Appendix B

DECOMMISSIONING PLAN

Lost City Renewables LLC

Logan and Muhlenberg Counties, Kentucky

Decommissioning Plan
Lost City Solar Project
Muhlenberg County, Kentucky

Prepared for:
Lost City Renewables LLC

Prepared by:
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Project No:2057322000

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The conclusions in the Report titled Decommissioning Plan are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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1.0 INTRODUCTION

Lost City Renewables LLC (Lost City) is proposing to construct and operate the Lost City Solar Project (Project) within Muhlenberg County, Kentucky. The Project footprint encompasses approximately 1,143 acres within perimeter fencing, out of a 1,413-acre Project area. The maximum generating capacity of the Project will be up to 250 megawatts, alternating current $(MW)_{[AC]}$.

This Decommissioning Plan (Plan) provides a description of the decommissioning and restoration phase of the Project. Start-of-construction is planned for June 2026, with anticipated Commercial Operation Date (COD) in June 2029. Major components of the Project include solar modules, tracking system, inverter/transformer stations, access and internal roads, perimeter fencing, electrical collection system and substation as shown in Figure 1.

This Plan includes an overview of the primary decommissioning Project activities, including the dismantling and removal of facilities, and subsequent restoration of land. A summary of estimated costs and revenues associated with decommissioning the Project are included in Section 4.0. The summary statistics and estimates provided are based on a 250-$MW_{[AC]}$ Project array design. This Plan complies with requirements stated within the 2023 Kentucky Revised Statutes (KRS) 278.706(2)(m). To the extent applicable laws and regulations in the future conflict with this Decommissioning Plan, such laws and regulations may apply in lieu of the applicable portion of this Plan.

1.1 SOLAR FARM COMPONENTS

The main components of the Project include:

- Solar modules
- Tracking system and steel piles
- Inverter/transformer stations
- Electrical cabling and conduits
- Site access and internal roads
- Perimeter fencing
- Project substation and overhead transmission tie-in line

1.2 TRIGGERING EVENTS AND EXPECTED LIFETIME OF PROJECT

Project decommissioning may be triggered by events such as the end of a power purchase agreement or when the Project reaches the end of its operational life. The decommissioning phase will comply with requirements of KRS, or applicable law at the time of decommissioning.

If properly maintained, the expected lifetime of a utility-scale solar project is approximately 30 years with an opportunity to extend the life of the project with equipment replacement and repowering. Depending on market conditions and project viability, solar arrays may be retrofitted with updated components (e.g., modules, racking system, etc.) to extend the life of a project. In the event that the facility is not retrofitted, or at the end of the Project's useful life, the solar arrays and associated components will be

decommissioned and removed from the Project site. During the Project's useful life, solar modules that are replaced or discarded will be removed from the site within 90 days, unless an extension has been granted by the secretary of the Kentucky Energy and Environment Cabinet ("Secretary").

The value of the individual components of the solar facility will vary with time. In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the life of the Project, components such as the solar modules could be sold in the wholesale market for reuse or refurbishment. As efficiency and power production of the modules decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; or other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment.

Components of the facility that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an approved offsite licensed solid waste disposal facility. Decommissioning activities will include removal of the solar arrays and associated components as described in Section 2.

1.3 DECOMMISSIONING SEQUENCE

Decommissioning activities will commence within twelve (12) months of the Project ceasing to produce electricity for sale unless the deadline has been extended by the Secretary. Lost City will be the responsible party. Monitoring and site restoration may extend beyond this period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected.

- Reinforce access roads, if needed, and prepare site for component removal
- Install erosion control materials and other best management practices (BMPs) to protect sensitive resources and control erosion during decommissioning activities.
- De-energize solar arrays.
- Dismantle and remove modules and above-ground wiring.
- Remove tracking equipment and piles.
- Remove inverter/transformer stations along with support system and foundation pads.
- Remove above and below-ground electrical cables and conduits
- Remove perimeter fence
- Remove the substation and overhead transmission line
- Remove access and internal roads and grade site (if required).
- De-compact subsoils as needed, restore, and revegetate disturbed land to a substantially similar state as it was prior to commencement of Project construction

2.0 PROJECT COMPONENTS AND DECOMMISSIONING ACTIVITIES

The Project components and decommissioning activities are further described within this section.

2.1 OVERVIEW OF SOLAR FACILITY SYSTEM

Lost City anticipates utilizing approximately 414,804 solar modules, with a total nameplate generating capacity of approximately 300 MW direct current $_{[DC]}$ converting to approximately 250 $MW_{[AC]}$ on the 1,143 acres of land within the perimeter fence. Statistics and cost estimates provided in this Plan are based on Trina bifacial modules, although the final module selection may vary prior to construction. The selection of different modules is not anticipated to materially alter the conclusions of this Plan.

Foundations, steel piles, and electric cabling and conduit installed 36 inches or less below the soil surface will be removed. Access roads and fence may be left in place if requested and/or agreed to by the landowner; however, for purposes of this assessment, all access roads are assumed to be removed. Lost City will communicate with the appropriate local agency to coordinate the repair of damaged or modified public roads during the decommissioning and reclamation process.

Estimated quantities of materials to be removed and sold, salvaged, or disposed of are included in this section. Many of the materials described have salvage value, although there are some components that will likely have none at the time of decommissioning. Removed materials that cannot be sold on the resale market will be salvaged or recycled to the extent possible. All other non-recyclable waste materials will be disposed of in accordance with state and federal law in a licensed solid waste facility. Table 1 presents a summary of the primary components of the Project included in this decommissioning plan.

Table 1 Primary Components of Solar Farm to be Decommissioned

Component	Quantity	Unit of Measure
Solar modules (approximate)	414,804	Each
Tracking system (equivalent full trackers)	5,318	Tracker
Steel piles	64,572	Each
Inverter stations with concrete pad foundations	63	Each
Perimeter fencing	51,895	Linear Foot
Access roads (approximate)	99,835	Linear Foot
Subsurface electrical cables and conduits	133,320	Linear Foot
Project substation	1	Each
Overhead tie-in transmission line	12	Linear Mile

2.2 SOLAR MODULES

Lost City intends to use bifacial modules from Trina Vertex for the Project. Statistics and estimates provided in this Plan are based on the Vertex N 710-watt bifacial module. The module assembly (with frame) will have a total weight of approximately 84 pounds and will be approximately 93.9 inches by 51.3 inches in

size. The modules are mainly comprised of non-metallic materials such as silicon, mono-crystalline glass, plastic, and epoxies, with an anodized aluminum frame.

At the time of decommissioning, module components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material. The estimates in this report have been calculated using a conservative approach, considering revenue from salvage only, rather than resale of Project components.

2.3 TRACKING SYSTEM AND SUPPORT

The solar modules will be mounted on a single-axis, one-in-portrait tracking system, such as the Nevados tracker by all Terrain Tracker or similar system. Each full, three-string tracker will be approximately 340 feet in length and will support approximately 78 solar modules. Smaller trackers will be employed at the edges of the layout to efficiently utilize available space. The tracking system is mainly comprised of galvanized and stainless steel; steel piles that support the system are comprised of structural steel.

The solar arrays will be deactivated from the surrounding electrical system and made safe for disassembly. Tracker lubricants will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Electronic components, and internal electrical wiring will be removed and salvaged. The steel piles will be completely removed.

The supports, tracking system, and piles contain salvageable materials which can be sold to provide revenue to offset the decommissioning costs.

2.4 INVERTER/TRANSFOMER STATIONS

The inverter and transformer stations are located within the array and will sit on piers with steel piles. The inverters and transformers will be deactivated, disassembled, and removed. Depending on condition, the equipment may be sold for refurbishment and re-use. If not re-used, they will be salvaged or disposed of at an approved solid waste management facility. Oils and lubricants will be collected and disposed of at a licensed facility.

2.5 ELECTRICAL CABLING AND CONDUITS

The Project's underground electrical collection system will be placed at a depth of three feet (36 inches) or greater. Underground cabling will be removed in decommissioning, regardless of depth.

2.6 PROJECT SUBSTATION

Lost City will include one substation as part of the Project located near the southeast area of the site. The substation will contain within its perimeter, a gravel pad, power transformers and footings, an electrical control house, and concrete pads, as needed. The Project substation is considered "interconnection and other facilities" as described in KRS 278.706, and thus, may remain in place at the end of the project. Unless an alternative use for the Project substation is determined, the facilities will be decommissioned and the land restored to a substantially similar state as it was prior to commencement of project construction.

At decommissioning, the substation transformers may be sold for re-use or salvaged. Components of the substation that cannot be salvaged will be transported off-site for disposal at an approved waste management facility. Foundations and footings will be demolished and removed.

2.7 OVERHEAD GENERATION TIE-IN TRANSMISSION LINE

An approximately 12-mile-long overhead generation tie-in transmission line will be constructed between the Project substation and the Point of Interconnection (POI). Unless an alternate use for the tie-in transmission line is identified, the lines will be removed and decommissioned. Estimated costs are included in this plan.

2.8 PERIMETER FENCING AND ACCESS ROADS

The Project will include an approximately six-foot-high chain link fence surrounding the perimeter of the site. The fence will total approximately 51,895 feet (9.8 miles) in length. Near the end of the decommissioning process, the fence fabric, poles, and foundations will be removed from the Project site.

A network of access roads will allow access to solar facility equipment. The internal access roads will be composed of gravel approximately 16 feet wide and total approximately 99,835 feet (18.9 miles) in length. The access road lengths may change with final Project design. Landowners may choose to retain the access roads at completion of the Project; however, to be conservative, the decommissioning estimate assumes that all site access roads will be removed.

During installation of the Project, site access drives will be excavated to remove topsoil, the subgrade will be compacted, and eight inches of aggregate fill will be placed. Geogrid will be placed beneath the gravel for the length of each access road. The estimated quantity of these materials is provided in Table 2.

Table 2 Typical Access Road Construction Materials

Item	Quantity	Unit
Aggregate fill, 8-inch thick	39,441	Cubic Yards
Geogrid	177,484	Square Yards

Decommissioning activities include the removal and stockpiling of aggregate materials onsite for salvage preparation. It is conservatively assumed that all aggregate materials will be removed from the Project site and hauled up to five miles from the Project area. Underlying geogrid will also be removed during the decommissioning process. Geogrid that is easily separated from the aggregate during excavation will be disposed of in an approved solid waste disposal facility. Geogrid that remains with the aggregate will be sorted out at the processing site and properly disposed. Following removal of aggregate and geogrid, the access road areas will be de-compacted with deep ripper or chisel plow (ripped to 18 inches), backfilled with native subsoil and topsoil, as needed, and graded as necessary.

3.0 LAND USE AND ENVIRONMENT

3.1 LAND USE

The Project site topography is hilly with limited open areas for agriculture. The current land use is agriculture and open land. The Project area will be restored to a substantially similar state as it was prior to commencement of construction.

3.2 RESTORATION AND REVEGETATION

Areas disturbed by Project facilities and activities will be restored to a substantially similar state as it was prior to project construction. Portions of the site that have been excavated and backfilled will be graded and de-compacted as previously described. If present, drain tiles that have been damaged will be restored to pre-construction condition.

Topsoil will be placed on disturbed areas, as needed, and stabilized prior to returning the site to the landowner, allowing a land use similar to that prior to construction of the Project. Restored areas will be revegetated in consultation with the current landowner and in compliance with regulations in place at the time of decommissioning. Work will be completed to comply with the conditions agreed upon by Lost City and the Kentucky Public Service Commission regulations in affect at the time of decommissioning.

3.3 SURFACE WATER DRAINAGE AND CONTROL

The Project facilities are being sited to avoid impacts to wetlands, waterways, and drainage swales. The Project site conditions at the time of decommissioning and proposed Best Management Practices (BMPs) to protect surface water features will be detailed in a Project Stormwater Pollution Prevention Plan (SWPPP) prior to the commencement of decommissioning activities.

Surface water conditions at the Project site will be reassessed prior to the decommissioning phase. Lost City will obtain the required water quality permits from the Kentucky Energy and Environmental Cabinet (KEEC) and the U.S. Army Corp of Engineers (USACE), as needed, prior to the start of Project decommissioning. BMPs may include enhancement of construction entrances, temporary seeding, mulching (in non-agricultural areas), erosion control matting, silt fence, filter berms, and filter socks.

3.4 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING

The activities involved in decommissioning the Project include removal of the Project components: solar modules, racking, tracking system, foundations and piles, inverter and transformer stations, access roads, perimeter fencing, Project substation and the overhead transmission line. Restoration activities include back-filling of pile and foundation sites; de-compaction of subsoils; grading of surfaces per the landowner lease agreement of the disturbed areas.

Equipment required for the decommissioning activities is similar to what is needed to construct the solar facility and may include, but is not limited to: small cranes, low ground pressure (LGP) tracked excavators,

backhoes, LGP-tracked bulldozers and dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, along with ancillary equipment. Standard dump trucks may be used to transport material removed from the site to disposal facilities and to import clean fill and topsoil if necessary.

4.0 DECOMMISSIONING COST ESTIMATE SUMMARY

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report, approximate 2024 market values were used to estimate labor expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

The value of the individual components of the solar facility will vary with time. In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the life of the Project, components such as the solar modules could be sold in the wholesale market for reuse or refurbishment. As efficiency and power production of the modules decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; or other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment.

4.1 DECOMMISSIONING EXPENSES

During decommissioning, the Project will incur costs associated with disposal of components not sold for salvage, including materials which will be disposed of at a licensed facility, as required. Decommissioning costs also include backfilling, grading, and restoration of the proposed Project site as described in Sections 2 and 3. Table 3 summarizes the estimated costs for activities associated with decommissioning the major components of the Project.

Table 3 Estimated Decommissioning Expenses

Activity	Unit	Quantity	Cost per Unit	Total
Overhead and management (includes estimated permitting required and public road repairs)	Lump Sum	1	$1,255,800	$1,255,800
Solar modules; disassembly and removal	Each	414,804	$5.15	$2,136,241
Tracking System disassembly and removal (equivalent full trackers)	Each	5,318	$685	$3,642,830
Steel pile/Trackers	Each	63,816	$12.70	$810,463
Steel pile/Inverters	Each	756	$53.80	$40,673
Transformers and inverters	Each	63	$1,890	$119,070
Access road excavation and removal	Lump Sum	1	$310,600	$310,600
Remove buried cable	Linear Feet	133,320	$0.91	$121,321
Perimeter fence removal (chain link)	Linear Feet	51,895	$4.60	$238,717

Activity	Unit	Quantity	Cost per Unit	Total
Topsoil replacement and rehabilitation of site	Lump Sum	1	$1,145,450	$1,145,450
Substation removal (two transformers)	Each	1	$495,000	$495,000
Overhead transmission line	Linear Mile	12	$291,500	$3,498,000
Total Estimated Decommissioning Cost				**$13,814,165**

4.2 POTENTIAL DECOMMISSIONING REVENUES

Revenue from decommissioning the Project will be realized through the sale of the solar facility components and construction materials. As previously described, the value of the decommissioned components will be higher in the early stages of the Project and decline over time. Resale of components such as solar modules is expected to be greater than salvage (i.e., scrap) value for most of the life of the Project, as described below. For purposes of this report, only estimated salvage values were considered in net revenue calculations, as this is the more conservative estimate strategy.

Modules and other solar plant components can be sold within a secondary market for re-use. A current sampling of reused solar modules indicates a wide range of pricing depending on age and condition ($0.10 to $0.30 per watt). Future pricing of solar modules is difficult to predict at this time, due to the relatively young age of the market, changes to solar module technology, and the ever-increasing product demand. A conservative estimation of the value of solar panels at $0.10 per watt would yield approximately $30,000,000. Increased costs of removal for resale versus salvage would be expected in order to preserve the integrity of the modules; however, the net revenue would be substantially higher than the estimated salvage value.

The resale value of components such as the trackers, may decline more quickly; however, the salvage value of the steel that makes up a large portion of the trackers is expected to stay at or above the value used in this report. The market value of steel and other materials fluctuates daily and has varied widely over the past five years. Salvage value estimates were based on an approximate five-year-average price of steel derived from sources including on-line recycling companies and United States Geological Survey (USGS) commodity summaries. The value of steel used in this report is $254 per metric ton, aluminum at $0.40 per pound, and glass at $0.05 per pound.

The main material of the tracking system and piles is assumed to be salvageable steel. Table 4 summarizes the potential salvage value for the solar array components and construction materials.

Table 4 - Estimated Decommissioning Revenues

Item	Unit of Measurement	Quantity per Unit	Salvage Price per Unit[1]	Total Salvage Price per Item[2]	Number of Items	Total
Modules - Silicon	Average Pounds per Module	2.10	$0.40	$0.840	414,804	$348,435
Modules - Aluminum	Average Pounds per Module	3.40	$0.40	$1.360	414,804	$564,133
Modules – Glass	Average Pounds per Module	31.70	$0.05	$1.585	414,804	$657,464
Tracking system and Posts	Metric tons per $MW_{[DC]}$	32.0	$254	$8,128	300	$2,438,400
Substation Components (steel and transformers)					1	$75,000
Total Potential Revenue (considering salvage values)						**$4,083,432**

*Revenue based on salvage value only. Revenue from used panels at $0.10 per watt could raise $30,000,000 as resale versus the estimated salvage revenue

4.3 DECOMMISSIONING COST SUMMARY

Table 5 provides a summary of the estimated cost to decommission the Project, using the information detailed in Sections 4.1 and 4.2. Estimates are based on 2024 prices, with no market fluctuations or inflation considered. Table 5 represents the total estimated net decommissioning cost including expected revenue.

Table 5 Net Decommissioning Cost Summary

Item	(Cost)/Revenue
Decommissioning Expenses	**($13,814,165)**
Potential Revenue – salvage value of modules and recoverable materials	**$4,083,432**
Net Decommissioning (Cost)/Revenue	**($9,730,733)**

Lost City Renewables LLC has indicated they will comply with the Kentucky Revised Statutes. Lost City will update the decommissioning estimate every five years during project life, and the financial security will be increased if the updated estimate yields a different net removal cost. The surety bond or other form of financial security will be one hundred (100) percent of the net decommissioning cost.

Lost City has indicated it will comply with requirements set forth in KRS 278.710(2)(m), including but not limited to the following:

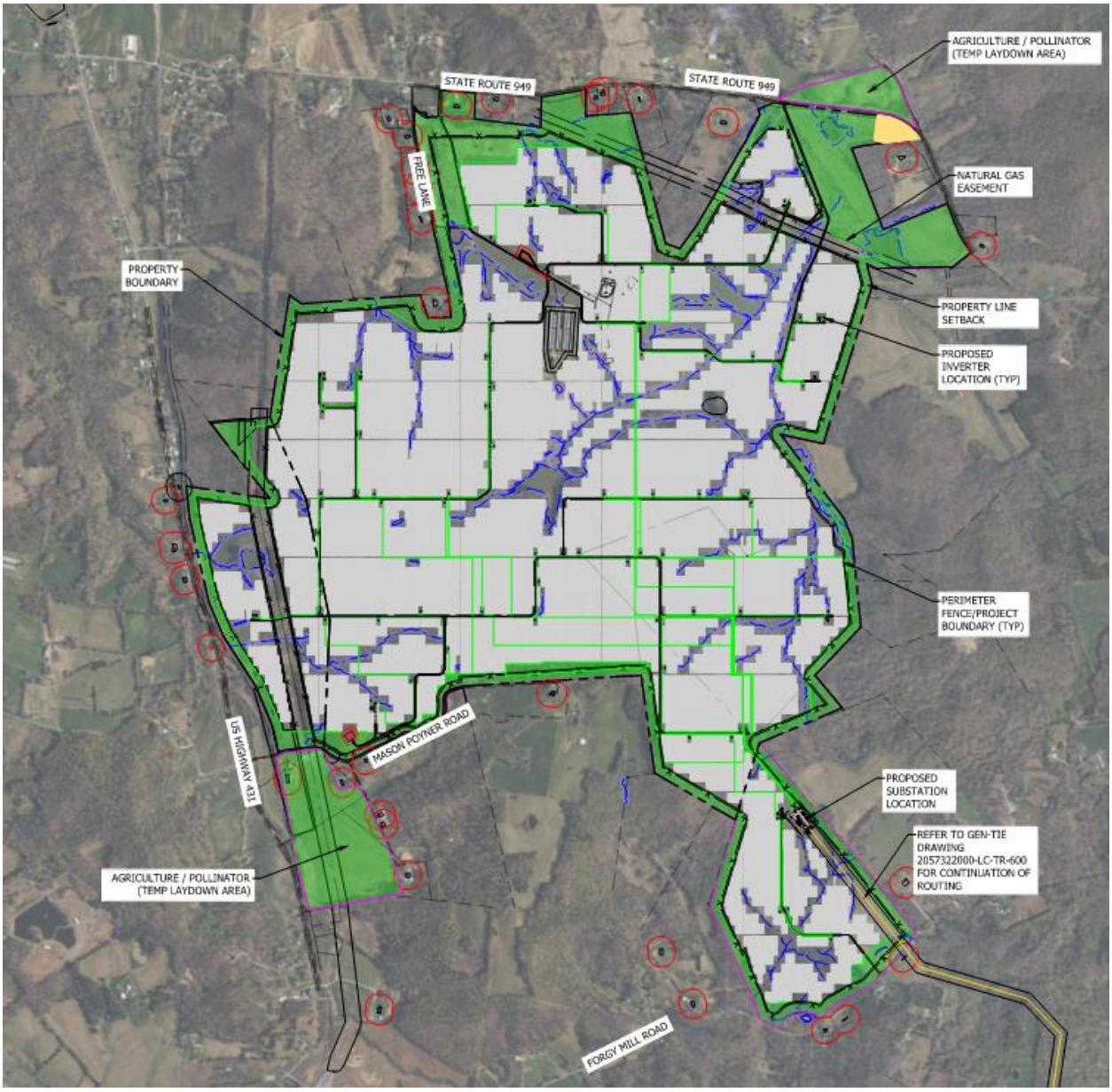
- The bond or other similar security shall be provided by an insurance company or surety that shall at all times maintain at least an “Excellent” rating as measured by the AM Best rating agency or an investment grade credit rating by any national credit rating agency and, if available, shall be noncancelable by the provider or the customer until completion of the decommissioning plan or until a replacement bond is secured.

- The bond or other similar security shall provide that at least thirty (30) days prior to its cancellation or lapse, the surety shall notify the applicant, its successor or assign, each landowner, the KEEC, and the county or city in which the facility is located of the impending cancellation or lapse. The notice shall specify the reason for the cancellation or lapse and provide any of the parties, either jointly or separately, the opportunity to cure the cancellation or lapse prior to it becoming effective. The applicant, its successor, or its assign shall be responsible for all costs incurred by all parties to cure the cancellation or lapse of the bond. Each landowner, the KEEC or the Muhlenberg County Fiscal Court with the prior approval of each landowner, may make a demand on the bond and initiate and complete the decommissioning plan.

- Communicate with each affected landowner at the end of the merchant electric generating facility's useful life so that any requests of the landowner that are in addition to the minimum requirements set forth in this paragraph and in addition to any other requirements specified in the lease with the landowner may, in the sole discretion of the applicant or its successor or assign, be accommodated.

FIGURES

Figure 1 Proposed Project Layout



Appendix C

TVA TRANSITIONAL SERIAL INTERCONNECTION FACILITY STUDY AGREEMENT

Lost City Renewables LLC

Logan and Muhlenberg Counties, Kentucky

APPENDIX 8 to LGIP

TRANSITIONAL SERIAL INTERCONNECTION FACILITIES STUDY AGREEMENT

THIS AGREEMENT is made and entered into this 22nd day of January 2025 by and between LOST CITY RENEWABLES, LLC, a limited liability company organized and existing under the laws of the State of Delaware, ("Interconnection Customer,") and Tennessee Valley Authority, a corporate agency and instrumentality of the United States of America created by and existing under and by virtue of the Tennessee Valley Authority Act of 1933, as amended ("TVA"). Interconnection Customer and TVA each may be referred to as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, Interconnection Customer is proposing to develop a Large Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Interconnection Request submitted by Interconnection Customer and represented with queue assignment dated March 28, 2023; and

WHEREAS, the Generating Facility being proposed by Interconnection Customer is a 250 MW photovoltaic generator which is listed as Q536 in TVA's interconnection queue; and

WHEREAS, Interconnection Customer desires to interconnect the Large Generating Facility with the Transmission System; and

WHEREAS, Interconnection Customer has requested TVA to continue processing its Interconnection Facilities Study to specify and estimate the cost of the equipment, engineering, procurement, and construction work needed to implement the conclusions of the final interconnection system impact study (from the previously effective serial study process) in accordance with Good Utility Practice to physically and electrically connect the Large Generating Facility to the Transmission System; and

WHEREAS, Interconnection Customer has requested TVA to perform an Interconnection Facilities Study to specify and estimate the cost of the equipment, engineering, procurement and construction work needed to implement the conclusions of the Cluster Study in accordance with Good Utility Practice to physically and electrically connect the Large Generating Facility to the Transmission System; and

WHEREAS, TVA has provided an Interconnection Facilities Study Agreement to Interconnection Customer on or before November 1, 2024;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1.0 When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated in this LGIP.

2.0 Interconnection Customer elects and TVA shall cause an Interconnection Facilities Study consistent with Section 8.0 of this LGIP to be performed.

3.0 The scope of the Interconnection Facilities Study shall be subject to the assumptions set forth in Attachment A to this Agreement, which shall be the same assumptions as the previous Interconnection Facilities Study Agreement executed by Interconnection Customer. Any modifications to the assumptions contained in the previous [Interconnection Request/Interconnection Facilities Study Agreement] are subject to the provisions of Section 4.4 of this LGIP.

4.0 The Interconnection Facilities Study Report (i) shall provide a description, estimated cost of (consistent with Attachment A), schedule for required facilities to interconnect the Large Generating Facility to the Transmission System and (ii) shall address the short circuit, instability, and power flow issues identified in the Cluster Study. The time for completion of the Interconnection Facilities Study shall be no later than June 12, 2025, one hundred fifty (150) Calendar Days after the execution deadline of this Agreement.

5.0 Interconnection Customer has met the requirements described in Section 5.1.1.1 of this LGIP. Along with this executed Agreement, Interconnection Customer shall provide to TVA:

(1) A deposit equal of $17,400,000 to one hundred percent (100%) of the costs identified for all Interconnection Facilities and Network Upgrades in Interconnection Customer's system impact study report. The deposit shall be in the form of an irrevocable letter of credit, cash or other form of security that is acceptable to TVA.

(2) Demonstration of Exclusive Site Control for 100% of the proposed Generating Facility.

6.0 Interconnection Customer previously provided a study deposit of $150,000 for the performance of the Interconnection Facilities Study. If Interconnection Customer did not previously provide a study deposit, Interconnection Customer shall provide a study deposit of $150,000.

7.0 Upon receipt of the Interconnection Facilities Study results, TVA shall charge and Interconnection Customer shall pay the actual costs, including applicable overheads, of the Interconnection Facilities Study.

8.0 Any difference between the study deposit and the actual cost of the study shall be paid by or refunded to Interconnection Customer, as appropriate.

9.0 Accuracy of Information. Except as a Party ("Providing Party") may otherwise specify in writing when it provides information to the other Party under this Agreement, Interconnection Customer represents and warrants that, to the best of its knowledge, the information it provides to the other Party shall be accurate and complete as of the date the information is provided. The Providing Party shall promptly provide the other Party with any additional information needed to update information previously provided.

10.0 Term and Termination. This Agreement shall be effective from the date executed by the Parties and unless earlier terminated in accordance with this Section 10.0, shall continue in effect until the Transitional Serial Interconnection Study is completed. This Agreement shall automatically terminate upon the withdrawal of Interconnection Request pursuant to Section 3.7 of the LGIP. TVA may terminate this Agreement fifteen (15) Business Days after providing written notice to the Interconnection Customer that it has breached one of its obligations hereunder, if the breach has not been cured within such fifteen (15) Business Day period. This Agreement shall continue in effect after termination, to the extent necessary, to provide for final billings and payments for costs incurred pursuant to this Agreement and to permit the determination and enforcement of liability and indemnification obligations arising from acts or events that occurred while this Agreement was in effect.

11.0 Force Majeure. Neither Party shall be considered to be in Default with respect to any obligation hereunder, other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Party in writing by email and by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this article shall be confirmed in writing by email as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

12.0 Indemnity. Interconnection Customer (the "Indemnifying Party") shall at all times indemnify, defend, and hold harmless TVA and its directors, officers, representatives and employees and the United States of America, including its departments, agencies, and instrumentalities (each an "Indemnified Person") from and against any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from Interconnection Customer's action or inactions of its obligations under this Agreement on behalf of the Indemnifying Party, except as pre-empted by federal law or in cases of gross negligence or intentional wrongdoing by the indemnified Party.

12.1 Indemnified Person. If an Indemnified Person is entitled to indemnification under this Section as a result of a claim by a third party, and the Indemnifying Party fails, after notice and reasonable opportunity to proceed to assume the defense of such claim, such Indemnified Person may at the expense of the Indemnifying Party contest, settle or consent to the entry of

any judgment with respect to, or pay in full, such claim.

12.2 Indemnifying Party. If an Indemnifying Party is obligated to indemnify and hold any Indemnified Person harmless under this Section, the amount owing to the Indemnified Person shall be the amount of such Indemnified Person's actual Loss, net of any insurance or other recovery.

12.3 Indemnity Procedures. Promptly after receipt by an Indemnified Person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Section may apply, the Indemnified Person shall notify the Indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the Indemnifying Party.

13.0 Consequential Damages. In no event shall either Party be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

14.0 Representations, Warranties and Covenants. Each Party makes the following representations, warranties and covenants:

14.1 Good Standing. Such Party is duly organized, validly existing and in good standing under federal law or the laws of the state in which it is organized, formed, or incorporated, as applicable; that it is qualified to do business in the state or states in which the Large Generating Facility, Interconnection Facilities and Network Upgrades owned by such Party, as applicable, are located; and that it has the corporate power and authority to own its properties, to carry on its business as now being conducted and to enter into this Agreement and carry out the transactions contemplated hereby and perform and carry out all covenants and obligations on its part to be performed under and pursuant to this Agreement.

14.2 Authority. Such Party has the right, power and authority to enter into this Agreement, to become a Party hereto and to perform its obligations hereunder. This Agreement is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, reorganization or other similar laws affecting creditors' rights generally and by general equitable principles (regardless of whether enforceability is sought in a proceeding in equity or at law).

14.3 No Conflict. The execution, delivery and performance of this Agreement does not violate or conflict with the organizational or formation documents, or bylaws or operating agreement, of such Party, or any judgment, license, permit, order, material agreement or instrument applicable to or binding upon such Party or any of its assets.

14.4 Consent and Approval. Such Party has sought or obtained, or, in accordance with this Agreement will seek or obtain, each consent, approval, authorization, order, or acceptance by any Governmental Authority in connection with the execution, delivery and performance of this Agreement, and it will provide to any Governmental Authority notice of any actions under this Agreement that are required by Applicable Laws and Regulations.

15.0 Miscellaneous.

15.1 Confidentiality. This Agreement is subject to the confidentiality provisions in Section 13.1 of the LGIP.

15.2 Disputes. This Agreement is subject to the dispute provisions in Section 13.5 of the LGIP.

15.3 Binding Effect. This Agreement and the rights and obligations hereof, shall be binding upon and shall inure to the benefit of the successors and assigns of the Parties hereto.

15.4 Entire Agreement. This Agreement, including all Attachments attached hereto, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

15.5 No Third-Party Beneficiaries. This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and, where permitted, their assigns.

15.6 Waiver. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty of this Agreement. Termination or Default of this Agreement for any reason

by Interconnection Customer shall not constitute a waiver of Interconnection Customer's legal rights to obtain an interconnection from TVA. Any waiver of this Agreement shall, if requested, be provided in writing.

15.7 Headings. The descriptive headings of the various Sections of this Agreement have been inserted for convenience of reference only and are of no significance in the interpretation or construction of this Agreement.

15.8 Multiple Counterparts. This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

15.9 Amendment. The Parties may by mutual agreement amend this Agreement by a written instrument duly executed by the Parties.

15.10 Modification by the Parties. The Parties may by mutual agreement amend the Attachments to this Agreement by a written instrument duly executed by the Parties. Such amendment shall become effective and a part of this Agreement upon satisfaction of all Applicable Laws and Regulations.

15.11 No Partnership. This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

15.12 Consistency with Federal Laws and Regulations. Nothing in this Agreement shall compel any person or federal entity to: (1) violate Federal statutes or regulations; or (2) in the case of a Federal agency, to exceed its statutory authority, as defined by any applicable Federal statutes, regulations, or orders lawfully promulgated thereunder. If any provision of this Agreement is inconsistent with any obligation imposed on any person or Federal entity by Federal law or regulation to that extent, it shall be inapplicable to that person or Federal entity. No person or Federal entity shall incur any liability by failing to comply with this Agreement that is inapplicable to it by reason of being inconsistent with any Federal statutes, regulations, or orders lawfully promulgated thereunder; provided, however, that such person or Federal entity shall use its best efforts to comply with the Agreement to the extent that applicable Federal laws, regulations, and orders lawfully promulgated thereunder permit it to do so.

IN WITNESS THEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

TENNESSEE VALLEY AUTHORITY

By: Smith, Heather Digitally signed by Smith, Heather Date: 2025.01.15 11:08:15 -05'00'

Heather Smith
Manager
Stakeholder Services & Contracts

Date: _____

LOST CITY RENEWABLES, LLC

By: DocuSigned by: Sean Toland DAAFB132C879462...

Print Name: Sean Toland

Title: Authorized Signer

Date: January 8, 2025

Attachment A To Appendix 8

Transitional Serial Interconnection Facilities Study Agreement

ASSUMPTIONS USED IN CONDUCTING THE TRANSITIONAL SERIAL INTERCONNECTION FACILITIES STUDY

[Assumptions and data to be completed/provided by Interconnection Customer]

Provide location plan and simplified one-line diagram of the plant and station facilities. The one-line diagram should be consistent with any drawings submitted with the Interconnection Request upon which the Cluster Study or Restudy was based.

One set of metering is required for each generation connection to the new ring bus or existing TVA station. Number of generation connections: ____

On the one-line diagram indicate the generation capacity attached at each metering location. (Maximum load on CT/PT)

On the one-line diagram indicate the location of auxiliary power. (Minimum load on CT/PT) Amps

Will an alternate source of auxiliary power be available during CT/PT maintenance?

Yes ___ No___

Will a transfer bus on the generation side of the metering require that each meter set be designed for the total plant generation? Yes ___No ___ (Please indicate on one line diagram).

What type of control system or Programmable Logic Controller (PLC) will be located at Interconnection Customer's Large Generating Facility? _____

_____

_____

What protocol does the control system or PLC use? _____

_____

_____

Please provide a General Arrangement & Site Plan. Sketch the plant, station, transmission line, and property line. Include latitude/longitude at the POI on the plan. Latitude/longitude should be consistent with any drawings submitted with the Interconnection Request upon which the Cluster Study or Restudy was based.

Physical dimensions of the proposed interconnection station:

_____

Bus length from generation to Interconnection Customer's interconnection station:

_____

Gen-tie line length in miles from Interconnection Customer's interconnection station to TVA's demarcation structure.

_____

Transmission Line Structure Number observed in the field. (Noted on structure)* _____

Number of third-party easements required for transmission lines*: _____

* To be completed in coordination with TVA.

Is the Large Generating Facility in TVA's service area?

Yes ___ No ___ Local Power Company: _____

Please provide proposed schedule dates:

Gen-Tie and Sub Detailed Engineering Start	Date:
Gen-Tie and Sub Detailed Engineering Complete	Date:
Land Options Executed	Date:
IC Switch House Available for TVA Equipment Installation (Set up with power and communication hookups)	Date:
Generator step-up transformer receives back feed power	Date:
Initial Synchronization Date	Date:
Performance Testing Readiness	Date:
Commercial Operation Date	Date:

Appendix D

PRELIMINARY CRITICAL ISSUES ANALYSIS

Lost City Renewables LLC

Logan and Muhlenberg Counties, Kentucky

COPPERHEAD
ENVIRONMENTAL CONSULTING

Critical Issues Analysis

TRANSMISSION LINE FOR THE LOST CITY PROJECT

LOGAN AND MUHLENBERG COUNTIES, KENTUCKY

Lost City Renewables LLC

25 March 2024

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.
P.O. BOX 73 ■ 471 MAIN STREET ■ PAINT LICK, KENTUCKY 40461
(859) 925-9012 OFFICE (859) 925-9816 FAX

www.copperheadconsulting.com

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INTRODUCTION

Copperhead Environmental Consulting, Inc. (Copperhead) was contracted by Lost City Renewables LLC to conduct a database review and prepare a critical issues analysis (CIA) for the proposed transmission line for the Lost City Solar Project, a potential 250-Megawatt (MW) solar facility, in Logan and Muhlenberg Counties, Kentucky.

The purpose of the CIA is to summarize the findings of the database review; identify potential concerns; and address recommended approaches to agency consultation and/or project design. The CIA does not include regulatory consultation or correspondence.

The transmission line, or Project Area, runs from the proposed solar siting facility southeast of Penrod, Kentucky south to the Tennessee Valley Authority (TVA) Lost City substation off of Lost City Road southeast of Lewisburg, Kentucky (Figures 1 and 2).

METHODS

Desktop Analysis – Environmental Resources

Copperhead reviewed publicly available databases to provide a high-level screening of environmental resources that may be present in or near the Project Area. The review identified preliminary data regarding land cover, vegetation communities, sensitive species, sites of cultural or historical significance, and other resources. The following data sources were reviewed in March 2024:

- Aerial photography and topographic maps
- Federal Emergency Management Agency: flood maps
- National Conservation Easement Database: protected lands and easements
- National Landcover Database: landcover
- National Wetland Inventory (NWI): wetland and waterway maps
- Natural Resources Conservation Service (NRCS): Web Soil Survey of Logan and Muhlenberg Counties
- Political boundaries (federal, state, tribal, county, municipal)
- KDFWR: state-listed species by quadrangle
- KDOW: Special use waters, 303(d) list of impaired waters, 305(b) list of designated use waters
- KGS (Kentucky Geological Survey): sinkholes and karst potential
- Topographic contour data/digital contour data and digital elevation models US Department of Agriculture (USDA): soil survey of Logan and Muhlenberg Counties and hydric soils list
- US Geological Survey: National Hydrography Database
- US Geological Survey: Protected Areas of the US database

- USFWS: IPaC (including results for eagles and migratory birds)
- US National Land Cover Database (NLCD); USGS 2019

The CIA describes the results of the desktop analysis as it relates to critical regulatory and environmental issues that may affect project development.

RESULTS – ENVIRONMENTAL RESOURCES

Land Cover

The Project Area is currently a mosaic of agricultural/pastural lands and deciduous/mixed forest. The southern end of the Project Area connects the proposed main solar siting area to the Lost City TVA substation off of Lost City Road. The surrounding landscape is similar to the mix of forest and agricultural lands in the solar facility Project Area; however, it also includes developed areas such as the town of Lewisburg, Dunmor, and Penrod as well.

Land cover use of the Project was determined using the National Land Cover Dataset (NLCD 2019) hosted by the United States Geological Survey (USGS) using ArcGIS Pro Version 3.1.3. The two-mile buffer surrounding the proposed Project is largely comprised of deciduous forest (15979.96 acres), followed by hay/pasture (9182.13 acres), cultivated crops (5108.47 ac), and mixed forest (3513.15 acres) (Table 1; Figure 3). The Project Area is comprised of deciduous forest (94.95 acres), followed by cultivated crops (42.34 acres), and woody wetlands (21.81 acres).

Table 1. Land Cover Types.

NLCD Land Cover Class	2-mile Buffer		Project Area	
	Acres	Percent	Acres	Percent
Barren Land	104.00	0.27%	-	-
Cultivated Crops	5108.47	13.27%	42.34	18.93%
Deciduous Forest	15979.96	41.51%	94.95	42.45%
Developed, High Intensity	126.60	0.33%	0.27	0.12%
Developed, Low Intensity	296.64	0.77%	0.41	0.18%
Developed, Medium Intensity	165.90	0.43%	0.36	0.16%
Developed, Open Space	1802.48	4.68%	5.53	2.47%
Emergent Herbaceous Wetlands	203.03	0.53%	0.35	0.16%
Evergreen Forest	308.49	0.80%	1.61	0.72%
Hay/Pasture	9182.13	23.85%	39.79	17.79%

NLCD Land Cover Class	2-mile Buffer		Project Area	
	Acres	Percent	Acres	Percent
Herbaceous	381.92	0.99%	0.61	0.27%
Mixed Forest	3513.15	9.13%	15.67	7.00%
Open Water	195.50	0.51%	-	-
Shrub/Scrub	248.76	0.65%	-	-
Woody Wetlands	881.56	2.29%	21.81	9.75%
Totals	**38498.58**	**-**	**223.69**	**-**

Source: 2019 National Land Cover Database (NLCD)

Soils

Soil types were assessed to determine the presence or absence of prime farmland. Project Area soil types consist primarily of loam and are summarized in the following table (Table 2) and shown in Figure 4. The Project Area contains 128.14 acres of soil types considered to be prime farmland, prime farmland if drained, prime farmland if drained and either protected from flooding or not frequently flooded during the growing season, and prime farmland if protected from flooding or not frequently flooded during the growing season by the NRCS; approximately 29.70 acres of soil types considered to be farmland of statewide importance.

Logan County contains 197,814.27 acres of soil types considered to be prime farmland, prime farmland if drained, prime farmland if drained and either protected from flooding or not frequently flooded during the growing season, and prime farmland if protected from flooding or not frequently flooded during the growing season by the NRCS; approximately 80,488.89 acres of soil types considered to be farmland of statewide importance. Muhlenberg County contains 114,497.56 acres of soil types considered to be prime farmland, prime farmland if drained, prime farmland if drained and either protected from flooding or not frequently flooded during the growing season, and prime farmland if protected from flooding or not frequently flooded during the growing season by the NRCS; approximately 35,353.73 acres of soil types considered to be farmland of statewide importance. Therefore, the transmission line has only a minimal impact on prime farmland or farmland of statewide importance compared to available prime farmland or farmland of statewide importance in both counties.

Table 2. Soil Types Present in the Lost City Transmission Line Corridor (75-foot buffer). Logan and Muhlenberg Counties, Kentucky

Map Unit	Soil Type	Percent Hydric Inclusions	Farmland Classification	Acres
CcC	Caneyville silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	1.43
Cg	Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded	0	All areas are prime farmland	2.65
CoC	Colbert silt loam, 6 to 12 percent slopes	0	Not prime farmland	4.94
CrB	Crider silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	2.40
EpB	Epley silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	3.92
FlD	Frondorf-Lenberg complex, 12 to 20 percent slopes	0	Not prime farmland	6.89
FlE	Frondorf-Lenberg complex, 20 to 30 percent slopes	0	Not prime farmland	12.08
FlF	Frondorf-Lenberg complex, 30 to 50 percent slopes	0	Not prime farmland	10.99
FrC	Frondorf silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	5.50
FrD	Frondorf silt loam, 12 to 20 percent slopes	0	Not prime farmland	1.32
FsF	Frondorf stony complex, 12 to 50 percent slopes (Muskingum, stony)	0	Not prime farmland	4.23
Ks	Karnak silty clay, 0 to 2 percent slopes, frequently flooded	98	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	17.18
La	Lawrence silt loam	6	Prime farmland if drained	7.99

Map Unit	Soil Type	Percent Hydric Inclusions	Farmland Classification	Acres
Ld	Lindside silt loam	0	Prime farmland if protected from flooding or not frequently flooded during the growing season	3.55
Me	Melvin silt loam	97	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	25.49
Ne	Newark silt loam	2	Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season	25.86
NhA	Nicholson silt loam, 0 to 2 percent slopes	0	All areas are prime farmland	0.67
NhB	Nicholson silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	8.12
No	Nolin silt loam	0	Prime farmland if protected from flooding or not frequently flooded during the growing season	2.46
PeB	Pembroke silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	0.32
Rx	Rock outcrop-Fredonia-Colbert complex (Caneyville rocky)	0	Not prime farmland	1.31
SaB	Sadler silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	0.80
TaB	Talbott silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	6.36
TaC	Talbott silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	12.38
TbD3	Talbott silty clay, 6 to 20 percent slopes, severely eroded	0	Not prime farmland	2.28
TcD	Talbott-Colbert rocky silt loams, 2 to 20 percent slopes (Caneyville rocky)	0	Not prime farmland	3.91

Map Unit	Soil Type	Percent Hydric Inclusions	Farmland Classification	Acres
TcF	Talbott-Colbert rocky silt loams, 20 to 50 percent slopes (Caneyville rocky)	0	Not prime farmland	8.10
uBelA	Belknap silt loam, 0 to 2 percent slopes, occasionally flooded	6	Prime farmland if drained	0.94
W	Water	0	Not prime farmland	1.44
WeC	Wellston silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	1.17
WlB	Wellston silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	0.27
WlC	Wellston silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	7.70
WlC3	Wellston silt loam, 6 to 12 percent slopes, severely eroded	0	Not prime farmland	0.09
WlD	Wellston silt loam, 12 to 20 percent slopes	0	Not prime farmland	8.29
ZaB	Zanesville silt loam, 2 to 6 percent slopes	0	All areas are prime farmland	19.15
ZaC	Zanesville silt loam, 6 to 12 percent slopes	0	Farmland of statewide importance	1.52
			Total Acreage	**223.71**

Source: Natural Resources Conservation Service Web Soil Survey GIS data, NRCS 2024

Potential karst topography occurs within the Project Area and within a two-mile buffer of the Project Area (Figure 5). Karst topography is a type of landscape where the dissolving of limestone and dolomite, which are carbonate rocks, has created sinkholes, sinking streams, caves, springs, and other underground features (NPS 2022). A record search identified no known caves within two miles of the Project Area. Based on available aerial imagery and digital elevation maps, it appears there are no sinkholes or caves on or within the Project Area (Figure 6).

Infrastructure and Transportation

Existing infrastructure within the Project Area includes multiple roads and highways as well as the TVA Lost City substation at the southern end of the Project Area. Surrounding the Project Area are residential homes and communities as well as commercial and industrial businesses such as Logan Aluminum, Dollar General, various restaurants and shopping centers. Nearby towns include Lewisburg, Dunmor, and Penrod.

The Project Area is served by highway and waterway modes of transportation. The existing roadway network is expected to have sufficient capacity to absorb the expected Project construction traffic increase; potential impacts of construction on roadway transportation are expected to be minor and temporary.

The nearest airport is the Muhlenberg County Airport which is 12.65 miles from the Project Area. An airspace review by the Federal Aviation Administration (FAA) is required for any "physical incursions of proposed structures into airspace, interference with radar communications, and any other conditions that might negatively impact air traffic" (FAA 2018). However, there are no hard triggers (e.g., project size, type, or distance from the airport) for airspace reviews for projects occurring off-airport. Once project design parameters are known, including the location and height of any structures, the FAA's online Notice Criteria Tool can be completed, and a determination can be made regarding the need for FAA review. A preliminary result of the Project does "not exceed Notice Criteria" was obtained during this assessment (Appendix A).

Conservation Areas and Public Lands

No natural areas or parks occur on or adjacent to the Project Area. A review of the National Conservation Easement Database and the USGS (PADUS) database, which is the official inventory of public open space and private protected areas, identified one conservation easement within two miles of the transmission line (Figure 7). Because a transmission line is unlikely to interfere with the management or use of the public lands, conservation measures are unlikely to be required.

Wetlands and Waterways

The Project Area is located within the Hazel Creek-Rocky Creek watershed (HUC: 051100030208), the Deerlick Creek-Mud River watershed (HUC: 051100030209), and the Norman Branch-Rocky Creek watershed (HUC: 051100030207).

A search of the NWI database showed that there are multiple wetlands in the form of freshwater forested/shrub wetlands, freshwater ponds, and riverine wetlands in the Project Area. A search of the USGS National Hydrography Dataset (NHD) database showed that there are multiple NHD waterways running through the Project Area including Jockys Branch, Mud River, Wolf Lick Creek, Alum Lick Creek, Austin Creek, and several unnamed tributaries (Figure 8).

In May 2023, the Supreme Court ruled that "In sum, we hold that the CWA extends to only those "wetlands with a continuous surface connection to bodies that are 'waters of the United States' in their own right," so that they are "indistinguishable" from those waters." (Sackett versus EPS 2023). Therefore, wetlands and waterways that do not connect directly to larger WOTUS are no longer protected under the CWA.

Streams and wetlands occur within the Project Area and avoidance and/or minimization of impacts is recommended. The planned wetland and stream delineation will help determine jurisdictional status of the wetlands and streams within the Project Area.

Floodplains

A floodplain is the relatively level land area along a stream or river that is subjected to periodic flooding. The area subject to a 1-percent chance of flooding in any given year is normally called the 100-year floodplain. The area subject to a 0.2-percent chance of flooding in any given year is normally called the 500-year floodplain.

A search of the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer revealed that multiple sections within the Project Area fall within a 1-percent annual chance flood hazard (Figure 9). Avoidance and/or minimization of impacts to 100-year floodplains is recommended.

Special Status Plant and Wildlife Species and Habitat

Federally Listed Species

The ESA provides broad protection for species of fish, wildlife and plants that are federally listed as threatened or endangered. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or their designated critical habitat.

The USFWS IPaC system identified four endangered species, one proposed endangered species, one experimental population (non-essential) species, and one candidate species with the potential to occur in the Project Area (Table 3). The Project is not located within any known critical habitats.

Table 3. 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	Candidate	N/A

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

Information regarding survey and consultation requirements for these species is discussed in detail in the *Potential for Further Study Requirements* section of this report. The official IPaC is available as Appendix B.

Mammals

Gray Bat

On April 28, 1976, the gray bat (*Myotis grisescens*) was listed as endangered under the ESA (USFWS 1976a). This species is primarily found in the cave regions of Alabama, Arkansas, Kentucky, Missouri, and Tennessee, with smaller populations known from Florida, Georgia, Illinois, Indiana, Kansas, Mississippi, North Carolina, Oklahoma, Virginia, and West Virginia (USFWS 2009). In Kentucky, the gray bat is considered to occur statewide, with maternity/reproductive records in Logan County and other records in Muhlenberg County

(KDFWR 2017a). The largest concentrations of gray bats are found in and around Mammoth Cave National Park in Edmonson County, located in south-central Kentucky (USFWS 2009). No critical habitat has been designated or is currently proposed for this species.

The gray bat typically roosts in caves year-round and is often found in large numbers, with colonies in excess of one million individuals reported (Brady et al. 1982). Habitat requirements for roosts are highly specific, with fewer than five percent of caves representing suitable habitat (Tuttle 1979). The gray bat utilizes varying types of caves during different times of the year, including caves with deep vertical shafts that provide a cold air trap during winter (hibernacula) and caves with domed ceilings that trap warm air during summer. Hibernacula typically have multiple entrances, good air flow (Martin 2007), and temperatures between 1° and 9° Celsius (C), although 1° to 4° C seems to be preferred (Tuttle and Kennedy 2005). Approximately 95 percent of the total species population hibernates in only nine caves. Maternity colonies are typically found in caves with temperatures between 14° and 25° C that are located within one to four kilometers of a stream or water body (Tuttle 1976, Tuttle and Kennedy 2005, Martin 2007). Other caves, known as dispersal caves, are used as roosting sites during migration from maternity caves to hibernacula.

