COPPERHEAD
ENVIRONMENTAL CONSULTING

Wetland and Stream Delineation Report for the Proposed Lost City Solar Project in Muhlenberg County, Kentucky

Prepared for:
Lost City Renewables, LLC

13 January 2025

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ACRONYMS AND ABBREVIATIONS

FEMA	Federal Emergency Management Agency
GPS	global positioning system
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high-water mark
PEM	palustrine emergent wetland
RBP	Rapid Bioassessment Protocol
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WOTUS	Waters of the United States

1 INTRODUCTION

Lost City Renewables, LLC (Lost City) contracted Copperhead Environmental Consulting, Inc. (Copperhead) to conduct a wetland and stream delineation for the proposed Lost City Solar project (Project) in Muhlenberg County, Kentucky, to identify and delineate aquatic features that may be considered jurisdictional waters of the United States (WOTUS) or non-jurisdictional waters. The overall Project encompasses approximately 1,374.2 acres (*Figure 1 –Project Overview* in Appendix A) consisting of a 1,368.3-acre original study area (original study area) and a 115-acre parcel addition (Lewis/Gardner addition). Collectively the original study area and the Lewis/Gardner parcel addition will be referred to herein as the "Study Area". The field delineation for the original study area was conducted between March 18, 2024, and April 5, 2024 by Copperhead employees Shea Davis, Meg Herod, Isaac Bentley, and Jake Murphy. The field delineation for the Lewis/Gardner addition was conducted between July 30, 2024 and August 2, 2024 by Copperhead employees Isaac Bentley and Shea Davis.

1.1 Site Conditions

The Study Area is located within the Eastern Mountains and Piedmont (EMP) physiographic province, southeast of the town of Penrod. Vegetation primarily consisted of three dominant upland community types: hardwood forests comprised primarily of yellow poplar (*Liriodendron tulipifera),* sugar maple (*Acer saccharum*), white oak (*Quercus alba*), and slippery elm (*Ulmus rubra);* open pasture areas comprised primarily of tall fescue (*Schedonorus arundinaceus)* and red deadnettle (*Lamium purpureum*), and agricultural fields previously planted in corn (*Zea mays)* comprised primarily of chickweed (*Stellaria media)* and hairy buttercup (*Ranunculus sardous)* during the field delineations. These upland communities were interspersed with three cowardin classes of wetlands including palustrine emergent (PEM) palustrine scrub/shrub (PSS) and palustrine forested (PFO) wetlands. Hydrology, vegetation and soil conditions observed within wetlands on site are described in chapter 3.2 (Field Survey Results). Site soils were generally characterized as silty loams, with some silty clay loam profiles occurring within wetland areas. United States Department of Agriculture (USDA)-mapped hydric soil units including Belknap silt loam, 0 to 2 percent slopes, occasionally flooded; Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded; and Sharon silt loam, 0 to 2 percent slopes, occasionally flooded comprised approximately 119.7 acres of the Study Area (See attached web soil survey within *Appendix A*). Some areas on the site had been significantly disturbed by row cropping and tilling, and climatic/hydrologic conditions were considered normal for the location and time of year during for the majority of field surveys. Conditions were considered wetter than normal during the July 30-August 2 delineation effort and drier than normal on March 28 (See Appendix C – Antecedent Precipitation Tool Results). Representative photographs showing site conditions at photo stations and data point locations are included in Appendix B.

2 METHODS

2.1 Preliminary Desktop Analysis

Prior to the field survey, a preliminary desktop analysis of available information was conducted using the following sources:

- ESRI GeoServer Web Map Service, National Land Cover Database (NLCD)_2016 Land

Cover L48;

- Federal Emergency Management Agency (FEMA) National Flood Hazard Map (FEMA 2022);
- National Wetlands Inventory (NWI) Maps (USFWS 2021);
- The National Hydrography Dataset (NHD; U.S. Geological Survey [USGS] 2006);
- USDA NRCS Web Soil Survey (Soil Survey Staff 2022).

The locations of surface waters, wetlands, and floodplains identified during the preliminary desktop analysis were mapped (*Figure 3 – Existing Hydrology* and *Figure 4 – FEMA Flood Hazard Zones* in Appendix A) and used as a baseline reference that was compared, verified, and/or modified based on actual conditions observed during the field investigations using the methodologies outlined in Sections 2.2 and 2.3.

Desktop mapping was also informed by results of initial site reconnaissance that occurred prior to each phase of the delineation. The reconnaissance focused on identifying areas of uncertainty where wetlands and waters may occur on site, and what the hydrologic, vegetation and soil characteristics were within those areas prior to the delineation.

2.2 Methods for Delineating Wetlands

Copperhead conducted field investigations to determine the presence and extent of wetlands. When present, the location, extent, and boundaries of wetlands within the Study Area were delineated in accordance with the 1987 *U.S. Army Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* (USACE 2012). Wetland delineations were based on the presence of wetland hydrology, hydrophytic (wetland) vegetation, and hydric soils. Wetlands identified within the Study Area were described using Cowardin classes (Cowardin, et al. 1979). The Cowardin classification system was adopted by the US Fish and Wildlife Service (USFWS) and is used by federal agencies to describe the type of wetland feature present.

When delineating the extent of wetlands, observations of the presence of wetland hydrology indicators were initially made. Vegetation species within each area possessing wetland hydrology were then identified and the wetland indicator status of each plant species was determined according to the 2022 National Wetland Plant List (Lichvar et al. 2022). Finally, soil profiles within each respective community were sampled using an Eijkelkamp soil auger for combination soils to a depth of approximately eighteen inches to determine if hydric soil indicators were present. Soil colors were documented using a Munsell Soil Color Chart (Munsell Color 2010). Areas with the presence of all three wetland indicators (i.e., wetland hydrology, hydrophytic vegetation, and hydric soils) were delineated as wetlands. Areas with one or more parameters considered "significantly disturbed" or "naturally problematic" based on the 1987 manual and EMP regional supplement were evaluated on a case- by-case basis.

At locations where wetland indicators were observed (i.e., wetland hydrology, hydrophytic vegetation, and hydric soils), a USACE Wetland Determination Data Form was completed. Each data form included supporting rationales for determining the presence or absence of each wetland parameter. Paired points were taken to document the conditions within wetlands and adjacent uplands wherever applicable.

The wetland boundaries within the Study Area were delineated using a Trimble global positioning system (GPS) handheld unit capable of sub-meter accuracy. GPS data were collected using ArcGIS Online Field Maps software. The GPS points of wetland boundaries and data point locations (including coordinates and attribute information) were subsequently imported into ESRI ArcGIS software for creating maps of delineated wetlands and calculating wetland acreages.

2.3 Methods for Assessing Streams

Hydrologic features other than wetlands (e.g., stream channels) were delineated in the field by identifying the ordinary high-water mark (OHWM). OHWM is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR 328.3(c)(7)).

Features meeting the definition of streams were assessed for flow regime (i.e., ephemeral, intermittent, or perennial) and listed according to their Cowardin classification. All natural linear features with a defined bed and bank, OHWM, intermittent or perennial flow regime, and observed or mapped hydrologic connection to navigable waters downstream were considered jurisdictional WOTUS. Streams lacking evidence of flow except in direct response to heavy rainfall (e.g., hydric soils within the channel, aquatic organisms, substrate sorting etc.) were delineated as non-jurisdictional ephemeral drainage features and classified as such. Man-made features (e.g., grassy swales or drainage ditches) and ephemeral drainage features with or without a bed and bank, but no discernable OHWM, were excluded from the delineation so long as they lacked signs of sustained flow or the three aforementioned wetland parameters.

2.4 Jurisdictional Statuses

2.4.1 Federal Jurisdiction

Jurisdictional statuses were defined for each delineated resource using the most up-to-date federal guidance current as of Monday, January 13, 2025. On September 8, 2023, revised guidance from the USACE and the EPA was published to the Federal Register conforming to rulings from the case of Sackett vs EPA regarding determinations of the jurisdictional status for wetlands and waterbodies. The conforming rules removed the significant nexus standard introduced previously under the Rapanos rules and eliminated the portion of the January 2023 definitions that considered all interstate waters jurisdictional. Ultimately, jurisdictional statuses for wetlands and waters were based on the relative permanence of a feature, and the presence of a direct surface connection between wetlands, relatively permanent waters, and downstream waters of the U.S. As such, only those waters with relatively permanent stagnant or flowing water and a continuous overland connection to downstream navigable waters were deemed jurisdictional at the federal level.

3 RESULTS

3.1 Desktop Analysis Results

The following information on soils and hydrology was gathered to inform and prepare the field team completing the delineation.

3.1.1 Site Soils

A review of the NRCS's Web Soil Survey and the Soil Survey of Muhlenberg County, Kentucky, (Soil Survey Staff 2022) identified eighteen soil map units within the Study Area. Three soil types have a hydric soil rating: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded; Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded; and Sharon silt loam, 0 to 2 percent slopes, occasionally flooded (Figure 7 in Appendix A). These soil map units occupy approximately 119.4 acres (8.7%) of the Study Area.

3.1.2 Site Hydrology

The Study Area is within the Norman Branch-Rocky Creek, the Hazel Creek-Rocky Creek, and the Deerlick Creek-Mud River (051100030207, 051100030208, 051100030209) subwatersheds. According to the KY-MU-9 precipitation gauge located in Greenville, Kentucky, the last significant precipitation event recorded prior to the original delineation occurred on March 15, 2024 with a total of 0.53 inches. In addition, according to the KY-LG-13 precipitation gauge located in Lewisburg, *Kentucky*, significant precipitation events were recorded prior to the delineations on July 31, 2024 with a total of 0.26 inches and August 2, 2024 with a total of 0.66 inches. The NWI features in this area were photo-interpreted using 1:58,000 scale color infrared imagery from 1983 (USFWS 1983). The Study Area includes three NWI wetlands, eight NWI lakes or ponds, and eight NHD streams (*Figure 3 – Existing Hydrology*).

3.2 Field Survey Results

The following sections provide the field survey results for the wetland and stream delineation. Photographic documentation of the site and delineated aquatic features is provided in Appendix B. USACE Wetland Determination Data Forms are provided in Appendix D. Resumes of Copperhead personnel who completed the delineation are included in Appendix E.

3.2.1 Wetland Delineation

The field survey resulted in the identification of seventy-nine (79) wetlands, nine ponds, thirteen perennial streams, and 35 intermittent streams within the Study Area (*Figure 7 – Wetland Delineation* in Appendix A). In addition, 280 non-regulated ephemeral drainages were identified within the Study Area. Classifications and acreages of each delineated feature are described in Table 1.

Table 1. Summary of delineated aquatic resources within the Lost City Solar Project Study Area, Muhlenberg County, Kentucky.

Feature Name	USACE Unverified Jusisdiction[1]	Feature Size (acres)	Feature Length (lf)	Feature width (feet)	Cowardin Classification Code[2]
IBW1	Isolated*	0.01	-	-	PEM
IBW10	Isolated*	0.05	-	-	PEM
IBW11	Isolated*	0.06	-	-	PEM
IBW13	Isolated*	0.16	-	-	PEM
IBW14	Isolated	0.05	-	-	PEM
IBW15	Isolated*	0.03	-	-	PEM
IBW16	Isolated*	0.04	-	-	PEM

Feature Name	USACE Unverified Jusisdiction[1]	Feature Size (acres)	Feature Length (lf)	Feature width (feet)	Cowardin Classification Code[2]
IBW17	Jurisdictional	0.86	-	-	PEM
IBW18	Isolated*	0.11	-	-	PEM
IBW19	Isolated	0.01	-	-	PEM
IBW2	Isolated	0.05	-	-	PEM
IBW20	Jurisdictional	0.03	-	-	PEM
IBW21	Jurisdictional	0.05	-	-	PEM
IBW22	Jurisdictional	0.12	-	-	PEM
IBW24	Isolated*	0.03	-	-	PEM
IBW3	Isolated	0.01	-	-	PEM
IBW4	Isolated	0.07	-	-	PEM
IBW5	Isolated*	0.21	-	-	PEM
IBW6	Isolated*	0.17	-	-	PEM
IBW7	Isolated	0.18	-	-	PEM
IBW8	Isolated*	0.51	-	-	PEM
IBW9	Isolated*	0.03	-	-	PEM
JMW1	Isolated*	3.30	-	-	PEM
JMW10	Isolated*	0.05	-	-	PEM
JMW11	Isolated*	0.12	-	-	PEM
JMW12	Isolated	0.16	-	-	PEM
JMW13	Isolated	0.02	-	-	PEM
JMW14	Isolated	0.14	-	-	PEM
JMW15	Isolated	0.14	-	-	PEM
JMW16	Isolated*	0.14	-	-	PEM
JMW18	Isolated	0.01	-	-	PEM
JMW19	Isolated	0.15	-	-	PEM
JMW21	Isolated	0.04	-	-	PEM
JMW4	Isolated	0.05	-	-	PEM
JMW5	Isolated*	0.19	-	-	PEM
JMW6	Isolated*	0.09	-	-	PEM
JMW8	Isolated*	0.08	-	-	PEM
JMW9	Isolated*	0.06	-	-	PEM
MHW001	Isolated	0.04	-	-	PEM
MHW002	Isolated	0.13	-	-	PEM
MHW003	Jurisdictional	0.33	-	-	PEM
MHW004	Jurisdictional	0.47	-	-	PEM
MHW005	Jurisdictional	1.08	-	-	PEM
MHW006	Jurisdictional	0.08	-	-	PEM
MHW007	Jurisdictional	0.57	-	-	PEM
MHW008	Jurisdictional	0.38	-	-	PEM
MHW010	Isolated*	1.37	-	-	PEM
MHW012	Isolated*	0.40	-	-	PEM
MHW013	Isolated*	0.32	-	-	PEM
MHW014	Isolated*	1.35	-	-	PEM
MHW021	Isolated*	0.15	-	-	PEM
MHW023	Isolated*	0.07	-	-	PEM

Feature Name	USACE Unverified Jusisdiction[1]	Feature Size (acres)	Feature Length (lf)	Feature width (feet)	Cowardin Classification Code[2]
SDW1	Isolated	0.57	-	-	PEM
SDW2	Isolated*	0.10	-	-	PEM
SDW3	Jurisdictional	0.28	-	-	PEM
SDW4	Isolated*	0.03	-	-	PEM
SDW5	Jurisdictional	0.36	-	-	PEM
SDW7	Isolated	0.76	-	-	PEM
SDW8	Isolated	0.26	-	-	PEM
SDW9	Jurisdictional	1.11	-	-	PEM
W001	Jurisdictional	0.06	-	-	PEM
W002	Isolated	0.04	-	-	PEM
W003	Jurisdictional	0.20	-	-	PEM
W004	Isolated	0.01	-	-	PEM
W005	Isolated	0.01	-	-	PEM
IBW12	Isolated*	0.06	-	-	PFO
IBW23	Jurisdictional	0.31	-	-	PFO
JMW17	Isolated*	0.06	-	-	PFO
JMW20	Isolated*	0.06	-	-	PFO
JMW3	Isolated*	0.01	-	-	PFO
MHW009	Isolated*	0.18	-	-	PFO
MHW011	Jurisdictional	1.56	-	-	PFO
MHW015	Isolated*	0.60	-	-	PFO
MHW018	Jurisdictional	0.08	-	-	PFO
MHW019	Jurisdictional	0.07	-	-	PFO
MHW020	Jurisdictional	0.73	-	-	PFO
MHW024	Jurisdictional	3.95	-	-	PFO
SDW6	Jurisdictional	1.55	-	-	PFO
JMW7	Jurisdictional	0.16	-	-	PSS
IBPUB1	Jurisdictional	0.61	-	-	PUB
IBPUB2	Jurisdictional	1.31	-	-	PUB
IBPUB4	Isolated	0.33	-	-	PUB
IBPUB5	Jurisdictional	4.44	-	-	PUB
JMW2	Isolated	0.05	-	-	PUB
PUB-B	Isolated	0.21	-	-	PUB
PUB-C	Isolated*	0.21	-	-	PUB
PUB002	Isolated	0.20	-	-	PUB
PUB003	Isolated	0.07	-	-	PUB
IBS47	Jurisdictional	-	454.13	4	R3 (UPPER PERENNIAL)
SDS41	Jurisdictional	-	3867.26	6	R3 (UPPER PERENNIAL)
SDS48	Jurisdictional	-	2464.50	6	R3 (UPPER PERENNIAL)
SDS48	Jurisdictional	-	121.69	11	R3 (UPPER PERENNIAL)

Feature Name	USACE Unverified Jusisdiction[1]	Feature Size (acres)	Feature Length (lf)	Feature width (feet)	Cowardin Classification Code[2]
SDS48	Jurisdictional	-	536.31	7	R3 (UPPER PERENNIAL)
SDS48 braid	Jurisdictional	-	94.03	7	R3 (UPPER PERENNIAL)
SDS70	Jurisdictional	-	68.75	5	R3 (UPPER PERENNIAL)
SM	Jurisdictional	-	6611.87	7	R3 (UPPER PERENNIAL)
IBS45	Jurisdictional	-	760.62	9	R3 (UPPER PERENNIAL)
JMS2	Jurisdictional	-	728.26	4	R3 (UPPER PERENNIAL)
MHS018	Jurisdictional	-	216.37	6	R3 (UPPER PERENNIAL)
SDS47	Jurisdictional	-	1049.03	3.5	R3 (UPPER PERENNIAL)
S010	Jurisdictional		835.4	10	R3 (UPPER PERENNIAL)
IBS28	Jurisdictional	-	690.87	3	R4 (INTERMITTENT)
IBS44	Jurisdictional	-	664.05	5	R4 (INTERMITTENT)
IBS47	Jurisdictional	-	2915.37	3	R4 (INTERMITTENT)
JMS2	Jurisdictional	-	1551.61	5	R4 (INTERMITTENT)
JMS5	Jurisdictional	-	758.84	3	R4 (INTERMITTENT)
MHS021	Jurisdictional	-	1789.95	2	R4 (INTERMITTENT)
MHS027	Jurisdictional	-	106.22	4.5	R4 (INTERMITTENT)
MHS032	Jurisdictional	-	228.08	3	R4 (INTERMITTENT)
SAA Braid 1	Jurisdictional	-	201.38	2	R4 (INTERMITTENT)
SAD	Jurisdictional	-	164.18	1	R4 (INTERMITTENT)
SB	Jurisdictional	-	182.43	2	R4 (INTERMITTENT)
SB	Jurisdictional	-	168.85	2	R4 (INTERMITTENT)
SBA	Jurisdictional	-	113.97	3	R4 (INTERMITTENT)
SBK	Jurisdictional	-	701.20	3	R4 (INTERMITTENT)
SDS13	Jurisdictional	-	138.16	5	R4 (INTERMITTENT)
SDS25	Jurisdictional	-	1637.46	5	R4

Feature Name	USACE Unverified Jusisdiction[1]	Feature Size (acres)	Feature Length (lf)	Feature width (feet)	Cowardin Classification Code[2]
					(INTERMITTENT)
SDS44	Jurisdictional	-	496.11	1	R4 (INTERMITTENT)
SDS44	Jurisdictional	-	256.56	1.5	R4 (INTERMITTENT)
SDS49	Jurisdictional	-	1051.70	2	R4 (INTERMITTENT)
SDS69	Jurisdictional	-	227.42	4	R4 (INTERMITTENT)
SDS77	Jurisdictional	-	72.73	2	R4 (INTERMITTENT)
SDS78	Jurisdictional	-	551.87	5.5	R4 (INTERMITTENT)
SDS79	Jurisdictional	-	417.20	3	R4 (INTERMITTENT)
SDS88	Jurisdictional	-	2217.38	7	R4 (INTERMITTENT)
SDS96	Jurisdictional	-	624.80	6	R4 (INTERMITTENT)
SDS98	Jurisdictional	-	946.67	3	R4 (INTERMITTENT)
SM	Jurisdictional	-	1254.95	1	R4 (INTERMITTENT)
SMH	Jurisdictional	-	342.66	3	R4 (INTERMITTENT)
SY	Jurisdictional	-	1015.81	3.5	R4 (INTERMITTENT)
SZ	Jurisdictional	-	1687.81	1	R4 (INTERMITTENT)
S001	Jurisdictional	-	161.3	5	R4 (INTERMITTENT)
S004	Jurisdictional	-	287.9	4	R4 (INTERMITTENT)
S009	Jurisdictional	-	86.8	5	R4 (INTERMITTENT)
S010	Jurisdictional	-	1292.2	4.5	R4 (INTERMITTENT)
Total	**20.74 acres Jurisdictional Wetlands**	**14.16 acres Isolated Wetlands**			**42,812 lf Streams**

Jurisdictional determinations and boundaries when presented are preliminary and are subject to final verification by the USACE.

[2]Classifications are based on Copperhead's professional judgment of actual field conditions.

*Indicates ephemeral (non-regulated) surface connection only. Feature's jurisdictional status dependent on flow regime of tangential feature(s).

Palustrine Emergent (PEM) Wetlands

Sixty-five (65) palustrine emergent (PEM) wetlands were identified within the study area. PEM wetlands are defined as non-tidal areas possessing all three wetland parameters (hydrology, vegetation, soils) with <25% cover of woody species greater than 1m (~3ft) in height. These wetlands commonly appeared as concave depressions within the surrounding landscape. Most PEM wetlands identified within the Study Area supported dominant wetland vegetation consisting primarily of soft rush (*Juncus effusus*), fringed sedge *(Carex crinita*), and bulbous buttercup (*Ranunculus bulbosus*). Soil profiles generally consisted of silty clay soils meeting the criteria for either hydric soil indicator F3 (depleted matrix) or F6 (Depleted Below Dark Surface). Common hydrology indicators within PEM wetlands included surface water, algal mats or crust, oxidized rhizospheres on living roots, drainage patterns, and geomorphic position.

PEM features frequently appeared as isolated depressions, headwater wetlands draining to ephemeral streams, or as linear fringe/floodplain wetlands adjacent to streams that have been subjected to recent or historic tree clearing. Anticipated jurisdictional statuses of each PEM wetlands are listed in Table 1. USACE Wetland Determination forms can be found in Appendix D.

Palustrine Scrub/Shrub (PSS) Wetlands

One (1) palustrine scrub/shrub (PSS) wetland, wetland JMW7, appeared within the Study Area as a linear depression abutting a perennial stream. PSS wetlands are defined as non-tidal areas possessing all three wetland parameters with 25% or more cover of woody saplings and shrubs (woody species greater than 1 meter in height) but possessing less than 25% cover of trees (defined as woody species measuring greater than 3in diameter at breast height [DBH]). JMW7 supported a mix of wetland and upland vegetation consisting primarily of soft rush (*Juncus effusus*), fringed sedge (*Carex crinita*), American beech (*Fagus grandifolia),* amur honeysuckle *(Lonicera maackii),* and sawtooth blackberry (*Rubus argutus*). The soil profile of JMW7 consisted of silty clay soils meeting hydric soil indicator F3 (depleted matrix). Hydrology indicators within this feature included surface water, saturation, and geomorphic position.

Palustrine Forested (PFO) Wetlands

Thirteen (13) palustrine forested (PFO) wetlands were located within the study area. PFO wetlands are defined as non-tidal areas possessing all three wetland parameters with 25% or greater cover of woody vegetation measuring greater than 3in DBH. PFO wetlands commonly appeared as concave depressions and flats within forested sections of the surrounding landscape, often located adjacent to streams and ponds where tree clearing has been limited in recent (10+) years. Most PFO wetlands identified within the Study Area supported a mix of wetland and upland vegetation consisting primarily of silver maple (*Acer saccharinum*), sweetgum (*Liquidambar styraciflua*), American sycamore (*Platanus occidentalis*), white oak (*Quercus alba*), and American beech (*Fagus grandifolia*) in the canopy, with sparse understories and limited herbaceous vegetation. Soil profiles generally consisted of silty clay loam soils meeting the necessary criteria for either hydric soil indicator F3 (depleted matrix) or F6 (Depleted Below Dark Surface). Common hydrology indicators within PFO wetlands included surface water, high water table, saturation, water-stained leaves, and geomorphic position.

PFO features frequently appeared as isolated depressions, headwater wetlands lacking relatively permanent downstream connections, or as linear fringe/floodplain wetlands adjacent to streams. Anticipated jurisdictional statuses of each PFO wetland are listed in Table 1, USACE Wetland Determination forms can be found in Appendix D.

Palustrine features with Unconsolidated Bottoms (PUB) e.g., Lakes and Ponds

Nine features within the Study Area were identified as open water, palustrine unconsolidated bottom (PUB) habitat. Hydrologic inputs for these features consisted of overland sheet flow, input from intermittent streams or other drainage features, and adjacent wetlands within the Study Area. Vegetation was not present within PUB portions of the wetlands at the time of survey, and boundaries between PUB and PEM ro PFO components wetland features were defined based on the presence of hydrophytic vegetation (see PEM and PFO wetlands above).

PUB features appeared as both isolated ponds excavated entirely within uplands, and as impoundments of wetlands and/or waterbodies within natural valleys. Anticipated jurisdictional statuses of each PUB wetland are defined based on whether the feature possessed a direct overland or culverted connection to relatively permanent waters downstream. The anticipated jurisdictional status of each PUB feature is listed in Table 1. USACE wetland determination forms were not completed within PUB features; however, determination forms within adjacent PEM of PFO wetlands were collected and can be found in Appendix D.

Ephemeral (R6) Drainages

Two hundred eighty (280) ephemeral drainage features were identified within the Study Area. Ephemeral features were field defined based on geomorphological, biological, and hydrologic components that indicate the duration of flow within a channel over the course of a normal climatic year. Examples of these components include the continuity of bed and bank, presence and abundance of aquatic macroinvertebrates, presence of rooted vegetation within the channel, and presence of flowing water within the channel during normal climatic/hydrologic conditions. Ephemeral streams frequently drain into intermittent or perennial waters within the study area or offsite, with some features terminating in isolated ponds or depressions. Ephemeral features generally exhibit some characteristics of bed and bank but lack the biological or hydrologic indicators of intermittent or perennial flow. Additionally, the majority of ephemeral streams onsite are found on steep slopes, and lacked standing or flowing water during normal conditions at the time of survey or hydric soils within the channel bed. Average channel width varies from one to twelve feet wide; however, approximately 240 (85%) of the ephemeral channels measure less than three feet wide. Ephemeral channels were documented photographically to provide examples of field indicators observed for determinations; however they are not included as aquatic resources within Table 1.

Intermittent (R4) Streams

Thirty-five (35) intermittent streams were identified within the Study Area, and were field defined based on geomorphological, biological, and hydrologic components that indicate the duration of flow within a channel over the course of a normal climatic year. Examples of these components include the continuity of bed and bank, hydric soil presence within the channel bed, presence and abundance of aquatic macroinvertebrates, presence of rooted vegetation within the

channel, and presence of flowing water within the channel during normal climatic/hydrologic conditions. Intermittent streams frequently received hydrology from abutting wetlands or other tributaries and drained to perennial waters within the study area or offsite. These streams exhibit characteristics of both bed and bank, with higher levels of erosion and channelization than R6 features. Average OHWM width varies from 1ft to 7ft wide and standing or flowing water was present in the channels generally present during normal conditions at the time of survey. Information for each intermittent (R4) stream can be found in Table 1.

Upper Perennial (R3) Streams

Thirteen (13) upper perennial streams were identified within the Study Area, and were field defined based on geomorphological, biological, and hydrologic components that indicate the duration of flow within a channel over the course of a normal climatic year. Examples of these components include the continuity of bed and bank, presence and abundance of fish or aquatic macroinvertebrates, presence of rooted vegetation within the channel, and presence of flowing water within the channel during normal climatic/hydrologic conditions. Features defined as Upper Perennial (R3) frequently had rocky bottoms and appeared in areas of higher elevation change with little floodplain development. The perennial streams appear as tributaries to Rocky Creek, with confluences occurring offsite. These streams exhibit characteristics of both bed and bank, and slight erosion and channelization. Average OHWM widths varying from 3.5ft to 11ft and standing or flowing water was present in the channels during normal conditions at the time of survey. Some fish were noted while assessing these streams, along with continuous flowing water and a well-defined channel. Information for each perennial (R3) stream can be found in Table 1.

4 CONCLUSIONS

It is Copperhead's professional opinion that the Study Area contains seventy-nine (79) wetlands, nine ponds, thirteen perennial streams, 35 intermittent streams, and 280 ephemeral channels were identified within the Study Area. Of the seventy-nine (79) wetlands identified, fifty-six (56) do not possess a continuous and indistinguishable connection to downstream WOTUS and would be considered isolated and are likely non-jurisdictional. The remaining twenty-three (23) wetlands either abut a perennial stream or possess a relatively permanent surface water connection to a downstream WOTUS and would be considered jurisdictional. The thirteen perennial streams and 35 intermittent streams identified within the Study Area are relatively permanent waterbodies with downstream connections to WOTUS and are therefore likely considered jurisdictional WOTUS. The two hundred eighty (280) ephemeral features identified within the Study Area appear to flow only in direct response to rainfall events and would likely be considered non-jurisdictional features by the USACE.

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Appendix A
Figures

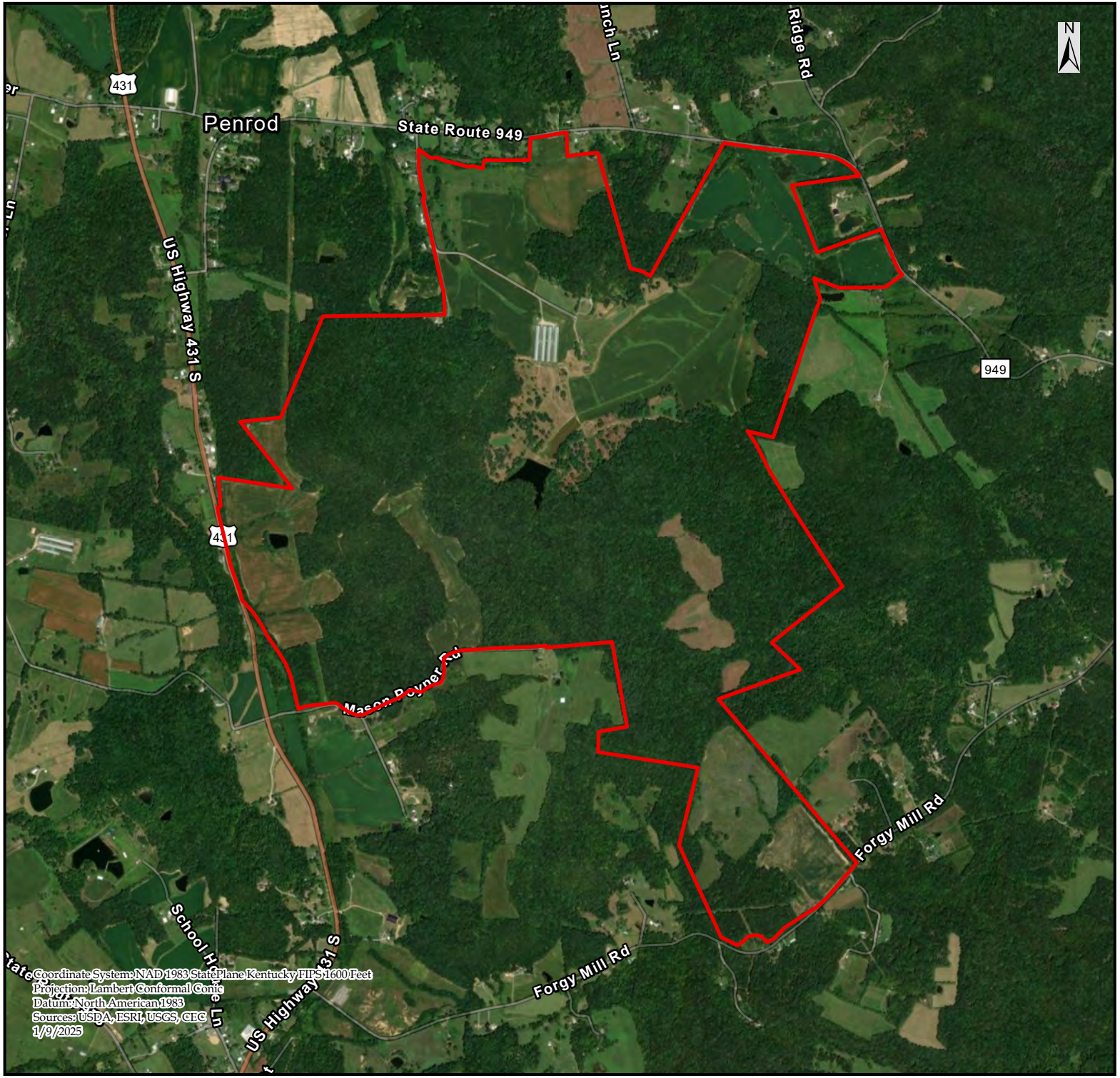

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FIGURE 1:
Project Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

Project Boundary

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

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P.O. Box 73
Paint Lick, Kentucky 40461

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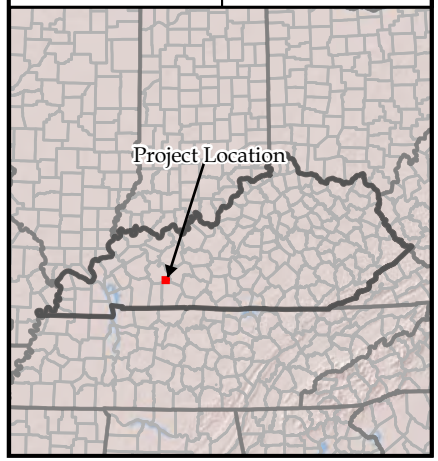

