Attachment F. Wetlands Assessment

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: Louisville District

- I am requesting a JD on property located at: 3805 West 5th Street Rd
  (Street Address)
  City/Township/Parish: Owensboro County: Daviess State: KY
  Acreage of Parcel/Review Area for JD: 117
  Section: NA Township: NA Range: NA
  Latitude (decimal degrees): 37.77097 Longitude (decimal degrees): -87.15917
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ☐ I currently own this property. ___ I plan to purchase this property.
  ☒ I am an agent/consultant acting on behalf of the requestor.
  ☐ Other (please explain): _____.
- Reason for request: (check as many as applicable)
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ☐ A Corps JD is required in order to obtain my local/state authorization.
  ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ☐ I believe that the site may be comprised entirely of dry land.
  ☐ Other: _____
- Type of determination being requested:
  ☐ I am requesting an approved JD.
  ☒ I am requesting a preliminary JD.
  ☐ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

*Signature: _____ Date: 22MAY23

- Typed or printed name: David Lamb
  Company name: Associated Engineers, Inc.
  Address: 2740 North Main Street
  Madisonville, KY 42431
  Daytime phone no.: 270-821-7732
  Email address: DLamb@associatedengineers.com

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Wetland Services

I n c o r p o r a t e d

3880 Trigg-Turner Rd
Corydon, KY 42406

270-860-8141
wetlandservices.net

◊ Delineation
◊ Permitting
◊ Mitigation
◊ Survey
◊ Design
◊ Construction
◊ Monitoring
◊ Maintenance

To: Tre Barron
ACOE Regulatory Division, South Branch
6855 State Road 66
Newburgh, Indiana 47630

22MAY23

RE: BREC – Transmission Operations Center Waters of the US JD Report, Owensboro, KY. For Associated Engineers, Inc. & Big Rivers Electric Corporation.

Hello Tre Barron,

During the month of May, a delineation of Waters of the U.S. (WOUS) was performed on the site of the proposed Big Rivers Electric Corporation, Transmission Operations Center at the request of Associated Engineers, Inc. Owensboro, KY. Midpoint Location: N 37.77097, W -87.15917

Please note the enclosed Jurisdictional Determination Report and associated information: Request for JD Form, JD Narrative, Delineation Summary Tables, Stream & Wetland Data Forms, Location & JD Map and Preliminary JD Form. The report is bookmarked in pdf format for your convenience.

At this time, the client is requesting Preliminary JD.

Sincerely,

Keith Michalski
Biologist
km@wetland.services
216-647-1641

CC: David Lamb, Associated Engineers, Inc.

Wetland Delineation, Stream Assessment, and Rapanos Report (JD Report)

BREC - Transmission Operations Center

May, 2023

Owensboro, KY

For:

Associated Engineers, Inc
2740 North Main St.
Madisonville, KY 42431
270-821-7732

By:

Wetland Services
3880 Trigg-Turner RD
Corydon, KY 42406
270-860-8141

JD REPORT

Introduction and Location: An Army Corps of Engineers (ACOE) jurisdictional wetland and stream delineation was conducted within the proposed site for the BREC - Transmission Operations Center at the request of Associated Engineers, Inc. Field assessments were completed from May 15 to May 18, 2023. The project is located in Daviess County, KY. The site resides within the inner loop of the Highway 60 Bypass on the west side of Owensboro, KY. Central point of project location: N 37.77097, W -87.15917

Directions to the site from the Louisville District, Newburgh Regional Field Office. Proceed 18.3 miles on IN-66 E. Turn right onto IN-161 S for 8.8 miles and travel across the Glover Cary Bridge into KY. Turn right onto E 3rd Street. Make the next right onto Daviess St. Make the next left onto E 2nd St. Proceed 2.6 miles on E 2nd St and turn left onto Gradd Way. A gravel site access location will imediately be on the left. Southern portion of the JD area can be accessed from W 5th Street.

As the regulating authority of Section 404 of the Clean Water Act, ACOE must make the final determination as to the jurisdictional status of this site. Kentucky Division of Water (KDOW) has jurisdiction over “Waters of the Commonwealth”.

Regulatory Definitions:

Waters of the United States: Waters of the United States are regulated by ACOE based on authority from Section 404 of the Clean Water Act. They include waters that are or could be used for interstate commerce such as rivers, wetlands, lakes, territorial seas and ponds, as well as streams, waterways, and ditches below the ordinary high-water mark. Manmade water bodies and farmed wetlands may also be considered jurisdictional depending on their connection to other “Waters of the U.S.” if they are not actively mined, farmed, or otherwise managed for five years. Activities in these areas will require an ACOE 404 permit if they include the discharge of dredged or fill material into “Waters of the U.S.”.

Waters of the Commonwealth: Waters of the Commonwealth are regulated by KDOW based on authority from Section 401 of the Clean Water Act 33USC 1314 and KRS 224.16-070. They are defined as Section 404 jurisdictional wetlands and solid or dashed blue-line streams on the most recent version of the USGS 1:24,000 topographic map. Activities that include a physical disturbance to “Waters of the Commonwealth” will require a KDOW 401 Water Quality Certification.

Other Permits: Other permits typically associated with Section 401 and 404 may include KDOW Floodway Construction, USFWS Threatened Endangered Species, and Historic Preservation Office - Archaeology.

Technical Definitions:

Wetlands: Wetlands are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. They are identified based on the three-parameter approach outlined in the *Corps of Engineers Wetland Delineation Manual (1987)* as amended by the Eastern Mountains and Piedmont Regional Supplement - Piedmont Central Subregion ERDC/EL TR-10-9. The three criteria include hydrophytic vegetation, hydric soils, and wetland hydrology. All three criteria must be present to make a positive wetland determination. The criteria are defined as follows:

Hydrophytic vegetation: Hydrophytic vegetation, due to morphological, physiological, and/or reproductive adaptation(s), has the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Individual species have been assigned indicator status by the USFWS - National Wetland Inventory and the National Plant List Panel. Vegetation is considered hydric when *more than* 50% of the dominant species from all strata are OBL, FACW, or FAC based on the dominance test. A prevalence index of 3.0 or less indicates hydrophytic vegetation. Vegetation is also present if either the dominance test or the prevalence test is passed according to morphological adaptations. If all dominants are FAC, the vegetation criterion is disregarded and the determination is based on soil and hydrology criteria.

Indicator Status	Probability of Occurrence in Wetlands
Obligate Wetland - OBL	> 99%
Facultative Wetland - FACW	67-99%
Facultative- FAC	34-66%
Facultative Upland - FACU	1-33%
Obligate Upland - UPL	<1%

Secondary vegetation rules include observed physiological adaptations, plants growing in saturated soils, and the FAC neutral test.

Hydric soils: Hydric soils are present when they develop anaerobic in the upper part during the growing season. Hydric soils in this report are identified by various combinations of soil colors, depths, organic matter, and redox features.

Hydrology: Hydrology in wetlands occurs in areas inundated permanently or periodically at mean water depths ≤6.6-feet, or if the soil is saturated to the surface for 14-days consecutively during the growing season of the prevalent vegetation. Wetland hydrology indicators may be present above or below the surface. Primary indicators include surface water, high water table, saturation, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, inundation visible from aerial imagery, water stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, and thin muck surface. Secondary indicators (two or more required) include surface soil cracks, sparsely vegetated concave surface, drainage patterns, moss trim lines, dry-season water table, crayfish burrows, saturation visible on aerial imagery, stunted of stressed plants, geomorphic position, shallow aquitard, microtopographic relief, and FAC neutral test.

Streams: Streams were assessed according to criteria set forth in Rapanos Guidance to include surface drains with ordinary high-water marks (OHWM) and defined bed and banks. OHWM are evidenced by a clear, natural line impressed on the bank, sediment deposition/sorting, litter, debris or wrack lines, scouring, the destruction of terrestrial vegetation, benching, shelving, and changes in soil character. Swales and gullies are “generally” not jurisdictional, but were mapped and illustrated when they provided surface connection between “waters of the U.S.” and a TNW. These features are denoted as surface connections, or ‘SC’, followed by the appropriate Unit ID as outlined below in the Unit ID labeling system.

Methods and Materials

Wetland Delineation

Soils: Soil colors were determined using the standard Munsell Soil Color Charts. Colors were determined with soil moist on an undisturbed ped face. Unless otherwise stated samples were taken using a tile spade and/or an Oakfield 7/8”x10” soil probe.

Vegetation: Vegetation was classified using the USFWS National List of Plant Species that Occur in Wetlands, Region 1, East, Eastern Mountains and Piedmont Regional Supplement. The 50/20 rule was applied to determine the dominant species in applying the dominance test. If the dominance test failed and the site had indicators of hydric soil and wetland hydrology, the prevalence index was applied. If the prevalence index failed, the morphological adaptations rule was applied.

Hydrology: Hydrology was determined by field indicators, and any reliable source of available gage data. Local soil survey data were also considered.

Stream Assessment: Assessments were conducted using the Rosgen stream assessment protocol and EPA RBP physical characterization and habitat parameter forms. Additional information was added to the standard Rosgen data sheet to facilitate Rapanos. These data include length, distance, sinuosity, area, vegetation width on both banks, additional Altered Channel descriptors and a check box for Step-Pool Series.

Unit ID Labeling System: For accurate record-keeping purposes a unit specific labeling system has been developed i.e.:

1NS2A1-1=Unit ID
1=watershed (any drain that solely leaves the permit boundary)
N=Landuse (Natural, Reclaimed, PreLaw, Ag, Mixed eXcavated, Logged, Urban)
S=Unit type (Stream, Wetland, Open Water)
2=Unit number (2nd stream assessed in watershed 1)
A=1st branch of stream 2
1=1st branch of stream 2A etc.
-1=Subsequent assessment on stream 2A1

Rapanos: Rapanos clarification of terms: watershed size is the area within the JD Boundary, drainage area is the size of each watershed on site, and review area is identified as the stream in conjunction with all associated wetlands. Occasionally a unit on site has connection to a TNW by a unit offsite. In such cases a visual observation of the unit is made from the permit boundary and an “Offsite” assessment is made to facilitate complete Rapanos documentation.

Site Description

Background Information: Information on the JD area was gathered from USGS Quadrangle maps, USDA/NRCS Web Soil Survey, USFWS Wetland Mapper, USGS StreamStats, KY LiDAR elevation data, and various aerial imagery. These data sets were studied and utilized in making a formal assessment between 15MAY23 and 18MAY23. The assessed JD area was approximatly 117-acres. Weather conditions during assessment were normal for temperature and precipitation. A heavy rain event occurred within seven days of assessment. Assessment

data forms are provided for all mapped features. Assessments were also completed on agricultural landscapes to document conditions where development is planned to occur.

Physiographic Setting: The site is located within Ecoregion 72a, the Wabash - Ohio Bottomlands. The region is composed of nearly level, poorly drained floodplains and undulating terraces. Wetlands, sloughs, abandoned channels, owbow lakes and low ridges occur. The region is more poorly drained than other parts of Ecoregion 72. Today, some woodlands remain, but the majority of land use is agricultural and developed. Streams within the region are dominated by fine substrates and often channelized. Drainage ditches are common. (Woods et. al.)

The landscape of the JD area was very similar to the physiographic setting description of Ecoregion 72a. The JD area was greater than 90% agricultural land use. The site is relatively flat with convex and concave surfaces due to natural topography and directional tillage. Drainage on the site is extensive and complicated by the Highway 60 bypass. The site drains predominately north to an unnamed tributary to the Ohio River (2MS1). A large drainage system consisting of one main feature (2AW3) with many lateral W-ditches drains crop ground to the north. W-ditches on site have been well maintained and fuction as intended. Portions of the site that drain west and south drain along the Highway 60 bypass (1MS1). Stream 1MS1 flows south and east to the retention basins off site. Retention basin water has the ability to be pumped to a recieveing water.

Drainage features within mature tree lines have aggraded, are no longer present or drainage has been facilitated along them. In some locations, surface water appears to sheet flow along tree lines before entering connected waters. Ground swelling has occurred within mature tree lines resulting in tree line surface elevation being above agricultural fields.

The JD area resides in two HUC 12 watersheds:051100050501 Rhodes Creek-Green River and 051402011202 Jackson Creek-Ohio River. Although most of the site resides in Rhodes Creek watershed, most of the site drains north to the Ohio River.

Streams: Natural stream density on the site would have been low due to the flat nature of the site. Surface features mapped as streams have been dredged and channelized across flat landscapes. Main ditched streams carry relatively permanent flow. Few ephemeral features were located on site. Streams were dominated by silt, clay and organic substrates. RBP scores indicate marginal to poor stream quality for Western Kentucky. Shallow drainage features located within agricultural land use that did not display an ordinary high-water mark, or defined bed and banks were not mapped as streams.

Open Waters: No open waters were located on site.

Wetlands: Three types of wetland were mapped on site; PFO, PEM and PUBG. Wetlands met abutting and adjacent status. The most common mapped wetland condition on site were large, aggraded drainage ditches located in mature tree lines (2MW1, 2MW4, 1MW6). Over time these drainage features have developed obstructions leading to ponding of surface water. One PEM wetland was mapped where a maintained sewer right of way occurs through a tree line (2MW2). One old, excavated trash pit was mapped as PUBG (1MW5). One surface drainage feature located in agriculture was mapped as linear wetland (2AW3). The feature has not been farmed through and was located within mapped hydric soils.

All tree lines were investigated for wetland criteria. Ground swelling and debris collection within mature tree lines has resulted in convex surface elevations above agricultural fields. Soils in these locations were often dark with organic material but did not display reducing conditions, redoximorphic features or required hydrology indicators.

Vegetation: PFO wetland vegetation was dominted by hard and soft mast tree species. Dominant tree line species included sweet gum, pin oak, cottonwood, red maple and red mulberry. Tree species also present included: bur oak, pecan, shellbark hickory, silver maple, american elm and sugarberry. Shrubs within wetlands and tree lines were dominated by red mulberry and non-native species: border privet, burning bush and bush honeysuckle. Understory herbaceous vegetation was dominated by winter creeper (Euonymus fortunei), which has formed a dense continous mat in most tree lines. Additional dominant species included virgina creeper, poison ivy, woodland grasses and green briar. PEM wetland vegetation was dominated by a mix of sedges, forbs and tree saplings.

Hydrology: The primary hydrologic source for wetlands onsite was precipitation, surface ponding and influence from a seasonally high-water table. At the time of assessment wetlands displayed hydrology indicators including: high water table, soil saturation, water marks, sediment deposits, drift deposits, algae mat, iron deposits, water stained leaves, surface soil cracks, sparsley vegetated concave surface, drainage patterns, crayfish burrows, stressed plants, geomorphic position and FAC-Neutral test.

Soils: Dominant soil types on site included: Melvin silt loam, Otwood silt loam, Cape silty clay loam and Elk silt loam. Two soil types are listed as hydric: Cape silty clay loam and Melvin silt loam. Mapped soil types and hydric status of soils on site was approximate to on the ground conditions. All mapped wetlands met the criteria for a depleted matrix. Portions of agricultural fields display hydric soils, but active farming has removed many hydrology indicators and vegetation.

Works Cited:

Woods, A.J., Omernik, J.M., Martin, W.H., Pond, G.J., Andrews, W.M., Call, S.M, Comstock, J.A., and Taylor, D.D., 2002, Ecoregions of Kentucky (color poster with map, descriptive text, summary tables, and photographs): Reston, VA., U.S. Geological Survey (map scale 1:1,000,000).

Jurisdictional Waters: An itemized summary of all existing waters is listed below.

Table 1: Itemized Summary of Jurisdictional Waters

TYPE	INDIVIDUAL UNITS	**TOTAL AMOUNT
Jurisdictional Wetlands	8	1.11-acres
Non-Jurisdictional Wetlands	0	0.00-acres
Jurisdictional Streams	6	2,557-Linear ft) 0.45 -acre*
Jurisdictional Open Waters	0	0.00-acres
Non-Jurisdictional Open Waters	0	0.00-acres
TOTAL Jurisdictional Area		**1.56-acres**
TOTAL Non-Jurisdictional Area		**0.00-acres**

*Stream area calculated by multiplying stream linear footage x “width OHWM”. Da channel area calculated by multiplying stream linear footage x “Wfpa”

**Areas rounded to the hundredth 0.01-acre.

Summary Tables

Streams						
Unit Id	**Latitude N**	**Longitude W**	**Eph**	**Int**	**Rosgen Type**	**RBP Score**
1MS1	37.76507	-87.16231	0	319	E6	107
2MS1	37.77293	-87.15661	0	626	G6c	86
2MS1A	37.77268	-87.15664	0	246	B6c	91
2MS1A1	37.77221	-87.15680	53	0	C6	83
2MS1A2	37.77251	-87.15912	37	0	B6c	71
2MS1B	37.77216	-87.15490	0	1,276	G6c	81
Total Linear Feet			**90**	**2,467**		

Wetlands				
Unit Id	**Latitude N**	**Longitude W**	**Cowardin Class**	**Connected Area**
2MW1	37.77241	-87.15808	PFO	0.42
2MW2	37.77223	-87.15747	PEM	0.09
2AW3	37.77141	-87.15703	PUBG	0.16
2MW4	37.77157	-87.15520	PFO	0.14
1MW1	37.76967	-87.16095	PFO	0.09
1MW4	37.76481	-87.16187	PFO	0.05
1MW5	37.77041	-87.16085	PUBG	0.04
1MW6	37.77046	-87.16386	PFO	0.12
Total Acres				**1.11**

Transmission Operations Center
Stream Assessment Worksheet

Stream 1MS1 **Date 5/18/2023** **Inv.: Dakota Spruill** **Entry: Keith Michalski**

Latitude:	37.76507	N
Longitude:	-87.16231	W
Length:	319	
Distance:	319	
Sinuosity:	1.00	
FlowType:	Intermittent	
Area In Acres:	0.11	
Slope %:	0.5	

Level II - Stream Morphological Description

Width at Bottom of Stream:	6.40
Bankfull Surface Width:	15.00
Width of Flood Prone Area:	60.00
Bankfull Mean Depth:	1.50
Entrenchment Ratio:	4.00
Width / Depth Ratio:	10.00
Stream Type:	E6

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	10a	100
Primary Riparian Right:	10b	80
Secondary Riparian Left:		0
Secondary Riparian Right:	RV 1	20
Stream Flow Regime:	I2	
Stream Size:	S-4	
Depositional Features:	B-4	
Meander Patterns:	M-3	
Stream Channel Debris:	D2	
Stream Bank Erosion:	Low	
Stream Aggradation:	Stable	
Channel Stability:	Good	
Altered Channel:	CH,CV	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	0
Percent Run:	85
Percent Pool:	15
Step Pool:	☐

Comments:

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 1ASC1 **Date: 5/22/2023** **Inv.: Keith Michalski** **Entry: Keith Michalski**

Latitude:	37.76997	N
Longitude:	-87.16121	W
Length:	845	
Distance:	845	
Sinuosity:	1.00	
FlowType:	Non Jurisdictional	
Area In Acres:	0.00	
Slope %:	0.5	

Level II - Stream Morphological Description

Width at Bottom of Stream:	0.00
Bankfull Surface Width:	0.00
Width of Flood Prone Area:	0.00
Bankfull Mean Depth:	0.00
Entrenchment Ratio:	0.00
Width / Depth Ratio:	0.00
Stream Type:	Swale

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:		
Primary Riparian Right:		
Secondary Riparian Left:		0
Secondary Riparian Right:		0
Stream Flow Regime:		
Stream Size:	S-1	
Depositional Features:		
Meander Patterns:		
Stream Channel Debris:		
Stream Bank Erosion:		
Stream Aggradation:		
Channel Stability:		
Altered Channel:		

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	0
Percent Run:	0
Percent Pool:	0
Step Pool:	☐

Comments: Farmed Drainage Path/Swale.