Gray bats are also known to use bridges and culverts as roosting habitat during the spring, summer, and fall. Concrete structures seem to be preferred due to their tendency to retain heat longer than other materials; however, metal and wood structures may also be used with less frequency. Gray bats have been observed using bridges and culverts as both day and night roosts. Bridges used as day roosts are typically constructed of concrete and contain vertical crevices, expansion joints, or other locations that allow bats to retreat into the bridge deck or superstructure (Keeley and Tuttle 1999, Feldhamer et al. 2003, Cleveland and Jackson 2013). Bridges with a concrete deck and concrete or metal girders seem to be preferred as night roosts (Keeley and Tuttle 1999, Kiser et al. 2002). This bridge type retains heat into the night, and the chambers between the girders trap heat rising from under the bridge and provide protection from wind, weather, and predators. Night-roosting bats are typically found on the vertical surface of the girder at the intersection with the underside of the deck, often near the bridge abutments. Areas over land seem to be preferred more than the central portion of the bridge and areas spanning water. Bridges that lack crevices/expansion joints or girders are rarely used as day or night roosts (Adam and Hayes 2000, Feldhamer et al. 2003, Ormsbee et al. 2007); however, structures with cave-like areas or other unique features that provide suitable roosting locations can also provide suitable roosting habitat.

Culverts utilized by gray bats are typically concrete box culverts between five and 10 feet in height; however, this species may also use metal culverts with similar dimensions. These structures are generally 50 feet or longer and provide dark zones, protection from high winds, and are not susceptible to frequent flooding. Roosting locations preferred by gray bats include dark areas with crevices and structural imperfections. Culverts less than five feet high are not generally used as roosting habitat (Keeley and Tuttle 1999, USFWS 2009).

Gray bats usually forage in riparian areas or over open water bodies such as rivers, streams, lakes, or reservoirs. While foraging, the gray bat consumes a variety of insects, most of which are aquatic-based (Brack and LaVal 2006). Studies in Indiana, Kentucky, Alabama, and Missouri have revealed that Tricoptera, Lepidoptera, Coleoptera, and Diptera are most frequently consumed, with a total of 14 insect orders documented as prey for this species (Brack et al. 1984, Whitaker et al. 2001, Brack and LaVal 2006). Commuting habitat for the gray bat primarily consists of wooded corridors used to travel between roosting and foraging habitat. Gray bats of all ages, including newly volant young, typically travel in the tree canopy while commuting, which may provide protection from predators (Brady et al. 1982).

Forested habitat (i.e., NLCD land cover classes: deciduous forest, mixed forest, evergreen forest, and woody wetlands) is considered suitable summer roosting, foraging, and commuting habitat for the Indiana bat, northern long-eared bat, and tricolored bat as well as commuting habitat for the gray bat. Using the 2019 NLCD data, approximately 134.04 ac (59.92%) of potential suitable bat habitat is present within the 75-foot buffer of the transmission line. Potential bat habitat within the Project Area is displayed as Figure 10.

Indiana Bat

The Indiana bat (*Myotis sodalis*) was originally listed as in danger of extinction under the ESA and formally attained endangered species status on March 11, 1967 (USFWS 1976b, USFWS 2007). On September 24, 1976, USFWS proposed critical habitat for four species, including the Indiana bat (USFWS 1976a). Final critical habitat for the Indiana bat was originally published in the Federal Register on August 11, 1977, and re-published in in the September 22, 1977, publication with corrections to critical habitat designations for the giant anole and five fishes (USFWS 1976b). Critical habitat for the Indiana bat includes 13 mines and caves found in Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia. The USFWS and the Indiana Bat Recovery Team developed an Indiana Bat Recovery Plan in 1983 (USFWS 1983), which was revised in 1996, published as an agency draft in 1999 (USFWS 1999), and finalized for publication in April 2007 entitled the Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision (USFWS 2007).

The species ranges from Michigan and parts of New York in the north, west of the Appalachian Mountains south to the northern half of Alabama and west to Arkansas, Missouri, and southern Iowa. In Michigan, the Indiana bat occurs in the southern half of the state and along the shores of Lake Michigan (USFWS 2024a).

Indiana bats use different habitat types in the winter and summer. In the winter months, Indiana bats hibernate in large numbers in a few caves that provide the adequate microclimate (USFWS 2007). The most successful hibernacula have temperatures between 37.4–45°F (3.0-7.2°C) and have a chimney-effect air flow between at least two entrances (Tuttle and Kennedy 2002). Brack (2007) suggests that hibernacula below 41°F (5°C) are too cold. Humidity could be an important hibernacula characteristic (UFSW 2007) but Tuttle and Kennedy (2002) document that humidity was not as important as temperature. Indiana bats typically form large, dense clusters on cave

ceilings but will also congregate in small clusters (LaVal and LaVal 1980; Brack 1983; Hicks and Novak 2002; Johnson et al. 2002). Hibernation occurs from October to late April and early May (Hall 1962).

During summer months, Indiana bats roost in a variety of habitats including riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities (Humphrey et al. 1977; Kiser and Elliott 1996; MacGregor et al. 1999; Gumbert 2001; Britzke et al. 2003; USFWS 2007). Carter et al. (2002) found that roosting areas contained more surface water features (e.g., ponds, lakes) than randomly chosen sites.

Roosts are typically located within canopy gaps, fencerows, or along wooded edges (USFWS 2007). Most known maternity roosts have been located in or near wooded areas where some light gap is present, allowing full or partial solar exposure to the roost site. Range wide, Indiana bats have been found to roost in over 33 species of trees (Kurta 2004). While Indiana bats probably utilize tree species according to their availability, roost choice is probably more a reflection of roost character (i.e., condition, usable bark, amount of solar exposure, tree size, distance to water resources, elevation) than species (Humphrey et al. 1977; Gardner et al. 1991a; Callahan et al.1997; USFWS 2007). Roosting characteristically occurs under the exfoliating bark of dead or live trees, but Indiana bats have also been found to use cavities or crevices of live-damaged trees (Gardner et al. 1991a; Kurta and Williams 1992; Gumbert 2001) and artificial roost structures (e.g., BrandenBarkTM, Gumbert et al. 2013). There is some evidence that suggests Indiana bats exhibit fidelity to summer roosting areas and even specific trees from year to year (Garner and Gardner 1992, Gumbert et al. 2002).

The Indiana bat is an insectivorous species, consuming a variety of small, soft-bodied flying insects. Food sources are predominately Lepidoptera (moths), but also include Coleoptera (beetles), Diptera (flies), Trichoptera (caddisflies), and Plecoptera (stoneflies) (LaVal and LaVal 1980; Thomson 1982). Foraging is concentrated in wooded areas (LaVal et al. 1977; Gardner et al. 1991a; Butchkoski and Hassinger 2002). LaVal et al. (1976, 1977) found that during summer, females and juveniles forage within or near the tree foliage of riparian and floodplain areas, but adult males typically forage over densely wooded areas along ridges and hillside forests (Kiser and Elliott 1996). This species also forages over clearings with early successional habitat, such as clearcuts, and along the edges of forest openings (Gardner et al. 1991b).

Forested habitat (i.e., NLCD land cover classes: deciduous forest, mixed forest, evergreen forest, and woody wetlands) is considered suitable summer roosting, foraging, and commuting habitat for the Indiana bat, northern long-eared bat, and tricolored bat as well as commuting habitat for the gray bat. Using the 2019 NLCD data, approximately 134.04 ac (59.92%) of potential suitable bat habitat is present within the 75-foot buffer of the transmission line. Potential bat habitat within the Project Area is displayed as Figure 10.

Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*) was listed as threatened under the ESA with an interim 4(d) Rule in May 2015; the final 4(d) Rule was issued in January 2016 (USFWS 2015a, 2016a). On 22 March 2022, the USFWS announced a proposal to reclassify the northern long-eared bat as endangered under the ESA (USFWS 2022a). This reclassification was finalized in November 2022 and became effective March 31, 2023, thus nullifying the 4(d) Rule. The USFWS has not designated or proposed any critical habitat for this species (USFWS 2016b).

The range of the northern long-eared bat includes the eastern, southern, and north-central United States and all Canadian provinces west to the southern Yukon Territory and eastern British Columbia. In the United States, the species can be found in the District of Columbia and 37 states ranging from Maine west to Montana, south to eastern Kansas, eastern Oklahoma, Arkansas, and east to South Carolina (USFWS 2016a). Historically, northern long-eared bats were most common in the eastern parts of its range and have rarely been captured in the western parts of its range (Caceres and Barclay 2000). However, northern long-eared bat populations in the east have greatly diminished with the arrival of White-nose Syndrome (WNS) and it is now estimated that the eastern range only supports 17% of the population (USFWS 2016a).

In Kentucky, the northern long-eared bat has been recorded throughout most of the state and likely occurs statewide. Summer occurrences have been recorded in approximately three-quarters of the counties in the state, with reproductive records (i.e., captures of juveniles or pregnant, lactating, or post-lactating females) in approximately half of the counties. This species has been found in the majority of Kentucky hibernacula known to harbor bats (USFWS 2015b). The northern long-eared bat utilizes different habitats during the summer and winter months. Hibernacula, used in winter, vary from large caves and abandoned mines with large entrances and passages to smaller features. Preferred features have relatively constant, cool temperatures (0 to 9° C), high humidity, and minimal air currents (Raesly and Gates 1987, Caceres and Pybus 1997). This species typically roosts in small crevices and cracks in walls and ceilings; however, individuals have also been observed roosting in the open, although less frequently (Barbour and Davis 1969, Caceres and Pybus 1997, Whitaker and Mumford 2009). In addition to mines, northern long-eared bats have been found hibernating in other cave-like, man-made structures (USFWS 2015b).

During the spring, summer, and fall, the northern long-eared bat uses a variety of forested habitats for roosting, foraging, and commuting, including forest blocks and woodlots, as well as linear features such as fencerows, riparian forests, and other wooded corridors. These forested areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Suitable roosting habitat consists of live or dead trees and snags with a dbh of three inches or greater that exhibit any of the following characteristics: exfoliating bark, crevices, cavities, or cracks (USFWS 2016a). This species is more likely to roost in crevices, cracks, and cavities than other *Myotis*

species (Carter and Feldhamer 2005, Lacki et al. 2009) and is more opportunistic when selecting a roost tree, often utilizing shorter trees with smaller dbh and tree stumps.

Foraging habitat includes mature upland forests along hillsides and ridges (LaVal et al. 1977, Brack and Whitaker 2001). This species may also forage in more open areas, such as forest clearings, over open water, and along roads (van Zyll de Jong 1985); however, it is less likely to forage in riparian areas (LaVal et al. 1977, Brack and Whitaker 2001). Commuting habitat is used to travel between roosting and foraging areas and typically includes forest edges and linear features, such as riparian corridors and fencerows (USFWS 2015b).

Forested habitat (i.e., NLCD land cover classes: deciduous forest, mixed forest, evergreen forest, and woody wetlands) is considered suitable summer roosting, foraging, and commuting habitat for the Indiana bat, northern long-eared bat, and tricolored bat as well as commuting habitat for the gray bat. Using the 2019 NLCD data, approximately 134.04 ac (59.92%) of potential suitable bat habitat is present within the 75-foot buffer of the transmission line. Potential bat habitat within the Project Area is displayed as Figure 10.

Tricolored bat

The tricolored bat is currently proposed for listing as endangered under the ESA, with a decision expected in Summer-Fall 2024, per the Federal Register notice (87 Fed. Reg. 56381, September 14, 2022).

Tricolored bats are geographically located from southeastern Canada south to Honduras and west through Oklahoma (Silvis et al. 2016). Tricolored bats are generally regional migrants but can also display partial and differential migratory behavior (Samoray et al. 2019, Fraser et al. 2012). They typically leave their hibernacula from mid-April to early May and arrive at their maternity colonies shortly thereafter (Whitaker 1998; Silvis et al. 2016). Parturition occurs around late May to early July to one or two pups, with juveniles volant after about a month (Whitaker 1998). Fall migration may be in mid-August with bats entering their hibernacula between late September to mid-October (Silvas et al. 2016). Similar to other Eastern U.S. bats, mating occurs in the fall and sperm is stored until after spring emergence.

Tricolored bats typically roost in dead or live foliage in the summer (Perry & Thill 2007, Veilleux et al. 2003) and hibernate in caves, culverts, rock crevices, and mines (USFWS 2024b). They have also been documented using bridges, decks, and buildings, as well as artificial roost structures such as rocket boxes and bat houses in the summer (Cervone et al. 2016, Whitaker 1998). While habitat availability is not a limiting factor for the species (Silvas et al. 2016), Perry and Thill (2007) found that tricolored bats prefer mature hardwood forests that contain abundant midstory hardwoods.

Perry and Thill (2007) also found that tricolored bat roosts were primarily in unharvested greenbelts which contained abundant midstory hardwoods. Silvas et al. (2016) suggest that while

habitat availability is not a limiting factor for the species, tree felling activities and habitat manipulation should be limited during the active maternity season. Along with the Indiana and northern long-eared bats, tricolored bats have been heavily impacted by white-nose syndrome (WNS) and it is the main reason for their proposed listing.

Forested habitat (i.e., NLCD land cover classes: deciduous forest, mixed forest, evergreen forest, and woody wetlands) is considered suitable summer roosting, foraging, and commuting habitat for the Indiana bat, northern long-eared bat, and tricolored bat as well as commuting habitat for the gray bat. Using the 2019 NLCD data, approximately 134.04 ac (59.92%) of potential suitable bat habitat is present within the 75-foot buffer of the transmission line. Potential bat habitat within the Project Area is displayed as Figure 10.

Birds

Whooping Crane

The whooping crane was originally listed as endangered under the ESA in 1970 due to population declines from shooting and destruction of nesting habitat. Additional influencing factors to the listing include low population numbers, slow reproductive potential, cyclic nesting and winter habitat suitability, a hazardous migration route, and human pressures (USFWS 2023a). The whooping crane is known to occur in U.S. in Kansas, Louisiana, Montana, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas; and only has one self-sustaining wild population which nests in Wood Buffalo National Park and winters in the coastal marches in Texas at Aransas (USFWS 2023a). Additionally, there are experimental captive raised populations (non-essential) including a small migratory population introduced in the beginning in 2001 that migrate between Wisconsin and Florida in an eastern migratory trajectory, and a non-migratory Florida population (USFWS 2023a). The last remaining bird in the experimental Rocky Mountain population died in 2002 (USFWS 2023a).

Aptly named, the whooping crane alarm is a repeated loud, single-note vocalization (USFWS 2023a). Whooping cranes only occur in North America and are the tallest bird on the continent with males reaching heights of up to five feet with a seven-foot wingspan. Weight of adult whooping cranes can vary from approximately 13.2 to 17.2 lbs. in wild populations, with captive males averaging 16 lbs. and captive females averaging 14 lbs (USFWS 2023b). Adult plumage is typically snowy white, with a few deviations including black primary feathers, a crimson crown, black or grayish specialized feathers, sparse black feathers in the malar region, and a gray black nape.

Whooping cranes have life spans of up to 30 years in the wild, and 35 to 40 years in captivity (USFWS 2023b). They are monogamous birds, forming pair bonds around two or three years of age; however, the average age of first egg production is around five years of age. Whooping cranes tend to nest annually, but they have been documented to skip a year if they are nutritionally stressed or if there are unsuitable nesting habitat conditions (USFWS 2023b). Eggs

are typically laid in late April to mid-May with an average clutch size of two eggs. Both parents participate in incubation and brood-rearing, with at least one member of the pair remaining on the nest at all times. The nest and territory are defended primarily by the male while females take on feeding responsibilities and care for the young (USFWS 2023b). The migratory behavior of whooping cranes varies, with some birds that live and travel alone, some in pairs, or some in flocks of 50 or more birds which can include sandhill cranes.

Habitat for breeding, migration, and winters include a variety of habitats include coastal marshes and estuaries, inland marshes, lakes, open ponds, wet meadows and rivers, and pastures and agricultural fields (USFWS 2023b). Prey items include large lymphal or larval forms of insects, frogs, rodents, small birds, minnows and berries (USFWS 2023b). The winter diet of the whooping crane consists primarily of blue crabs, clams, and Carolina wolfberry (USFWS 2023b).

Muhlenberg County is not one of the Kentucky counties where USFWS recommends further coordination on the whooping crane.

Clams

Pink Mucket

The pink mucket (*Lampsilis abrupta*) was listed as endangered on June 14, 1976. Habitat for this species is restricted to main-channel habitats of medium-sized to large streams in gravel and sand substrates. In Kentucky, the historical range of the pink mucket includes the Ohio, Green, Cumberland, Licking, Salt, Tennessee, and Big Sandy River. Small, isolated populations survive in free flowing sections of the Barren and Green rivers below antiquated navigation dams and in the longer, unimpounded sections of the Upper Green (Haag and Cicerello 2016). Propagated individuals have been released into the lower Tennessee, Green River, and four sites on the Licking River. No critical habitat has been designated for this species.

Suitable habitat for the Pink Mucket is possible present within the Project Area within Jockys Branch, Mud River, Wolf Lick Creek, Alum Lick Creek, Austin Creek, and several unnamed tributaries (Figure 8).

Insects

Monarch Butterfly

The monarch butterfly is currently a candidate species for listing under the ESA. In December 2020, USFWS completed a status assessment of the species and determined that listing the monarch under the ESA is warranted but precluded at this time by higher priority listing actions (USFWS 2024c).

Monarchs are a large butterfly with a wingspan between 86-124 mm. The upper side of males are bright orange with wide black borders and black veins, and the hindwing has a patch of scent scales. The upper side of females are orange-brown with wide black borders and blurred black veins. Both sexes have white spots on the borders and apex (Lotts and Naberhaus 2017). The

Monarch can be found in much of North America, in open habitats from Canada to South America. Monarchs are known for their annual migration and are the only butterfly to regularly migrate north and south (Pyle 1981). Monarchs in central and eastern North America migrate to the mountainous forests of central Mexico while those in the western portions of North America migrate to the California coast. Monarch habitat is complex, but generally includes all patches of milkweed in North America. Overwintering habitats including high-altitude Mexican conifer forests or coastal California conifer and Eucalyptus groves are critical for the species. Land management changes that impact milkweed include increased herbicide use, excessive roadside mowing, and urban development, among others (USFWS 2020).

Open prairies, meadows, roadsides, and grassed areas with the presence of milkweed plants within the Project Area would provide suitable habitat for the monarch butterfly.

Migratory Birds and Eagles

Certain birds are protected under the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940). The USFWS IPaC system identified two migratory Birds of Conservation Concern (BCC) with potential to occur within the Project (Table 4; Appendix B).

Table 4. Migratory Birds of Conservation Concern Potentially Found in the Project Area, Logan and Muhlenberg Counties, Kentucky.

Common Name	Scientific Name	Breeding Season	Months likely to be present	Nearest eBird Sighting (mile)
Field Sparrow	*Spizella pusilla*	1 March – 15 August	Mid-March	1.31
Red-headed Woodpecker	*Melanerpes erythrocephalus*	10 May – 10 September	Mid-August to early September	2.80

Source: USFWS IPaC Resource List, accessed 10/03/2022 at https://ecos.fws.gov/ipac

The IPaC system did not identify any bald and/or golden eagles within the Project. Should an active nest be discovered within close proximity to the Project Area, an avoidance buffer of up to 660 feet for certain activities during nesting season would be required per the Bald and Golden Eagle Protection Act. The Bald and Golden Eagle Protection Act prohibits anyone who lacks a permit to take, possess, sell, purchase, barter, offer to sell, transport, export, or import a bald or golden eagle, dead or alive, including an egg or a part of a nest (16 U.S.C. 668-668c and 50 CFR Part 22).

Bald eagle habitat includes estuaries, large lakes, reservoirs, rivers, and some seacoasts and marshes where they forage for fish. Bald eagles will also feed on waterfowl, turtles, rabbits,

snakes, other small animals, and carrion (USFWS 2019). Bald eagles require a combination of readily available prey, perching areas, and nesting sites. In winter, bald eagles congregate near open water in tall trees for spotting prey and for night roosts (USFWS 2019). Ponds and rivers within 1 mile of the Project Area contain the nearest potentially suitable habitat for bald eagles. No bald eagle occurrences have been recorded in the Project Area.

The bald eagle and raptor nest field survey conducted on March 21, 2024 did not identify any eagle or raptor nests in the Project Area.

State Threatened, Endangered, and Special Concern Species

There are no mandated conservation measures or regulatory requirements for state-listed species in Kentucky. However, state agencies such as KDFWR may request or require avoidance or minimization measures if unique or breeding populations of these species are known to occur within a project site. To gain a better understanding of which species may utilize the Project Area, Copperhead requested data from OKNP's Natural Heritage Program Database of state threatened, endangered, and special concern species for the Project Area and a 1-mile buffer. The OKNP search results are provided in Table 5.

Table 5. State Endangered, Threatened, and Special Concern Species Potentially Found in the Project Area, Logan and **Muhlenberg Count**ies**, Kentucky.**

Scientific Name	Common Name	State Status	Federal Status	Is Suitable Habitat Potentially Present?[1]
Birds				
Lanius ludovicianus	Loggerhead Shrike	S	-	Yes (Brushy areas, thickets, and scrub in open country, open and riparian woodland.)
Peucaea aestivalis	Bachman's Sparrow	E	-	Yes (Early successional areas with scattered saplings (often pines), bushes, or understory, brushy or overgrown hillsides, overgrown fields with thickets and brambles.)
Clams				
Leaunio lienosus	Little Spectaclecase	T	-	Yes (Small to medium sided creeks and rivers in sand, mud, silt substrates)
Fish				

Scientific Name	Common Name	State Status	Federal Status	Is Suitable Habitat Potentially Present?[1]
Hybopsis amnis	Pallid Shiner	E	-	Yes (Medium to large rivers in sandy and silty pools)
Lepomis miniatus	Redspotted Sunfish	T	-	Yes (Rivers, reservoirs, lowland streams, swamps, and oxbow lakes)
Plants				
Delphinium carolinianum ssp. calciphilum	Carolina Larkspur	T	-	Yes (Glades, prairies, fields, rocky slopes, and rights-of-way)
Didiplis diandra	Water-purslane	E	-	Yes (Shallow stagnant or slow-moving water, muddy shores)
Reptiles				
Nerodia erythrogaster neglecta	Copperbelly Watersnake	T	T	Yes (Shallow wetlands and edges of large wetland complexes)
Thamnophis saurita saurita	Eastern Ribbonsnake	S	-	Yes (Edges of streams and swamps)

[1] A formal habitat assessment would be required to confirm the presence, quality, and extent of suitable habitat.

Status Key

E *Endangered*
T *Threatened*
S ***Special Concern***

Cultural and Historic Resources

Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events. Cultural resources that are listed, or considered eligible for listing, in the National Register of Historic Places (NRHP) are called historic properties. To be considered a historic property, a cultural resource must possess both integrity and significance. A historic property's integrity is based on its location, design, setting, materials, workmanship, feeling, and association. The significance is established when historic properties meet at least one of the following criteria: (a) are associated with important historical events or are associated with the lives of significant historic persons; (b) embody distinctive characteristics of a type, period, or method of construction; (c) represent the work of a master or have high artistic value; or (d) have yielded or may yield information important in history or prehistory (36 CFR Part 60.4).

A review of the National Register of Historic Places (NRHP) did not identify any NHRP listed in the Project Area.

At least three cemeteries and eight churches are known to occur within two miles of the Project Area (Figure 11). No known areas of historic or public significance occur within the Project Area.

POTENTIAL FOR FURTHER STUDY REQUIREMENTS

Based on the initial desktop analysis, Copperhead has identified potential further studies and best management practices that may be required by applicable agencies.

Prime Farmland

As discussed above, per the Farmland Protection Policy Act, the NRCS would be consulted during the NEPA process because the Project has the potential to affect prime farmland. To date, no TVA solar projects have exceeded the threshold at which mitigation measures are required. No further study is required.

Transportation

The Kentucky Transportation Cabinet and the local county offices may request that traffic control measures be implemented during phases of construction when large vehicles may be traveling to and from the Project site. No further study should be needed; best management practices would be agreed upon in discussion with TVA.

Wetlands/Surface Waters

A wetland and stream delineation is required to determine the presence and extent of jurisdictional waters within the Project Area. A delineation report would be submitted in an application for an Approved Jurisdictional Determination (AJD) to the USACE.

A KYR10 Stormwater Construction general permit would be required under Section 402 of the Clean Water Act for discharge of pollutants found in stormwater runoff associated with construction activities that disturb greater than one acre into Waters of the US or Waters of the State of Kentucky. The development and approval of a SWPPP is a component of this permit. Construction best management practices to minimize impacts to water quality would be outlined in the SWPPP. A 25-foot buffer around waters is recommended.

Threatened, Endangered, and Special Status Species Habitat Assessments and Surveys

Per Section 7 of the Endangered Species Act, the USFWS needs to consider effects on federally listed species and their habitat. A formal habitat assessment will be necessary. If surveys are required, surveys may need to be conducted during specific times of the year (e.g., during summer blooming season for listed plants).

Bat Species

Forested areas within the Project Area likely provide suitable habitat for the foraging, roosting, and commuting habitat for the northern long-eared bat and tricolored bat. As a result, a habitat assessment to quantify the amount and quality of habitat that could be affected by project construction and operation would be required. A habitat assessment would take approximately 2-4 days in the field and could be conducted at any time during the year, but a mist-net survey could only occur between May 15 and August 15. A proposed mist-net survey is planned once the Project Area is confirmed.

Pink Mucket

The USFWS IPaC report identified the pink mucket as having the potential to occur within the Project Area. Based on desktop analysis, perennial streams in the Project Area may provide suitable habitat for the listed mussels. If the project would cross or alter a perennial stream, it will likely require a formal habitat assessment / mussel walk to confirm the presence of suitable habitat. The habitat assessment would focus on the perennial stream corridor and could be conducted during spring, summer, or fall (depending on water temperature) excepting periods of drought or excessive precipitation. If avoidance is possible, consultation with USFWS would likely be informal, lasting 1-3 months during the NEPA process. If avoidance is not possible, species surveys may be required and a biological assessment prepared.

Monarch Butterfly

The monarch butterfly, currently a candidate species, receives no statutory protection under the ESA, but USFWS encourages cooperative conservation efforts for the species as they may warrant future protection.

State-Listed Species

Although there are no mandated conservation measures or regulatory requirements for state-listed or sensitive species in Kentucky, TVA may request avoidance or minimization measures if unique habitat or breeding populations of these species are known to occur within a project site. A formal habitat assessment will be required to determine the presence and quality of suitable habitat for state-listed species. Coordination with the TVA biologist would provide certainty regarding whether targeted species or detailed vegetative community surveys would be required in areas of potentially suitable habitat. Seasonality of the survey would be determined by the official list of species identified in TVA's natural heritage database but is likely to be targeted during plant blooming season (i.e., spring or summer).

Phase I Archaeological and Historic Architectural Resources Survey

A federal nexus is anticipated as a federal approval/permit (e.g., TVA NEPA approval/USACE Clean Water Act Section 404 permit) is anticipated. Section 106 consultation efforts with the Kentucky Heritage Council or SHPO will be required. A Phase I archaeological survey and a

cultural historic (architectural) survey to identify known archaeological and historic architectural resources within the Project Area and a buffer will be required. The cultural resource surveys would include fieldwork to identify and characterize unknown archaeological and architectural resources. There are no seasonal restrictions for these surveys. They may require approximately one or more weeks in the field to complete and associated reporting would likely take several weeks to complete. Should the surveys identify archaeological or historic architectural resources that require avoidance or other minimization measures, consultation with the Kentucky Heritage Council would determine appropriate buffer distances depending on the nature and type of the affected resource(s).

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FIGURES

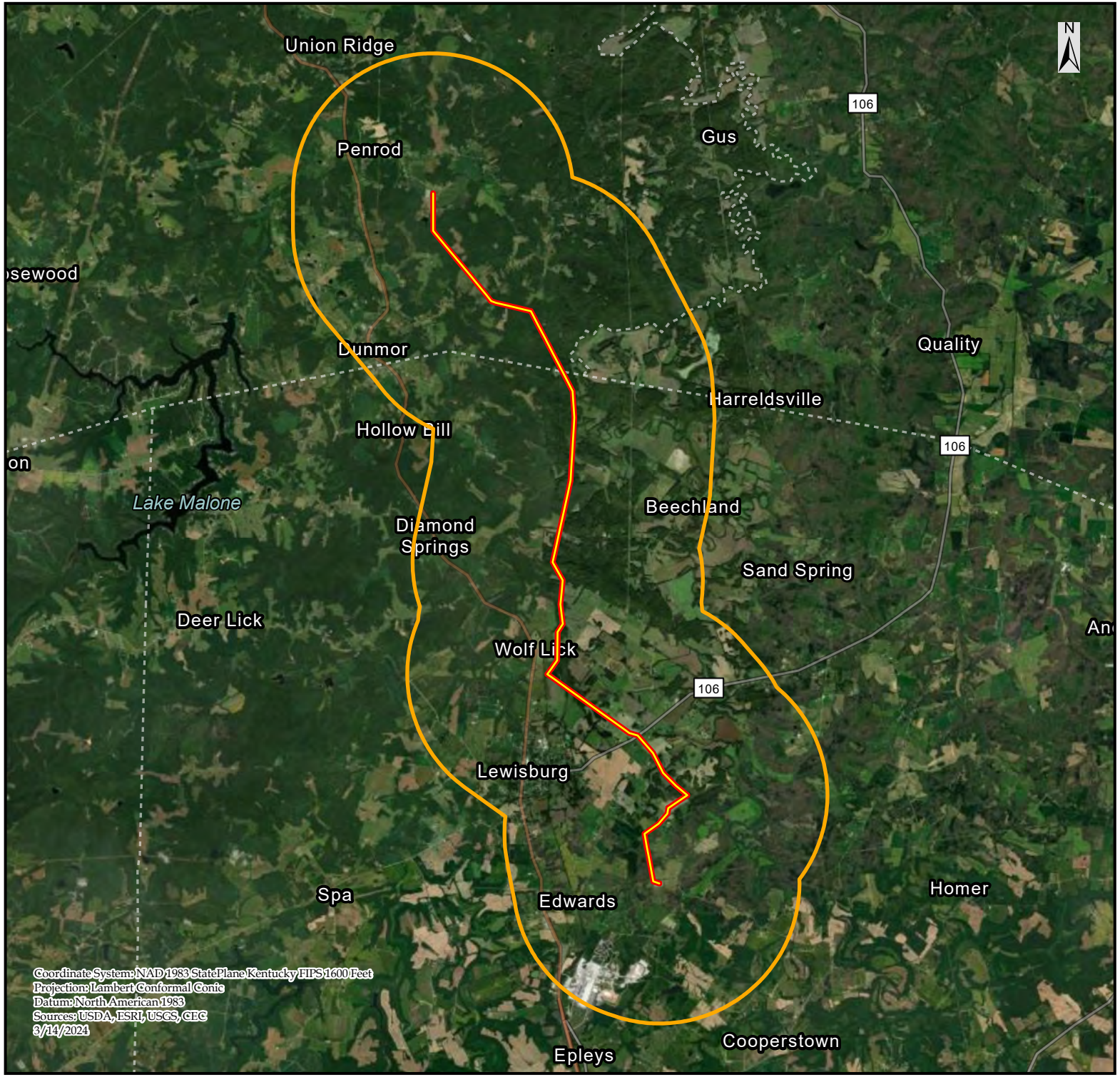

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FIGURE 1:
PRELIMINARY
Transmission Line Overview
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Proposed Transmission Line
- 2-mi Buffer
- Project Area

0 1 2
Miles
Scale: 1 in = 2 mi

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01

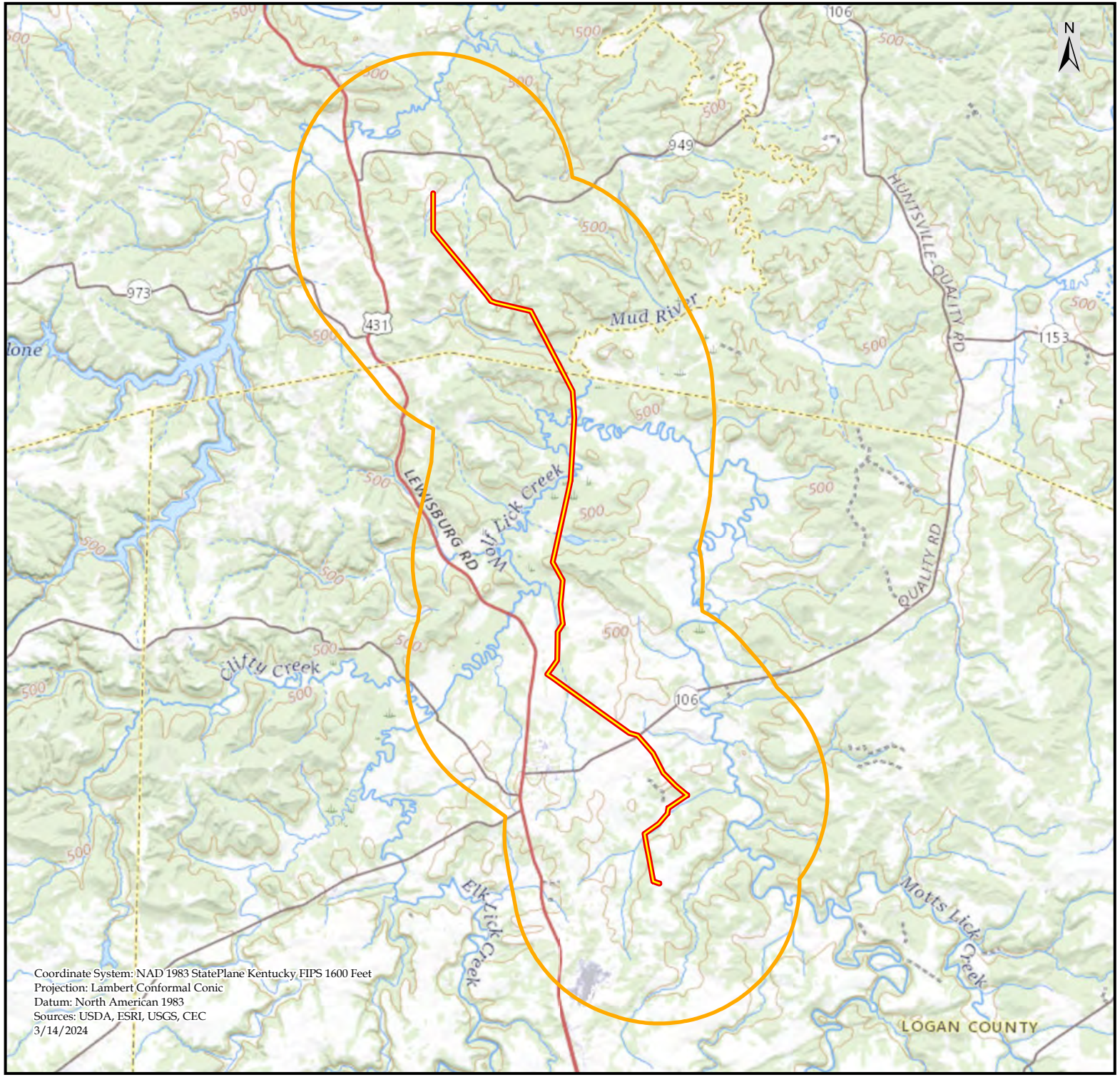

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FIGURE 2:
PRELIMINARY
Transmission Line Topological Overview
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Proposed Transmission Line
- 2-mi Buffer
- Project Area

0 1 2
Miles

Scale: 1 in = 2 mi

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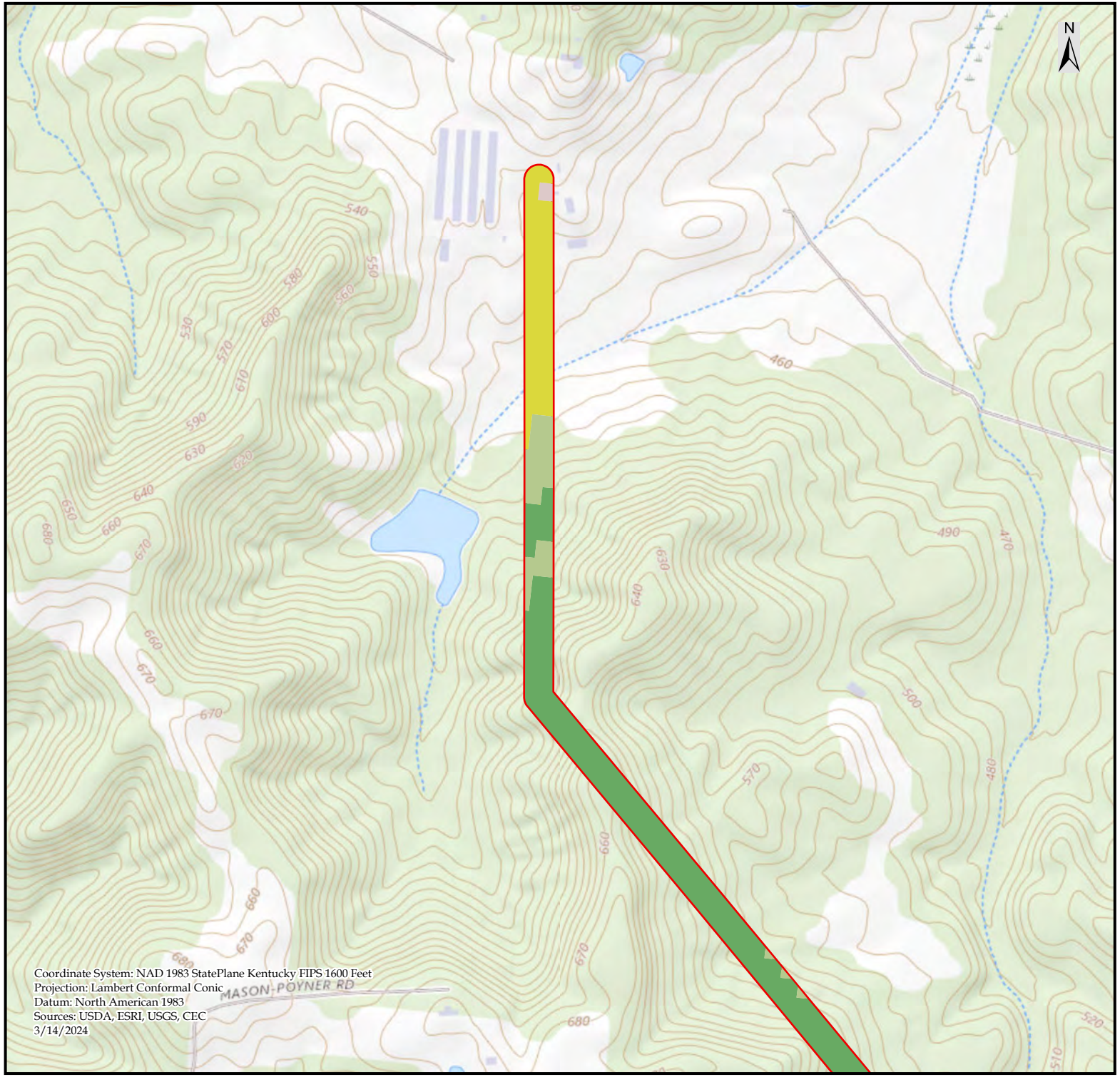

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Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
3/14/2024

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FIGURE 3.1:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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Drawn by:	TC	Date:	3/14/2024
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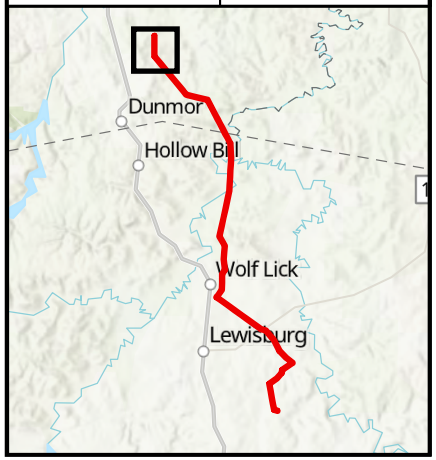

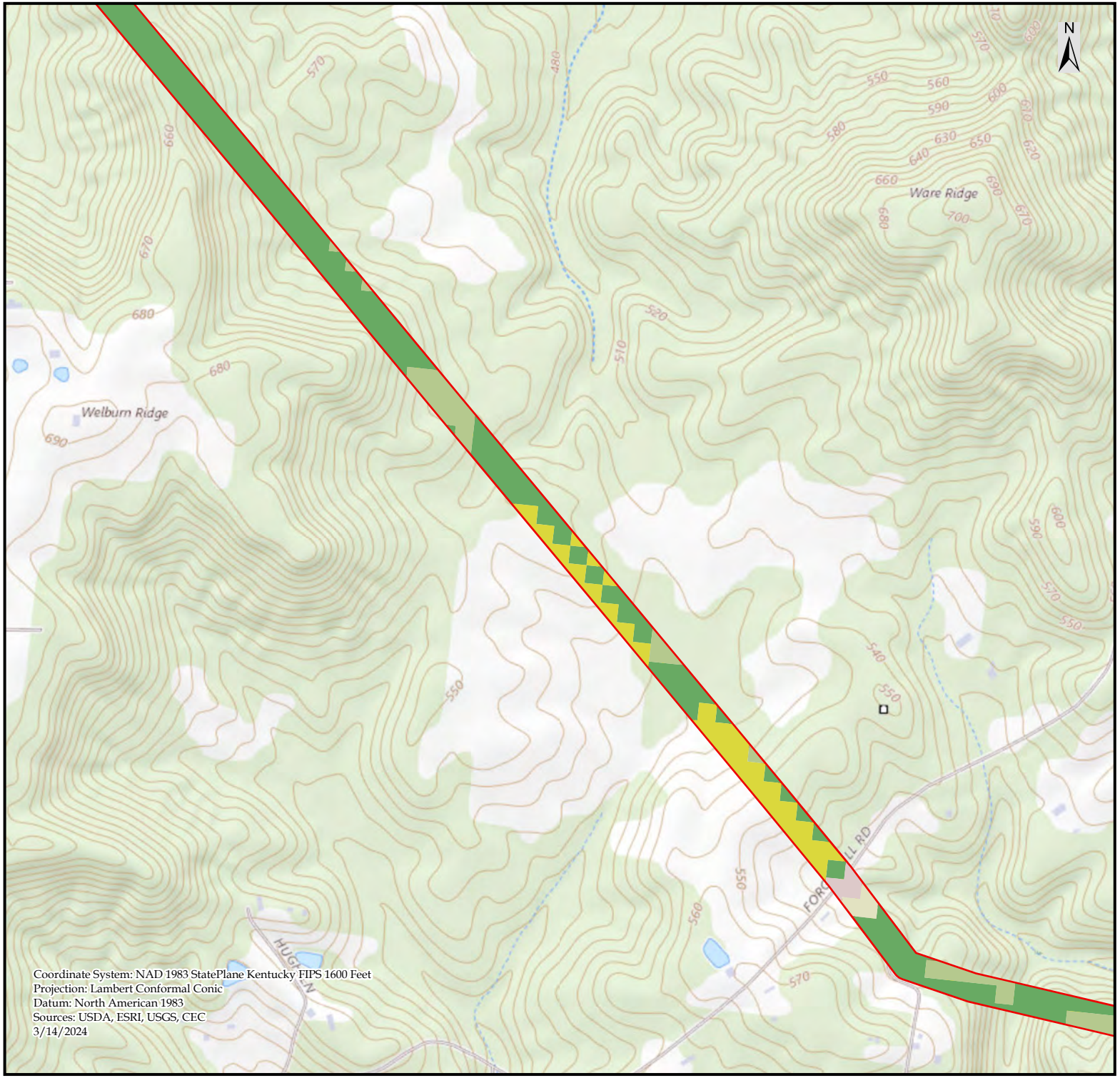

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FIGURE 3.2:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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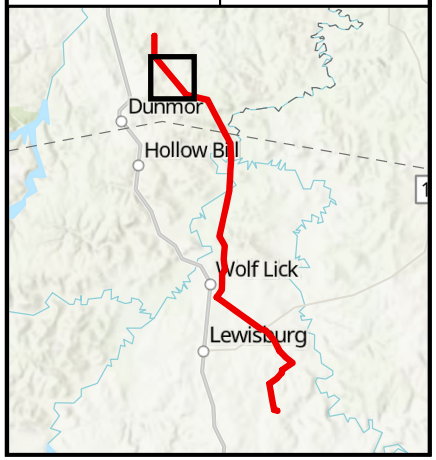

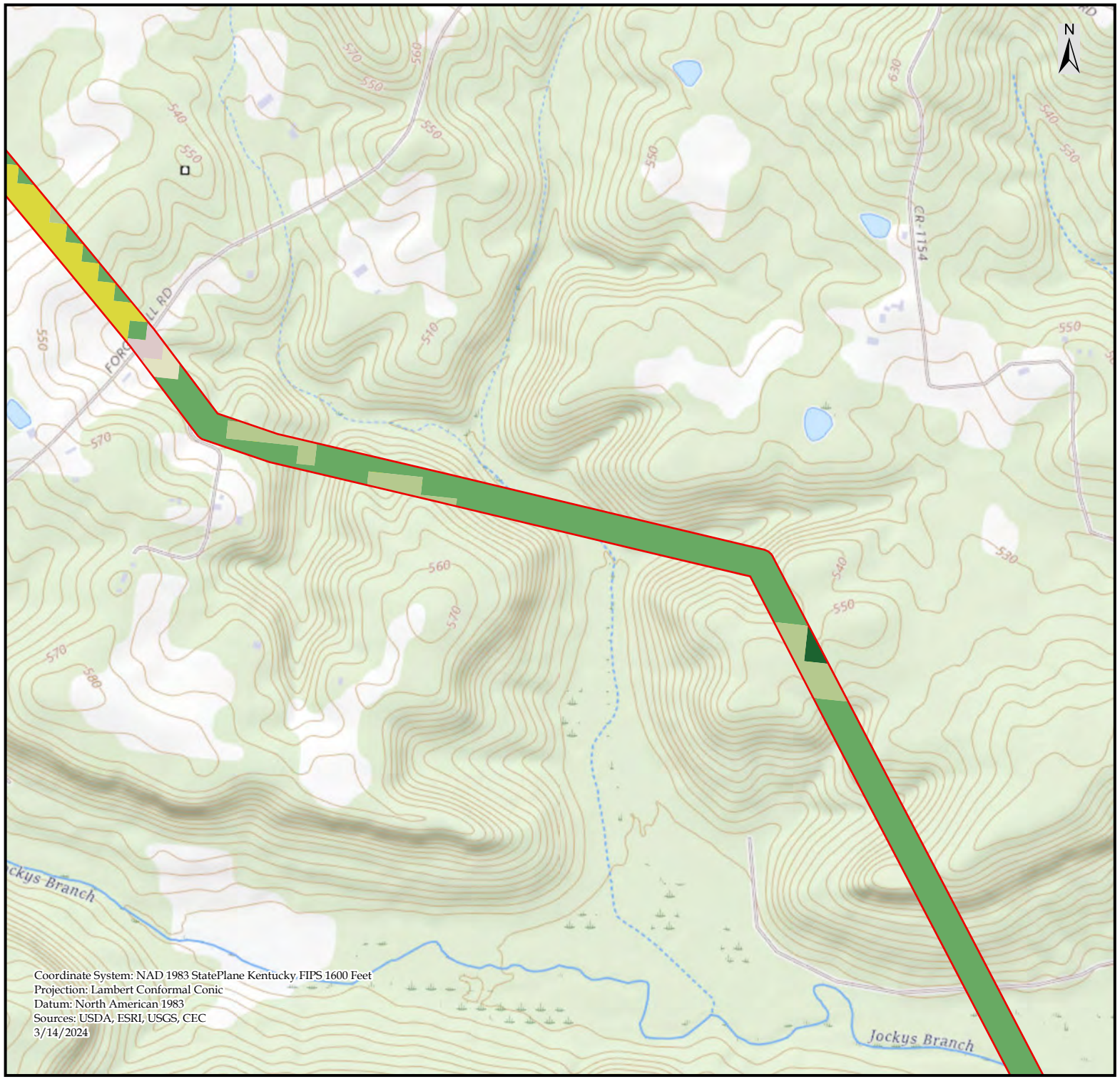

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FIGURE 3.3:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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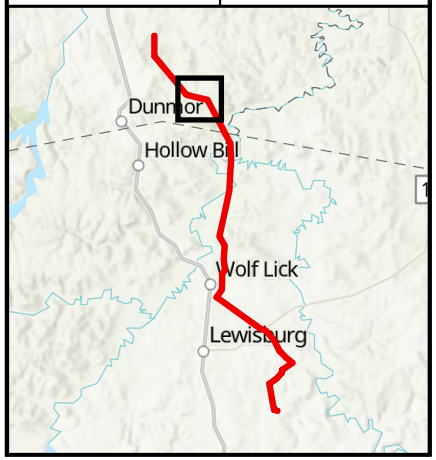