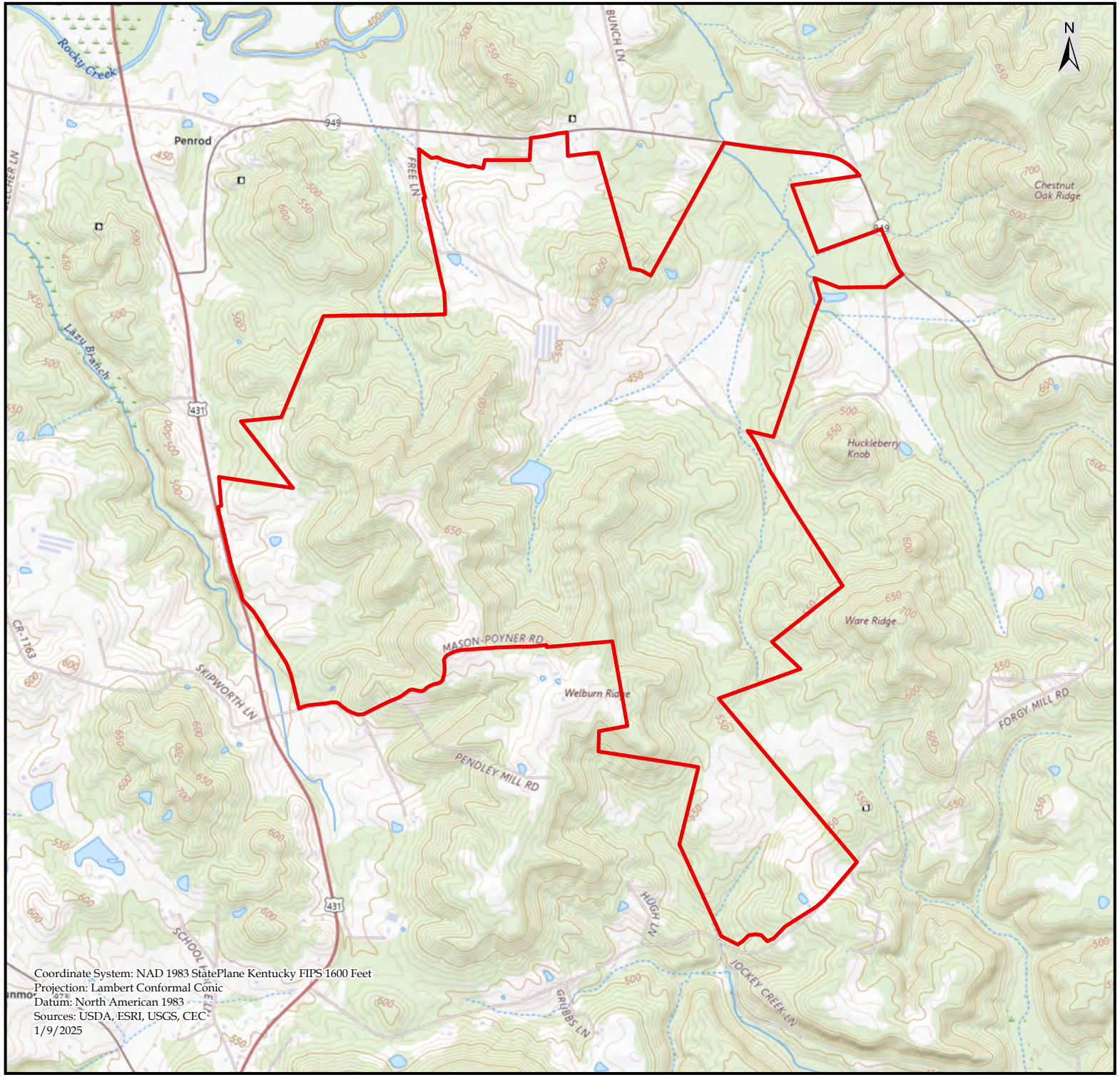

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FIGURE 2:
Topographic Overview Map
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

Project Boundary

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

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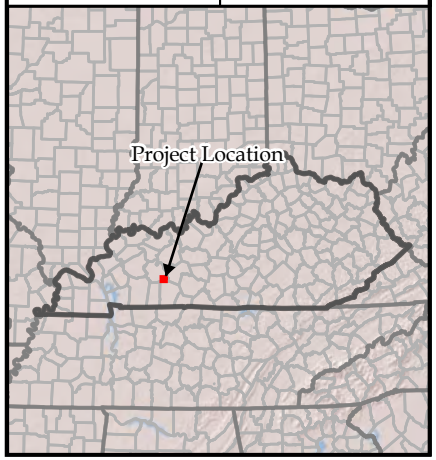

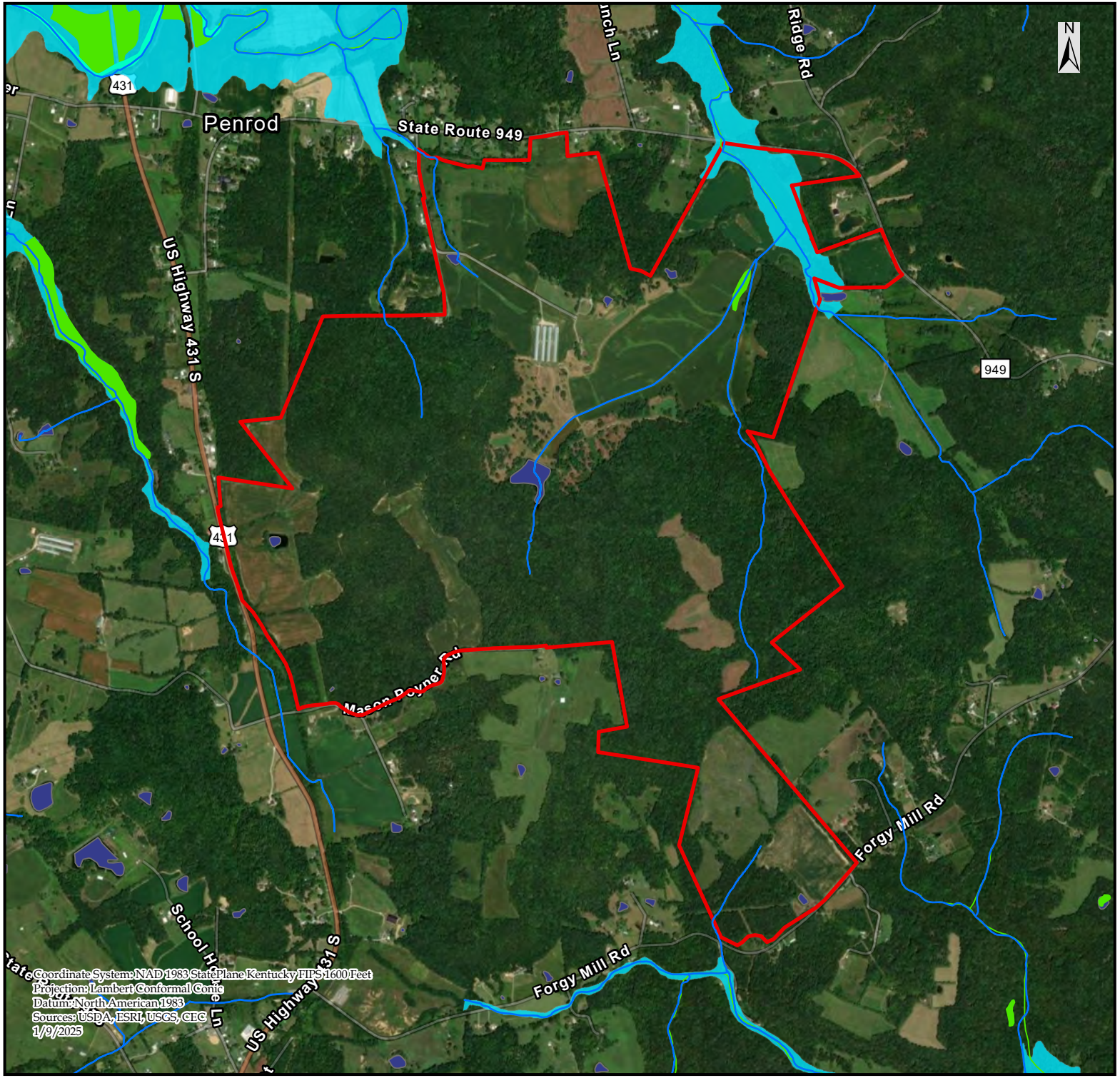

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FIGURE 3:
Existing Hydrology for the
Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- NHD Waterway
- 1% Annual Chance Flood Hazard
- NHD Waterbody
- Freshwater Forested/Shrub Wetland
- Riverine Wetland
- Project Boundary

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

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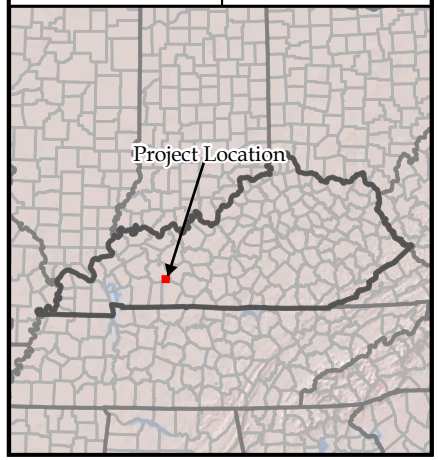

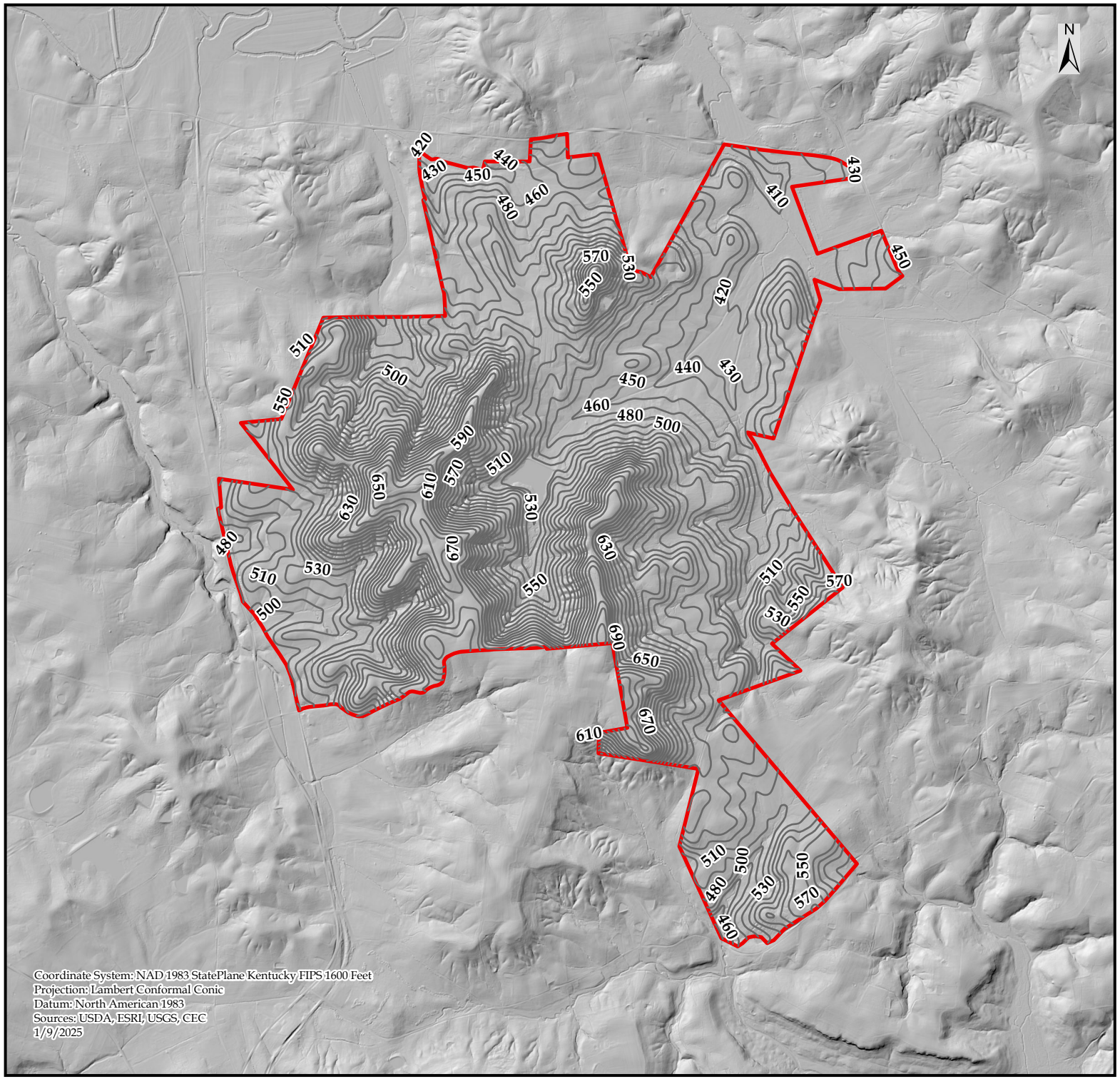

Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
1/9/2025

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FIGURE 4:
Digital Elevation Model
and Elevation Contours for the
Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Elevation Contour
- Project Boundary

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

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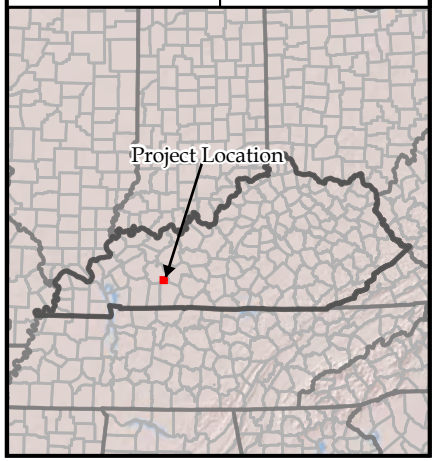

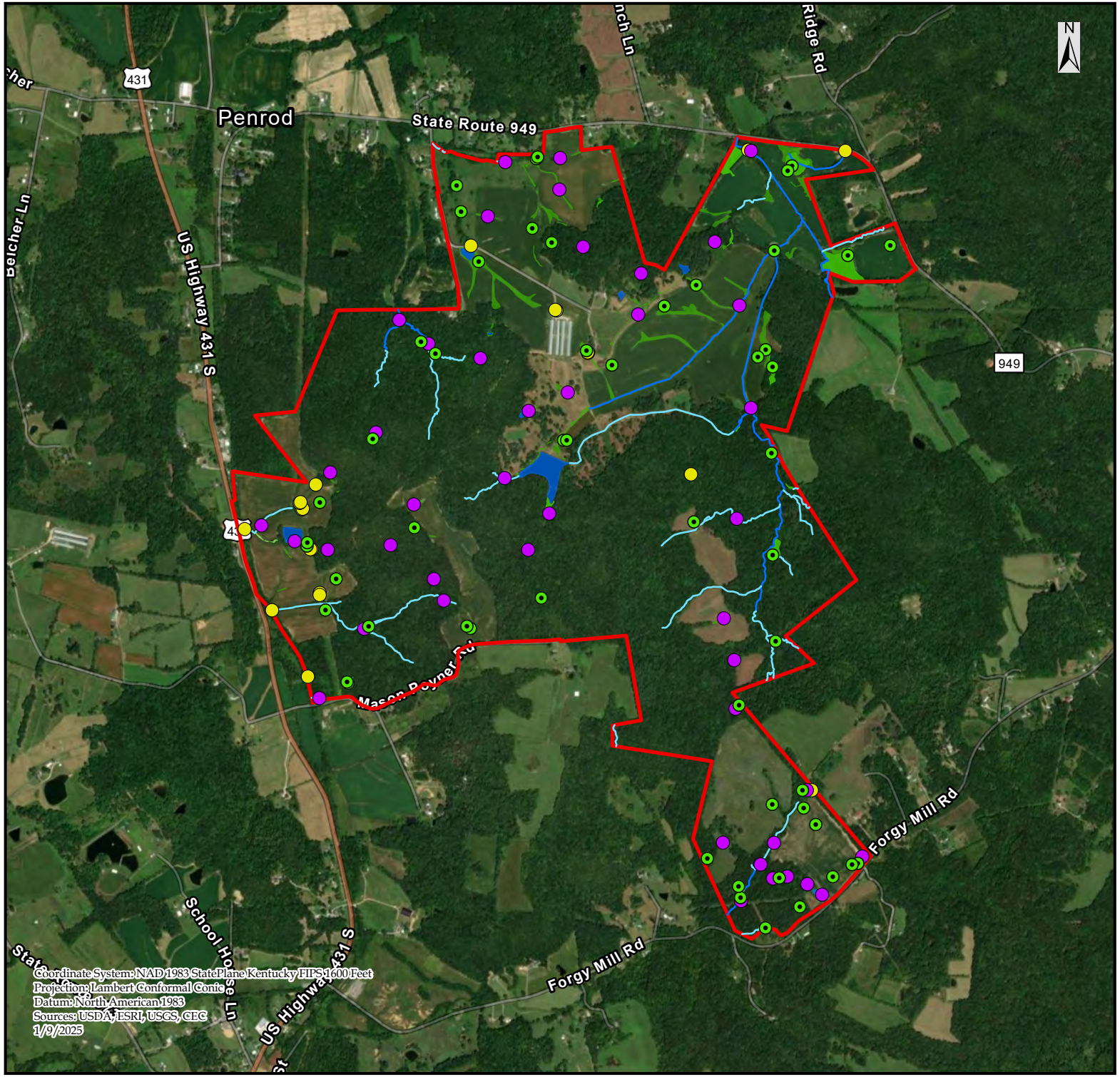

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FIGURE 5.1:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 1,000 2,000
US Feet

Scale: 1 in = 2,000 ft

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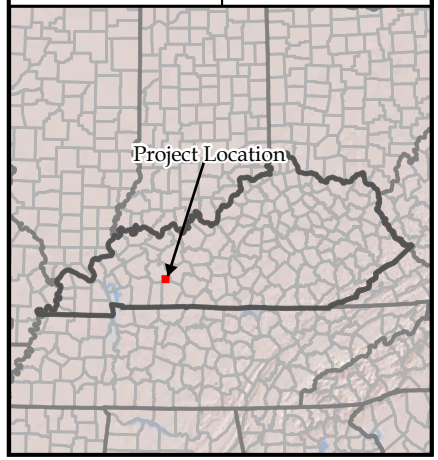

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FIGURE 5.2:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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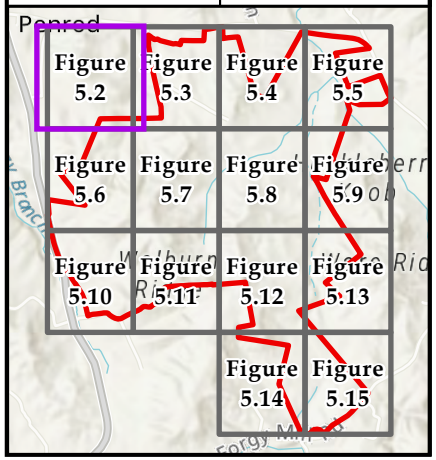

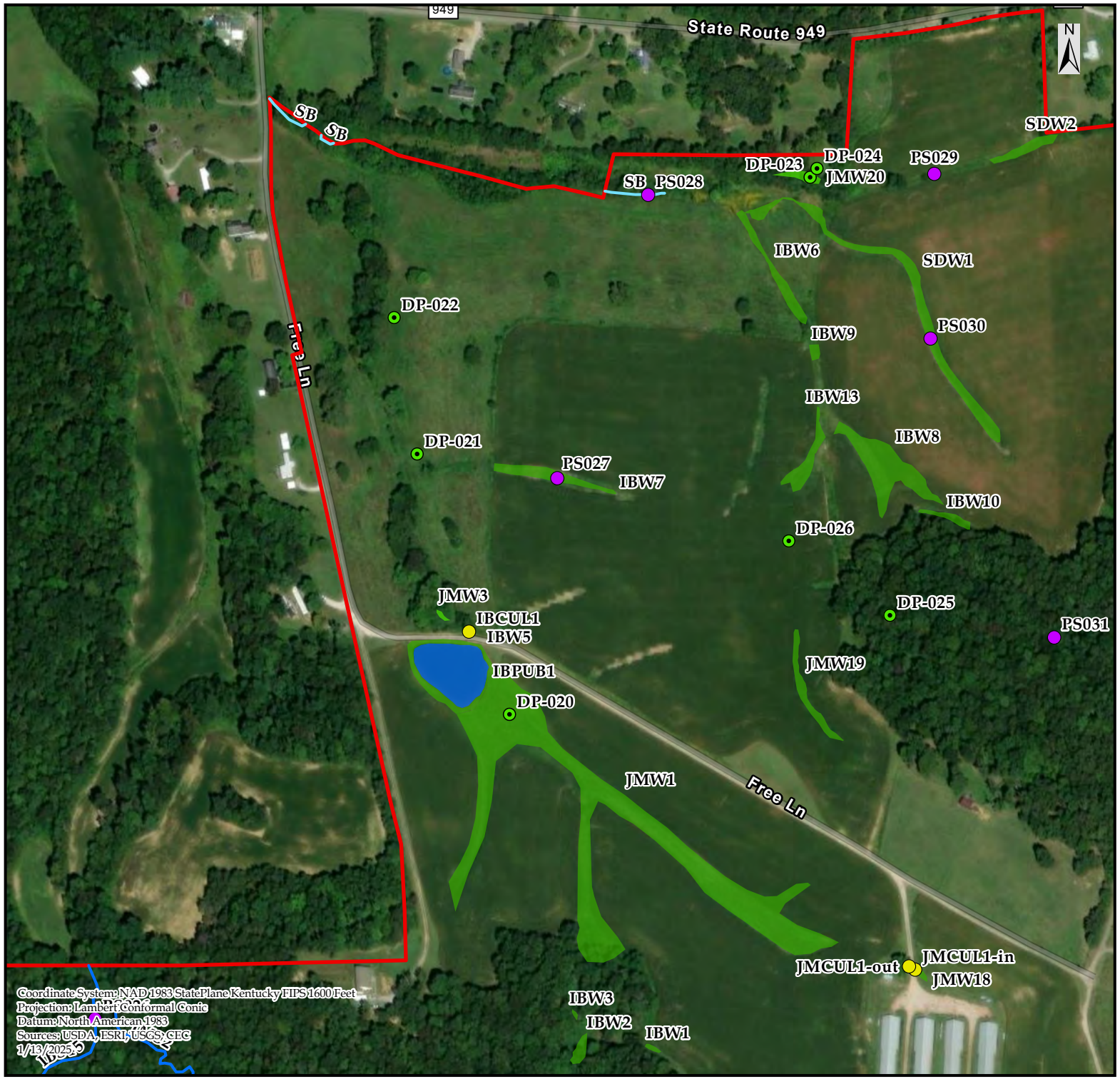

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FIGURE 5.3:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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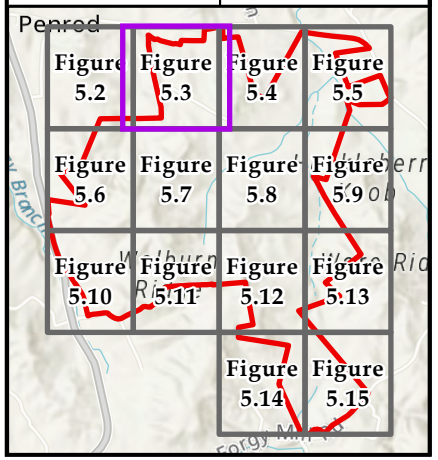

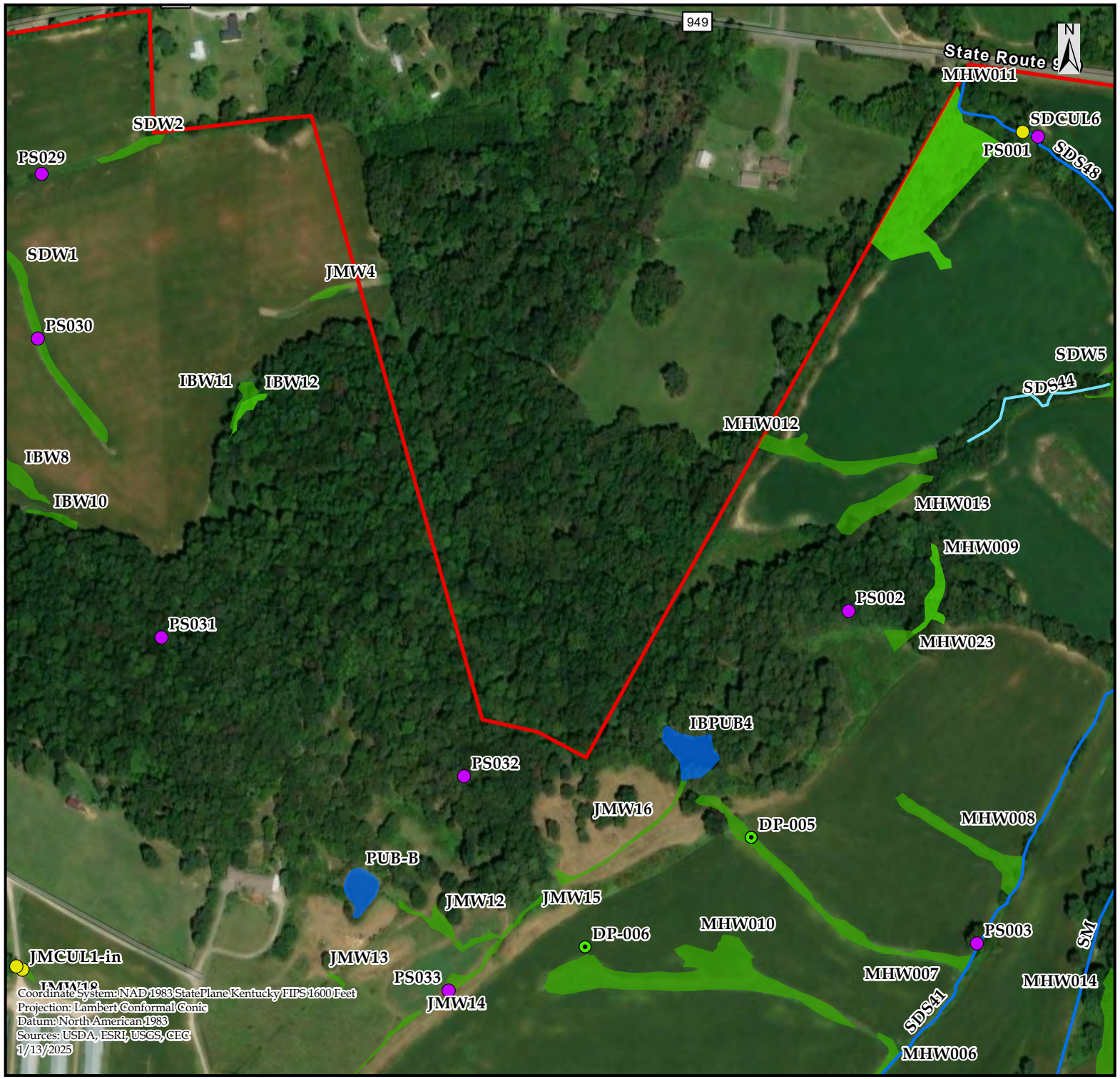

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FIGURE 5.4:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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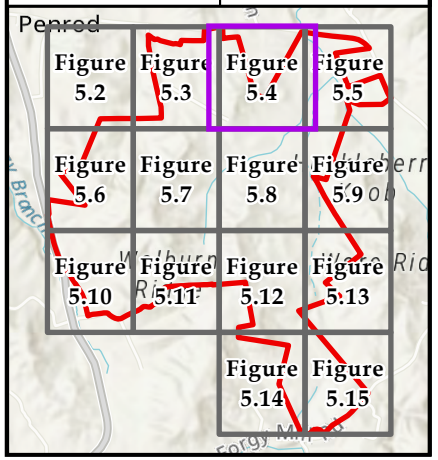

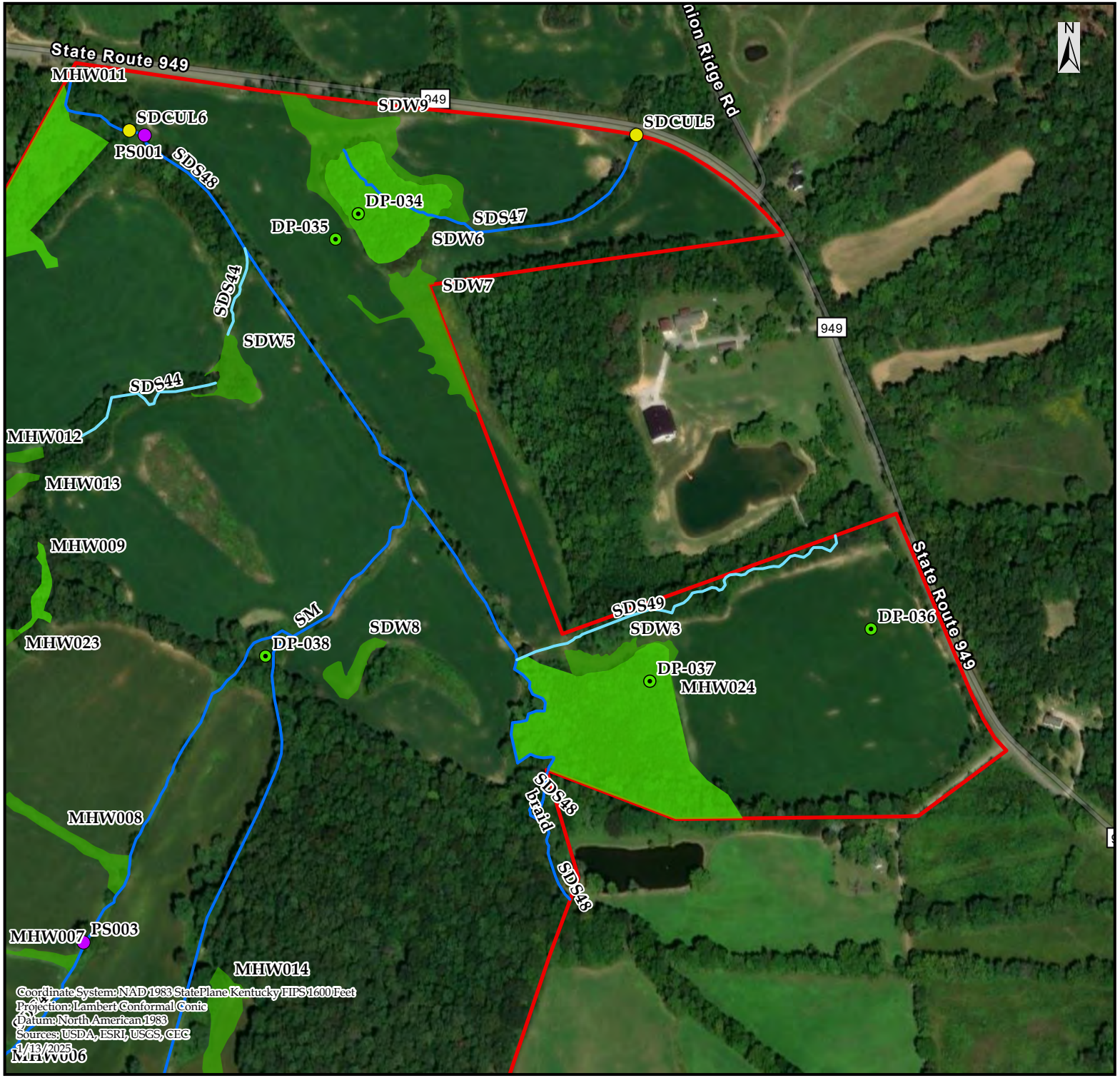

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FIGURE 5.5:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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Penrod

Figure 5.2	Figure 5.3	Figure 5.4	Figure 5.5
Figure 5.6	Figure 5.7	Figure 5.8	Figure 5.9
Figure 5.10	Figure 5.11	Figure 5.12	Figure 5.13
		Figure 5.14	Figure 5.15

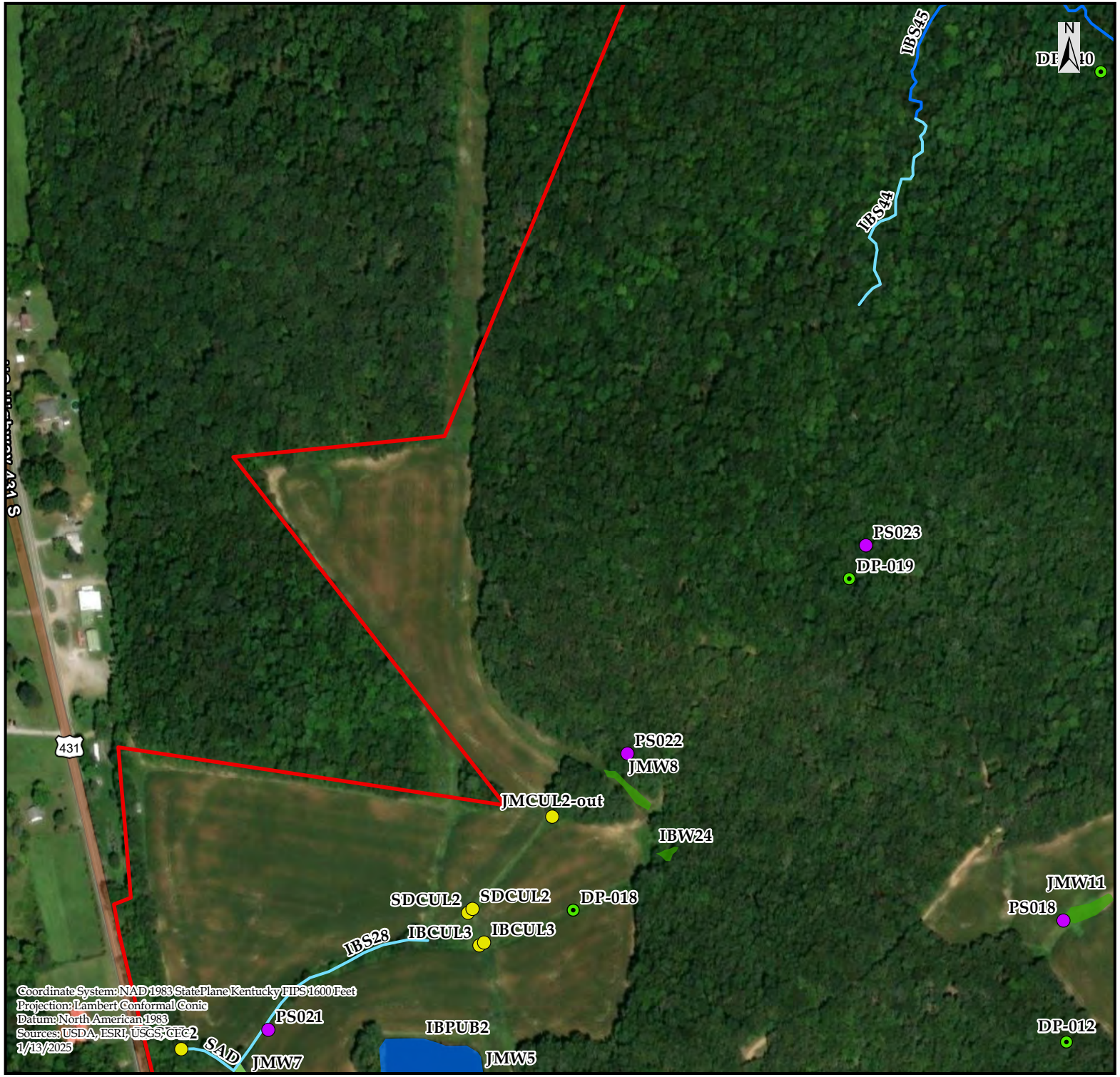

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FIGURE 5.6:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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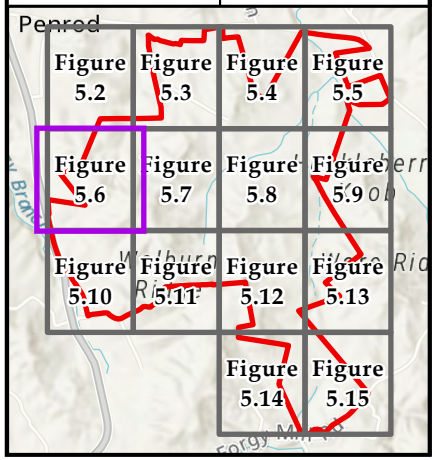