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 2MS1 **Date 5/16/2023** **Inv.: Keith Michalski** **Entry: Keith Michalski**

Latitude:	37.77293	N
Longitude:	-87.15661	W
Length:	626	
Distance:	575	
Sinuosity:	1.09	
FlowType:	Intermittent	
Area In Acres:	0.26	
Slope %:	1	

Level II - Stream Morphological Description

Width at Bottom of Stream:	12.50
Bankfull Surface Width:	18.00
Width of Flood Prone Area:	25.00
Bankfull Mean Depth:	2.00
Entrenchment Ratio:	1.39
Width / Depth Ratio:	9.00
Stream Type:	G6

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	10b	20
Primary Riparian Right:	10b	20
Secondary Riparian Left:	RV 1	80
Secondary Riparian Right:	RV 1	80
Stream Flow Regime:	I2	
Stream Size:	S-4	
Depositional Features:	B-4	
Meander Patterns:	M-1	
Stream Channel Debris:	D3	
Stream Bank Erosion:	Low	
Stream Aggradation:	SL Agg	
Channel Stability:	Fair	
Altered Channel:	CH,CV	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	5
Percent Run:	80
Percent Pool:	15
Step Pool:	☐

Comments:

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 2MS1A **Date** 5/16/2023 **Inv.:** Dakota Spruill **Entry:** Keith Michalski

Latitude:	37.77268	N
Longitude:	-87.15664	W
Length:	246	
Distance:	228	
Sinuosity:	1.08	
FlowType:	Intermittent	
Area In Acres:	0.03	
Slope %:	1	

Level II - Stream Morphological Description

Width at Bottom of Stream:	1.60
Bankfull Surface Width:	5.90
Width of Flood Prone Area:	12.80
Bankfull Mean Depth:	0.50
Entrenchment Ratio:	2.17
Width / Depth Ratio:	11.80
Stream Type:	B6c

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	3b	20
Primary Riparian Right:	3b	100
Secondary Riparian Left:		0
Secondary Riparian Right:		0
Stream Flow Regime:	I2	
Stream Size:	S-3	
Depositional Features:	NA	
Meander Patterns:	M-1	
Stream Channel Debris:	D2	
Stream Bank Erosion:	Moderate	
Stream Aggradation:	Sl deg	
Channel Stability:	Fair	
Altered Channel:	CH,CV	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	5
Percent Run:	90
Percent Pool:	5
Step Pool:	☐

Comments: Drainage Ditch

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 2MS1A1 **Date** 5/16/2023 **Inv.:** Dakota Spruill **Entry:** Keith Michalski

Latitude:	37.77221	N
Longitude:	-87.15680	W
Length:	53	
Distance:	53	
Sinuosity:	1.00	
FlowType:	Ephemeral	
Area In Acres:	0.00	
Slope %:	1	

Level II - Stream Morphological Description

Width at Bottom of Stream:	2.10
Bankfull Surface Width:	3.40
Width of Flood Prone Area:	7.90
Bankfull Mean Depth:	0.25
Entrenchment Ratio:	2.32
Width / Depth Ratio:	13.60
Stream Type:	C6

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	10b	10
Primary Riparian Right:	10b	10
Secondary Riparian Left:	RV 1	90
Secondary Riparian Right:	RV 1	90
Stream Flow Regime:	E2	
Stream Size:	S-2	
Depositional Features:	NA	
Meander Patterns:	M-1	
Stream Channel Debris:	D1	
Stream Bank Erosion:	Moderate	
Stream Aggradation:	Sl deg	
Channel Stability:	Fair	
Altered Channel:	CH	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	5
Percent Run:	90
Percent Pool:	5
Step Pool:	☐

Comments: Drainage Ditch.

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 2MS1A2 **Date** 5/17/2023 **Inv.:** Dakota Spruill **Entry:** Dakota Spruill

Latitude:	37.77251	N
Longitude:	-87.15912	W
Length:	37	
Distance:	37	
Sinuosity:	1.00	
FlowType:	Ephemeral	
Area In Acres:	0.00	
Slope %:	1	

Level II - Stream Morphological Description

Width at Bottom of Stream:	1.41
Bankfull Surface Width:	3.10
Width of Flood Prone Area:	6.20
Bankfull Mean Depth:	0.20
Entrenchment Ratio:	2.00
Width / Depth Ratio:	15.50
Stream Type:	B6c

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	10b	100
Primary Riparian Right:	10b	100
Secondary Riparian Left:		0
Secondary Riparian Right:		0
Stream Flow Regime:	E2	
Stream Size:	S-2	
Depositional Features:	NA	
Meander Patterns:	M-3	
Stream Channel Debris:	D2	
Stream Bank Erosion:	Moderate	
Stream Aggradation:	Sl deg	
Channel Stability:	Fair	
Altered Channel:	NA	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	10
Percent Run:	90
Percent Pool:	0
Step Pool:	☐

Comments: Agriculture field drainage location.

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Transmission Operations Center
Stream Assessment Worksheet

Stream 2MS1B **Date 5/18/2023** **Inv.: Keith Michalski** **Entry: Keith Michalski**

Latitude:	37.77216	N
Longitude:	-87.15490	W
Length:	1276	
Distance:	1273	
Sinuosity:	1.00	
FlowType:	Intermittent	
Area In Acres:	0.32	
Slope %:	1	

Level II - Stream Morphological Description

Width at Bottom of Stream:	7.30
Bankfull Surface Width:	11.00
Width of Flood Prone Area:	17.50
Bankfull Mean Depth:	1.50
Entrenchment Ratio:	1.59
Width / Depth Ratio:	7.33
Stream Type:	G6c

Level III - Stream State or Condition Morphological Description

Primary Riparian Left:	10b	5
Primary Riparian Right:	10b	30
Secondary Riparian Left:	RV 1	95
Secondary Riparian Right:	RV 1	70
Stream Flow Regime:	I2	
Stream Size:	S-3	
Depositional Features:	B-4	
Meander Patterns:	M-3	
Stream Channel Debris:	D3	
Stream Bank Erosion:	Moderate	
Stream Aggradation:	Stable	
Channel Stability:	Fair	
Altered Channel:	CH,DG,PI	

Altered Channel Key

CH = Channelized
CV = Culvert
DAM = Weir, Dam, or Rock Checks
DG = Dredged
LWC = Low Water Crossing
NA = Not applicable
OT = Other (See Comments)
PI = Pipe
RSC = Road Side Channel

Percent Riffle:	5
Percent Run:	80
Percent Pool:	15
Step Pool:	☐

Comments:

Riparian Buffer: Primary and Secondary Riparian Buffer widths and vegetation types are delineated out to 100 ft (or the watershed divide if less) under the Level III criteria. Non-buffering land uses such as agriculture and roadways are disregarded.

From methods described in "Applied River Morphology" by Dave Rosgen, 1996, Second Edition

Project ID: Transmission Operations Center		Stream Class:	Intermittent
Stream ID: 1MS1		Location;	OWENSBORO KY
Lat: 37.76507	Long: -87.16231	River Basin	Ohio
Investigators: Dakota Spruill			
Signature:	Date: 18-May-23	Reason for Survey:	
	Time: 10:58 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☐ Cloud Cover % 0 ☑ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☑ Cloud Cover % 50 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 75 Air Temp C: 24

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☑ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.00 Km ^{2} 0.00

WATERSHED FEATURES

Surrounding Land Use & Percentage: ☑ Forest 10 ☐ Field/Pasture 0 ☑ Agriculture 70 ☐ Residential 0 ☐ Commercial 0 ☑ Other 20 Highway Interchange

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbs ☐ None

Dominant Species: Mixed mast.

INSTREAM FEATURES

Est Reach Length	ft 100	m 30		
Est Stream Width	ft 15.0	m 4.6		
Sampling Reach Area	ft ^{2} 1500.0	m ^{2} 139.4		
Sampling Area	mile^2 0.000055	km^2 0.000139		
Est Water Depth	in 4.0	m 0.1		
Surface Velocity	ft/s 0.1	m/s 0.0		

Canopy Cover: ☐ Open ☑ Partly Open ☐ Shaded ☐ Partly Shaded

High Water Mark ft 1.50

High Water Mark m 0.46

% of Stream Morphology: ☐ Riffle % 0 ☑ Run % 85 ☑ Pool % 15 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☑ Yes ☐ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD 0.1 m ^{2} 1 ft ^{2}

Density of LWD m ^{2} /km ^{2} 0.0000000929 ft ^{2} /mile ^{2} 0.0000000359

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☑ Rooted Emergent ☑ Rooted Submergent ☐ Rooted Floating ☐ None ☐ Free Floating ☑ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 20

WATER QUALITY

☐ No Water Present ☐ No Flow Present

Temperature 20 °C 68 °F

Conductivity µs/cm 583

Total Disolved Solids 292 mg/l

pH 7.85

Water Odors: ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: 8.3 mg/L

Turbidity: ☑ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other

Deposits
☐ Sludge ☐ Sawdust ☐ Paper Fiber
☐ Sand ☐ Relic Shells ☐ Other

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Looking at stones which are not deeply embedded, are undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Dietritus	Sticks, wood, coarse plant material	5
Boulder	>10"	0			
Cobble	2.5 - 10"	0	Muck-Mud	Black, very fine organic matter	5
Gravel	0.1 - 2.5"	2			
Sand	gritty	8	Marl	Grey, shell fragments	0
Silt	gooey	70			
Clay	slick	20			

Habitat Parameter	HABITAT ASSESSMENT - LOW GRADIENT STREAMS			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 9	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☑9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 11	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☑11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 9	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☑9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	16	☐20 ☐19 ☐18 ☐17 ☑16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	4	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☑4 ☐3 ☐2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	8	☐10 ☐9	☑8 ☐7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	8	☐10 ☐9	☑8 ☐7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Total Score	107				

Project ID: Transmission Operations Center		Stream Class:	Intermittent
Stream ID: 2MS1		Location;	OWENSBORO KY
Lat: 37.77293	Long: -87.15661	River Basin	Ohio
Investigators: Keith Michalski			
Signature:	Date: 16-May-23	Reason for Survey:	
	Time: 10:20 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☑ Cloud Cover % 50 ☐ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☑ Showers (Intermittent) ☐ Cloud Cover % 0 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 70 Air Temp C: 21

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☐ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.00 Km ^{2} 0.00

WATERSHED FEATURES

Surrounding Land Use & Percentage: ☑ Forest 10 ☐ Field/Pasture 0 ☑ Agriculture 70 ☑ Residential 10 ☑ Commercial 10 ☐ Other 0

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbs ☐ None

Dominant Species: Mixed mast.

INSTREAM FEATURES

Est Reach Length	ft	100	m	30
Est Stream Width	ft	18.0	m	5.5
Sampling Reach Area	ft ^{2}	1800.0	m ^{2}	167.2
Sampling Area	mile^2	0.000066	km^2	0.000167
Est Water Depth	in	4.0	m	0.1
Surface Velocity	ft/s	0.2	m/s	0.1

Canopy Cover: ☐ Open ☐ Partly Open ☑ Shaded ☐ Partly Shaded

High Water Mark ft: 2.00

High Water Mark m: 0.61

% of Stream Morphology: ☑ Riffle % 5 ☑ Run % 80 ☑ Pool % 15 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☑ Yes ☐ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD: 0.9 m ^{2} 10 ft ^{2}

Density of LWD: m ^{2} /km ^{2} 0.0000009290 ft ^{2} /mile ^{2} 0.0000003587

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☐ Rooted Emergent ☐ Rooted Submergent ☐ Rooted Floating ☐ None ☐ Free Floating ☑ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 5

WATER QUALITY

☐ No Water Present ☐ No Flow Present

Temperature 0 °C 0 °F

Conductivity µs/cm 0

Total Disolved Solids 0 mg/l

pH 0

Water Odors: ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: mg/L

Turbidity: ☑ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other

Deposits
☐ Sludge ☐ Sawdust ☐ Paper Fiber
☐ Sand ☐ Relic Shells ☐ Other

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Looking at stones which are not deeply embedded, are undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Dietritus	Sticks, wood, coarse plant material	25
Boulder	>10"	0			
Cobble	2.5 - 10"	0	Muck-Mud	Black, very fine organic matter	20
Gravel	0.1 - 2.5"	0			
Sand	gritty	5	Marl	Grey, shell fragments	0
Silt	gooey	70			
Clay	slick	25			

Habitat Parameter	HABITAT ASSESSMENT - LOW GRADIENT STREAMS			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	15	☐20 ☐19 ☐18 ☐17 ☐16	☑15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	10	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☑10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	4	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☑4 ☐3 ☐2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	6	☐10 ☐9	☐8 ☐7 ☑6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	2	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☐3	☑2 ☐1 ☐0
Score (RB)	2	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☐3	☑2 ☐1 ☐0
Total Score	86				

Project ID: Transmission Operations Center		Stream Class:	Intermittent
Stream ID: 2MS1A		Location;	OWENSBORO KY
Lat: 37.77268	Long: -87.15664	River Basin	Ohio
Investigators: Dakota Spruill			
Signature:	Date: 16-May-23	Reason for Survey:	
	Time: 10:02 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☑ Showers (Intermittent) ☐ Cloud Cover % 0 ☐ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☑ Cloud Cover % 50 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 66

Air Temp C: 19

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☑ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.00; Km ^{2} 0.00

WATERSHED FEATURES

Surrounding Land Use & Percentage: ☑ Forest 20 ☐ Commercial 0 ☐ Field/Pasture 0 ☐ Other 0 ☑ Agriculture 80 ☐ Residential 0

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☐ Trees ☐ Shrubs ☑ Grasses ☐ Herbs ☐ None

Dominant Species: annual and perennial grasses

INSTREAM FEATURES

Est Reach Length	ft	100	m	30
Est Stream Width	ft	5.9	m	1.8
Sampling Reach Area	ft ^{2}	590.0	m ^{2}	54.8
Sampling Area	mile^2	0.000022	km^2	0.000055
Est Water Depth	in	1.0	m	0.0
Surface Velocity	ft/s	0.0	m/s	0.0

Canopy Cover: ☐ Open ☐ Partly Open ☐ Shaded ☑ Partly Shaded

High Water Mark ft: 0.50

High Water Mark m: 0.15

% of Stream Morphology: ☑ Riffle % 5 ☑ Run % 90 ☑ Pool % 5 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☑ Yes ☐ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD: 0.2 m ^{2} 2 ft ^{2}

Density of LWD: m ^{2} /km ^{2} 0.0000001858 ft ^{2} /mile ^{2} 0.0000000717

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☐ Rooted Emergent ☐ Rooted Submergent ☐ Rooted Floating ☑ None ☐ Free Floating ☐ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 0

WATER QUALITY

☐ No Water Present ☑ No Flow Present

Temperature: 0 °C 0 °F

Conductivity µs/cm: 0

Total Disolved Solids: 0 mg/l

pH: 0

Water Odors: ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: mg/L

Turbidity: ☑ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other

Deposits
☐ Sludge ☐ Sawdust ☐ Paper Fiber
☐ Sand ☐ Relic Shells ☐ Other

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Looking at stones which are not deeply embedded, are undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Dietritus	Sticks, wood, coarse plant material	2
Boulder	>10"	0			
Cobble	2.5 - 10"	0	Muck-Mud	Black, very fine organic matter	0
Gravel	0.1 - 2.5"	0			
Sand	gritty	10	Marl	Grey, shell fragments	0
Silt	gooey	40			
Clay	slick	50			

