

Photography Log – Preliminary Karst Assessment

Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

November 30, 2020 ■ Terracon Project No. 57195114



Photo 45



Photo 46

Feature F-74: Cover collapse sinkhole with open throat. Appears to have been previously filled with rock and soil; has since re-opened.

Photography Log – Preliminary Karst Assessment

Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

November 30, 2020 ■ Terracon Project No. 57195114



Photo 47



Photo 48

Feature F-75: Cover collapse sinkhole with open throat. Appears to have been previously filled with rock and soil; has since re-opened.

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Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

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Photo 49



Photo 50

Feature F-76: Cover subsidence sinkhole with open throat. Observations of vegetation and ground surface indicate potential estavelle, closed depression that acts as an insurgence for surface water during dry periods, and floods or acts as an ephemeral spring during times of water table elevation.

Photography Log – Preliminary Karst Assessment

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Photo 51



Photo 52

Feature F77: Cover collapse with open throat in wooded area.

Photography Log – Preliminary Karst Assessment

Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

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Photo 53



Photo 54

Feature F78: Multiple cover collapse features with open throats in wooded area.

Photography Log – Preliminary Karst Assessment

Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

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Photo 55



Photo 56

Feature F79: Cover collapse feature with open throat in wooded area.

Photography Log – Preliminary Karst Assessment

Hoffman Solar Project – Summer Parcel ■ Franklin, Simpson County, Kentucky

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Photo 57



Photo 58

Feature F-80: Small cover collapse upgradient from F-56 and F-57. Approximately 3 feet deep.

Threatened and Endangered Species Review

Hoffman TVA Solar Tyree Chapel Road Franklin, Simpson County, Kentucky

Date: May 3, 2021

Terracon Project No. N120P073



Prepared for:

Horus Renewables
West Sacramento, California

Prepared by:

Terracon Consultants, Inc.
Cincinnati, Ohio

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials

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Threatened and Endangered Species Review

Hoffman TVA Solar ■ Franklin, Kentucky
May 3, 2021 ■ Terracon Project: N120P073



Threatened and Endangered Species Review

Hoffman TVA Solar

Tyree Chapel Road

Franklin, Simpson County, Kentucky

Terracon Project No. N120P073

May 3, 2021

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Horus Renewables (client) to perform a Threatened and Endangered (T&E) Species Review in an effort to identify any known occurrences of federally listed T&E species or any areas of designated critical habitat on or in the vicinity of the proposed, approximately 538-acre property, hereafter referred to as the project site. The project site is located along Tyree Chapel Road, north of Geddes Road and south of Old Country Farm Road, in Franklin, Simpson County, Kentucky. The project site location is depicted on Exhibit 1 and 2 in Appendix A.

The purpose of performing a T&E species review at the project site was to characterize the existing site conditions, observe the project site for any potential habitat of state and federally listed T&E species, and provide recommendations regarding whether or not the T&E species are at risk of take.

It is important to note that the findings presented in this report represent Terracon's professional opinion, based upon field observations made during the site visit and our experience with current regulatory guidance under the Endangered Species Act. In order to verify the findings presented in this report, further consultation with the United States Fish and Wildlife Service (USFWS) and Office of Kentucky Nature Preserves (OKNP) may be necessary.

2.0 SCOPE OF SERVICES

Terracon performed the following scope of work:

- Regulatory correspondence regarding the potential of threatened, endangered, and candidate species to be listed in the vicinity of the project site;
- Reviewed aerial photographs to assist with identifying existing project site conditions;
- Mobilized to the project site to conduct the preliminary site visit; and
- Completed a T&E Species Review that included project site characterization information, a discussion of applicable data, and recommendations for the project site.

3.0 THREATENED AND ENDANGERED SPECIES REVIEW

A review of species extracted from the Tennessee Valley Authority (TVA) Natural Heritage Database (NHD), USFWS Information for Planning and Conservation (IPaC), and OKNP Natural

Threatened and Endangered Species Review

Hoffman TVA Solar ■ Franklin, Kentucky
 May 3, 2021 ■ Terracon Project: N120P073



Heritage Program Database (NHD) for threatened, endangered, and candidate species for the project area and Simpson County, Kentucky is presented below.

3.1 TVA NHD

Terracon requested and received data from the TVA NHD, which are summarized in Table 1.

Table 1. TVA Natural Heritage Database information for state and federally-listed species within a 10-mile search radius of the project site and within the counties in which the project site is located. An explanation of state rank and status and federal status can be found here: <https://fw.ky.gov/WAP/Pages/Explanation-of-fields-used-in-species-accounts.aspx>.