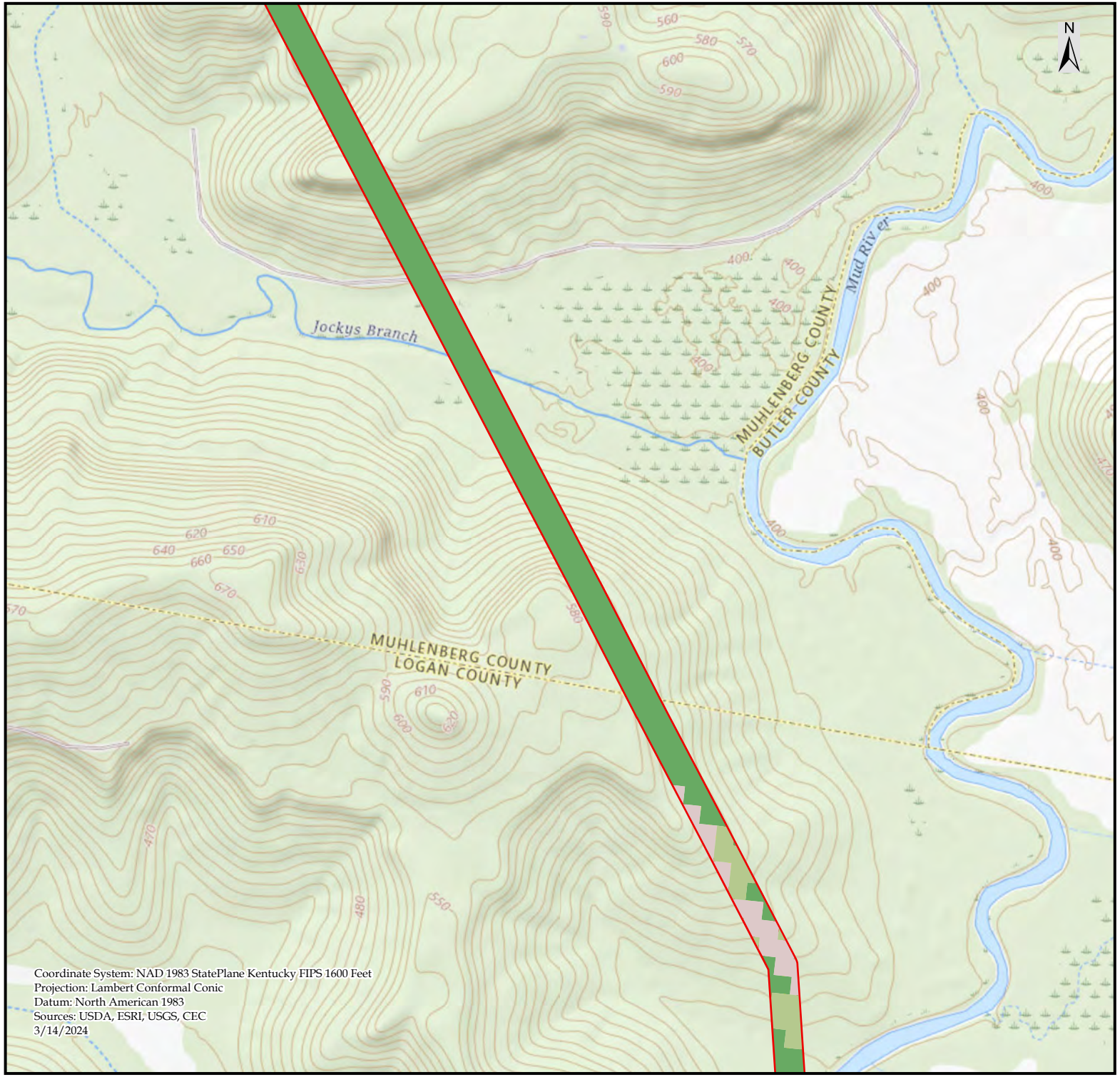

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FIGURE 3.4:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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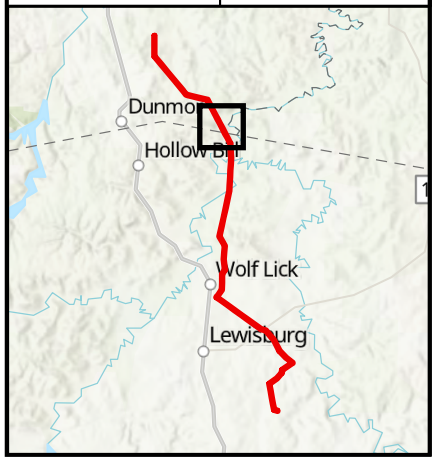
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



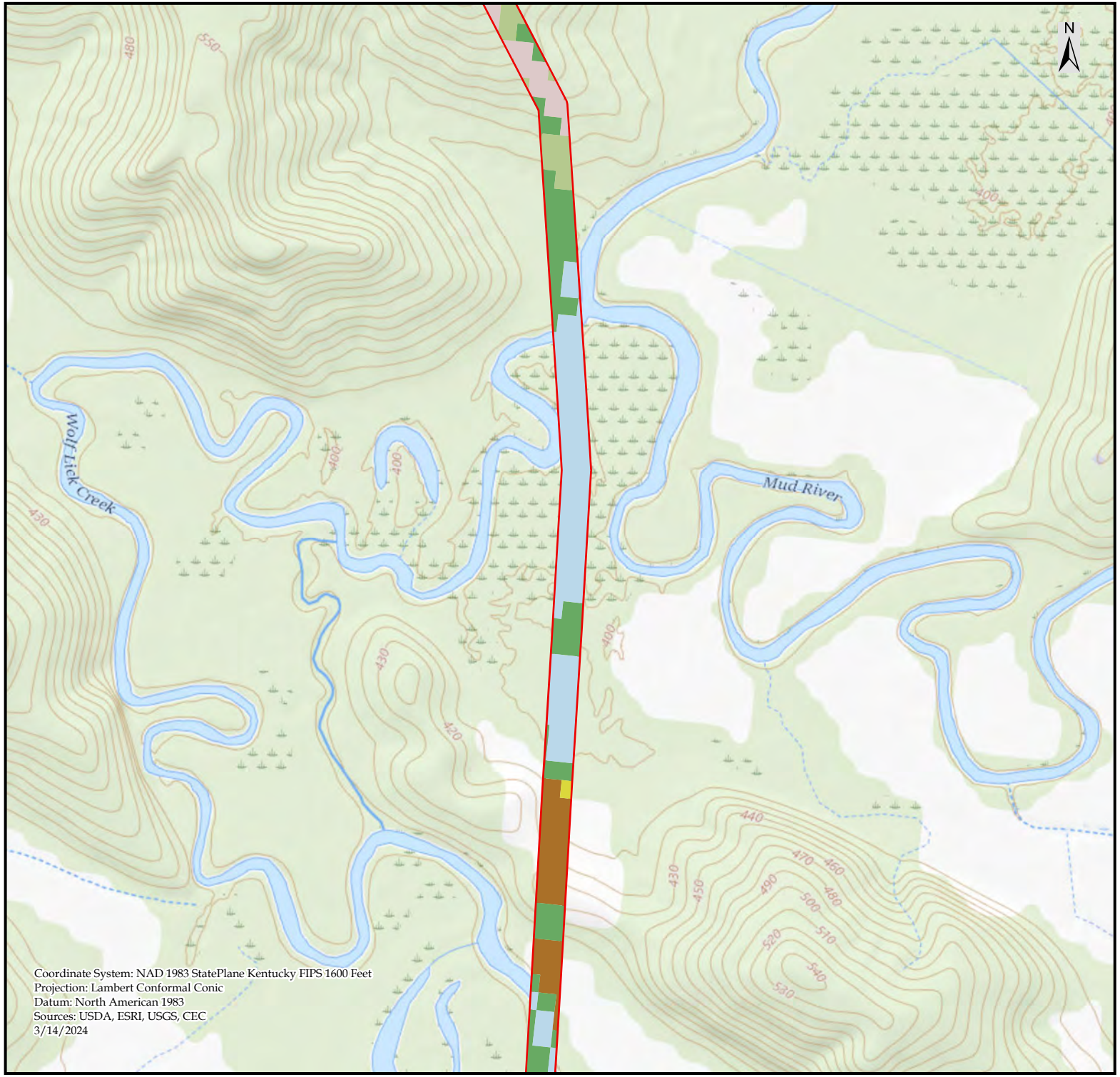


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FIGURE 3.5:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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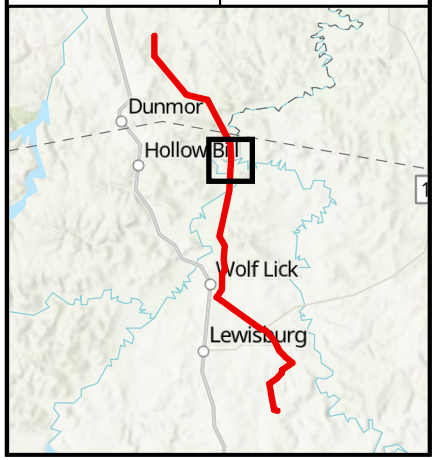

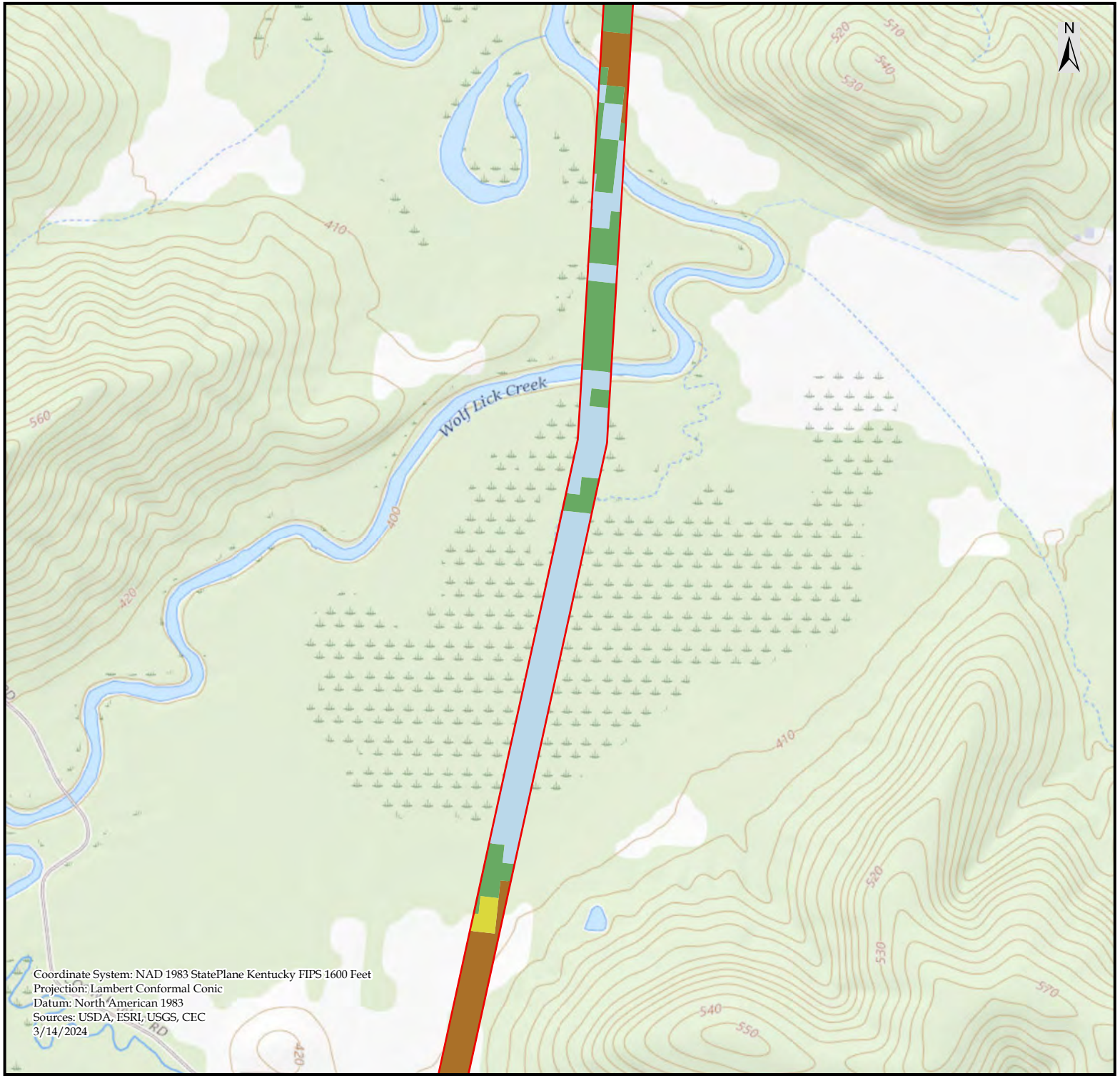

Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
3/14/2024

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FIGURE 3.6:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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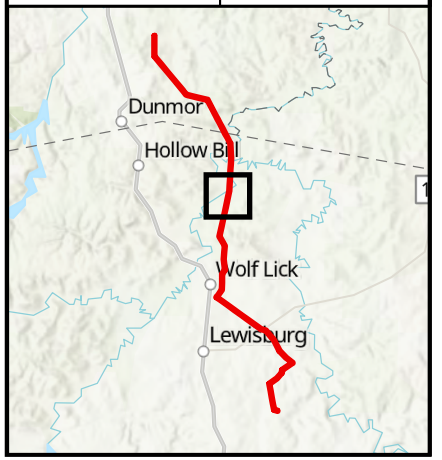

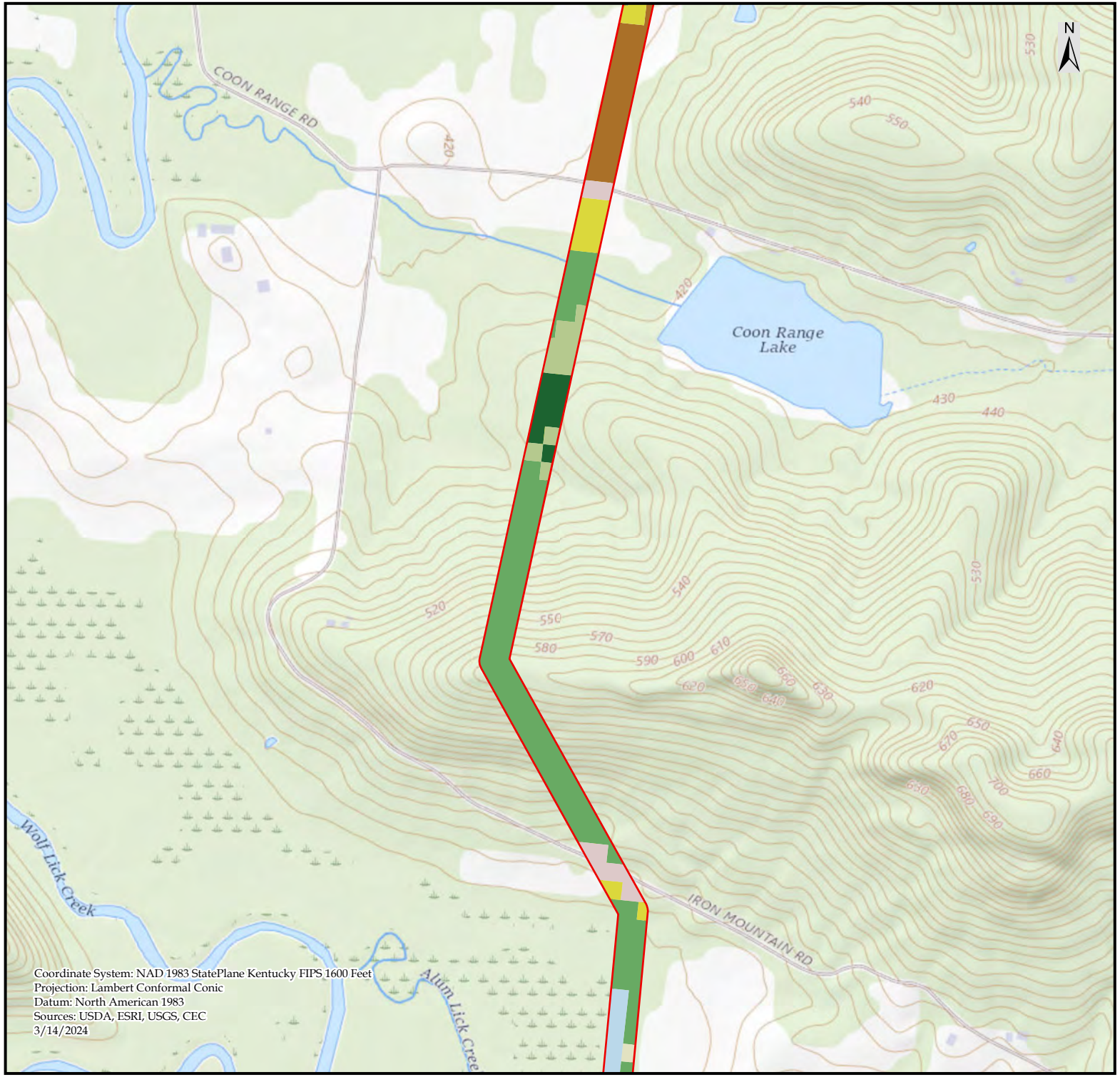

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FIGURE 3.7:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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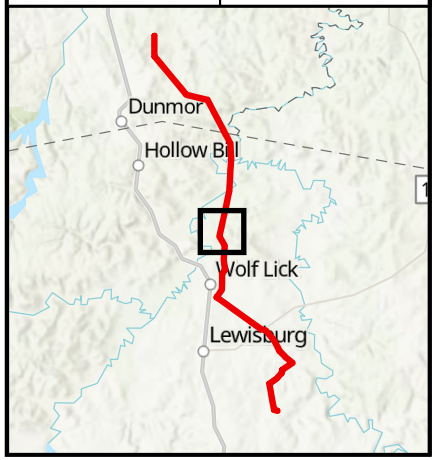
Checked by:	MM	Revision:	01



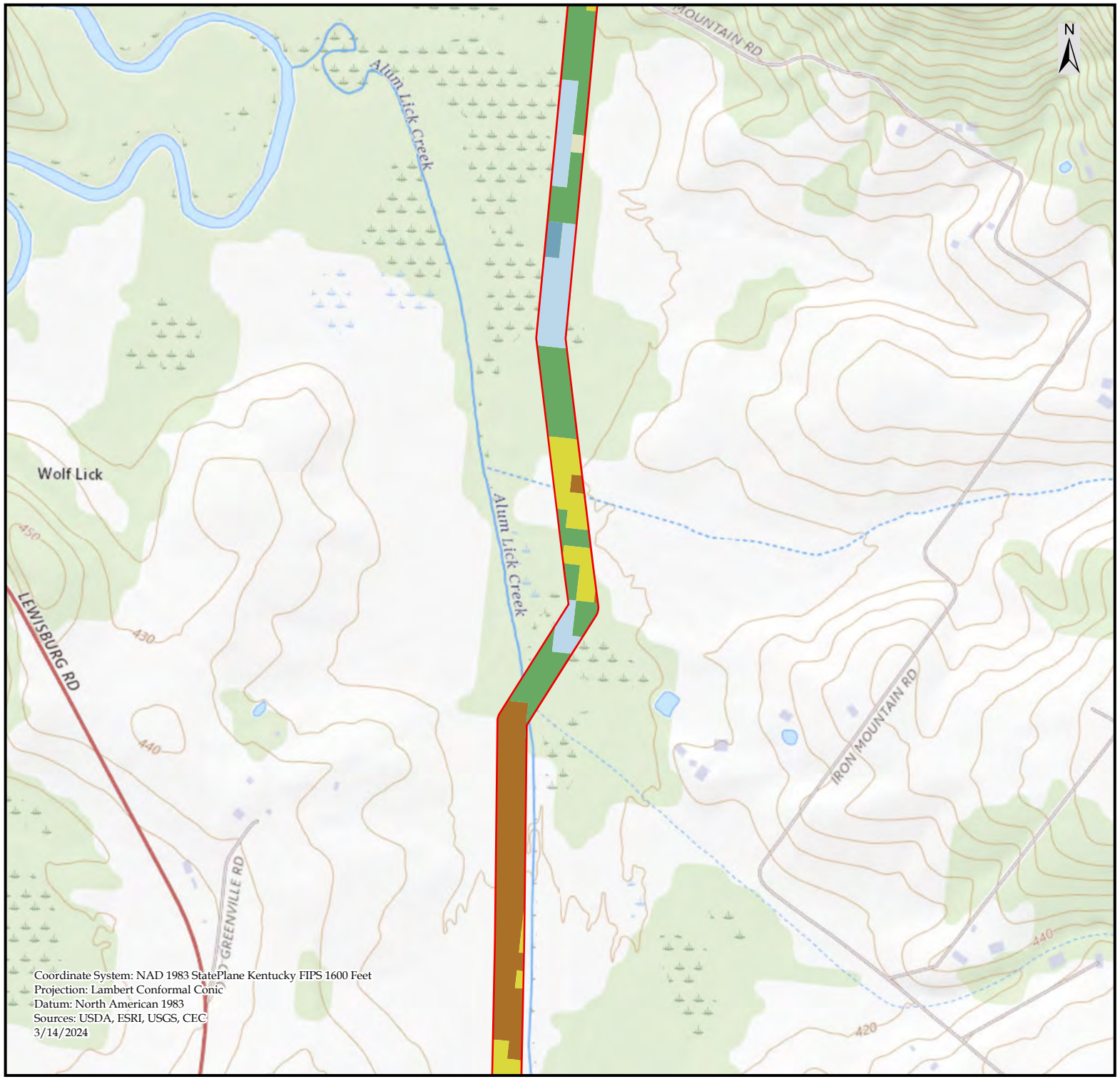


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FIGURE 3.8:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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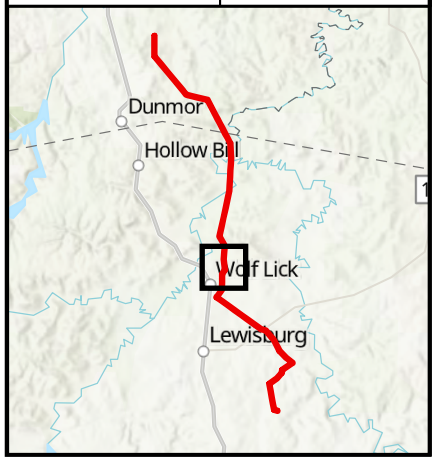
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



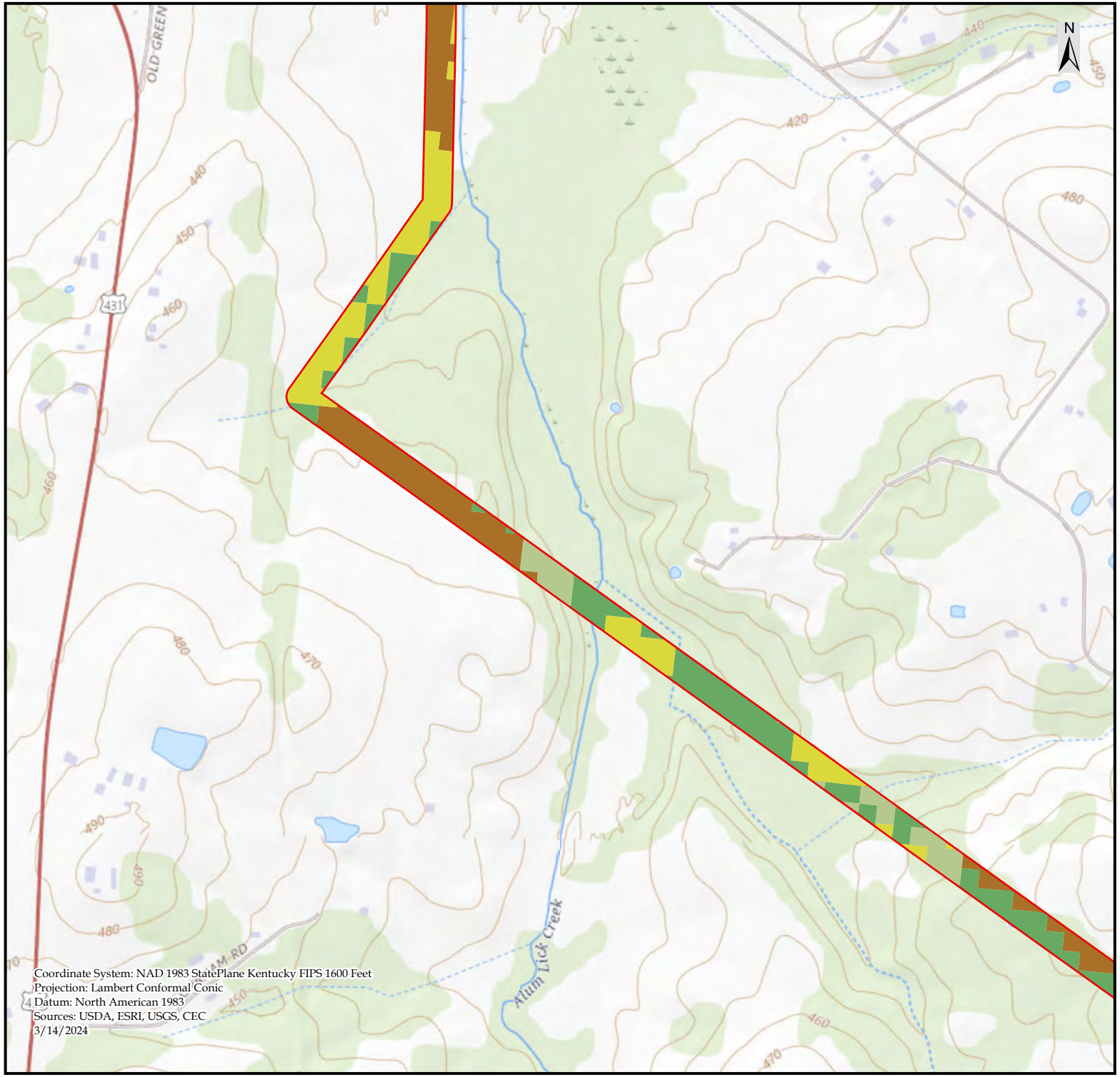


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FIGURE 3.9:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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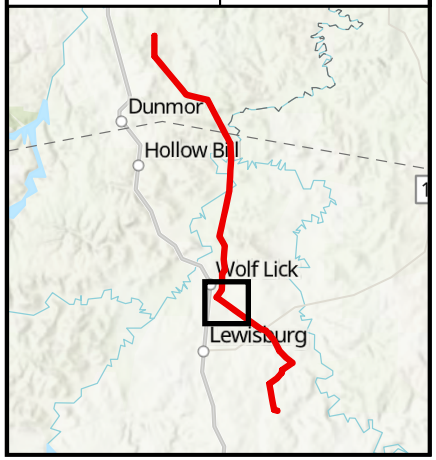
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



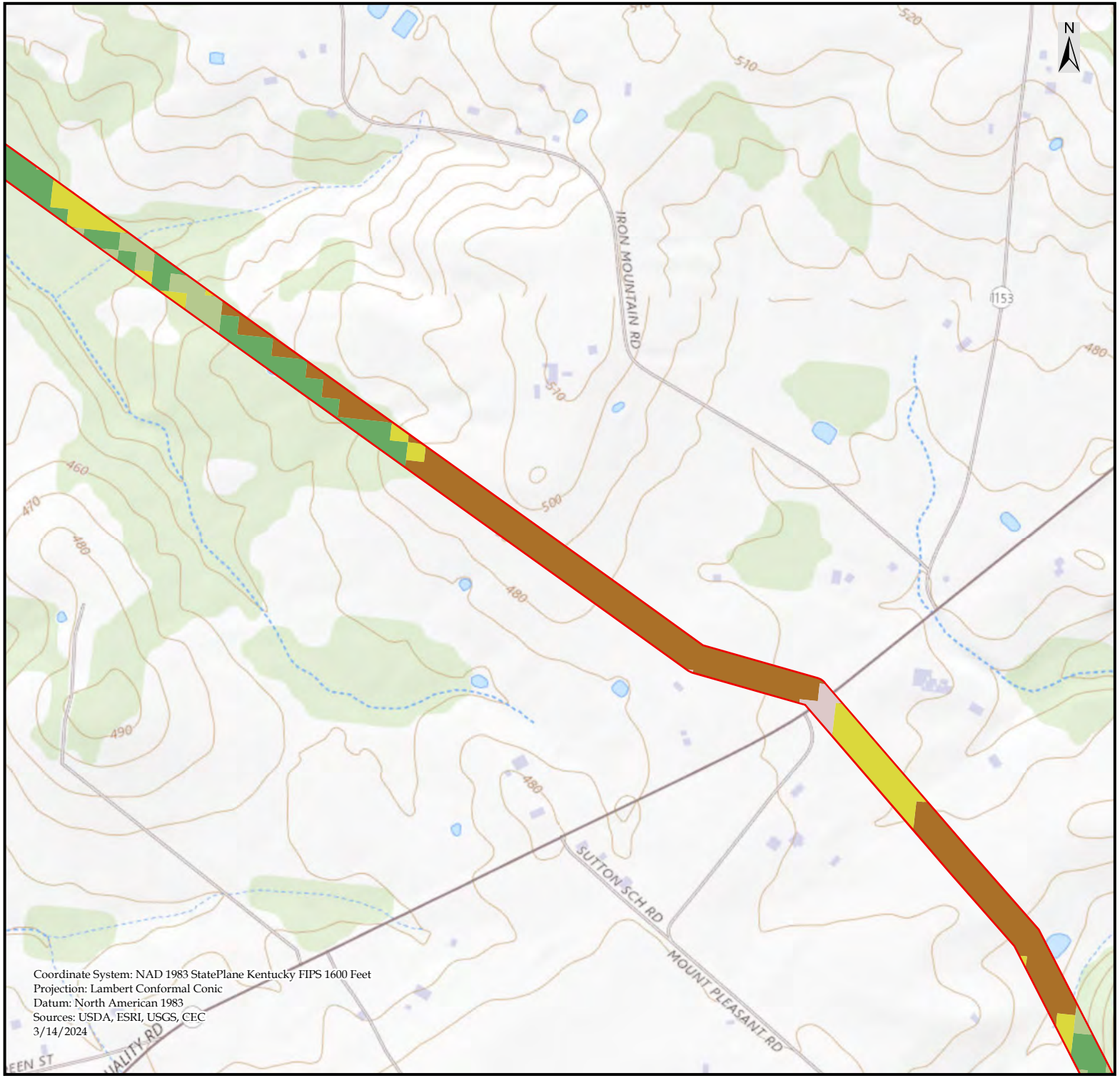


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FIGURE 3.10:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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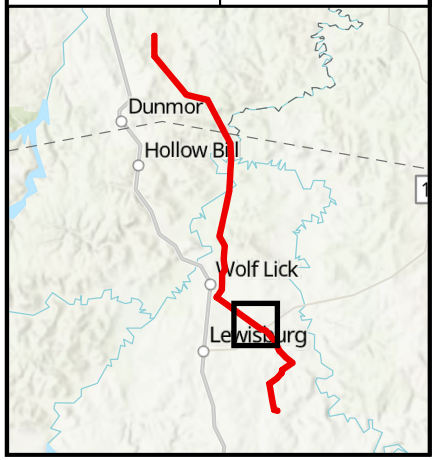
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



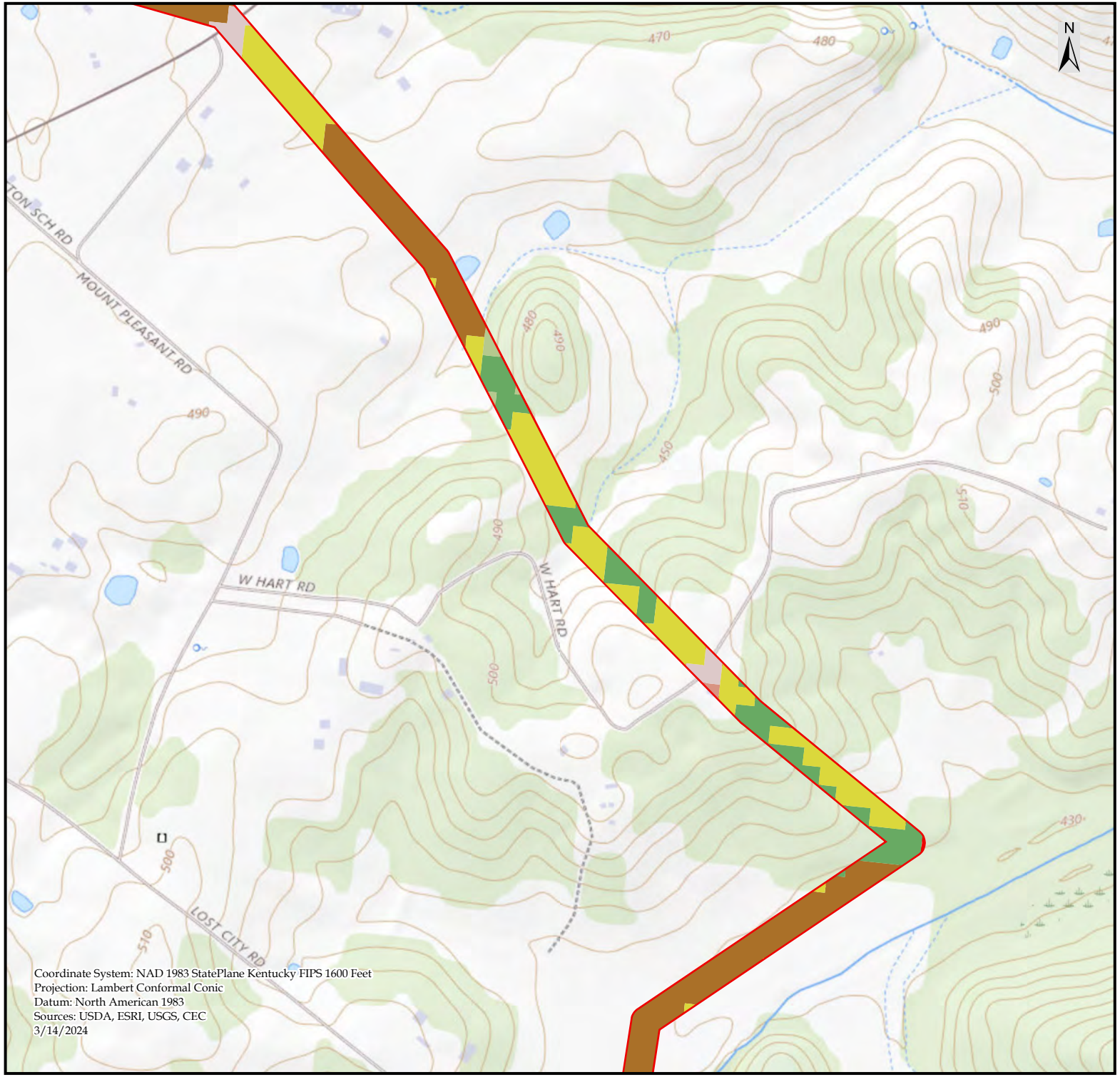


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FIGURE 3.11:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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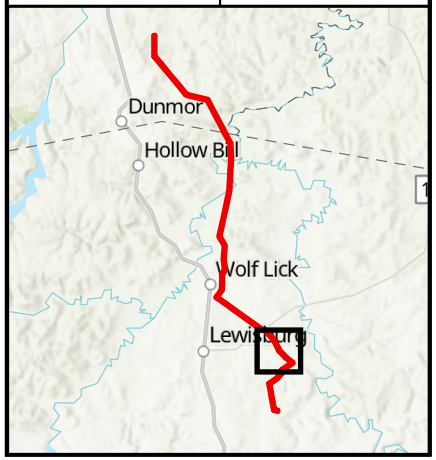
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



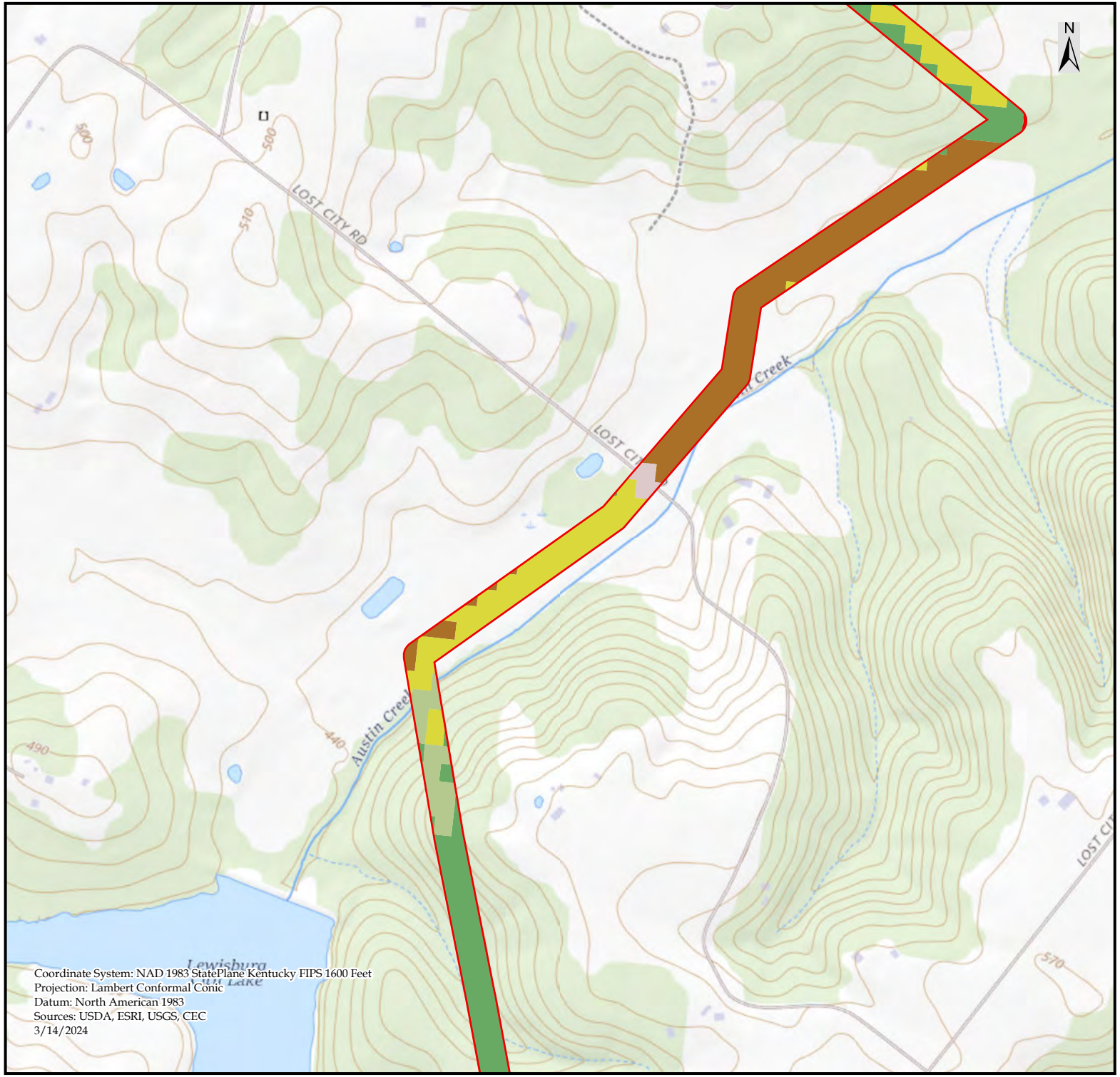


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FIGURE 3.12:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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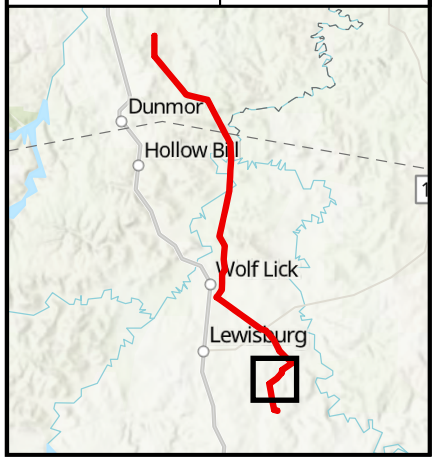
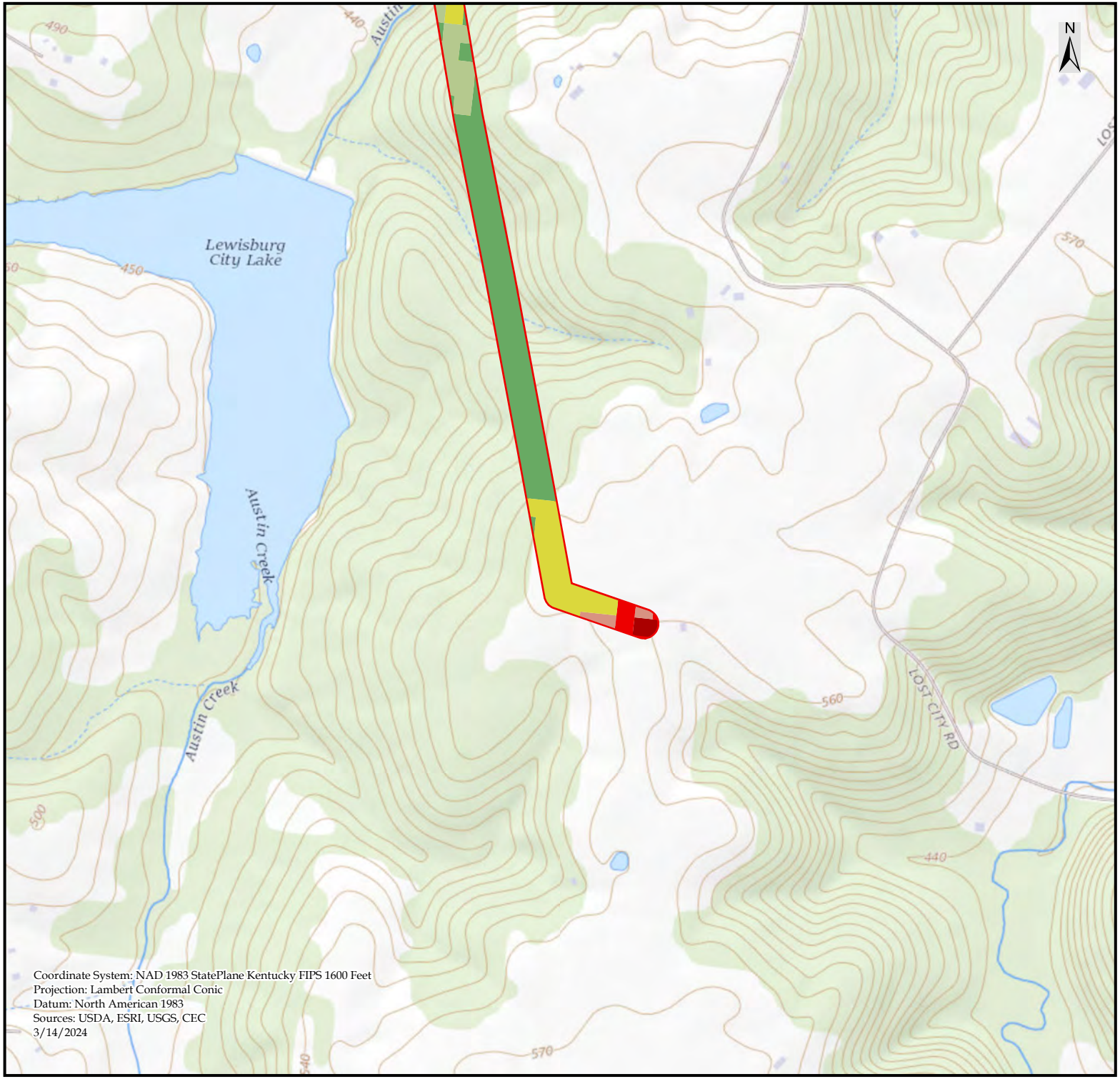
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
3/14/2024

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FIGURE 3.13:
PRELIMINARY
National Land Cover Dataset
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cultivated Crops
- Deciduous Forest
- Developed, High Intensity
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Evergreen Forest
- Hay/Pasture
- Herbaceous
- Mixed Forest
- Woody Wetlands
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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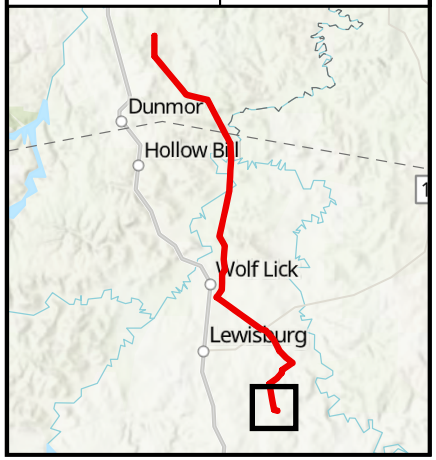
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



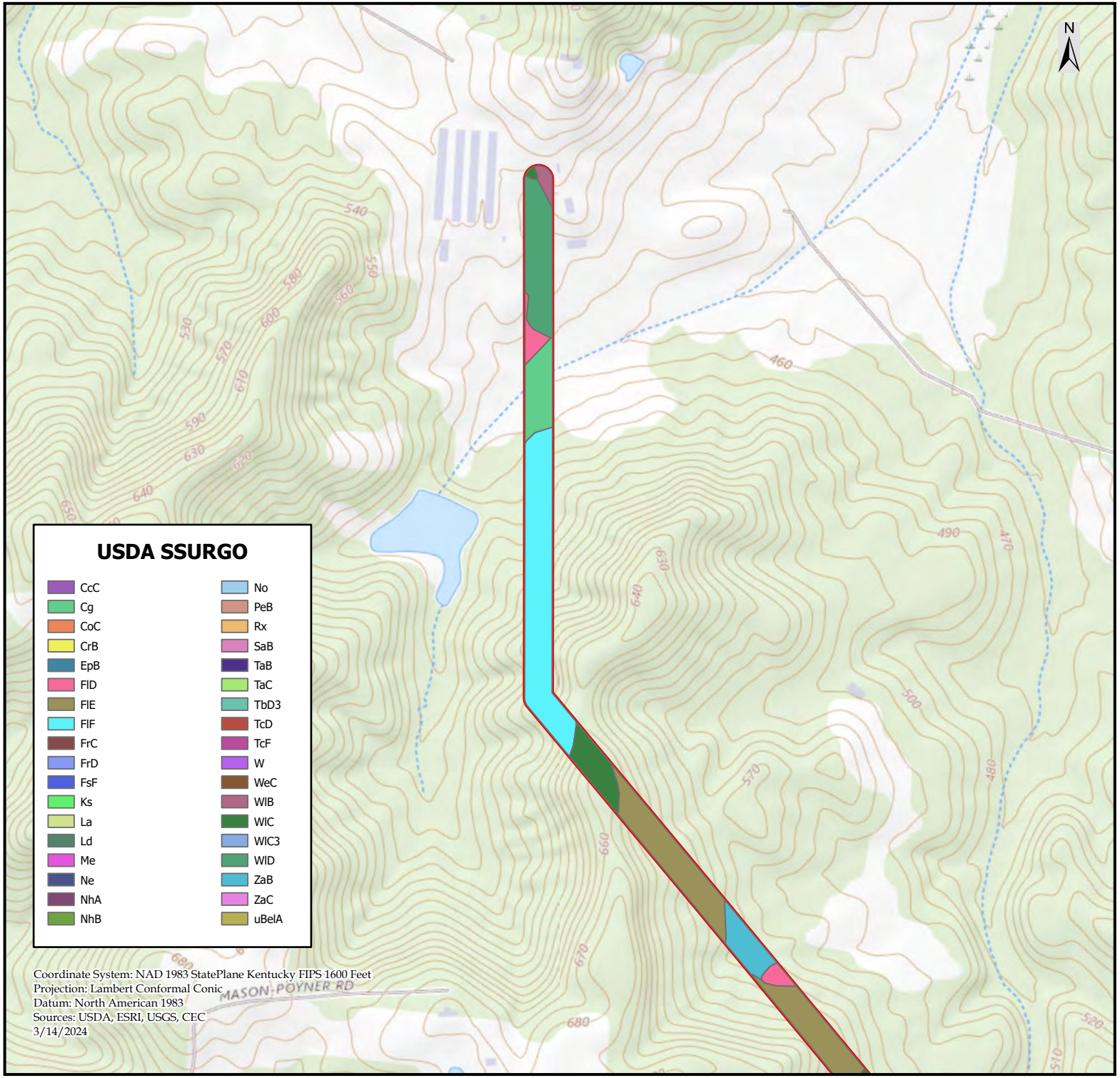


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FIGURE 4.1:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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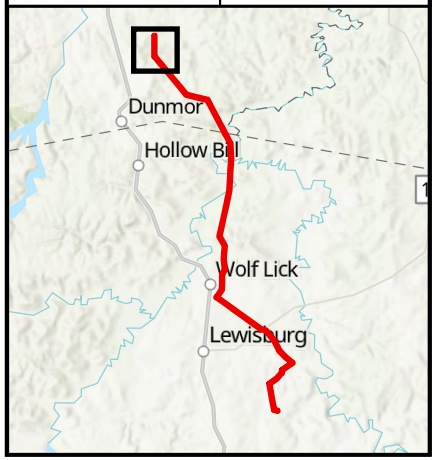
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



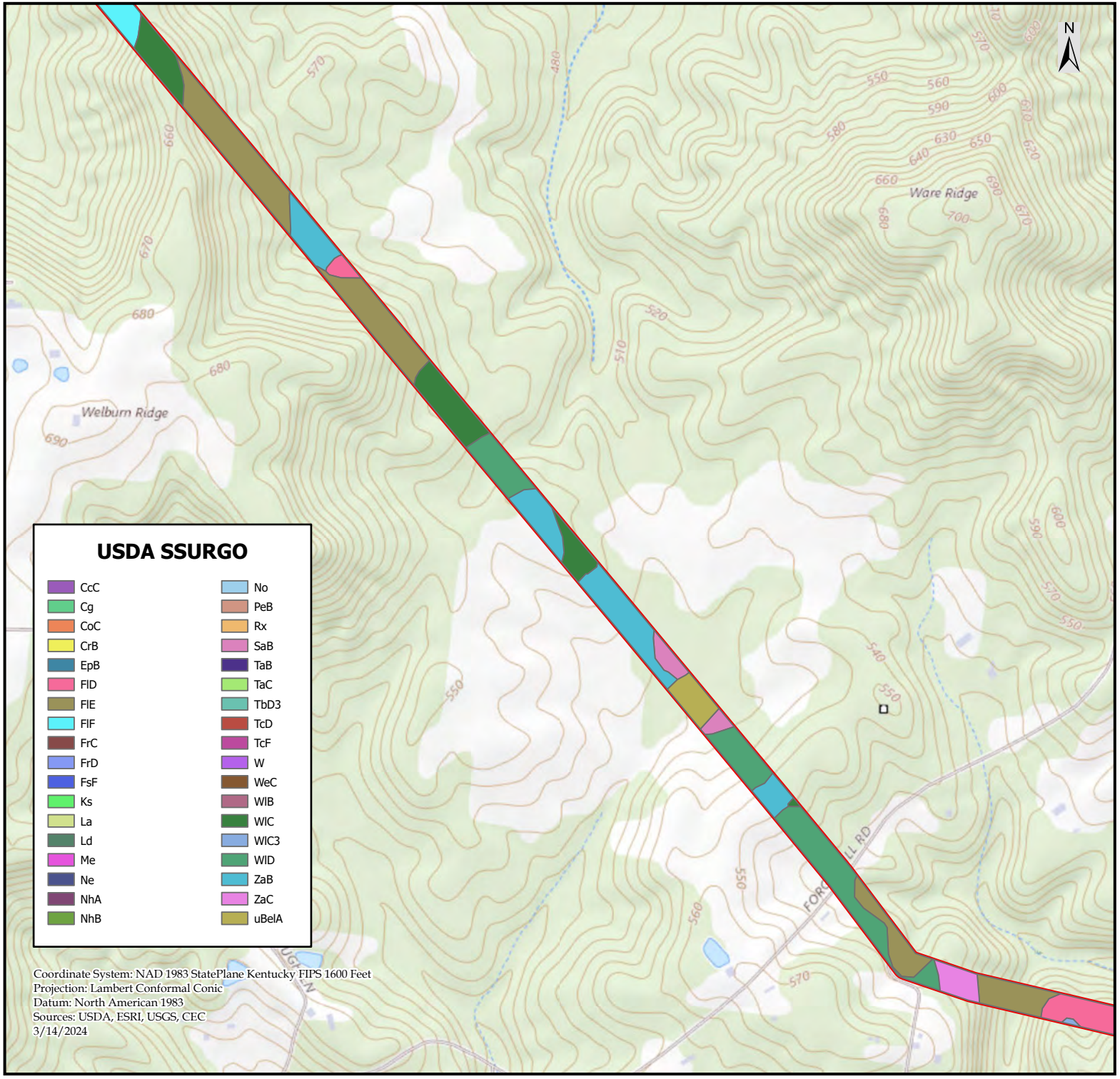


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FIGURE 4.2:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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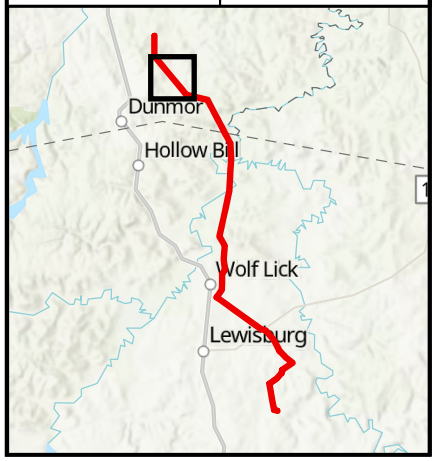
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