Habitat Parameter	HABITAT ASSESSMENT - LOW GRADIENT STREAMS			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 9	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☑9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 5	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☑5 ☐4 ☐3 ☐2 ☐1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 15	☐20 ☐19 ☐18 ☐17 ☐16	☑15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	5	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☑5 ☐4 ☐3 ☐2 ☐1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	11	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☑11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	5	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☑5 ☐4 ☐3 ☐2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	8	☐10 ☐9	☑8 ☐7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	3	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☑3	☐2 ☐1 ☐0
Score (RB)	3	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☑3	☐2 ☐1 ☐0
Total Score	91				

Project ID: Transmission Operations Center		Stream Class:	Ephemeral
Stream ID: 2MS1A1		Location;	OWENSBORO KY
Lat: 37.77221	Long: -87.15680	River Basin	Ohio
Investigators: Dakota Spruill			
Signature:	Date: 16-May-23	Reason for Survey:	
	Time: 10:12 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☑ Showers (Intermittent) ☐ Cloud Cover % 0 ☐ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☑ Cloud Cover % 50 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 68

Air Temp C: 20

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☐ Intermittent ☑ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☑ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.00; Km ^{2} 0.00

WATERSHED FEATURES

Surrounding Land Use & Percentage: ☑ Forest 10 ☐ Commercial 0 ☐ Field/Pasture 0 ☐ Other 0 ☑ Agriculture 90 ☐ Residential 0

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbs ☐ None

Dominant Species: Soft Mast Tree Species

INSTREAM FEATURES

Est Reach Length	ft	53	m	16
Est Stream Width	ft	3.4	m	1.0
Sampling Reach Area	ft ^{2}	180.2	m ^{2}	16.7
Sampling Area	mile^2	0.000007	km^2	0.000017
Est Water Depth	in	0.0	m	0.0
Surface Velocity	ft/s	0.0	m/s	0.0

Canopy Cover: ☐ Open ☐ Partly Open ☑ Shaded ☐ Partly Shaded

High Water Mark ft: 0.25

High Water Mark m: 0.08

% of Stream Morphology: ☑ Riffle % 5 ☑ Run % 90 ☑ Pool % 5 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☑ Yes ☐ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD: 0.5 m ^{2} 5 ft ^{2}

Density of LWD: m ^{2} /km ^{2} 0.0000004645 ft ^{2} /mile ^{2} 0.0000001794

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☐ Rooted Emergent ☐ Rooted Submergent ☐ Rooted Floating ☑ None ☐ Free Floating ☐ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 0

WATER QUALITY

☑ No Water Present ☐ No Flow Present

Temperature: 0 °C 0 °F

Conductivity µs/cm: 0

Total Disolved Solids: 0 mg/l

pH: 0

Water Odors: ☐ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: mg/L

Turbidity: ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE	Odors ☑ Normal ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic ☐ None ☐ Other Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Profuse	Deposits ☐ Sludge ☐ Sawdust ☐ Paper Fiber ☐ Sand ☐ Relic Shells ☐ Other Looking at stones which are not deeply embedded, are undersides black in color? ☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Detritus	Sticks, wood, coarse plant material	5
Boulder	>10"	0			
Cobble	2.5 - 10"	0	Muck-Mud	Black, very fine organic matter	0
Gravel	0.1 - 2.5"	0			
Sand	gritty	10	Marl	Grey, shell fragments	0
Silt	gooey	40			
Clay	slick	50			

Habitat Parameter	HABITAT ASSESSMENT - LOW GRADIENT STREAMS			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 5	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☑5 ☐4 ☐3 ☐2 ☐1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 15	☐20 ☐19 ☐18 ☐17 ☐16	☑15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	1	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☑1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	11	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☑11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	5	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☑5 ☐4 ☐3 ☐2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	6	☐10 ☐9	☐8 ☐7 ☑6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	6	☐10 ☐9	☐8 ☐7 ☑6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	3	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☑3	☐2 ☐1 ☐0
Score (RB)	3	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☑3	☐2 ☐1 ☐0
Total Score	83				

Project ID: Transmission Operations Center		Stream Class:	Ephemeral
Stream ID: 2MS1A2		Location;	OWENSBORO KY
Lat: 37.77251	Long: -87.15912	River Basin	Ohio
Investigators: Dakota Spruill			
Signature:	Date: 17-May-23	Reason for Survey:	
	Time: 9:53 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☐ Cloud Cover % 0 ☑ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☑ Showers (Intermittent) ☐ Cloud Cover % 0 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 70
Air Temp C: 21

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☐ Intermittent ☑ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☑ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.02; Km ^{2} 0.05

WATERSHED FEATURES

Surrounding Land Use & Percentage:

☑ Forest	5	☐ Commercial	0
☐ Field/Pasture	0	☐ Other	0
☑ Agriculture	95		
☐ Residential	0		

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbs ☐ None

Dominant Species: Mxed Mast.

INSTREAM FEATURES

Est Reach Length	ft	37	m	11	
Est Stream Width	ft	3.1	m	0.9	
Sampling Reach Area	ft ^{2}	114.7	m ^{2}	10.7	
Sampling Area	mile^2	0.000004	km^2	0.000011	
Est Water Depth	in	0.0	m	0.0	
Surface Velocity	ft/s	0.0	m/s	0.0	

Canopy Cover: ☐ Open ☐ Partly Open ☑ Shaded ☐ Partly Shaded

High Water Mark ft: 0.20
High Water Mark m: 0.06

% of Stream Morphology: ☑ Riffle % 10 ☑ Run % 90 ☐ Pool % 0 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☐ Yes ☑ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD: 0.0 m ^{2} 0 ft ^{2}

Density of LWD: m ^{2} /km ^{2} 0.0000000000 ft ^{2} /mile ^{2} 0.0000000000

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☐ Rooted Emergent ☐ Rooted Submergent ☐ Rooted Floating ☑ None ☐ Free Floating ☐ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 0

WATER QUALITY

☑ No Water Present ☐ No Flow Present

Temperature: 0 °C 0 °F

Conductivity µs/cm: 0

Total Disolved Solids: 0 mg/l

pH: 0

Water Odors: ☐ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: mg/L

Turbidity: ☐ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other

Deposits
☐ Sludge ☐ Sawdust ☐ Paper Fiber
☐ Sand ☐ Relic Shells ☐ Other

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Looking at stones which are not deeply embedded, are undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Dietritus	Sticks, wood, coarse plant material	5
Boulder	>10"	0			
Cobble	2.5 - 10"	0	Muck-Mud	Black, very fine organic matter	0
Gravel	0.1 - 2.5"	0			
Sand	gritty	5	Marl	Grey, shell fragments	0
Silt	gooey	55			
Clay	slick	40			

Habitat Parameter	HABITAT ASSESSMENT - LOW GRADIENT STREAMS			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 4	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☑4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 1	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☑1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 15	☐20 ☐19 ☐18 ☐17 ☐16	☑15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	1	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☑1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	12	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☑12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	2	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☑2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
Total Score	71				

Project ID: Transmission Operations Center		Stream Class:	Intermittent
Stream ID: 2MS1B		Location;	OWENSBORO KY
Lat: 37.77216	Long: -87.15490	River Basin	Ohio
Investigators: Keith Michalski			
Signature:	Date: 18-May-23	Reason for Survey:	
	Time: 9:10 AM	404 functional Assessment:	

WEATHER CONDITIONS

Current: ☐ Storm (Heavy Rain) ☐ Rain Steady ☐ Showers (Intermittent) ☑ Cloud Cover % 50 ☐ Clear/Sunny

Past 24 Hour: ☐ Storm (Heavy Rain) ☐ Rain Steady ☑ Showers (Intermittent) ☐ Cloud Cover % 0 ☐ Clear/Sunny

Heavy rain in last 7 days: ☐ No ☑ Yes

Air Temp F: 72

Air Temp C: 22

Other:

STREAM CHARACTERIZATION

Stream Subsystem: ☐ Perennial ☑ Intermittent ☐ Ephemeral

Stream Type: ☐ Coldwater ☑ Warmwater

Stream Origin: ☐ Upland Runoff ☑ Mixture of Origin ☐ Spring-fed/Ground Water ☐ Wetland ☐ Other

Catchment Area: Mile ^{2} 0.00; Km ^{2} 0.00

WATERSHED FEATURES

Surrounding Land Use & Percentage: ☑ Forest 5 ☐ Commercial 0 ☐ Field/Pasture 0 ☐ Other 0 ☑ Agriculture 50 ☑ Residential 45

Local Watershed NPS Pollution: ☐ No evidence ☐ Some potential sources ☑ Obvious sources

Local Watershed Erosion: ☐ None ☑ Moderate ☐ Heavy

RIPARIAN VEGETATION (18 meter buffer)

Indicate the dominant type and record the dominant species present: ☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbs ☐ None

Dominant Species: Mixed mast trees

INSTREAM FEATURES

Est Reach Length	ft	100	m	30
Est Stream Width	ft	11.0	m	3.4
Sampling Reach Area	ft ^{2}	1100.0	m ^{2}	102.2
Sampling Area	mile^2	0.000040	km^2	0.000102
Est Water Depth	in	4.0	m	0.1
Surface Velocity	ft/s	0.2	m/s	0.1

Canopy Cover: ☐ Open ☐ Partly Open ☑ Shaded ☐ Partly Shaded

High Water Mark ft: 1.50

High Water Mark m: 0.46

% of Stream Morphology: ☑ Riffle % 5 ☑ Run % 80 ☑ Pool % 15 ☐ Glide Pool ☐ Step Pool Series

Channelized: ☑ Yes ☐ No

Dam Present: ☐ Yes ☑ No

LARGE WOODY DEBRIS

LWD: 0.2 m ^{2} 2 ft ^{2}

Density of LWD: m ^{2} /km ^{2} 0.0000001858 ft ^{2} /mile ^{2} 0.0000000717

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present: ☐ Rooted Emergent ☐ Rooted Submergent ☐ Rooted Floating ☑ None ☐ Free Floating ☐ Attached Algae ☐ Floating Algae

Portion of the reach with aquatic vegetation present: 0

WATER QUALITY

☐ No Water Present ☐ No Flow Present

Temperature: 20 °C 68 °F

Conductivity µs/cm: 468

Total Disolved Solids: 234 mg/l

pH: 7.81

Water Odors: ☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Anaerobic

Do: 3.46 mg/L

Turbidity: ☑ Clear ☐ Slightly Turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

Water Surface Oils: ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ Other

SEDIMENT/ SUBSTRATE

Odors
☑ Normal ☐ Sewage ☐ Petroleum
☐ Chemical ☐ Anaerobic ☐ None
☐ Other

Deposits
☐ Sludge ☐ Sawdust ☐ Paper Fiber
☐ Sand ☐ Relic Shells ☐ Other

Oils
☑ Absent ☐ Slight ☐ Moderate ☐ Profuse

Looking at stones which are not deeply embedded, are undersides black in color?
☐ Yes ☑ No

INORGANIC SUBSTRATE COMPONENTS			ORGANIC SUBSTRATE COMPONENTS		
Substrate Type	**Diameter**	**% Composite in Sampling Reach**	**Substrate Type**	**Characteristic**	**% Composition in Sampling Reach**
Bedrock		0	Dietritus	Sticks, wood, coarse plant material	20
Boulder	>10"	0			
Cobble	2.5 - 10"	2	Muck-Mud	Black, very fine organic matter	10
Gravel	0.1 - 2.5"	0			
Sand	gritty	8	Marl	Grey, shell fragments	0
Silt	gooey	70			
Clay	slick	20			

Habitat Parameter	**HABITAT ASSESSMENT - LOW GRADIENT STREAMS**			
	Optimal	**SubOptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/ Available Cover	Greater than 50% for low gradient streams) of substrate favorable for epifaunal colonization & fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat & at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% for low gradient streams) mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in form of new fall, but not yet prepared for colonization (may rate at high end of scale).	10-30% for low gradient streams) mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	10% for low gradient streams)stable habitat; lack of habitat is obvious;substrate unstable or lacking.
Score 8	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☑8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom: little or no root mat: no submerged vegetation.	Hardpan clay or bedrock: no root mat or vegetation.
Score 7	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☑7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
3. Pool Variability	Even mix of large shallow, large-deep, small shallow, small-deep pools present.	Majority of pools large-deep; very few shallow	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
Score 6	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☑6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
Score 9	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☑9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0

5. Channel Flow Status		Water reaches base of both lower banks, and mimimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
Score	15	☐20 ☐19 ☐18 ☐17 ☐16	☑15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
6. Channel Alteration		Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
Score	9	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☑9 ☐8 ☐7 ☐6	☐5 ☐4 ☐3 ☐2 ☐1 ☐0
7. Channel Sinuosity		The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered coastal plains and other normal low-lying areas. this parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
Score	4	☐20 ☐19 ☐18 ☐17 ☐16	☐15 ☐14 ☐13 ☐12 ☐11	☐10 ☐9 ☐8 ☐7 ☐6	☐5 ☑4 ☐3 ☐2 ☐1 ☐0
8. Bank Stability (score each bank) **Note: determine left or right side by facing downstream.**		Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
Score (LB)	7	☐10 ☐9	☐8 ☑7 ☐6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	5	☐10 ☐9	☐8 ☐7 ☐6	☑5 ☐4 ☐3	☐2 ☐1 ☐0
9. Vegetative Protection (score each bank) **Note: determine left or right side by facing downstream.**		More than 90% of the streambank surfaces and immediate riparian zones covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well represented disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
Score (LB)	6	☐10 ☐9	☐8 ☐7 ☑6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
Score (RB)	6	☐10 ☐9	☐8 ☐7 ☑6	☐5 ☐4 ☐3	☐2 ☐1 ☐0
10. Riparian Vegetative Zone Width (score each bank riparian zone) **Note: determine left or right side by facing downstream.**		Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
Score (LB)	4	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☑4 ☐3	☐2 ☐1 ☐0
Score (RB)	1	☐10 ☐9	☐8 ☐7 ☐6	☐5 ☐4 ☐3	☐2 ☑1 ☐0
Total Score	87				

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW1
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.76967 N Lon: -87.16095 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PFO Area Ft²: 4,045
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes

Remarks: Forested patch in agriculture field. Drains via surface connection that disperses along ag field edge.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Quercus palustris	40.0	Yes	FACW
2. Carya illinoinensis	15.0	No	FACU
3. Morus rubra	25.0	Yes	FACU
4. Celtis laevigata	10.0	No	FACW
5.			
	90.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Morus rubra	20.0	Yes	FACU
2. Celtis laevigata	5.0	No	FACW
3.			
4.			
5.			
	25.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Campsis radicans	25.0	Yes	FAC
2. Toxicodendron radicans	25.0	Yes	FAC
3. Rumex crispus	10.0	No	FAC
4. Carex sp.	5.0	No	NI
5. Packera glabella	5.0	No	OBL
6. Symphyotrichum lanceolatum		No	FACW
7.			
8.			
9.			
10			
	70.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Vitis rotundifolia	5.0	Yes	FAC
2.			
	5.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 4 A
Total Number of Dominant Species across all Strata: 6 B
Percent of Dominant Species that are OBL, FACW or FAC: 66.7 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL Sampling Point: 1MW1

Profile Description: (Describe to 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
0-12	10YR 6/2	90	7.5YR 5/6	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1
MW
1

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW1U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 0.5
Subregion: LRR Lat: 37.76968 N Lon: -87.16096 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located south of wetland.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS			
(A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL

Sampling Point: 1MW1U

Profile Description: (Describe to 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
0-4	10YR 4/4	100					Loamy	
4-10	10YR 5/4	100					Loamy	
10-16	10YR 6/3	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Sampling Point: 1MW1U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 18-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW4
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.25
Subregion: LRR Lat: 37.76481 N Lon: -87.16187 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PFO Area Ft²: 2,386
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes

Remarks: Wet forest edge where ag field drains to offsite drain.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Acer saccharinum	50.0	Yes	FACW
2. Acer rubrum	15.0	No	FAC
3. Morus rubra	10.0	No	FACU
4.			
5.			
	75.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Acer saccharinum	20.0	Yes	FACW
2. Morus rubra	10.0	Yes	FACU
3.			
4.			
5.			
	30.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	20.0	Yes	NI
2. Verbesina alternifolia	5.0	Yes	FAC
3. Commelina caroliniana	5.0	No	FAC
4. Boehmeria cylindrica	5.0	No	FACW
5. Campsis radicans	3.0	No	FAC
6. Toxicodendron radicans	3.0	No	FAC
7.			
8.			
9.			
10			
	41.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 60.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 1MW4

Profile Description: (Describe to 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
0-12	10YR 5/2	95	7.5YR 5/6	5	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1
MW4

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 18-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW4U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 1
Subregion: LRR Lat: 37.76482 N Lon: -87.16187 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located in crop field north of wetland.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 1MW4U

Profile Description: (Describe to 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
0-10	10YR 4/4	100					Loamy	
10-16	10YR 5/3	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1MW4U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW5
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Depression Local Relief: Concave Slope %: 0
Subregion: LRR Lat: 37.77041 N Lon: -87.16085 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PUBG Area Ft²: 1,582
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☑, Soil ☑, or Hydrology ☑ Significantly Disturbed? Are "Normal Circumstances" present: No
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks: Old Trash Pit.