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FIGURE 5.7:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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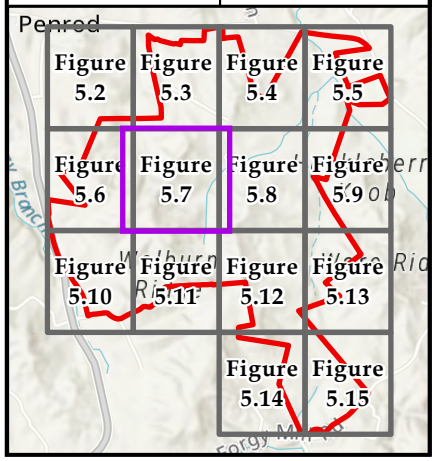

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FIGURE 5.8:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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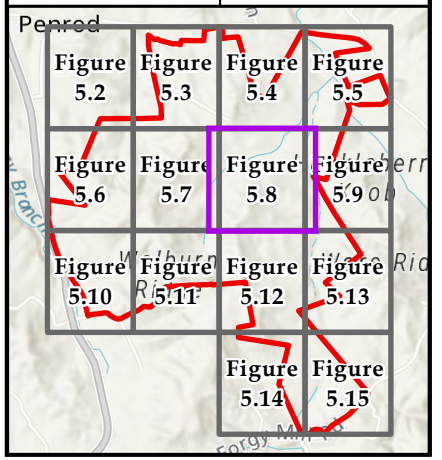

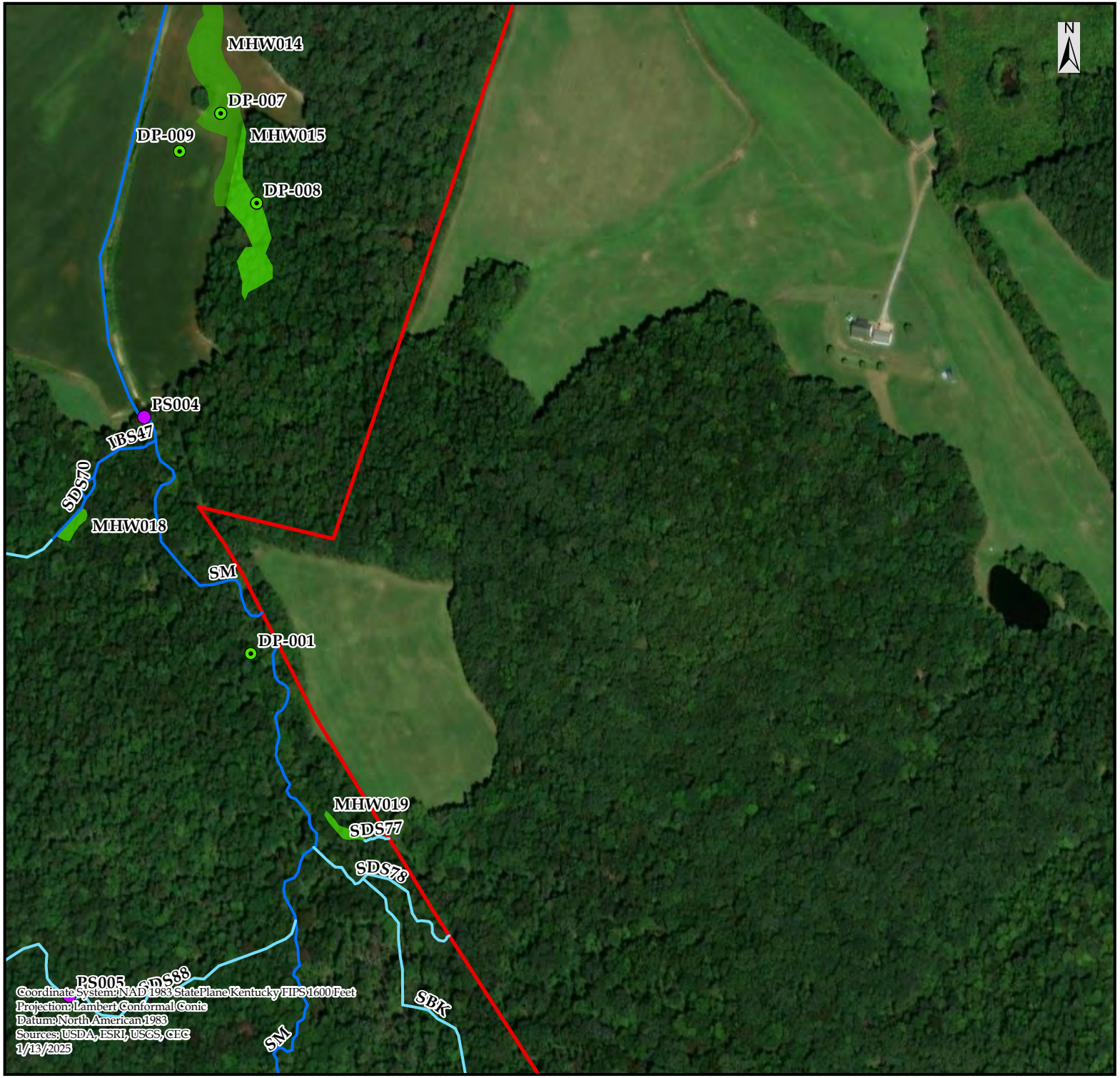

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FIGURE 5.9:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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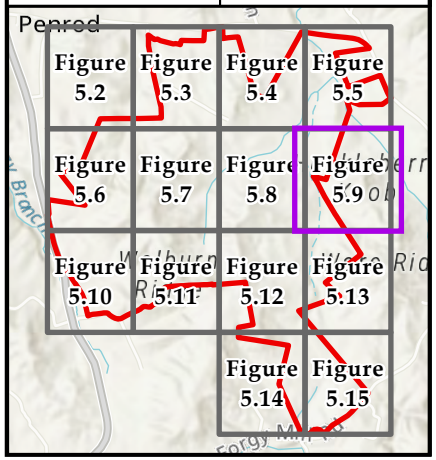

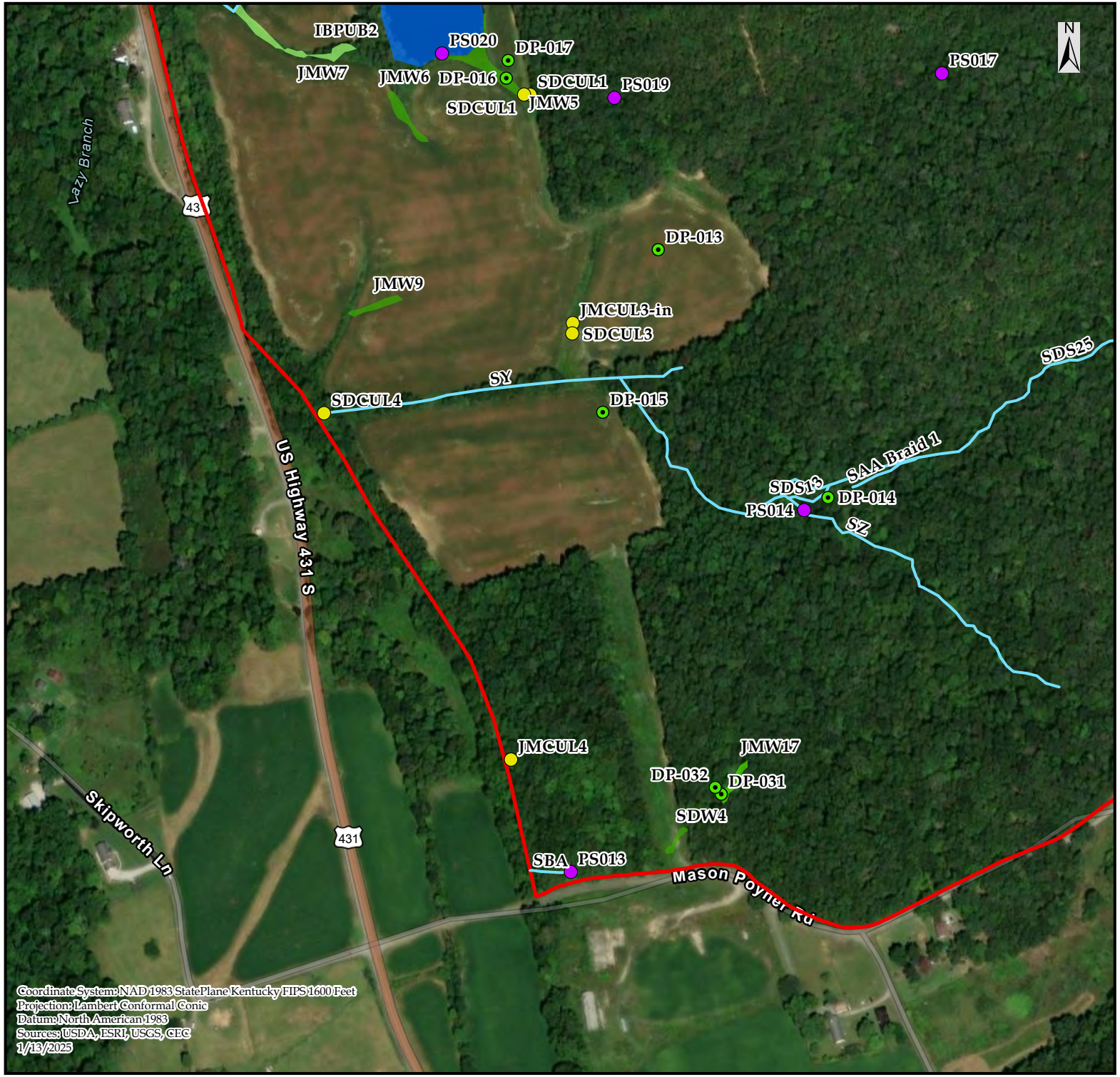

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FIGURE 5.10:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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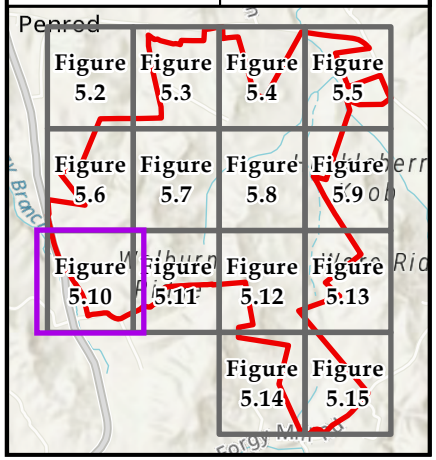
Drawn by:	TC	Date:	1/13/2025
Checked by:	DH	Revision:	02



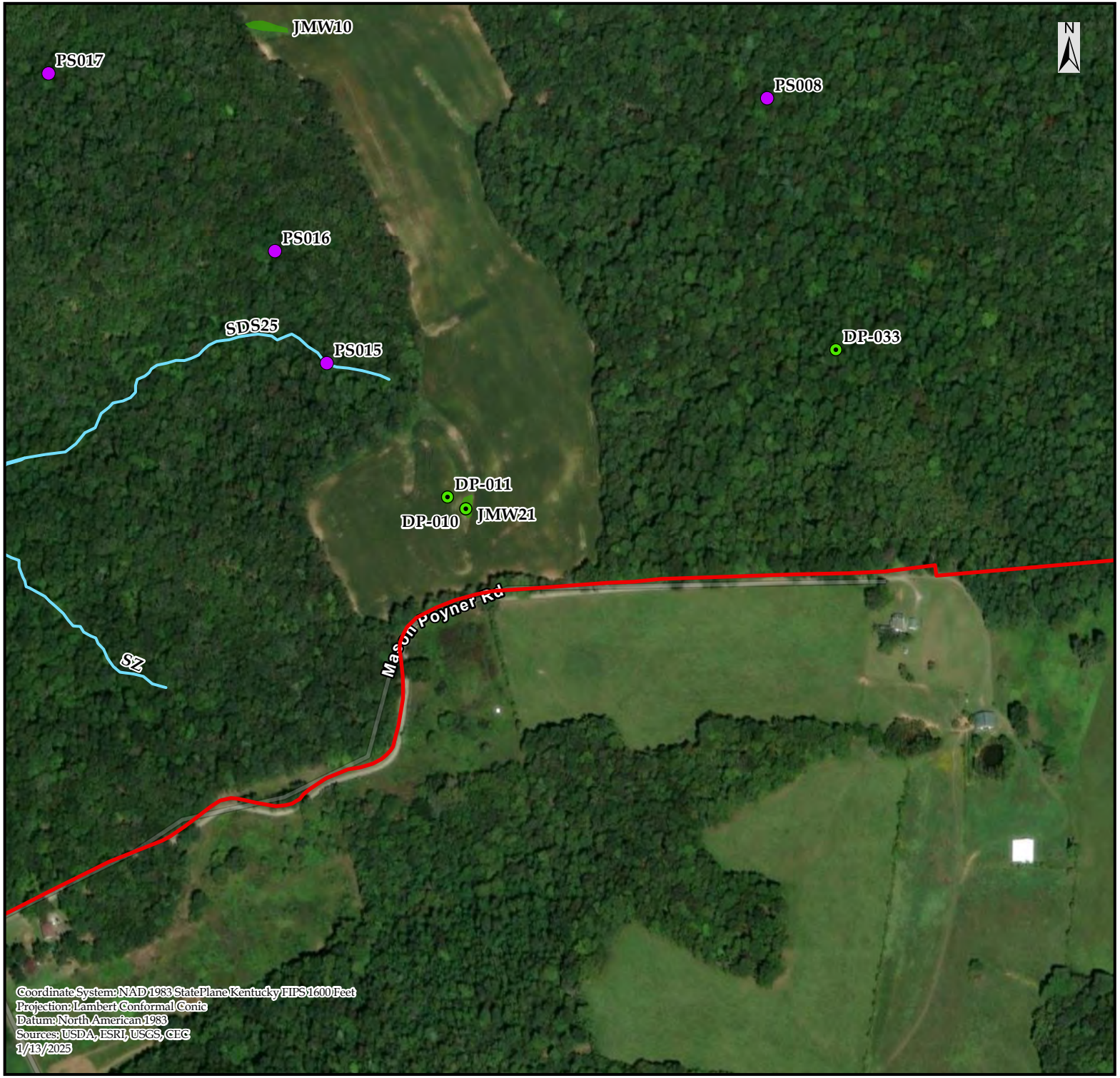


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FIGURE 5.11:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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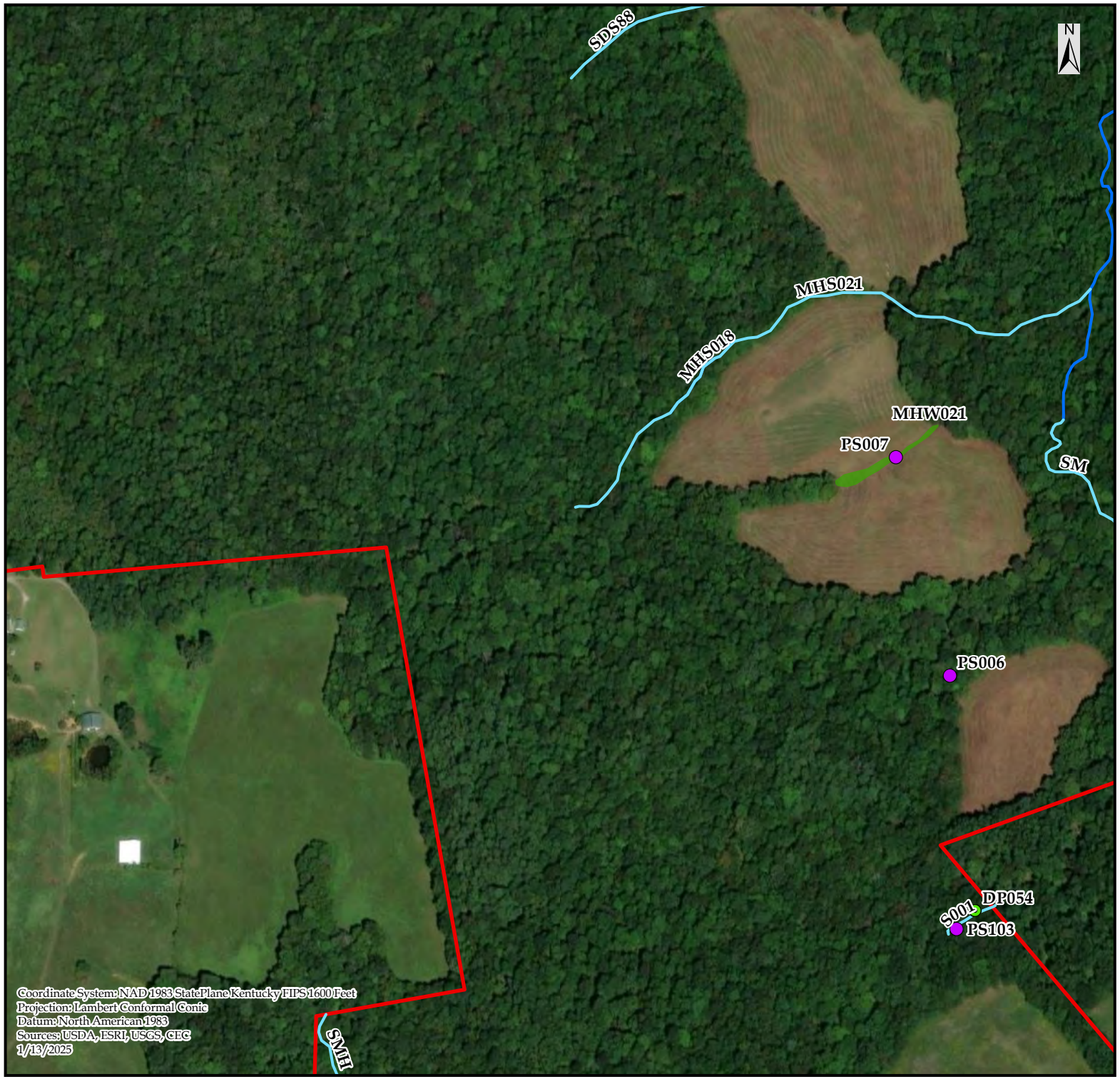
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	1/13/2025
Checked by:	DH	Revision:	02

Period

Figure 5.2	Figure 5.3	Figure 5.4	Figure 5.5
Figure 5.6	Figure 5.7	Figure 5.8	Figure 5.9
Figure 5.10	Figure 5.11	Figure 5.12	Figure 5.13
		Figure 5.14	Figure 5.15



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Prepared for:

Lost City Renewables LLC

FIGURE 5.12:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

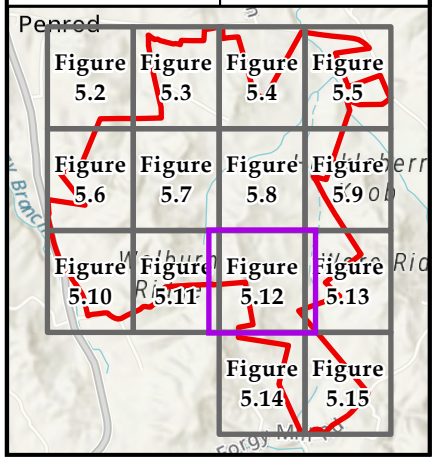
- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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

Drawn by:	TC	Date:	1/13/2025
Checked by:	DH	Revision:	02



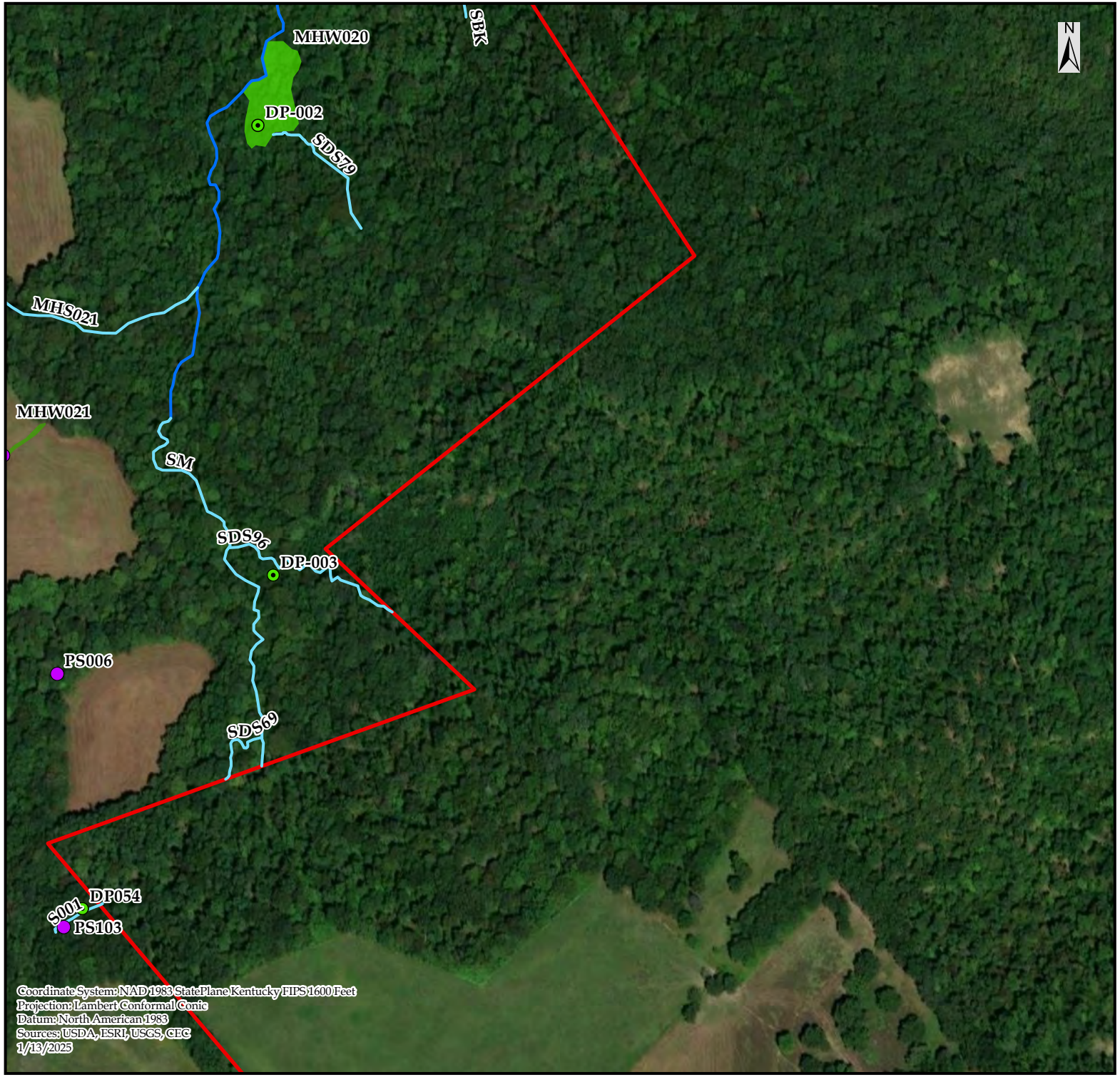


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FIGURE 5.13:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
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- Project Boundary

0 190 380
US Feet

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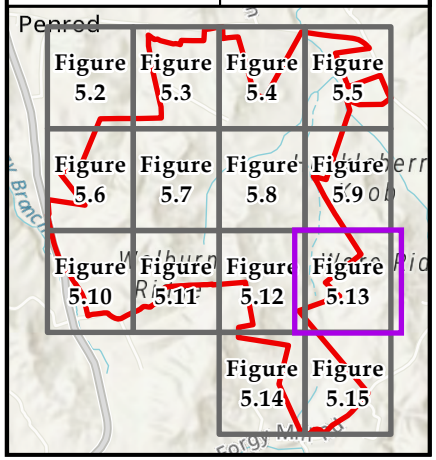

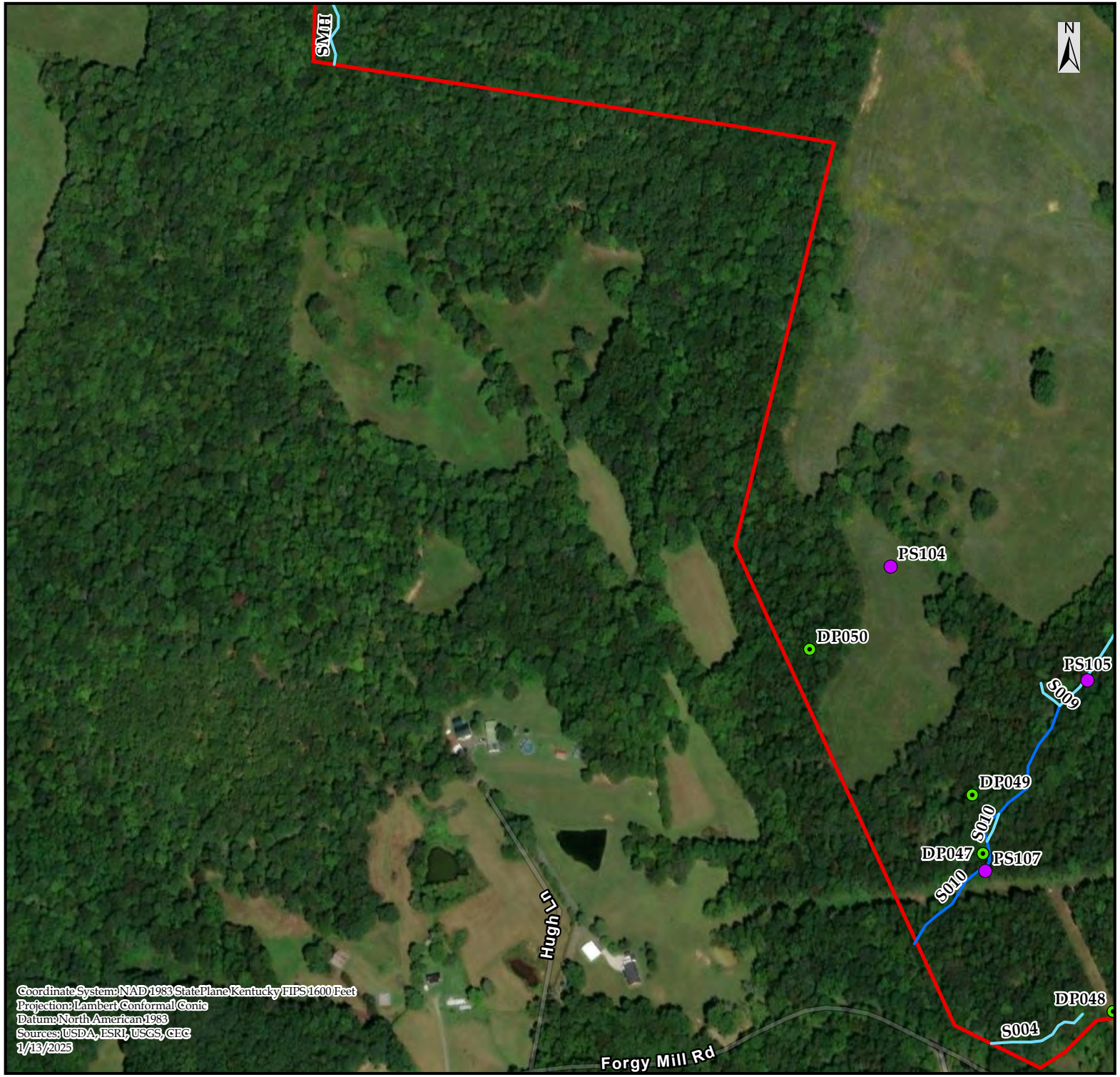

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Prepared for:

Lost City Renewables LLC

FIGURE 5.14:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
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Drawn by:	TC	Date:	1/13/2025
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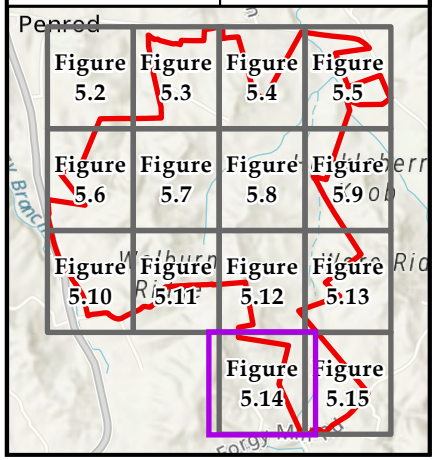

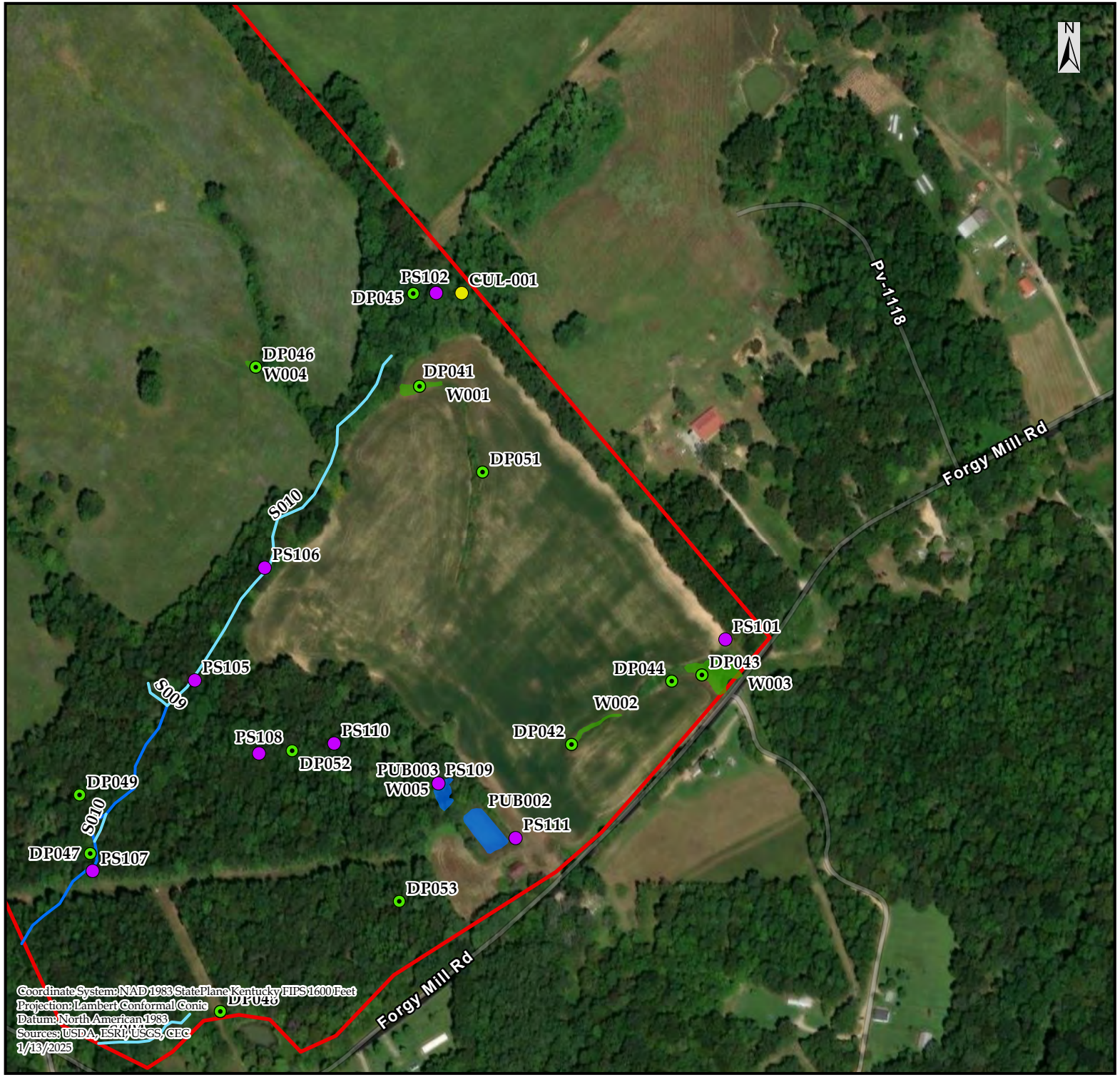

COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 5.15:
Wetland Delineation Overview
for the Lost City Solar Project,
Muhlenberg County, Kentucky.

Legend

- Culvert Point
- Photo Station
- Wetland Data Point
- Upper Perennial Stream (R3)
- Intermittent Stream (R4)
- PEM Wetland
- PFO Wetland
- PSS Wetland
- PUB Wetland
- Project Boundary

0 190 380
US Feet

Scale: 1 in = 383 ft

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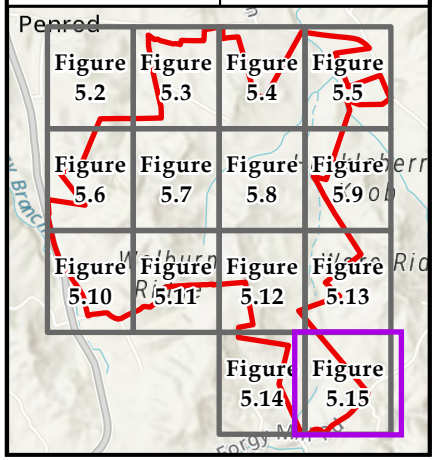
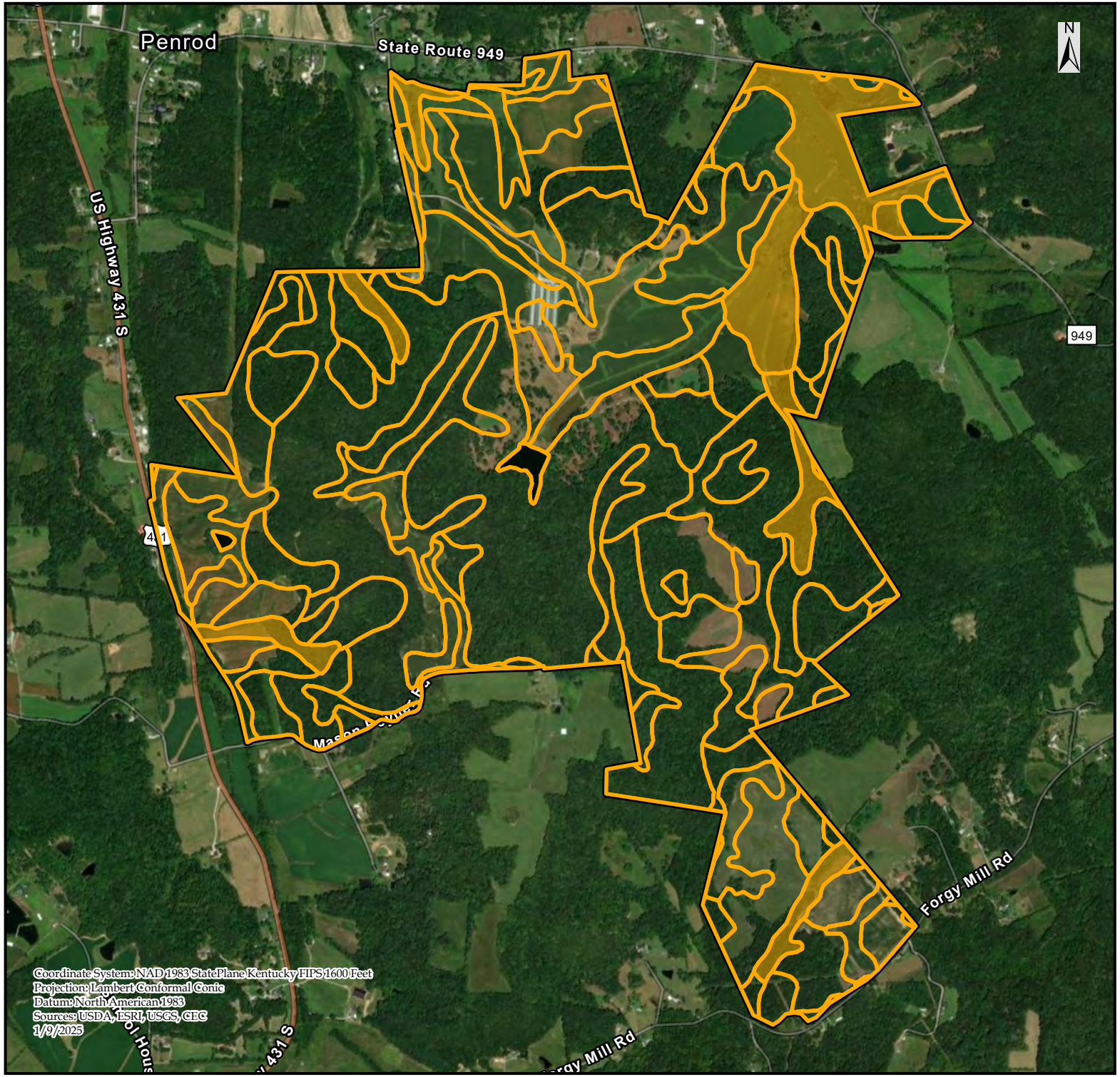
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	1/13/2025
Checked by:	DH	Revision:	02





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Prepared for:

Lost City Renewables LLC

FIGURE 6:
USDA SSURGO Soil Classification for the Lost City Solar Project, Muhlenberg County, Kentucky.