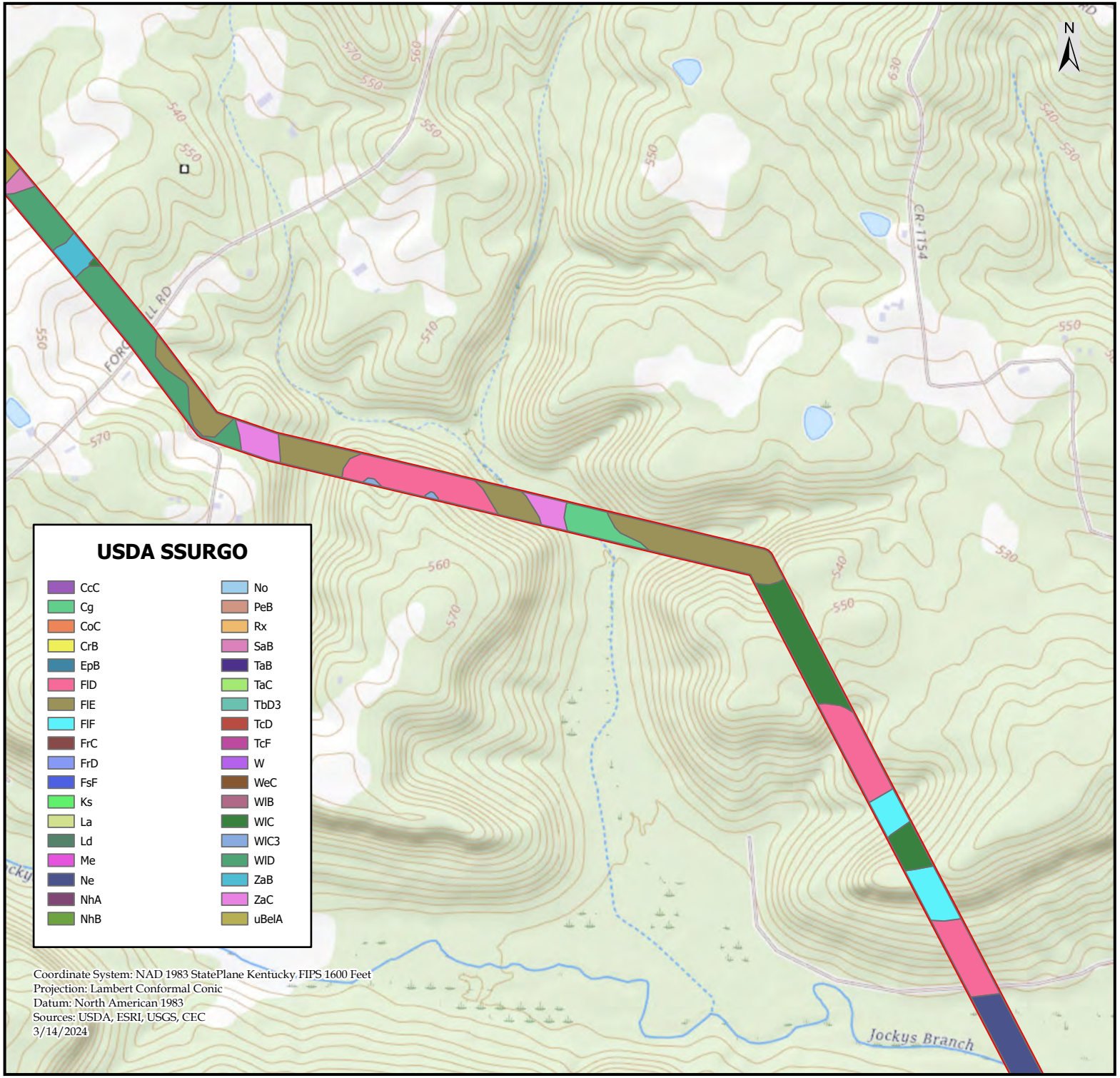


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FIGURE 4.3:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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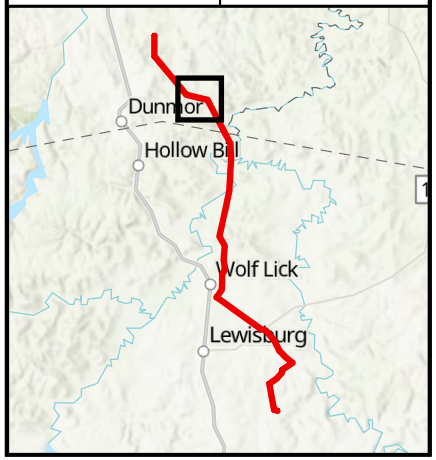
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



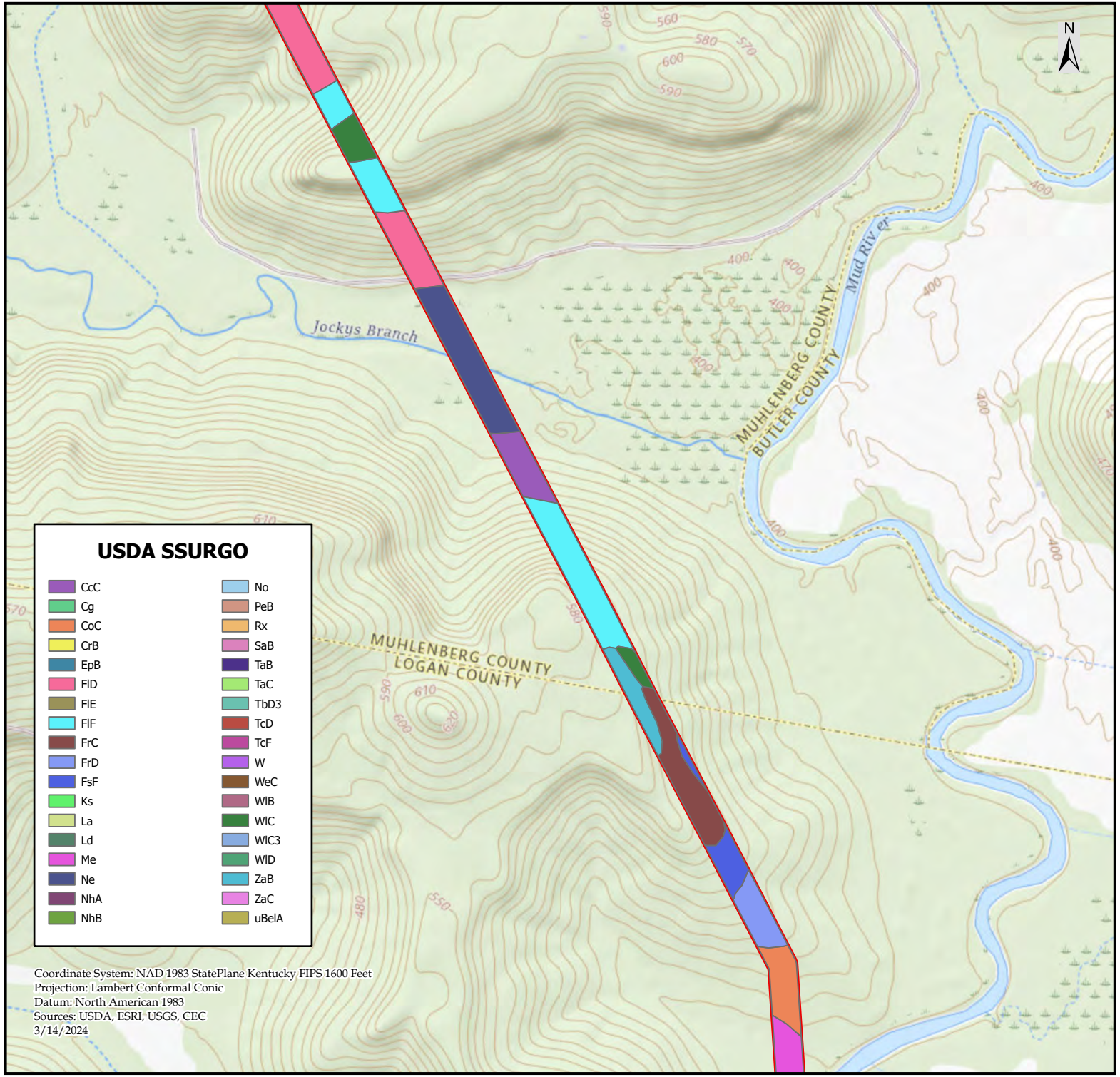


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FIGURE 4.4:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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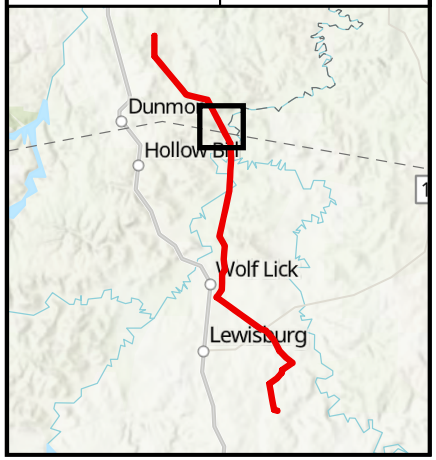
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



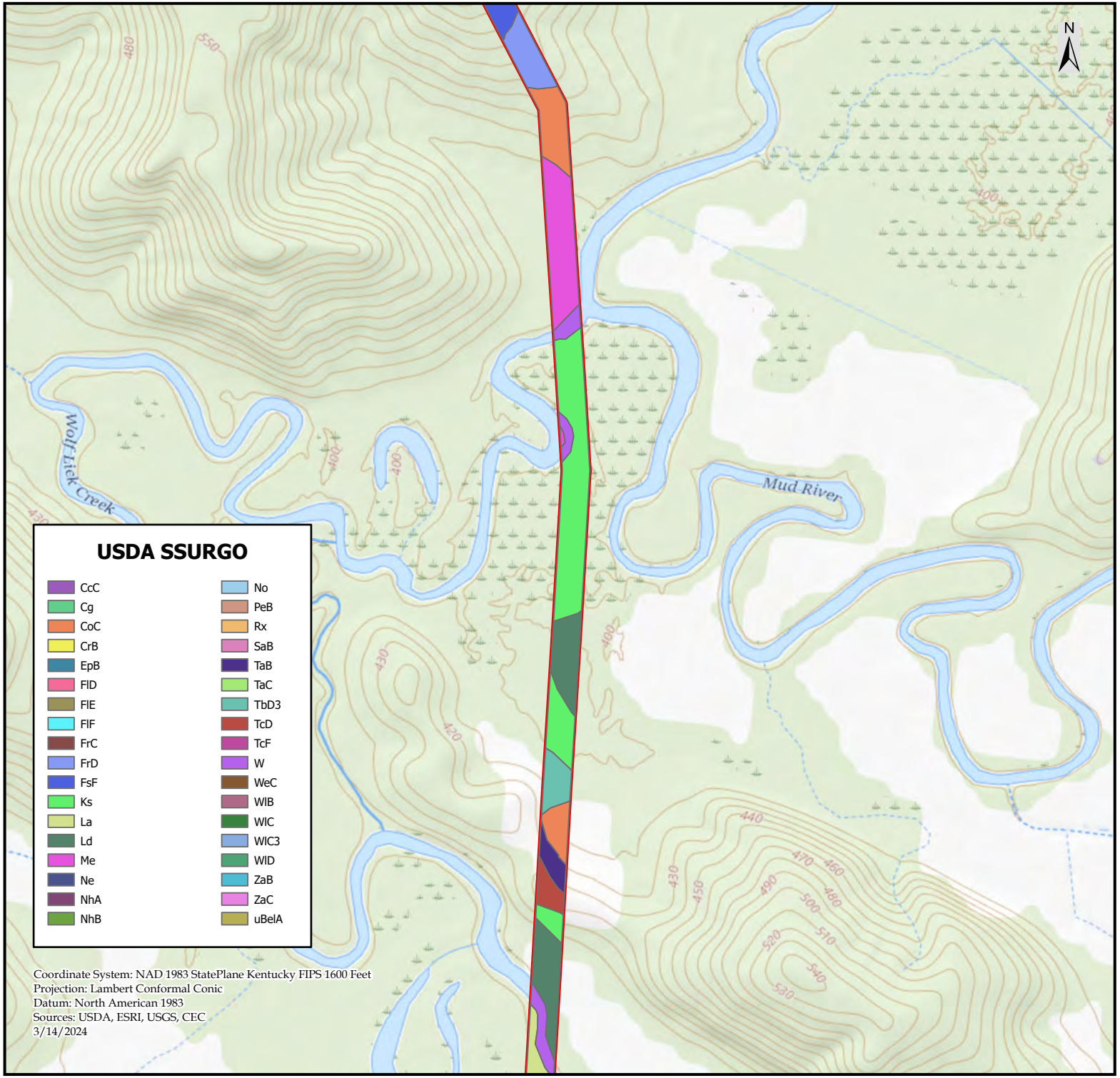


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FIGURE 4.5:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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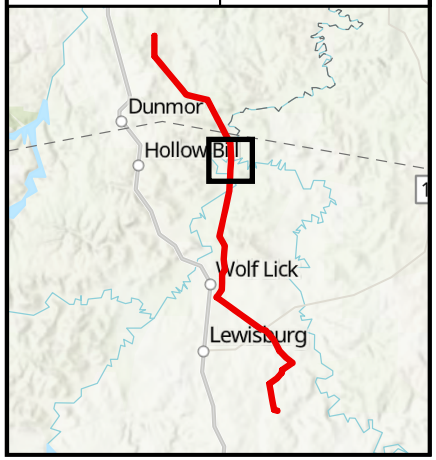
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



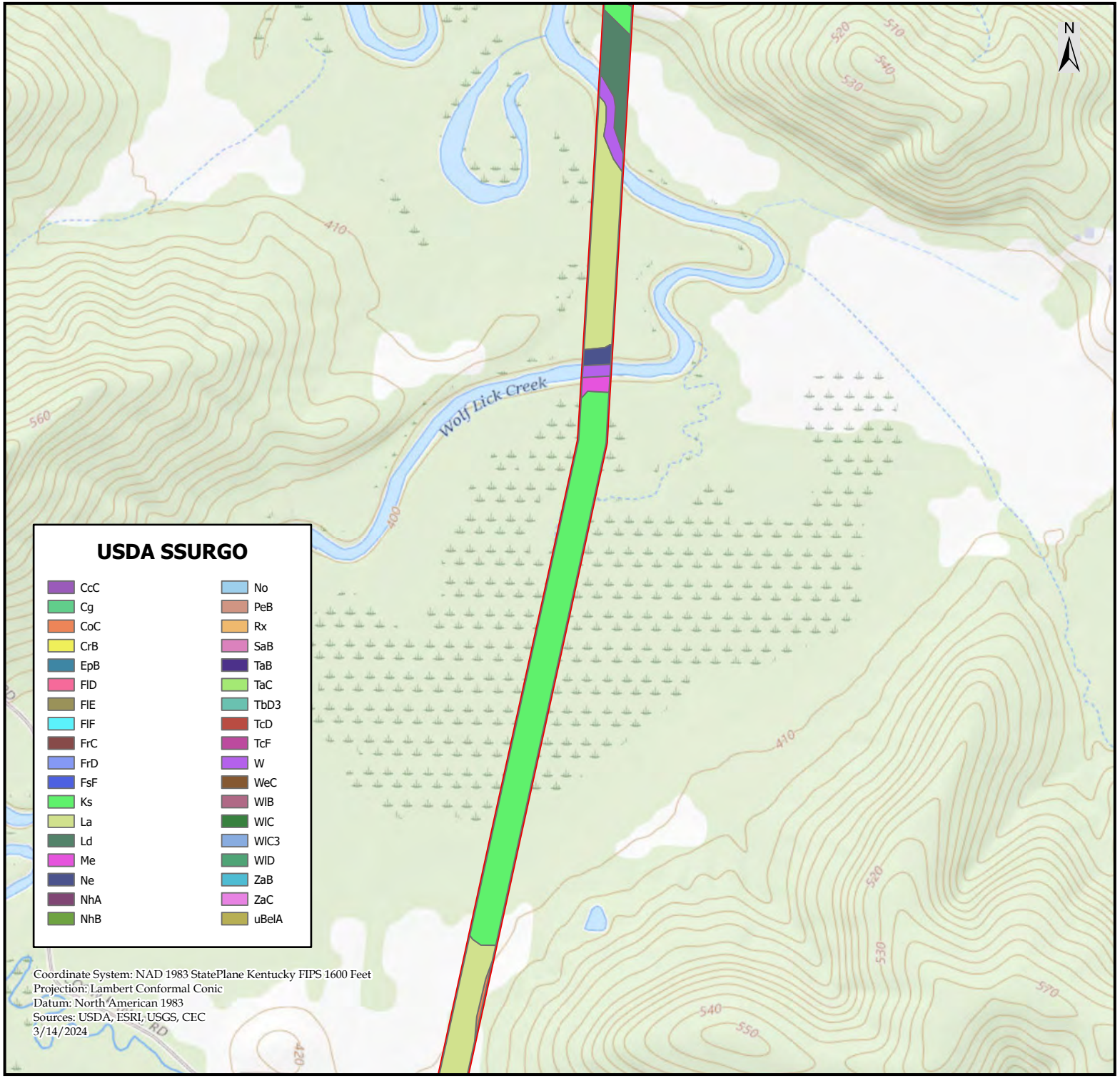


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FIGURE 4.6:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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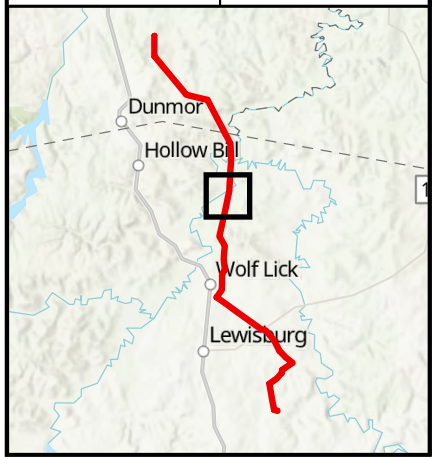
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



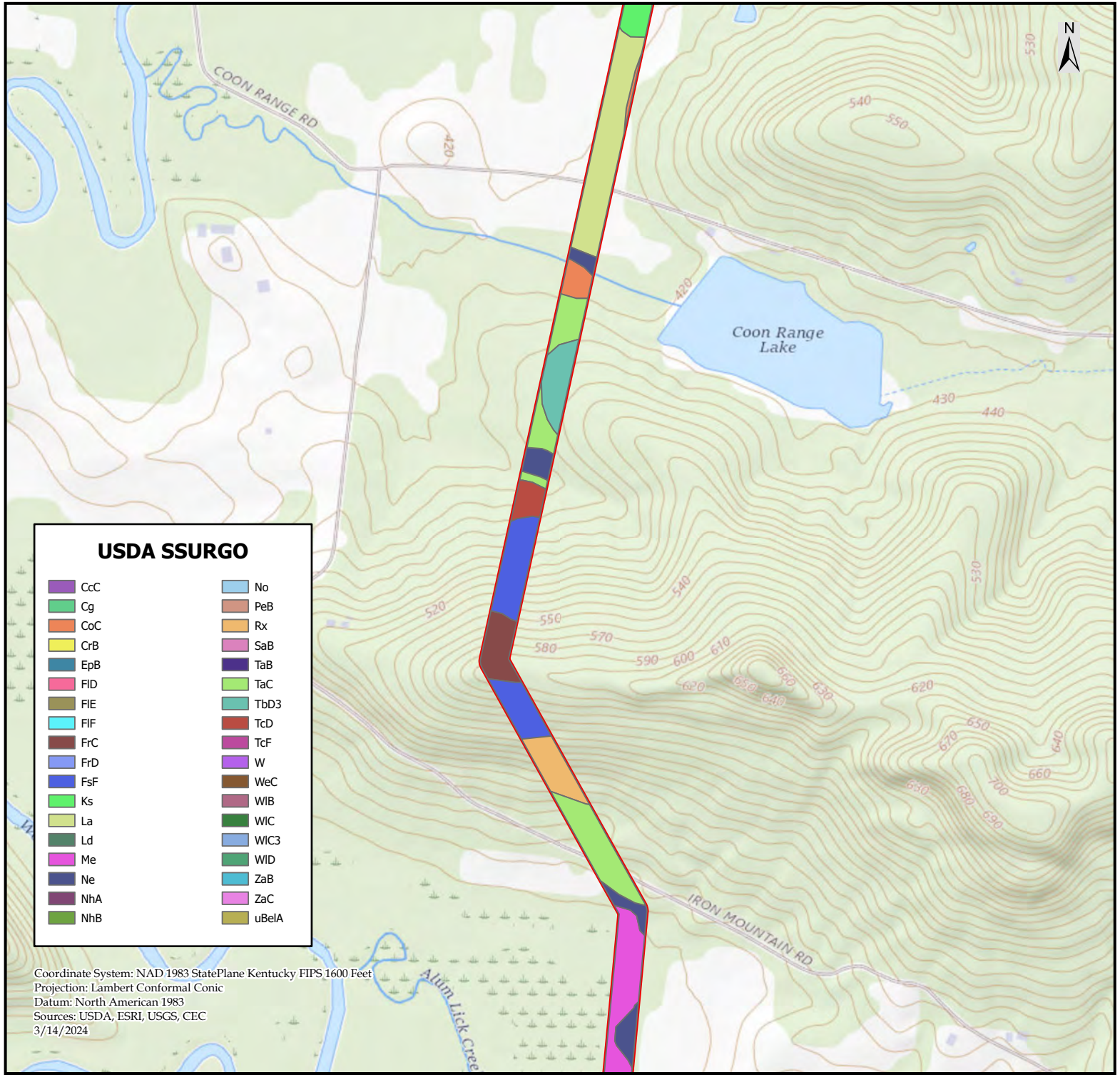


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FIGURE 4.7:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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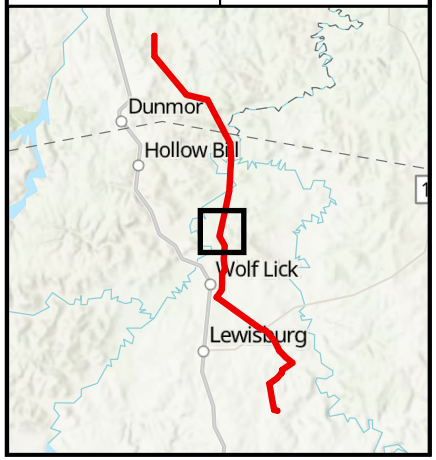
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



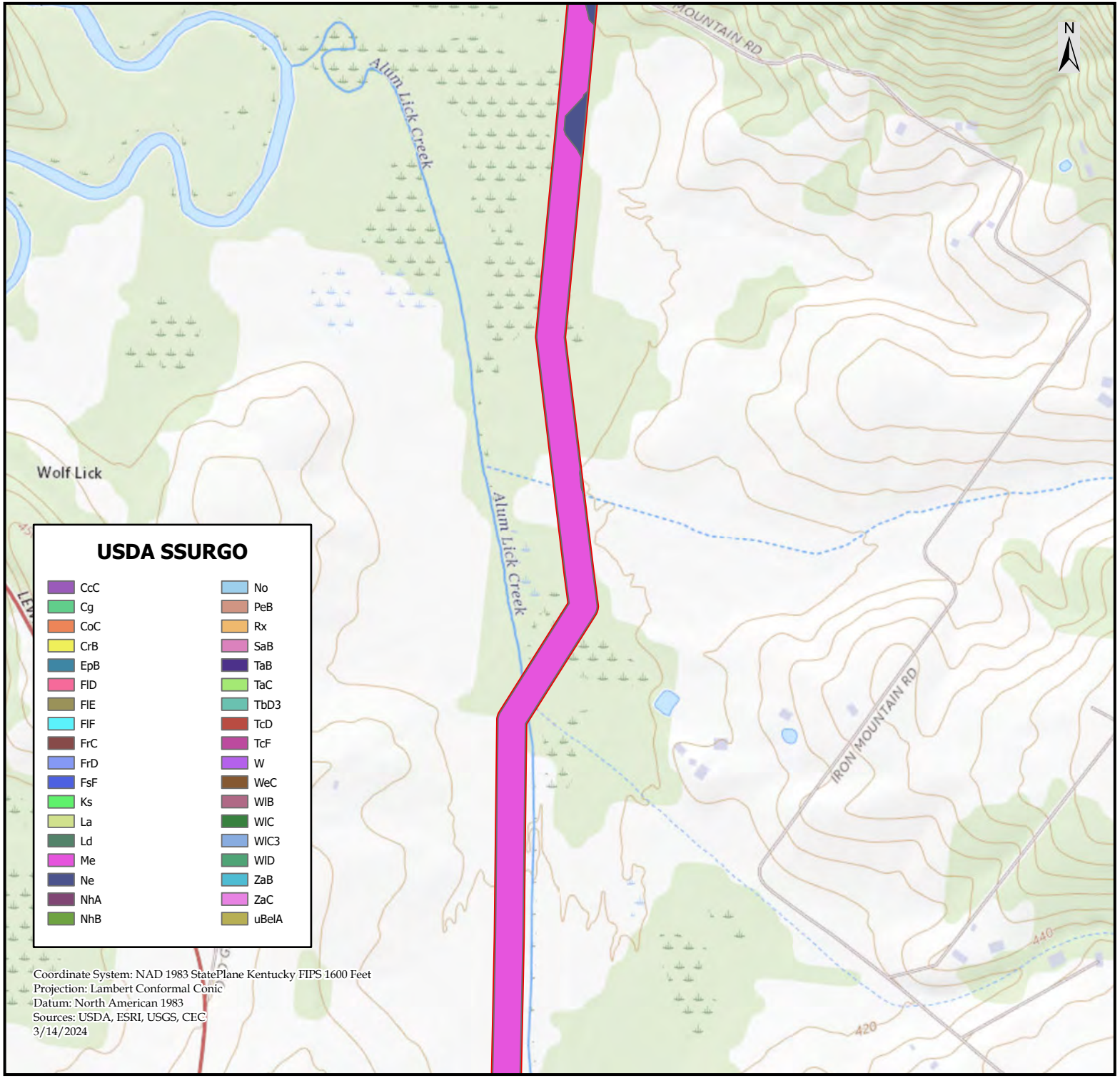


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FIGURE 4.8:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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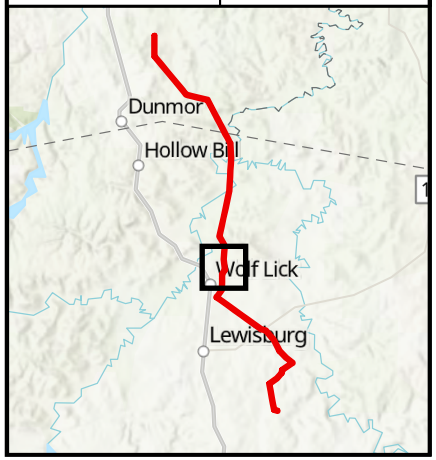
Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



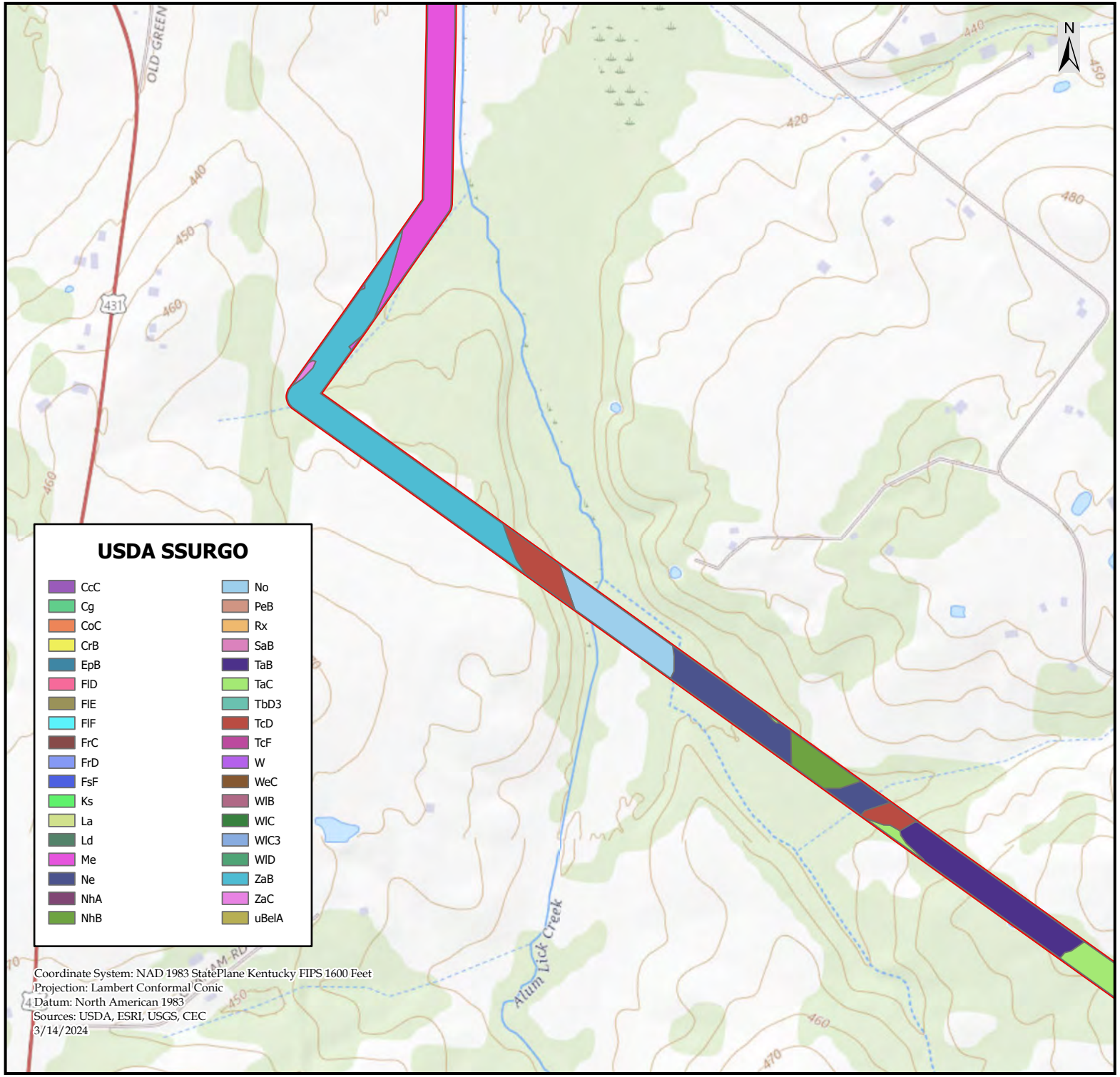


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FIGURE 4.9:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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471 Main Street
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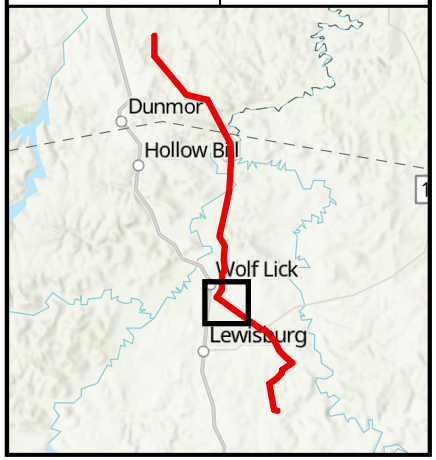
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



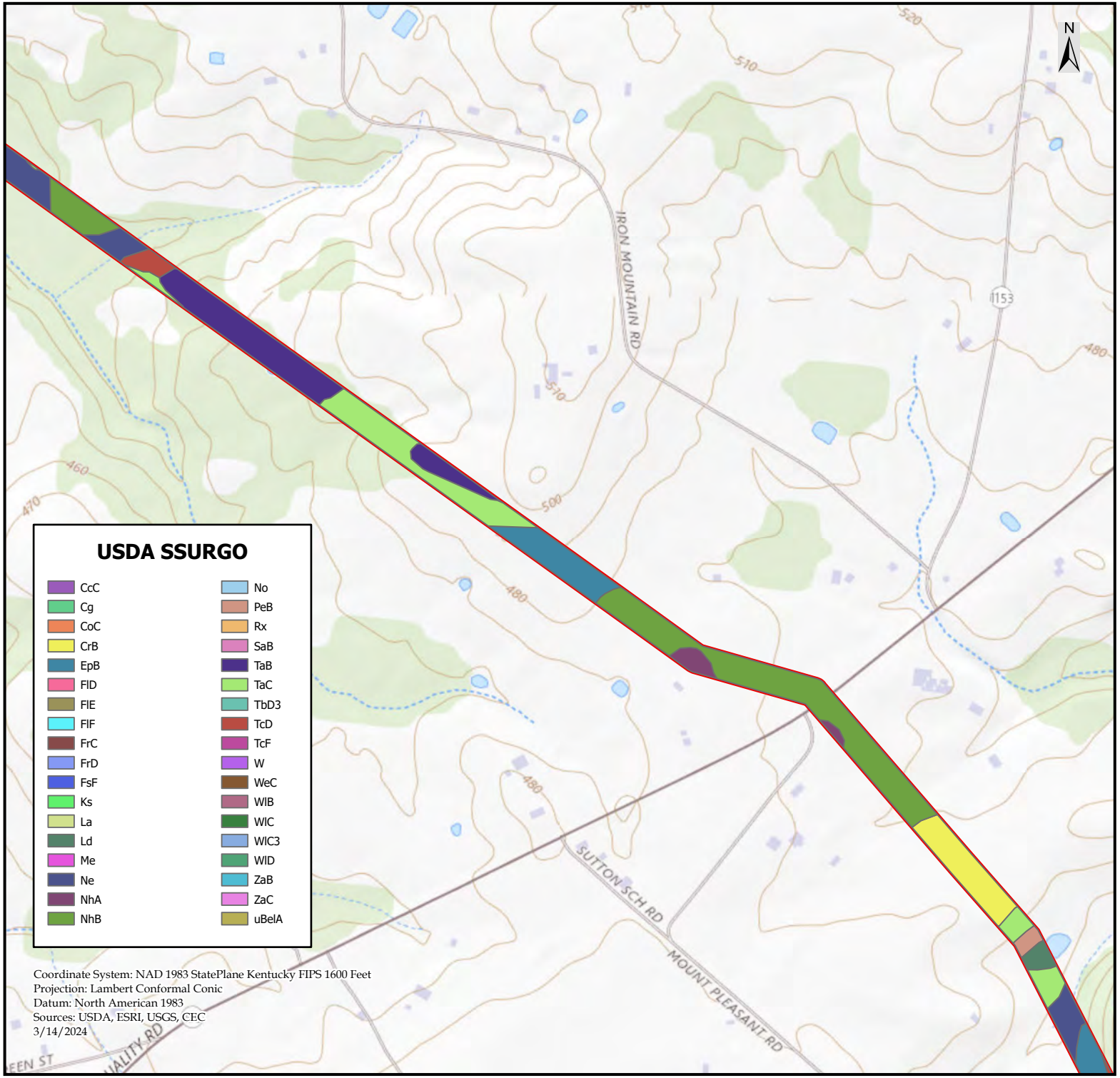


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FIGURE 4.10:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

Prepared by :
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471 Main Street
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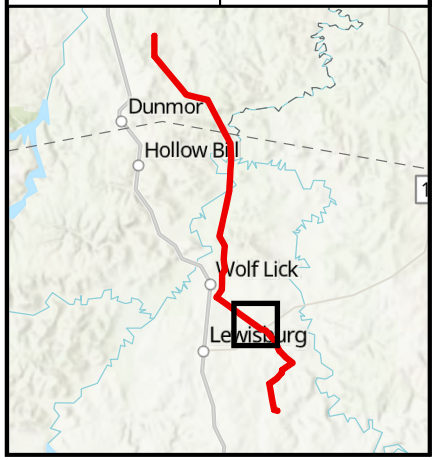
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



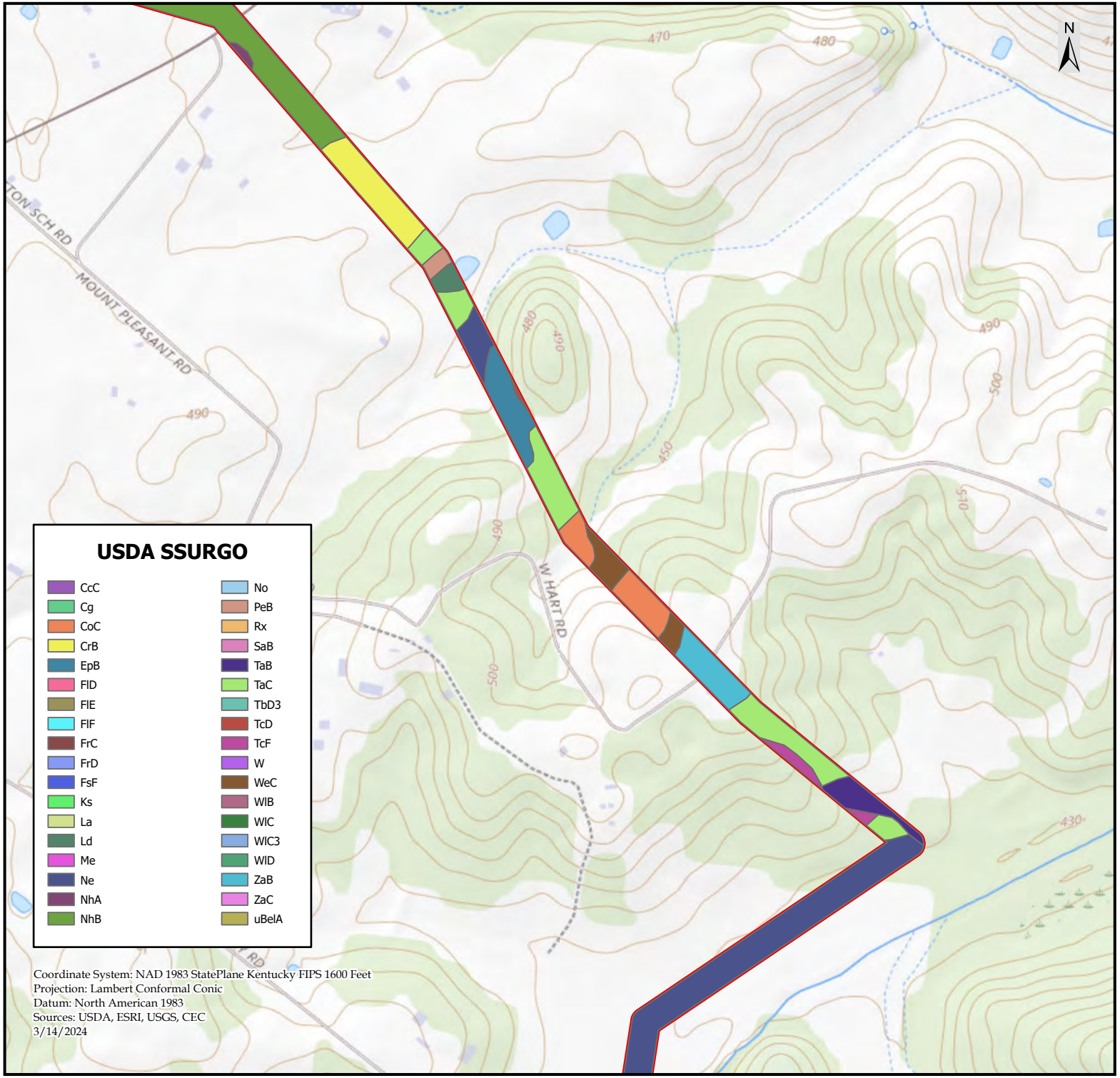


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FIGURE 4.11:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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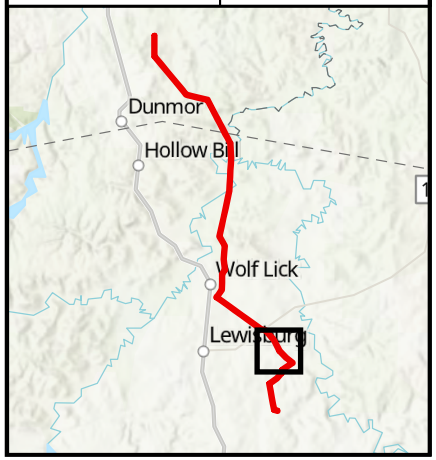
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



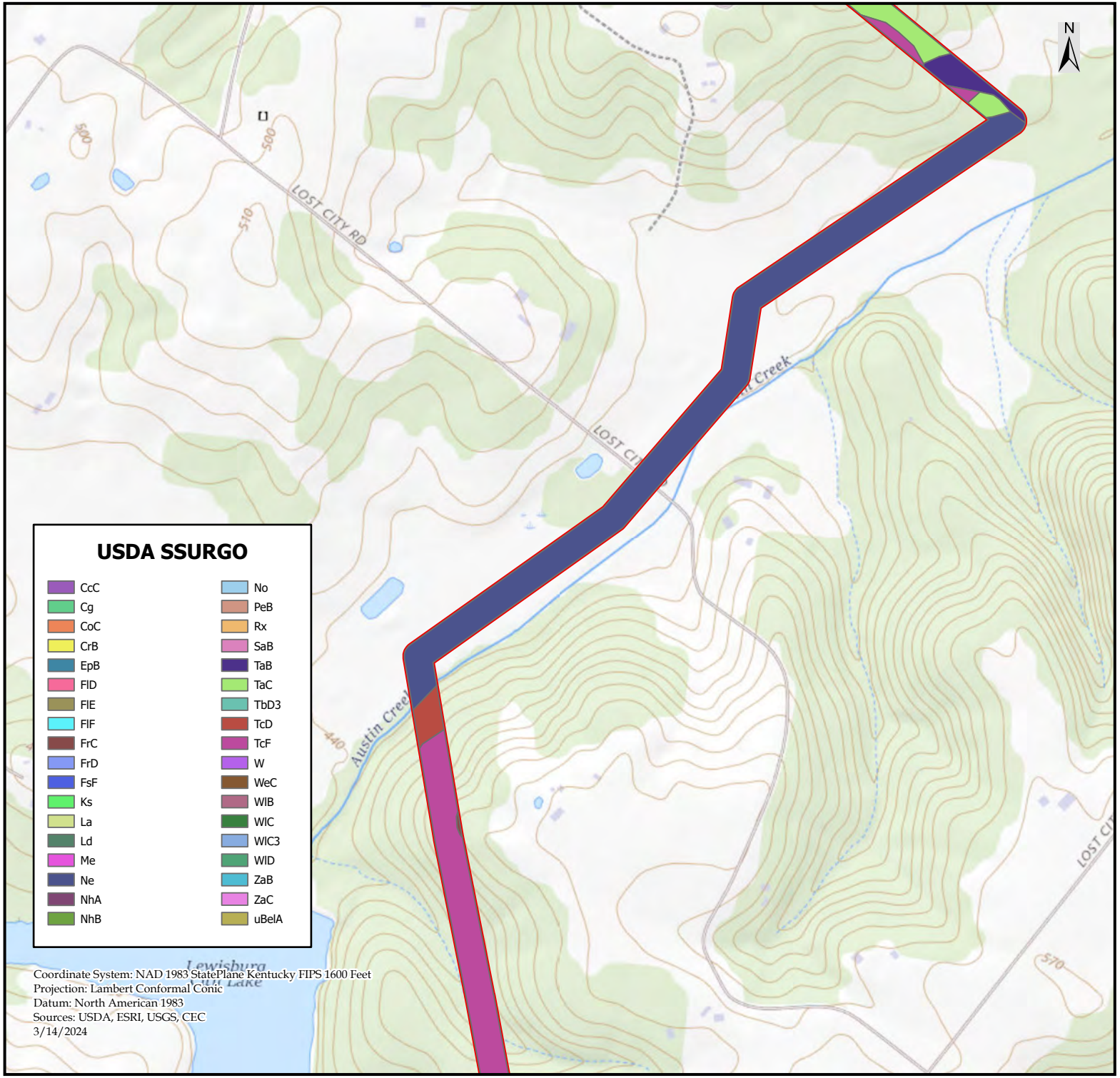


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FIGURE 4.12:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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P.O. Box 73
Paint Lick, Kentucky 40461

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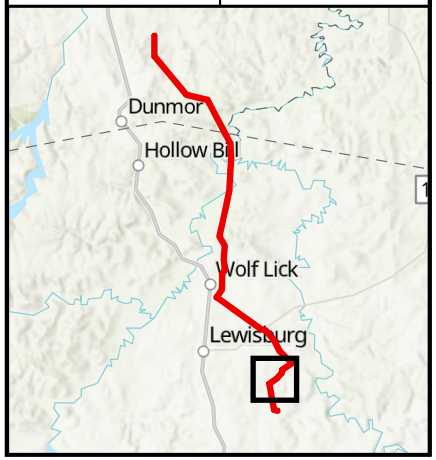

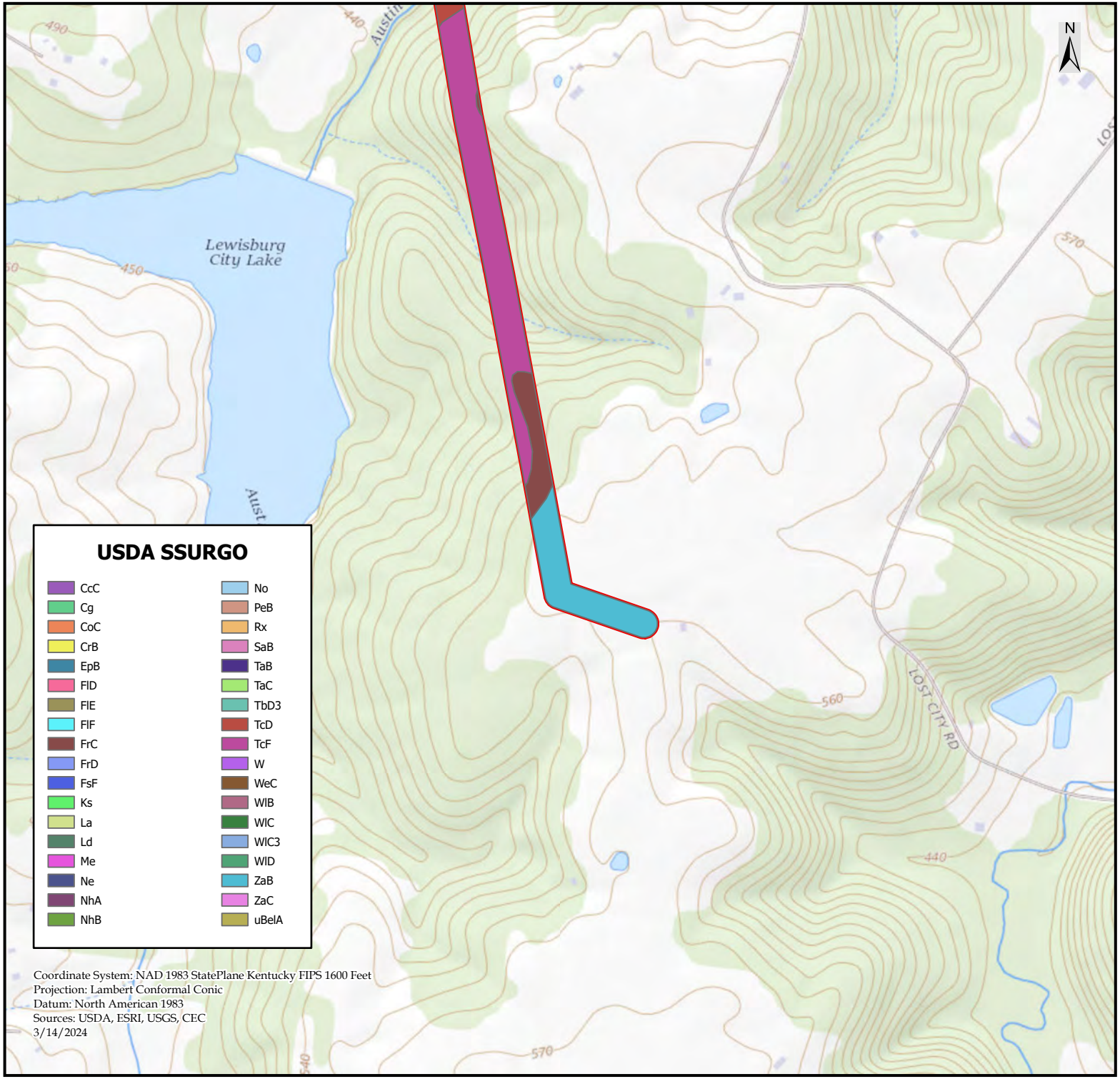

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FIGURE 4.13:
PRELIMINARY
USDA SSURGO Soil Classes
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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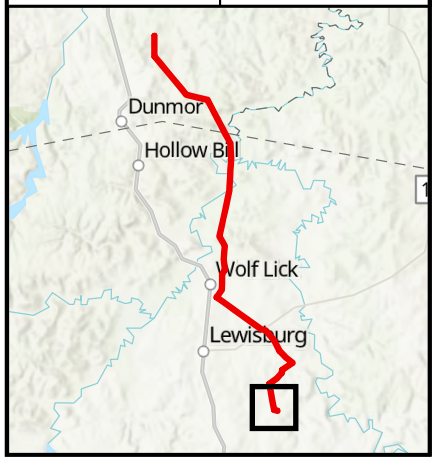