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes

Remarks: Old trash pit. No surface connection to downstream waters.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Celtis laevigata	20.0	Yes	FACW
2.			
3.			
4.			
5.			
	20.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Celtis laevigata	10.0	Yes	FACW
2.			
3.			
4.			
5.			
	10.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	5.0	Yes	NI
2. Boehmeria cylindrica	3.0	Yes	FACW
3. Smilax rotundifolia	2.0	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10			
	10.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Vitis rotundifolia	5.0	Yes	FAC
2. Smilax rotundifolia	5.0	Yes	FAC
	10.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 A
Total Number of Dominant Species across all Strata: 6 B
Percent of Dominant Species that are OBL, FACW or FAC: 83.3 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☑ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL Sampling Point: 1MW5

Profile Description: (Describe to 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
0-12	10YR 5/2	90	7.5YR 5/8	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☑ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Sampling Point: 1MW5

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW5U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77041 N Lon: -87.16085 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

Remarks: Upland location in forested block adjacent to wetland.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	20.0	Yes	FACW
2. Sassafras albidum	15.0	Yes	FACU
3. Celtis laevigata	15.0	Yes	FACW
4. Robinia pseudoacacia	10.0	No	FACU
5. Carya illinoinensis	10.0	No	FACU
	70.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Celtis laevigata	10.0	Yes	FACW
2. Morus rubra	10.0	Yes	FACU
3. Lonicera tatarica	10.0	Yes	FACU
4. Sambucus canadensis	10.0	Yes	FACW
5.			
	40.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	90.0	Yes	NI
2. Laportea canadensis	15.0	No	FAC
3. Parthenocissus quinquefolia	5.0	No	FACU
4. Galium aparine	3.0	No	FACU
5. Toxicodendron radicans	3.0	No	FAC
6.			
7.			
8.			
9.			
10			
	116.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Vitis rotundifolia	10.0	Yes	FAC
2. Euonymus fortunei	5.0	Yes	NI
	15.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 A
Total Number of Dominant Species across all Strata: 10 B
Percent of Dominant Species that are OBL, FACW or FAC: 50.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	55	x2=	110
FAC	28	x3=	84
FACU	63	x4=	252
UPL	0	x5=	0
TOTALS			
(A)	146	(B)	446

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 1MW5U

Profile Description: (Describe to 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
0-4	10YR 4/2	100					Loamy	
4-8	10YR 5/3	100					Loamy	
8-16	10YR 6/3	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) ____

Water Table Present? No — Depth (inches) 0.0

Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
MW
3
U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 18-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW6
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Concave Slope %: 0.25
Subregion: LRR Lat: 37.77046 N Lon: -87.16386 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PFO Area Ft²: 5,261
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes

Remarks: Old drainage ditch wetland. Drains west under and/or south along Highway 60 bypass.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Quercus palustris	50.0	Yes	FACW
2. Liquidambar styraciflua	10.0	No	FAC
3. Carya laciniosa	10.0	No	FAC
4. Diospyros virginiana	10.0	No	FAC
5. Acer rubrum	10.0	No	FAC
	90.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Acer rubrum	5.0	Yes	FAC
2. Corylus americana	5.0	Yes	FACU
3. Celtis laevigata	3.0	No	FACW
4. Quercus macrocarpa	2.0	No	FAC
5.			
	15.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Toxicodendron radicans	5.0	Yes	FAC
2. Euonymus fortunei	5.0	Yes	NI
3. Parthenocissus quinquefolia	2.0	No	FACU
4. Boehmeria cylindrica	2.0	No	FACW
5. Smilax rotundifolia	2.0	No	FAC
6. Campsis radicans	1.0	No	FAC
7. Cinna arundinacea	1.0	No	FACW
8.			
9.			
10			
	18.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Smilax rotundifolia	5.0	Yes	FAC
2.			
	5.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 4 A
Total Number of Dominant Species across all Strata: 6 B
Percent of Dominant Species that are OBL, FACW or FAC: 66.7 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 1MW6

Profile Description: (Describe to 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
0-2	10YR 4/2	100					Loamy	
2-12	10YR 5/1	85	7.5YR 5/8	15	C	M	Clayey	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☑ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) Yes — Depth (inches) 4.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1MW6

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 18-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1MW6U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77043 N Lon: -87.16388 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located in woods next to ditch wetland 1MW6.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	50.0	Yes	FAC
2. Ulmus rubra	20.0	Yes	FAC
3. Acer rubrum	10.0	No	FAC
4. Morus rubra	5.0	No	FACU
5.			
	85.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Morus rubra	5.0	Yes	FACU
2. Acer rubrum	5.0	Yes	FAC
3. Lindera benzoin	3.0	No	FAC
4. Celtis laevigata	2.0	No	FACW
5. Euonymous alatus	2.0	No	NI
	17.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	20.0	Yes	NI
2. Parthenocissus quinquefolia	40.0	Yes	FACU
3. Rosa multiflora	5.0	No	FACU
4. Lonicera japonica	5.0	No	FAC
5. Smilax rotundifolia	3.0	No	FAC
6. Laportea canadensis	2.0	No	FAC
7. Campsis radicans	5.0	No	FAC
8. Toxicodendron radicans	3.0	No	FAC
9. Geum canadense	2.0	No	FACU
10 Lactuca serriola	1.0	No	FAC
	86.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Vitis rotundifolia	5.0	Yes	FAC
2. Smilax rotundifolia	3.0	Yes	FAC
	8.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 A
Total Number of Dominant Species across all Strata: 8 B
Percent of Dominant Species that are OBL, FACW or FAC: 62.5 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL Sampling Point: 1MW6U

Profile Description: (Describe to 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
0-4	10YR 4/4	100					Loamy	
4-16	10YR 5/4	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1MW6U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW1
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Concave Slope %: 0.25
Subregion: LRR Lat: 37.77241 N Lon: -87.15808 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PFO Area Ft²: 18,456
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Remarks: Large old drainage ditch.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Populus deltoides	30.0	Yes	FAC
2. Celtis laevigata	20.0	No	FACW
3. Liquidambar styraciflua	20.0	No	FAC
4. Quercus palustris	20.0	Yes	FACW
5. Ulmus americana	10.0	No	FACW
	100.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Celtis laevigata	10.0	Yes	FACW
2. Ulmus americana	10.0	Yes	FACW
3. Liquidambar styraciflua	5.0	No	FAC
4. Fraxinus pennsylvanica	5.0	No	FACW
5. Quercus bicolor	2.0	No	FACW
	32.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	5.0	Yes	NI
2. Campsis radicans	3.0	Yes	FAC
3. Carex cristatella	2.0	No	FACW
4. Toxicodendron radicans	2.0	No	FAC
5. Smilax rotundifolia	2.0	No	FAC
6.			
7.			
8.			
9.			
10			
	14.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 A
Total Number of Dominant Species across all Strata: 6 B
Percent of Dominant Species that are OBL, FACW or FAC: 83.3 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 2MW1

Profile Description: (Describe to 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
0-4	10YR 4/1	80	7.5YR 5/8	20	C	M	Loamy	
4-12	10YR 5/1	85	7.5YR 5/8	15	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☑ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? Yes — Depth (inches) 6.0
Saturation Present? (including capillary fringe) Yes — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW1U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 0.5
Subregion: LRR Lat: 37.77242 N Lon: -87.15808 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located on top of ditch bank.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	60.0	Yes	FAC
2. Celtis laevigata	10.0	No	FACW
3. Populus deltoides	10.0	No	FAC
4. Prunus serotina	10.0	No	FACU
5.			
	90.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Ligustrum obtusifolium	30.0	Yes	NI
2. Lonicera tatarica	20.0	Yes	FACU
3. Euonymous alatus	15.0	Yes	NI
4. Celtis laevigata	5.0	No	FACW
5.			
	70.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	70.0	Yes	NI
2. Toxicodendron radicans	10.0	No	FAC
3. Galium aparine	4.0	No	FACU
4. Geum canadense	3.0	No	FACU
5. Chasmanthium latifolium	5.0	No	FACU
6. Parthenocissus quinquefolia	2.0	No	FACU
7. Rosa multiflora	3.0	No	FACU
8.			
9.			
10			
	97.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Euonymus fortunei	10.0	Yes	NI
2.			
	10.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 2 A
Total Number of Dominant Species across all Strata: 6 B
Percent of Dominant Species that are OBL, FACW or FAC: 33.3 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	15	x2=	30
FAC	95	x3=	285
FACU	77	x4=	308
UPL	0	x5=	0
TOTALS (A)	187	(B)	623

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2MW1U

Profile Description: (Describe to 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
0-6	10YR 4/2	100					Loamy	
6-16	10YR 5/3	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW2
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77223 N Lon: -87.15747 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PEM Area Ft²: 3,743
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Remarks: Maintained right of way.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Populus deltoides	10.0	Yes	FAC
2. Salix nigra	5.0	Yes	OBL
3. Liquidambar styraciflua	5.0	No	FAC
4. Fraxinus pennsylvanica	3.0	No	FACW
5. Carya illinoinensis	2.0	No	FACU
	25.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Carex vulpinoidea	20.0	Yes	OBL
2. Juncus tenuis	10.0	Yes	FAC
3. Carex cristatella	5.0	No	FACW
4. Scirpus atrovirens	5.0	No	OBL
5. Eupatorium serotinum	5.0	No	FAC
6. Rubus argutus	5.0	No	FACU
7. Juncus effusus	2.0	No	FACW
8. Rumex crispus	3.0	No	FAC
9. Lonicera japonica	5.0	Yes	FAC
10 Sorghum halepense	5.0	No	FACU
	65.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 100.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 2MW2

Profile Description: (Describe to 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
0-12	10YR 5/2	90	7.5YR 5/8	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) Yes — Depth (inches) 2.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:

Sampling Point: 2MW2

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW2U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77223 N Lon: -87.15747 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located in tree line to the west along ditch wetland 2MW1.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Liquidambar styraciflua	25.0	Yes	FAC
2. Fraxinus pennsylvanica	20.0	Yes	FACW
3. Sassafras albidum	10.0	No	FACU
4.			
5.			
	55.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Liquidambar styraciflua	20.0	Yes	FAC
2. Fraxinus pennsylvanica	20.0	Yes	FACW
3. Ulmus rubra	5.0	No	FAC
4. Juniperus virginiana	5.0	No	FACU
5. Ligustrum obtusifolium	5.0	No	NI
	55.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Cinna arundinacea	10.0	No	FACW
2. Toxicodendron radicans	25.0	Yes	FAC
3. Euonymus fortunei	20.0	Yes	NI
4. Lonicera japonica	20.0	Yes	FAC
5. Campsis radicans	5.0	No	FAC
6.			
7.			
8.			
9.			
10			
	80.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Lonicera japonica	5.0	Yes	FAC
2. Campsis radicans	5.0	Yes	FAC
	10.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 8 A
Total Number of Dominant Species across all Strata: 9 B
Percent of Dominant Species that are OBL, FACW or FAC: 88.9 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL Sampling Point: 2MW2U

Profile Description: (Describe to 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
0-16	10YR 4/2	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2MW2U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 22-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW3
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 0.25
Subregion: LRR Lat: 37.77141 N Lon: -87.15703 W Datum: Decimal Degrees
Soil Map Unit Name: Melvin silt loam NWI Classification: PUBG Area Ft²: 7,107
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☑, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: No
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks: Agricultural Drain.

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes

Remarks: Non-farmed, shallow agricultural drain located within mapped hydric soils. Width = 3 ft.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Amaranthus rudis	2.0	Yes	FACW
2. Packera glabella	1.0	No	OBL
3. Xanthium strumarium	1.0	No	FAC
4. Persicaria maculosa	1.0	No	FACW
5. Poa annua	2.0	Yes	FACU
6.			
7.			
8.			
9.			
10			
	7.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 1 A
Total Number of Dominant Species across all Strata: 2 B
Percent of Dominant Species that are OBL, FACW or FAC: 50.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	1	x1=	1
FACW	3	x2=	6
FAC	1	x3=	3
FACU	2	x4=	8
UPL	0	x5=	0
TOTALS (A)	7	(B)	18

Prevalence Index = B/A = 2.6

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☑ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 2AW3

Profile Description: (Describe to 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
0-12	10YR 5/1	85	7.5YR 5/8	15	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) Yes — Depth (inches) 1.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2AW3

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 22-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW3U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 1
Subregion: LRR Lat: 37.77157 N Lon: -87.15634 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☑, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks: Agricultural Field.

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

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

Remarks: Upland assessment located in crop field, SE of wetland assessment.

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW3U

Profile Description: (Describe to 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
0-2	10YR 4/4	100					Loamy	
2-15	10YR 5/4	100					Loamy	
15-16+	10YR 6/3	90	7.5YR 5/6	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2AW3U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW4
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Depression Local Relief: Concave Slope %: 1
Subregion: LRR Lat: 37.77157 N Lon: -87.15520 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: PFO Area Ft²: 6,053
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	**Is the Sampled Area within a Wetland?** Yes
Remarks: Old drainage ditch.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Quercus palustris	30.0	Yes	FACW
2. Celtis laevigata	20.0	Yes	FACW
3. Acer rubrum	10.0	No	FAC
4. Ulmus americana	10.0	No	FACW
5.			
	70.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Quercus palustris	10.0	Yes	FACW
2. Celtis laevigata	5.0	No	FACW
3. Carya illinoinensis	5.0	Yes	FACU
4. Acer rubrum	5.0	No	FAC
5.			
	25.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	7.0	Yes	NI
2. Toxicodendron radicans	5.0	Yes	FAC
3. Rumex crispus	2.0	No	FAC
4. Vitis rotundifolia	3.0	No	FAC
5.			
6.			
7.			
8.			
9.			
10			
	17.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Euonymus fortunei	5.0	Yes	NI
2. Vitis rotundifolia	2.0	Yes	FAC
	7.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 5 A
Total Number of Dominant Species across all Strata: 8 B
Percent of Dominant Species that are OBL, FACW or FAC: 62.5 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 2MW4

Profile Description: (Describe to 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
0-12	10YR 5/1	85	7.5YR 5/6	15	C	M	Clayey	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☑ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) Yes — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


MW4

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 16-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2MW4U
Investigators: Keith Michalski Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 3
Subregion: LRR Lat: 37.77158 N Lon: -87.15521 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²:
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? Yes Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Upland assessment located on ditch berm in tree line.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1. Celtis laevigata	20.0	Yes	FACW
2. Ulmus americana	20.0	Yes	FACW
3. Prunus serotina	10.0	No	FACU
4. Robinia pseudoacacia	20.0	Yes	FACU
5.			
	70.0 = Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1. Celtis laevigata	10.0	Yes	FACW
2. Acer negundo	5.0	Yes	FAC
3.			
4.			
5.			
	15.0 = Total Cover		
Herb Stratum Plot Size: Unit			
1. Euonymus fortunei	70.0	Yes	NI
2. Parthenocissus quinquefolia	15.0	No	FACU
3. Lonicera japonica	5.0	No	FAC
4. Rubus argutus	3.0	No	FACU
5. Cinna arundinacea	2.0	No	FACW
6.			
7.			
8.			
9.			
10			
	95.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1. Euonymus fortunei	25.0	Yes	NI
2.			
	25.0 = Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 4 A
Total Number of Dominant Species across all Strata: 7 B
Percent of Dominant Species that are OBL, FACW or FAC: 57.1 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤ 3.0[1]
- ☐ Morphologic Adaptations[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes

Remarks:

SOIL

Sampling Point: 2MW4U

Profile Description: (Describe to 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
0-16	10YR 5/2	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2MW4U

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1AW2
Investigators: Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.76943 N Lon: -87.16252 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Barrow Area.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	40.0	Yes	FACU
2. Packera glabella	25.0	Yes	OBL
3. Conyza canadensis	15.0	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10			
	80.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW or FAC: 1 A
Total Number of Dominant Species across all Strata: 2 B
Percent of Dominant Species that are OBL, FACW or FAC: 50.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	25	x1=	25
FACW	0	x2=	0
FAC	0	x3=	0
FACU	55	x4=	220
UPL	0	x5=	0
TOTALS (A)	80	(B)	245

Prevalence Index = B/A = 3.06

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL

Sampling Point: 1AW2

Profile Description: (Describe to 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
0-6	10YR 4/4	100					Loamy	
6-8	10YR 5/4	100					Loamy	
8-16	10YR 6/3	95	7.5YR 5/6	5	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

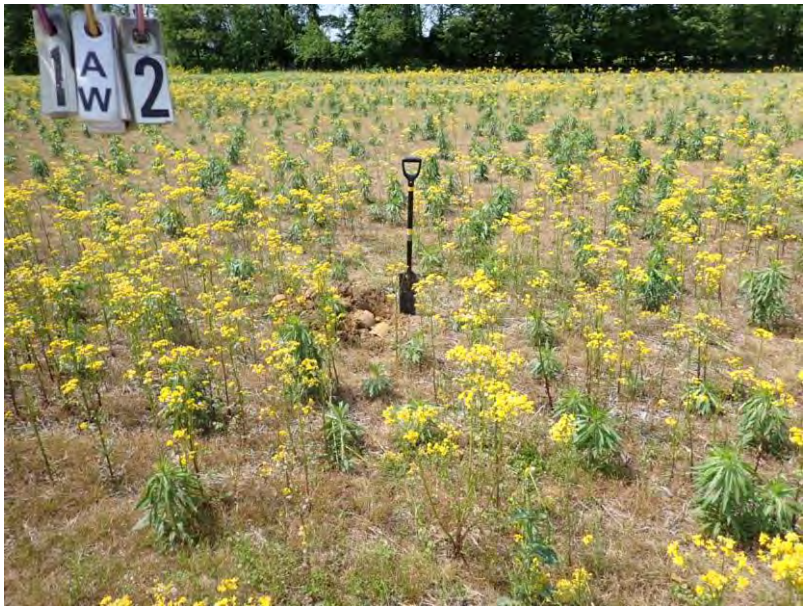
Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


1
A
W
2

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 1AW3
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.76898 N Lon: -87.16051 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks: Barrow Area.	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL

Sampling Point: 1AW3

Profile Description: (Describe to 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
0-6	10YR 4/4	100					Loamy	
6-8	10YR 5/4	100					Loamy	
8-16	10YR 5/6	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