Legend

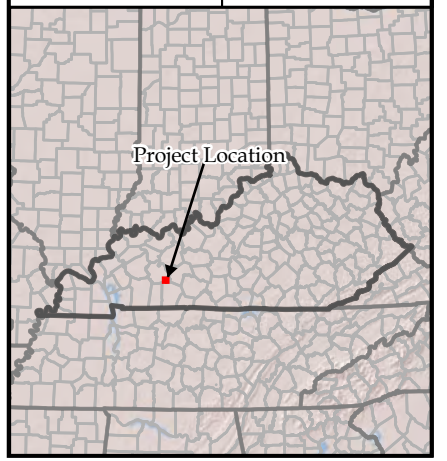
- Hydric Soil
- Non-Hydric Soil
- Project Boundary

0 500 1,000
US Feet

Scale: 1 in = 1,670 ft

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

Drawn by:	TC	Date:	1/9/2025
Checked by:	DH	Revision:	01



United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for McLean and Muhlenberg Counties, Kentucky

December 17, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

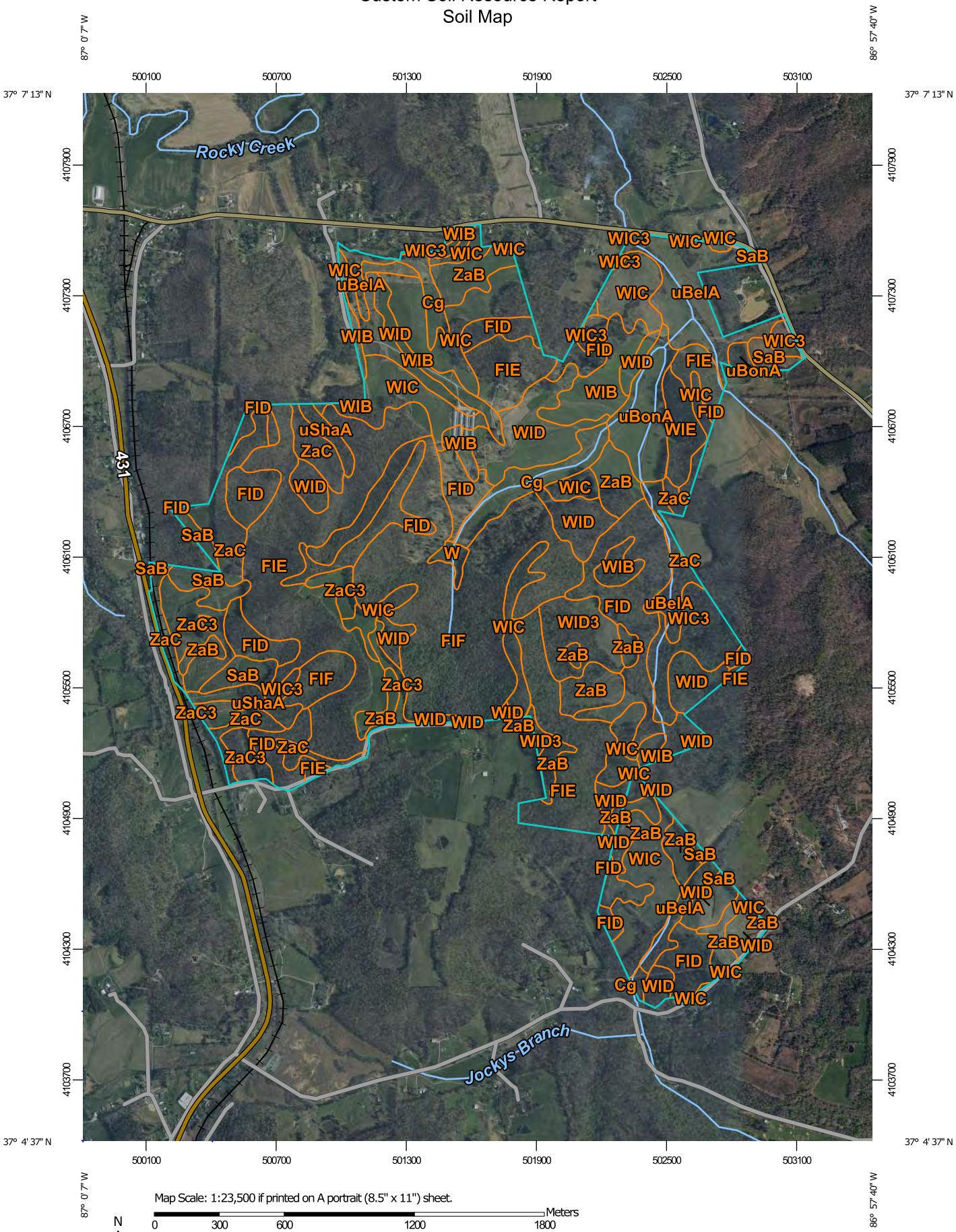
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: McLean and Muhlenberg Counties, Kentucky
Survey Area Data: Version 22, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 10, 2023—Oct 10, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cg	Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded	32.0	2.3%
FlD	Frondorf-Lenberg complex, 12 to 20 percent slopes	165.2	12.0%
FlE	Frondorf-Lenberg complex, 20 to 30 percent slopes	215.7	15.7%
FlF	Frondorf-Lenberg complex, 30 to 50 percent slopes	182.1	13.3%
SaB	Sadler silt loam, 2 to 6 percent slopes	30.1	2.2%
uBelA	Belknap silt loam, 0 to 2 percent slopes, occasionally flooded	72.2	5.3%
uBonA	Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded	32.4	2.4%
uShaA	Sharon silt loam, 0 to 2 percent slopes, occasionally flooded	14.7	1.1%
W	Water	4.9	0.4%
WlB	Wellston silt loam, 2 to 6 percent slopes	57.6	4.2%
WlC	Wellston silt loam, 6 to 12 percent slopes	165.4	12.0%
WlC3	Wellston silt loam, 6 to 12 percent slopes, severely eroded	39.2	2.9%
WlD	Wellston silt loam, 12 to 20 percent slopes	128.2	9.3%
WlD3	Wellston silt loam, 12 to 30 percent slopes, severely eroded	28.3	2.1%
WlE	Wellston silt loam, 20 to 30 percent slopes	16.0	1.2%
ZaB	Zanesville silt loam, 2 to 6 percent slopes	87.0	6.3%
ZaC	Zanesville silt loam, 6 to 12 percent slopes	55.3	4.0%
ZaC3	Zanesville silt loam, 6 to 12 percent slopes, severely eroded	47.6	3.5%
Totals for Area of Interest		**1,374.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

McLean and Muhlenberg Counties, Kentucky

Cg—Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2r14j
Elevation: 380 to 760 feet
Mean annual precipitation: 38 to 58 inches
Mean annual air temperature: 44 to 69 degrees F
Frost-free period: 154 to 212 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Clifty, occasionally flooded, and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clifty, Occasionally Flooded

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Acid fine-loamy alluvium

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 30 inches: gravelly silt loam
C - 30 to 80 inches: gravelly loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 60 to 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F120AY015KY - Loamy Alluvial Headwaters
Hydric soil rating: No

Minor Components

Skidmore, occasionally flooded

Percent of map unit: 6 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Hydric soil rating: No

Blackford, occasionally flooded

Percent of map unit: 4 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sharon, occasionally flooded

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cuba, occasionally flooded

Percent of map unit: 2 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

FID—Frondorf-Lenberg complex, 12 to 20 percent slopes

Map Unit Setting

National map unit symbol: lhgd
Elevation: 360 to 760 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Frondorf and similar soils: 45 percent
Lenberg and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frondorf

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Thin fine-loamy noncalcareous loess over loamy residuum weathered from sandstone and siltstone

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 32 inches: channery silt loam
R - 32 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Description of Lenberg

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from acid shale

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 18 inches: silty clay loam
H3 - 18 to 25 inches: silty clay
H4 - 25 to 35 inches: very gravelly silty clay
Cr - 35 to 45 inches: weathered bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F120AY005KY - Moderately Deep Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Wellston
Percent of map unit: 10 percent
Hydric soil rating: No

Other soils
Percent of map unit: 10 percent
Hydric soil rating: No

FlE—Frondorf-Lenberg complex, 20 to 30 percent slopes

Map Unit Setting
National map unit symbol: lhgf
Elevation: 360 to 760 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition
Frondorf and similar soils: 45 percent
Lenberg and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frondorf

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-loamy noncalcareous loess over loamy residuum weathered from sandstone and siltstone

Typical profile
H1 - 0 to 20 inches: silt loam
H2 - 20 to 32 inches: channery silt loam
R - 32 to 42 inches: unweathered bedrock

Properties and qualities
Slope: 20 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Description of Lenberg

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from acid shale

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 18 inches: silty clay loam
H3 - 18 to 25 inches: silty clay
H4 - 25 to 35 inches: very gravelly silty clay
Cr - 35 to 45 inches: weathered bedrock

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F120AY005KY - Moderately Deep Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Wellston

Percent of map unit: 5 percent
Hydric soil rating: No

Other soils

Percent of map unit: 5 percent

Hydric soil rating: No

Zanesville

Percent of map unit: 5 percent
Hydric soil rating: No

Collins

Percent of map unit: 3 percent
Hydric soil rating: No

Clifty

Percent of map unit: 2 percent
Hydric soil rating: No

FIF—Frondorf-Lenberg complex, 30 to 50 percent slopes

Map Unit Setting

National map unit symbol: lhgg
Elevation: 350 to 730 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Frondorf and similar soils: 45 percent
Lenberg and similar soils: 20 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Frondorf

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-loamy noncalcareous loess over loamy residuum weathered from sandstone and siltstone

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 32 inches: channery silt loam
R - 32 to 42 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Description of Lenberg

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from acid shale

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 18 inches: silty clay loam
H3 - 18 to 25 inches: silty clay
H4 - 25 to 35 inches: very gravelly silty clay
Cr - 35 to 45 inches: weathered bedrock

Properties and qualities

Slope: 30 to 50 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: F120AY005KY - Moderately Deep Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Wellston

Percent of map unit: 10 percent
Hydric soil rating: No

Zanesville

Percent of map unit: 10 percent

Hydric soil rating: No

Clifty

Percent of map unit: 5 percent
Hydric soil rating: No

Collins

Percent of map unit: 5 percent
Hydric soil rating: No

Other soils

Percent of map unit: 5 percent
Hydric soil rating: No

SaB—Sadler silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2vtzl
Elevation: 360 to 990 feet
Mean annual precipitation: 30 to 58 inches
Mean annual air temperature: 44 to 69 degrees F
Frost-free period: 157 to 213 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sadler and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sadler

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 20 inches: silt loam
E/B - 20 to 24 inches: silt loam
2Btx - 24 to 62 inches: silt loam
2C - 62 to 76 inches: very gravelly fine sandy loam
2R - 76 to 86 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 22 to 31 inches to fragipan; 72 to 80 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)
Depth to water table: About 19 to 28 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: F120AY002KY - Fragipan Uplands
Hydric soil rating: No

Minor Components

Zanesville

Percent of map unit: 7 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Robbs

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Wellston

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

uBelA—Belknap silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2s2cn

Elevation: 300 to 700 feet
Mean annual precipitation: 30 to 58 inches
Mean annual air temperature: 45 to 69 degrees F
Frost-free period: 164 to 240 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Belknap, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Belknap, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Acid coarse-silty alluvium

Typical profile

Ap - 0 to 3 inches: silt loam
Bw - 3 to 9 inches: silt loam
Bg - 9 to 77 inches: silt loam
BCg - 77 to 100 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F120AY019KY - Moist Silty Alluvium
Hydric soil rating: No

Minor Components

Wakeland, occasionally flooded

Percent of map unit: 6 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bonnie, occasionally flooded

Percent of map unit: 4 percent

Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Sharon, occasionally flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Stendal, occasionally flooded
Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Belknap, frequently (hydric)
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

uBonA—Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting
National map unit symbol: 2vp3j
Elevation: 310 to 820 feet
Mean annual precipitation: 30 to 58 inches
Mean annual air temperature: 44 to 69 degrees F
Frost-free period: 164 to 240 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Bonnie, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonnie, Occasionally Flooded

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave

Across-slope shape: Linear
Parent material: Acid fine-silty alluvium

Typical profile

Ap - 0 to 8 inches: silt loam
Bg - 8 to 38 inches: silt loam
Cg - 38 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F120AY020KY - Wet Alluvial Flats
Hydric soil rating: Yes

Minor Components

Belknap, occasionally flooded

Percent of map unit: 9 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melvin, occasionally flooded

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Piopolis, occasionally flooded

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

uShaA—Sharon silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2wltv
Elevation: 330 to 690 feet
Mean annual precipitation: 30 to 58 inches
Mean annual air temperature: 45 to 69 degrees F
Frost-free period: 164 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sharon, occasionally flooded, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sharon, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Acid coarse-silty alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
Bw - 7 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 20 to 36 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F120AY019KY - Moist Silty Alluvium
Hydric soil rating: No

Minor Components

Belknap, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Blackford, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wilbur, occasionally flooded
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pope, occasionally flooded
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Bonnie, occasionally flooded
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

W—Water

Map Unit Setting
National map unit symbol: lhhb
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

WlB—Wellston silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2wlvj

Elevation: 380 to 960 feet

Mean annual precipitation: 30 to 60 inches

Mean annual air temperature: 44 to 69 degrees F

Frost-free period: 157 to 215 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Wellston and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston

Setting

Landform: Ridges

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam

Bt - 8 to 40 inches: silt loam

2C - 40 to 52 inches: loam

2R - 52 to 62 inches: bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 40 to 72 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: B

Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Zanesville
Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Frondorf
Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lenberg
Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WIC—Wellston silt loam, 6 to 12 percent slopes

Map Unit Setting
National map unit symbol: 2vtzy
Elevation: 330 to 1,160 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 44 to 68 degrees F
Frost-free period: 157 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Wellston and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston

Setting
Landform: Ridges

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 35 inches: silt loam
2C - 35 to 60 inches: fine sandy loam
2R - 60 to 70 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Zanesville

Percent of map unit: 4 percent
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lenberg

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Frondorf

Percent of map unit: 3 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope

Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WlC3—Wellston silt loam, 6 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2wv4t
Elevation: 360 to 940 feet
Mean annual precipitation: 30 to 58 inches
Mean annual air temperature: 41 to 69 degrees F
Frost-free period: 141 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Wellston, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 2 inches: silt loam
Bt - 2 to 40 inches: silt loam
2C - 40 to 52 inches: loam
2R - 52 to 62 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 40 to 69 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Ecological site: F120BY007IN - Deep Well Drained Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Zanesville, severely eroded
Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rosine, severely eroded
Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Gilpin, severely eroded
Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lenberg, severely eroded
Percent of map unit: 2 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WID—Wellston silt loam, 12 to 20 percent slopes

Map Unit Setting
National map unit symbol: 2wh3r
Elevation: 350 to 830 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 44 to 69 degrees F
Frost-free period: 157 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Wellston and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 35 inches: silt loam
2C - 35 to 60 inches: fine sandy loam
2R - 60 to 70 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Frondorf

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Zanesville

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lenberg

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WID3—Wellston silt loam, 12 to 30 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2vtzw
Elevation: 350 to 830 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Wellston, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston, Severely Eroded

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

A - 0 to 3 inches: silt loam
Bt - 3 to 25 inches: silty clay loam
2C - 25 to 60 inches: fine sandy loam
2R - 60 to 70 inches: bedrock

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: 49 to 74 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Zanesville, severely eroded

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Frondorf, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Lenberg, severely eroded

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

WIE—Wellston silt loam, 20 to 30 percent slopes

Map Unit Setting

National map unit symbol: lhhm
Elevation: 350 to 660 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 46 to 68 degrees F
Frost-free period: 168 to 212 days

Farmland classification: Not prime farmland

Map Unit Composition

Wellston and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wellston

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 30 inches: silt loam
H3 - 30 to 52 inches: loam
R - 52 to 62 inches: unweathered bedrock

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: 40 to 72 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: F120AY004KY - Loess Veneered Sandstone-Shale Uplands
Hydric soil rating: No

Minor Components

Alluvial soils

Percent of map unit: 5 percent
Hydric soil rating: No

Frondorf

Percent of map unit: 5 percent
Hydric soil rating: No

Lenberg

Percent of map unit: 5 percent
Hydric soil rating: No

Loring

Percent of map unit: 5 percent
Hydric soil rating: No

Memphis

Percent of map unit: 5 percent
Hydric soil rating: No

Other upland soils

Percent of map unit: 5 percent
Hydric soil rating: No

ZaB—Zanesville silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2s2cp
Elevation: 350 to 670 feet
Mean annual precipitation: 30 to 60 inches
Mean annual air temperature: 44 to 69 degrees F
Frost-free period: 157 to 213 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Zanesville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zanesville

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 31 inches: silt loam
Btx - 31 to 39 inches: silty clay loam
2C - 39 to 68 inches: silty clay loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 24 to 32 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 21 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F120AY002KY - Fragipan Uplands
Hydric soil rating: No

Minor Components

Hosmer

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Sadler

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wellston

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

ZaC—Zanesville silt loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2s2cr
Elevation: 330 to 910 feet
Mean annual precipitation: 30 to 61 inches
Mean annual air temperature: 44 to 70 degrees F
Frost-free period: 168 to 212 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Zanesville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zanesville

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and siltstone

Typical profile

Ap - 0 to 8 inches: silt loam
Bt - 8 to 30 inches: silt loam
Btx - 30 to 50 inches: silt loam
2C - 50 to 70 inches: clay loam
R - 70 to 80 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 24 to 32 inches to fragipan; 40 to 79 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)
Depth to water table: About 21 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F120AY002KY - Fragipan Uplands
Hydric soil rating: No

Minor Components

Sadler

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Hosmer

Percent of map unit: 5 percent

Landform: Loess hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Wellston

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

ZaC3—Zanesville silt loam, 6 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2s2ct
Elevation: 320 to 970 feet
Mean annual precipitation: 30 to 61 inches
Mean annual air temperature: 42 to 70 degrees F
Frost-free period: 154 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Zanesville, severely eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zanesville, Severely Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Thin fine-silty noncalcareous loess over loamy residuum weathered from sandstone and siltstone

Typical profile

Ap - 0 to 4 inches: silt loam
Bt - 4 to 23 inches: silt loam
Btx - 23 to 34 inches: silty clay loam
2C - 34 to 56 inches: clay loam
R - 56 to 66 inches: bedrock

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: 20 to 28 inches to fragipan; 38 to 75 inches to lithic bedrock
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.13 in/hr)
Depth to water table: About 17 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F120AY002KY - Fragipan Uplands
Hydric soil rating: No

Minor Components

Sadler, eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Hosmer, severely eroded

Percent of map unit: 5 percent
Landform: Loess hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wellston, severely eroded

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

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Appendix B

Representative Stream and Wetland Photographs

Photo Number: 1

8/1/2024

Description:
Overview of the intermittent stream S001 taken from photo station PS103, facing northeast (upstream).

Photo Number: 2

8/1/2024

Description:
View of the perennial portion of stream S010 taken from photo station PS107, facing north.

Photo Number: 3

3/26/2024

Description:
Upstream view of perennial stream SDS48 taken from photo station PS001, facing southeast.

Photo Number: 4

3/25/2024

Description:
Upstream view of perennial stream SDS41 taken from photo station PS003, facing southwest.

Photo Number: 5

3/27/2024

Description:
Downstream view of the perennial (R3) reach of stream SM taken from photo station PS004, facing northeast.

Photo Number: 6

4/3/2024

Description:
Downstream view of the intermittent (R4) reach of stream SDS88 taken from photo station PS005, facing north.

Photo Number: 7

4/4/2024

Description:
Upstream view of the intermittent (R4) reach of stream SDS98 taken from photo station PS010, facing southwest.

Photo Number: 8

3/20/2024

Description:
Downstream view of the intermittent (R4) reach of stream SZ taken from photo station PS014, facing northwest.

Photo Number: 9

3/20/2024

Description:
Downstream view of the intermittent (R4) reach of stream SDS25 taken from photo station PS015, facing northwest.

Photo Number: 10

3/21/2024

Description:
Downstream view of the intermittent (R4) reach of stream SY taken from photo station PS017, facing southwest.

Photo Number: 11

3/20/2024

Description:
Upstream view of intermittent (R4) stream IBS28 taken from photo station PS021, facing northeast..

Photo Number: 12

3/19/2024

Description:
Upstream view of the intermittent (R4) reach of stream JMS2 taken from photo station PS025, facing southwest.

Photo Number: 13

3/19/2024

Description:
Upstream view of perennial (R3) stream IBS45 taken from photo station PS026, facing south.

Photo Number: 14

3/19/2024

Description:
Downstream view of the intermittent (R4) reach of stream SB taken from photo station PS028, facing northwest.

Photo Number: 15

8/1/2024

Description:
Overview of pond PUB002 taken from photo station PS111, facing southwest.

Photo Number: 16

8/1/2024

Description:
Overview of pond PUB003 and palustrine emergent (PEM) wetland W005 taken from photo station PS109, facing southeast.

Photo Number: 17

4/2/2024

Description:
View of upland data point DP-001, facing east.

Photo Number: 18

4/2/2024

Description:
Overview of palustrine forested (PFO) wetland MHW020 taken from data point DP-002, facing south.

Photo Number: 19

4/3/2024

Description:
View of upland data point DP-003 located within hardwood forest, facing north.

Photo Number: 20

4/3/2024

Description:
View of upland data point DP-004 located within an agricultural field, facing south.

Photo Number: 21

4/3/2024

Description:
Overview of PEM wetland MHW007 taken from data point DP-005, facing north.

Photo Number: 22

4/3/2024

Description:
View of upland data point DP-006 located north of wetland MHW010, facing west.

Photo Number: 23

4/3/2024

Description:
Overview of PEM wetland MHW014 taken from data point DP-007, facing south.

Photo Number: 24

4/3/2024

Description:
Overview of PFO wetland MHW015 taken from data point DP-008, facing south.

Photo Number: 25

4/3/2024

Description:
View of upland data point DP-009 west of wetlands MHW014 and MHW015, facing south.

Photo Number: 26

4/4/2024

Description:
Overview of PEM wetland JMW21 taken from data point DP-010, facing north.

Photo Number: 27

4/4/2024

Description:
View of upland data point DP-011 located west of wetland JM21, facing south.

Photo Number: 28

4/4/2024

Description:
View of upland data point DP-012, facing south.

Photo Number: 29

4/4/2024

Description:
View of upland data point DP-013 located in an agricultural field, facing east.

Photo Number: 30

4/4/2024

Description:
View of upland data point DP-014, facing east.

Photo Number: 31

4/4/2024

Description:
View of upland data point DP-015 located in an agricultural field southwest of stream SY and stream SZ, facing west.

Photo Number: 32

4/4/2024

Description:
Overview of PEM wetland JMW5 taken from data point DP-016, facing north.

Photo Number: 33

4/4/2024

Description:
View of upland data point DP-017 located north of wetland JMW5, facing east.

Photo Number: 34

4/4/2024

Description:
View of upland data point DP-018, facing west.

Photo Number: 35

4/4/2024

Description:
View of upland data point DP-019 located in hardwood forest, facing west.

Photo Number: 36

4/4/2024

Description:
Overview of PEM wetland JMW1 taken from data point DP-020, facing east.

Photo Number: 37

4/4/2024

Description:
View of upland data point DP-021, facing east.

Photo Number: 38

4/4/2024

Description:
View of upland data point DP-022, facing south.

Photo Number: 39

4/4/2024

Description:
Overview of PFO wetland JMW20 taken from data point DP-023, facing west.

Photo Number: 40

4/4/2024

Description:
View of upland data point DP-024 located northwest of wetland JMW20, facing north.

Photo Number: 41

4/4/2024

Description:
View of upland data point DP-025, facing east.

Photo Number: 42

4/4/2024

Description:
View of upland data point DP-026 located west of wetland W002, facing west.

Photo Number: 43

4/4/2024

Description:
Overview of PEM wetland MHW003 taken from data point DP-027, facing north.

Photo Number: 44

4/4/2024

Description:
View of upland data point DP-028 located in an agricultural field between wetland MHW003 and wetland MHW004, facing south.

Photo Number: 45

4/4/2024

Description:
Overview of PEM wetland IBW17 taken from data point DP-029, facing north.

Photo Number: 46

4/4/2024

Description:
View of upland data point DP-030 located east of wetland IBW17, facing south.

Photo Number: 47

4/5/2024

Description:
Overview of PFO wetland JMW17 taken from data point DP-031, facing east.

Photo Number: 48

4/5/2024

Description:
View of upland data point DP-032 located northwest of wetland JMW17, facing west.

Photo Number: 49

4/5/2024

Description:
View of upland data point DP-033, facing south.

Photo Number: 50

4/5/2024

Description:
Overview of PFO wetland SDW6 taken from data point DP-034, facing west.

Photo Number: 51

4/5/2024

Description:
View of upland data point DP-035 located southwest of wetland SDW6 and wetland SDW9, facing east.

Photo Number: 52

4/5/2024

Description:
View of upland data point DP-036 located in an agricultural field east of wetland SDW3 and wetland MHW024, facing south.

Photo Number: 53

4/5/2024

Description:
Overview of PFO wetland MHW024 taken from data point DP-037, facing south.

Photo Number: 54

4/5/2024

Description:
View of upland data point DP-038, facing west.

Photo Number: 55

4/5/2024

Description:
View of upland data point DP-039, facing east.

Photo Number: 56

4/5/2024

Description:
View of upland data point DP-040 located in mixed hardwood forest, facing west.

Photo Number: 57

8/1/2024

Description:
Overview of PEM wetland W001 taken from data point DP-041, facing west.

Photo Number: 58

8/1/2024

Description:
Overview of linear PEM wetland W002 taken from data point DP-042, facing northeast.

Photo Number: 59

8/1/2024

Description:
Overview of PEM wetland W003 taken from data point DP-043, facing northeast.

Photo Number: 60

8/1/2024

Description:
View of upland data point DP-044, facing north.

Photo Number: 61

8/1/2024

Description:
View of upland data point DP-045 located within mesic hardwood forest, facing east.

Photo Number: 62

8/1/2024

Description:
Overview of PEM wetland W004 taken at DP-046, facing northeast.

Photo Number: 63

8/1/2024

Description:
View of upland data point DP-047, facing east.

Photo Number: 64

8/1/2024

Description:
View of upland data point DP-048, facing east.

Photo Number: 65

8/1/2024

Description:
View of upland data point DP-0049, facing south.

Photo Number: 66

8/1/2024

Description:
View of upland data point DP-050 located within mixed hardwood forest near the western boundary of the site, facing south.

Photo Number: 67

8/1/2024

Description:
View of upland data point DP-051 located within an agricultural field, facing south.

Photo Number: 68

8/1/2024

Description:
View of upland data point DP-052 located in mixed hardwood forest, facing east.

Photo Number: 69

8/1/2024

Description:
View of upland data point DP-053 located within mixed hardwood forest near the southern boundary of the site, facing north.

Photo Number: 70

8/1/2024

Description:
View of upland data point DP-054 located north of stream S001, facing south.

Photo Number: 71

4/4/2024

Description:
Overview of PEM wetland MHW021 taken from photo station PS007, facing east.

Photo Number: 72

3/26/2024

Description:
Overview of PEM wetland IBW18 taken from photo station PS011, facing east.

Photo Number: 73

3/20/2024

Description:
Overview of PUB wetland IBPUB2 taken from photo station PS020, facing north.

Photo Number: 74

3/18/2024

Description:
Overview of PEM wetland IBW7 taken from photo station PS027, facing west.

Photo Number: 75

3/19/2024

Description:
Overview of PEM wetland SDW1 taken from photo station PS030, facing north.

Photo Number: 76

3/21/2024

Description:
Overview of PEM wetland JMW15 taken from photo station PS033, facing east.

Photo Number: 77

8/1/2024

Description:
Overview of PEM wetland W003 taken from photo station PS101, facing south.

Photo Number: 78

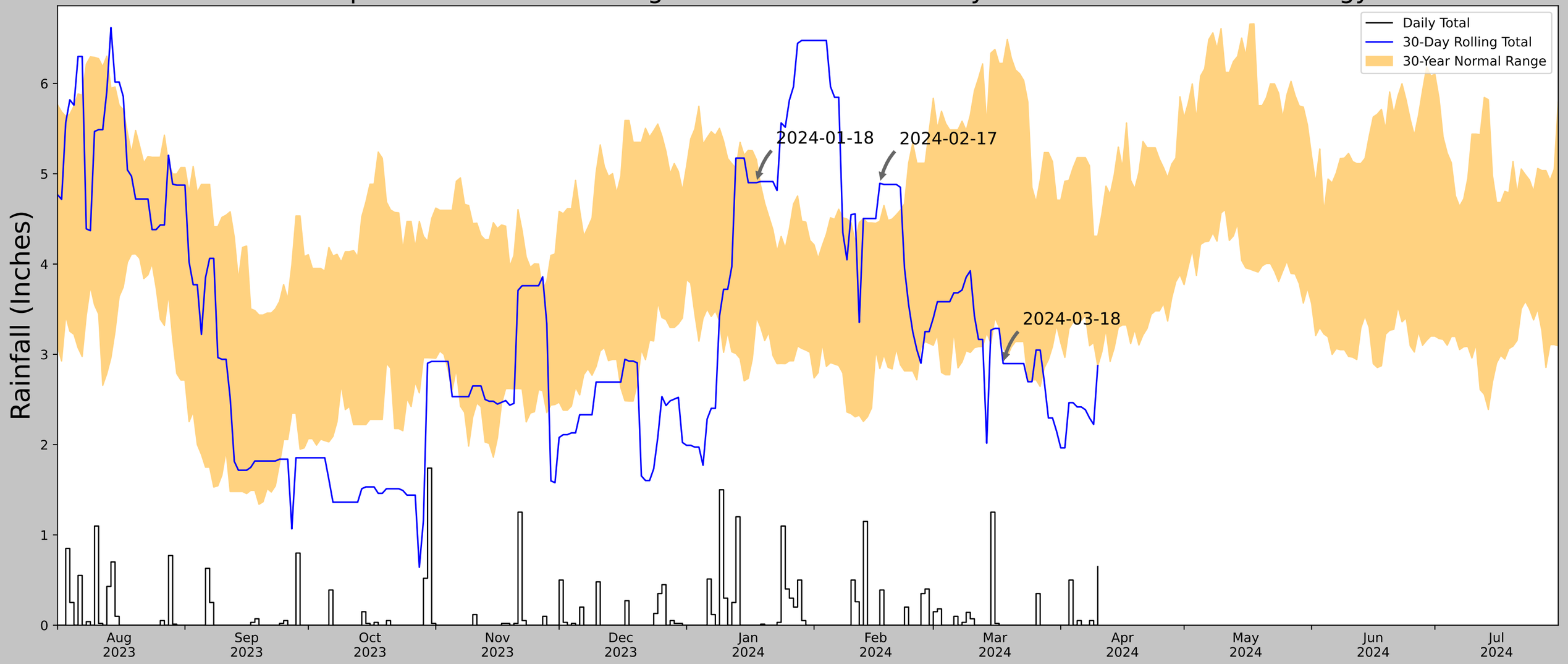
8/1/2024

Description:
View of upland habitat at photo station PS106, facing southwest.