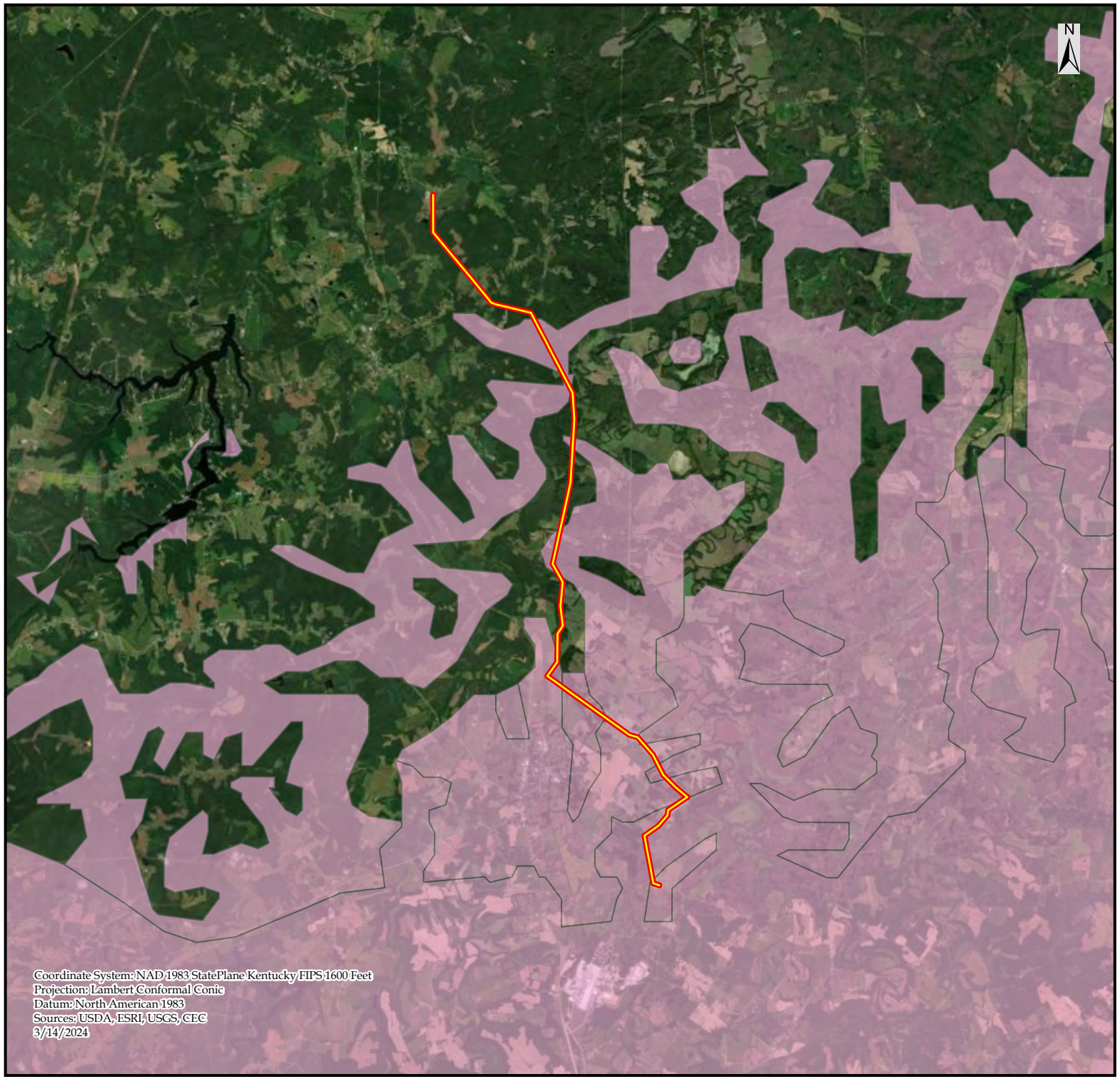

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FIGURE 5:
PRELIMINARY
Karst areas for the
Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Proposed Transmission Line
- Prone to be Karst
- Project Area

0 1 2
Miles

Scale: 1 in = 2 mi

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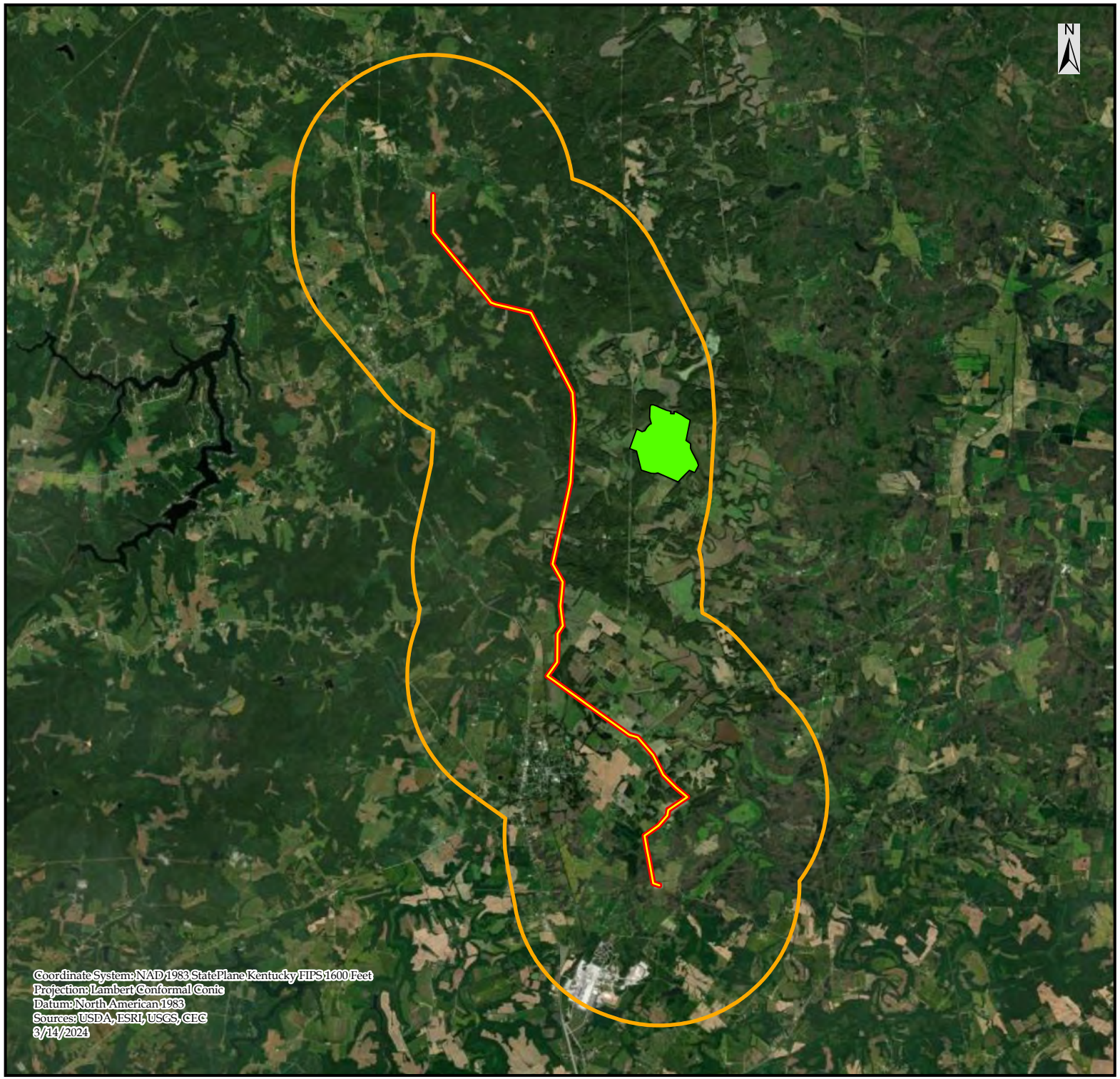

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FIGURE 6:
PRELIMINARY
Protected and Conservation Areas
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Proposed Transmission Line
- Conservation Easement
- 2-mi Buffer
- Project Area

0 1 2
Miles

Scale: 1 in = 2 mi

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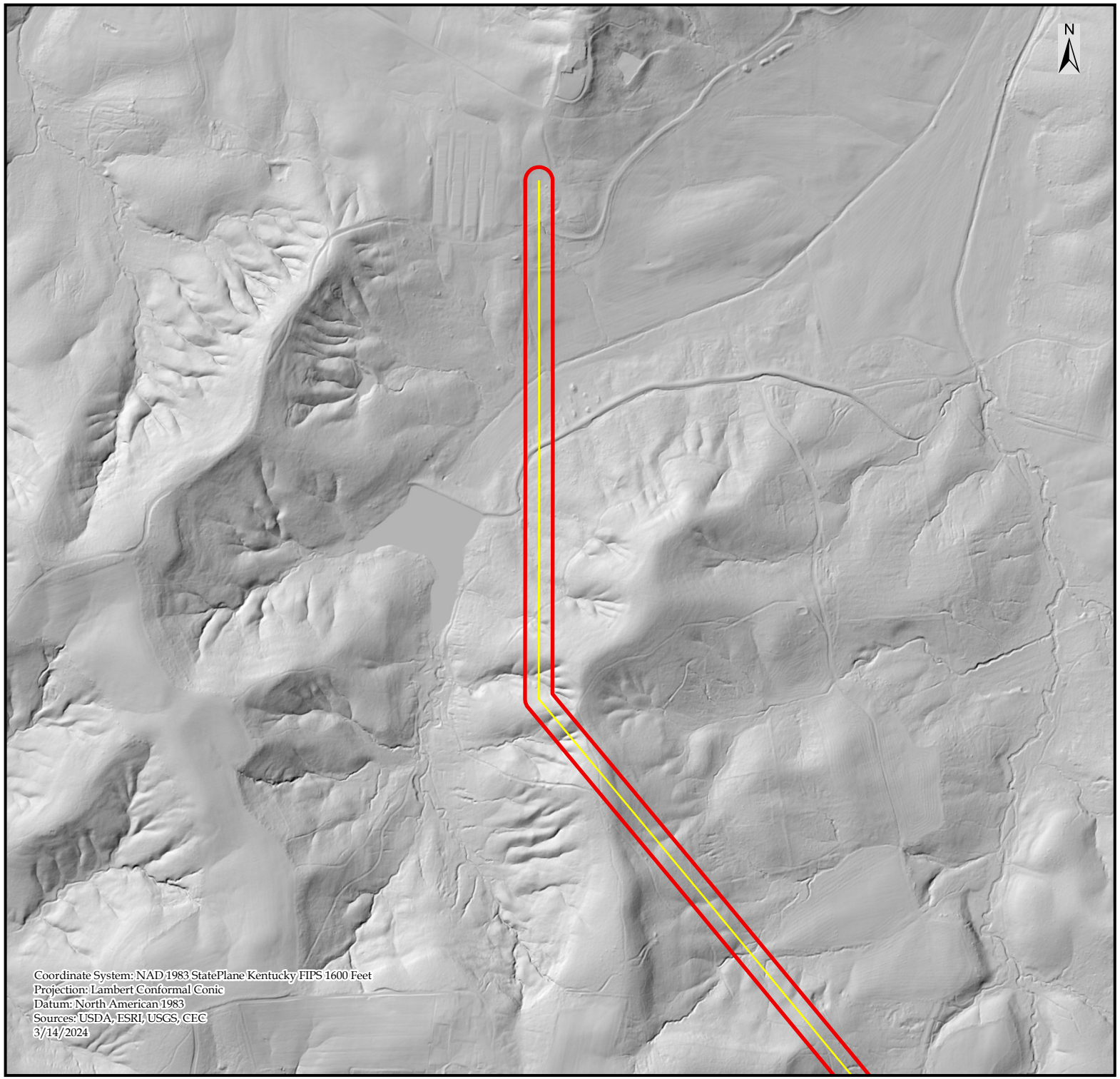

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FIGURE 7.1:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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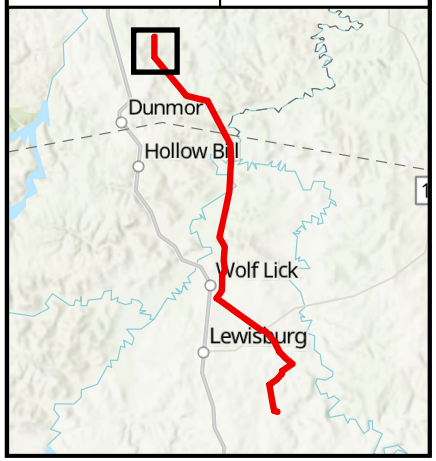

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FIGURE 7.2:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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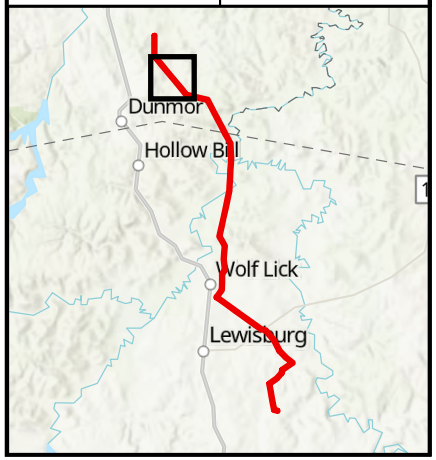

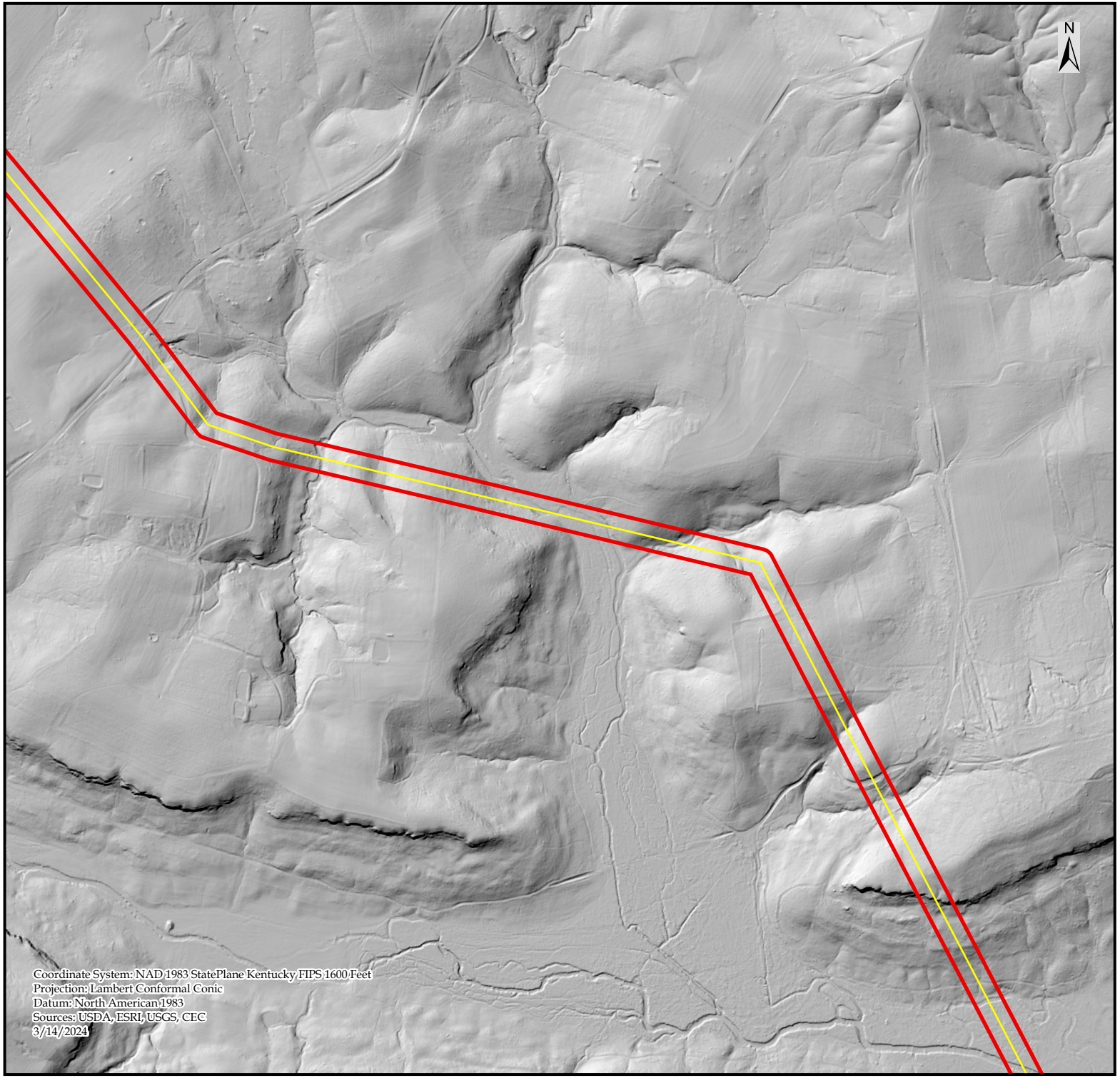

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FIGURE 7.3:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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Paint Lick, Kentucky 40461

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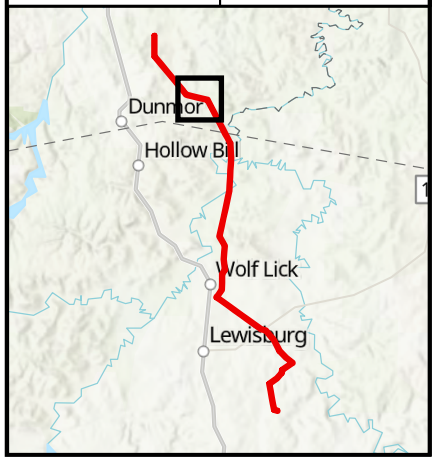

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FIGURE 7.4:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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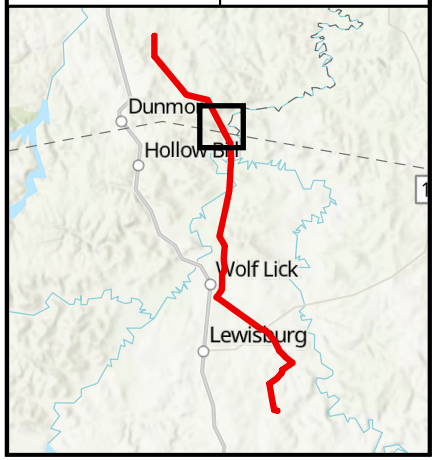

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FIGURE 7.5:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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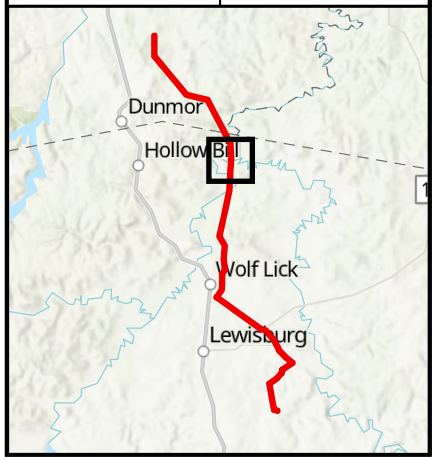

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FIGURE 7.6:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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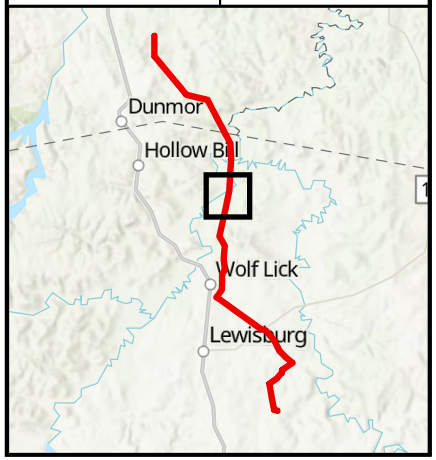

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FIGURE 7.7:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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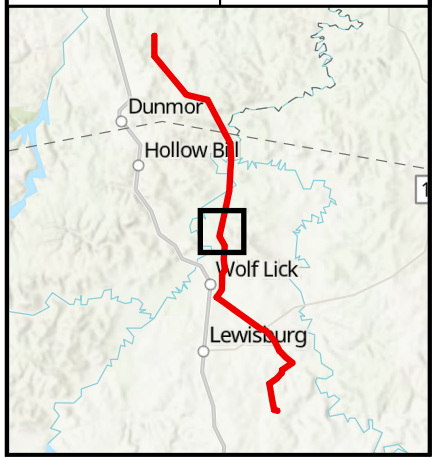

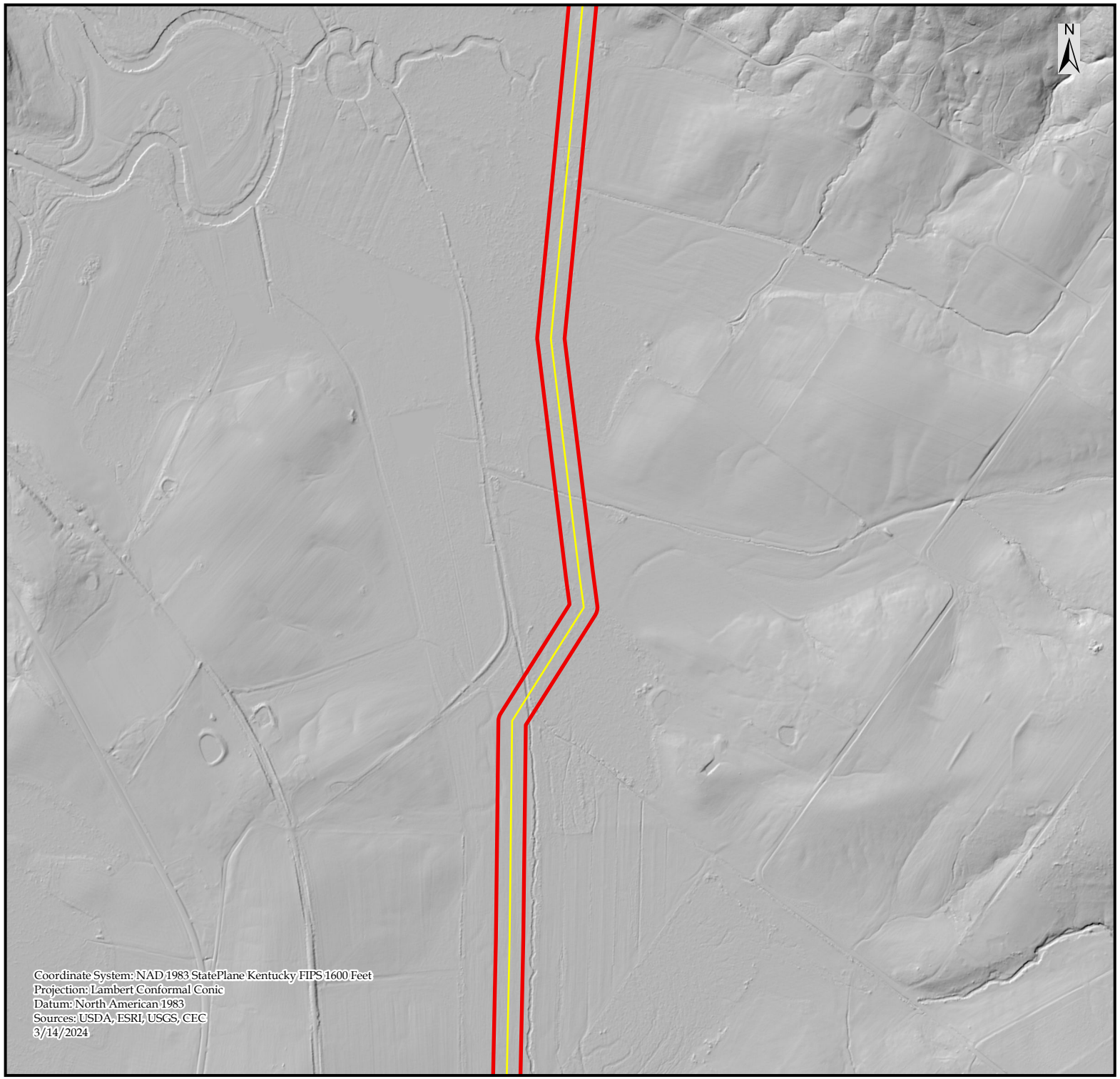

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FIGURE 7.8:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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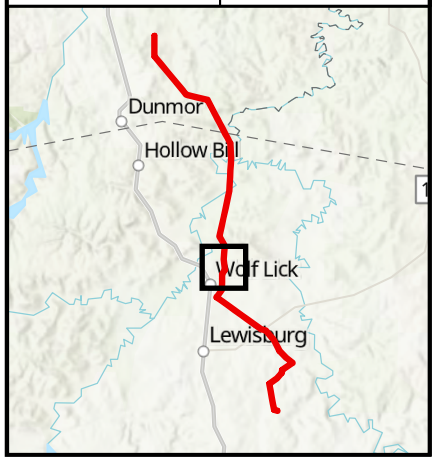

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FIGURE 7.9:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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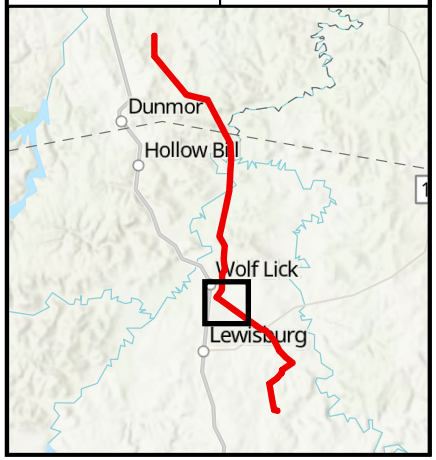

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FIGURE 7.10:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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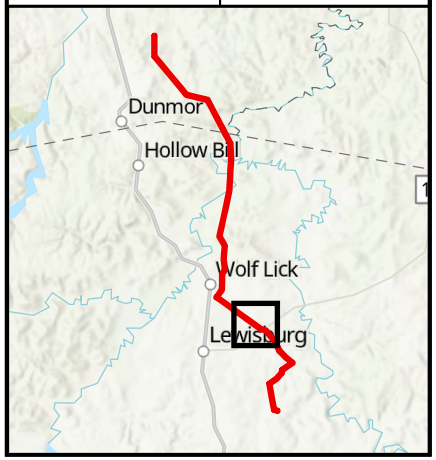

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FIGURE 7.11:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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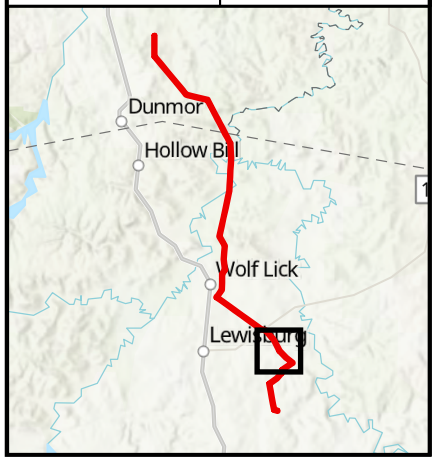

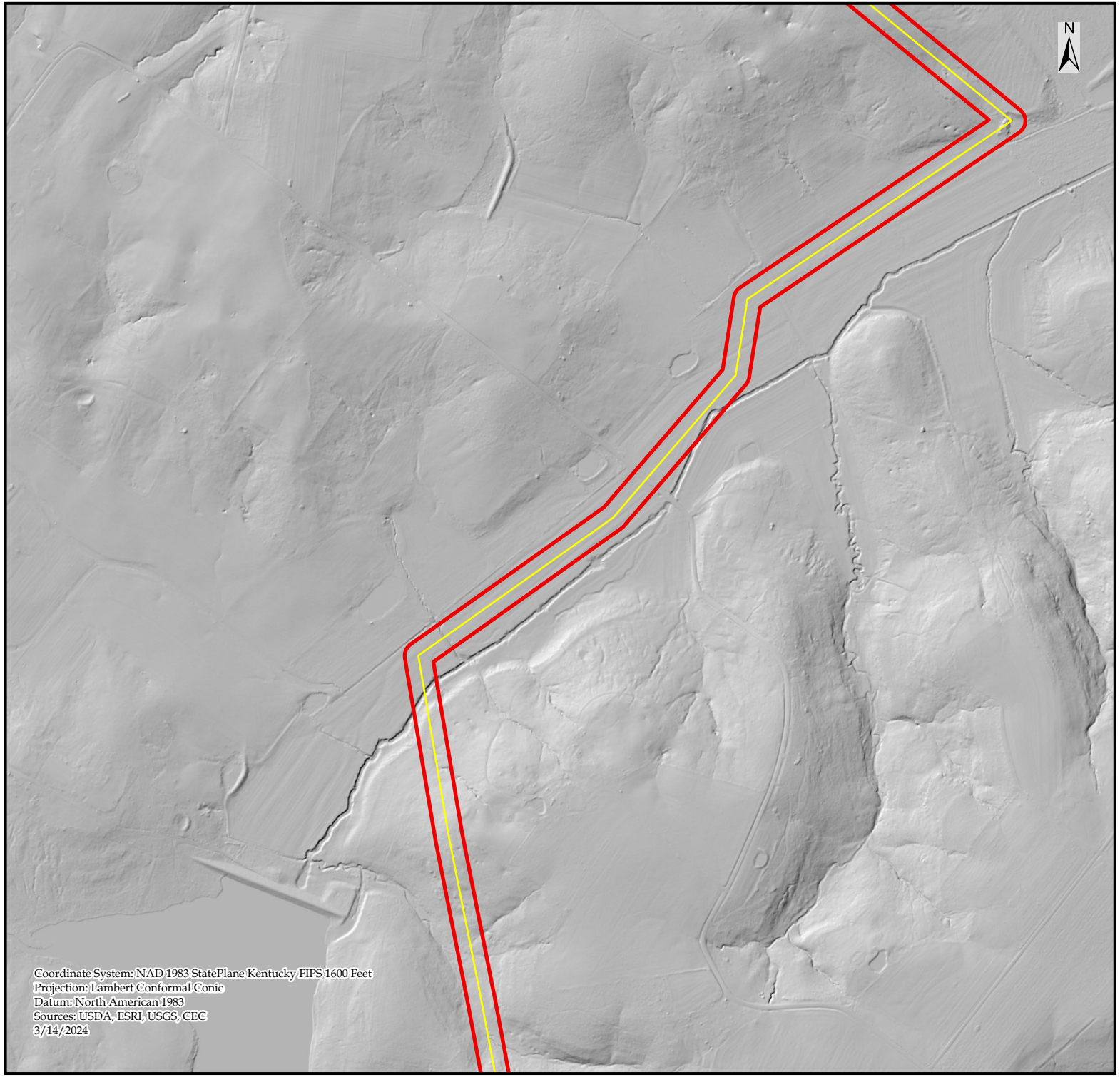

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FIGURE 7.12:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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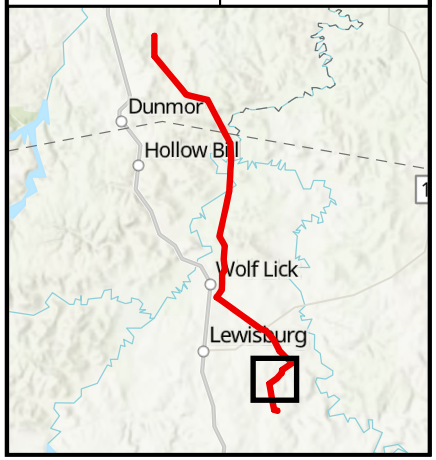

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FIGURE 7.13:
PRELIMINARY
Digital Elevation Model
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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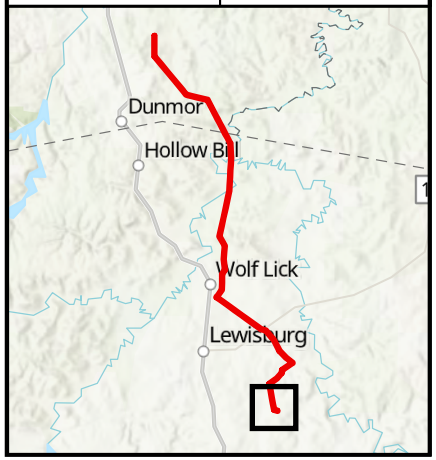

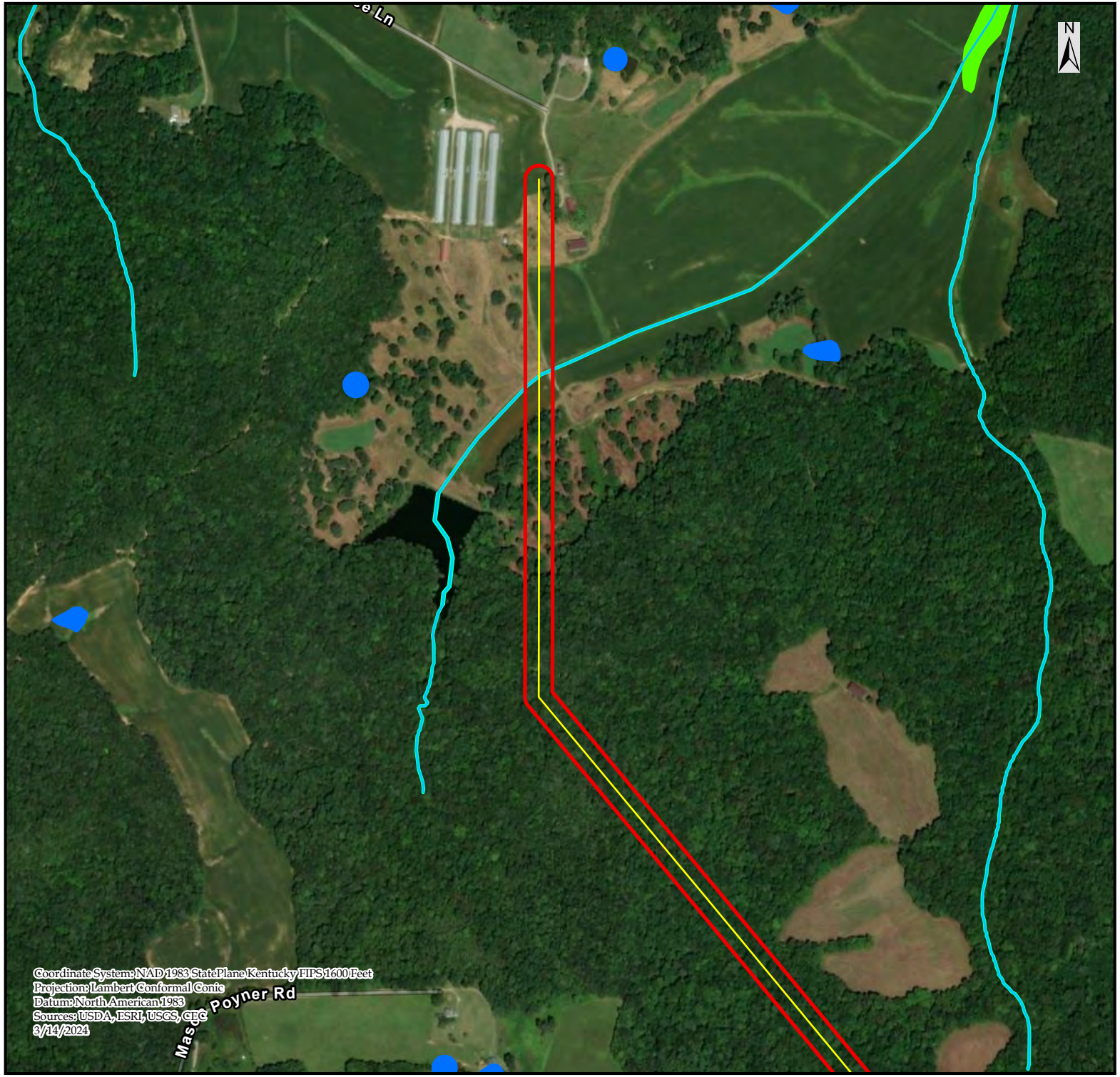

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FIGURE 8.1:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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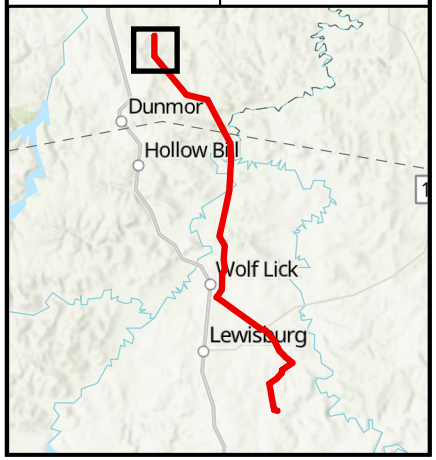

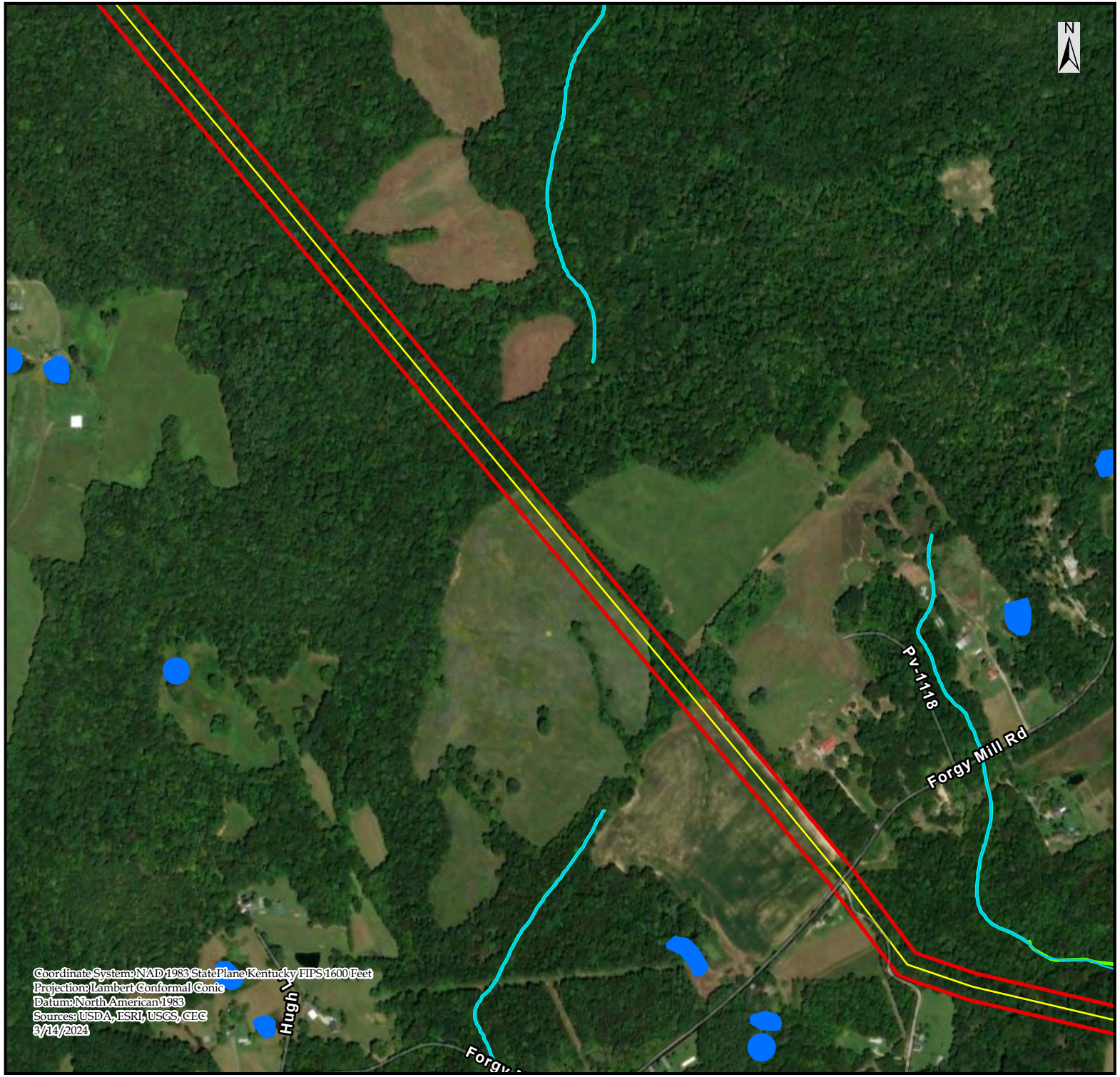

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FIGURE 8.2:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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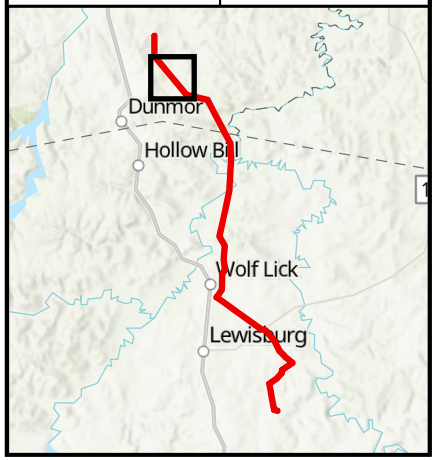

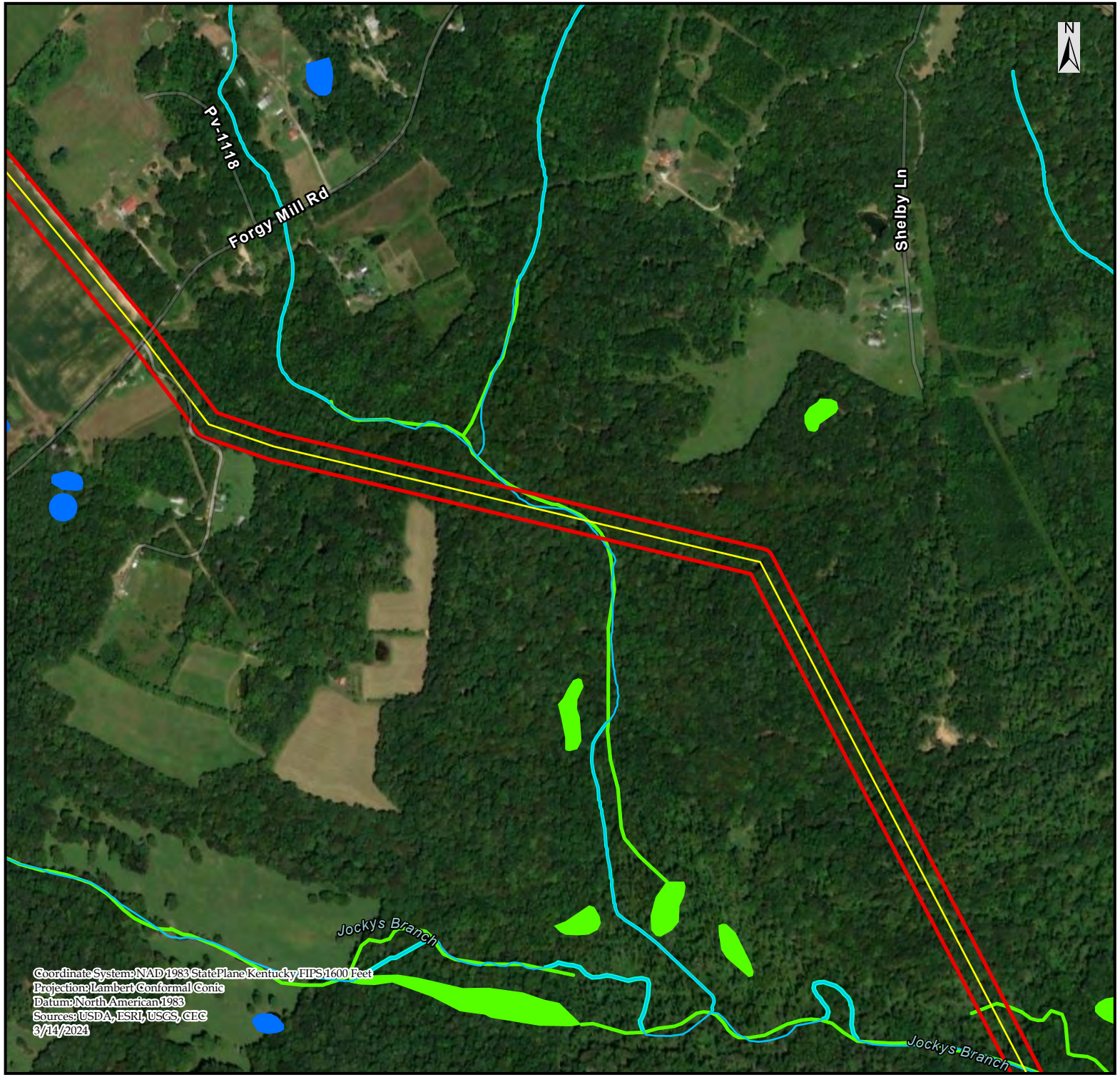

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FIGURE 8.3:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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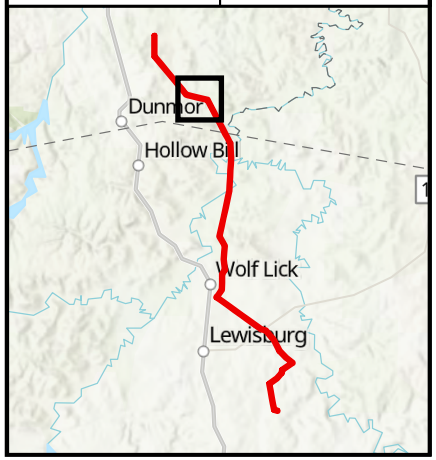

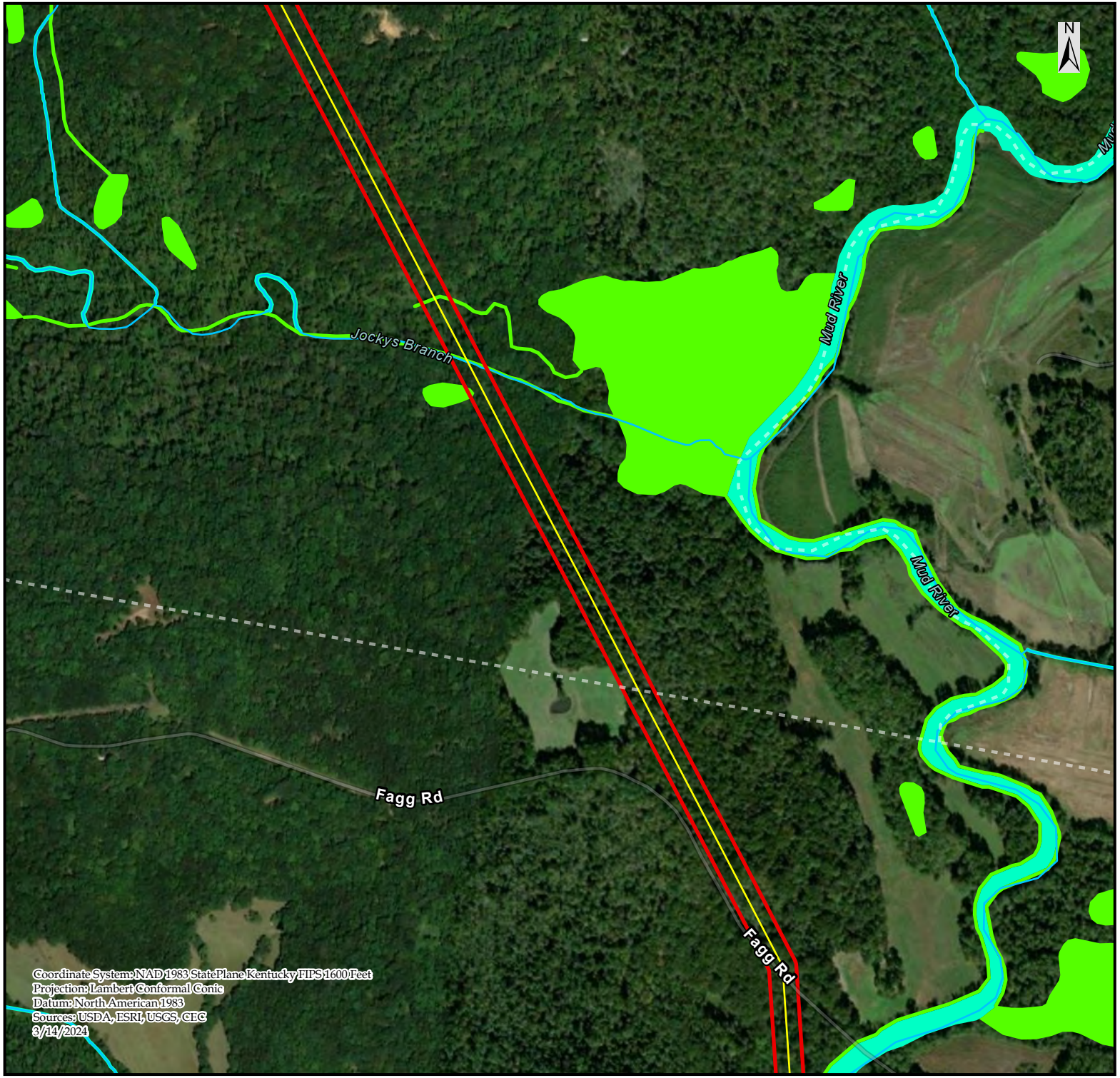

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FIGURE 8.4:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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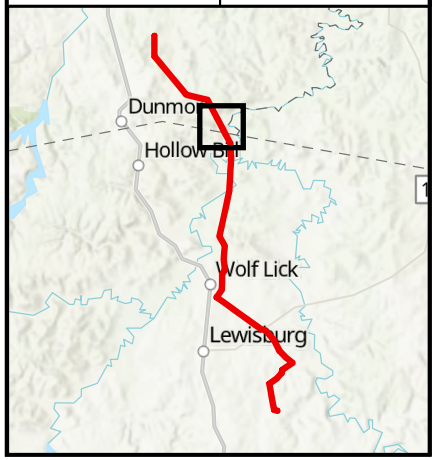

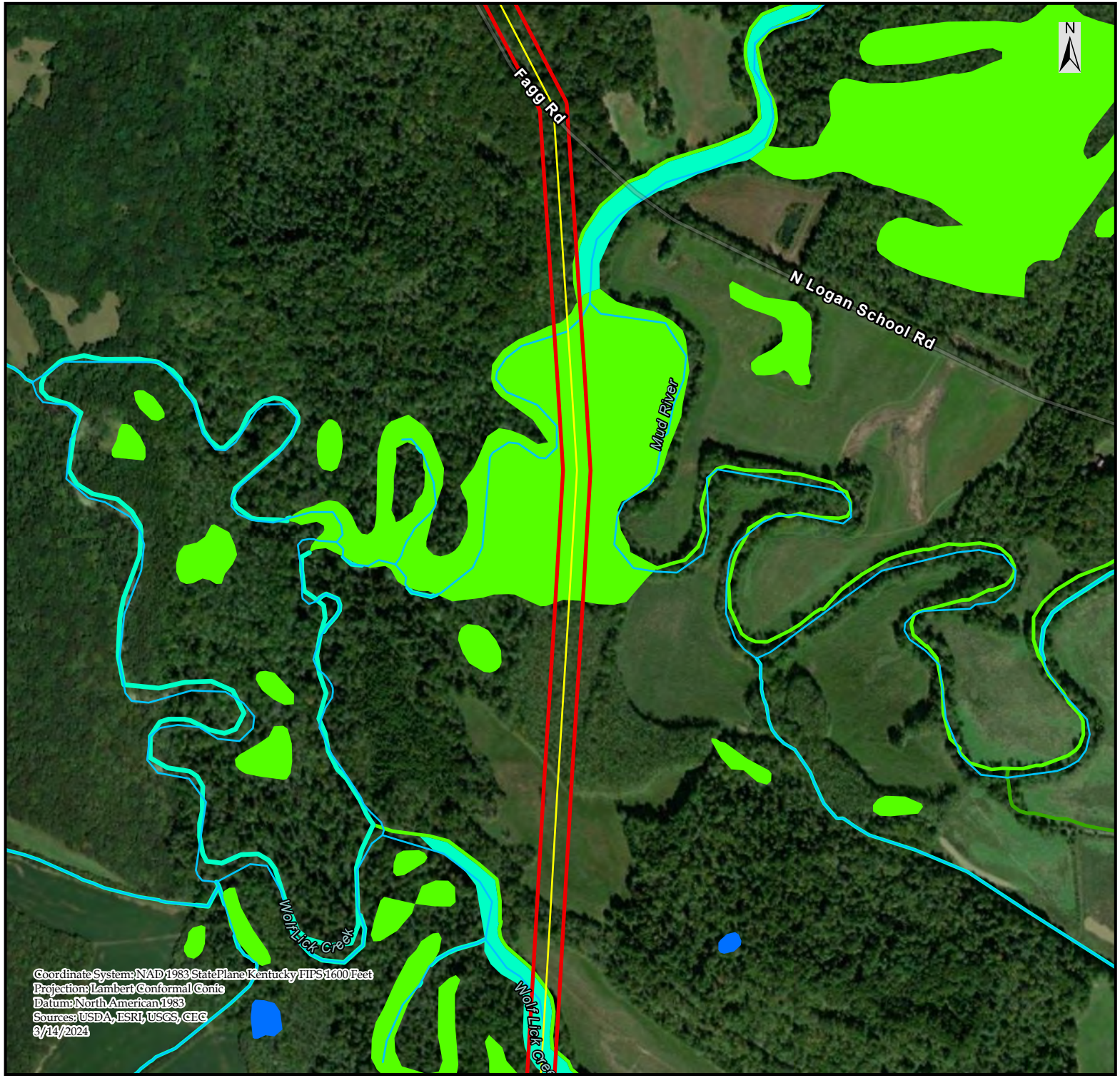

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FIGURE 8.5:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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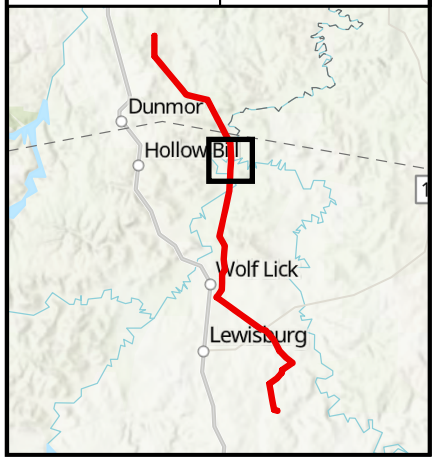