A
W

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW5
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77283 N Lon: -87.15814 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	60.0	Yes	FACU
2. Packera glabella	5.0	No	OBL
3. Stellaria media	2.0	No	UPL
4. Conyza canadensis	5.0	No	FACU
5.			
6.			
7.			
8.			
9.			
10			
	72.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	5	x1=	5
FACW	0	x2=	0
FAC	0	x3=	0
FACU	65	x4=	260
UPL	2	x5=	10
TOTALS (A)	72	(B)	275

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL

Sampling Point: 2AW5

Profile Description: (Describe to 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
0-4	10YR 3/1	100					Loamy	Coal Fines
4-14	10YR 4/1	85	7.5YR 4/6	26	C	M	Loamy	
14-16	10YR 5/1	85	7.5YR 4/6	15	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
A
W
5

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW6
Investigators: Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77212 N Lon: -87.15894 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	70.0	Yes	FACU
2. Packera glabella	5.0	No	OBL
3. Conyza canadensis	2.0	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10			
	77.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	5	x1=	5
FACW	0	x2=	0
FAC	0	x3=	0
FACU	72	x4=	288
UPL	0	x5=	0
TOTALS (A)	77	(B)	293

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL

Sampling Point: 2AW6

Profile Description: (Describe to 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
0-8	10YR 4/2	95	10YR 4/6	5	C	M	Loamy	
8-16	10YR 4/1	90	7.5YR 5/6	10	C	M	Clayey	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
A
W
6

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW7
Investigators: Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 0.5
Subregion: LRR Lat: 37.77122 N Lon: -87.15960 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	70.0	Yes	FACU
2. Packera glabella	10.0	No	OBL
3. Conyza canadensis	10.0	No	FACU
4. Sorghum halepense	2.0	No	FACU
5.			
6.			
7.			
8.			
9.			
10			
	92.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	10	x1=	10
FACW	0	x2=	0
FAC	0	x3=	0
FACU	82	x4=	328
UPL	0	x5=	0
TOTALS (A)	92	(B)	338

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW7

Profile Description: (Describe to 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
0-2	10YR 4/2	100					Loamy	
2-12	10YR 5/2+	100					Loamy	
12-16	10YR 5/1	90	7.5YR 5/6	10	C	M	Clayey	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
A
W
7

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW8
Investigators: Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 0.5
Subregion: LRR Lat: 37.77021 N Lon: -87.15939 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks:	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	50.0	Yes	FACU
2. Conyza canadensis	15.0	No	FACU
3. Packera glabella	10.0	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10			
	75.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	10	x1=	10
FACW	0	x2=	0
FAC	0	x3=	0
FACU	65	x4=	260
UPL	0	x5=	0
TOTALS (A)	75	(B)	270

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW8

Profile Description: (Describe to 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
0-2	10YR 4/4	100					Loamy	
2-15	10YR 5/4	100					Loamy	
15-16+	10YR 6/3	90	7.5YR 5/6	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
AW
8

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW9
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.77215 N Lon: -87.15581 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Poa annua	50.0	Yes	FACU
2. Conyza canadensis	15.0	No	FACU
3. Packera glabella	10.0	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10			
	75.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	10	x1=	10
FACW	0	x2=	0
FAC	0	x3=	0
FACU	65	x4=	260
UPL	0	x5=	0
TOTALS (A)	75	(B)	270

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW9

Profile Description: (Describe to 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
0-8	10YR 4/1	90	10YR 3/8	10	C	M	Loamy	
8-16	10YR 5/1	95	10YR 5/8	5	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
AW
9

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW10
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Convex Slope %: 1
Subregion: LRR Lat: 37.77157 N Lon: -87.15634 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks:	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW10

Profile Description: (Describe to 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
0-2	10YR 4/4	100					Loamy	
2-15	10YR 5/4	100					Loamy	
15-16+	10YR 6/3	90	7.5YR 5/6	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2AW10

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW11
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.76925 N Lon: -87.15667 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

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

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW11

Profile Description: (Describe to 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	95	10YR 5/6	5	C	M	Loamy	
10-16	10YR 5/1	90	7.5YR 5/6	10	C	M	Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? Yes

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:
Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? Yes

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2
A
W
1
1

WETLAND DETERMINATION DATA FORM Eastern Mountains and Piedmont

Project/Site: Transmission Operations Center City/County: Owensboro/Daviess Date: 17-May-23
Applicant/Owner: BREC State: KY Sampling Point: 2AW12
Investigators: Keith Michalski,Dakota Spruill Sec, Twp, Rng: S NA, T NA, R NA
Landform: Flat Local Relief: Flat Slope %: 0.5
Subregion: LRR Lat: 37.76762 N Lon: -87.15743 W Datum: Decimal Degrees
Soil Map Unit Name: NWI Classification: Area Ft²: 0
Are climatic/hydrologic conditions on this site typical for this time of year? Yes — Remarks (If No):
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Significantly Disturbed? Are "Normal Circumstances" present: Yes
Are Vegetation ☐, Soil ☐, or Hydrology ☐ Naturally Problematic? Remarks:

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

Hydrophytic Vegetation Present? No Hydric Soil Present? No Wetland Hydrology Present? No	**Is the Sampled Area within a Wetland?** No
Remarks:	

VEGETATION: Scientific Names

Tree Stratum Plot Size: Unit	Absolute % Cover:	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum Plot Size: Unit			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum Plot Size: Unit			
1. Zea mays	20.0	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
	20.0 = Total Cover		
Woody Vine Stratum Plot Size: Unit			
1.			
2.			
	= Total Cover		

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: 0.0 A/B

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL	0	x1=	0
FACW	0	x2=	0
FAC	0	x3=	0
FACU	0	x4=	0
UPL	0	x5=	0
TOTALS (A)	0	(B)	0

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Dominance Test is >50%
☐ Prevalence Index is ≤ 3.0[1]
☐ Morphologic Adaptations[1]
☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? No

Remarks:

SOIL Sampling Point: 2AW12

Profile Description: (Describe to 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
0-6	10YR 4/6	100					Loamy	
6-16	10YR 5/6	100					Loamy	

[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)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N)**

Indicators for Problematic Hydric Soils[3]:

- ☐ Red Parent Material (TF2)
- ☐ 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: 0
Depth (inches): 0

Hydric Soil Present? No

Remarks:

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 From Aerial Imagery (B7)
- ☐ Water Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Live 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 Reilef (D4)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No — Depth (inches) 0.0
Water Table Present? No — Depth (inches) 0.0
Saturation Present? (including capillary fringe) No — Depth (inches) 0.0

Wetland Hydrology Present? No

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspection), if available:

Remarks:


2AW12

Additional Site Photos

Looking across surface drain feature (2AW3) and W-ditched field.

Farmed through W-ditch.

2AW3-1: Location where surface drain feature runs along tree line.

2AW3-2: Southern most portion of surface drain feature.

1MW2: Old clay tile exposed with uprooted tree.

Southern boundary of primary development area. Looking WSW towards 1MW1. Upland Soils.

Transmission Operations Center Location Map

Big Rivers Electric Corporation

N

1 inch = 2,000 feet

0 375 750 1,500 2,250 3,000 3,750 4,500 Feet

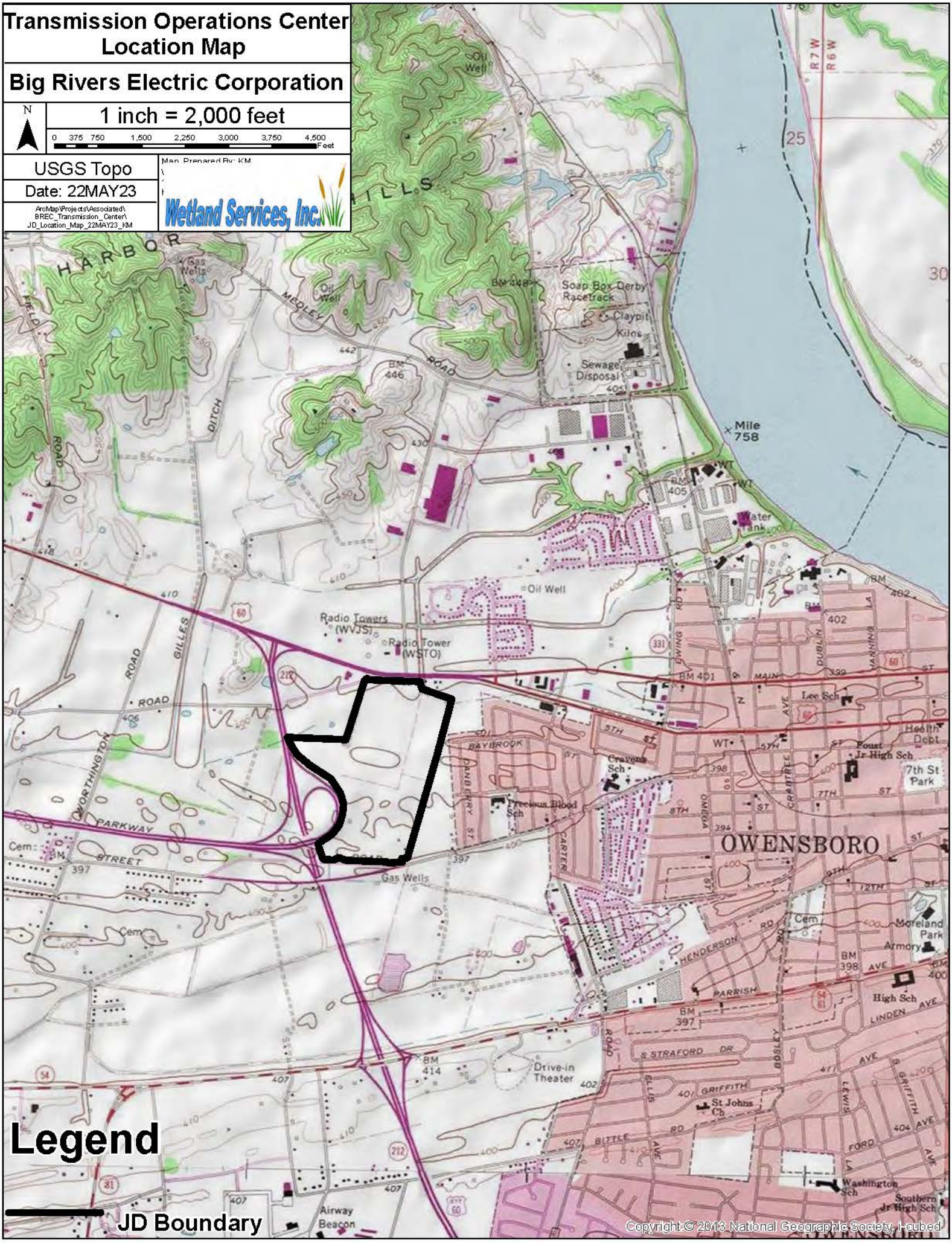
USGS Topo

Date: 22MAY23

Map Prepared By: KM

ArcMap\Projects\Associated\BREC_Transmission_Center\JD_Location_Map_22MAY23_KM

Wetland Services, Inc.



Legend

JD Boundary

Transmission Operations Center
JD Map

Big Rivers Electric Corporation

N

1 inch = 375 feet

0 125 250 500 750 Feet

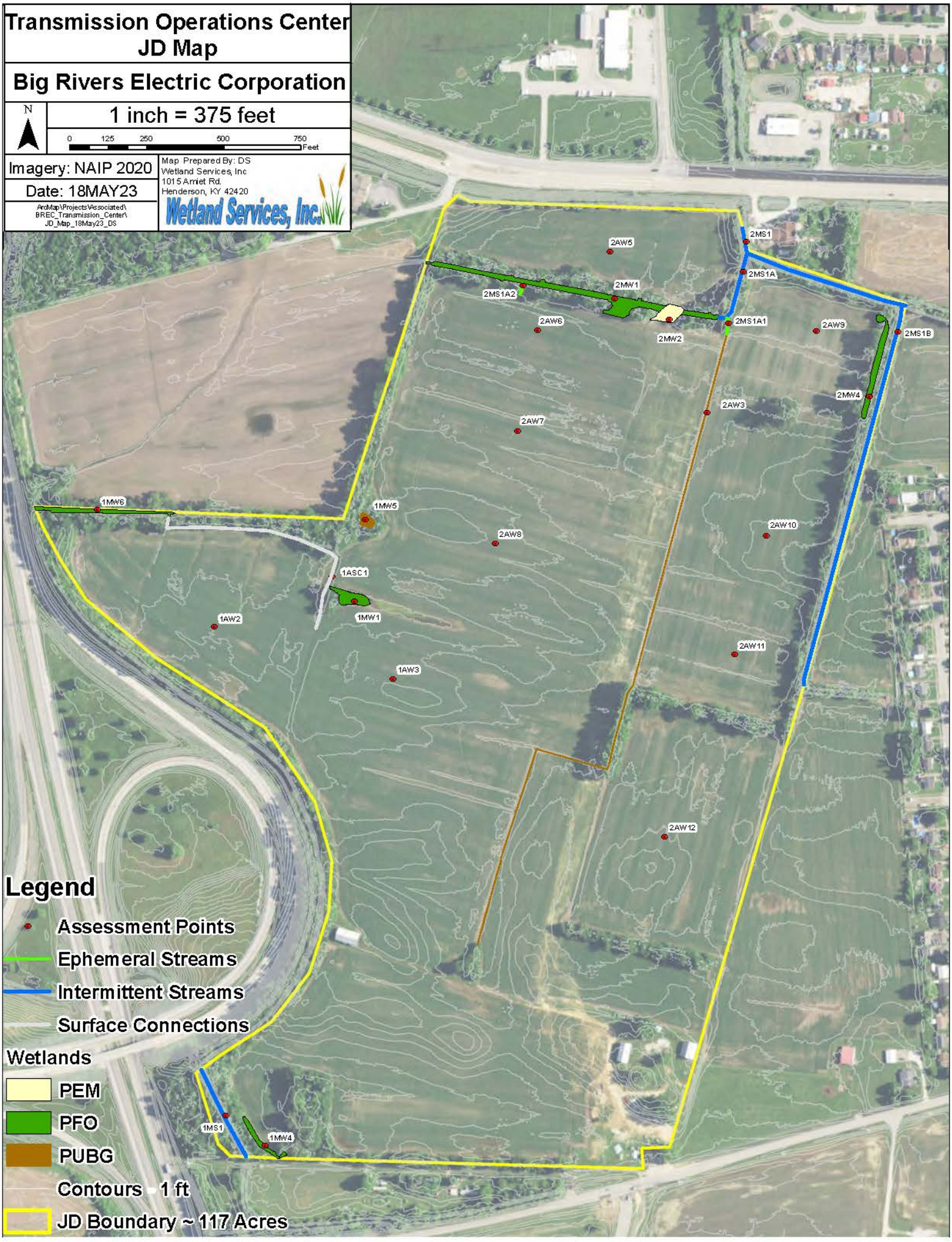
Imagery: NAIP 2020

Date: 18MAY23

ArcMap\Projects\Associated\BREC_Transmission_Center\JD_Map_18May23_DS

Map Prepared By: DS
Wetland Services, Inc
1015 Amiet Rd.
Henderson, KY 42420

Wetland Services, Inc.



Legend

- Assessment Points
- Ephemeral Streams
- Intermittent Streams
- Surface Connections

Wetlands

- PEM
- PFO
- PUBG

- Contours - 1 ft
- JD Boundary ~ 117 Acres

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

U.S. Army Corps of Engineers

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): May 22, 2023

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Keith Michalski
Wetland Services, Inc.
3880 Trigg Turner Road
Corydon, Kentucky 42406

David Lamb
Associated Engineers, Inc
2740 North Main St.
Madisonville, KY 42431

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CELRL-OPF-N, BREC-Transmission Operation Center,

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: KY County: Daviess City: Owensboro

Center coordinates of site: Latitude and Longitude (NAD 83):

Latitude: 37.77097° North, Longitude: -87.15917° West

Authority: ☑ Section 404 ☑ Section 10

Name of nearest waterbody: Canoe Creek, Wilson Creek, Elam Ditch

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 2,557 linear feet: 2.0 - 12.0 width (ft) and/or 0.45 acres.