Appendix C

Antecedent Precipitation Table

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-18
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

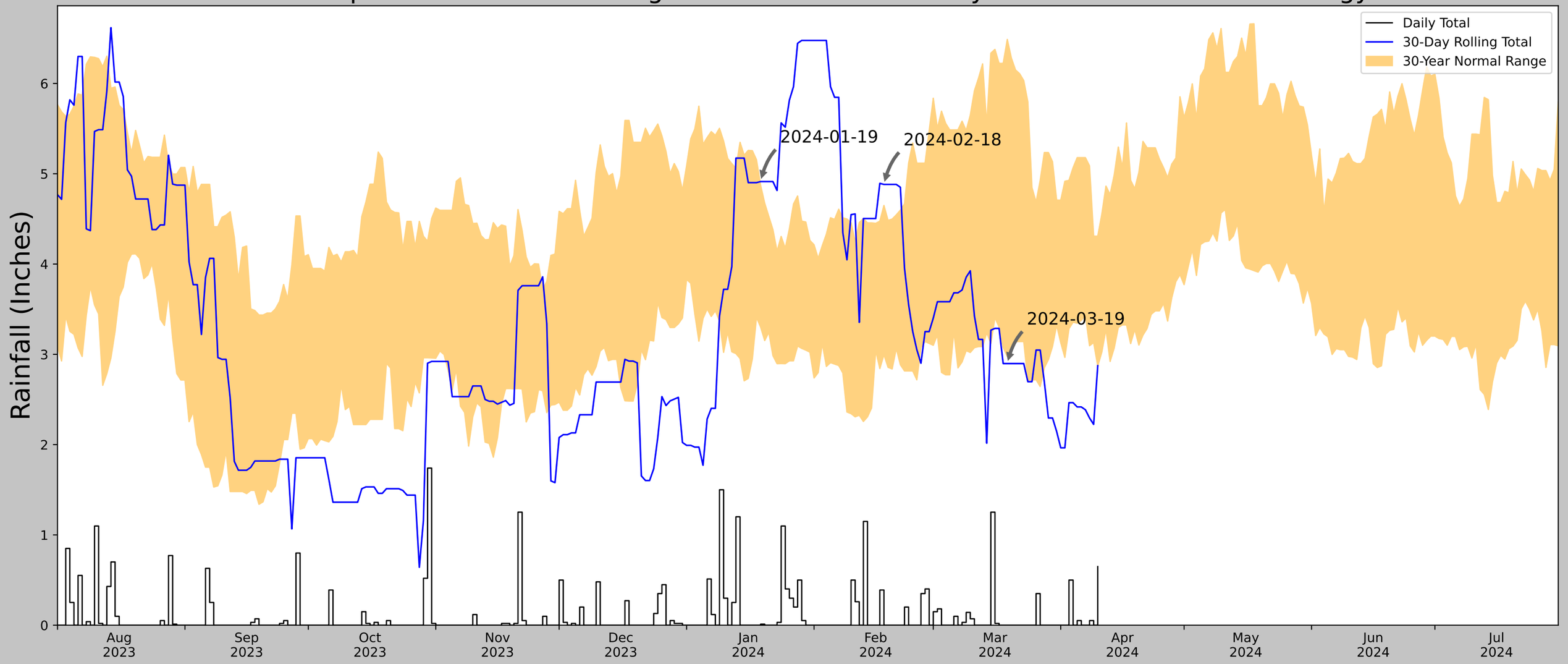
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-18	3.077559	6.222441	2.897638	Dry	1	3	3
2024-02-17	2.842126	4.474803	4.893701	Wet	3	2	6
2024-01-18	3.410236	5.155512	4.901575	Normal	2	1	2
Result							Normal Conditions - 11

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-19
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

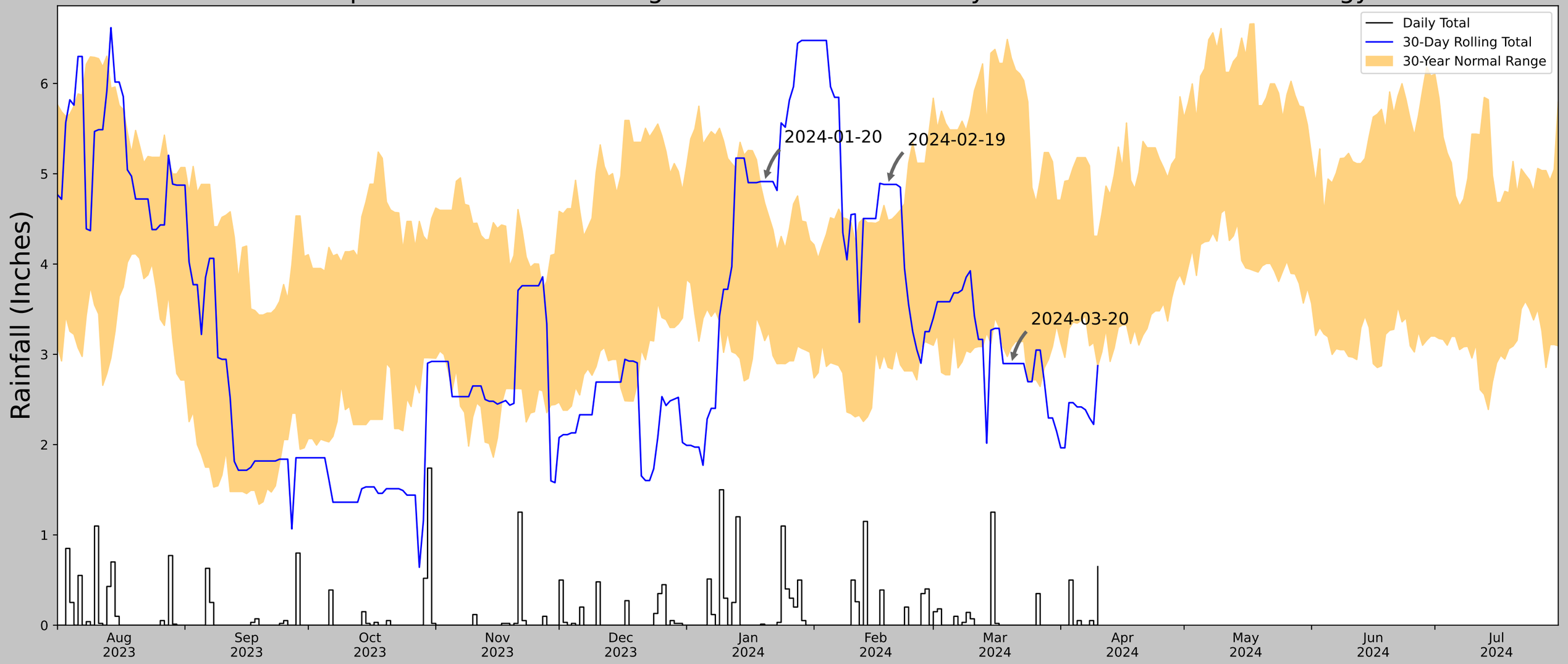
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-19	2.975591	6.487795	2.897638	Dry	1	3	3
2024-02-18	2.996457	4.649213	4.88189	Wet	3	2	6
2024-01-19	3.30315	4.873622	4.913386	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-20
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

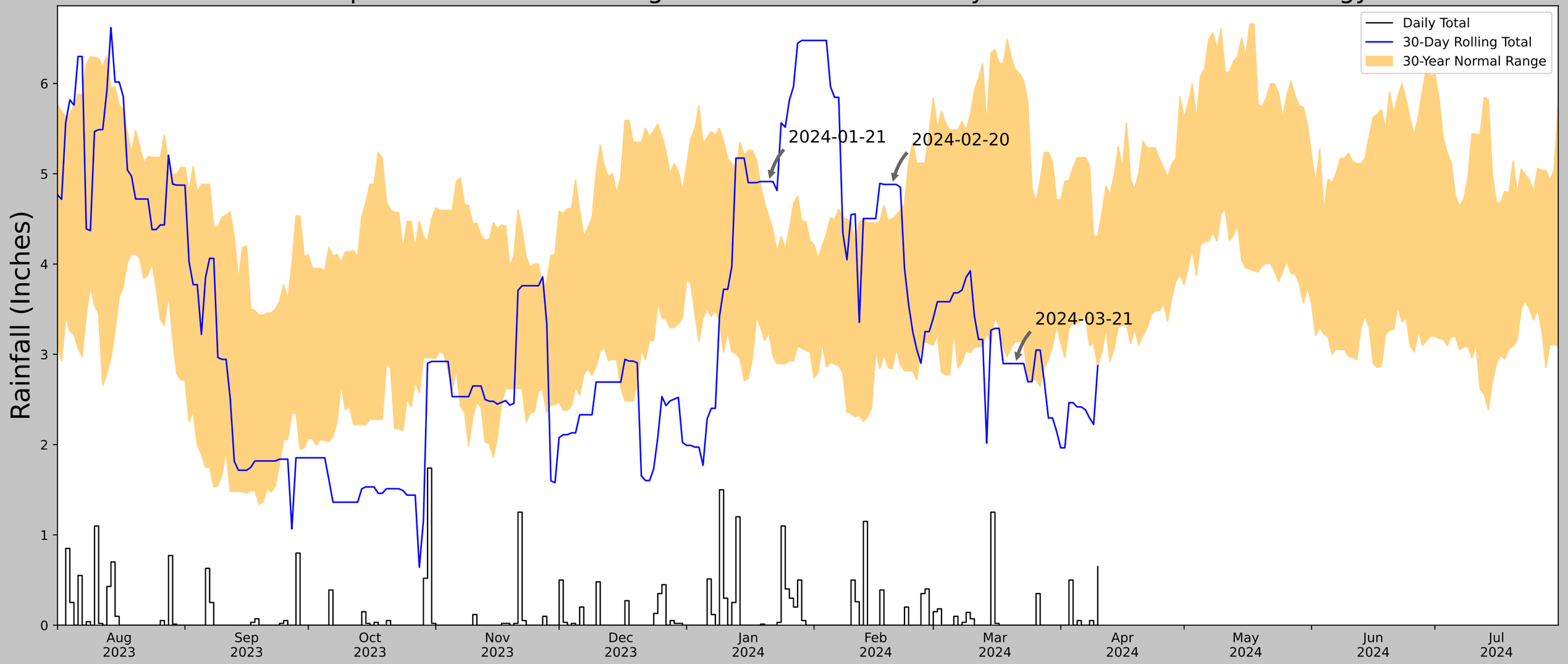
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-20	3.081496	6.280315	2.897638	Dry	1	3	3
2024-02-19	2.855906	4.483071	4.88189	Wet	3	2	6
2024-01-20	3.151969	4.674016	4.913386	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-21
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-21	3.141732	6.149606	2.897638	Dry	1	3	3
2024-02-20	2.838189	4.498425	4.88189	Wet	3	2	6
2024-01-21	3.244095	4.527559	4.913386	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
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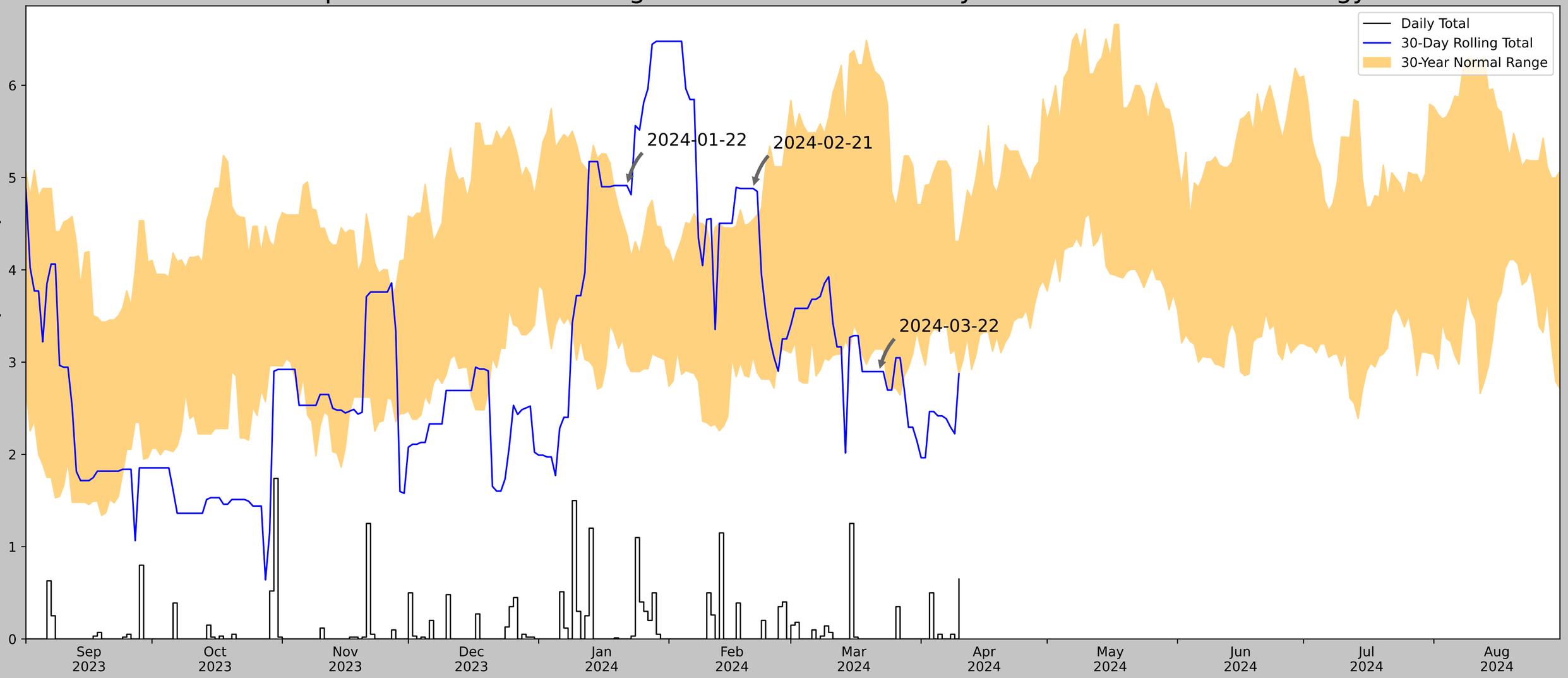
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-22
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-22	3.141732	6.108268	2.897638	Dry	1	3	3
2024-02-21	3.065354	4.544488	4.88189	Wet	3	2	6
2024-01-22	2.985433	4.381496	4.913386	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
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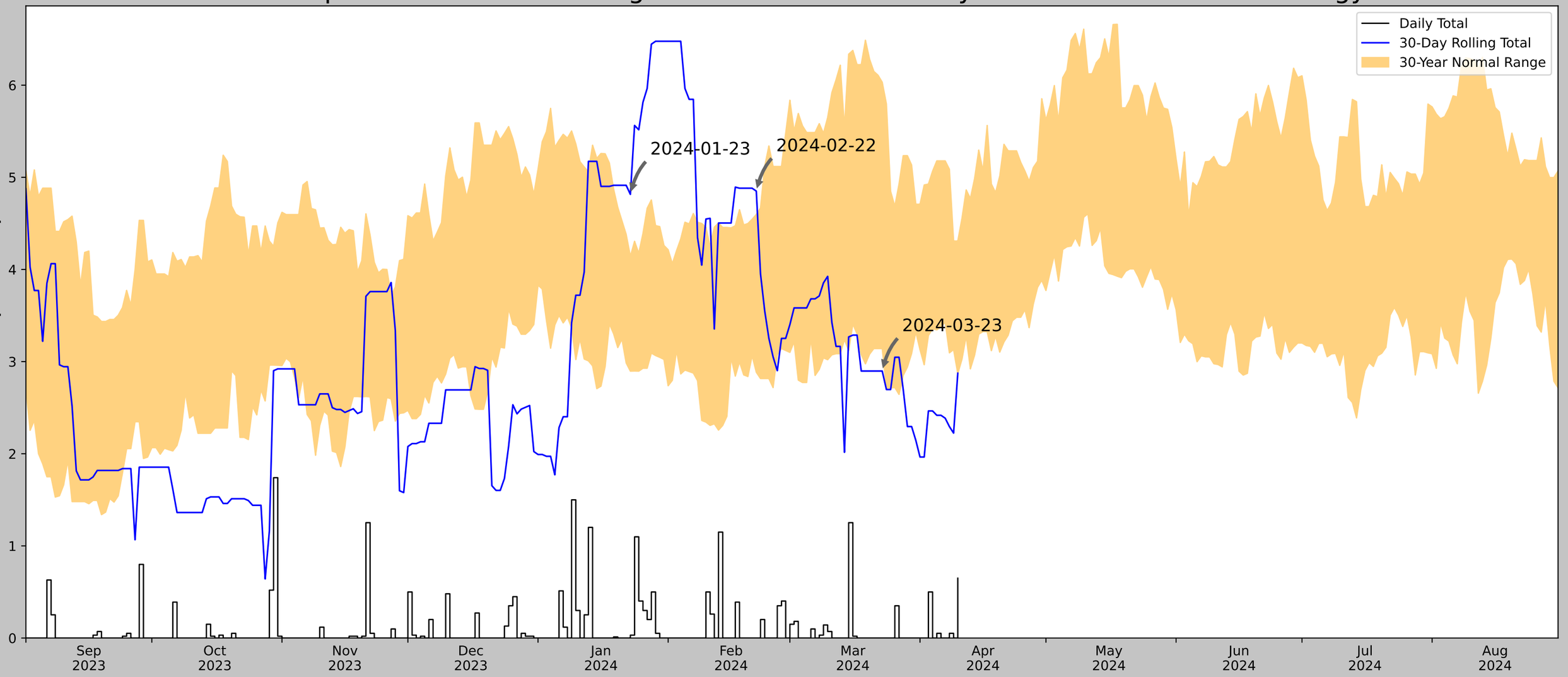
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-23
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

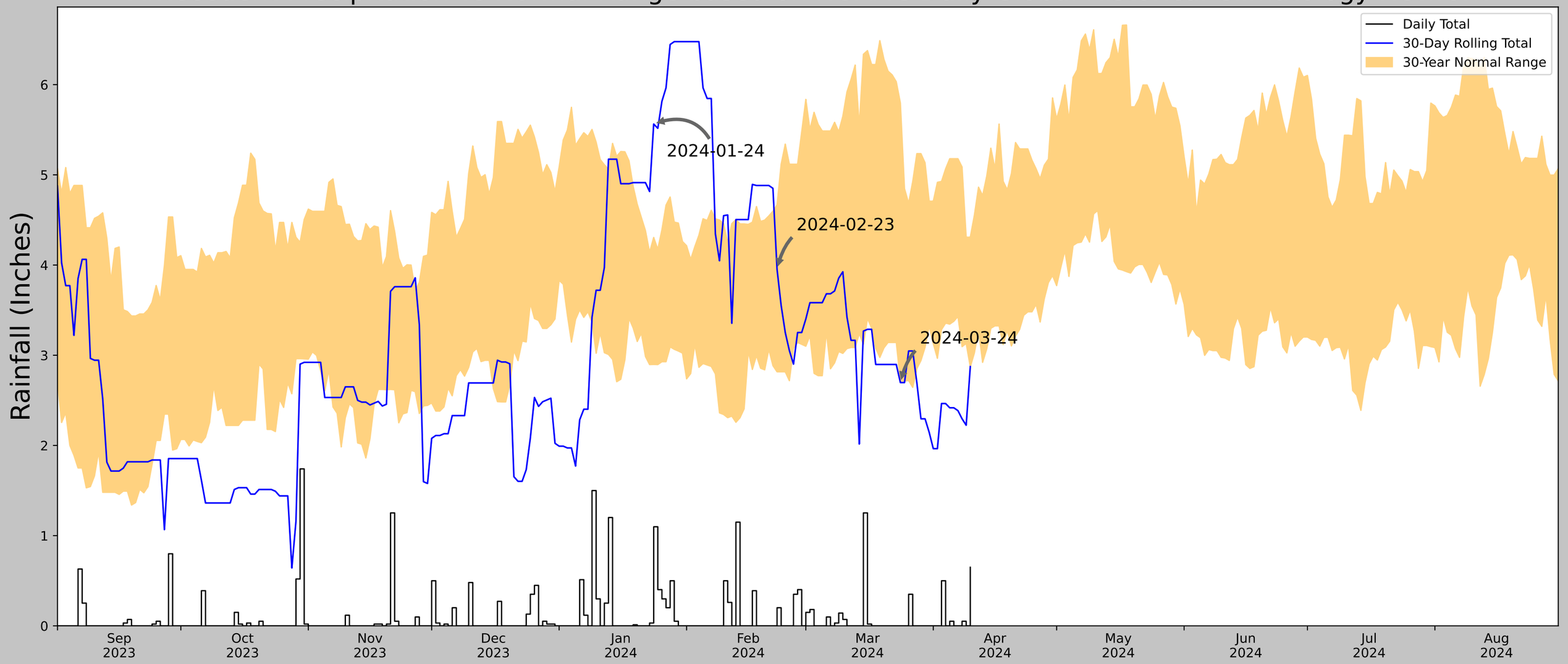
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-23	3.141732	6.032284	2.897638	Dry	1	3	3
2024-02-22	2.884646	4.596851	4.850394	Wet	3	2	6
2024-01-23	2.896457	4.141732	4.814961	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-24
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

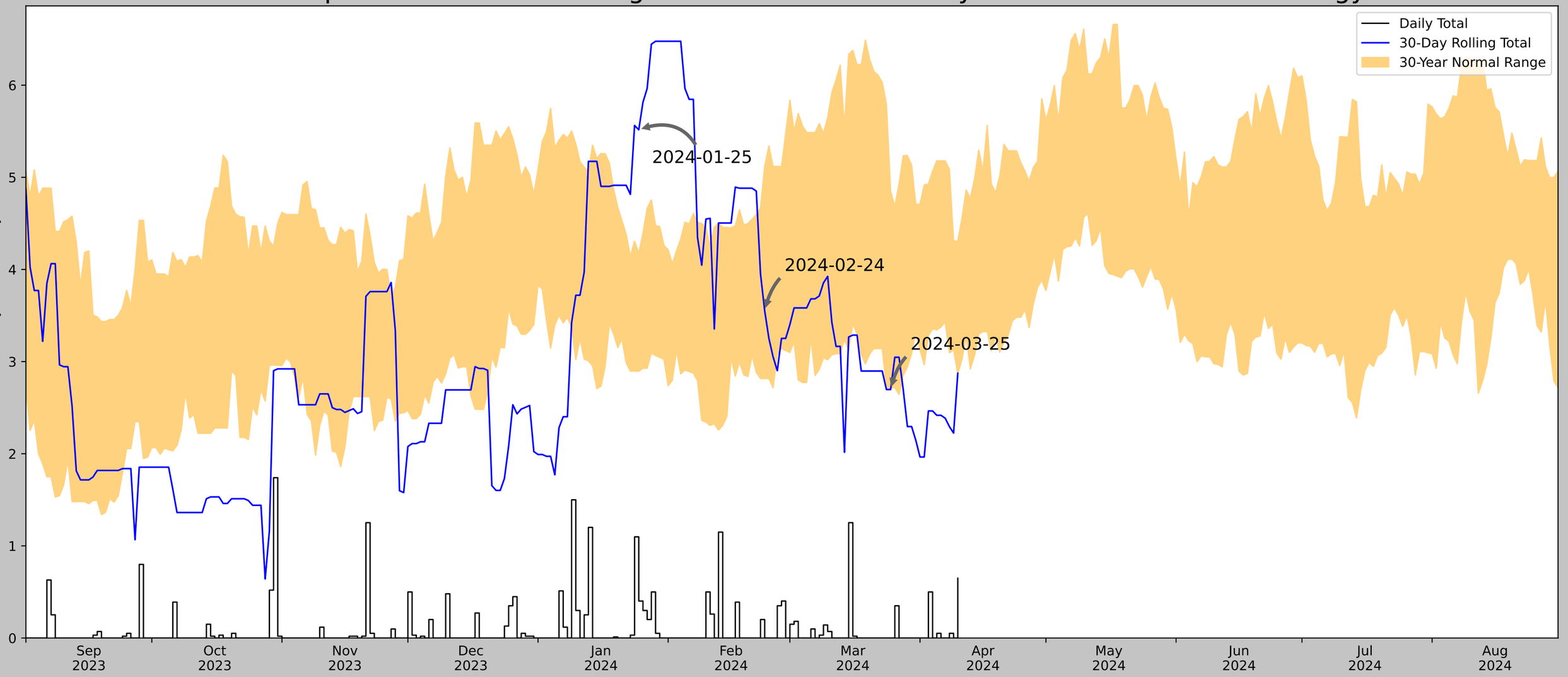
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-24	2.71378	5.796063	2.69685	Dry	1	3	3
2024-02-23	2.816142	4.666536	3.952756	Normal	2	2	4
2024-01-24	2.897638	4.305906	5.562992	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-25
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-25	2.71378	4.847638	2.69685	Dry	1	3	3
2024-02-24	2.816142	5.118504	3.551181	Normal	2	2	4
2024-01-25	2.896457	4.175197	5.515748	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

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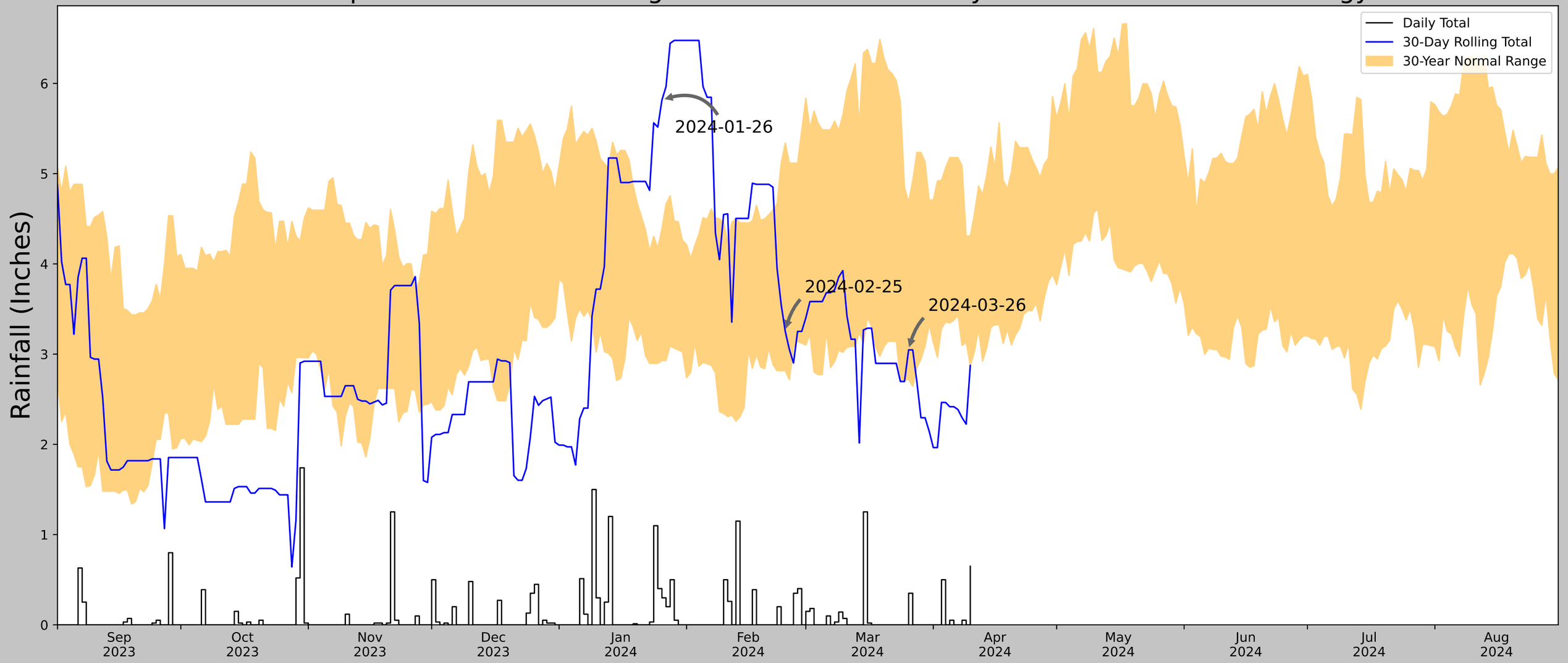
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-26
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

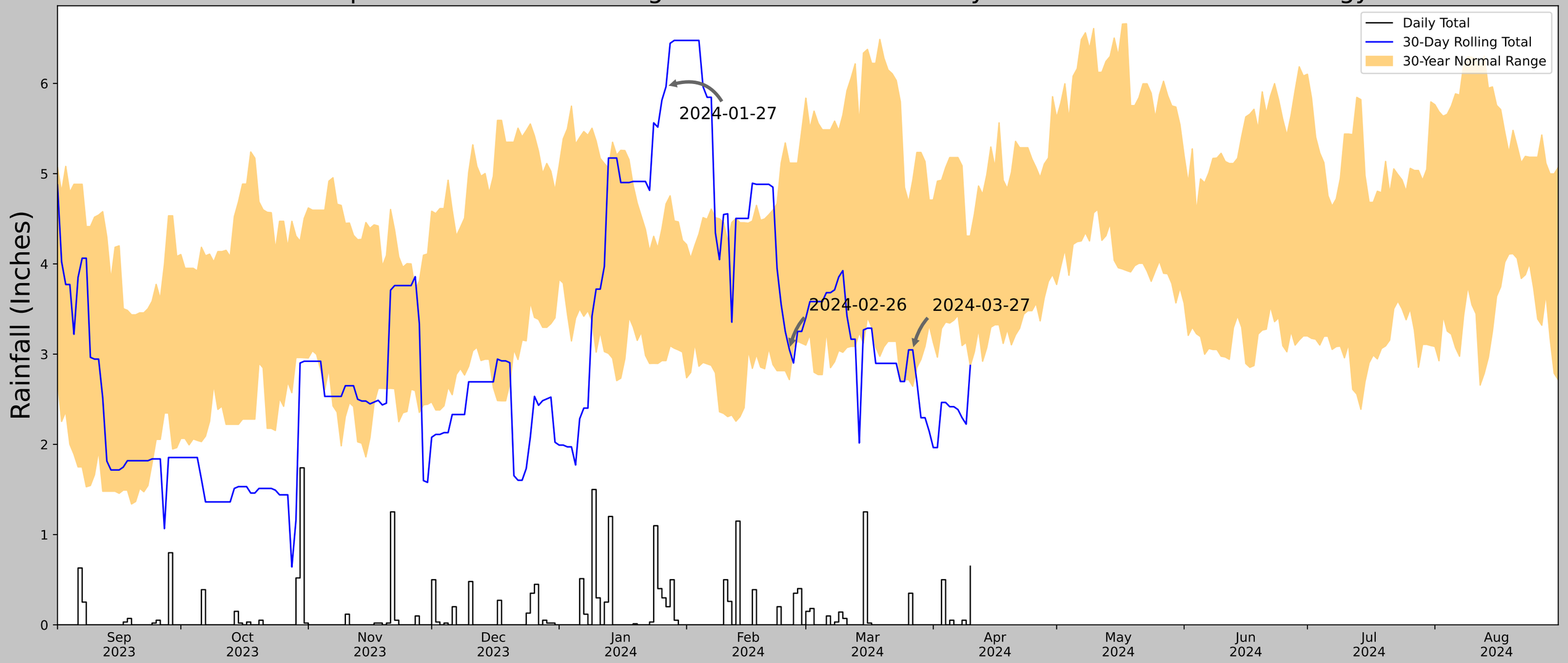
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-26	2.719291	4.685433	3.047244	Normal	2	3	6
2024-02-25	2.816142	5.340945	3.251969	Normal	2	2	4
2024-01-26	2.927953	4.390551	5.814961	Wet	3	1	3
Result							Normal Conditions - 13

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-27
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

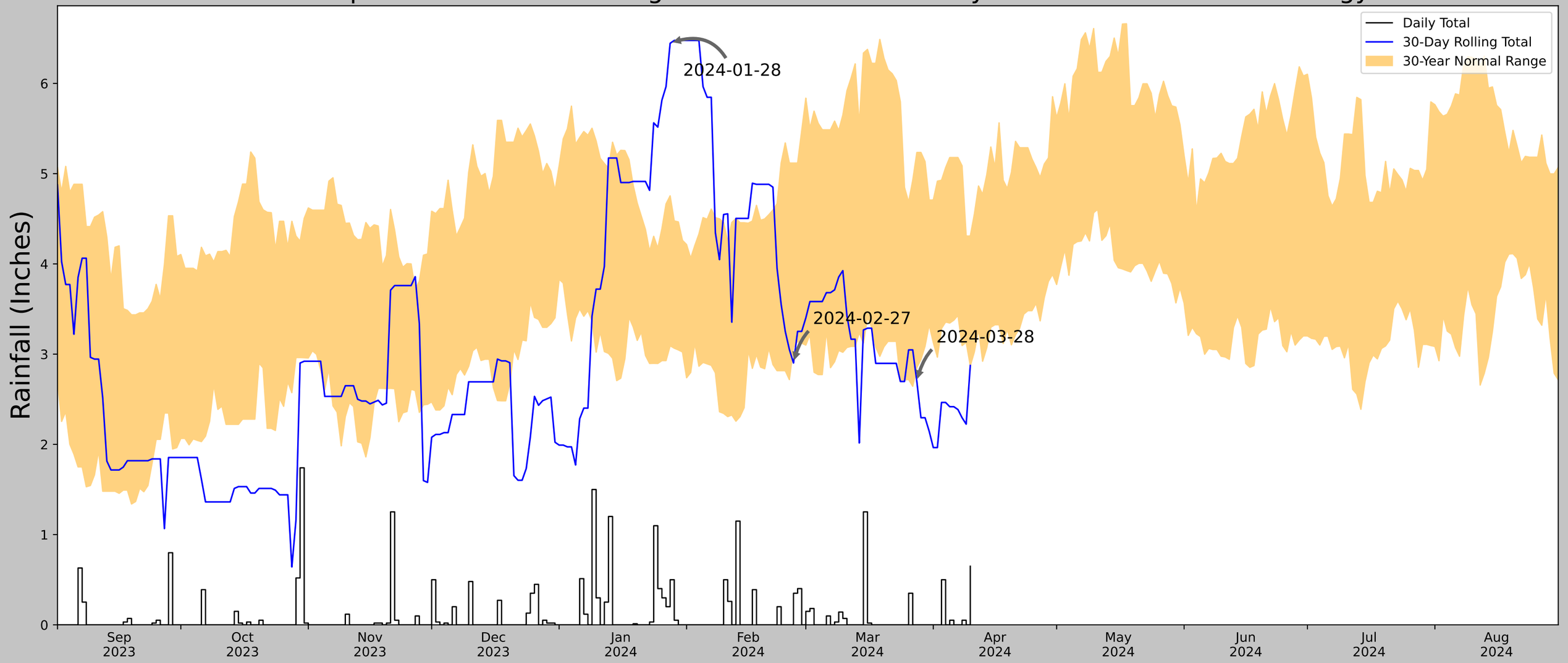
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-27	2.643701	4.926378	3.047244	Normal	2	3	6
2024-02-26	2.717323	5.117717	3.051181	Normal	2	2	4
2024-01-27	2.927953	4.664567	5.964567	Wet	3	1	3
Result							Normal Conditions - 13

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-03-28
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-28	2.850787	5.23504	2.69685	Dry	1	3	3
2024-02-27	3.075591	5.117717	2.901575	Dry	1	2	2
2024-01-28	3.09252	4.754331	6.444882	Wet	3	1	3
Result							Drier than Normal - 8

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Coordinates	37.1043, -86.9827
Observation Date	2024-03-29
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-29	2.940945	5.23504	2.295276	Dry	1	3	3
2024-02-28	3.141732	5.117717	3.251969	Normal	2	2	4
2024-01-29	3.065748	4.475984	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Coordinates	37.1043, -86.9827
Observation Date	2024-03-30
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-30	3.087795	5.133465	2.295276	Dry	1	3	3
2024-02-29	3.120866	5.477362	3.251969	Normal	2	2	4
2024-01-30	3.046457	4.465354	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network