Habitat	Scientific Name	Common Name	County	State	State Rank	State Status	Federal Status
Aquatic	<i>Villosa ortmanni</i>	Kentucky Creekshell	Simpson	KY	S1, S2	E	
Aquatic	<i>Etheostoma barrenense</i>	Splendid Darter	Sumner	TN	S3	D	
Aquatic	<i>Carychium stygium</i>	Cave Thorn	Sumner	TN	S2		
Aquatic	<i>Etheostoma bellum</i>	Orangefin Darter	Sumner	TN	S3	D	
Aquatic	<i>Etheostoma barbouri</i>	Teardrop Darter	Sumner	TN	S2	D	
Aquatic	<i>Typhlichthys subterraneus</i>	Southern Cavefish	Simpson	KY	S2, S3		
Aquatic	<i>Orconectes pellucidus</i>	Mammoth Cave Crayfish	Simpson	KY	S3	S	
Aquatic	<i>Percina stictogaster</i>	Frecklebelly Darter	Sumner	TN	S1	D	
Aquatic	<i>Villosa vanuxemensis</i>	Mountain Creekshell	Simpson	KY	S2	T	
Aquatic	<i>Percina macrocephala</i>	Longhead Darter	Allen	KY	S1	E	
Aquatic	<i>Barbicambarus cornutus</i>	Bottlebrush Crayfish	Simpson	KY	S2, S3	S	
Aquatic	<i>Cryptobranchus alleganiensis alleganiensis</i>	Eastern Hellbender	Simpson	KY	S2S3	S	PS:PE
Terrestrial	<i>Spiranthes odorata</i>	Sweetscent Ladies'-tresses	Sumner	TN	S1	E	
Terrestrial	<i>Hypericum adpressum</i>	Creeping St. John's-wort	Sumner	TN	S1	E	
Terrestrial	<i>Batrachosymodes quisnamus</i>	Cave-Obligate Beetle	Simpson	KY	SH	H	
Terrestrial	<i>Myotis grisescens</i>	Gray Bat	Robertson, Sumner	TN	S2	E	LE
Terrestrial	<i>Myotis grisescens</i>	Gray Bat	Simpson	KY	S2	T	LE
Terrestrial	<i>Perimyotis subflavus</i>	Tricolored Bat	Robertson	TN	S2S3	T	

Aquatic Species

The aquatic habitat observed on the project site consisted of small, low quality ephemeral channels that terminated into karst features and a low-quality, isolated wetland that appears to be a filled-in agricultural pond. Based on the characteristics of these aquatic features, Terracon did not observe suitable habitat for the aquatic species listed in the NHD.

Threatened and Endangered Species Review

Hoffman TVA Solar ■ Franklin, Kentucky
May 3, 2021 ■ Terracon Project: N120P073



Terrestrial Species

- Sweetscent Ladies'-tresses (*Spiranthes odorata*) is an obligate wetland plant species typically found in marshy or swampy areas. Suitable habitat for this species was not observed on the project site.
- Creeping St. John's-wort (*Hypericum adpressum*) is also an obligate wetland plant species typically found in wet depressions, marshes, or wet meadows. Suitable habitat for this species was not observed on the project site.
- Cave-Obligate Beetle (*Batriasymmodes quisnamus*) is an insect species known to exist in 18 caves in Tennessee and Kentucky. Suitable habitat for this species was not observed on the project site.
- The Gray bat (*Myotis grisescens*) typically lives in caves year-round. Karst features were observed on the project site. The deepest karst sinkhole observed on the project site was approximately 15 feet deep and nearly vertical in structure. Terracon was able to observe the interior of the aforementioned sinkhole, and horizontal space that would accommodate gray bat roosting and use was not observed. Based on the observations made during the site reconnaissance, suitable habitat for this species was not observed on the project site.
- The Tri-Colored Bat (*Perimyotis subflavus*) typically hibernates in deep caves and/or mines and forages in open, forested habitat. Based on observations made during the site reconnaissance, hibernacula for this species is not present at the project site; however, suitable foraging habitat may be present on the project site in a forested area located in the southeastern portion of the project site.

3.2 USFWS IPaC

Terracon has reviewed project-specific data from the USFWS in an effort to identify any known occurrences of federally listed T&E species or any areas of designated critical habitat on or in the vicinity of the project site.

The USFWS IPaC listed three species, which are discussed below. Critical habitat for these species was not identified within project site boundaries. The IPaC documentation is included as Appendix C. Representative site photographs are included in Appendix B.