Cowardin Class: Riverine

Stream Flow: Intermittent, Ephemeral

Wetlands: 1.11 acres

Cowardin Class: Palustrine: Forested, Emergent & Unconsolidated Bottom

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A

Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☑ Office (Desk) Determination. Date: May 15 - 22, 2023

☑ Field Determination. Date(s): May 15 - 18, 2023

The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

1. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. §331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply)
- checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☑ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Location/Topo, JD
- ☑ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☑ U.S. Geological Survey map(s). Cite scale & quad name: 1:24,000
- ☑ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA Web Soil Survey
- ☑ National wetlands inventory map(s). Cite name: USFWS Wetland Mapper
- ☐ State/Local wetland inventory map(s):
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is:
  (National Geodectic Vertical Datum of 1929)
- ☑ Photographs: ☑ Aerial (Name & Date): NAIP 2020
- ☐ or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Applicable/supporting case law:
- ☐ Applicable/supporting scientific literature:
- ☐ Other information (please specify):

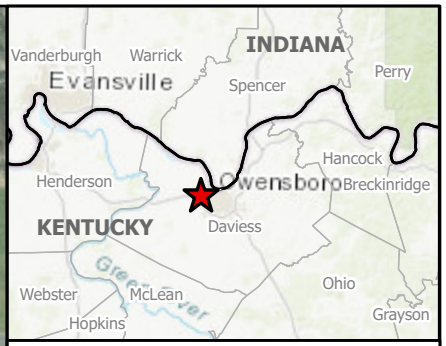
IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Regulatory Project Manager (REQUIRED)	Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Streams					
Unit Id	**Latitude N**	**Longitude W**	**Eph**	**Int**	**Class of Aquatic Resource**
1MS1	37.76507	-87.16231	0	319	Non-Section 10, non-tidal
2MS1	37.77293	-87.15661	0	626	
2MS1A	37.77268	-87.15664	0	246	
2MS1A1	37.77221	-87.15680	53	0	
2MS1A2	37.77251	-87.15912	37	0	
2MS1B	37.77216	-87.15490	0	1,276	
Total Linear Feet			90	2,467	

Wetlands					
Unit Id	**Latitude N**	**Longitude W**	**Cowardin Class**	**Connected Area**	**Class of Aquatic Resource**
2MW1	37.77241	-87.15808	PFO	0.42	Non-Section 10, non-tidal
2MW2	37.77223	-87.15747	PEM	0.09	
2AW3	37.77141	-87.15703	PUBG	0.16	
2MW4	37.77157	-87.15520	PFO	0.14	
1MW1	37.76967	-87.16095	PFO	0.09	
1MW4	37.76481	-87.16187	PFO	0.05	
1MW5	37.77041	-87.16085	PUBG	0.04	
1MW6	37.77046	-87.16386	PFO	0.12	
Total Acres				**1.11**	

Attachment G. Hydrology Map



Big Rivers Electric Corporation

Transmission Operations Center Environmental Assessment

Area Hydrology

Transmission Operations Center Site Area

Site Boundary - 1,000 ft Buffer Area

National Hydrology Dataset

Lake/Pond

Canal/Ditch

Stream/River

Pipeline (Underground)

National Wetlands Inventory

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

N

1 inch equals 1,000 feet*

0 250 500 1,000

US Feet

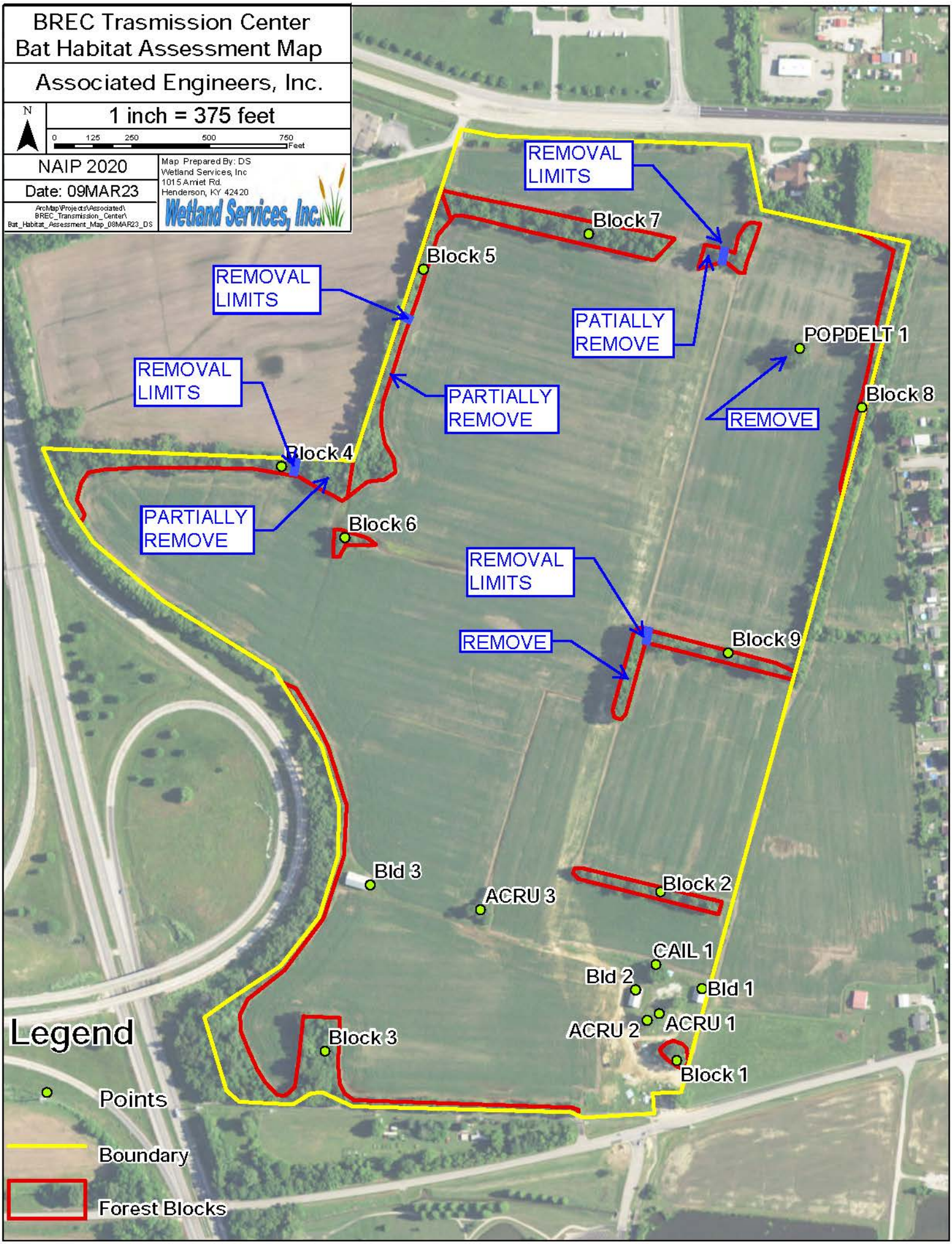
*When printed on 8.5" x 11" page

Disclaimer: Maps are not intended to provide survey grade data.

Sargent & Lundy

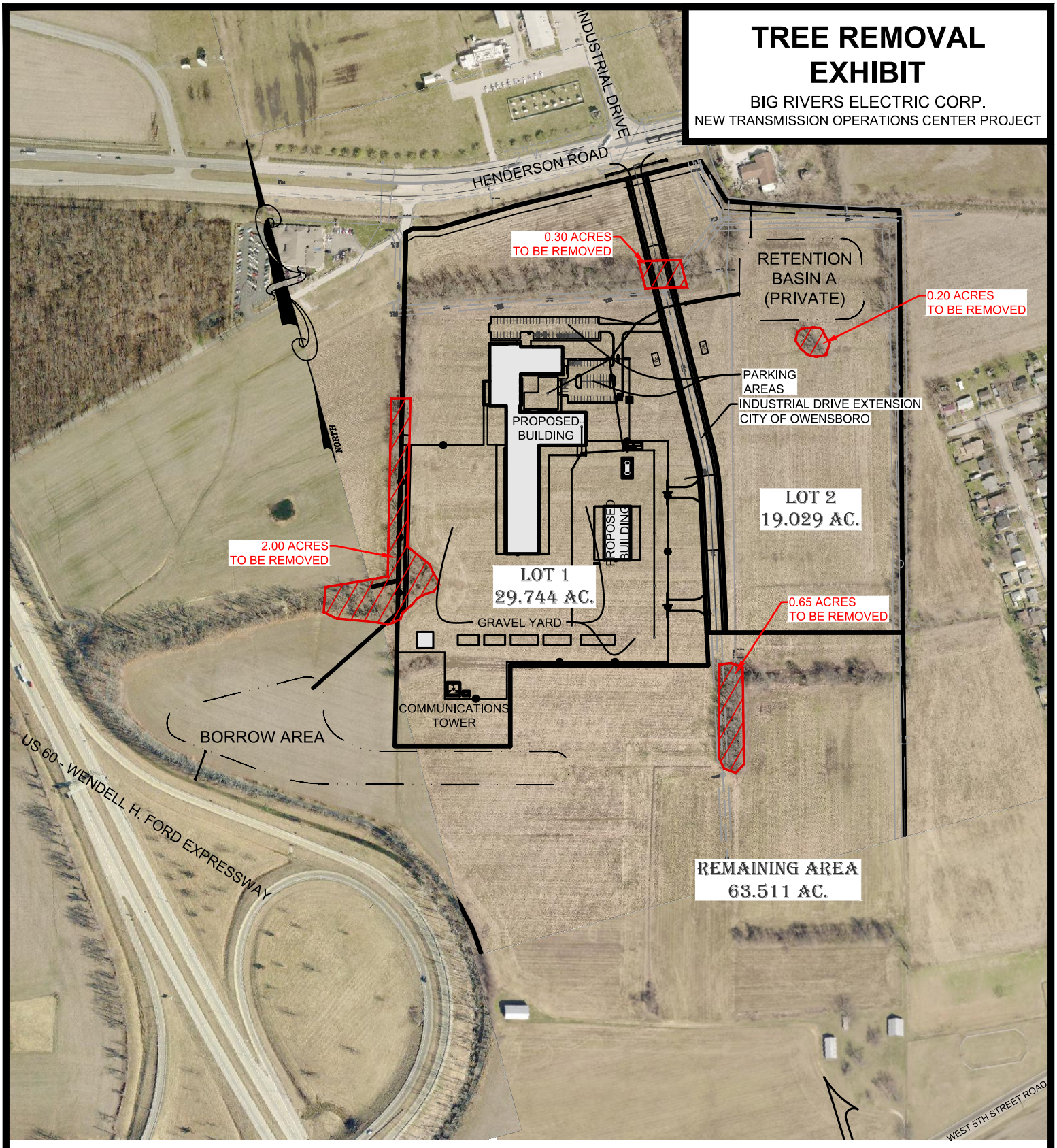
Title: Area Hydrology	Prepared: S. McEwen-Barbas
Site: Transmission Operations Center Site	Reviewed: M. Krajewski
Figure: 1 of 5	Date: 11/11/2022
Source: National Hydrology Dataset & National Wetlands Inventory	Revision: 0

Attachment H. Tree Removal Maps


BREC Trasmission Center
Bat Habitat Assessment Map
Associated Engineers, Inc.
N
1 inch = 375 feet
0 125 250 500 750
Feet
NAIP 2020
Date: 09MAR23
ArcMap\Projects\Associated\
BREC_Transmission_Center\
Bat_Habitat_Assessment_Map_08MAR23_DS
Map Prepared By: DS
Wetland Services, Inc
1015 Amiet Rd.
Henderson, KY 42420
Wetland Services, Inc.
REMOVAL LIMITS
Block 7
Block 5
REMOVAL LIMITS
PATIALLY REMOVE
POPDELT 1
REMOVAL LIMITS
PARTIALLY REMOVE
Block 8
REMOVE
Block 4
PARTIALLY REMOVE
Block 6
REMOVAL LIMITS
REMOVE
Block 9
Bld 3
ACRU 3
Block 2
CAIL 1
Bld 2
Bld 1
ACRU 2
ACRU 1
Block 3
Block 1
Legend
Points
Boundary
Forest Blocks

TREE REMOVAL EXHIBIT

BIG RIVERS ELECTRIC CORP.
NEW TRANSMISSION OPERATIONS CENTER PROJECT



GRAPHIC SCALE

400 0 200 400 800

(IN FEET)
1 inch = 400 feet

BRYANT ENGINEERING INC.
Civil Engineering • Land Surveying

1535 FREDERICA STREET ~ P.O. BOX 21382
OWENSBORO, KENTUCKY 42304
(270) 685-2811

F:\Data\2022\22-6424\05_Drawings\EXHIBIT - TREE REMOVAL.dwg

Attachment I. IPaC Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
Email Address: kentuckyes@fws.gov

In Reply Refer To: June 05, 2023
Project Code: 2023-0041139
Project Name: Transmission Operations Center

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

To Whom It May Concern:

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

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

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

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

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

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
(502) 695-0468

PROJECT SUMMARY

Project Code: 2023-0041139
Project Name: Transmission Operations Center
Project Type: New Constr - Above Ground
Project Description: Big Rivers is proposing to construct a new Transmission Operations Center (the "TOC Facility") located south of the intersection of Henderson Road and Industrial Drive near 3740 U.S. Hwy 60 W, Owensboro, Kentucky (the "Project"). Construction of the TOC Facility will allow Big Rivers to combine its existing Energy Transmission & Substation (ET&S) facility; Energy Control, Planning & Compliance operations; Engineering; and other support operations at one central location. The TOC Facility, which includes an office building, warehouse, enclosed and covered vehicle storage space, outdoor equipment storage, and a loading dock, will be accessible via major thoroughfares in Owensboro, including U.S. Highway 60 W (Wendell Ford Expressway) and Henderson Road (KY-331). Big Rivers anticipates utilizing Rural Utility Service (RUS) loans or loan guarantees to finance construction of the TOC Facility. RUS, a division within the U.S. Department of Agriculture's (USDA) Rural Development Agency, provides financing for water and waste treatment, electric power, and telecommunications infrastructure or infrastructure improvements serving rural communities.

Construction of the TOC Facility will impact approximately 30 acres of the 114-acre site Big Rivers acquired for the proposed Project.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.7690171,-87.15944427348667,14z

Counties: Daviess County, Kentucky

ENDANGERED SPECIES ACT SPECIES

There is a total of 17 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 9 of these species should be considered only under certain conditions.

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

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

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

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens*	Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:

- The project area includes potential gray bat habitat.

Species profile: https://ecos.fws.gov/ecp/species/6329
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/6422.pdf

Indiana Bat *Myotis sodalis*	Endangered

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
This species only needs to be considered under the following conditions:

- The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species.

Species profile: https://ecos.fws.gov/ecp/species/5949
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/6422.pdf

Northern Long-eared Bat *Myotis septentrionalis*	Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/6422.pdf

BIRDS

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

CLAMS

NAME — STATUS

Clubshell *Pleurobema clava* — Endangered

Population: Wherever found; Except where listed as Experimental Populations
No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/3789
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Fanshell *Cyprogenia stegaria* — Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/4822
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Longsolid *Fusconaia subrotunda* — Threatened

There is **final** critical habitat for this species.
Species profile: https://ecos.fws.gov/ecp/species/9880

Northern Riffleshell *Epioblasma rangiana* — Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact, directly or indirectly, the following rivers: Green, Licking, or Ohio.

Species profile: https://ecos.fws.gov/ecp/species/527
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Orangefoot Pimpleback (pearlymussel) *Plethobasus cooperianus* — Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/1132
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Pink Mucket (pearlymussel) *Lampsilis abrupta* — Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7829
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Rabbitsfoot *Quadrula cylindrica cylindrica* — Threatened

NAME STATUS

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/5165
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Ring Pink (mussel) *Obovaria retusa* Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/4128
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Rough Pigtoe *Pleurobema plenum* Endangered

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- The species may be affected by projects that significantly impact the Ohio River.

Species profile: https://ecos.fws.gov/ecp/species/6894
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Sheepnose Mussel *Plethobasus cyphyus* Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/6903
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

Snuffbox Mussel *Epioblasma triquetra* Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4135

Spectaclecase (mussel) *Cumberlandia monodonta* Endangered

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7867
General project design guidelines:
https://ipac.ecosphere.fws.gov/project/V66Y5NWLJJBWNE3WLJ43HAYEKQ/documents/generated/5639.pdf

INSECTS

NAME STATUS

Monarch Butterfly *Danaus plexippus* Candidate

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

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency: Sargent & Lundy
Name: Samantha Country
Address: 55 E Monroe St.
City: Chicago
State: IL
Zip: 60603
Email samantha.m.country@sargentlundy.com
Phone: 3122696832

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Agriculture

Attachment J. USFWS Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
330 West Broadway, Suite 265
Frankfort, Kentucky 40601
(502) 695-0468

August 3, 2023

Suzanne Kopich
USDA, Rural Development
Rural Utilities Service
1400 Independence Avenue, S.W.
Washington, DC 20250

Subject: FWS 2023-0041139; USDA, Big Rivers Transmission Operations Center; Daviess County, Kentucky

Dear Suzanne Kopich:

The U.S. Fish and Wildlife Service's (Service) Kentucky Field Office (KFO) has reviewed the above-referenced project information and request for concurrence received by our office on June 2, 2023 and additional information provided on July 31, 2023. The United States Department of Agriculture's (USDA) Rural Utilities Service is proposing to fund a transmission operations center in Daviess County, Kentucky. The KFO offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Project Description
The proposed project consists of constructing one office building, one warehouse, vehicle storage space, outdoor equipment storage, and one loading dock. The project area is located at the southeast intersection of US-60 and KY-331. The project area consists of agricultural field and forested habitat. No stream impacts are proposed. Tree removal is proposed. In addition, Best Management Practices (BMPs) will be implemented to reduce erosion and sedimentation.

Federally Listed Species
The USDA has determined that the proposed project will have "no effect" on the Clubshell (*Pleurobema clava*), Fanshell (*Cyprogenia stegaria*), Northern Riffleshell (*Epioblasma torulosa rangiana*), Orangefoot Pimpleback (*Plethobasus cooperianus*), Pink Mucket (*Lampsilis abrupta*), Rabbitsfoot (*Quadrula cylindrica cylindrica*), Ring Pink (*Obovaria retusa*), Rough Pigtoe (*Pleurobema plenum*), Sheepnose Mussel (*Plethobasus cyphyus*), Snuffbox Mussel (*Epioblasma triquetra*), and Spectaclecase (*Cumberlandia monodonta*) by utilizing the Service's IPaC Kentucky State-wide Determination Key (IPaC Project code: 2023-0041139). There is no requirement to request concurrence with a "no effect" determination; however, the KFO acknowledges this determination and has no additional comments or concerns regarding these

species. The USDA has also determined that the proposed project has the potential to affect the gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*).

Gray bat

The KFO has reviewed the concurrence letter generated by the Kentucky State-wide Determination Key (IPaC Record Locator: 690-115540423). Based on the information provided in the concurrence letter, we concur with your determination that the proposed action, "may affect, but is not likely to adversely affect" the gray bat.