Coordinates	37.1043, -86.9827
Observation Date	2024-03-31
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-03-31	3.324016	4.707874	2.145669	Dry	1	3	3
2024-03-01	3.1	5.837008	3.401575	Normal	2	2	4
2024-01-31	3.024016	4.261024	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
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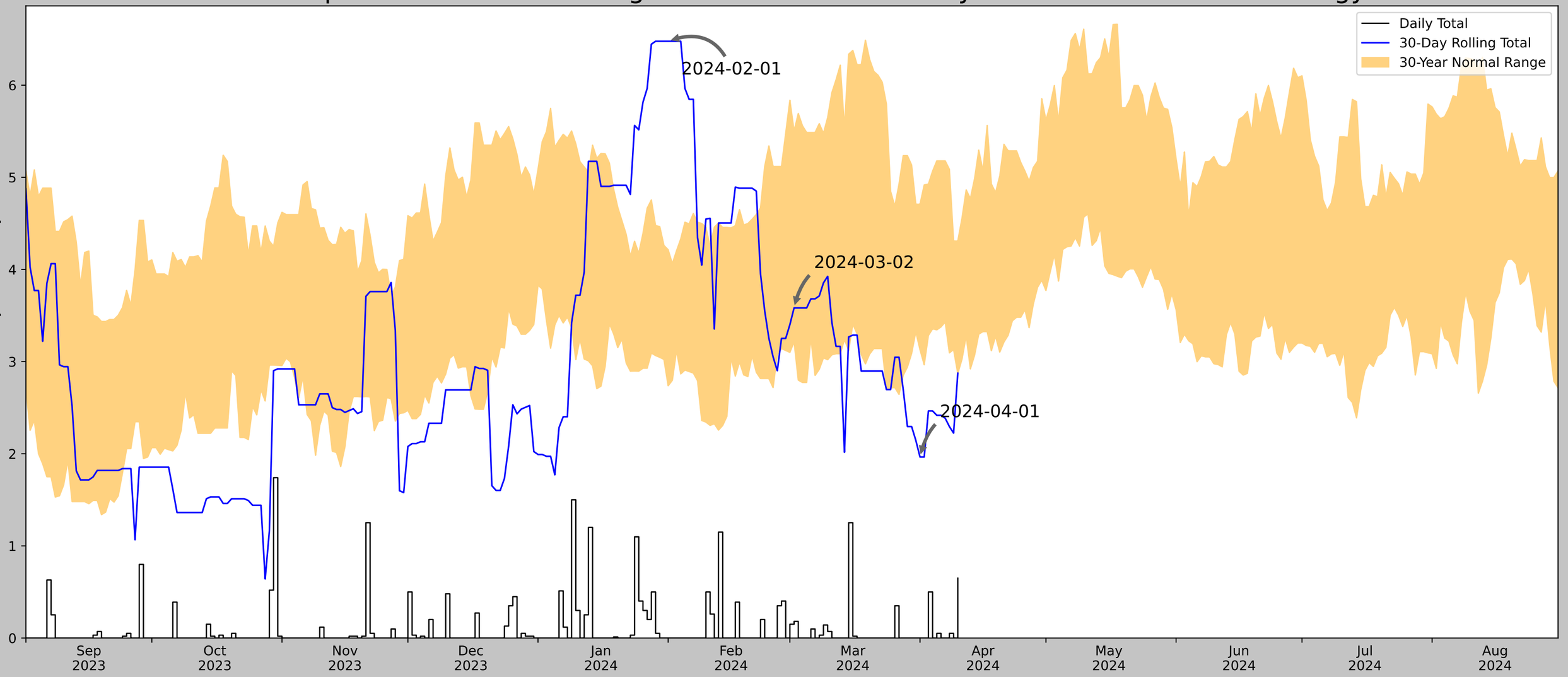
Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-04-01
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-01	3.12874	4.707874	1.964567	Dry	1	3	3
2024-03-02	3.215748	5.501575	3.582677	Normal	2	2	4
2024-02-01	2.737795	4.214173	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
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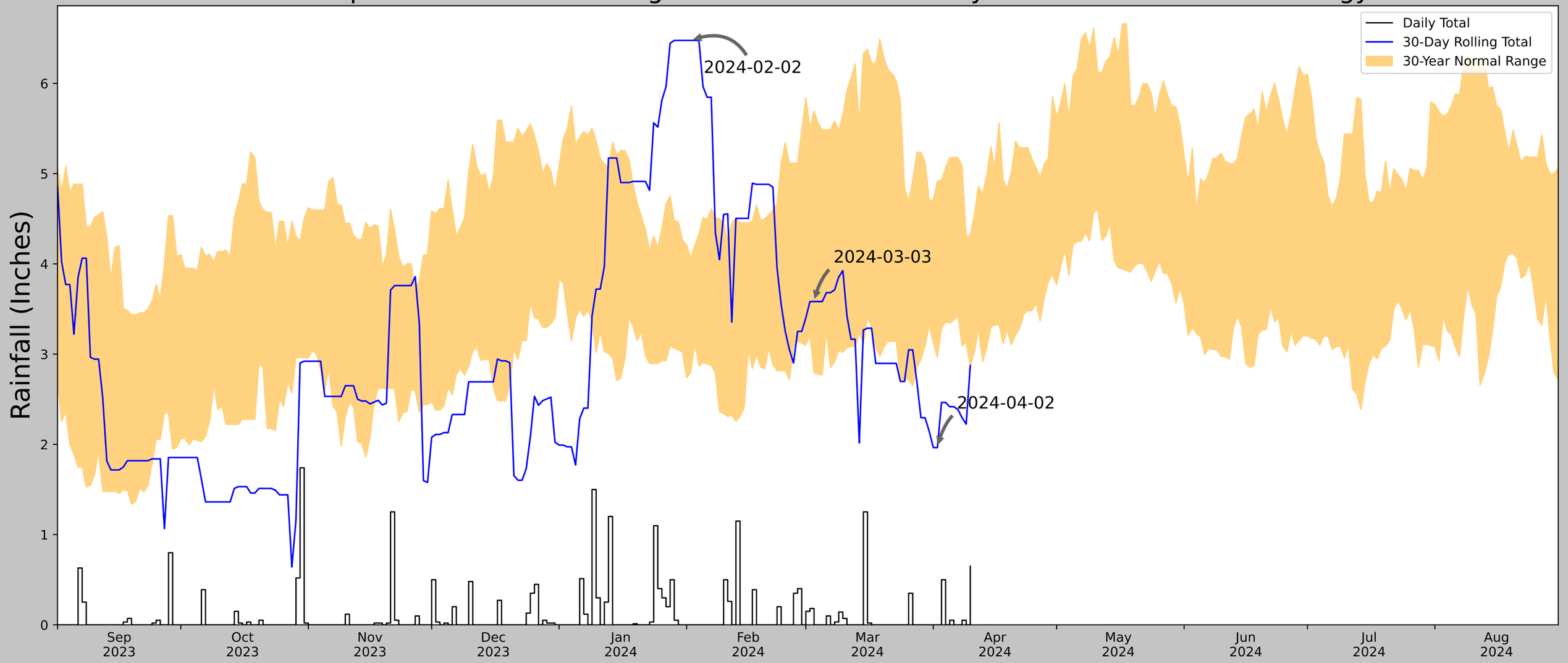
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-04-02
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-02	2.965748	4.917323	1.964567	Dry	1	3	3
2024-03-03	2.799213	5.693307	3.582677	Normal	2	2	4
2024-02-02	2.79685	4.062599	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
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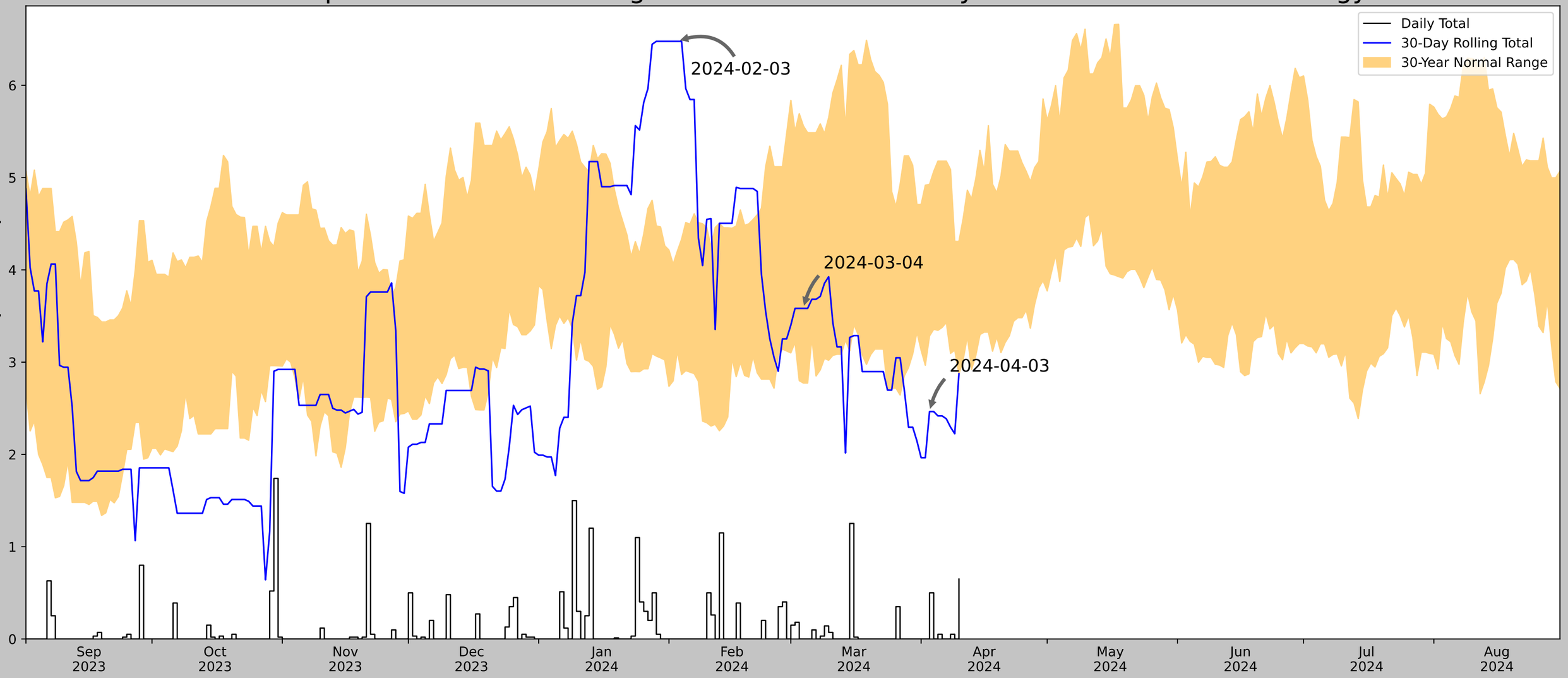
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-04-03
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-03	3.283858	4.926772	2.464567	Dry	1	3	3
2024-03-04	2.773228	5.559055	3.582677	Normal	2	2	4
2024-02-03	3.120473	4.203543	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

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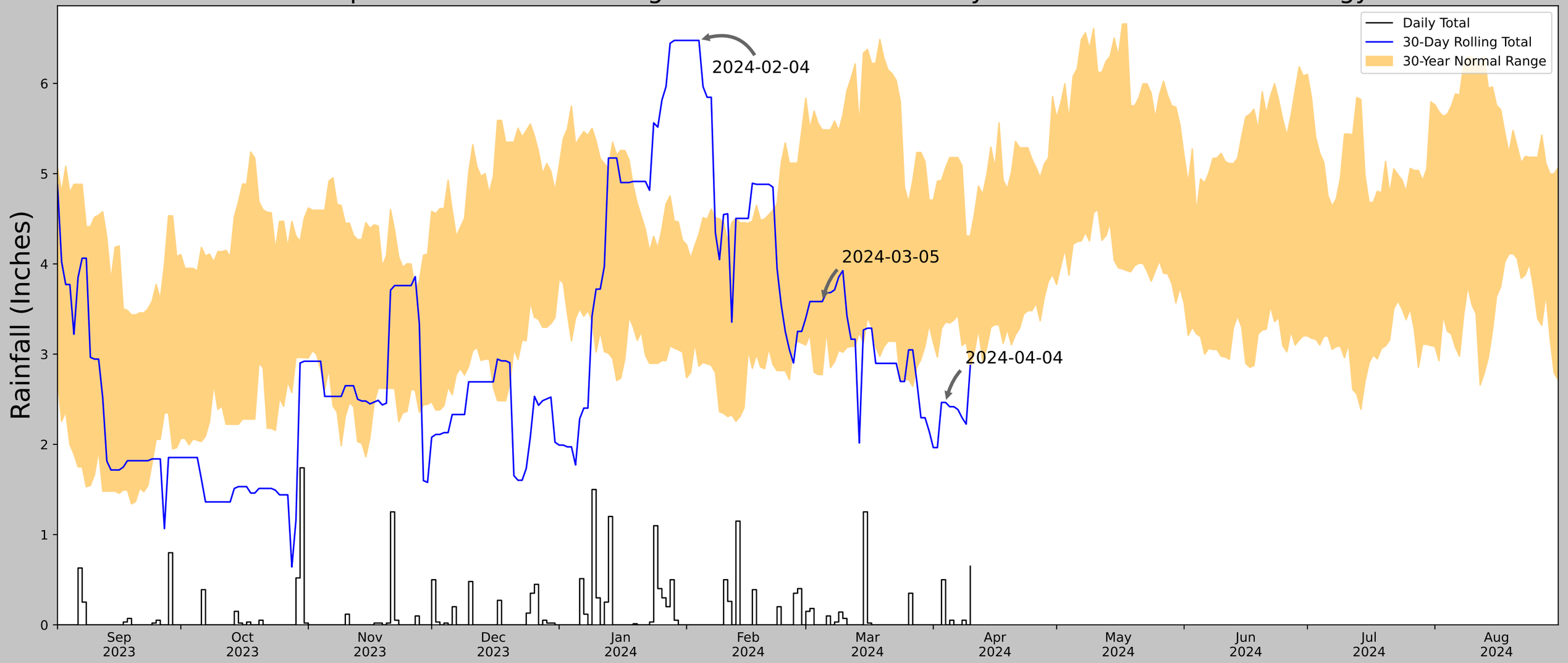
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-04-04
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-04	3.356299	5.067323	2.464567	Dry	1	3	3
2024-03-05	2.773228	5.486221	3.582677	Normal	2	2	4
2024-02-04	2.866142	4.331496	6.476378	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

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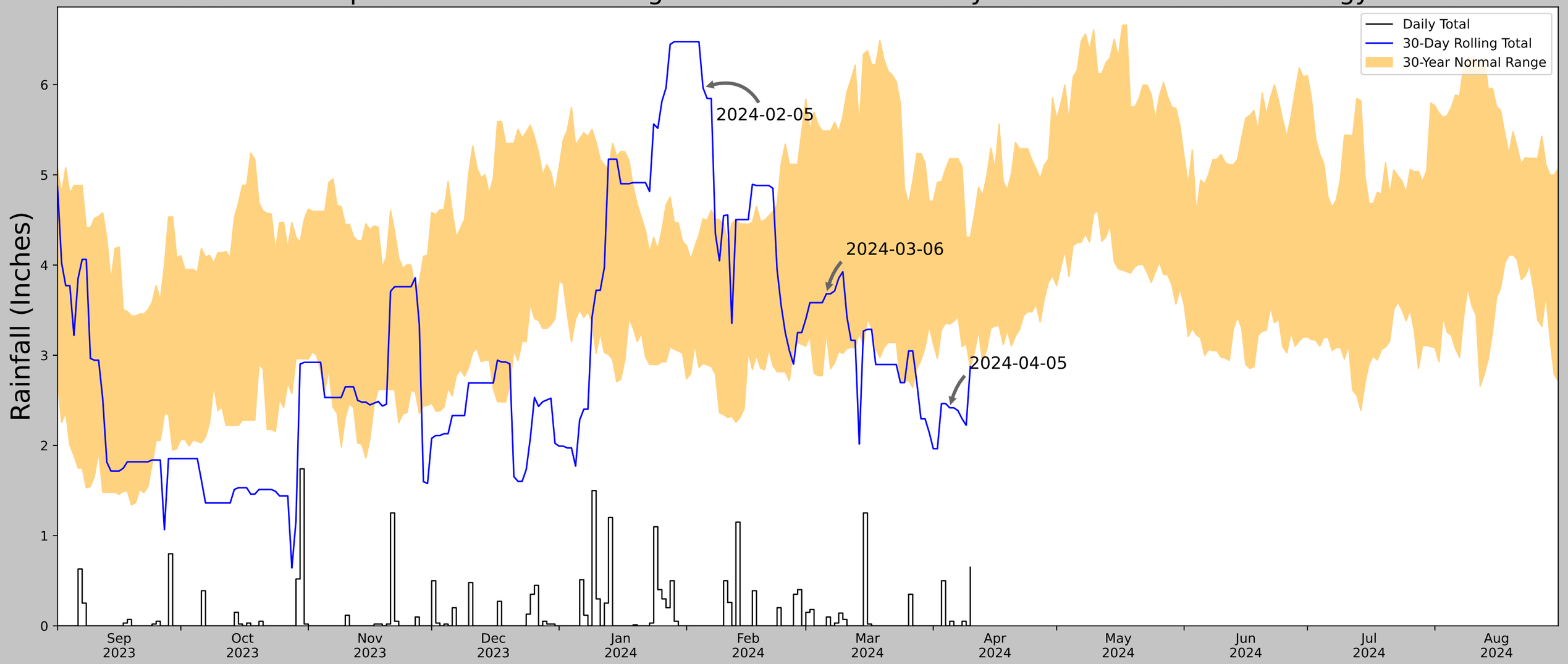
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.1043, -86.9827
Observation Date	2024-04-05
Elevation (ft)	489.553
Drought Index (PDSI)	Moderate drought (2024-03)
WebWIMP H_2O Balance	Wet Season

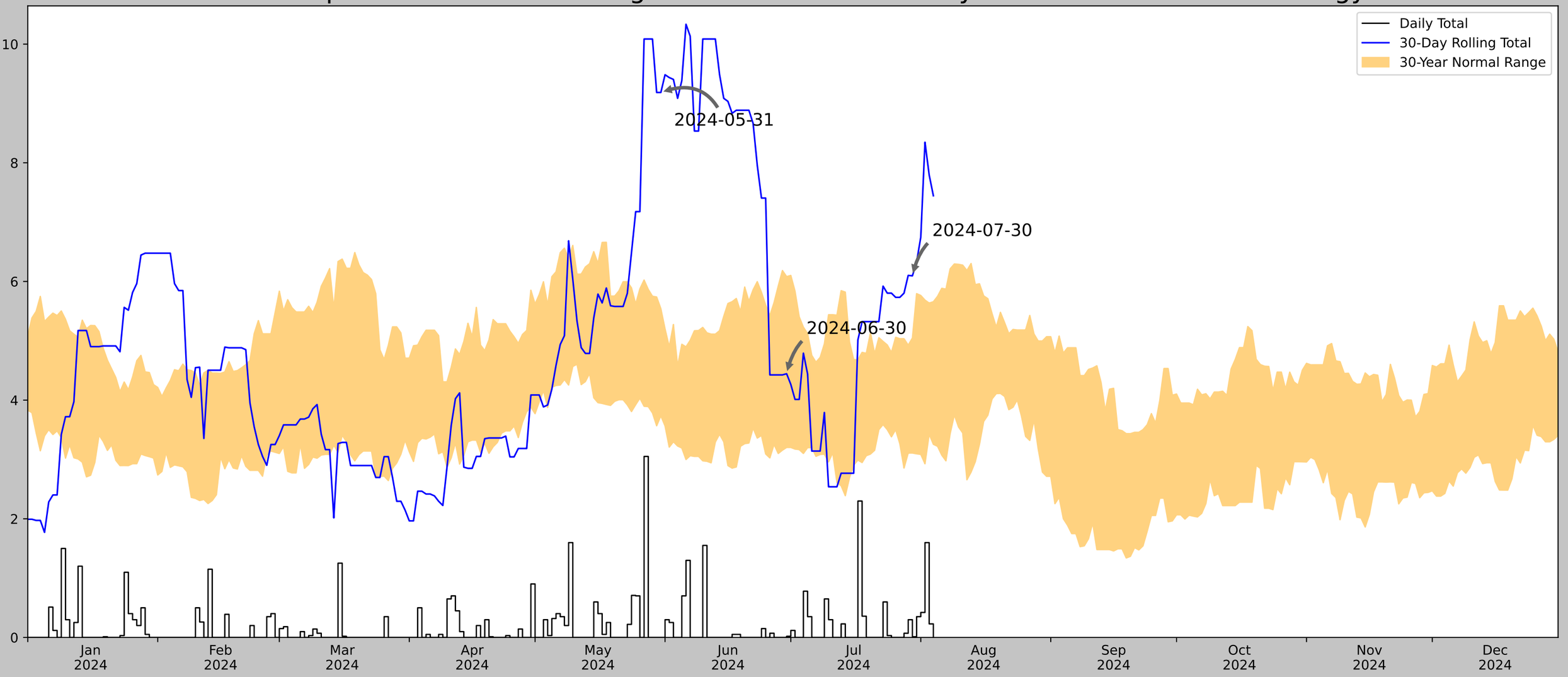
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-05	3.344488	5.17874	2.417323	Dry	1	3	3
2024-03-06	3.257874	5.486221	3.681102	Normal	2	2	4
2024-02-05	2.908268	4.512992	5.964567	Wet	3	1	3
Result							Normal Conditions - 10

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2167, -86.8936	390.092	9.186	99.461	5.047	10119	89
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.484	11.811	2.533	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.754	132.874	3.937	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.931	54.79	4.003	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.43	100.065	6.287	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.115	41.995	6.453	0	1
POWDERLY	37.235, -87.1514	444.882	14.239	54.79	7.188	6	0
WOODBURY	37.1853, -86.6336	439.961	14.472	49.869	7.234	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.745	42.979	7.762	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	29.856	7.815	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.087774, -86.969912
Observation Date	2024-07-30
Elevation (ft)	508.321
Drought Index (PDSI)	Incipient drought (2024-06)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-07-30	3.107874	5.047244	6.094488	Wet	3	3	9
2024-06-30	3.201969	6.082284	4.444882	Normal	2	2	4
2024-05-31	3.735039	5.54252	9.18504	Wet	3	1	3
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

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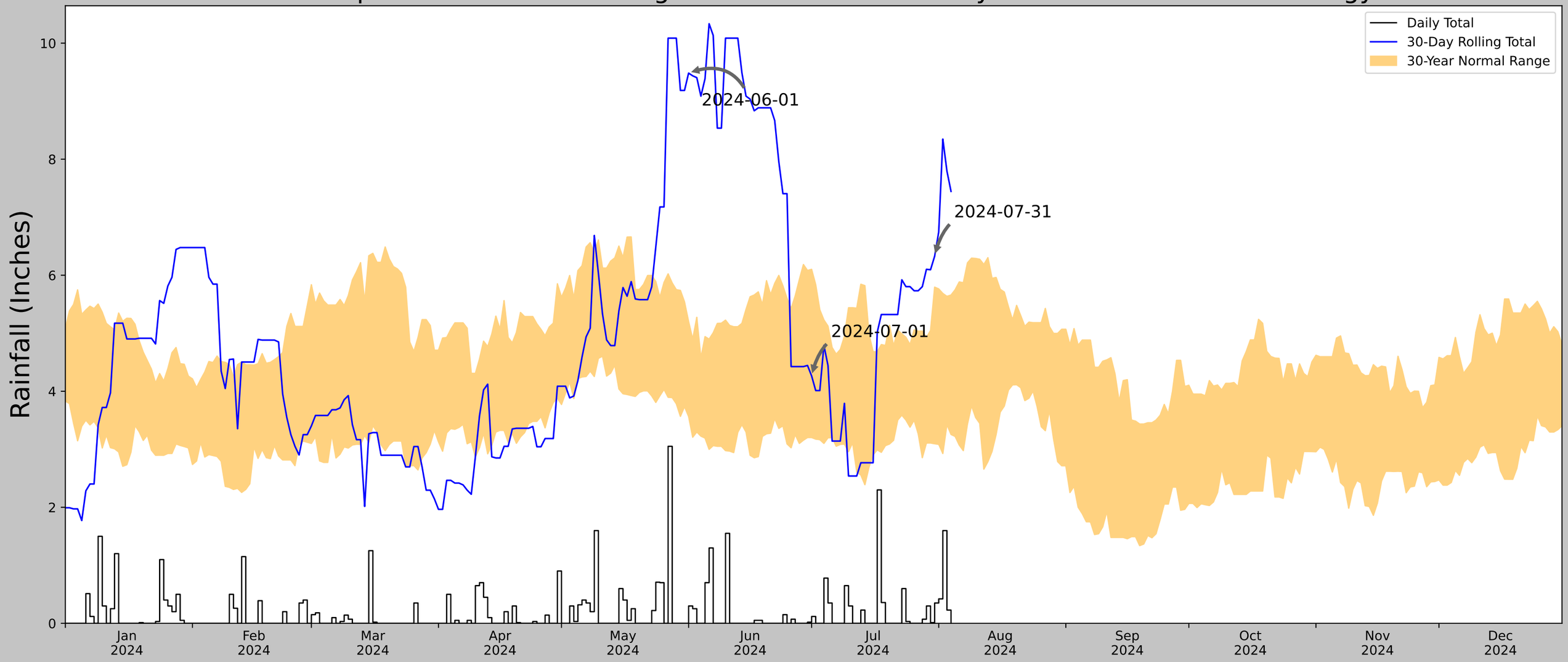
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2164, -86.8939	399.934	9.824	108.387	5.485	10119	86
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.481	1.969	2.477	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.731	123.032	3.857	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.956	44.948	3.938	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.449	90.223	6.185	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.136	32.153	6.334	0	4
POWDERLY	37.235, -87.1514	444.882	14.225	44.948	7.041	6	0
WOODBURY	37.1853, -86.6336	439.961	14.486	40.027	7.099	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.721	33.137	7.595	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	20.014	7.655	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.087774, -86.969912
Observation Date	2024-07-31
Elevation (ft)	508.321
Drought Index (PDSI)	Incipient drought (2024-06)
WebWIMP H_2O Balance	Dry Season

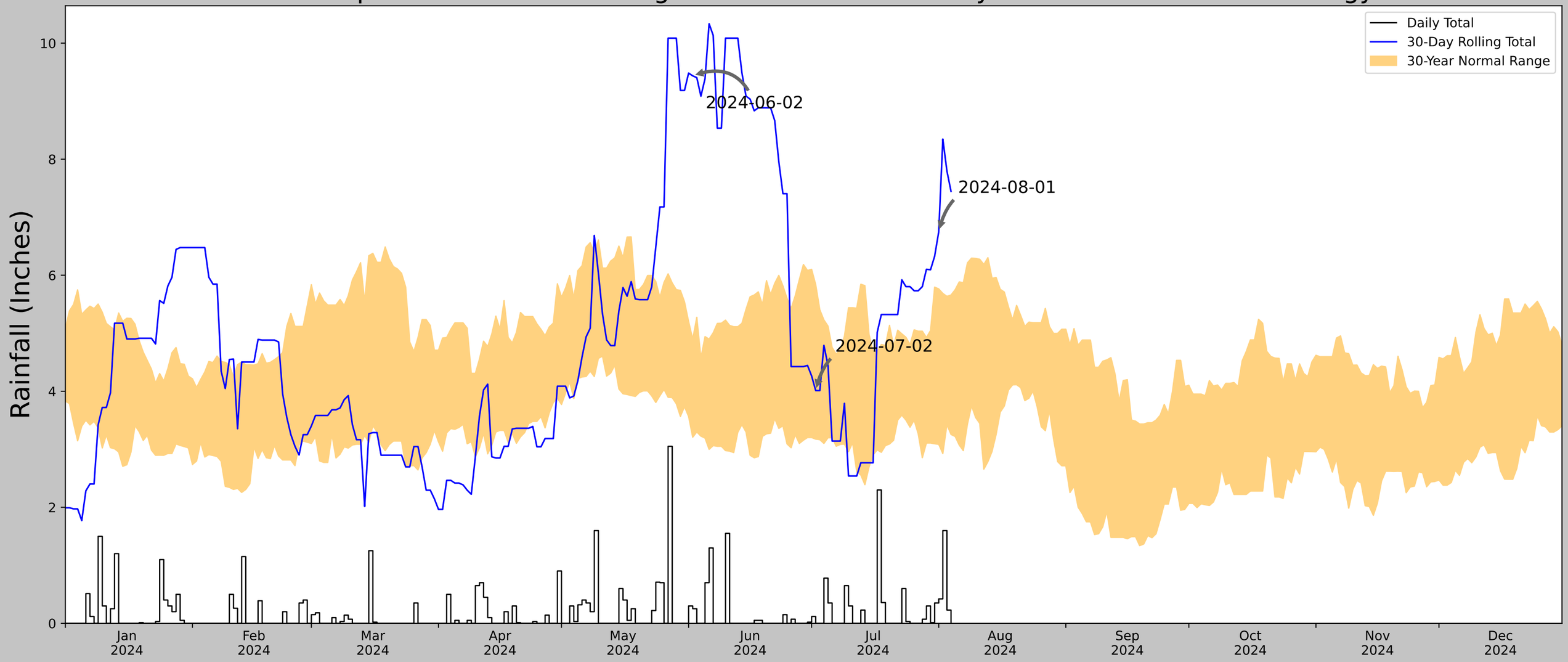
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-07-31	3.094882	5.795276	6.326772	Wet	3	3	9
2024-07-01	3.201969	6.101969	4.26378	Normal	2	2	4
2024-06-01	3.564961	5.201969	9.484252	Wet	3	1	3
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2164, -86.8939	399.934	9.824	108.387	5.486	10119	86
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.481	1.969	2.477	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.731	123.032	3.857	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.956	44.948	3.938	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.449	90.223	6.185	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.136	32.153	6.334	0	4
POWDERLY	37.235, -87.1514	444.882	14.225	44.948	7.041	6	0
WOODBURY	37.1853, -86.6336	439.961	14.486	40.027	7.099	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.721	33.137	7.595	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	20.014	7.655	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.087774, -86.969912
Observation Date	2024-08-01
Elevation (ft)	508.321
Drought Index (PDSI)	Not available (2024-07)
WebWIMP H_2O Balance	Dry Season

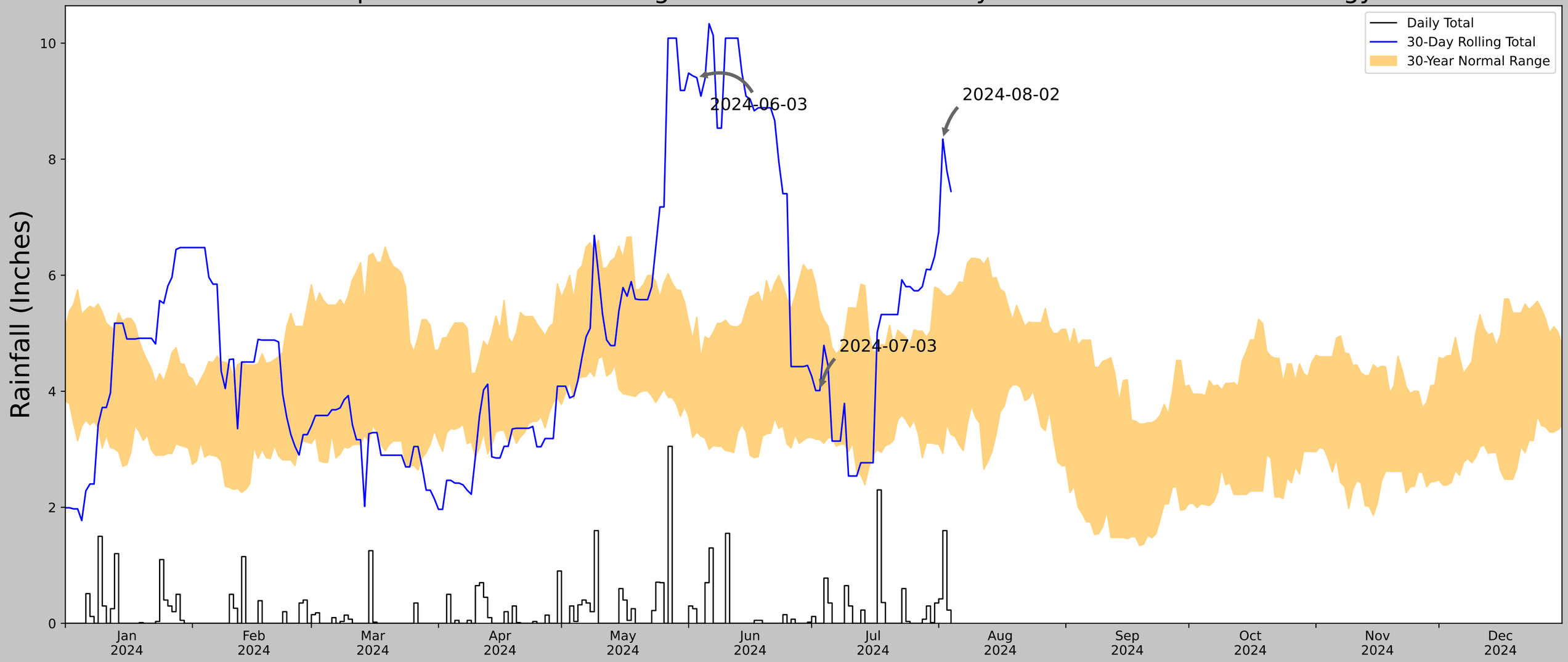
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-08-01	3.085433	5.764173	6.748032	Wet	3	3	9
2024-07-02	3.174803	5.837795	4.011811	Normal	2	2	4
2024-06-02	3.20748	4.899213	9.437008	Wet	3	1	3
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2164, -86.8939	399.934	9.824	108.387	5.486	10119	86
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.481	1.969	2.477	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.731	123.032	3.857	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.956	44.948	3.938	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.449	90.223	6.185	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.136	32.153	6.334	0	4
POWDERLY	37.235, -87.1514	444.882	14.225	44.948	7.041	6	0
WOODBURY	37.1853, -86.6336	439.961	14.486	40.027	7.099	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.721	33.137	7.595	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	20.014	7.655	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.087774, -86.969912
Observation Date	2024-08-02
Elevation (ft)	508.321
Drought Index (PDSI)	Not available (2024-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-08-02	2.926378	5.686221	8.346457	Wet	3	3	9
2024-07-03	3.165748	5.405512	4.011811	Normal	2	2	4
2024-06-03	3.298425	5.275197	9.405512	Wet	3	1	3
Result							Wetter than Normal - 16

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
ROCHESTER FERRY	37.2164, -86.8939	399.934	9.824	108.387	5.486	10119	86
PARADISE STEAM PLT	37.2592, -86.9778	401.903	5.481	1.969	2.477	456	0
BELTON 2 NE	37.1839, -87.0092	522.966	6.731	123.032	3.857	1	0
BEAVER DAM 5.7 SSE	37.3237, -86.8414	444.882	7.956	44.948	3.938	80	0
ABERDEEN	37.2317, -86.6867	490.157	11.449	90.223	6.185	686	0
BEAVER DAM 0.6 NW	37.4064, -86.8855	432.087	13.136	32.153	6.334	0	4
POWDERLY	37.235, -87.1514	444.882	14.225	44.948	7.041	6	0
WOODBURY	37.1853, -86.6336	439.961	14.486	40.027	7.099	1	0
LEWISBURG	36.9925, -86.9447	433.071	15.721	33.137	7.595	2	0
GREEN RVR PWR STN	37.3656, -87.1233	419.948	16.287	20.014	7.655	1	0

Appendix D

Field Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-02

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-001

Investigator(s): M. Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.1019889 Long: -86.9717427 Datum: WGS84

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-001

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Y	FAC
2. *Liriodendron tulipifera*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Lonicera mackii*	15	Y	UPL
2. *Fagus grandifolia*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Herb Stratum (Plot size: 5' radius)			
1. *Podophyllum peltatum*	15	Y	FACU
2. *Rosa multiflora*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	10.00	x 3 =	30.00
FACU species	40.00	x 4 =	160.00
UPL species	15.00	x 5 =	75.00
Column Totals:	65.00 (A)		265.00 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/4	100					SIL	
2-17	10YR 4/3	20					SIL	
	10YR 5/3	80					SIL	
17-18	10YR 6/2	90	10YR 6/8	10	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-12

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-002

Investigator(s): M. Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.097903 Long: -86.971613 Datum: WGS84

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-002

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	30	Y	FACW
2. *Liquidambar styraciflua*	15	Y	FAC
3. *Platanus occidentalis*	5	N	FACW
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	35.00	x 2 =	70.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	50.00 (A)		115.00 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	90	10YR 5/6	10	C	M/PL	SIL	
3-10	10YR 4/2	90	10YR 5/6	10	C	M/PL	SIL	
10-18	10YR 4/2	70	10YR 4/6	10			SIL	
	10YR 6/2	20					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-003

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): None Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.094539 Long: -86.971396 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-003

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	25	Y	FACU
2. *Fagus grandifolia*	15	Y	FACU
3. *Liriodendron tulipifera*	5	N	FACU
4. *Quercus rubra*	5	N	FACU
5. *Acer saccharum*	5	N	FACU
6.			
7.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Fagus grandifolia*	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	70.00	x 4 =	280.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		280.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-003

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					SIL	
2-10	10YR 3/4	100					SIL	
10-18	7.5YR 5/6	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-004

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.099194 Long: -86.975583 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 30 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-004

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Phelum pretense*	100	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100.0 = Total Cover		
50% of total cover: 50.0	20% of total cover: 20.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	100.00	x 5 =	500.00
Column Totals:	100.00 (A)		500.00 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

Vegetation significantly disturbed due to recent planting with forage grass.