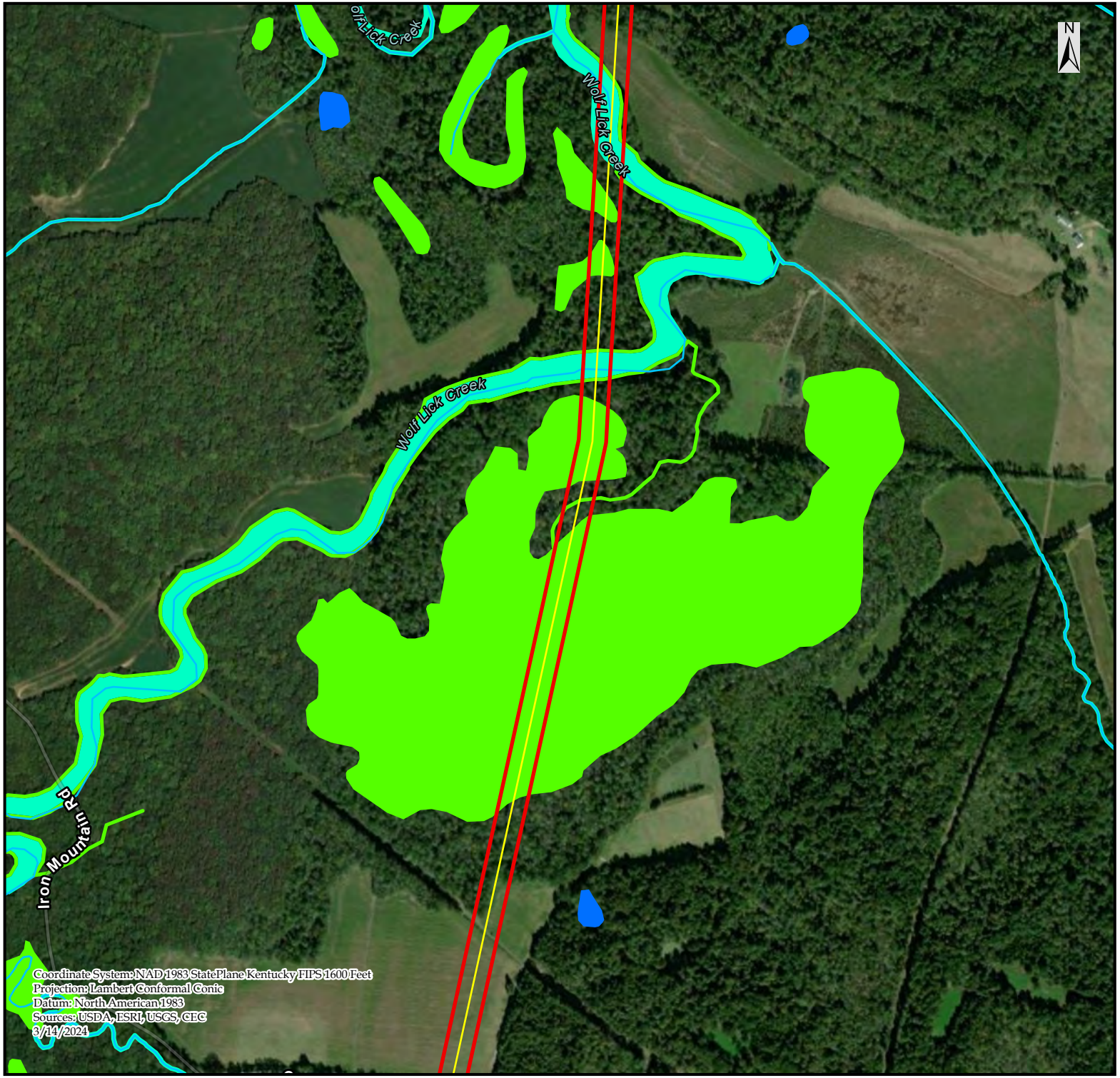

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FIGURE 8.6:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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

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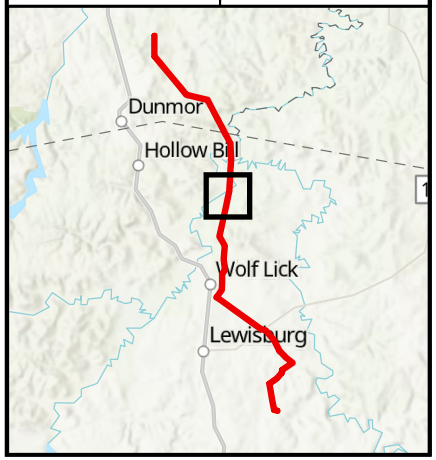
Checked by:	MM	Revision:	01



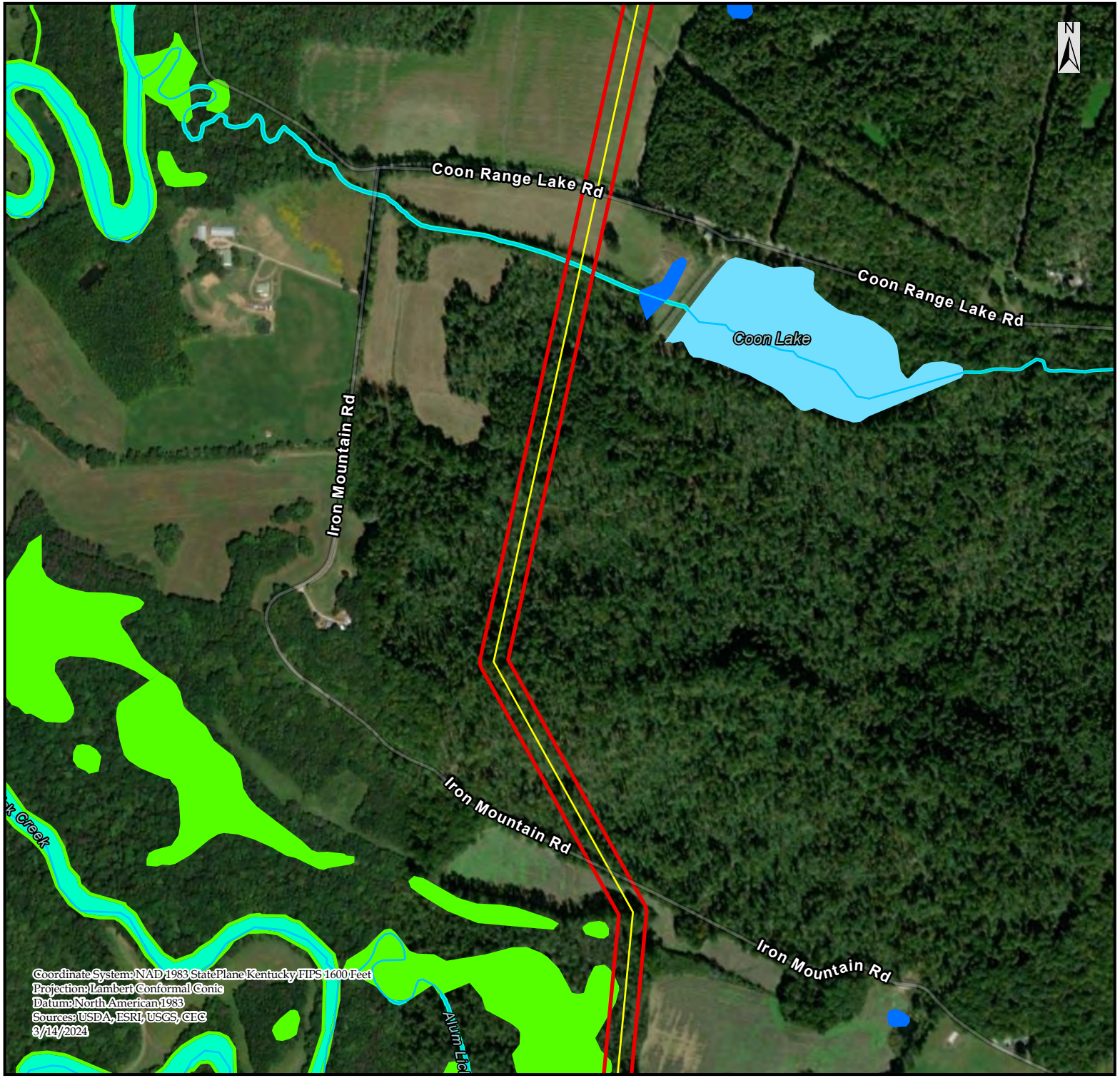


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FIGURE 8.7:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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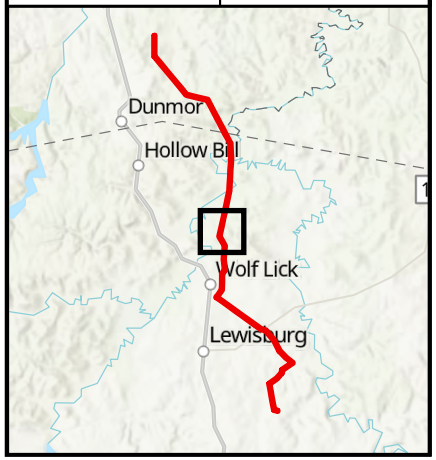

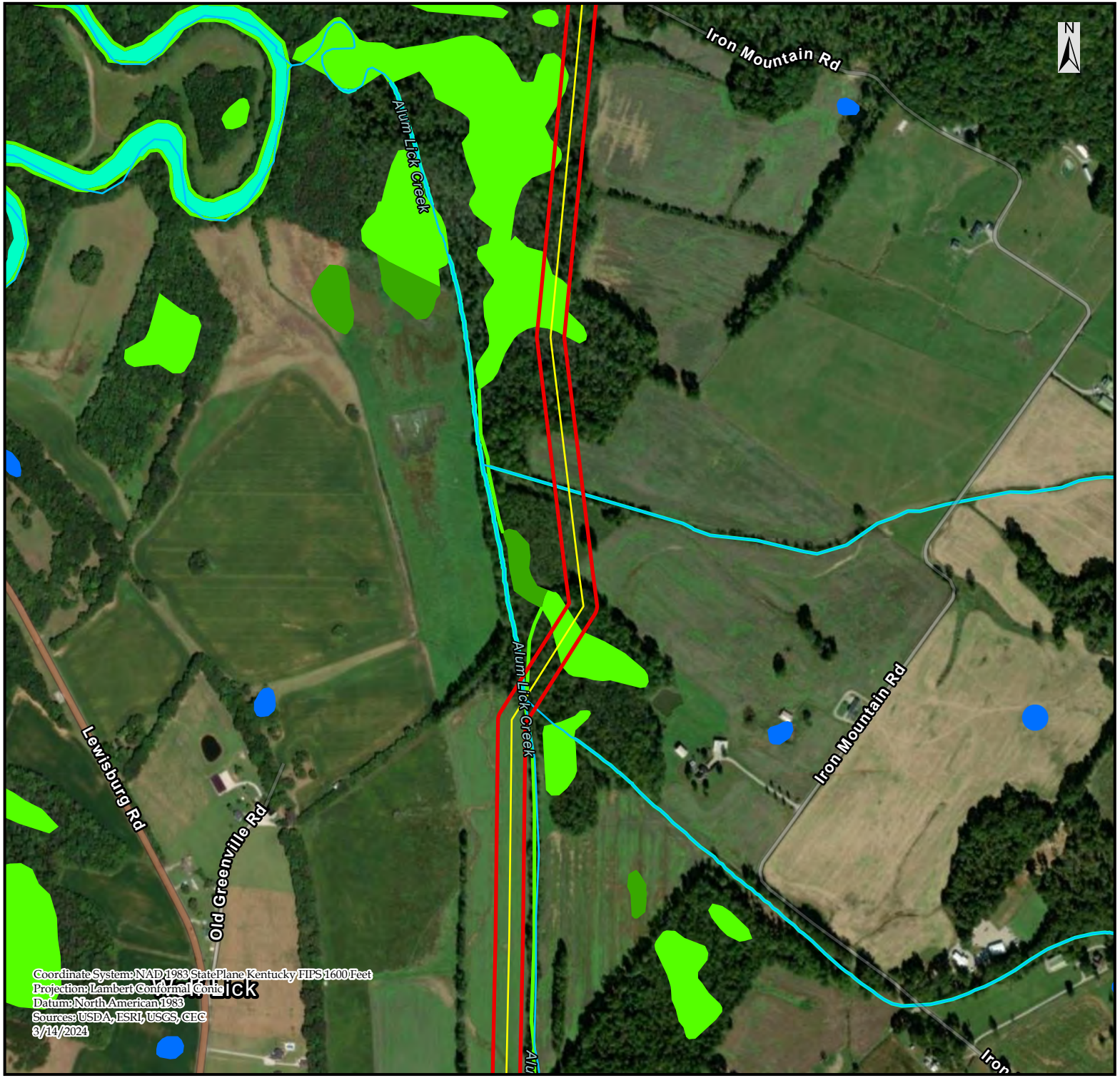

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FIGURE 8.8:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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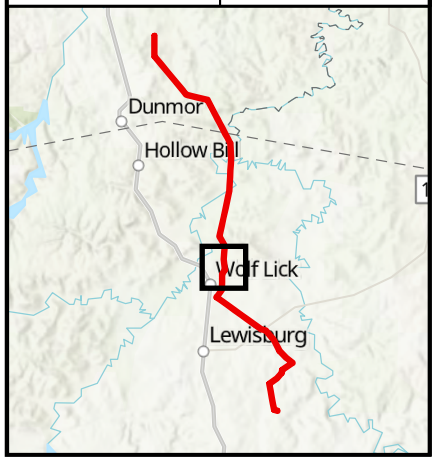

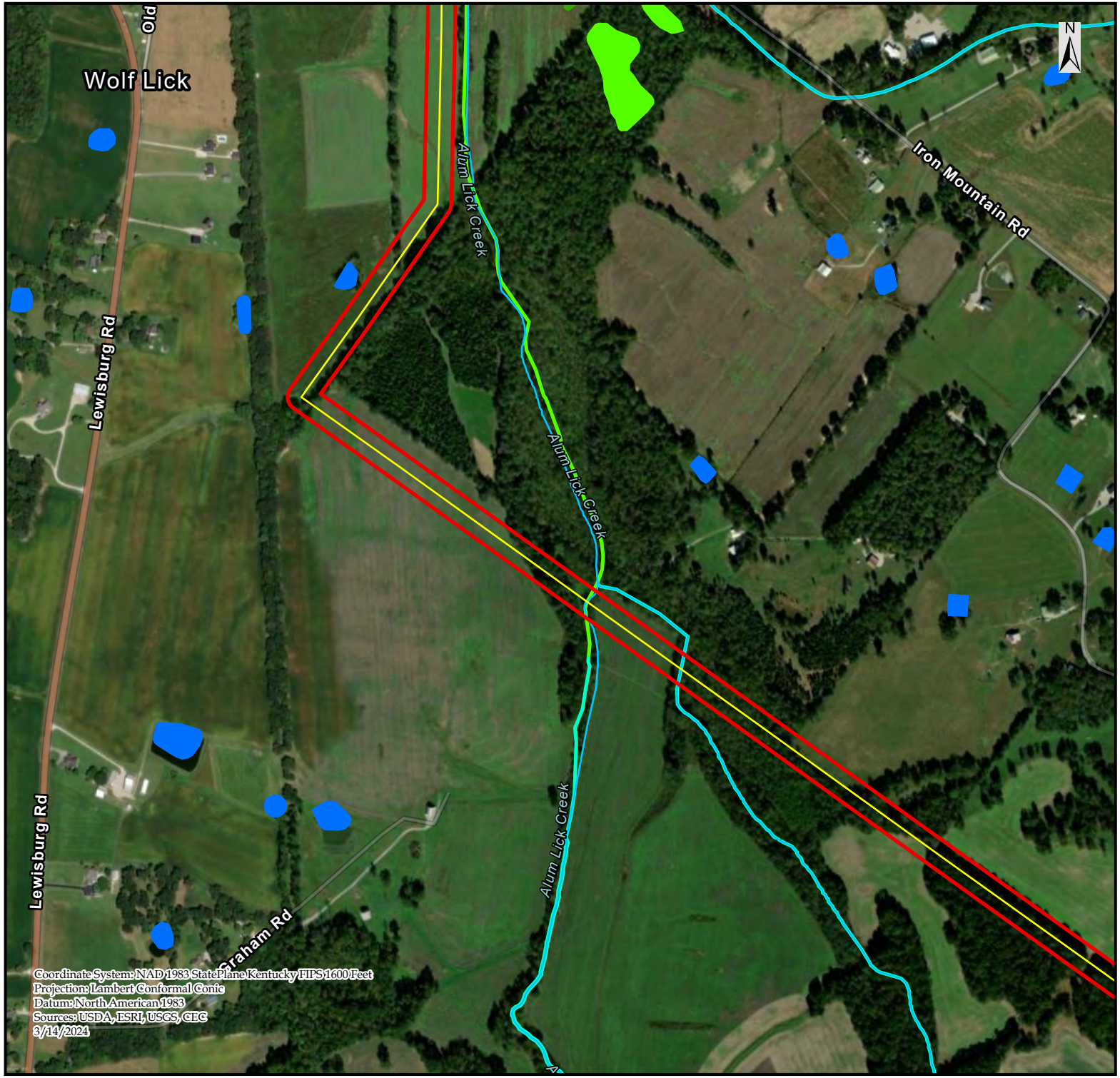

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FIGURE 8.9:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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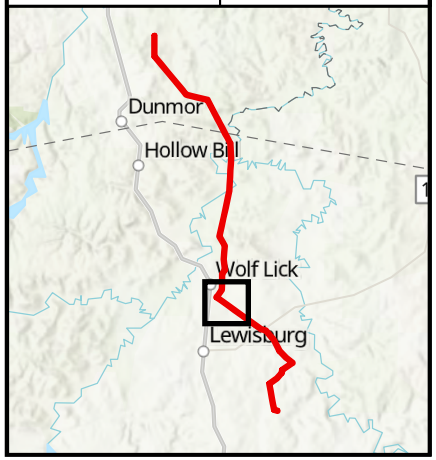

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FIGURE 8.10:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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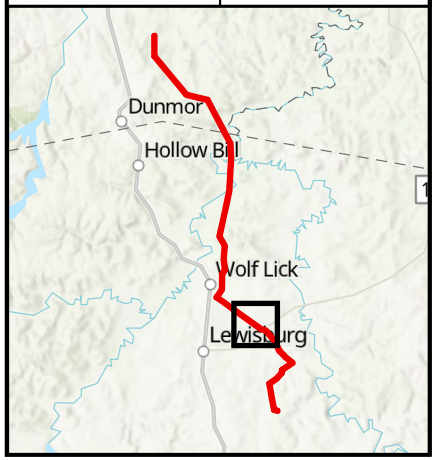

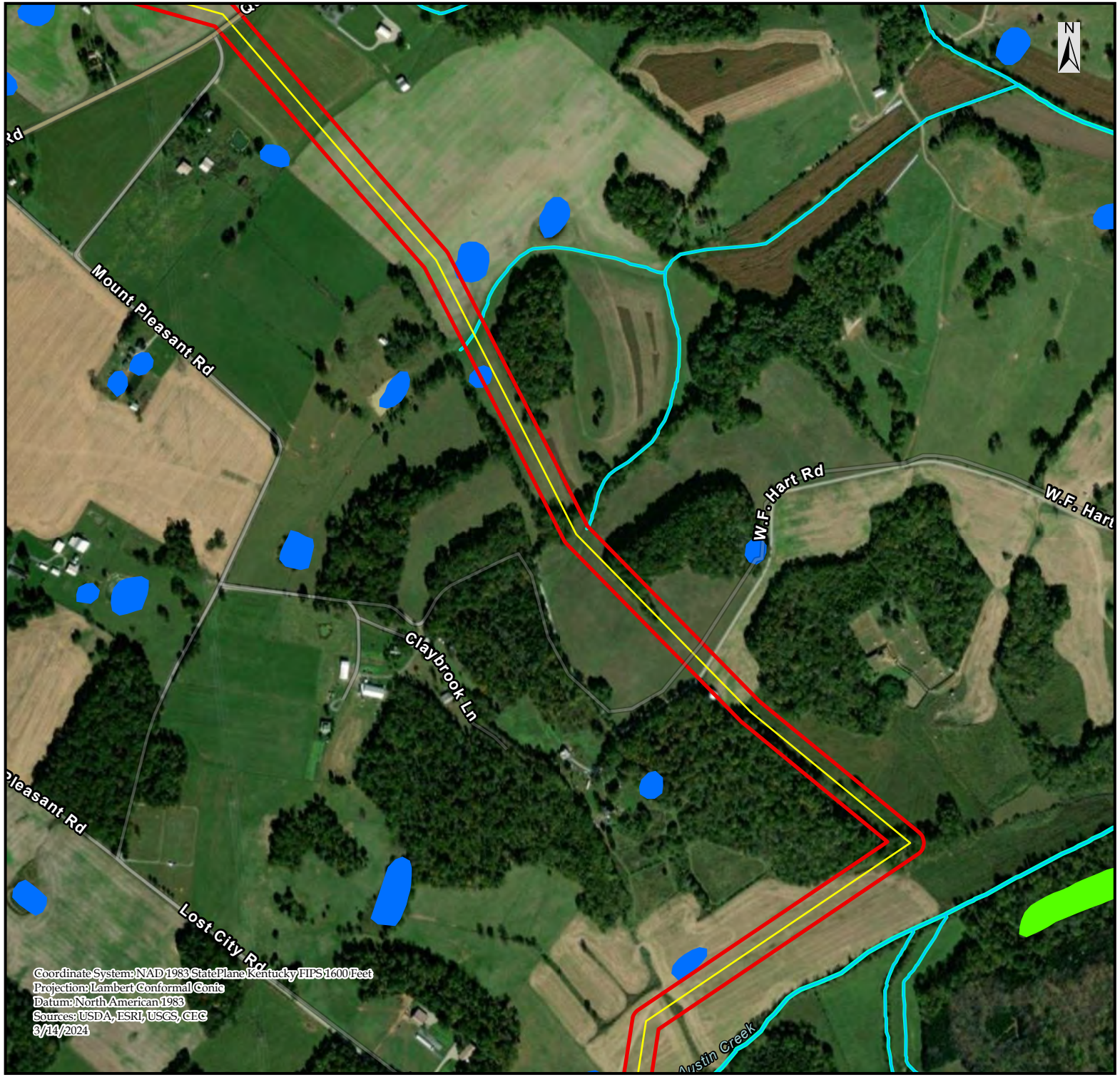

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FIGURE 8.11:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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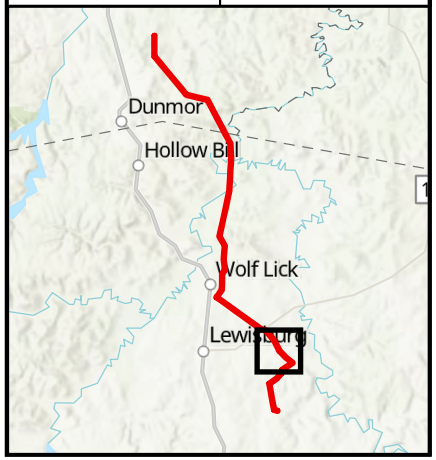

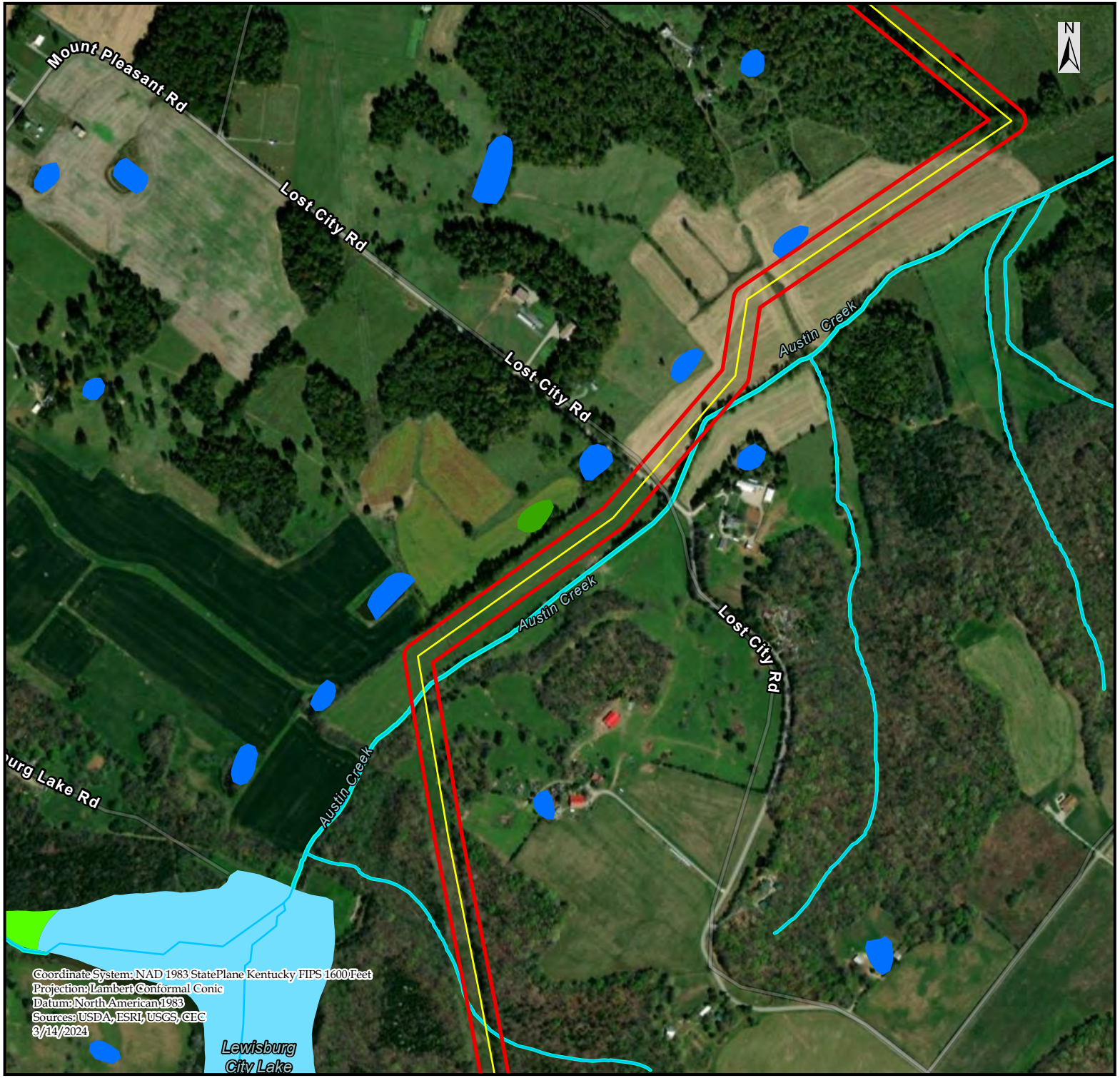

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FIGURE 8.12:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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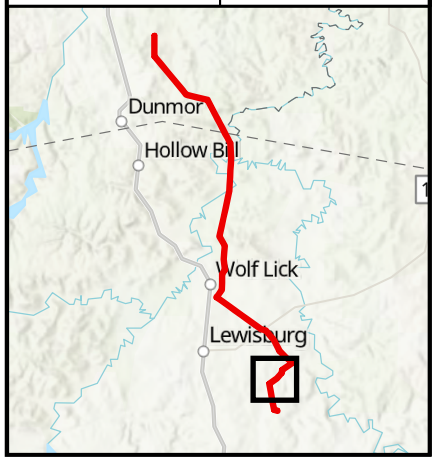

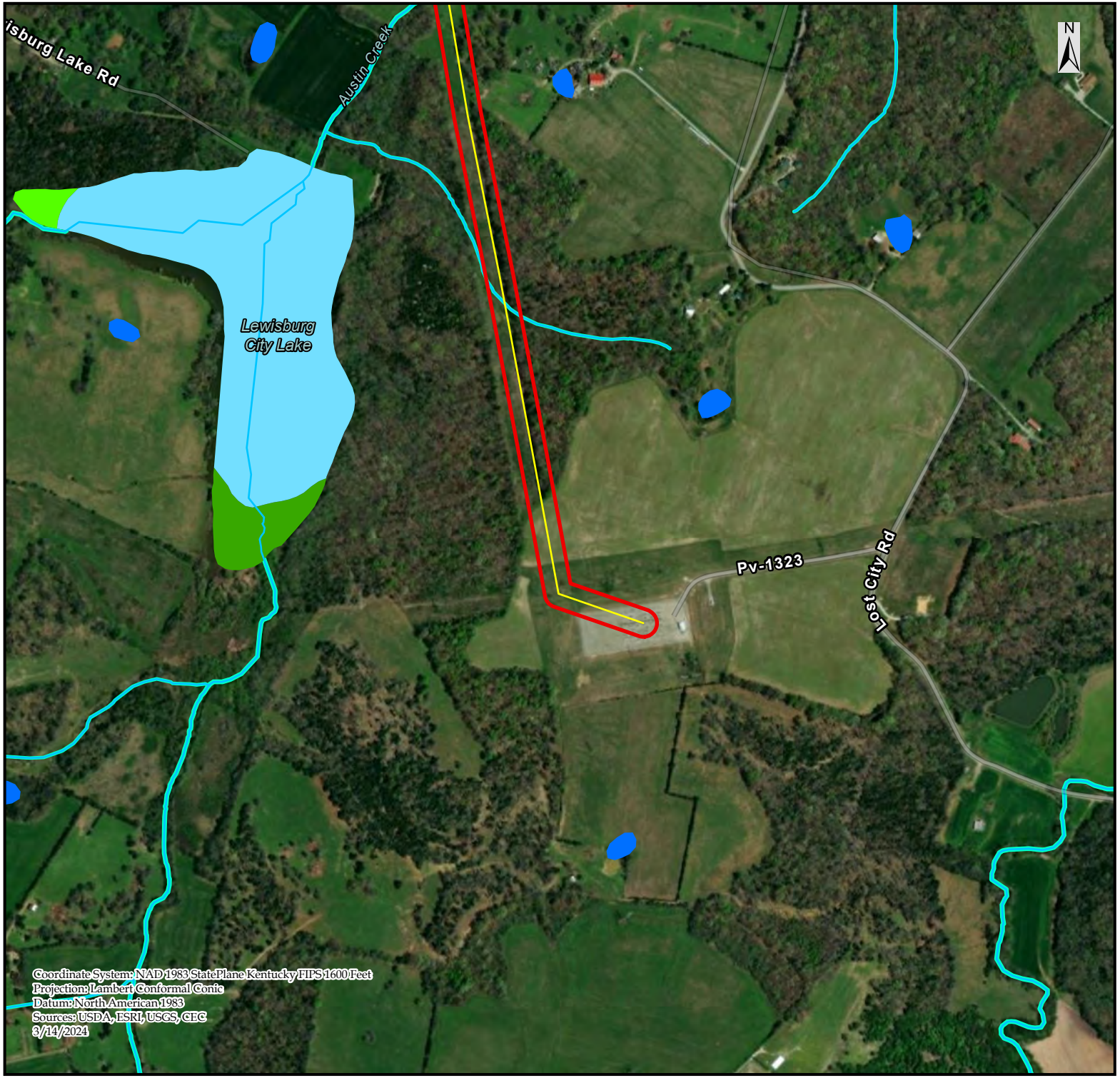

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FIGURE 8.13:
PRELIMINARY
Existing Hydrology
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- NHD Waterway
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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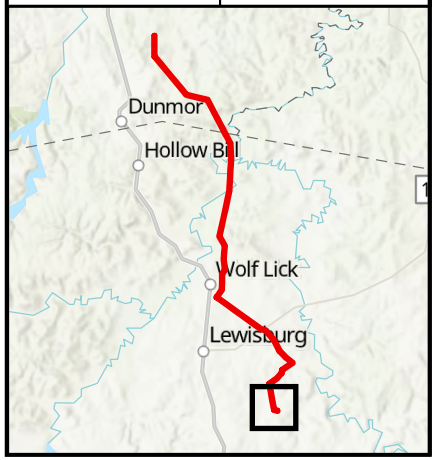

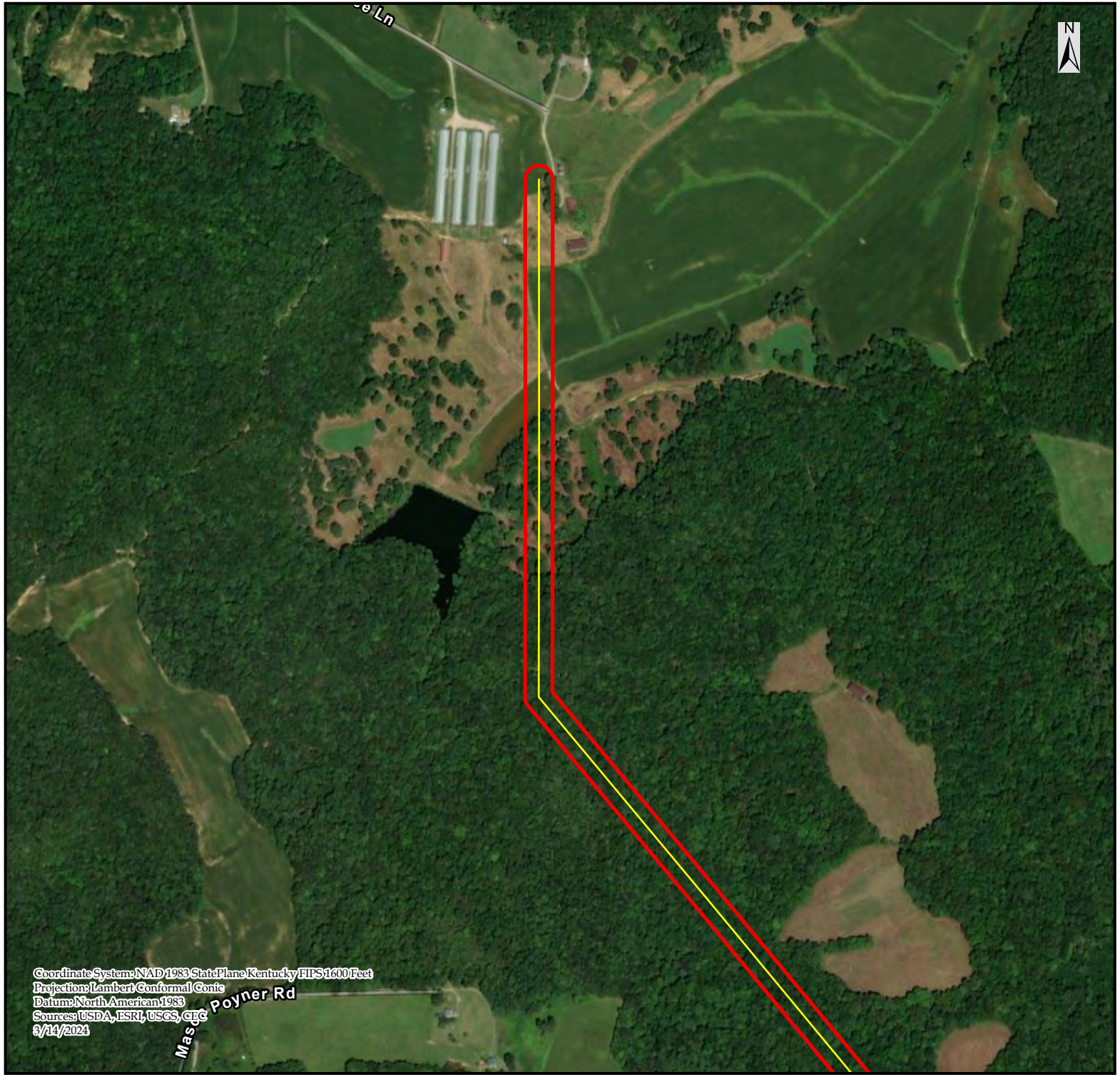

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FIGURE 9.1:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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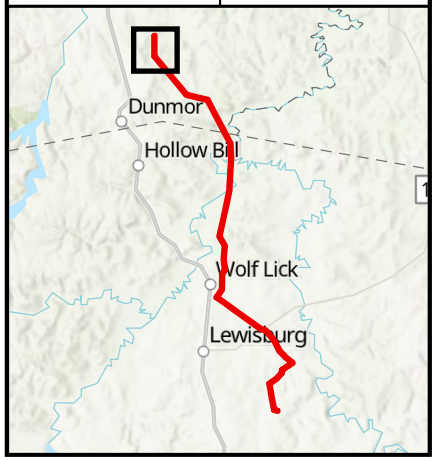

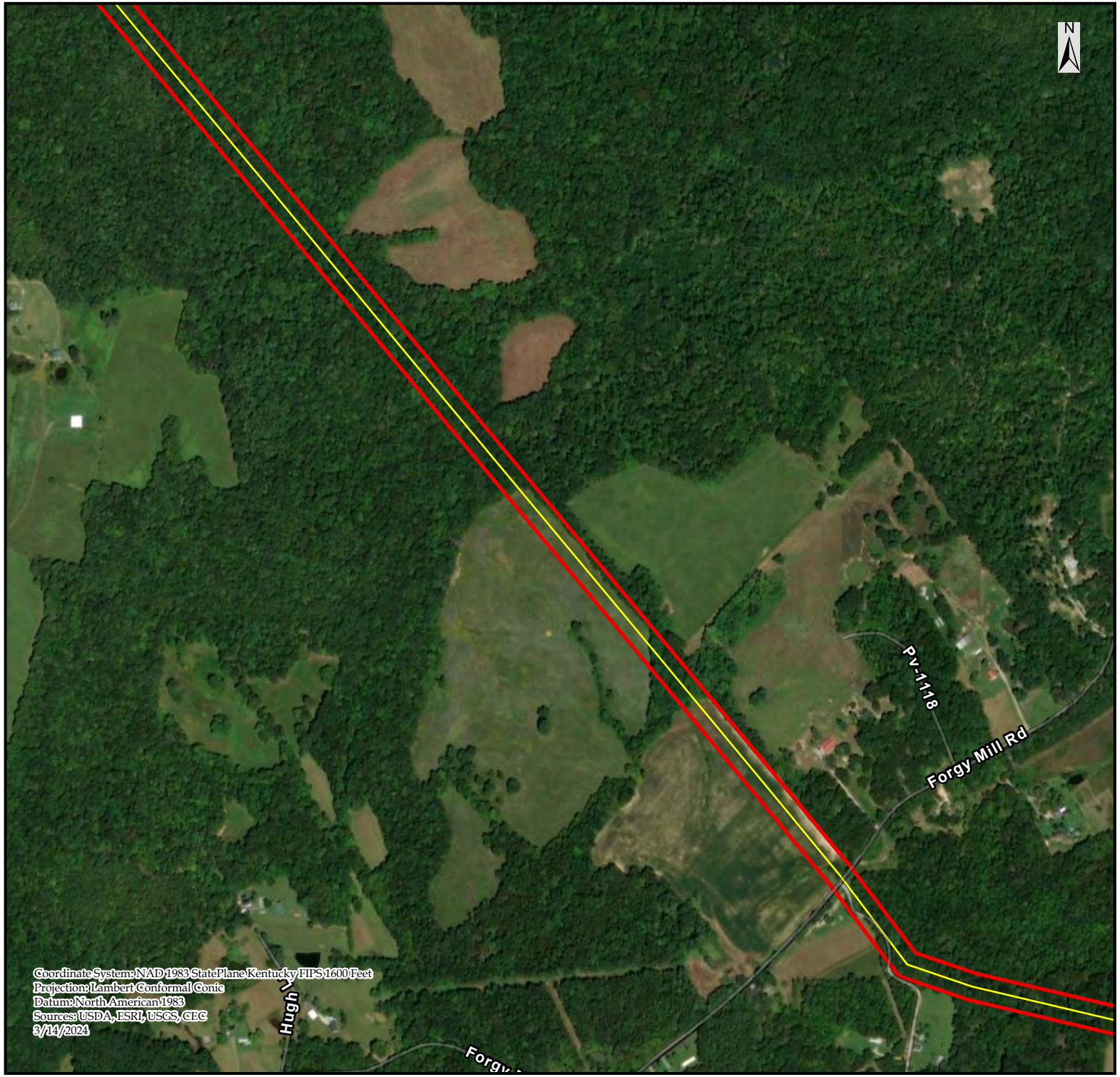

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FIGURE 9.2:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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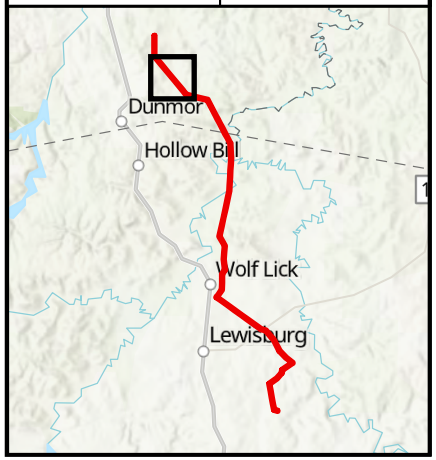

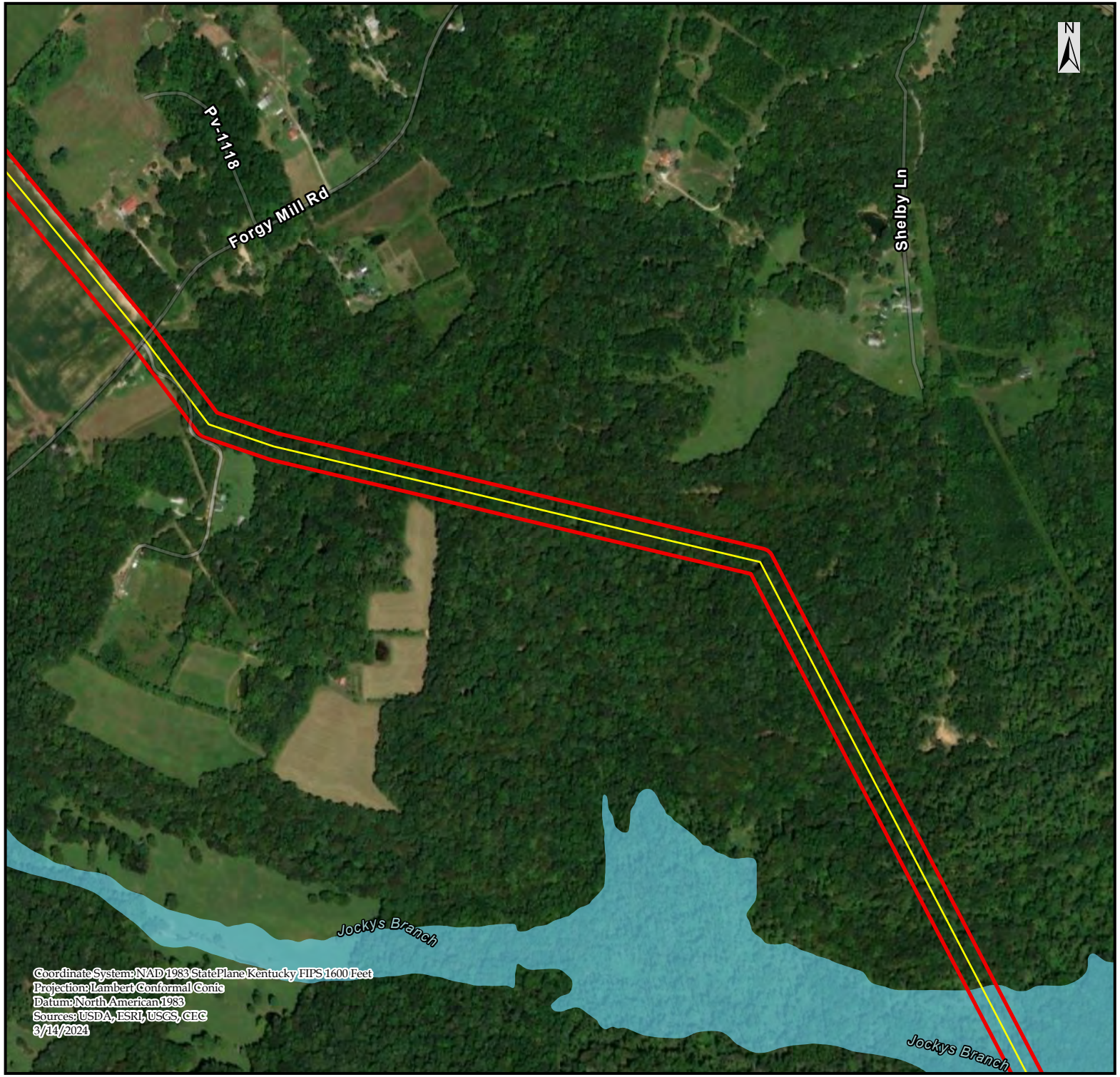

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FIGURE 9.3:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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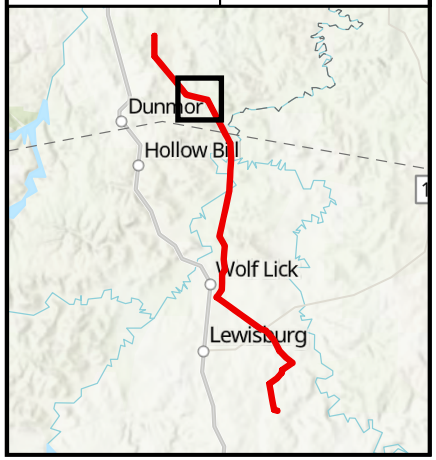

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FIGURE 9.4:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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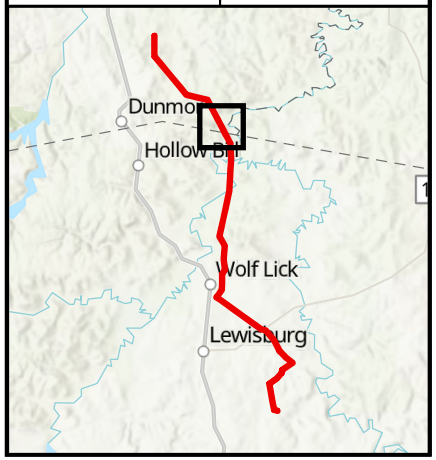

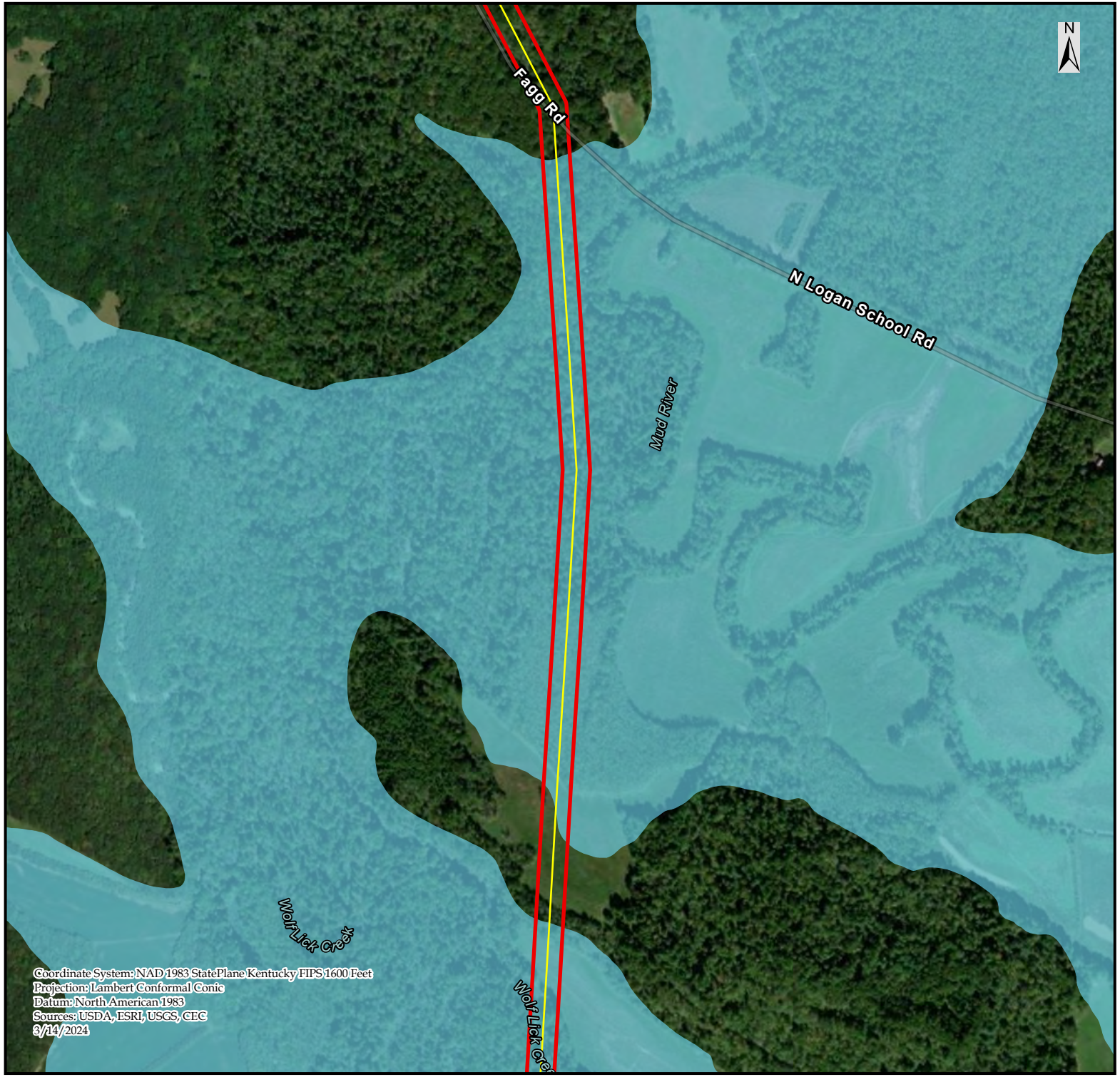

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FIGURE 9.5:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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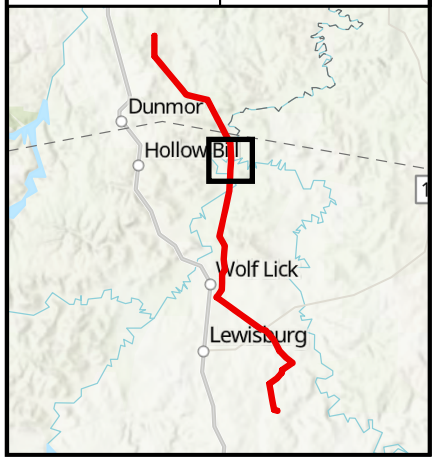