Indiana bat and northern long-eared bat (NLEB)

No caves or cave-like features that could be used as winter hibernacula by these species are located within the project area. The proposed project will require the removal of 3.15 acres of potential Indiana bat and NLEB habitat. The applicant proposes to remove this habitat during the occupied timeframe, excluding June and July. The applicant has chosen to make a voluntary payment to the Imperiled Bat Conservation Fund (IBCF) as part of the proposed action to address Indiana bat and NLEB habitat loss. A voluntary payment to the IBCF is a conservation measure that is identified in the KFO's 2016 *Revised Conservation Strategy for Forest-Dwelling Bats* (Conservation Strategy). Based on the Conservation Strategy, the voluntary payment to the IBCF should be $13,702.50[1].

We have determined that the proposed action is consistent with the actions evaluated in the 2015 Biological Opinion: *Kentucky Field Office's Participation in Conservation Memoranda of Agreement for the Indiana Bat and/or Northern Long-eared Bat* (BO) that supports the Conservation Strategy. Any incidental take of Indiana bats or NLEBs resulting from forested habitat removal is not prohibited. The BO concludes that this incidental take is not likely to jeopardize the continued existence of the Indiana bat or NLEB. To complete this proposed conservation measure, the applicant should mail the voluntary payment to the Imperiled Bat Conservation Fund administered by Kentucky Natural Lands Trust. **The check or money order should be made payable to Kentucky Natural Lands Trust with "Imperiled Bat Conservation Fund" in the memo line.** At this time, payments can only be received via U.S. Postal Service delivery due to office closures in response to COVID-19. Payments can be sent by Priority Mail through the U.S. Postal Service for quicker delivery, but do not request a signature.

Mail to:
Imperiled Bat Conservation Fund
c/o Kentucky Natural Lands Trust
433 Chestnut Street
Berea, KY 40403

[1] The calculated amount is based on the current average value of farm real estate in Kentucky as reported by the U.S. Department of Agriculture in the Land Values and Cash Rents document ($4,350). This figure is updated annually around the first week in August. If payment is not made prior to August 31, 2023, please contact the KFO to confirm the current cost value.

The voluntary payment should include a cover letter with the following information: the applicant's name, the FWS project number referenced in the subject line of this letter, and a contact name and address to receive the receipt of payment.

Summary
The KFO concurs that the proposed action, "may affect, but is not likely to adversely affect" the gray bat. The KFO also agrees that the project is consistent with the IBCF process. In view of these findings, we believe that the section 7 requirements of the Endangered Species Act for this project are fulfilled. The USACE should reconsider their section 7 obligation, if: (1) new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, (2) the proposed action is subsequently modified to include activities which were not considered during this consultation, or (3) new species are listed or critical habitat designated.

We appreciate the opportunity to review the proposed project. If you have any questions, please contact Pamela McDill of my staff at pamela_mcdill@fws.gov.

Sincerely,

VIRGIL ANDREWS

Digitally signed by VIRGIL ANDREWS
Date: 2023.08.03 16:36:46 -04'00'

Virgil Lee Andrews, Jr.
Field Supervisor

United States Department of Agriculture

Rural Development

Rural Utilities Service

1400 Independence Ave SW, Room 4121
Stop 1510
Washington, DC 20250

Voice 202.961 8514

June 14, 2023

Lee Andrews, Jr.
U.S. Fish and Wildlife Service
Kentucky Ecological Services Field Office
J.C. Watts Federal Building, Room 265
330 West Broadway
Frankfort, Kentucky 40601

Re: Project code: 2023-0041139, Transmission Operations Center

Dear Mr. Andrews,

USDA Rural Utilities Service (RUS) is in receipt of an application for financial assistance submitted by Big Rivers Electric Corporation (Big Rivers) for the purpose of constructing a new Transmission Operations Center (TOC Facility/ the Action) located south of the intersection of Henderson Road and Industrial Drive near 3740 U.S. Hwy 60 W, Owensboro, Kentucky. Construction of the TOC Facility would allow Big Rivers to combine its existing Energy Transmission & Substation (ET&S) facility; energy control, planning and compliance operations; engineering; and other support operations at one central location. The proposed TOC Facility would include an office building, warehouse, enclosed and covered vehicle storage space, outdoor equipment storage, and a loading dock. It would be accessible via major thoroughfares in Owensboro, including U.S. Highway 60 W (Wendell Ford Expressway) and Henderson Road (KY-331). The project site currently consists of planted row crop monoculture with approximately 9.26 acres of mixed mast trees and brush on the site. The Action will require the removal of 3.15 acres of trees (site layout and tree removal map follows this letter).

The Information for Planning and Consultation (IPaC) system identified fifteen threatened and endangered species to include 12 mussel species, three bat species, one candidate species, the Monarch Butterfly, and the Whooping Crane, an Experimental Population, Non-Essential.

As the project site is not located in close proximity to streams, RUS is recommending a determination of No Affect for the 12 mussel species. As required by the USFWS, the applicant will complete all excavation and grading and put BMPs in place to stabilize all excavated and graded areas within 1 month. Additionally, there is no suitable habitat or remnants of milkweed that would support the Monarch Butterfly, or marshes and grasslands that would provide suitable habitat for the Whooping Crane.

RUS is recommending a determination of Not Likely to Adversely Affect the Gray Bat, and the Northern Long-eared Bat (NLEB); and May Affect the Indiana Bat. The applicant, Big Rivers, has committed to restricting tree clearing from June 1 through July 31 and will contribute to the Imperiled Bat Conservation Fund as mitigation. The determination letter for the NLEB, dated June 1, 2023, states that the USFWS has 15 days to reconsider their finding of a Not Likely to Adversely Affect the NLEB.

Based on the above analysis, we conclude that financial assistance for this project will have No Effect on the 12 mussel species; is Not Likely to Adversely Affect the NLEB and Gray Bat; and May Affect the Indiana Bat.

RUS requests that your office review these recommendations for determination of effect and provide comments on this Project as soon as possible. Please feel free to contact me by phone at 202-961-8514, or email for additional information.

Sincerely,

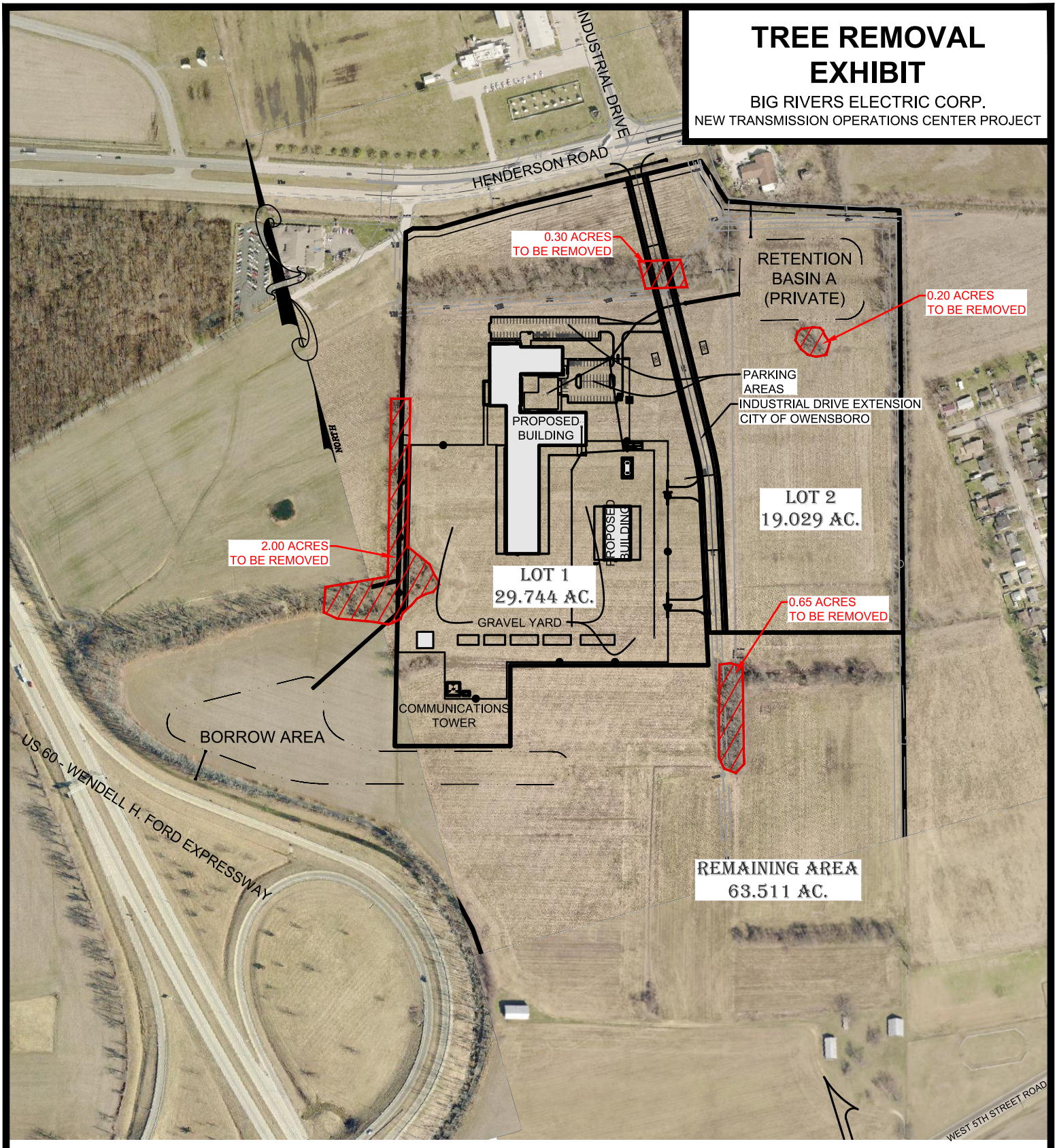
Suzanne Kopich
Environmental Protection Specialist
Environmental and Historic Preservation Division
Rural Utilities Service, Rural Development

Attachments

1. Revised site layout_tree removal map
2. June 1, 2023 USFWS Determination Letter
3. June 1, 2023 USFWS Determination Letter for NLEB
4. April 28, 2023 USFWS Determination Letter for Indiana bat

TREE REMOVAL EXHIBIT

BIG RIVERS ELECTRIC CORP.
NEW TRANSMISSION OPERATIONS CENTER PROJECT



GRAPHIC SCALE

400 0 200 400 800

(IN FEET)
1 inch = 400 feet

BRYANT ENGINEERING INC.
Civil Engineering • Land Surveying

1535 FREDERICA STREET ~ P.O. BOX 21382
OWENSBORO, KENTUCKY 42304
(270) 685-2811

F:\Data\2022\22-6424\05_Drawings\EXHIBIT - TREE REMOVAL.dwg

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
Email Address: kentuckyes@fws.gov

In Reply Refer To: June 01, 2023
Project code: 2023-0041139
Project Name: Transmission Operations Center

Subject: Verification letter for the project named 'Transmission Operations Center' for specified threatened and endangered species that may occur in your proposed project location consistent with the Kentucky Endangered Species Determination Key (DKey)

Dear Suzanne Kopich:

The U.S. Fish and Wildlife Service (Service) received on **June 01, 2023** your effect determination(s) for the 'Transmission Operations Center' (Action) using the Kentucky (DKey) within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

You have agreed to the following conservation measures:

- The project proponent will complete all excavation and grading and put BMPs in place to stabilize all excavated and graded areas within 1 month.

Based on your answers and the assistance of the Service's Kentucky DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Clubshell (*Pleurobema clava*)	Endangered	No effect
Fanshell (*Cyprogenia stegaria*)	Endangered	No effect
Gray Bat (*Myotis grisescens*)	Endangered	NLAA
Northern Riffleshell (*Epioblasma rangiana*)	Endangered	No effect
Orangefoot Pimpleback (pearlymussel) (*Plethobasus cooperianus*)	Endangered	No effect
Pink Mucket (pearlymussel) (*Lampsilis abrupta*)	Endangered	No effect
Rabbitsfoot (*Quadrula cylindrica cylindrica*)	Threatened	No effect
Ring Pink (mussel) (*Obovaria retusa*)	Endangered	No effect

Rough Pigtoe (*Pleurobema plenum*)	Endangered	No effect
Sheepnose Mussel (*Plethobasus cyphyus*)	Endangered	No effect
Snuffbox Mussel (*Epioblasma triquetra*)	Endangered	No effect
Spectaclecase (mussel) (*Cumberlandia monodonta*)	Endangered	No effect

Consultation Status

NLAA Determinations: NLAA determinations are those for which you made a "may affect – not likely to adversely affect" determination for the species for the proposed Action. Species with NLAA determinations are consistent with the programmatic evaluation in the standing analysis of proposed Actions the Kentucky Ecological Services Field Office has identified that typically do not result in significant adverse effects to that species. If you uploaded documents (e.g., survey reports, habitat assessment) to support your "may affect – not likely to adversely affect" (NLAA) determination (these will be listed in the "Qualification Interview" attached to this letter), the Service has 15 calendar days to review those documents and notify you if we determine that those documents are not sufficient to support the determination. If you did not upload supporting documents, the Service has 5 business days to notify you if we determine that the proposed Action does not meet the criteria for a NLAA determination for the species. This verification period allows the Kentucky Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, the Kentucky Ecological Services Field Office may request additional information to verify the effects determination reached through the key. If we do not notify you within the specified timeframes, you may accept this letter as the Service's concurrence with any NLAA determination(s) you made through this key.

The Service recommends that your agency contact the Kentucky Ecological Services Field Office or re-evaluate the Action in IPaC if: 1) the scope, timing, duration, or location of the Action changes, 2) new information reveals the Action may affect listed species or designated critical habitat, or 3) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Kentucky Ecological Services Field Office should take place before project changes are final or resources committed.

The following species and/or critical habitats may also occur in your project area and **are not** covered by this conclusion:

- Indiana Bat *Myotis sodalis* Endangered
- Longsolid *Fusconaia subrotunda* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Long-eared Bat *Myotis septentrionalis* Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

To address effects to other federally listed or proposed species and/or their designated critical habitat, you can request project-specific review by following the instructions in the "Next Steps" section of your species list letter, or you may use another determination key, if available.

Additional Coordination

To request additional technical assistance or consultation, please email your request to KentuckyES@fws.gov and include relevant site-specific information. The Kentucky Ecological Services Field Office will respond within 30 days of your submittal.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Transmission Operations Center

2. Description

The following description was provided for the project 'Transmission Operations Center':

> Big Rivers is proposing to construct a new Transmission Operations Center (the "TOC Facility") located south of the intersection of Henderson Road and Industrial Drive near 3740 U.S. Hwy 60 W, Owensboro, Kentucky (the "Project"). Construction of the TOC Facility will allow Big Rivers to combine its existing Energy Transmission & Substation (ET&S) facility; Energy Control, Planning & Compliance operations; Engineering; and other support operations at one central location. The TOC Facility, which includes an office building, warehouse, enclosed and covered vehicle storage space, outdoor equipment storage, and a loading dock, will be accessible via major thoroughfares in Owensboro, including U.S. Highway 60 W (Wendell Ford Expressway) and Henderson Road (KY-331). Big Rivers anticipates utilizing Rural Utility Service (RUS) loans or loan guarantees to finance construction of the TOC Facility. RUS, a division within the U.S. Department of Agriculture's (USDA) Rural Development Agency, provides financing for water and waste treatment, electric power, and telecommunications infrastructure or infrastructure improvements serving rural communities.
>
> Construction of the TOC Facility will impact approximately 30 acres of the 114-acre site Big Rivers acquired for the proposed Project.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.7690171,-87.15944427348667,14z

QUALIFICATION INTERVIEW

1. Will the proposed Action involve Federal funding, permitting, or authorization, or will it be carried out by a Federal Agency?

   Yes

2. Are you the lead Federal Action Agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   No

3. [Hidden Semantic] Does the action area intersect critical habitat?

   Automatically answered
   No

4. Will the proposed Action involve construction or operation of wind turbines?

   No

5. Will the proposed Action involve blasting (other than a fireworks display)?

   No

6. Will the proposed Action involve a new point source discharge from a facility other than a water treatment plant or storm water system?

   No

7. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g. leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

   No

8. Will the proposed Action include the removal, replacement, repair and/or maintenance of an existing bridge or culvert?

   No

9. Will the proposed Action involve perennial stream loss that would require an individual permit under 404 of the Clean Water Act?

   No

10. Will the proposed Action involve discharge of sediment into a stream?

    No

11. Does the Action Area contain any caves (including their associated sinkholes, fissures, or other karst features), rockshelters, underground quarries, or abandoned mine portals (including associated underground workings)?

    No

12. [Hidden Semantic] Does the Action Area intersect the Kentucky AOI of the gray bat?

    Automatically answered
    Yes

13. Will the proposed Action involve drilling or boring?

    No

14. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service's Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the gray bat.

    What is your effect determination for the **gray bat**?

    Note:*IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for "May affect – not likely to adversely affect" determinations. If you choose "May affect – likely to adversely affect" or "Unsure," additional coordination with the Service is recommended.*

    2. "May affect - not likely to adversely affect"

15. Will the proposed Action involve a new point source discharge into a stream or change an existing point source discharge (e.g., outfalls; leachate ponds)?

    No

16. Will the proposed Action include any activities that would alter stream flow, such as hydropower energy production, impoundments, intake structures, diversion structures, and/or turbines?

    No

17. Will the proposed Action involve dredging or in-stream gravel mining?

    No

18. Will the proposed Action involve resource extraction (e.g., mining, oil/gas, logging), including exploration activities?

    No

19. Will the proposed Action involve stream impacts (perennial or intermittent) that would require an individual permit under 404 of the Clean Water Act?