SOIL Sampling Point: DP-004

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					SIL	
5-13	10YR 4/4	100					SIL	
13-18	10YR 3/6						SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-005

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.108682 Long: -86.975627 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✓ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 6
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-005

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Carex stricta*	20	Y	OBL
2. *Juncus effusus*	10	Y	FACW
3. *Ludwigia palustris*	7	N	OBL
4. *Stellaria media*	5	N	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	42.0 = Total Cover		
50% of total cover: 21.0	20% of total cover: 8.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	27.00	x 1 =	27.00
FACW species	10.00	x 2 =	20.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	5.00	x 5 =	25.00
Column Totals:	42.00 (A)		72.00 (B)

Prevalence Index = B/A = 1.71

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-005

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/2	90	10YR 6/8	10	C	M/PL	SI	
2-10	10YR 5/2	80	10YR 6/8	10	C	M	SIL	
	10YR 5/1	10					SIL	
10-18	10YR 5/3	70	10YR 6/8	5				
	10YR 5/2	25						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-006

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Other Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.107830 Long: -86.977198 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-006

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	80	Y	UPL
2. *Ranunculus sardous*	5	N	FAC
3. *Lamium amplexicaule*	2	N	UPL
4. *Lamium purpureum*	2	N	UPL
5. *Packera glabella*	2	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	84.00	x 5 =	420.00
Column Totals:	91.00 (A)		437.00 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-006

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/4	100					SIL	
4-18	10YR 4/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-007

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.105513 Long: -86.971744 Datum: NAD83

Soil Map Unit Name: Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 3
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? **Yes ✓** **No _____**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-007

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Cardamine pensylvanica*	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	5.00 (A)		5.00 (B)

Prevalence Index = B/A = 1.0

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-007

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/2	90	7.5YR 5/8	10	C	M/PL	SICL	
6-12	10YR 5/2	85	7.5YR 5/8	15	C	M	SICL	
12-18	10YR 5/2	30	7.5YR 5/8	50	C	M	SICL	
	10YR 2/1	20					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-008

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.105444 Long: -86.971778 Datum: NAD83

Soil Map Unit Name: Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 4
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-008

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	35	Y	FACW
2. *Platanus occidentalis*	15	Y	FACW
3. *Quercus alba*	10	N	FACU
4. *Fagus grandifolia*	5	N	FACU
5. *Ulmus rubra*	5	N	FAC
6.			
7.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Carex stricta*	5	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	50.00	x 2 =	100.00
FAC species	5.00	x 3 =	15.00
FACU species	15.00	x 4 =	60.00
UPL species	0.00	x 5 =	0.00
Column Totals:	75.00 (A)		180.00 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-008

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 5/2	90	10YR 6/8	10	C	M	SICL	
10-18	10YR 5/3	70	10YR 6/8	5	C	M	SICL	
	10YR 5/2	25					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-009

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Other Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.105840 Long: -86.972490 Datum: NAD83

Soil Map Unit Name: Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-009

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	80	Y	UPL
2. *Ranunculus sardous*	5	N	FAC
3. *Lamium amplexicaule*	2	N	UPL
4. *Lamium purpureum*	2	N	UPL
5. *Packera glabella*	2	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	84.00	x 5 =	420.00
Column Totals:	91.00 (A)		437.00 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DP-009

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/4	100					SIL	
4-18	10YR 4/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-010

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.094802 Long: -86.986694 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 20 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 1

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-010

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted sapling/shrub present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	5	Y	OBL
2. *Carex stricta*	2	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	7.0 = Total Cover		
50% of total cover: 3.5	20% of total cover: 1.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7.00	x 1 =	7.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	7.00 (A)		7.00 (B)

Prevalence Index = B/A = 1.0

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-010

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 5/2	20	10YR 5/8	80	C	M/PL	SICL	
5-9	10YR 2/1	15	10YR 5/8	80	C	M	SICL	
	10YR 5/2	5					SICL	
9-12	10YR 2/1	20	10YR 5/8	75	C	M	SICL	
	10YR 5/2	5					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F6 (Redox Dark Surface) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-011

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.094890 Long: -86.986876 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 20 to 30 percent slopes NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-011

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	95	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	95.00	x 5 =	475.00
Column Totals:	95.00 (A)		475.00 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-011

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100					SIC	
6-18	10YR 5/6	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-012

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.098813 Long: -86.989569 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 20 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-012

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	20	Y	FACU
2. *Quercus montana*	15	Y	UPL
3. *Fagus grandifolia*	10	Y	FACU
4. *Amelanchier arborea*	5	N	FAC
5.			
6.			
7.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	30.00	x 4 =	120.00
UPL species	15.00	x 5 =	75.00
Column Totals:	50.00 (A)		210.00 (B)

Prevalence Index = B/A = 4.2

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-012

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 5/3	100					SIC	
3-7	10YR 5/4	100					SIC	
7-13	10YR 2/2	30					SIC	
	10YR 5/3	15					SIC	
	10YR 5/4	55					SIC	
13-18	10YR 2/2	10	7.5YR 5/8	10	C	M	SIC	
	10YR 5/3	80					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-013

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.096732 Long: -86.993458 Datum: NAD83

Soil Map Unit Name: Sadler silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-013

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	95	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	95.00	x 5 =	475.00
Column Totals:	95.00 (A)		475.00 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-013

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/4	100					SIC	
6-18	10YR 5/6	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-014

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.094821 Long: -86.991785 Datum: NAD83

Soil Map Unit Name: Sharon silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-014

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	35	Y	FACU
2. *Acer rubrum*	5	N	FAC
3.			
4.			
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *Cardamine concatenata*	5	Y	FACU
2. *Stellaria media*	5	Y	UPL
3. *Allium Vineale*	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	45.00	x 4 =	180.00
UPL species	5.00	x 5 =	25.00
Column Totals:	55.00 (A)		220.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-014

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	100					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-015

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.095497 Long: -86.993991 Datum: NAD83

Soil Map Unit Name: Sharon silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-015

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	50	Y	UPL
2. *Packera glabella*	10	N	OBL
3. *Carduus nutans*	7	N	UPL
4. *Dichanthelium laxiflorum*	7	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	74.0 = Total Cover		
50% of total cover: 37.0	20% of total cover: 14.8		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	7.00	x 4 =	28.00
UPL species	57.00	x 5 =	285.00
Column Totals:	74.00 (A)		323.00 (B)

Prevalence Index = B/A = 4.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DP-015

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100					SIL	
12-16	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-016

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.098018 Long: -86.994947 Datum: NAD83

Soil Map Unit Name: Zanesville silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✓ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 4

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-016

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Carex crinita*	10	Y	OBL
2. *Juncus effusus*	10	Y	FACW
3. *Rumex crispus*	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10.00	x 1 =	10.00
FACW species	10.00	x 2 =	20.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	25.00 (A)		45.00 (B)

Prevalence Index = B/A = 1.8

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-016

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/2	90	10YR 6/8	10	C	M/PL	SI	
2-10	10YR 5/2	80	10YR 6/8	10	C	M	SIL	
	10YR 5/1	10					SIL	
10-18	10YR 5/3	70	10YR 6/8	5				
	10YR 5/2	25						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-017

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.098157 Long: -86.994923 Datum: NAD83

Soil Map Unit Name: Zanesville silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-017

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	50	Y	UPL
2. *Dichanthelium laxiflorum*	7	N	FACU
3. *Packera glabella*	5	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	62.0 = Total Cover		
50% of total cover: 31.0	20% of total cover: 12.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	7.00	x 4 =	28.00
UPL species	50.00	x 5 =	250.00
Column Totals:	62.00 (A)		283.00 (B)

Prevalence Index = B/A = 4.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-017

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100					SIL	
12-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-018

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Dip Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.099777 Long: -86.994327 Datum: NAD83

Soil Map Unit Name: Sadler silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-018

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	5	Y	FACW
2. *Allium vineale*	5	Y	FACU
3. *Rubus laciniatus*	5	Y	UPL
4. *Dichanthelium laxiflorum*	5	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20.0 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	0.00	x 3 =	0.00
FACU species	10.00	x 4 =	40.00
UPL species	5.00	x 5 =	25.00
Column Totals:	20.00 (A)		75.00 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-018

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	95	10YR 6/8	5			SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 12

Hydric Soil Present? **Yes** ____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

Auger refusal due to gravel layer; soils sampled shallowly.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-019

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.102334 Long: -86.991703 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 20 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-019

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus montana*	40	Y	UPL
2. *Quercus rubra*	5	N	FACU
3.			
4.			
5.			
6.			
7.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Fagus grandifolia*	20	Y	FACU
2. *Lonicera mackii*	10	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	25.00	x 4 =	100.00
UPL species	50.00	x 5 =	250.00
Column Totals:	75.00 (A)		350.00 (B)

Prevalence Index = B/A = 4.67

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-019

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	25					SIC	
	10YR 4/3	10					SIC	
	10YR 5/4	65					SIC	
6-14	10YR 3/3	40					SIL	
	10YR 4/3	10					SIL	
	10YR 5/4	60					SIL	
14-18	10YR 5/8	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-020

Investigator(s): S. Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): Microtopography Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.109519 Long: -86.986533 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 5

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-020

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	50	Y	FACW
2. *Carex crinita*	30	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30.00	x 1 =	30.00
FACW species	50.00	x 2 =	100.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	80.00 (A)		130.00 (B)

Prevalence Index = B/A = 1.62

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-020

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	90	10YR 5/8	10	C	M/PL	SICL	
6-18	10YR 4/2	80	10YR 5/8	10	C	M		
	10YR 2/1	10						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-021

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.110534 Long: -86.988270 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-021

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Festuca subverticillata*	90	Y	FACU
2. *Lamium purpureum*	5	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	90.00	x 4 =	360.00
UPL species	5.00	x 5 =	25.00
Column Totals:	95.00 (A)		385.00 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-021

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	95	10YR 5/8	5	C	M	SIL	
4-18	10YR 4/4	90	10YR 5/8	7	C	M	SIL	
	10YR 2/1	3					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-022

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.112563 Long: -86.987678 Datum: NAD83

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-022

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Festuca subverticillata*	90	Y	FACU
2. *Lamium purpureum*	5	N	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95.0 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	90.00	x 4 =	360.00
UPL species	5.00	x 5 =	25.00
Column Totals:	95.00 (A)		385.00 (B)

Prevalence Index = B/A = 4.05

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-022

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	95	10YR 5/8	5	C	M	SIL	
4-18	10YR 4/4	95	10YR 6/8	5	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-023

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.113684 Long: -86.983715 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-023

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	20	Y	FACW
2. *Liquidambar styraciflua*	15	Y	FAC
3. *Acer saccharum*	5	N	FACU
4. *Ulmus alata*	5	N	FACU
5.			
6.			
7.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Packera glabella*	15	Y	OBL
2. *Lamium purpureum*	5	Y	UPL
3. *Ranunculus sardous*	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	20.00	x 2 =	40.00
FAC species	20.00	x 3 =	60.00
FACU species	10.00	x 4 =	40.00
UPL species	5.00	x 5 =	25.00
Column Totals:	70.00 (A)		180.00 (B)

Prevalence Index = B/A = 2.57

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-023

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/2	50	7.5YR 5/8	50	C	M/PL	SIL	
7-13	10YR 4/2	45	7.5YR 5/8	50	C	M	SIL	
	10YR 2/1	5					SIL	
13-18	10YR 2/1	3	10YR 6/8	3	C	M	SIL	
	10YR 6/1	94					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-024

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.113740 Long: -86.983656 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-024

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Lamium purpureum*	30	Y	UPL
2. *Trifolium repens*	15	Y	FACU
3. *Erigeron philadelphicus*	10	N	FACU
4. *Stellaria media*	10	N	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65.0 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	25.00	x 3 =	75.00
FACU species	25.00	x 4 =	100.00
UPL species	40.00	x 5 =	200.00
Column Totals:	90.00 (A)		375.00 (B)

Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-024

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/4	100						
16-18	10YR 4/4	50	10YR 5/6	50	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost CIty Renewables, LLC State: Kentucky Sampling Point: DP-025

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.110295 Long: -86.982876 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-025

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	45	Y	FACU
2. *Quercus alba*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *Cardamine concatenata*	5	Y	FACU
2. *Podophyllum peltatum*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	70.00	x 4 =	280.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		280.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-025

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100					SIL	
8-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-026

Investigator(s): M. Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.110879 Long: -86.983866 Datum: NAD83

Soil Map Unit Name: Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-026

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Lamium purpureum*	60	Y	UPL
2. *Dichanthelium laxiflorum*	15	N	FACU
3. *Stellaria media*	15	N	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90.0 = Total Cover		
50% of total cover: 45.0	20% of total cover: 18.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	15.00	x 4 =	60.00
UPL species	75.00	x 5 =	375.00
Column Totals:	90.00 (A)		435.00 (B)

Prevalence Index = B/A = 4.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-026

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost CIty Renewables, LLC State: Kentucky Sampling Point: DP-027

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.106006 Long: -86.981066 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:
All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-027

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	60	Y	FACW
2. *Carex crinita*	15	N	OBL
3. *Ranunculus bulbosus*	5	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	60.00	x 2 =	120.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	80.00 (A)		150.00 (B)

Prevalence Index = B/A = 1.88

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-027

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	100					SICL	
2-8	10YR 4/2	95	10YR 5/8	5	C	M/PL	SICL	
8-12	10YR 4/2	85	10YR 5/8	14	C	M	SICL	
12-18	10YR 4/2	70	10YR 5/8	25	C	M	SICL	
	10YR 2/1	5					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-028

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Other Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.105434 Long: -86.979797 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-028

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	80	Y	UPL
2. *Ranunculus sardous*	5	N	FAC
3. *Lamium amplexicaule*	2	N	UPL
4. *Lamium purpureum*	2	N	UPL
5. *Packera glabella*	2	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	84.00	x 5 =	420.00
Column Totals:	91.00 (A)		437.00 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-028

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/4	100					SIL	
4-18	10YR 4/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-04

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-029

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.102391 Long: -86.982181 Datum: NAD83

Soil Map Unit Name: Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 4	
Water Table Present?	Yes ✓	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0	**Wetland Hydrology Present? Yes ✓ No _____**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-029

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	25	Y	FACW
2. *Ranunculus bulbosus*	15	Y	FAC
3. *Carex crinita*	10	N	OBL
4. *Packera glabella*	5	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	25.00	x 2 =	50.00
FAC species	15.00	x 3 =	45.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	55.00 (A)		110.00 (B)

Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-029

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	60	10YR 3/6	40	C	M/PL	SICL	
6-14	10YR 4/2	75	10YR 3/6	25	C	M	SICL	
14-18	10YR 4/2	85	10YR 3/6	15	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-03

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-030

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.102396 Long: -86.981991 Datum: NAD83

Soil Map Unit Name: Clifty gravelly silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-030

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	80	Y	UPL
2. *Ranunculus sardous*	5	N	FAC
3. *Lamium amplexicaule*	2	N	UPL
4. *Lamium purpureum*	2	N	UPL
5. *Packera glabella*	2	N	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	91.0 = Total Cover		
50% of total cover: 45.5	20% of total cover: 18.2		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	0.00	x 4 =	0.00
UPL species	84.00	x 5 =	420.00
Column Totals:	91.00 (A)		437.00 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-030

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/4	100					SIL	
4-18	10YR 4/3	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-031

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.092544 Long: -86.992771 Datum: NAD83

Soil Map Unit Name: Zanesville silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
All parameters met; area is considered a palustrine forested (PFO) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 4

Water Table Present? Yes ✓ No _____ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-031

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	20	Y	FACW
2. *Liquidambar styraciflua*	10	Y	FAC
3. *Fagus grandifolia*	5	N	FACU
4. *Acer rubrum*	5	N	FAC
5.			
6.			
7.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	20.00	x 2 =	40.00
FAC species	15.00	x 3 =	45.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	40.00 (A)		105.00 (B)

Prevalence Index = B/A = 2.62

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-031

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100				M	SIC	
3-6	10YR 3/2	85	10YR 5/8	15	C	M	SIC	
6-18	10YR 4/2	30	10YR 5/8	70	C	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost CIty Renewables, LLC State: Kentucky Sampling Point: DP-032

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.092582 Long: -86.992850 Datum: NAD83

Soil Map Unit Name: Zanesville silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-032

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	50	Y	FACU
2. *Acer rubrum*	10	N	FAC
3. *Quercus alba*	5	N	FACU
4.			
5.			
6.			
7.			
	65.0 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *No rooted herbs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	10.00	x 3 =	30.00
FACU species	55.00	x 4 =	220.00
UPL species	0.00	x 5 =	0.00
Column Totals:	65.00 (A)		250.00 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-032

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					SIC	
5-18	10YR 4/6	85					SIC	
	10YR 4/3	15					SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-033

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.096031 Long: -86.983209 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 30 to 50 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:
One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-033

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	30	Y	FACU
2. *Acer saccharum*	10	Y	FACU
3. *Quercus alba*	5	N	FACU
4. *Ulmus rubra*	5	N	FAC
5.			
6.			
7.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Herb Stratum (Plot size: 5' radius)			
1. *Polystichum acrostichoides*	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	5.00	x 3 =	15.00
FACU species	50.00	x 4 =	200.00
UPL species	0.00	x 5 =	0.00
Column Totals:	55.00 (A)		215.00 (B)

Prevalence Index = B/A = 3.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-033

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	100					SICL	
6-12	10YR 4/3	50					SICL	
	10YR 4/4	50					SICL	
12-18	10YR 4/6	100					SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-034

Investigator(s): S.Davis, M.Herod Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.113510 Long: -86.970897 Datum: NAD83

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No _____**
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 6
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-034

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Phalaris arundinacea*	30	Y	FACW
2. *Carex crinita*	20	Y	OBL
3. *Baccharis neglecta*	10	N	FAC
4. *Rubus pensylvanicus*	10	N	FAC
5. *Typha latifolia*	10	N	OBL
6. *Sagittaria cuneata*	5	N	OBL
7.			
8.			
9.			
10.			
11.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35.00	x 1 =	35.00
FACW species	30.00	x 2 =	60.00
FAC species	20.00	x 3 =	60.00
FACU species	0.00	x 4 =	0
UPL species	0.00	x 5 =	0.00
Column Totals:	85.00 (A)		155.00 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-034

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/2	75	10YR 5/8	25	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-035

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.113318 Long: -86.971124 Datum: NAD83

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-035

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	70	Y	UPL
2. *Ranunculus arvensis*	10	N	FAC
3. *Packera glabella*	5	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	0.00	x 2 =	0.00
FAC species	10.00	x 3 =	30.00
FACU species	0.00	x 4 =	0.00
UPL species	70.00	x 5 =	350.00
Column Totals:	85.00 (A)		385.00 (B)

Prevalence Index = B/A = 4.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-035

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-036

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.110380 Long: -86.965935 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes, severely eroded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-036

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Stellaria media*	80	Y	UPL
2. *Cerastium glomeratum*	10	N	UPL
3. *Packera glabella*	2	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	92.0 = Total Cover		
50% of total cover: 46.0	20% of total cover: 18.4		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2.00	x 1 =	2.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	90.00	x 5 =	450.00
Column Totals:	92.00 (A)		452.00 (B)

Prevalence Index = B/A = 4.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-036

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/4	100					SICL	
9-18	10YR 4/3	50	7.5YR 5/8	50	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-037

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.109956 Long: -86.968052 Datum: NAD83

Soil Map Unit Name: Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 6
Water Table Present?	Yes ✓	No _____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-037

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Betula nigra*	35	Y	FACW
2. *Sambucus nigra*	15	Y	FAC
3. *Ulmus rubra*	10	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Herb Stratum (Plot size: 5' radius)			
1. *Rumex Crispus*	5	Y	FAC
2. *Polystichum acrostichoides*	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *Lonicera Japonica*	63	Y	FACU
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	35.00	x 2 =	70.00
FAC species	30.00	x 3 =	90.00
FACU species	68.00	x 4 =	272.00
UPL species	0.00	x 5 =	0.00
Column Totals:	133.00 (A)		432.00 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-037

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/1	95	10YR 5/8	5	C	M/PL	SIC	
2-18	10YR 5/2	80	10YR 5/8	20	C	M	SIC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-038

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.105750 Long: -86.988737 Datum: NAD83

Soil Map Unit Name: Sharon silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-038

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	80	Y	FACU
2. *Carya cordiformis*	20	N	FACU
3. *Acer saccharum*	15	N	FACU
4. *Ulmus rubra*	5	N	FAC
5.			
6.			
7.			
	120.0 = Total Cover		
50% of total cover: 60.0	20% of total cover: 24.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Symphoricarpos orbiculatus*	5	Y	FACU
2. *Claytonia virginica*	5	Y	FAC
3. *Cardamine hirsuta*	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	10.00	x 3 =	30.00
FACU species	125.00	x 4 =	500.00
UPL species	0.00	x 5 =	0.00
Column Totals:	135.00 (A)		530.00 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-038

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 4/4	100					SIL	
16-18	10YR 4/6	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-039

Investigator(s): M.Herod, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.110099 Long: -86.971740 Datum: NAD83

Soil Map Unit Name: Bonnie silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-039

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees present*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *No rooted saplings/shrubs present*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5' radius)			
1. *Allium vineale*	30	Y	FACU
2. *Symphoricarpos orbiculatus*	20	Y	FACU
3. *Podophyllum peltatum*	15	Y	FACU
4. *Dichanthelium latifolium*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	70.00	x 4 =	280.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		280.00 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-039

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-04-05

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-040

Investigator(s): M.Herod, S.Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.106291 Long: -86.989379 Datum: NAD83

Soil Map Unit Name: Sharon silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-040

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	15	Y	FACU
2. *Fagus grandifolia*	10	Y	FACU
3. *Prunus serotina*	5	N	FACU
4.			
5.			
6.			
7.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ulmus rubra*	15	Y	FAC
2. *Lonicera mackii*	5	Y	UPL
3. *Carya ovata*	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		
Herb Stratum (Plot size: 5' radius)			
1. *Claytonia virginica*	5	Y	FAC
2. *Symphoricarpos orbiculatus*	5	Y	FACU
3. *Cardamine hirsuta*	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15.0 = Total Cover		
50% of total cover: 7.5	20% of total cover: 3.0		
Woody Vine Stratum (Plot size: 30' radius)			
1. *No rooted vines present*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	20.00	x 3 =	60.00
FACU species	45.00	x 4 =	180.00
UPL species	5.00	x 5 =	25.00
Column Totals:	70.00 (A)		265.00 (B)

Prevalence Index = B/A = 3.79

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-040

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-30

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-041

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Baseslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.087774 Long: -86.969912 Datum: NAD83

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 3
Water Table Present?	Yes ✓	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-041

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Acer rubrum*	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		
Herb Stratum (Plot size: 5 radius)			
1. *Cyperus strigosus*	60	Y	FACW
2. *Ludwigia palustris*	25	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85.0 = Total Cover		
50% of total cover: 42.5	20% of total cover: 17.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25.00	x 1 =	25.00
FACW species	60.00	x 2 =	120.00
FAC species	10.00	x 3 =	30.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	95.00 (A)		175.00 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-041

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	100					SIL	
2-13	10YR 4/2	85	10YR 5/6	15	C	M/PL	SICL	
13-18	10YR 4/3	90	10YR 5/6	10	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-042

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Headslope Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.085189 Long: -86.966989 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 2
Water Table Present?	Yes ✓	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-042

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5 radius)			
1. *Carex frankii*	20	Y	OBL
2. *Hypericum mutilum*	10	Y	FACW
3. *Ludwigia alternifolia*	10	Y	FACW
4. *Acer rubrum*	5	N	FAC
5. *Oxalis dillenii*	5	N	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20.00	x 1 =	20.00
FACW species	20.00	x 2 =	40.00
FAC species	5.00	x 3 =	15.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	50.00 (A)		95.00 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-042

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	100					SIL	
3-7	10YR 4/2	90	10YR 5/4	10	C	M/PL	SIL	
7-12	10YR 5/2	90	10YR 5/4	10	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 12

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-043

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Baseslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.085683 Long: -86.967085 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ✓ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ✓ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ✓ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 4
Water Table Present?	Yes ✓	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-043

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Salix nigra*	45	Y	OBL
2. *Rosa multiflora*	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		
Herb Stratum (Plot size: 5 radius)			
1. *Carex frankii*	25	Y	OBL
2. *Hypericum mutilum*	15	Y	FACW
3. *Carex crinita*	10	Y	OBL
4. *Onoclea sensibilis*	10	Y	FACW
5. *Typha latifolia*	5	N	OBL
6. *Alisma subcordatum*	5	N	OBL
7. *Bidens aristosa*	5	N	FACW
8. *Dichanthelium scoparium*	5	N	FACW
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90.00	x 1 =	90.00
FACW species	35.00	x 2 =	70.00
FAC species	0.00	x 3 =	0.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	130.00 (A)		180.00 (B)

Prevalence Index = B/A = 1.38

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DP-043

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/1	100					SIL	
2-18	10YR 5/1	90	10YR 5/6	10	C	M/PL	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-044

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.085515 Long: -86.967467 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-044

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5 radius)			
1. *Glycine max*	10	Y	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10.0 = Total Cover		
50% of total cover: 5.0	20% of total cover: 2.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	10.00	x 5 =	50.00
Column Totals:	10.00 (A)		50.00 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

Date point taken within planted soybean field. Naturally-occurring vegetation absent.

SOIL

Sampling Point: DP-044

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-045

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.088467 Long: -86.969993 Datum: NAD83

Soil Map Unit Name: Zanesville silt loam, 2 to 6 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-045

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	60	Y	FAC
2. *Liriodendron tulipifera*	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
	90.0 = Total Cover		
50% of total cover: 45.0	20% of total cover: 18.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Ulmus rubra*	15	Y	FAC
2. *Liquidambar styraciflua*	8	Y	FAC
3. *Acer rubrum*	5	N	FAC
4. *Rubus argutus*	2	N	FACU
5.			
6.			
7.			
8.			
9.			
	30.0 = Total Cover		
50% of total cover: 15.0	20% of total cover: 6.0		
Herb Stratum (Plot size: 5 radius)			
1. *Microstegium vimineum*	60	Y	FAC
2. *Ligustrum sinense*	10	N	FACU
3. *Solidago rugosa*	5	N	FAC
4. *Boehmeria cylindrica*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80.0 = Total Cover		
50% of total cover: 40.0	20% of total cover: 16.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	153.00	x 3 =	459.00
FACU species	42.00	x 4 =	168.00
UPL species	0.00	x 5 =	0.00
Column Totals:	200.00 (A)		637.00 (B)

Prevalence Index = B/A = 3.19

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL Sampling Point: DP-045

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/6	100					SIL	
4-18	10YR 4/6	95	10YR 5/6	5	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-046

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.087887 Long: -86.971489 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** **Yes ✓** **No ____**
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

All parameters met; area is considered a palustrine emergent (PEM) wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-046

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5 radius)			
1. *Juncus effusus*	35	Y	FACW
2. *Carex frankii*	15	Y	OBL
3. *Eupatorium perfoliatum*	10	N	FACW
4. *Cyperus strigosus*	5	N	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65.0 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15.00	x 1 =	15.00
FACW species	50.00	x 2 =	100.00
FAC species	0.00	x 3 =	0.00
FACU species	0.00	x 4 =	0.00
UPL species	0.00	x 5 =	0.00
Column Totals:	65.00 (A)		115.00 (B)

Prevalence Index = B/A = 1.77

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 1 (Rapid Test) present with all dominant species FACW or OBL; parameter met. Dominance Test and Prevalence Index calculated for reference purposes only

SOIL Sampling Point: DP-046

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	100					SIL	
3-10	10YR 4/2	85	10YR 5/6	15	C	M/PL	SIL	
10-18	10YR 4/3	90	10YR 5/6	10	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present; parameter met.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-07-31

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-047

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.084128 Long: -86.972954 Datum: NAD83

Soil Map Unit Name: Belknap silt loam, 0 to 2 percent slopes, occasionally flooded NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-047

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	Y	FAC
2. *Aesculus flava*	20	Y	FACU
3. *Liquidambar styraciflua*	10	N	FAC
4.			
5.			
6.			
7.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Fagus grandifolia*	20	Y	FACU
2. *Cornus florida*	15	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Herb Stratum (Plot size: 5 radius)			
1. *Fagus grandifolia*	10	Y	FACU
2. *Smilax rotundifolia*	10	Y	FAC
3. *Polystichum acrostichoides*	10	Y	FACU
4. *Amphicarpaea bracteata*	5	N	FAC
5. *Carya ovata*	5	N	FACU
6. *Liriodendron tulipifera*	5	N	FACU
7.			
8.			
9.			
10.			
11.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *Parthenocissus quinquefolia*	5	Y	FACU
2. *Toxicodendron radicans*	2	Y	FAC
3.			
4.			
5.			
	7.0 = Total Cover		
50% of total cover: 3.5	20% of total cover: 1.4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	67.00	x 3 =	201.00
FACU species	90.00	x 4 =	360.00
UPL species	0.00	x 5 =	0.00
Column Totals:	157.00 (A)		561.00 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DP-047

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: KY Sampling Point: DP-048

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Baseslope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.082945 Long: -86.971718 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ✓ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): 1
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

At least one primary or two secondary indicators observed; parameter met.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-048

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *No rooted saplings/shrubs*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5 radius)			
1. *Microstegium vimineum*	45	Y	FAC
2. *Juncus effusus*	15	Y	FACW
3. *Carex vulpinoidea*	5	N	OBL
4. *Solidago canadensis*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5.00	x 1 =	5.00
FACW species	15.00	x 2 =	30.00
FAC species	45.00	x 3 =	135.00
FACU species	5.00	x 4 =	20.00
UPL species	0.00	x 5 =	0.00
Column Totals:	70.00 (A)		190.00 (B)

Prevalence Index = B/A = 2.71

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Indicator 2 (Dominance Test) present with greater than 50% of dominant species FAC or wetter; parameter met. Prevalence Index calculated for reference purposes only.