- The Indiana bat (*Myotis sodalis*) is a federally-listed endangered species and the Northern long-eared bat (*Myotis septentrionalis*) is a federally-listed threatened species, both known to occur in Simpson County, Kentucky. Potential summer roosting habitat for these species generally consists of sites that contain mature and/or standing dead trees with exfoliating bark, and/or stream/river corridors which serve as flight paths. Additionally, sites that contain caves could be used by the Indiana bat and Northern long-eared bat for

Threatened and Endangered Species Review

Hoffman TVA Solar ■ Franklin, Kentucky
May 3, 2021 ■ Terracon Project: N120P073



winter hibernacula. Karst features were observed on the project site. The deepest karst sinkhole observed on the project site was approximately 15 feet deep and nearly vertical in structure. Terracon was able to observe the interior of the aforementioned sinkhole, and horizontal space that would accommodate Indiana and/or Northern long-eared bat hibernacula was not observed.

A small forested area containing mature trees with features that could be used for summer bat roosting and with a relatively open understory were observed in the southeastern portion of the project site. Additionally, two tree lines on the western portion of the project site contained potential roost trees (PRTs). Therefore, it is Terracon's opinion that potential summer habitat was identified on the project site.

The deepest karst sinkhole observed on the project site was approximately 15 feet deep and nearly vertical in structure. Terracon was able to observe the interior of the aforementioned sinkhole, and horizontal space that would accommodate Indiana and/or Northern long-eared bat hibernacula was not observed.

- The Gray bat (*Myotis grisescens*) is a federally-listed endangered species known to occur in Simpson County, Kentucky. This species typically lives in caves year-round. Karst features were observed on the project site. The deepest karst sinkhole observed on the project site was approximately 15 feet deep and nearly vertical in structure. Terracon was able to observe the interior of the aforementioned sinkhole, and horizontal space that would accommodate gray bat roosting and use was not observed. Based on the observations made during the site reconnaissance, it does not appear that potential habitat for this species is present on the project site.
- The Snuffbox mussel (*Epioblasma triquetra*) is a federally-listed endangered species listed as occurring in Simpson County, Kentucky. Snuffbox mussels are found in small to medium-sized creeks and in larger rivers and lakes. They are found in swift currents of riffles and shoals and along wave-washed lakeshores over gravel and sand with cobble and boulders. The aquatic habitat observed on the project site consisted of ephemeral channels terminating in karst features and without downstream connections and an isolated wetland; therefore, it is Terracon's opinion that potential habitat for this species is not present on the project site.

3.3 OKNP NHD

Terracon has reviewed project-specific data from the OKNP in an effort to identify any known occurrences of state listed T&E species or any areas of special concern on or in the vicinity of the project site.

Threatened and Endangered Species Review

Hoffman TVA Solar ■ Franklin, Kentucky
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The OKNP NHD identified two species discussed below. The OKNP documentation is included as Appendix C.

- Eastern hellbender (*Cryptobranchus alleganiensis*) is an amphibian species listed as imperiled and vulnerable in the state of Kentucky. This species is typically confined to running water in large streams and rivers. Suitable habitat for this species was not observed on the project site.
- Loggerhead shrike (*Lanius ludovicianus*) is an avian species listed as vulnerable to secure in the state of Kentucky and identified as occurring in the northeastern section of the Franklin, KY USGS 7.5' Topographic Quadrangle. This species is typically found in areas of low vegetation with interspersed short trees/shrubs and/or fences for perches. Suitable habitat for this species was not observed on the project site.

Additionally, two caves were identified in the search radius for the project site. Terracon observed a low-quality karst sinkhole, discussed in the IPAC review in Section 3.1. The natural features of concern were not observed on the Project Site.