    No

20. Will the proposed Action involve activities that would contribute measureable nonpoint source pollution to streams (e.g., sediment, nutrients, etc.)? *See the following EPA webpage for more examples of nonpoint source pollution and activities that can produce it: https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution*

    No

21. Will the proposed Action involve new or increased use of public recreational OHV trails?

    No

22. Will the proposed Action disturb the channel or bank of a perennial or intermittent stream?

    No

23. Will the proposed Action disturb the channel or bank of an ephemeral stream?

    No

24. Will the proposed Action involve vegetation removal within 200 feet of a perennial stream bank?

    No

25. Will the proposed Action involve excavation or grading, including for the construction or improvement of an access road?

    Yes

26. Are all areas proposed for excavation or grading situated more than 200 feet from the banks of perennial and intermittent streams?

    Yes

27. Are any areas proposed for excavation or grading located in or partly in a "special flood hazard area" as designated by FEMA? *You can determine this by searching for your project area at the FEMA Flood Map Service Center (https://msc.fema.gov/portal/home. For technical assistance please contact the Field Office listed in the letterhead of your project's official species list.*

    No

28. Will the excavation or grading create new water bars or ditches that will channel stormwater into a stream?

    No

29. Will the project proponent complete all excavation and grading activities and subsequent soil stabilization measures within 1 month?

    Yes

30. [Hidden Semantic] Does the project area intersect the AOI of the snuffbox?

    Automatically answered
    Yes

31. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service's Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the snuffbox.

    What determination do you want to make for the **snuffbox**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for "May affect – not likely to adversely affect" determinations. If you choose "May affect – likely to adversely affect" or "Unsure," additional coordination with the Service is recommended.

    1. "No effect"

32. [Hidden Semantic] Does the project area intersect the AOI of the clubshell (*Pleurobema clava*)?

    Automatically answered
    Yes

33. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the clubshell.

    What determination do you want to make for the **clubshell**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

34. [Hidden Semantic] Does the project area intersect the AOI of the fanshell (*Cyprogenia stegaria*)?

    Automatically answered
    Yes

35. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the fanshell.

    What is your effect determination for the **fanshell**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

36. [Hidden Semantic] Does the project area intersect the AOI of the northern riffleshell (*Epioblasma torulosa rangiana*)?

    Automatically answered
    Yes

37. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service's Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the northern riffleshell.

    What is your effect determination for the **northern riffleshell**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for "May affect – not likely to adversely affect" determinations. If you choose "May affect – likely to adversely affect" or "Unsure," additional coordination with the Service is recommended.

    1. "No effect"

38. [Hidden Semantic] Does the project area intersect the AOI of the orangefoot pimpleback (*Plethobascus cooperianus*)?

    Automatically answered
    Yes

39. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service's Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the orangefoot pimpleback.

    What is your effect determination for the **orangefoot pimpleback**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for "May affect – not likely to adversely affect" determinations. If you choose "May affect – likely to adversely affect" or "Unsure," additional coordination with the Service is recommended.

    1. "No effect"

40. [Hidden Semantic] Does the project area intersect the AOI of the pink mucket (*Lampsilis abrupta*)?

    Automatically answered
    Yes

41. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the pink mucket.

    What is your effect determination for the **pink mucket**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

42. [Hidden Semantic] Does the project area intersect the AOI of the rabbitsfoot (*Theliderma (= Quadrula) cylindrica*)?

    Automatically answered
    Yes

43. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the rabbitsfoot.

    What is your effect determination for the **rabbitsfoot**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

44. [Hidden Semantic] Does the project area intersect the AOI of the ring pink (*Obovaria retusa*)?

    Automatically answered
    Yes

45. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the ring pink.

    What is your effect determination for the **ring pink**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

46. [Hidden Semantic] Does the project area intersect the AOI of the rough pigtoe (*Pleurobema plenum*)?

    Automatically answered
    Yes

47. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the rough pigtoe.

    What is your effect determination for the **rough pigtoe**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

48. [Hidden Semantic] Does the project area intersect the AOI of the sheepnose (Plethobasus cyphyus)?

    Automatically answered
    Yes

49. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the sheepnose.

    What is your effect determination for the **sheepnose**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

50. [Hidden Semantic] Does the project area intersect the AOI of the spectaclecase (*Margaritifera (= Cumberlandia) monodonta*)?

    Automatically answered
    Yes

51. Based on the responses you have provided, we believe that the proposed Action is consistent with the type of Actions programmatically evaluated by the Service’s Kentucky Field Office under the standing analyses that support this determination key. These Actions typically conclude with "no effect" or "may affect - not likely to adversely affect" determinations for the spectaclecase.

    What is your effect determination for the **spectaclecase**:

    Note: IPaC will not provide a concurrence for "no effect" determinations, because there is no statutory requirement to request concurrence from the Service. IPaC will provide concurrence for “May affect – not likely to adversely affect” determinations. If you choose “May affect – likely to adversely affect” or “Unsure,” additional coordination with the Service is recommended.

    1. “No effect”

IPAC USER CONTACT INFORMATION

Agency: Department of Agriculture
Name: Suzanne Kopich
Address: 1400 Independence Ave, S.W.
City: Washington
State: DC
Zip: 20250
Email suzanne.kopich@usda.gov
Phone: 2029618514

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0468 Fax: (502) 695-1024
Email Address: kentuckyes@fws.gov

In Reply Refer To:
Project code: 2023-0041139
Project Name: Transmission Operations Center

June 01, 2023

Federal Nexus: yes
Federal Action Agency (if applicable): Department of Agriculture

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'Transmission Operations Center'

Dear Suzanne Kopich:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on June 01, 2023, for 'Transmission Operations Center' (here forward, Project). This project has been assigned Project Code 2023-0041139 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (DKey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the determination of “May Affect, Not Likely to Adversely Affect” the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Clubshell *Pleurobema clava* Endangered
- Fanshell *Cyprogenia stegaria* Endangered
- Gray Bat *Myotis grisescens* Endangered
- Indiana Bat *Myotis sodalis* Endangered
- Longsolid *Fusconaia subrotunda* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Riffleshell *Epioblasma rangiana* Endangered
- Orangefoot Pimpleback (pearlymussel) *Plethobasus cooperianus* Endangered
- Pink Mucket (pearlymussel) *Lampsilis abrupta* Endangered
- Rabbitsfoot *Quadrula cylindrica cylindrica* Threatened
- Ring Pink (mussel) *Obovaria retusa* Endangered
- Rough Pigtoe *Pleurobema plenum* Endangered
- Sheepnose Mussel *Plethobasus cyphyus* Endangered
- Snuffbox Mussel *Epioblasma triquetra* Endangered
- Spectaclecase (mussel) *Cumberlandia monodonta* Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the Kentucky Ecological Services Field Office and reference Project Code 2023-0041139 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Transmission Operations Center

2. Description

The following description was provided for the project 'Transmission Operations Center':

> Big Rivers is proposing to construct a new Transmission Operations Center (the "TOC Facility") located south of the intersection of Henderson Road and Industrial Drive near 3740 U.S. Hwy 60 W, Owensboro, Kentucky (the "Project"). Construction of the TOC Facility will allow Big Rivers to combine its existing Energy Transmission & Substation (ET&S) facility; Energy Control, Planning & Compliance operations; Engineering; and other support operations at one central location. The TOC Facility, which includes an office building, warehouse, enclosed and covered vehicle storage space, outdoor equipment storage, and a loading dock, will be accessible via major thoroughfares in Owensboro, including U.S. Highway 60 W (Wendell Ford Expressway) and Henderson Road (KY-331). Big Rivers anticipates utilizing Rural Utility Service (RUS) loans or loan guarantees to finance construction of the TOC Facility. RUS, a division within the U.S. Department of Agriculture's (USDA) Rural Development Agency, provides financing for water and waste treatment, electric power, and telecommunications infrastructure or infrastructure improvements serving rural communities.
>
> Construction of the TOC Facility will impact approximately 30 acres of the 114-acre site Big Rivers acquired for the proposed Project.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.7690171,-87.15944427348667,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   No

9. Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

   No

10. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
(If unsure, answer "Yes.")

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

11. Will the action cause effects to a bridge?

    No

12. Will the action result in effects to a culvert or tunnel?

    No

13. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

    No

14. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

15. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

16. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

17. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

18. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    No

19. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

20. Will the proposed action involve blasting?

    No

21. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

22. Will the proposed action involve the use of herbicides or pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

23. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    No

24. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

    Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

25. Will the action use only downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting)
when installing new or replacing existing permanent lights? Or for those transportation agencies using the Backlight, Uplight, Glare (BUG) system developed by the Illuminating Engineering Society, will all three ratings (backlight, uplight, and glare) be as close to zero as is possible, with a priority of "uplight" of 0?

    No

26. Will the proposed action result in the cutting or other means of knocking down, bringing down, or trimming of any trees suitable for northern long-eared bat roosting?

    Note: Suitable northern long-eared bat roost trees are live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities.

    Yes

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

5.1

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

5.1

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

Yes

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

5.1

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

0

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

No

Will all project activities by completed by April 1, 2024?

Yes

IPAC USER CONTACT INFORMATION

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Zip: 20250
Email suzanne.kopich@usda.gov
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
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Phone: (502) 695-0468 Fax: (502) 695-1024
Email Address: kentuckyes@fws.gov

In Reply Refer To: April 28, 2023
Project code: 2023-0041139
Project Name: Transmission Operations Center

Subject: Consistency letter for the project named 'Transmission Operations Center' for the endangered Indiana bat and its critical habitat in the proposed project location, pursuant to the Indiana Bat Determination Key (DKey)

Dear Samantha Country:

The U.S. Fish and Wildlife Service (Service) received on **April 28, 2023** your effect determination(s) for the 'Transmission Operations Center' using the Indiana Bat DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers and the assistance of the Service's Indiana Bat DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Indiana Bat (*Myotis sodalis*)	Endangered	May affect

Consultation Status

May Affect Determinations: Species with May Affect determinations are those for which the DKey was unable to provide a conclusion or those for which you were either unsure about the determination or you chose to make a "may affect" determination. If the DKey was unable to provide a conclusion, this does not necessarily mean that the project is likely to adversely affect the species. If you think the project may affect the species or want additional technical assistance, please follow the instructions in the "Additional Coordination" section below. If a federal action agency chooses to make a "no effect" determination for the species, there is no statutory requirement to request concurrence with that determination; however, the federal action agency should document the supporting information for this determination in their files. This documentation would typically demonstrate a lack of suitable habitat within the action area,

show that no impacts to suitable habitat would occur, or provide information that the species is not reasonably certain to occur in the action area even though suitable habitat is present.

In addition to the Indiana bat, the following species and/or critical habitats may also occur in your project area and **are not** covered by this conclusion:

- Clubshell *Pleurobema clava* Endangered
- Fanshell *Cyprogenia stegaria* Endangered
- Gray Bat *Myotis grisescens* Endangered
- Longsolid *Fusconaia subrotunda* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Long-eared Bat *Myotis septentrionalis* Endangered
- Northern Riffleshell *Epioblasma rangiana* Endangered
- Orangefoot Pimpleback (pearlymussel) *Plethobasus cooperianus* Endangered
- Pink Mucket (pearlymussel) *Lampsilis abrupta* Endangered
- Rabbitsfoot *Quadrula cylindrica cylindrica* Threatened
- Ring Pink (mussel) *Obovaria retusa* Endangered
- Rough Pigtoe *Pleurobema plenum* Endangered
- Sheepnose Mussel *Plethobasus cyphyus* Endangered
- Snuffbox Mussel *Epioblasma triquetra* Endangered
- Spectaclecase (mussel) *Cumberlandia monodonta* Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

To address effects to other federally listed or proposed species and/or their designated critical habitat, you can request project-specific review by following the instructions in the “Next Steps” section of your species list letter, or you may use another determination key, if available.

Additional Coordination

To request additional technical assistance or consultation, please contact the Kentucky Ecological Services Field Office . When you contact the office, please provide all relevant site-specific information regarding the proposed Action. The Kentucky Ecological Services Field Office will respond within 30 to 60 days of your submittal.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Transmission Operations Center

2. Description

The following description was provided for the project 'Transmission Operations Center':

> Big Rivers is proposing to construct a new Transmission Operations Center (the "TOC Facility") located south of the intersection of Henderson Road and Industrial Drive near 3740 U.S. Hwy 60 W, Owensboro, Kentucky (the "Project"). Construction of the TOC Facility will allow Big Rivers to combine its existing Energy Transmission & Substation (ET&S) facility; Energy Control, Planning & Compliance operations; Engineering; and other support operations at one central location. The TOC Facility, which includes an office building, warehouse, enclosed and covered vehicle storage space, outdoor equipment storage, and a loading dock, will be accessible via major thoroughfares in Owensboro, including U.S. Highway 60 W (Wendell Ford Expressway) and Henderson Road (KY-331). Big Rivers anticipates utilizing Rural Utility Service (RUS) loans or loan guarantees to finance construction of the TOC Facility. RUS, a division within the U.S. Department of Agriculture's (USDA) Rural Development Agency, provides financing for water and waste treatment, electric power, and telecommunications infrastructure or infrastructure improvements serving rural communities.
>
> Construction of the TOC Facility will impact approximately 30 acres of the 114-acre site Big Rivers acquired for the proposed Project.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.7690171,-87.15944427348667,14z

QUALIFICATION INTERVIEW

1. Will the proposed action involve Federal funding, permitting, or authorization, or will it be carried out by a Federal Agency?

   Yes

2. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) the lead Federal Agency for this action.

   No

3. Are you the lead Federal Action Agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   Yes

4. [Semantic] Is the Action Area within 1/2-mile of a known Indiana bat hibernaculum?

   Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact the Field Office listed in the letterhead of this letter.

   Automatically answered
   No

5. If you have determined that the Indiana bat is unlikely to occur to within your project's Action Area or that your project is unlikely to have any potential impacts on the Indiana bat, you may wish to make a "No Effect" determination for the Indiana bat. Would you like to make a No Effect determination for the Indiana bat?

   Note: A "No Effect" determination does not require concurrence from the Service; however, you should document the supporting information for this determination in your files. This documentation would typically demonstrate a lack of suitable habitat within the action area, show that no impacts to suitable habitat would occur, or provide information that the species is not reasonably certain to occur in the action area even though suitable habitat is present. If you believe the Indiana bat may be affected by your project or if you would like assistance in making a determination, please answer "no" and continue through the key.

   No

6. Will the proposed Action involve construction or operation of wind turbines?

   No

7. Will the proposed Action involve blasting, other than a fireworks display?

   No

8. Will the proposed Action involve a new point source discharge from a facility other than a water treatment plant or storm water system?

   No

9. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

   No

10. Will the proposed Action include the removal, replacement, repair and/or maintenance of an existing bridge?

    No

11. Will the proposed Action involve perennial stream loss that would require an individual permit under 404 of the Clean Water Act?

    No

12. Will the proposed Action involve discharge of sediment into a stream?

    No

13. Does the Action Area contain any caves (including their associated sinkholes, fissures, or other karst features), rockshelters, underground quarries, or abandoned mine portals (including associated underground workings)?

    No

14. Will the proposed project result in the removal of trees?

    Yes

15. Did a habitat model applicable to the project site determine the project site to be of low probability for use by Indiana bats?

    Note: This question will most commonly be answered "no." If the answer to this question is "yes", you will be required to upload your **Habitat Model Report**

    No

16. Will the proposed project result in the removal of potentially suitable summer habitat for the Indiana bat? Suitable summer habitat for Indiana bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel. This includes forests and woodlots, linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree (live tree and/or snag ≥5 inches diameter at breast height (dbh) (12.7 centimeter) that has exfoliating bark, cracks, crevices, and/or hollows) and are located within 1,000 feet (305 meters) of other forested/wooded habitat. See the Indiana Bat Summer Survey Guidelines for addition description (https://www.fws.gov/sites/default/files/documents/Range-wide-Indiana-bat-survey-guidelines-March-23-2020.pdf).

    Note: If "no" upload a document with photos representative of the forested habitat to be removed.

    Yes

17. Will the proposed Action remove any suitable (primary or alternate) Indiana bat roost trees? *Suitable Indiana bat roost trees are live trees and/or snags ≥5 inches diameter at breast height (dbh) (12.7 centimeter) that have exfoliating bark, cracks, crevices, and/or hollows.*

    Note: If "no" upload a document with photos representative of the forested habitat to be removed.

    Yes

18. Will the proposed Action remove any suitable primary roost trees? *Suitable Indiana bat primary roost trees are live trees and/or snags 9 inches diameter at breast height (dbh) or greater that have exfoliating bark, cracks, crevices, and/or hollows.*

    Note: If "no" upload a document with photos representative of the forested habitat to be removed.

    Yes

19. If appropriate, would you like to conduct a voluntary emergence survey to determine if bats are using all of the suitable roost trees proposed for removal? *Emergence surveys require a surveyor to observe each suitable roost tree for the presence of bats. Surveys should follow the protocol in Appendix E in the USFWS' current Indiana Bat Summer Survey Guidelines at https://www.fws.gov/sites/default/files/documents/Range-wide-Indiana-bat-survey-guidelines-March-23-2020.pdf.*

    No

20. Would you like to conduct a voluntary summer survey presence/absence survey (netting or acoustic) of the project area?

    Note: If "yes" upload a survey proposal for the Field Office to review. Surveys should be conducted in accordance with the USFWS' current Indiana Bat Summer Survey Guidelines, found at https://www.fws.gov/sites/default/files/documents/Range-wide-Indiana-bat-survey-guidelines-March-23-2020.pdf.

    No

IPAC USER CONTACT INFORMATION

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LEAD AGENCY CONTACT INFORMATION

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