SOIL

Sampling Point: DP-048

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 5/3	90	10YR 5/6	10	C	M/PL	SIL	Rocky
6-18	10YR 6/6	90	5YR 5/6	10	C	M	SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: KY Sampling Point: DP-049

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.084597 Long: -86.973080 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 6 to 12 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-049

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Nyssa sylvatica*	30	Y	FAC
2. *Acer rubrum*	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
	50.0 = Total Cover		
50% of total cover: 25.0	20% of total cover: 10.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Carpinus caroliniana*	15	Y	FAC
2. *Fagus grandifolia*	10	Y	FACU
3. *Quercus alba*	8	Y	FACU
4. *Cornus florida*	5	N	FACU
5.			
6.			
7.			
8.			
9.			
	38.0 = Total Cover		
50% of total cover: 19.0	20% of total cover: 7.6		
Herb Stratum (Plot size: 5 radius)			
1. *Rubus argutus*	15	Y	FACU
2. *Polystichum acrostichoides*	15	Y	FACU
3. *Sanguinaria canadensis*	8	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	38.0 = Total Cover		
50% of total cover: 19.0	20% of total cover: 7.6		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	65.00	x 3 =	195.00
FACU species	53.00	x 4 =	212.00
UPL species	8.00	x 5 =	40.00
Column Totals:	126.00 (A)		447.00 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DP-049

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					SIL	
2-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-050

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Sideslope Local relief (concave, convex, none): None Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.085743 Long: -86.974622 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-050

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	20	Y	FAC
2. *Acer saccharum*	15	Y	FACU
3. *Carya glabra*	15	Y	FACU
4. *Liriodendron tulipifera*	10	N	FACU
5.			
6.			
7.			
	60.0 = Total Cover		
50% of total cover: 30.0	20% of total cover: 12.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Fagus grandifolia*	15	Y	FACU
2. *Acer rubrum*	10	Y	FAC
3. *Nyssa sylvatica*	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Herb Stratum (Plot size: 5 radius)			
1. *Parthenocissus quinquefolia*	8	Y	FACU
2. *Chasmanthium latifolium*	5	Y	FACU
3. *Carya ovata*	3	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	16.0 = Total Cover		
50% of total cover: 8.0	20% of total cover: 3.2		
Woody Vine Stratum (Plot size: 30 radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44.44 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	45.00	x 3 =	135.00
FACU species	71.00	x 4 =	284.00
UPL species	0.00	x 5 =	0.00
Column Totals:	116.00 (A)		419.00 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-050

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/4	100					SIL	
4-18	10YR 4/6	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-051

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.087096 Long: -86.969267 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-051

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *No rooted trees*			
2.			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Acer rubrum*	15	Y	FAC
2. *Ulmus alata*	15	Y	FACU
3. *Eleagnus umbellata*	10	Y	UPL
4.			
5.			
6.			
7.			
8.			
9.			
	40.0 = Total Cover		
50% of total cover: 20.0	20% of total cover: 8.0		
Herb Stratum (Plot size: 5 radius)			
1. *Glycene max*	10	Y	UPL
2. *Ambrosia artemisiifolia*	10	Y	FACU
3. *Chamaecrista nictitans*	8	Y	FACU
4. *Ludwigia alternifolia*	5	N	FACW
5. *Oxalis dillenii*	5	N	FACU
6. *Plantago lanceolata*	3	N	UPL
7.			
8.			
9.			
10.			
11.			
	41.0 = Total Cover		
50% of total cover: 20.5	20% of total cover: 8.2		
Woody Vine Stratum (Plot size: 30 radius)			
1. *No rooted vines*			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	5.00	x 2 =	10.00
FAC species	15.00	x 3 =	45.00
FACU species	38.00	x 4 =	152.00
UPL species	23.00	x 5 =	115.00
Column Totals:	81.00 (A)		322.00 (B)

Prevalence Index = B/A = 3.98

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL

Sampling Point: DP-051

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/4	100					SIL	
3-18	10YR 5/6	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-052

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-7

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.084942 Long: -86.971064 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-052

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	35	Y	FAC
2. *Liriodendron tulipifera*	20	Y	FACU
3. *Acer rubrum*	15	N	FAC
4. *Fagus grandifolia*	10	N	FACU
5. *Quercus alba*	10	N	FACU
6.			
7.			
	90.0 = Total Cover		
50% of total cover: 45.0	20% of total cover: 18.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Carya ovata*	15	Y	FACU
2. *Fagus grandifolia*	10	Y	FACU
3. *Acer rubrum*	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Herb Stratum (Plot size: 5 radius)			
1. *Fraxinus pennsylvanica*	20	Y	FACW
2. *Polystichum acrostichoides*	15	Y	FACU
3. *Microstegium vimineum*	10	N	FAC
4. *Parthenocissus quinquefolia*	10	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55.0 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *Toxicodendron radicans*	5	Y	FAC
2.			
3.			
4.			
5.			
	5.0 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	20.00	x 2 =	40.00
FAC species	75.00	x 3 =	225.00
FACU species	90.00	x 4 =	360.00
UPL species	0.00	x 5 =	0.00
Column Totals:	185.00 (A)		625.00 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-052

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/4	100					SIL	
3-18	10YR 4/6	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-053

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Noseslope Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.083808 Long: -86.970072 Datum: NAD83

Soil Map Unit Name: Frondorf-Lenberg complex, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicators of wetland hydrology absent; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-053

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus echinata*	35	Y	UPL
2. *Juniperus virginiana*	20	Y	FACU
3. *Quercus stellata*	15	Y	UPL
4.			
5.			
6.			
7.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		

Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Fraxinus americana*	20	Y	FACU
2. *Vaccinium arboreum*	10	Y	FACU
3. *Quercus stellata*	5	N	UPL
4.			
5.			
6.			
7.			
8.			
9.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		

Herb Stratum (Plot size: 5 radius)			
1. *Fraxinus americana*	10	Y	FACU
2. *Quercus stellata*	5	Y	UPL
3. *Smilax rotundifolia*	5	Y	FAC
4. *Fagus grandifolia*	5	Y	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25.0 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5.0		

Woody Vine Stratum (Plot size: 30 radius)			
1. *Lonicera japonica*	5	Y	FACU
2. *Toxicodendron radicans*	3	Y	FAC
3.			
4.			
5.			
	8.0 = Total Cover		
50% of total cover: 4.0	20% of total cover: 1.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 18.18 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	8.00	x 3 =	24.00
FACU species	70.00	x 4 =	280.00
UPL species	95.00	x 5 =	475.00
Column Totals:	138.00 (A)		779.00 (B)

Prevalence Index = B/A = 4.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-053

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/6	100					SI	
3-18	10YR 6/6	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Lost City Solar City/County: Muhlenberg County Sampling Date: 2024-08-01

Applicant/Owner: Lost City Renewables, LLC State: Kentucky Sampling Point: DP-054

Investigator(s): I. Bentley, S. Davis Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR or MLRA): LRR N, MLRA 120A Lat: 37.091836 Long: -86.973239 Datum: NAD83

Soil Map Unit Name: Wellston silt loam, 12 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

One or more parameters lacking; area is not considered a definitional wetland. The lead delineator conducted a due diligence review of the Antecedent Precipitation Tool (APT) and determined that hydrologic conditions were wetter than normal at the time of survey.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ✓	Depth (inches): ____
Water Table Present?	Yes ____	No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary and only one secondary indicator of wetland hydrology present; parameter lacking.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP-054

Tree Stratum (Plot size: 30 radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Y	FAC
2. *Carya glabra*	30	Y	FACU
3. *Fagus grandifolia*	10	N	FACU
4.			
5.			
6.			
7.			
	70.0 = Total Cover		
50% of total cover: 35.0	20% of total cover: 14.0		
Sapling/Shrub Stratum (Plot size: 15 radius)			
1. *Ulmus rubra*	15	Y	FAC
2. *Fagus grandifolia*	10	Y	FACU
3. *Acer rubrum*	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
	35.0 = Total Cover		
50% of total cover: 17.5	20% of total cover: 7.0		
Herb Stratum (Plot size: 5 radius)			
1. *Symphoricarpos orbiculatus*	25	Y	FACU
2. *Fraxinus americana*	10	Y	FACU
3. *Smilax rotundifolia*	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45.0 = Total Cover		
50% of total cover: 22.5	20% of total cover: 9.0		
Woody Vine Stratum (Plot size: 30 radius)			
1. *Toxicodendron radicans*	3	N	FAC
2.			
3.			
4.			
5.			
	3.0 = Total Cover		
50% of total cover: 1.5	20% of total cover: 0.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0.00	x 1 =	0.00
FACW species	0.00	x 2 =	0.00
FAC species	68.00	x 3 =	204.00
FACU species	85.00	x 4 =	340.00
UPL species	0.00	x 5 =	0.00
Column Totals:	153.00 (A)		544.00 (B)

Prevalence Index = B/A = 3.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

Indicators of hydrophytic vegetation absent; parameter lacking.

SOIL Sampling Point: DP-054

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/3	100					SIL	
3-18	10YR 4/4	100					SIL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Hydric soil indicators absent; parameter lacking.

Appendix E

Resumes

COPPERHEAD
ENVIRONMENTAL CONSULTING

ISAAC BENTLEY

AQUATIC/WETLAND SCIENTIST II

Regulatory Expertise

- CWA (Section 404 & 401)
- United States Army Corps of Engineering (USACE) Wetland Delineation Manual & Regional Supplements
- ESA (§7 & §10)
- Migratory Bird Treaty Act

Industry Clientele

- KY Department of Fish and Wildlife Resources
- TN Department of Environment and Conservation

Education

- **M.S. Biology**, 2020, Eastern Kentucky University, Richmond, Kentucky (did not defend)
- **B.S. Wildlife Management**, 2017, Eastern Kentucky University, Richmond, Kentucky

Taxa Expertise

- Inland Stream Fishes (Listed)
- Freshwater Invertebrates (Listed)
- Wetland and Aquatic plants
- Eastern U.S. Woody Plants and Vegetation
- Passerines and Raptors
- Reptiles/Amphibians
- Mammals

Survey Expertise

- Wetland and Stream Delineation
- Habitat Assessments, Aquatic and Terrestrial
- Presence/Absence
- Fish Shocking
- Aquatic Invertebrate
- Vegetation, Wetland and Upland
- Avian, Passerine and Raptor

Certifications/Trainings

- Wetland Delineation Certificate, Wetland Training Institute, 2021
- Swamp School Training, 2022
- Tennessee Department of Environment & Conservation Hydrologic Determination Training Course, 2022
- Certified Wildlife Biologist (TWS)
- Type II Wildland Firefighter
- Chronic Wasting Disease Workshop, Retropharyngeal Lymph Node Extraction

Qualifications and Background

Mr. Bentley has 8 years of experience studying, working, and volunteering alongside universities, agencies, and NGOs with federal and state listed flora and fauna species. He has conducted master's level research on the ability of movement in stream fishes as part of a restoration technique employed by Kentucky Department of Fish and Wildlife. He has worked extensively with wetland delineation, stream fishes, vegetation surveys, avian surveys/capture methods, and identification skills. Mr. Bentley has designed, developed, and implemented an inventory, research, management, and monitoring for his fish study. He has filled supervisory roles during his master's research, employing assistance and coordinating dates for employing field-method based research.

Affiliations

- The Wildlife Society
- National Wild Turkey Federation
- Rocky Mountain Elk Foundation
- Southeastern Fishes Council
- Ecological Society of America

Selected Project Experience

Wetland & Stream Delineation for Mammoth Cave Campground Denison Ferry Road, KY 2023
Conducted a wetland and stream delineation for a site of approximately 200 acres near Mammoth Cave, Kentucky.

Multiple Service Aquatic Surveys for Lochner Bridge Replacements, KY 2022
Conducted preliminary multiple-service surveys for 23 bridges to be replaced in areas that span the entirety of Kentucky. Once preliminary surveys were conducted, aquatic surveys for listed species (Big Sandy Crayfish, Cumberland Darter, and Kentucky Arrow Darter) were conducted.

Wetland & Stream Delineation for DNV Mastodon Solar Project, MI 2022
Conducted a wetland and stream delineation for a site of approximately 3,000 acres near Blissfield, Michigan.

Wetland & Stream Delineation for CCR Fiddler Solar Project, TN 2022
Conducted a wetland and stream delineation for a site of approximately 850 acres in DeKalb County, Tennessee.

Wetland & Stream Delineation for EDP Solar Project, KY 2022
Conducted a wetland and stream delineation for a site of approximately 2,500 acres in Breckinridge County, Kentucky.

Wetland & Stream Delineation for JDA Geil Lane Project, KY 2022
Conducted a wetland and stream delineation for a site of approximately 35 acres near Louisville, Kentucky.

Wetland & Stream Delineation for CCR Tupelo MS Solar Project, MS 2022
Conducted a wetland and stream delineation for a site of approximately 3,000 acres in Tupelo, Mississippi.

Wetland & Stream Delineation for TVA Transmission Lines (Barkley-Oakwood) Project, KY/TN 2022
Conducted a corridor wetland and stream delineation for a site of approximately 60 linear miles in Western Kentucky and Tennessee.

Wetland & Stream Delineation for Village at the Palisades, KY 2022
Conducted a wetland and stream delineation for a site of approximately 8 acres in Mercer County, Kentucky.

Wetland & Stream Delineation for WKRRA for Wickliffe Solar Project, KY 2022
Conducted a wetland and stream delineation for a site of approximately 15 acres in Ballard County, Kentucky.

Wetland & Stream Delineation for Horseshoe Bend Solar Project, KY 2022
Conducted a wetland and stream delineation for a site of approximately 560 acres in Green County, Kentucky.

Wetland & Stream Delineation for Engie, Mt. Olive Creek Solar Project KY 2022
Conducted a wetland and stream delineation for a site of approximately 512 acres in Russel and Adair Counties, Kentucky.

Wetland & Stream Delineation for TVA – Incompatible Vegetation Project in Transmission Right of Ways, TN/KY/AL/GA 2022

Conducted a corridor wetland and stream delineation for transmission lines approximately 200 linear miles long primarily in Tennessee, but also in Kentucky, Alabama, and Georgia.

Wetland & Stream Delineation for Hardin County Solar Project, KY 2021
Corrected a wetland and stream delineation alongside the USACE for a site of approximately 1100 acres in Hardin County, Kentucky.

Wetland & Stream Delineation for Pine Gate Renewables Belsena Solar Project, PA 2021
Conducted a wetland and stream delineation for a site of approximately 900 acres in Clearfield County, Pennsylvania.

Movement of Stream Fishes Over Potential Migratory Barriers, Kentucky Department of Fish and Wildlife Resources, Menifee Co., Kentucky – 2017-2020
Mr. Bentley designed, developed, managed, and conducted movement surveys of stream fishes in East Fork Indian Creek in the Red River Gorge of Kentucky. The study was formed to understand passage of all stream fish, including two species of Kentucky state concern (*Percina maculata* and *Etheostoma baileyi*), over potential anthropogenic migratory barriers. Logistics of the study included orchestrating, overseeing, and installing/removing field equipment, utilizing two types of marking techniques (PIT and VIE), and monitoring fish movement over the duration of two years. Management recommendations were provided to Federal and State organizations based on data analyses and results.

Presentations

Movement of stream fishes across potential migration barriers in East Fork Indian Creek, Menifee Co. Kentucky, 2019. The Kentucky Academy of Sciences and the Southeastern Fishes Council Annual Meeting

COPPERHEAD
ENVIRONMENTAL CONSULTING

SHEA DAKOTA DAVIS

AQUATIC BIOLOGIST

Survey Expertise

- Freshwater Mussel Surveys and Relocation
- Mussel Habitat Assessment
- Electrofishing/Seining Fish Surveys and relocation
- Rapid Bioassessment Protocols

Relevant Coursework

- Forest Ecology
- Stream Restoration
- Fluvial Geomorphology
- Hydrogeology
- GIS
- Entomology
- Forest Entomology

Certifications/Training

- West Virginia Mussel Course
- Swamp School
- CPR
- Wilderness First Aid

Professional Experience

Copperhead Environmental Consulting, Inc., Aquatic Biologist, May 2022 – Present

Education

University of Kentucky, Bachelor of Science in Natural Resources and Environmental Science with concentrations in Water Resources, Field/Lab, and Wildlife, 2021

Qualifications and Background

Ms. Davis attended the University of Kentucky where she graduated summa cum laude with a Bachelor of Science in Natural Resources and Environmental Science.

During her undergraduate career, her emphasis areas were water resources, wildlife, and field/laboratory analysis. Presently she is an aspiring aquatic biologist with a specific interest in freshwater mussels as well gaining experience in delineating wetlands.

Herbert Hoover Mussel Monitoring, WV 2022-2023
Provided turbidity monitoring for streams impacted by the construction of Herbert Hoover High School in Elkview, WV.

Bridge Water Quality Monitoring TDOT, TN 2022-current
Conducted monthly monitoring of water chemistry parameters of two locations on Clear Creek, wrote and submitted monthly report of results and calibrates equipment.

Tree Planting Fort Knox, KY 2023
Hand planted bare root seedlings with the Copperhead forestry team on a total of 45 acres within Hunt Area 80 on Fort Knox property.

Tree Planting DBNF, KY 2023
Hand planted bare root Red Oak seedlings with the Copperhead forestry team in the Daniel Boone National Forest.

Wetland & Stream Delineation for KY-536 Expansion Project, KY 2022
Conducted a wetland and stream delineation for an approximately 150-acre site in Kenton County, Kentucky

Water Quality Survey, Yellow Creek, 2022.
Backpack electroshocking two reaches to investigate stream health of Yellow Creek using the Kentucky Index of Biotic Integrity (KIBI). Macroinvertebrate sampling for stream health assessments also took place using kick-netting as well as swoop-netting to collect samples.

Mussel Survey TDOT Gary Dyer, TN 2022
Conducted a freshwater mussel survey on Black Wolf Creek and its tributaries within the project boundary in Scott Co., TN.

Bridge Surveys KYTC, KY 2022
Conducted a fish shocking survey for a KYTC bridge replacement project in Tye Fork, Knox County, Kentucky. Including water quality surveys, mussel survey, habitat assessment stream assessment, and fish surveys.

Fish Relocation for the Kentucky Bridge Program Project, KY 2022
Collected and identified fish within the impacted stream area and relocated the threatened Kentucky Arrow Darter (*Etheostoma spilotum*).

National Parks Service Mussel Surveys, WV 2022
Conducted mussel surveys for an inventory program on the New River, Gauley River, and Bluestone Rivers for the National Park Service. Supervised by biologists Price Sewell and Taylor Fagin.

NERI Cliff-line Survey, WV 2022
Conducted acoustic surveys for bats to determine species and activity level near climbing routes in the New River Gorge, contracted by the National Park Service. Installed and removed poles with Anabat technology—acoustic detectors fitted with omnidirectional microphones.

Hinkston Creek Water Quality Assessment, KY 2022
Evaluated water quality in Hinkston Creek (Bourbon County, KY) through bivalve (*Corbicula fluminea*) in situ growth studies in mussel silos, electrofishing and subsequent IBI, and by use of water quality meters.

Little Sextons Creek Habitat Assessment, KY 2023
Marked and recorded data on individual trees to be retained that served as potential habitat for bat species along Little Sextons Creek in service of the ILF-KDFWR stream restoration project in Jackson and Clay Counties, KY.

Slabcamp Branch Habitat Assessment, KY 2023
Marked and recorded data on individual trees to be retained that served as potential habitat for bat species along Slabcamp Branch in service of the ILF-KDFWR stream restoration project in Rowan County, KY.

Post-Harvest Timber Stand Improvement DBNF, KY 2023
Employed hack and squirt methodologies for timber stand improvement for the Ruffed Grouse Society on approximately 73-acres within the Daniel Boone National Forest in Pulaski County, KY.

Imperiled Forest Dwelling Bat Monitoring, Fort Knox, KY 2023
Monitored and recorded emergence data for bats dwelling in BrandenBark® structures via conducting exit counts. Monitored bat activity in timber cut areas via installing Anabat technology—acoustic detectors fitted with omnidirectional microphones, and subsequent removal. Conducted mist-net surveys for collecting standard biometric data on individual bats and subsequent radio tagging of target species. Tracked radio-tagged bats to roosts for seven days.

Presence/Absence Mist-Net Survey, TN 2023
Conducted mist-net surveys for Tennessee Department of Transportation to determine presence/probable absence of Indiana bats. Tricolored bats, and Northern long-eared bats in Hawkins County, TN.

COPPERHEAD
ENVIRONMENTAL CONSULTING

MEG HEROD
WETLAND SCIENTIST

Regulatory Expertise
- Clean Water Act
- Executive Order 13751
- NEPA

Industry Clientele
- US Forest Service
- Tennessee Valley Authority
- National Park Service
- US Fish and Wildlife Service
- USACE

Environmental Services
- Ecosystem Restoration
- Wetland & Stream Delineation
- Invasive species management & control

Survey Expertise
- Vegetation Surveys
- Stream Surface Water Quality
- Invasive Species Monitoring
- Plant Relocation Assessment
- Macroinvertebrate Sampling

Education
Wetland Delineation, 2022, Swamp School LLC

Tennessee Hydrologic Determination Course,2022, TDEC

M.S. Aquatic Resources, 2022, Texas State University
Graduate Advisor: Dr. Jason Martina

B.S. Ecology for Environmental Science, 2018, University of North Texas

Experience
Copperhead Environmental Consulting, Inc., Wetland Scientist, January 2022-present

Texas State University, Graduate Research Assistant, Instructional Assistant, August 2019 – January 2022

USACE, Aquatic Ecosystem Research Student Leader, May 2018 – July 2019, Terrestrial Ecosystem Management Assistant, December 2017 – May 2018

Qualifications and Background

Mrs. Herod is a broadly experienced ecologist with four years of experience working for various state and federal agencies and universities. She has conducted master's level research on the ecological correlates of the spread and invasion success of *Arundo donax* in central Texas. She has contributed her skills to a wide range of environmental projects, including the global Nutrient Network experiment, invasive species management and monitoring with the USACE and USGS, habitat restoration with the USACE and Texas Water Development Board, and macroinvertebrate surveys with the University of North Texas. She has worked extensively in wetland, limnetic, and stream environments conducting surveys of these ecosystems' biotic and abiotic characteristics. Mrs. Herod has instructed over 250 students in laboratory coursework related to botany, general ecology, and wetland plant ecology and management. She has experience in field data collection techniques, greenhouse experiment design, GIS mapping, GPS data collection, remote sensing of vegetation and data analysis software.

Presentations

"Wetlands and Wetland Delineation". The Kentucky Wildlife Society Annual Conference, February 2022

"Endangered and Invasive Species". Boy Scouts of America – Kyle Chapter, June 2021

"Comparative Anatomy of the Submersed and Emergent Stems and Leaves of *Shinnersia rivularis* (Asteraceae: Eupatorieae)". Texas Academy of Science Annual Conference, Stephen F. Austin State University, February 2019

Publications

Herod, M., & Martina, J. (2023). Influence of light, nutrients, and soil moisture on the growth and resource allocation of Arundo donax. Weed Research.

Project Experience

DBNF Vegetation Management Risk Analysis, 2023
Assisted in the data aggregation, outlining, writing, and proofreading of an herbicide risk assessment per USFS guidelines.

NPS FRST Trails EA, 2023
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the National Park Service.

Natchez Trace Programmatic Road EA, 2023
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the National Park Service.

Wetland & Stream Delineation for Vermillion Renewables Project, IL 2023
Conducted a wetland and stream delineation and led field teams for a wind turbine site in Champaign County, Illinois.

USFS Gap EA, 2023
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the US Forest Service.

INHF Brandenbark Installation, IA 2023
Assisted in the building and instillation of artificial bat roosting structures in Iowa.

UPL Algaecide Trials, KY 2023
Developed and executed testing protocol for monitoring the efficacy of novel algaecides. Maintained algal cultures.

UPL Algaecide Trials, KY 2023
Developed and executed testing protocol for monitoring the efficacy of novel algaecides. Maintained algal cultures.

Fort Knox Tree Inventory, KY 2023
Assisted in the data collection for tree inventory in Fort Knox, KY. Estimated saleable timber and provided recommendations for future timber management strategies.

Fort Knox Timber Stand Improvement, KY 2023
Conducted timber stand improvement managing invasive species and nuisance species. Safely handled herbicide.

Fort Knox Timber Stand Improvement, KY 2023
Conducted timber stand improvement managing invasive species and nuisance species. Safely handled herbicide.

TVA Brandenbark Monitoring, TN, AL, KY 2023
Monitored artificial bat roosting structures for colony presence and conducted mist net surveys on structures housing bat colonies.

Stantec Wetland Delineation Support, VA 2023
Conducted a wetland and stream delineation as support for Stantec on a site in Mecklenburg County, Virginia

ODNR AMLER Buckeye Trail Survey, OH 2023
Conducted vegetation, habitat, and RTE species surveys on proposed trail expansion in Athens and Perry County, Ohio.

Herbert Hoover Water Quality Monitoring Project, WV 2023
Conducted water quality monitoring for streams impacted by construction. Kanawha County, West Virginia

Wetland & Stream Delineation for Manchester Pike Project, TN 2023
Conducted a wetland and stream delineation for an approximately 25-acre site in Rutherford County, Tennessee

Wetland & Stream Delineation for Mantle Rock Solar Project, KY 2023
Conducted a wetland and stream delineation for an approximately 500-acre site in Livingston County, Kentucky

Wetland & Stream Delineation for Mastodon Solar Project, MI 2022
Conducted a wetland and stream delineation for an approximately 1,800-acre site in Lenawee County, Michigan

Wetland & Stream Delineation for KY-536 Expansion Project, KY 2022
Conducted a wetland and stream delineation for an approximately 150-acre site in Kenton County, Kentucky

Wetland & Stream Delineation for Fiddler Solar Project, TN 2022
Conducted a wetland and stream delineation for an approximately 800-acre site in DeKalb County, Tennessee

Wetland & Stream Delineation for Mount Vernon Trail (NPS), DC 2022
Conducted a wetland and stream delineation for an approximately 5-mile-long section of trail in Washington DC/Virginia.

Wetland & Stream Reconnaissance for Winner Solar Project, PA 2022

Conducted a wetland and stream delineation for an approximately 2000-acre site in Clearfield County, Pennsylvania

Wetland & Stream Delineation for Mammoth Cave Campground Rehabilitation (NPS) Project, KY 2022
Conducted a wetland and stream delineation for an approximately 100-acre site in Hart County, Kentucky

Wetland & Stream Delineation for Battelle Construction Project, KY 2022
Conducted a wetland and stream delineation for an approximately 100-acre site in Marshall County Kentucky

Wetland & Stream Delineation for EDP Solar Project, KY 2022
Conducted a wetland and stream delineation for an approximately 2,500-acre site in Breckinridge County Kentucky

Wetland & Stream Delineation for NPS Mammoth Cave Road Expansion, KY 2022
Conducted a wetland and stream delineation for an approximately 8-acre site in Mammoth Cave National Park Kentucky.

Wetland & Stream Delineation for CCR Tupelo MS Solar Project, MS 2022
Conducted a wetland and stream delineation for an approximately 3,000-acre site in Tupelo, Mississippi.

Wetland & Stream Delineation for TVA Powerlines (Barkley-Oakwood) Project, KY/TN 2022
Conducted a wetland and stream delineation for an approximately 60 linear mile site in the land between the lakes in Kentucky and Tennessee.

Wetland Delineation for CCR Strawhorn Solar Project, NC 2022
Conducted a wetland and stream delineation for an approximately 1200-acre site in Bladen County, North Carolina.

Wetland Delineation for Village at the Palisades, KY 2022
Conducted a wetland and stream delineation for an approximately 8-acre site in Mercer County, Kentucky.

Stream Assessment for Horse Soldier Distillery, KY 2022
Conducted a stream assessment for an approximately 236 -acre site in Somerset, Pulaski County, Kentucky.

Preliminary Wetland and Stream Assessment for Terry Shaw, P.E, KY 2022
Conducted a wetland and stream assessment for an approximately 215 -acre site in Henry County, Kentucky.

Wetland Delineation for Horseshoe Bend Solar Project, KY 2022
Conducted a wetland and stream delineation for an approximately 560-acre site in Green County, Kentucky.

The ecological correlates of the spread and invasion success of *Arundo donax* in central Texas – South Central Texas. 2019-2022. Designed, developed, and implemented a multistep experiment to inform management efforts of *Arundo donax* in central Texas. The two-phase experiment consisted of a

greenhouse experiment in which the ecological factors contributing to the performance-related traits *Arundo* were assessed. The second phase of the experiment used remote sensing to identify the spatial dynamics of *Arundo* spread following a 100-year flood event.

Comparative Anatomy of the Submersed and Emergent Stems and Leaves of *Shinnersia rivularis* (Asteraceae: Eupatorieae). 2019-2020 Developed and executed a comparative analysis of the anatomical characteristics of *Shinnersia rivularis.* Collected and stored in fixative live samples of submersed and emergent plant material. Made and analyzed microscope slides of stems and leaves to assess and quantify the difference in anatomical characteristics between submersed and emergent individuals.

COPPERHEAD
ENVIRONMENTAL CONSULTING

JACOB MURPHY
WETLAND SCIENTIST

Regulatory Expertise
- Clean Water Act
- USACE Nation Wide Permitting

Industry Clientele
- KY Department of Fish and Wildlife Resources

Environmental Services
- Stream Restoration
- Field Surveys
- Invasive Species Management

Survey Expertise
- Habitat Assessments
- Stream Water Quality Assessments
- Stream Fish Nesting Measurements
- Invasive Species Monitoring
- Electro Fishing
- Plant Community Surveys
- Crayfish Surveys

Certifications/Training
- Kentucky Department of Agriculture, Division of Environmental Services N2 Forestry Pesticide Applicators License
- Swamp School Training, 2022
- Winter Tree Identification Training, Berea Forest, 2022
- First Aid, CPR, AED Training

Education
M.S. Biology, 2022, Eastern Kentucky University, Richmond, Kentucky
Graduate Advisor: Dr. Sherry Harrel

B.S. Biology, 2020, University of Kentucky

Experience
Copperhead Environmental Consulting Inc., Wetland Scientist, June 2022-present

Eastern Kentucky University, Graduate Research Assistant and Instructional Assistant for the Cellular and Molecular Biology Lab, August 2020 – May 2022

Qualifications and Background
Mr. Murphy is an ecologist with three years of experience working for Eastern Kentucky University and Copperhead Environmental Consulting. He has conducted master's level research on spawning habitat and nest density of the soon-to-be threatened or endangered Buck Darter (*Etheostoma nebra)* in the Cumberland River drainage, Kentucky. He has experience running and supervising the cellular and molecular lab at Eastern Kentucky University, as well as teaching a freshman course in the subject. Within his education, Mr. Murphy had experience conducting plant community surveys, presence/absence surveys, water quality assessments, and backpack and boat electro fishing. At Copperhead, Mr. Murphy has conducted and led wetland delineations in the field, written wetland reports for clients and the USACE, conducted water quality assessments, macroinvertebrate surveys, crayfish surveys, assisted in endangered fish species relocation and survey, and assisted in the writing of EAs, EISs, BAs, and BEs.

Presentations

"Comparison of Spawning Habitat and Nest Density Between Buck Darter (*Etheostoma nebra)* and Striped Darter (*Etheostoma virgatum)* Populations in the Cumberland River Drainage, Kentucky". Graduate Research Seminar, Eastern Kentucky University, March 2022

Project Experience

NPS FRST Trails EA, February 2024
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the National Park Service.

Valhalla Storage Critical Issues Analysis, January 2024
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Valhalla Battery Storage Project in Tennessee.

USFS Montana Bonanza EA, January 2024
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the US Forest Service.

Lark Storage Critical Issues Analysis, December 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Lark Battery Storage Project in Iowa.

Old Fiddler Storage Critical Issues Analysis, December 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Old Fiddler Battery Storage Project in Texas.

River King Storage Critical Issues Analysis, December 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the River King Battery Storage Project in Iowa.

Harbor Beach Storage Critical Issues Analysis, December 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Harbor Beach Battery Storage Project in Michigan.

Alligator Snapping Turtle Habitat Assessment Monroe County, AR, November 2023
Conducted and lead an alligator snapping turtle habitat assessment for a potential solar development in Monroe County, Arkansas.

Alligator Snapping Turtle Habitat Assessment Hinds County, MS, November 2023
Conducted and lead an alligator snapping turtle habitat assessment for a potential solar development in Hinds County, Mississippi.

Taylorville Storage Critical Issues Analysis, November 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Taylorville Battery Storage Project in Illinois.

Natchez Trace Programmatic Road EA, November 2023

Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the National Park Service.

Mountain View Storage Critical Issues Analysis, November 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Mountain View Battery Storage Project in Virginia.

Kentucky Arrow Darter Survey and Relocation, Clay County, KY, October – December 2023
Assisted in Kentucky Arrow Darter identification, survey, and relocation each week for a bridge reconstruction in Clay County, Kentucky.

Van Kal Storage Critical Issues Analysis, October 2023
Assisted in the outlining, writing, and proofreading of a critical issues analysis for the Van Kal Battery Storage Project in Michigan.

USFS Gap EA, October 2023
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the US Forest Service.

TVA Office EA, October 2023
Assisted in the outlining, writing, and proofreading of an environmental assessment as part of the NEPA process for the Tennessee Valley Authority.

Fort Knox Timber Stand Improvement, KY September 2023
Conducted timber stand improvement managing invasive species and nuisance species. Safely handled herbicide.

Mussel Survey of Fink Creek, Doddridge County, WV, August 2023
Conducted a survey for native and endangered mussel species within Fink Creek for a proposed natural gas pipeline project.

Wetland & Stream Delineation for the Ring Road Construction Project, Elizabethtown, KY, June 2023
Conducted a wetland and stream delineation for an approximately 50-acre site in Elizabethtown, Kentucky.

Fish Survey of Hinkston Creek, Bourbon County, KY, May 2023
Conducted a fish electroshock survey to calculate the index of biotic integrity to determine if Hinkston Creek is a good site for future mussel propagation efforts.

Wetland and Stream Delineation for the Mantle Rock Solar Project, Hampton, KY, April 2023
Conducted a wetland and stream delineation for an approximately 500-acre site in Hampton, Kentucky.

Wetland and Stream Delineation for the National Park Service's Natchez Trace Trail, Jackson, MS, March 2023
Conducted a wetland and stream delineation for a 2-mile stretch of walking trail in Jackson, Mississippi.

Water Quality Survey in Middlesboro, KY, December 2022.
Conducted fish shocking surveys, macroinvertebrate collections and water quality surveys in Yellow Creek, Middlesboro, Kentucky to determine water quality effects up and downstream of an historic building.

Fish Survey in Knox County, Kentucky, November 2022.
Conduced a fish shocking survey for a KYTC bridge replacement project in Tye Fork, Knox County, Kentucky.

Bat Habitat Survey for the EDP Solar Project, KY, November 2022.
Conducted a bat habitat survey looking for potential roost habitat for the Indiana Bat (*Myotis sodalis),* the Northern Long-eared Bat (*Myotis keenii),* and the Gray Bat (*Myotis grisescens)* on an approximately 690-acre site in Breckinridge County, Kentucky.

Crayfish Survey for the Kentucky Transportation Cabinet Bridge Program Project, Martin and Pike County, KY, November 2022
Collected and identified crayfish species within the impacted stream area, looking specifically for the threatened Big Sandy Crayfish (Cambarus callainus).

Crayfish Survey for the Kentucky Transportation Cabinet Bridge Program Project, Lawrence and Martin County, KY, November 2022
Collected and identified crayfish species within the impacted stream area, looking specifically for the threatened Big Sandy Crayfish (Cambarus callainus).

Wetland & Stream Delineation for Mastodon Solar Project, MI, November 2022
Conducted a wetland and stream delineation for an approximately 4,773-acre site in Lenawee County, Michigan.

Wetland & Stream Delineation for Fiddler Solar Project, TN, October - November 2022
Conducted a wetland and stream delineation for an approximately 870-acre site in DeKalb County, Tennessee.

Wetland and Stream Reconnaissance Survey for Winner Solar Project, PA, October 2022.
Conducted a wetland and stream reconnaissance survey to estimate feature sizes prior to project boundary decision on an approximately 4,362-acre site in Clinton County, Pennsylvania.

Crayfish Survey for the Kentucky Bridge Program Project, KY, September 2022
Collected and identified crayfish species within the impacted stream area, looking specifically for the threatened Big Sandy Crayfish (*Cambarus callainus*).

Fish Relocation for the Kentucky Bridge Program Project, KY, September 2022
Collected and identified fish within the impacted stream area and relocated the threatened Kentucky Arrow Darter (*Etheostoma spilotum*).

Wetland & Stream Delineation for EDP Solar Project, KY, July - August 2022
Conducted a wetland and stream delineation for an approximately 2,500-acre site in Breckinridge County, Kentucky.

Wetland Delineation for Geil Lane Project, KY, June 2022
Conducted a wetland delineation for an approximately 30-acre site in Jefferson County, Kentucky.

Comparison of Spawning Habitat and Nest Density Between Buck Darter (Etheostoma nebra) and Striped Darter (Etheostoma virgatum) Populations in the Cumberland River Drainage, Kentucky, March 2022.

Mr. Murphy collected nine nesting habitat measurements and nest density measurements for *Etheostoma nebra* and *Etheostoma virgatum* throughout the spawning season to compare between the declining Buck Darter population and the surviving Striped Darter populations. His findings were presented to employees of the Kentucky Department of Fish and Wildlife Resources and are to be used to help reintroduce populations of the species into streams with suitable habitat.