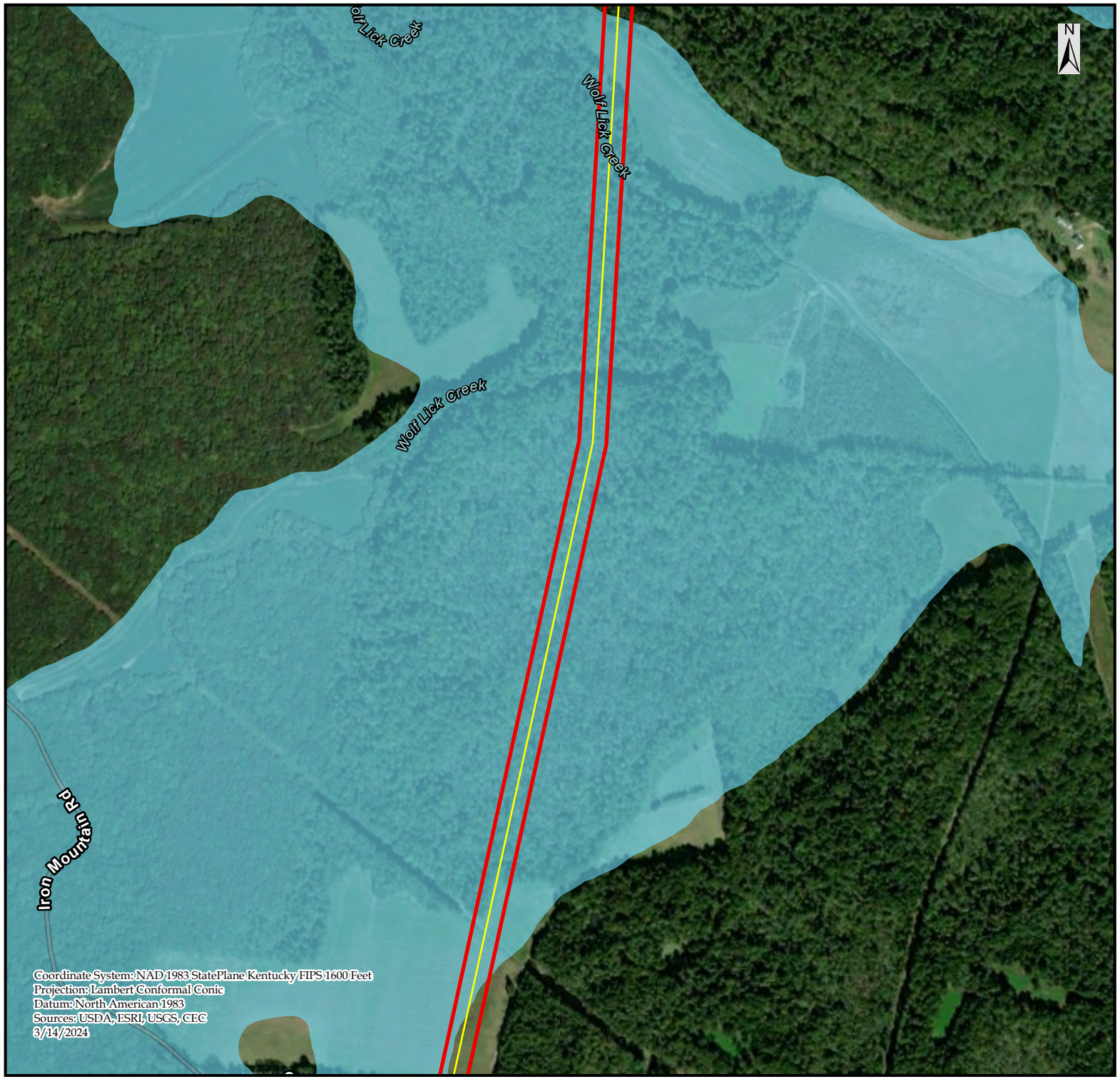

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FIGURE 9.6:
FEMA National Flood Hazard Layer for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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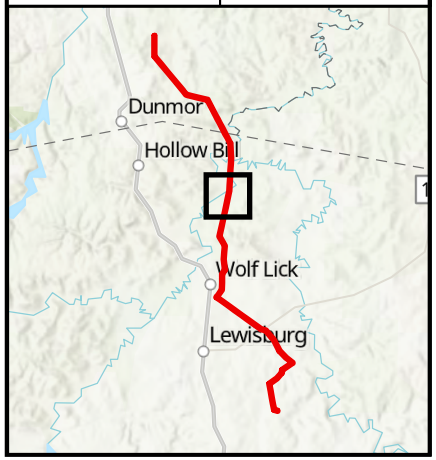

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FIGURE 9.7:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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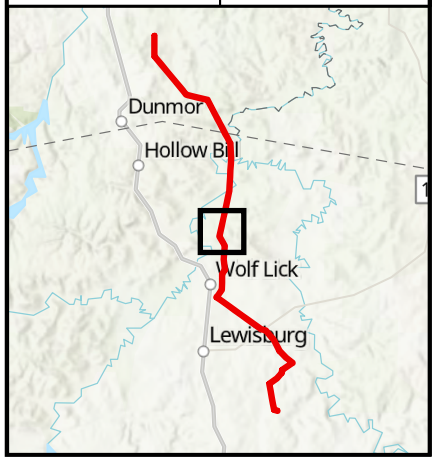

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FIGURE 9.8:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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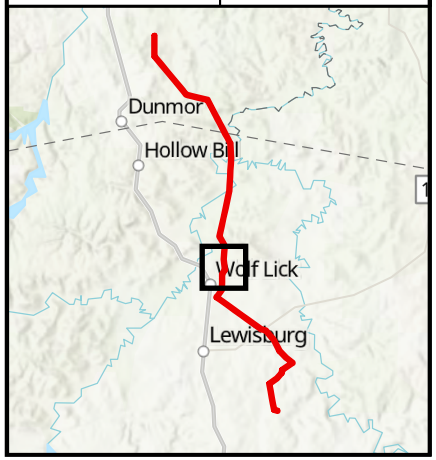

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FIGURE 9.9:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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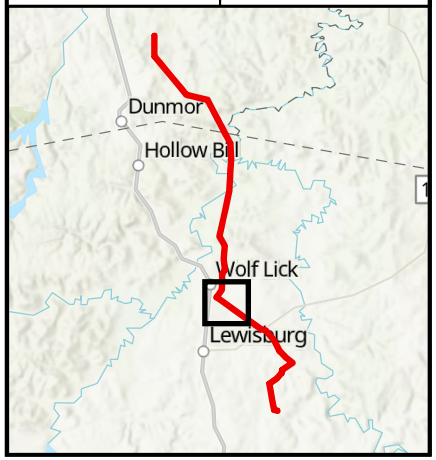

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FIGURE 9.10:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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Drawn by:	TC	Date:	3/14/2024
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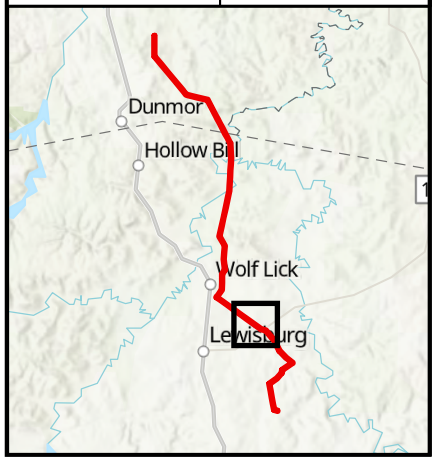

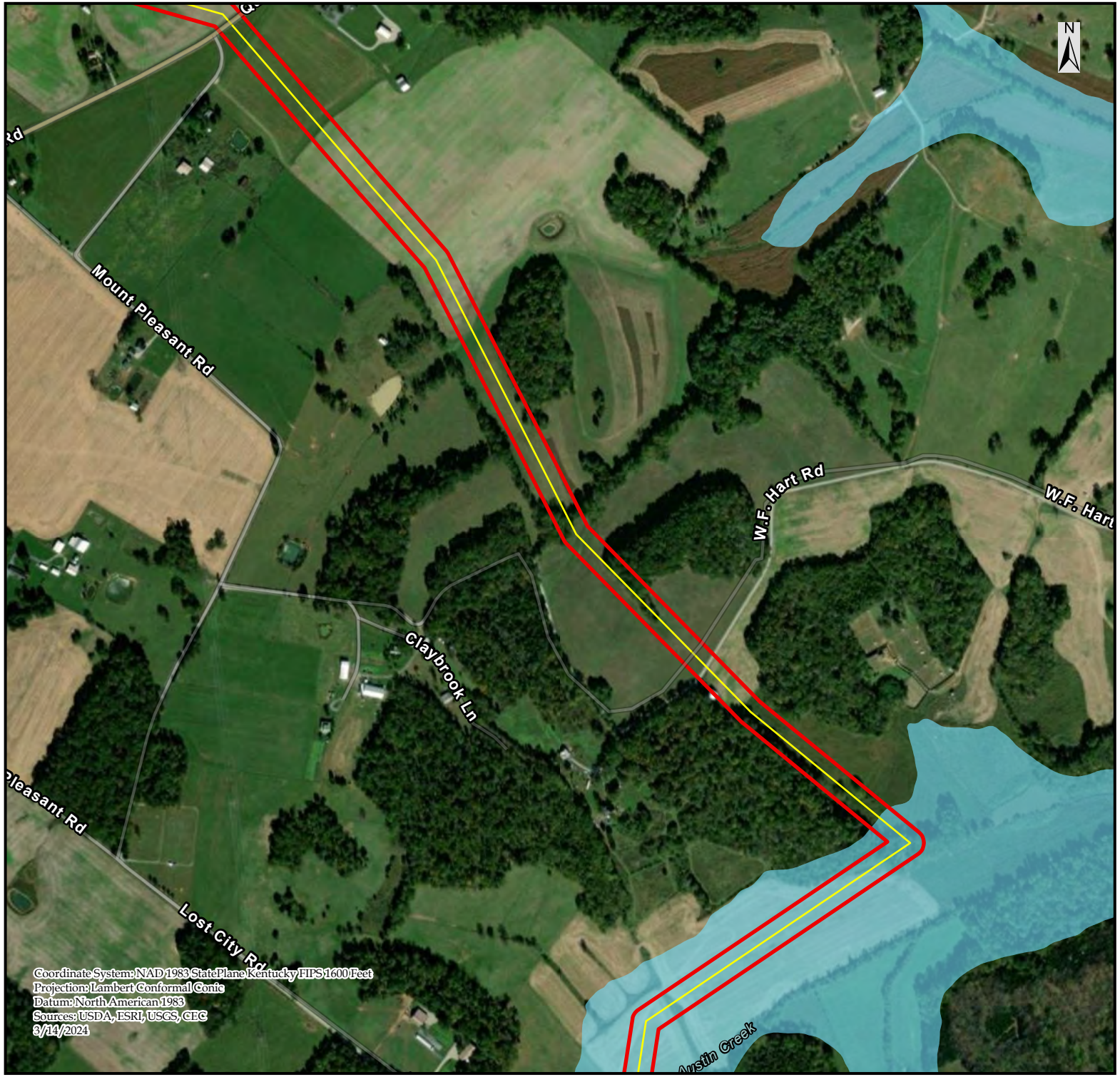

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FIGURE 9.11:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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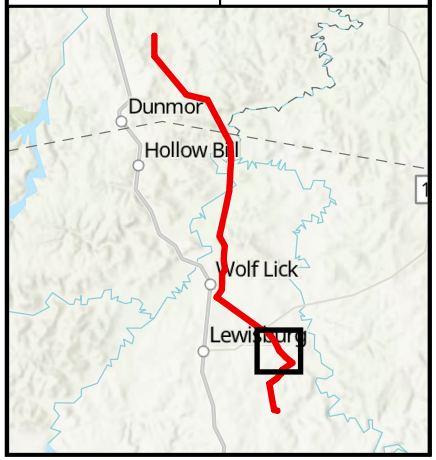

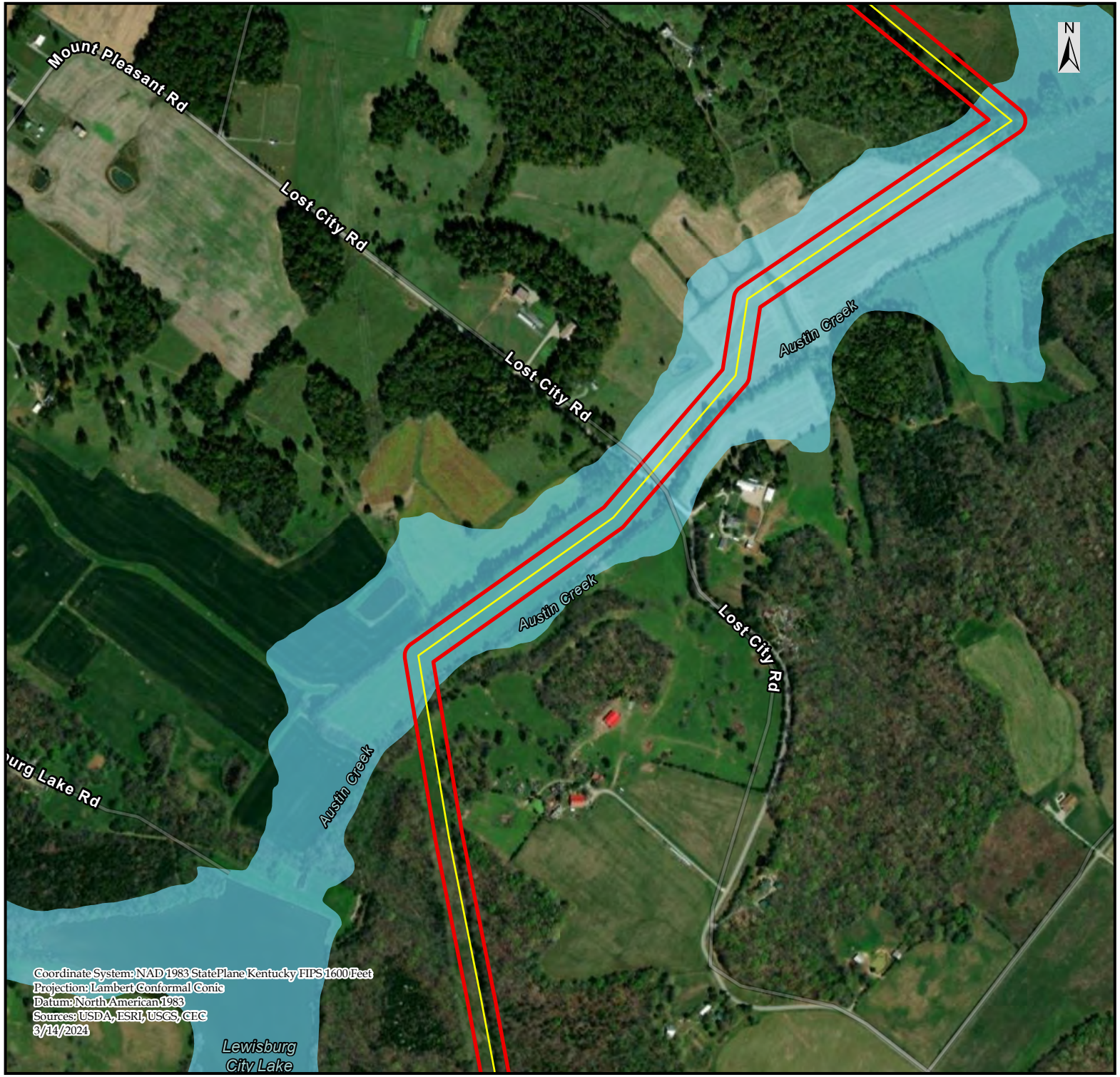

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FIGURE 9.12:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Project Area
- 1% Annual Chance Flood Hazard

0 375 750
US Feet

Scale: 1 in = 750 ft

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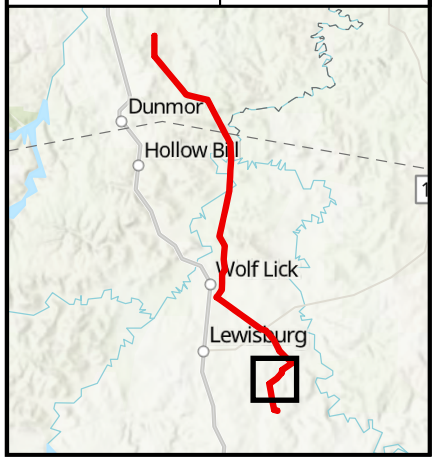

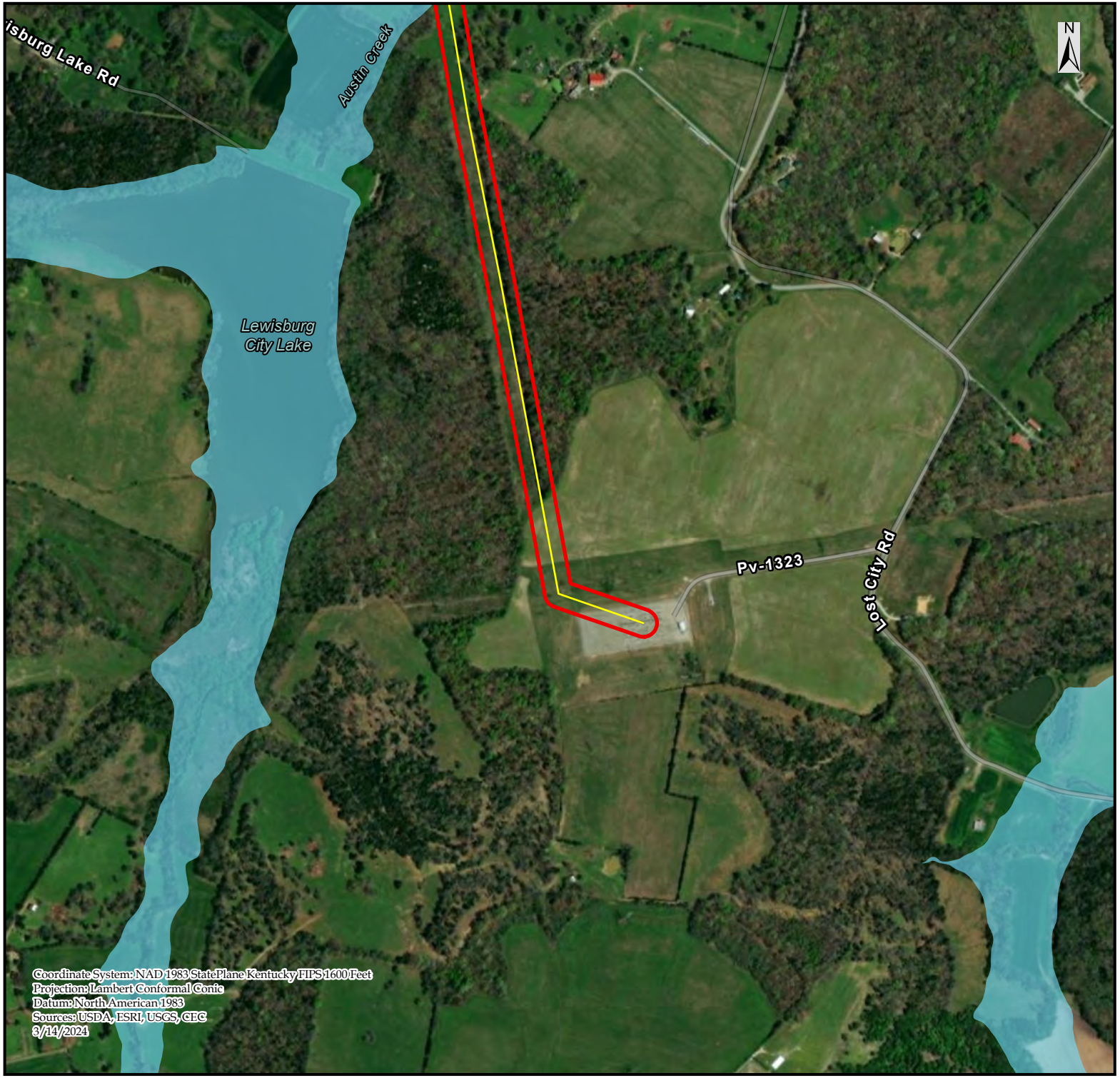

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FIGURE 9.13:
PRELIMINARY
FEMA National Flood Hazard
Layer for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

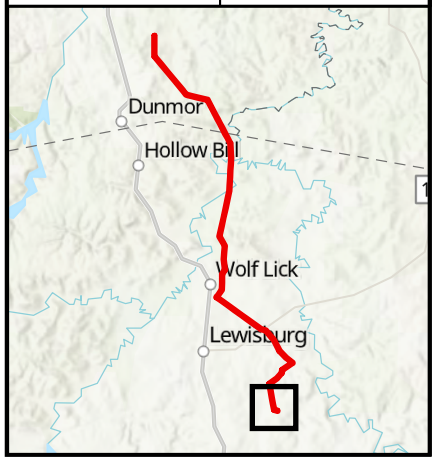
- Project Area
- 1% Annual Chance Flood Hazard

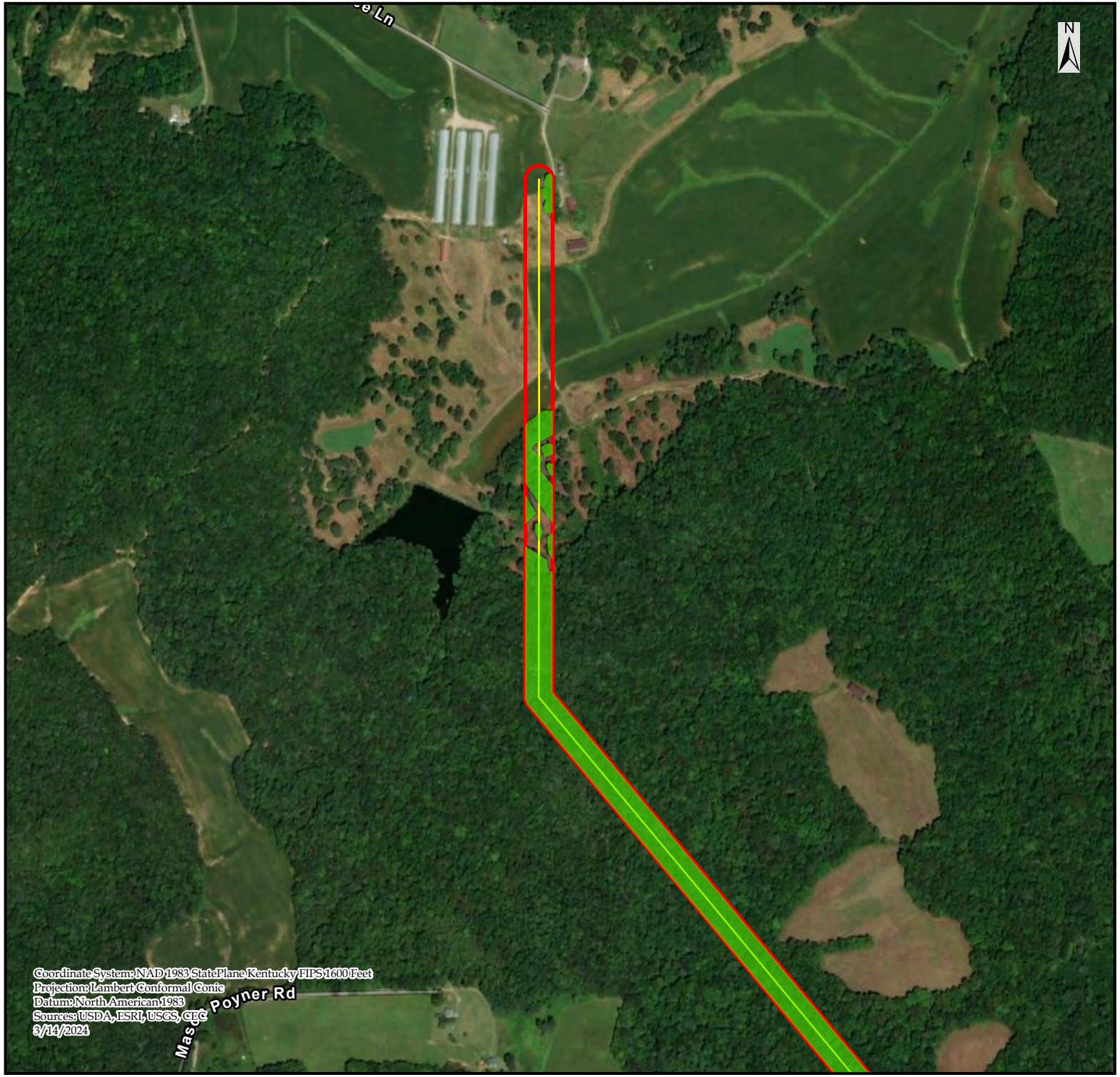
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.1:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

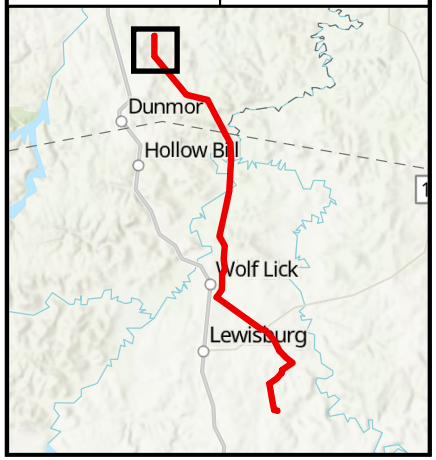
- Potential Bat Habitat
- Project Area

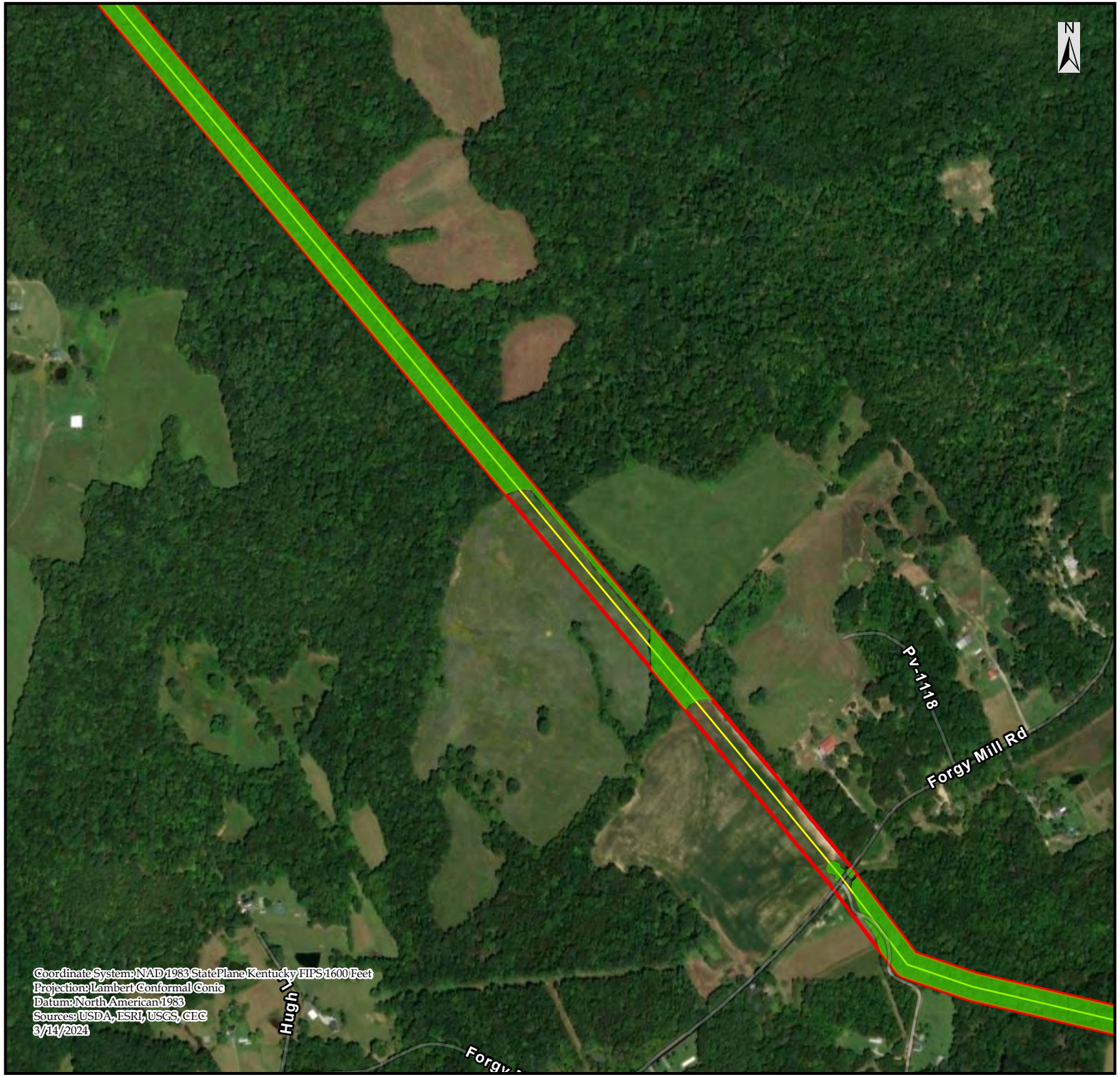
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 10.2:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

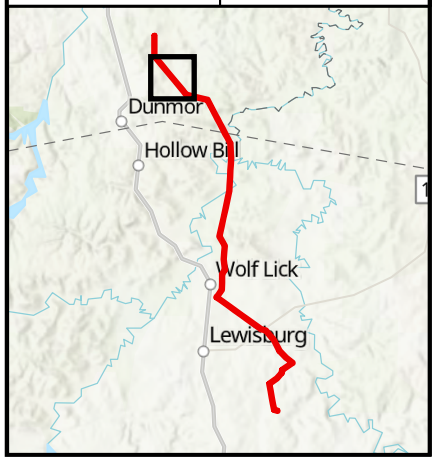
- Potential Bat Habitat
- Project Area

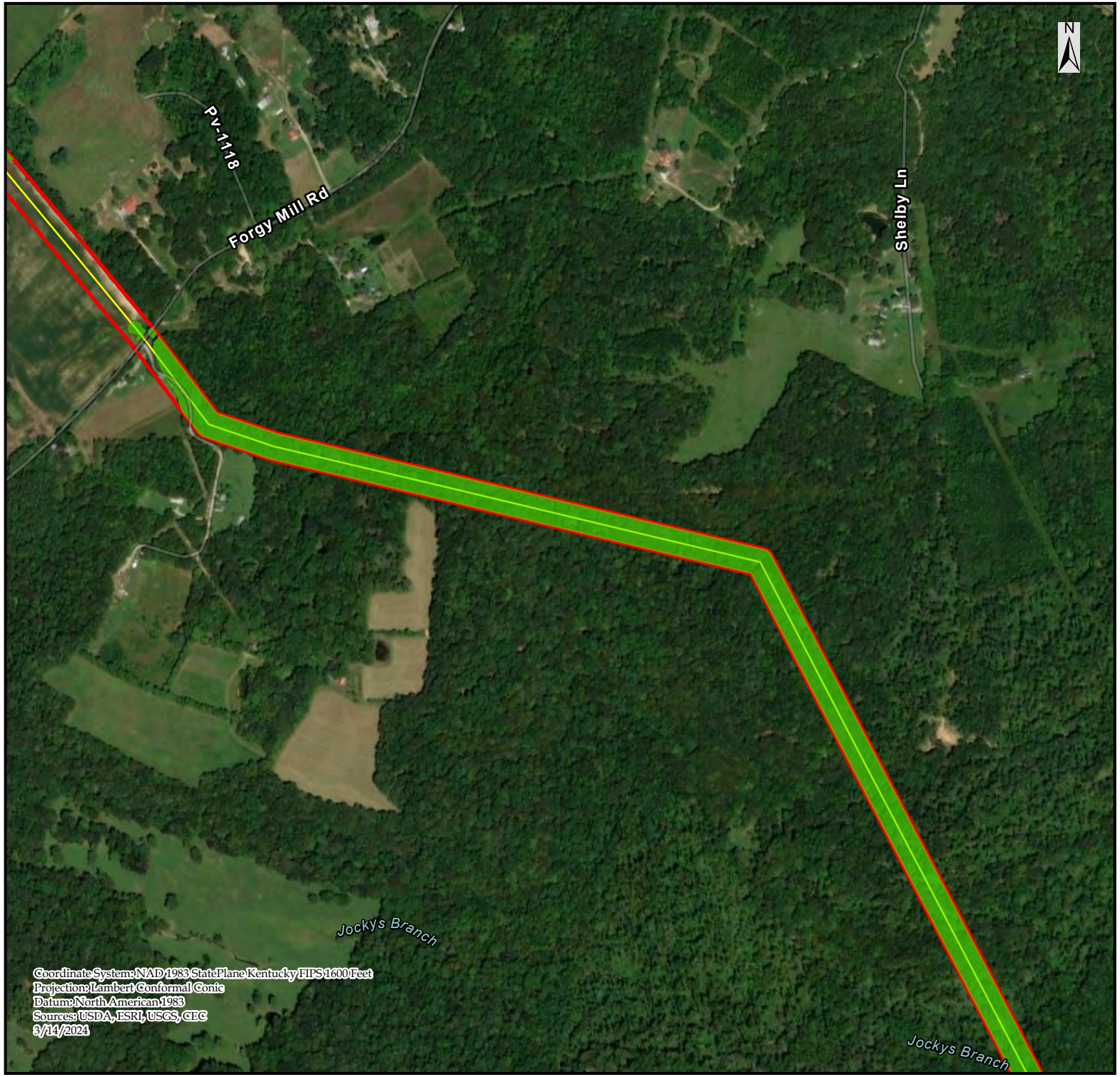
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.3:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

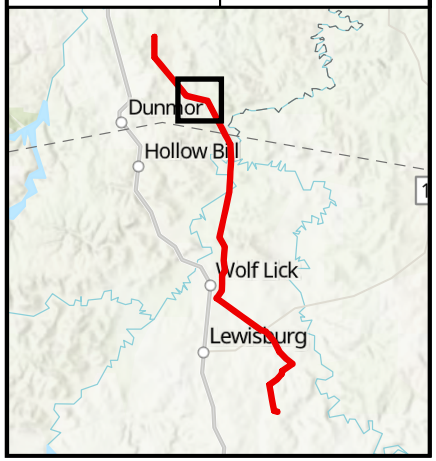
- Potential Bat Habitat
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



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Prepared for:

Lost City Renewables LLC

FIGURE 10.4:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

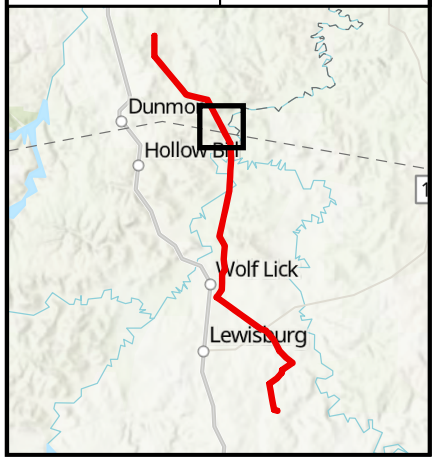
- Potential Bat Habitat
- Project Area

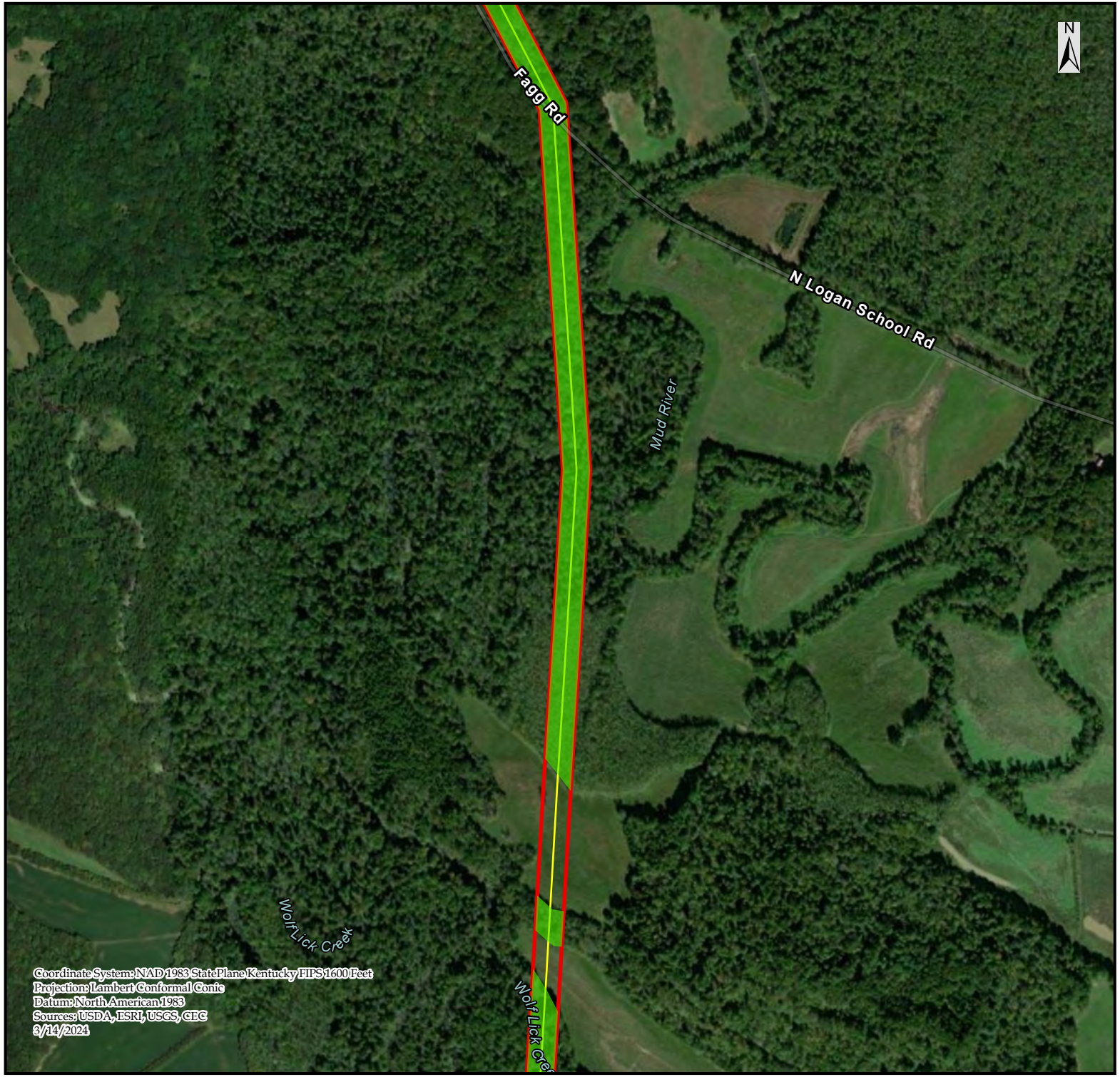
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.5:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

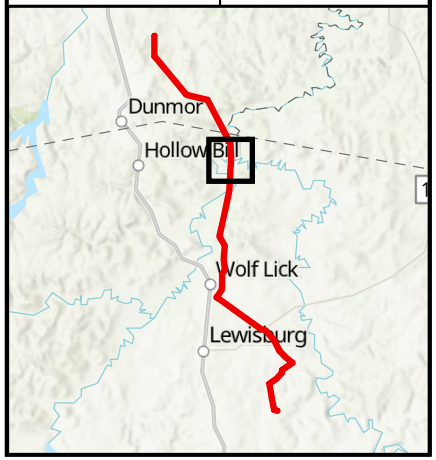
- Potential Bat Habitat
- Project Area

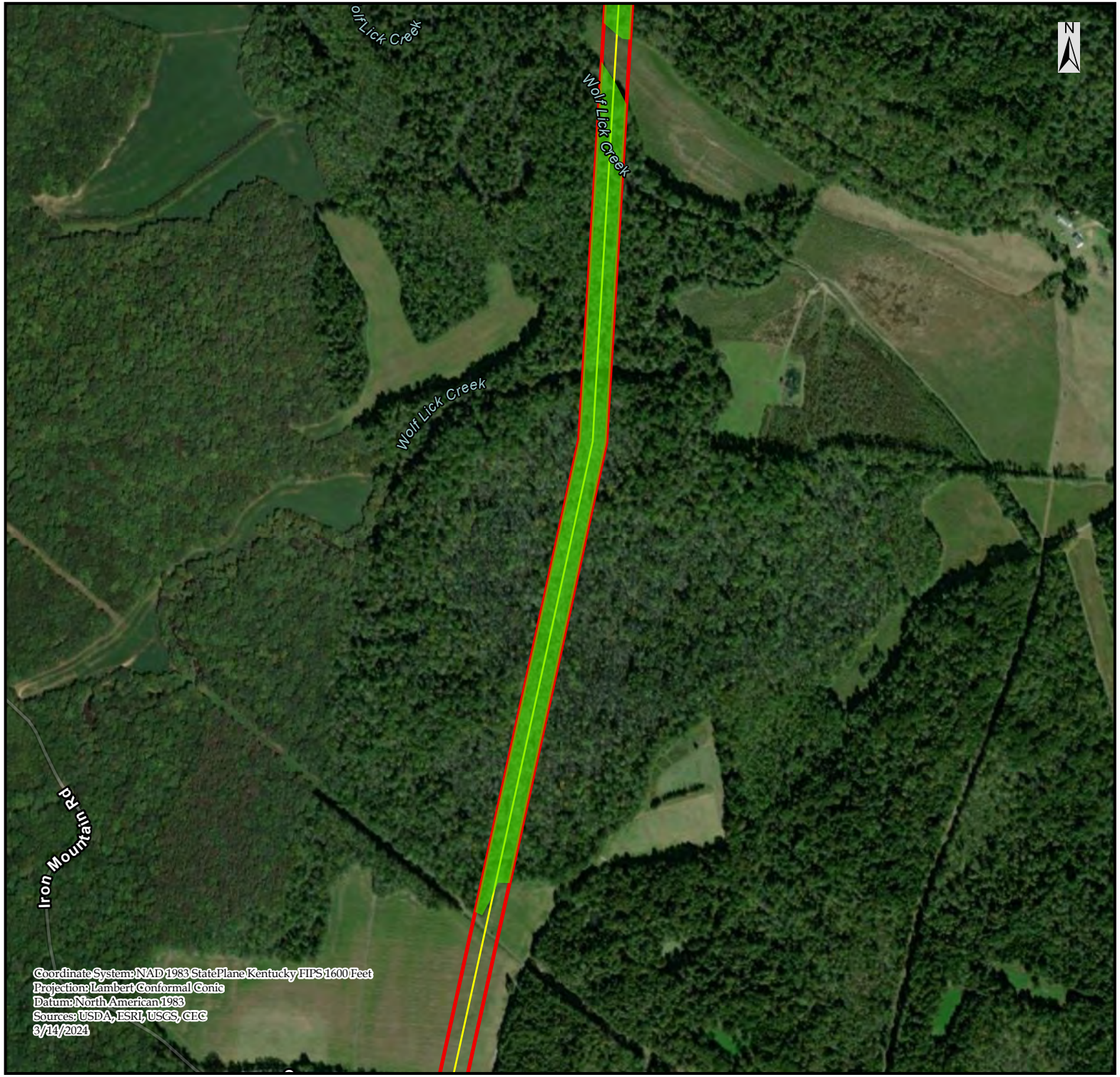
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.6:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

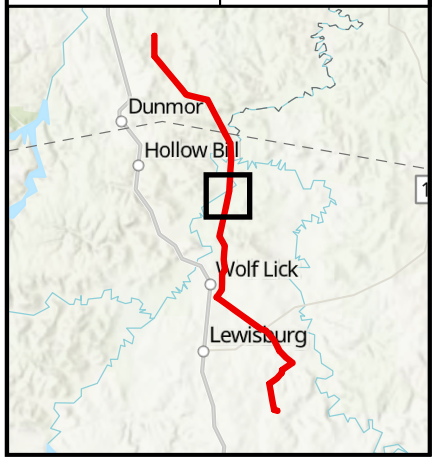
- Potential Bat Habitat
- Project Area

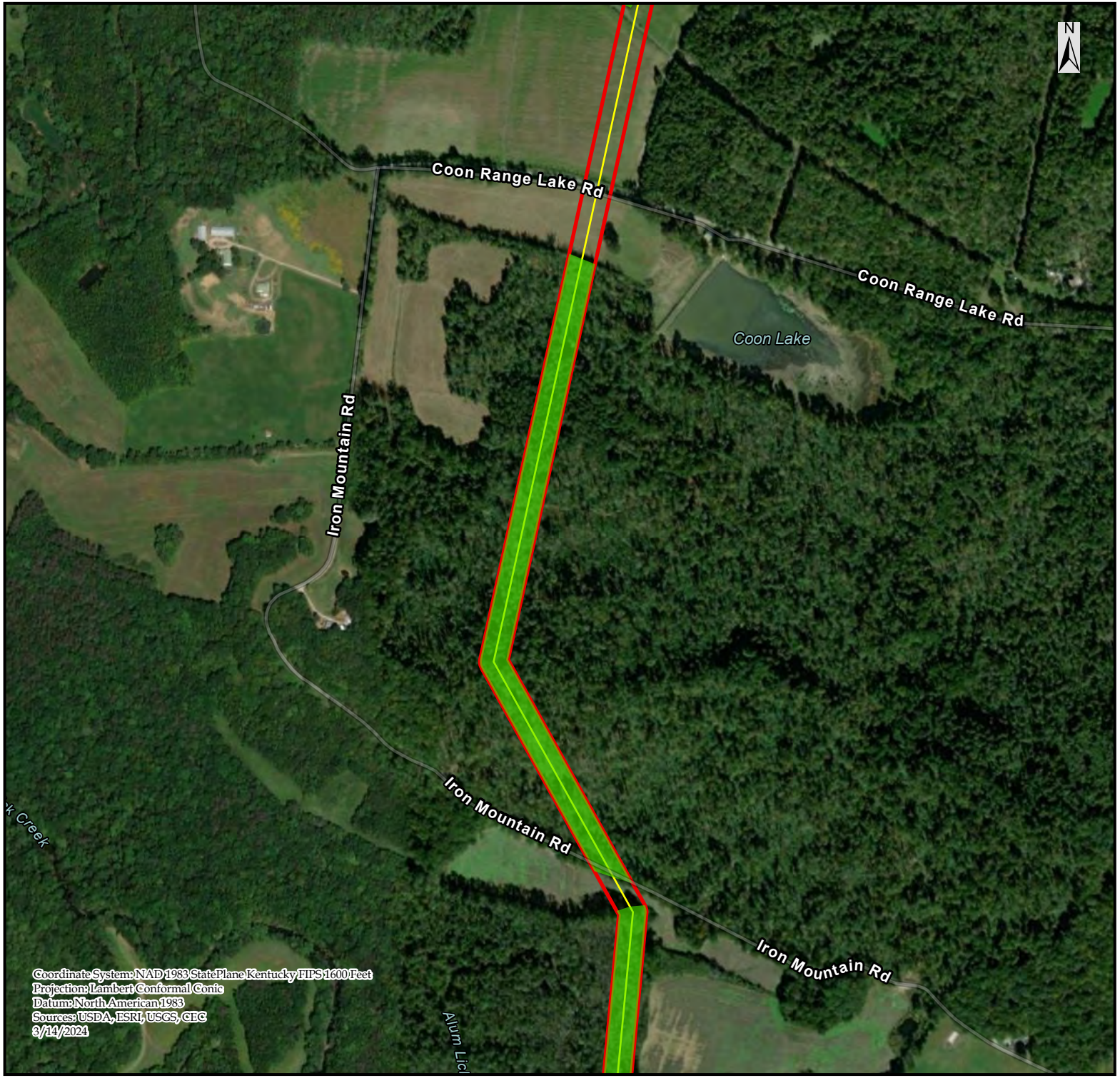
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.7:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

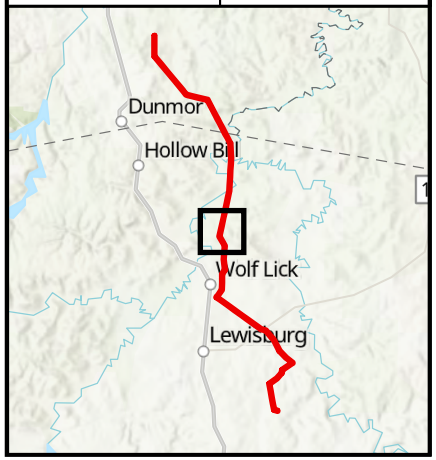
- Potential Bat Habitat
- Project Area

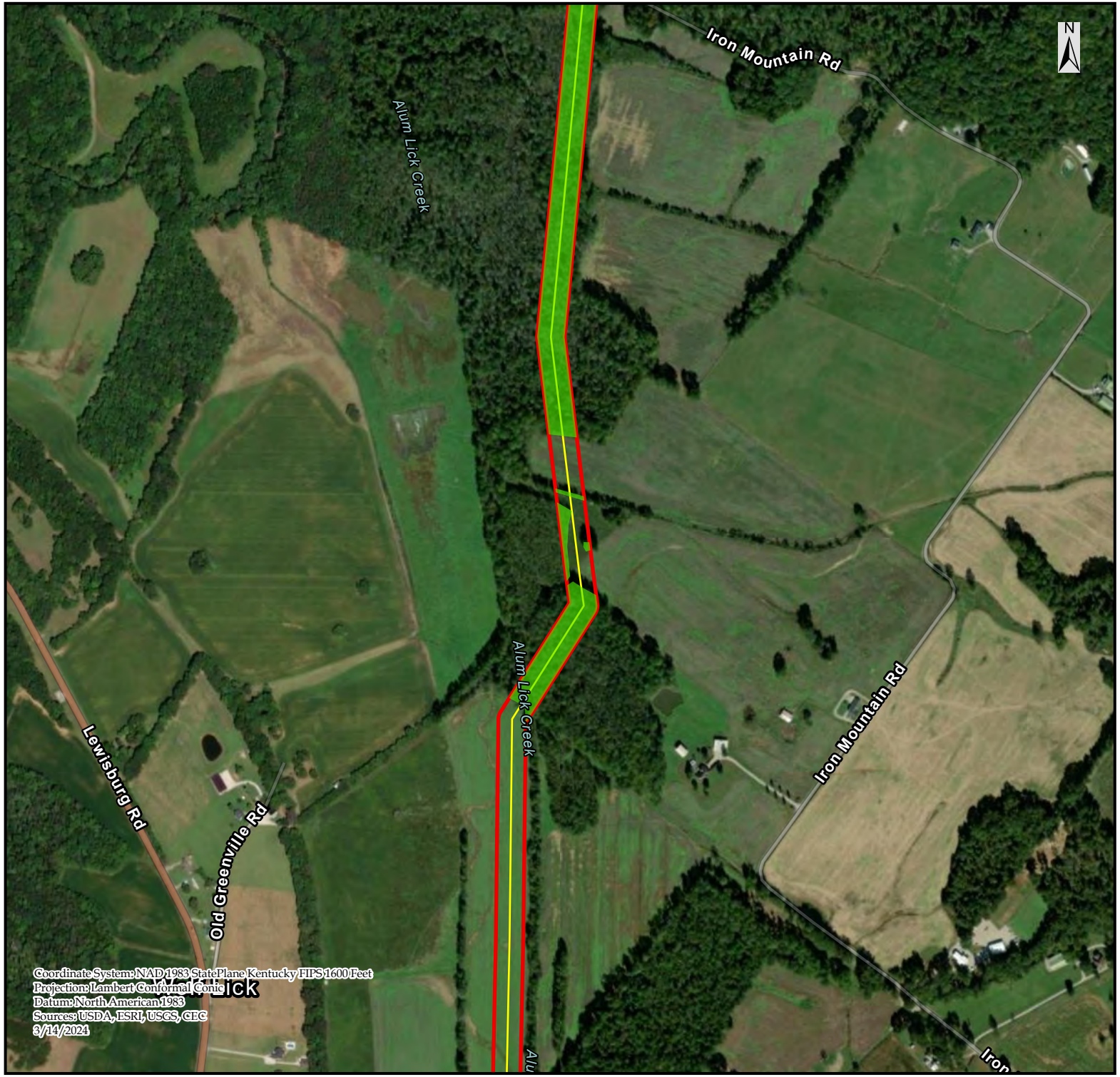
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 10.8:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

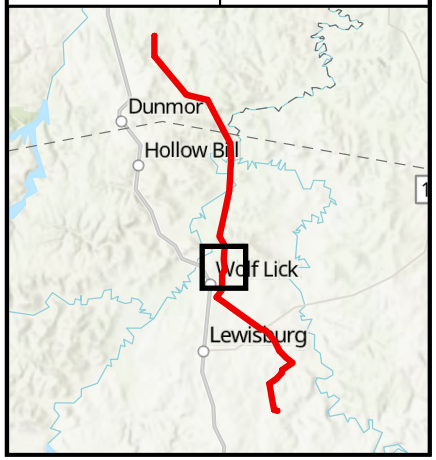
- Potential Bat Habitat
- Project Area

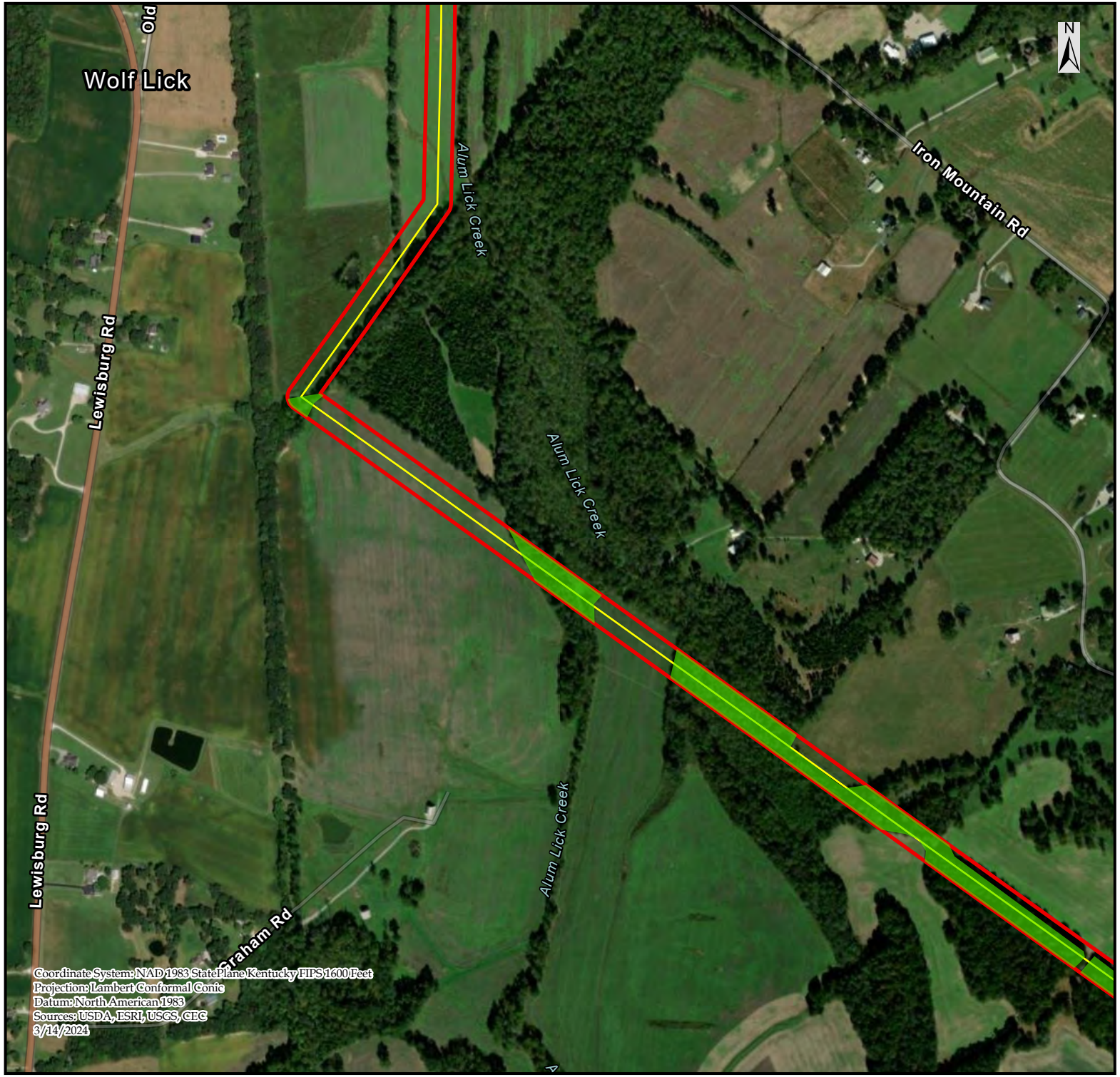
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.9:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

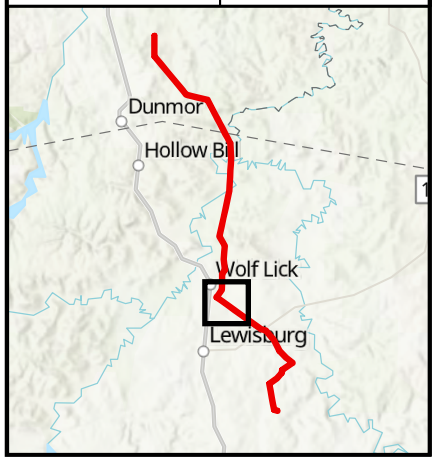
- Potential Bat Habitat
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01



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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.10:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

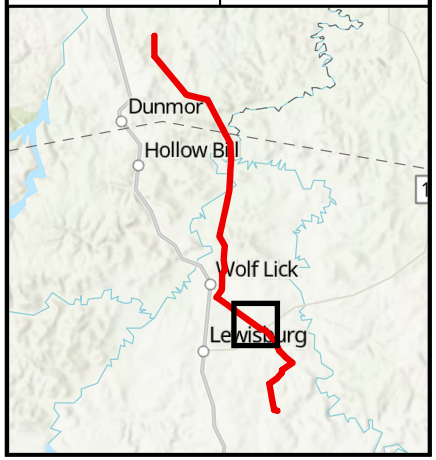
- Potential Bat Habitat
- Project Area

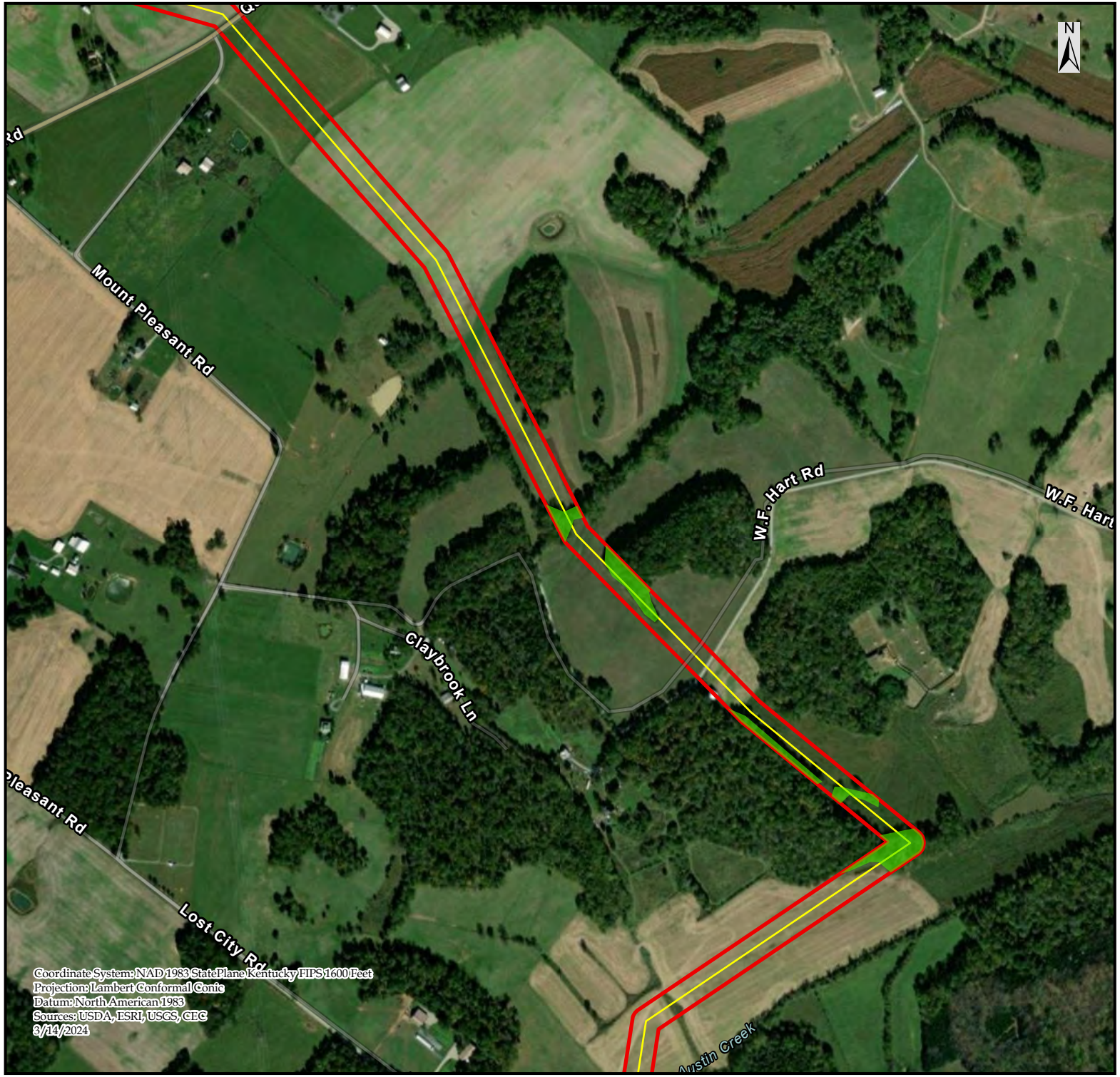
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.11:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

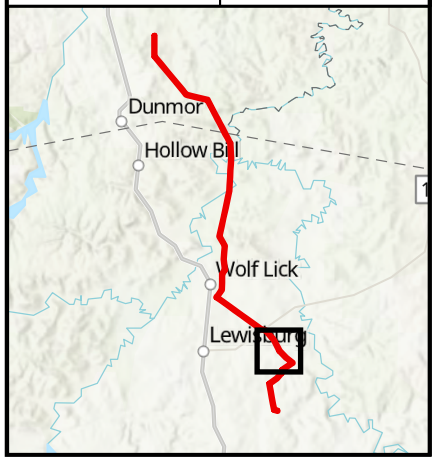
- Potential Bat Habitat
- Project Area

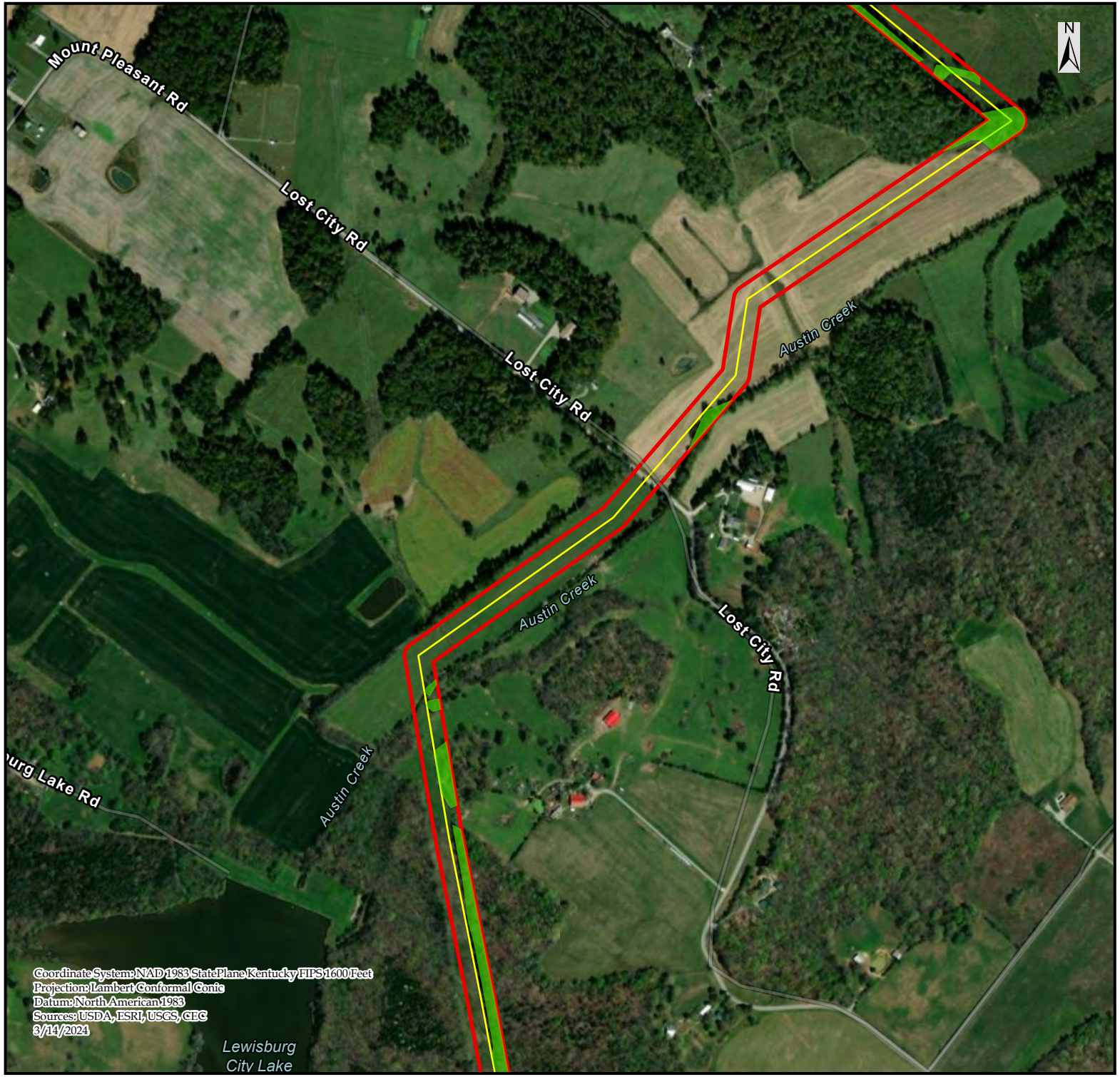
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 10.12:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

- Potential Bat Habitat
- Project Area

0 375 750
US Feet

Scale: 1 in = 750 ft

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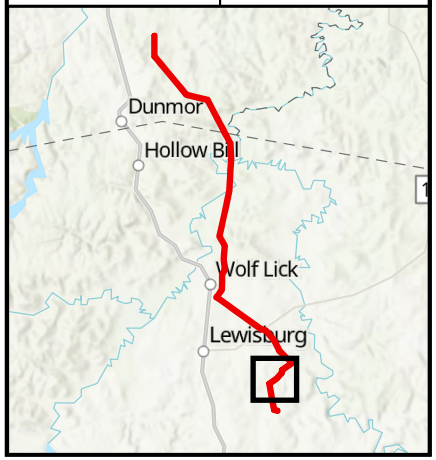
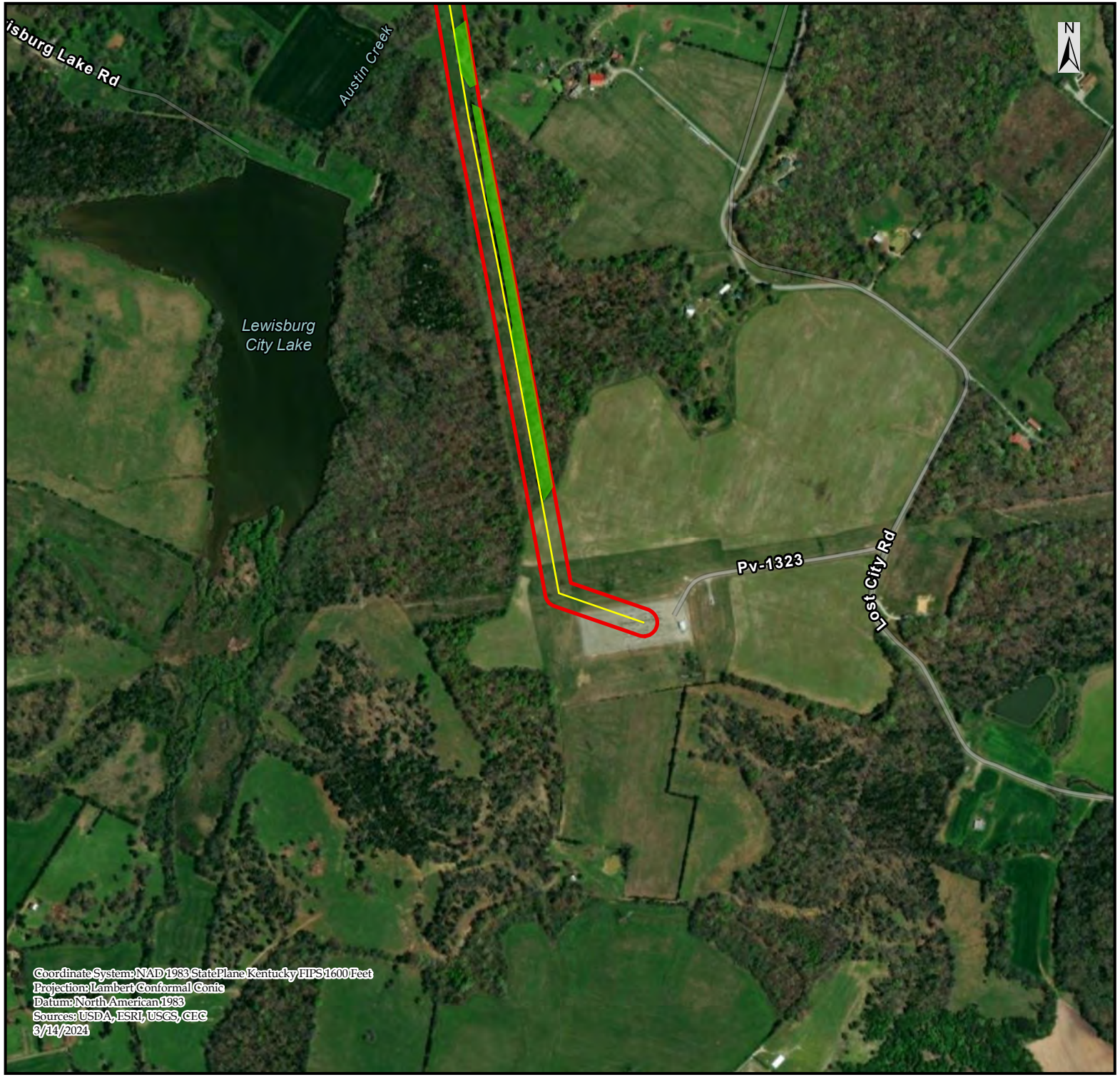
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 10.13:
PRELIMINARY
Potential Bat Habitat
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky

Legend

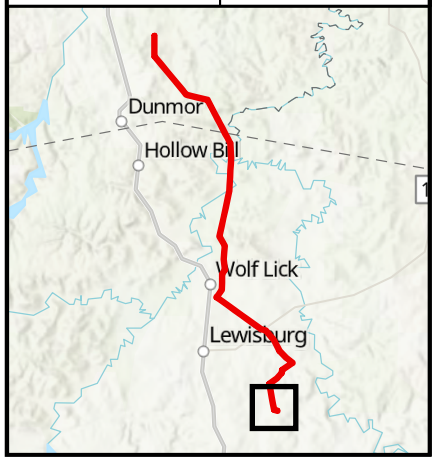
- Potential Bat Habitat
- Project Area

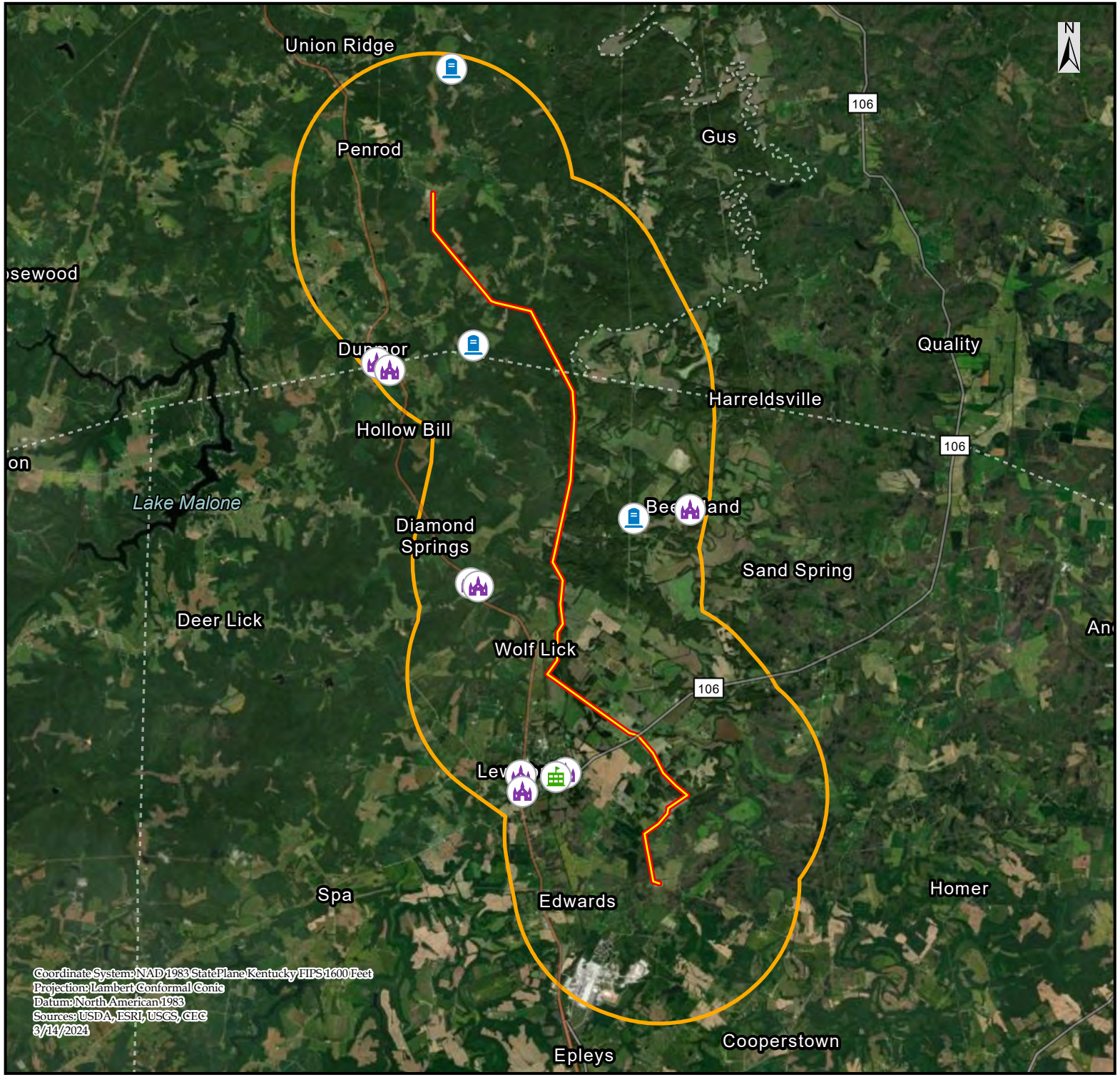
0 375 750
US Feet

Scale: 1 in = 750 ft

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MM	Revision:	01





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 11:
PRELIMINARY
Areas of Public Significance
for the Lost City Solar Project,
Logan and Muhlenberg Counties, Kentucky.

Legend

- Cemetery
- Church
- School
- Proposed Transmission Line
- 2-mi Buffer
- Project Area

0 1 2
Miles

Scale: 1 in = 2 mi

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

Drawn by:	TC	Date:	3/14/2024
Checked by:	MH	Revision:	01

APPENDIX A:

Federal Aviation Administration (FAA) Notice Criteria Tool Results

Federal Aviation Administration

« OE/AAA

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

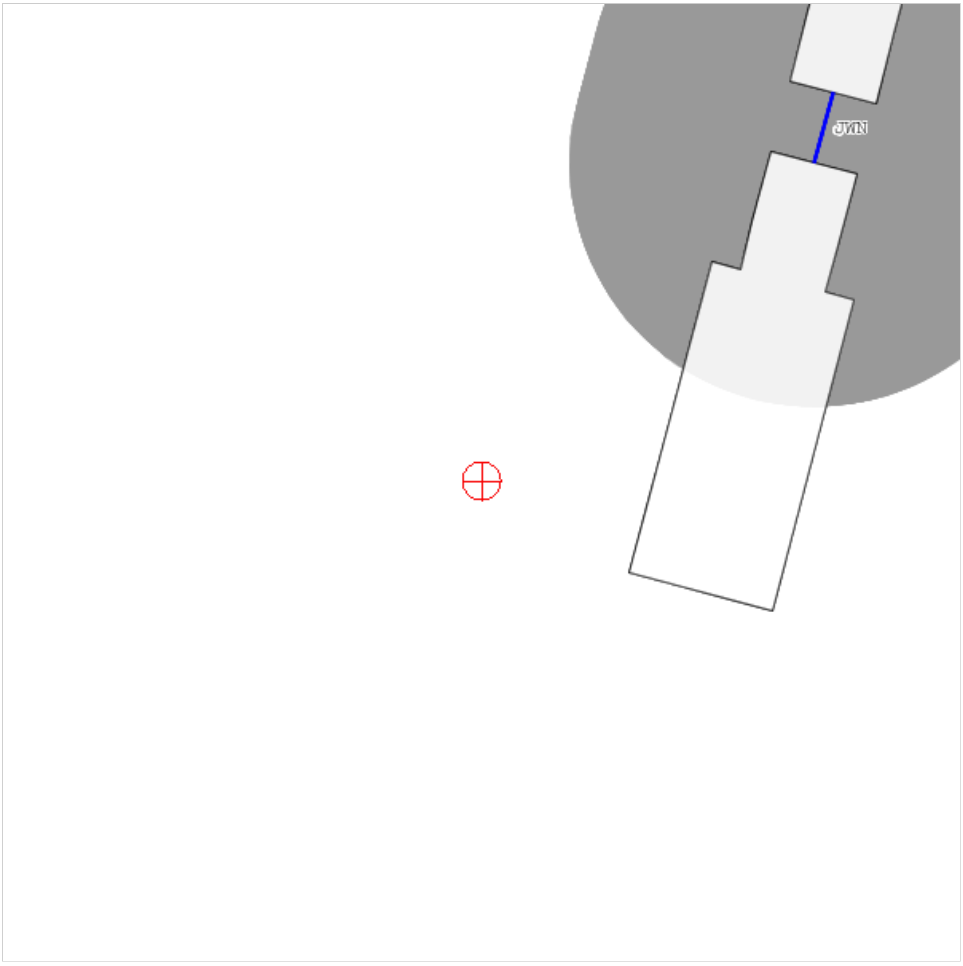
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	36 Deg 06 M 10.84 S N
Longitude:	86 Deg 58 M 53.67 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	467 (nearest foot)
Structure Height :	15 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.


JVN

APPENDIX B:

IPaC Official Species List - Project Code: 2024-0063692

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: 03/25/2024 15:29:02 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, intentional or unintentional, 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..

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. 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: Power Gen - Solar
Project Description: Transmission line for solar project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.034903099999994,-86.94741238887804,14z

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*	Candidate

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

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.

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Email	keshler@copperheadconsulting.com
Phone:	8599259012

Appendix E

EAGLE AND RAPTOR NEST SURVEY

Lost City Renewables LLC

Logan and Muhlenberg Counties, Kentucky

COPPERHEAD
ENVIRONMENTAL CONSULTING

2024 Eagle and Raptor Nest Survey Report
Lost City Solar Project
Logan & Muhlenberg Counties, KY

Malachia Evans and Gregg Janos
Copperhead Environmental Consulting Inc.
471 Main St.
Paint Lick, KY 40461

17 January 2025

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.
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INTRODUCTION

Copperhead Environmental Consulting, Inc. ("Copperhead") completed an aerial raptor nest survey for the proposed Lost City Solar Project ("Project") in Logan and Muhlenberg counties, Kentucky (Figure 1). The purpose of the survey was to document bald eagle (*Haliaeetus leucocephalus*) nests within the Project and a 660-foot buffer. Bald eagles are the only eagle species with the potential to nest in the general vicinity of the Project. The survey was completed in accordance with the U.S. Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance (ECPG 2013) and Eagle Incidental Take and Eagle Nest Take Regulations (50 CFR 13 and 22; USFWS 2016).

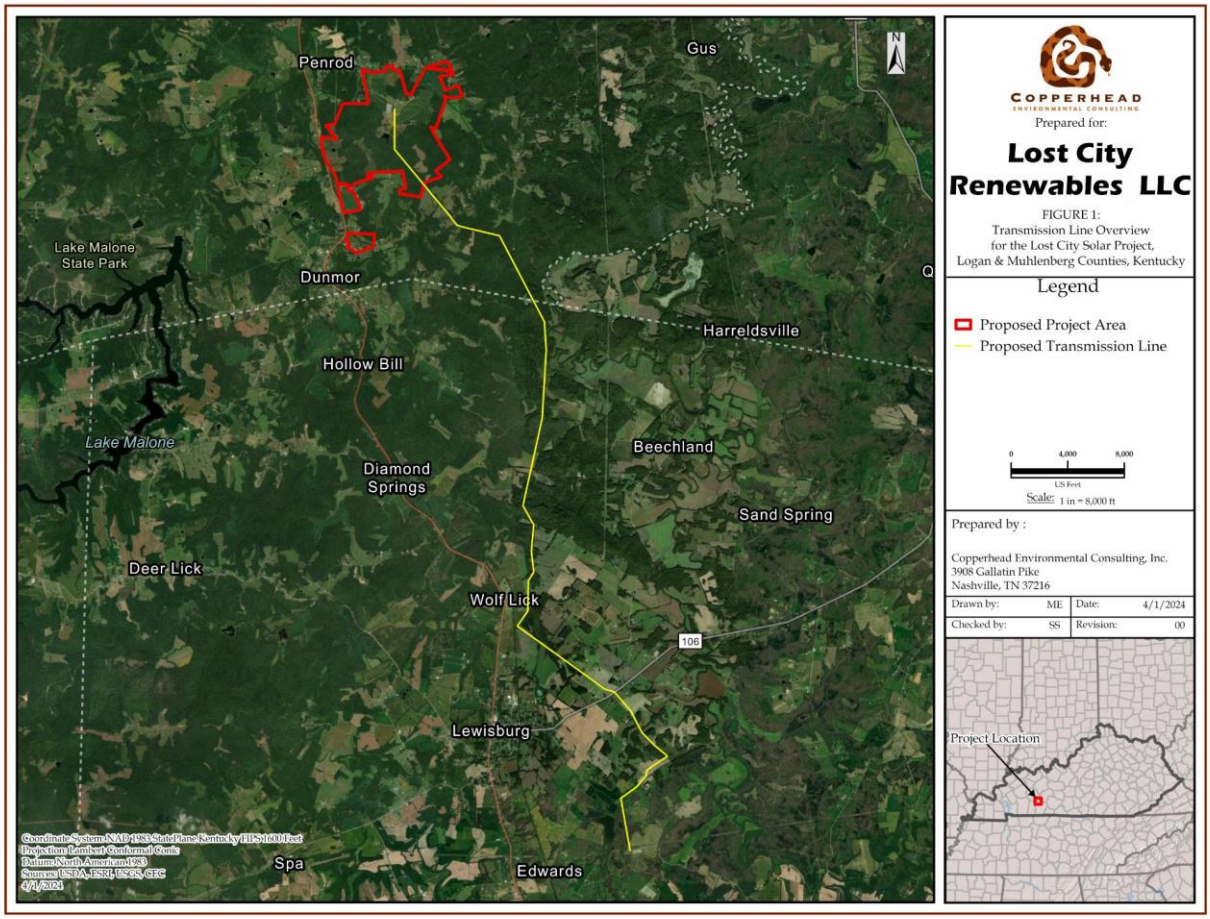

Figure 1. Project boundary for the proposed Lost City Solar Project, Logan & Muhlenberg Counties, KY.

PROJECT AND SURVEY AREA

Based on the U.S. Geological Survey's National Land Cover Database (NLCD) landcover classification, the predominant land cover/use type within the Logan and Muhlenberg counties' Project area and 660-foot buffer (herein referred to as 'Survey Area') is deciduous forest (54%), which provides nesting habitat for eagles (Table 1). Land cover/use types that are considered generally optimal for eagle and raptor nesting include large trees suitable for holding relatively substantial nests (Anthony and Isaacs 1989). Eagles are also known to nest near open water (Andrew and Mosher 1982, Anthony and Isaacs 1989), which consists of multiple streams within or crossing the Survey Area. Suitable raptor/eagle nesting habitats, specifically deciduous forest, woody wetlands, mixed forest, evergreen forest, and open water account for approximately 59% of the Survey Area and are mainly concentrated along riparian areas in the northern (e.g. Rocky Creek, Lazy River) and southern (e.g. Jockys Branch, Mud River, Wolf Lick Creek, Alum Lick Creek, Austin Creek) portions of the Project area (Figure 2, Table 1; NLCD 2011; Homer et al. 2020).

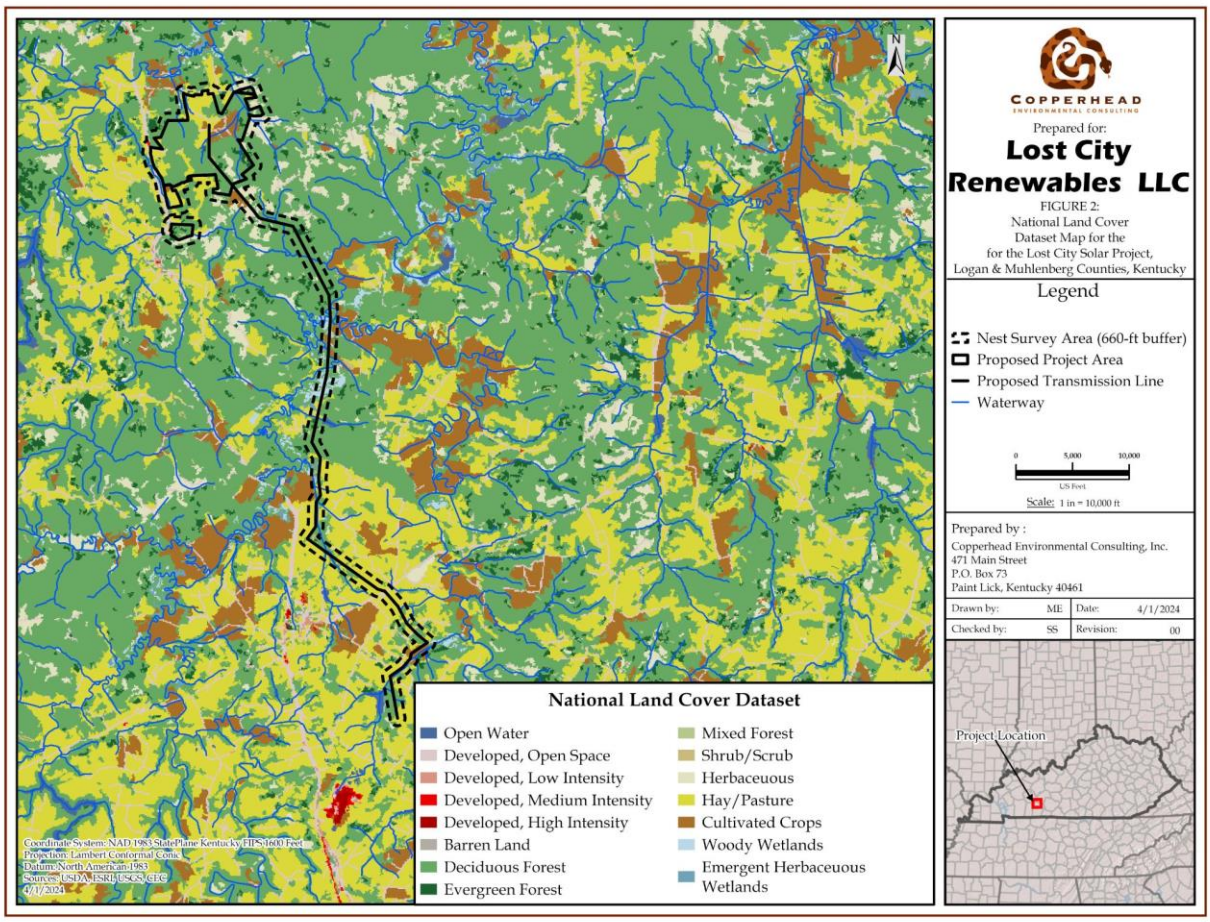

Figure 2. Landcover classifications from the NLCD for the proposed Lost City Solar Survey Area, Logan & Muhlenberg counties, KY.

Table 1. Land use and land cover proportions within the proposed Lost City Solar Project and Survey Area, Logan & Muhlenberg counties, KY.

Land Use/Land Cover Classification	Project (acres)	Survey Area (acres)	Potential Eagle Nest Habitat
Deciduous Forest	832	2,137	Yes
Hay/Pasture	284	1,001	No
Cultivated Crops	100	219	No
Herbaceous	38	201	No
Developed	46	172	No
Evergreen Forest	52	111	Yes
Woody Wetlands	-	92	Yes
Emergent Herbaceous Wetlands	-	14	No
Mixed Forest	8	12	Yes
Shrub/Scrub	3	6	No
Open Water	4	5	Yes

METHODS

Copperhead completed an aerial eagle and raptor nest survey 21 March 2024, from a Cessna 172 fixed wing aircraft carrying one pilot/biologist and one additional wildlife biologist experienced with aerial raptor nest searches. Nest searches within the Project and 660-foot buffer focused on locating eagle and raptor nests (i.e., stick nest structures). The aerial survey focused on suitable eagle and raptor nesting substrate (e.g., trees, transmission lines structures, etc.).

To ensure adequate coverage, the entire Survey Area was flown and areas with high quality eagle and raptor habitat were surveyed more intensively. Flight paths are included in Appendix A. All observed nest locations were recorded using aerial mapping software. For each nest, the following data were collected whenever possible: location, species, and occupancy status.

If located, eagle nests were classified as "In Use" or "Alternate" nests consistent with definitions amended from the ECPG and presented in the Eagle Incidental Take and Eagle Nest Take Regulations (50 CFR 13 and 22; USFWS 2016). Under these definitions, an In Use classification would be applied if eagles were observed displaying courtship or nest building behavior in proximity to the nest, or if any of the following were observed: (1) an adult eagle in an incubating position, (2) eggs, (3) nestlings or fledglings, (4) occurrence of a pair of adult eagles (or, sometimes subadults, e.g., Steenhof et al. 1983) at or near a nest through at least the time incubation normally occurs, (5) a newly constructed or refurbished stick nest in the area where territorial behavior of a raptor had been observed early in the breeding season, or (6) "A recently repaired nest with fresh sticks (clean breaks) or fresh boughs on top, and/or droppings and/or molted feathers on its rim or underneath" (Postupalsky 1974). If no eagles, courtship behavior, or nest-building were observed, and the nests did not appear to have any of the aforementioned use indicators, the nest would be classified as Alternate.

For all other raptor nests, occupancy status can be challenging to confirm from the air because the nests are smaller and generally lower in the canopy. If other raptor nests were found, nests were classified as Occupied if one of the following were observed: (1) an adult raptor in an incubating position, (2) occurrence of an adult raptor at or near a nest, or (3) if there was evidence of new material in the nest. If none of the aforementioned occupancy indicators were observed, the nest would be classified as Unoccupied. The raptor species would be recorded if it was possible to confirm which species the nest belonged to. When species could not be confirmed, the nest would be recorded as an "Unknown" raptor nest.

RESULTS

Eagles

No bald eagle nests were documented during the surveys.

Other Raptors

One Occupied unknown raptor nest was documented within the Project boundary during the survey (Table 3, Figure 4). No raptor was present when RAPT1 was documented but new nest material was observed in the bowl. This nest was too small to be a potential eagle nest. A photo of the raptor nest is included in Appendix B.

Table 2. Raptor nest location and occupancy status within the proposed Lost City Solar Project and Survey Area, Logan & Muhlenberg counties, KY.

Nest ID	Species	Occupancy Status	Distance to Project (mi)	Latitude	Longitude	Habitat
RAPT1	Unknown Raptor	Occupied	Inside	37.103593	-86.983217	Woodlot

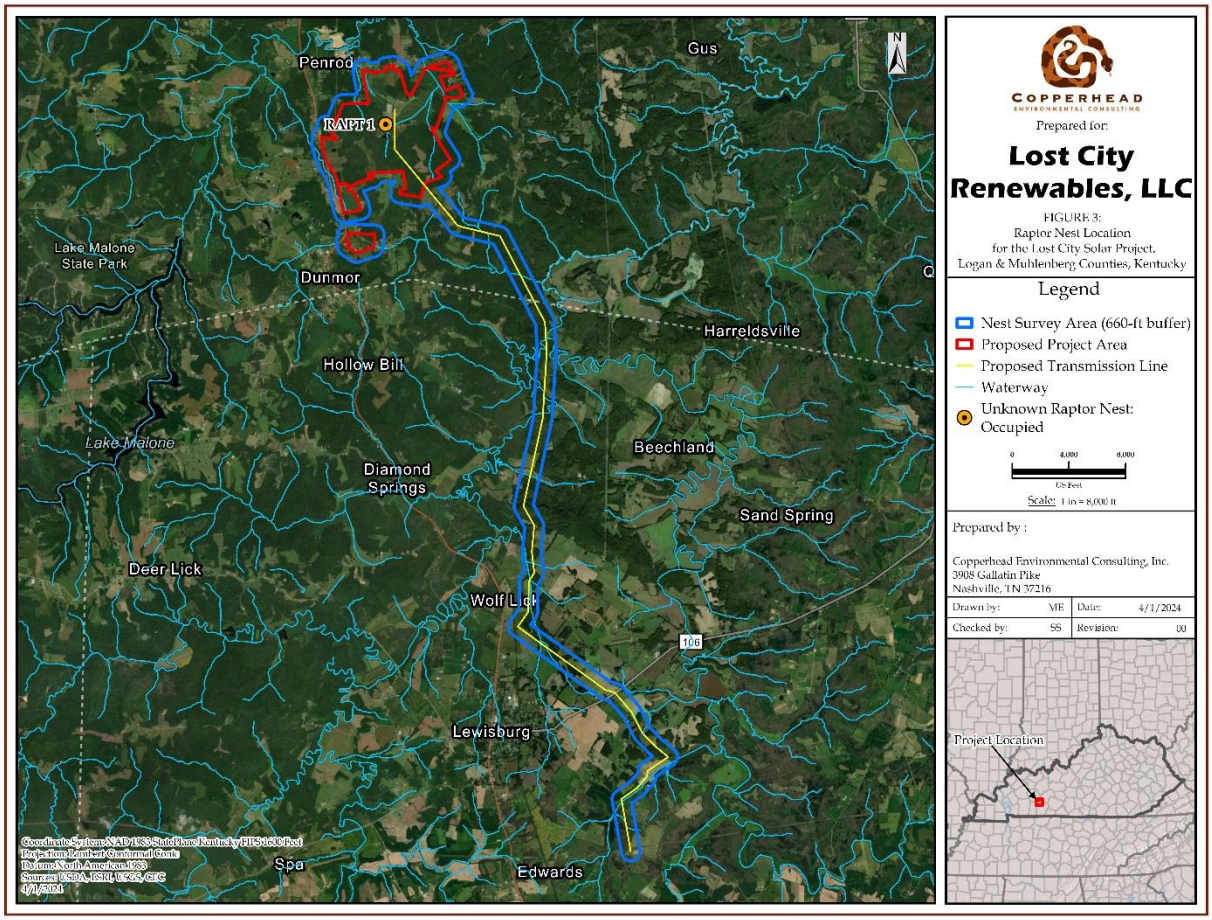

Figure 3. Raptor nest location within proposed Lost City Solar Project and Survey Area, Logan & Muhlenberg counties, KY.

CONCLUSION

No bald eagle nests were observed within the Project or Survey Area. Suitable eagle nesting habitat made up 59% of the total land use within the Survey Area; primarily located in the Project area to the north. Additionally, one Occupied, non-eagle, unknown raptor nest was observed within the Project boundary.

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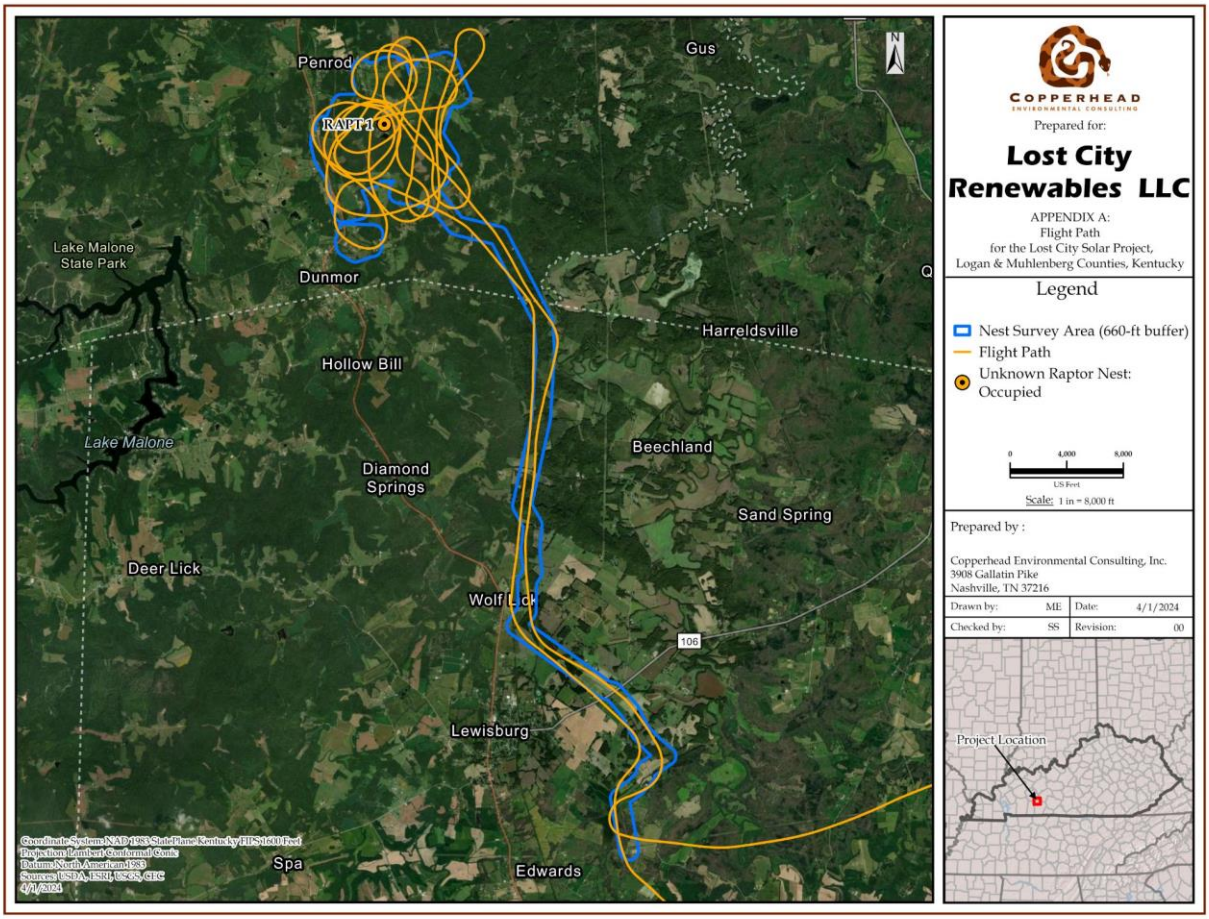
Appendix A: Flight Path of the 2024 Lost City Solar Aerial Raptor Nest Surveys



Appendix B: 2024 Raptor Nest Photographs

COPPERHEAD ENVIRONMENTAL CONSULTING	2024 Eagle and Raptor Nest Survey Report for the Proposed Lost City Solar Project Muhlenberg County, KY Photographic Record	
Project No.: 1543	**County, State:** Muhlenberg County, KY	**Client:** Lost City Renewables, LLC

Photo No. 1: RAPT1	
Date: 21 March 2024	
Location: 37.103593, -86.983217	
Description: Aerial survey image of an unknown raptor nest.	