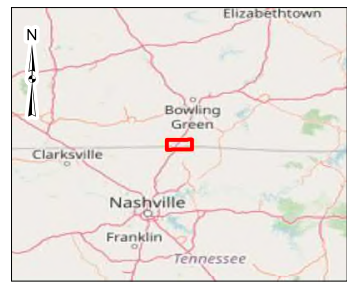
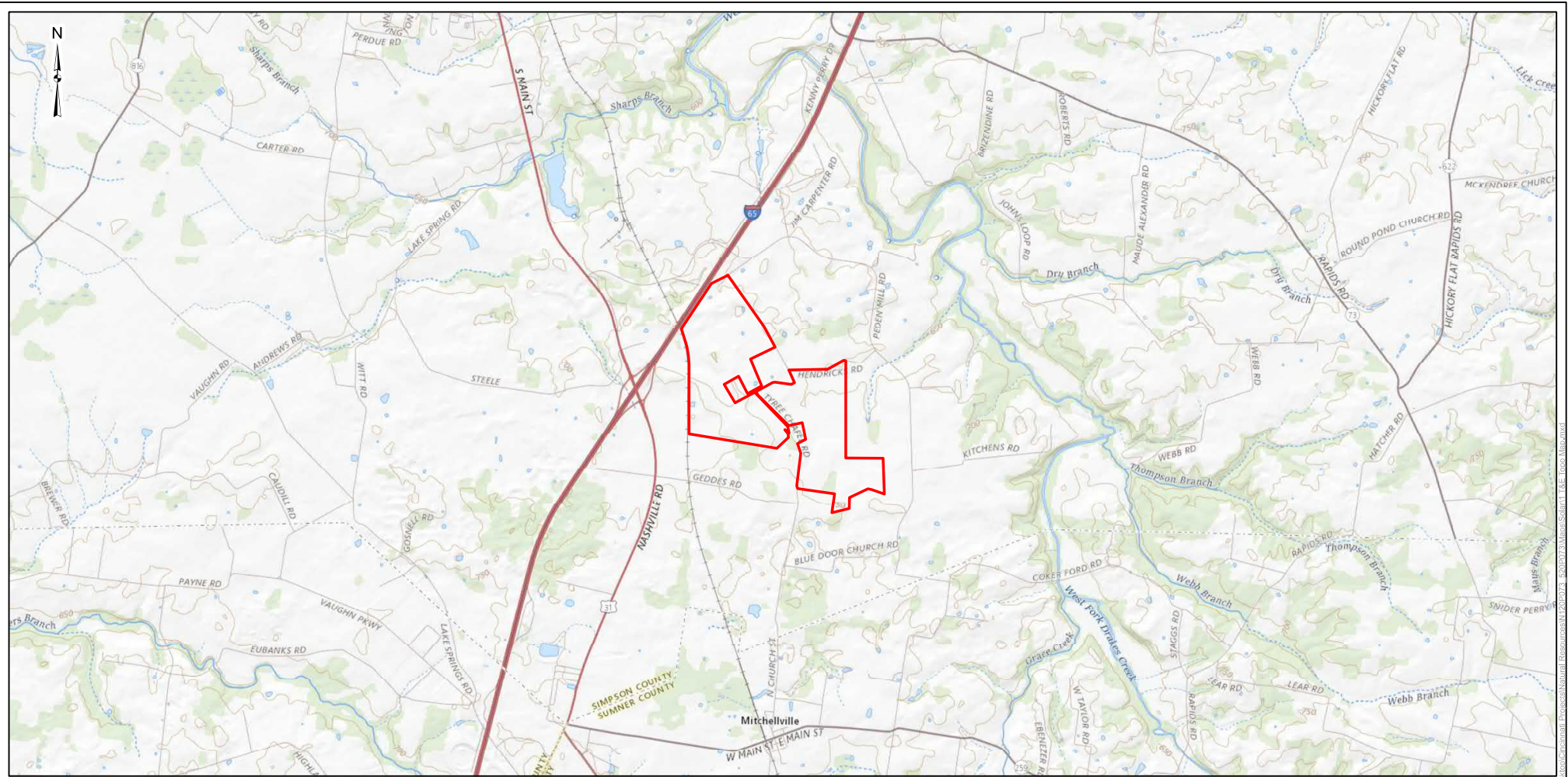
4.0 SUMMARY AND CONCLUSION

A T&E species review of an approximately 538-acre property located near Franklin, Simpson County, Kentucky was conducted to assess the suitability of the project site for state and federally-listed species. The review utilized readily available information including, but not limited to, TVA NHD data, USFWS IPaC data, OKNP NHD data, aerial imagery and other available data to assist with the findings. In addition, a site visit was performed, on November 4, 2020, to characterize the existing site conditions and observe the project site for potential T&E species occurrence and/or the presence of associated habitat.

Based on observations made during the site reconnaissance, it is Terracon's opinion that suitable roosting and/or foraging habitat for the Indiana, Northern long-eared, and Tri-Colored bats is present on the project site.

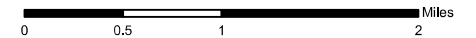
Appendices

APPENDIX A – EXHIBITS



Legend
 Project Site Boundary

DATA SOURCES:
 ESRI WMS - World Aerial Imagery, OpenStreetMap



1:40,000

Project No.:
 N120P073
 Date:
 4/30/2021
 Drawn By:
 MDP
 Reviewed By:
 SEW



611 Lunken Park Drive Cincinnati, Ohio 45226
 PH: (513) 321-5816 FAX: (513) 321-0294

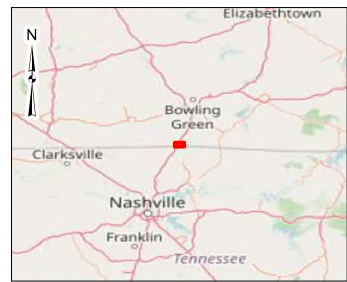
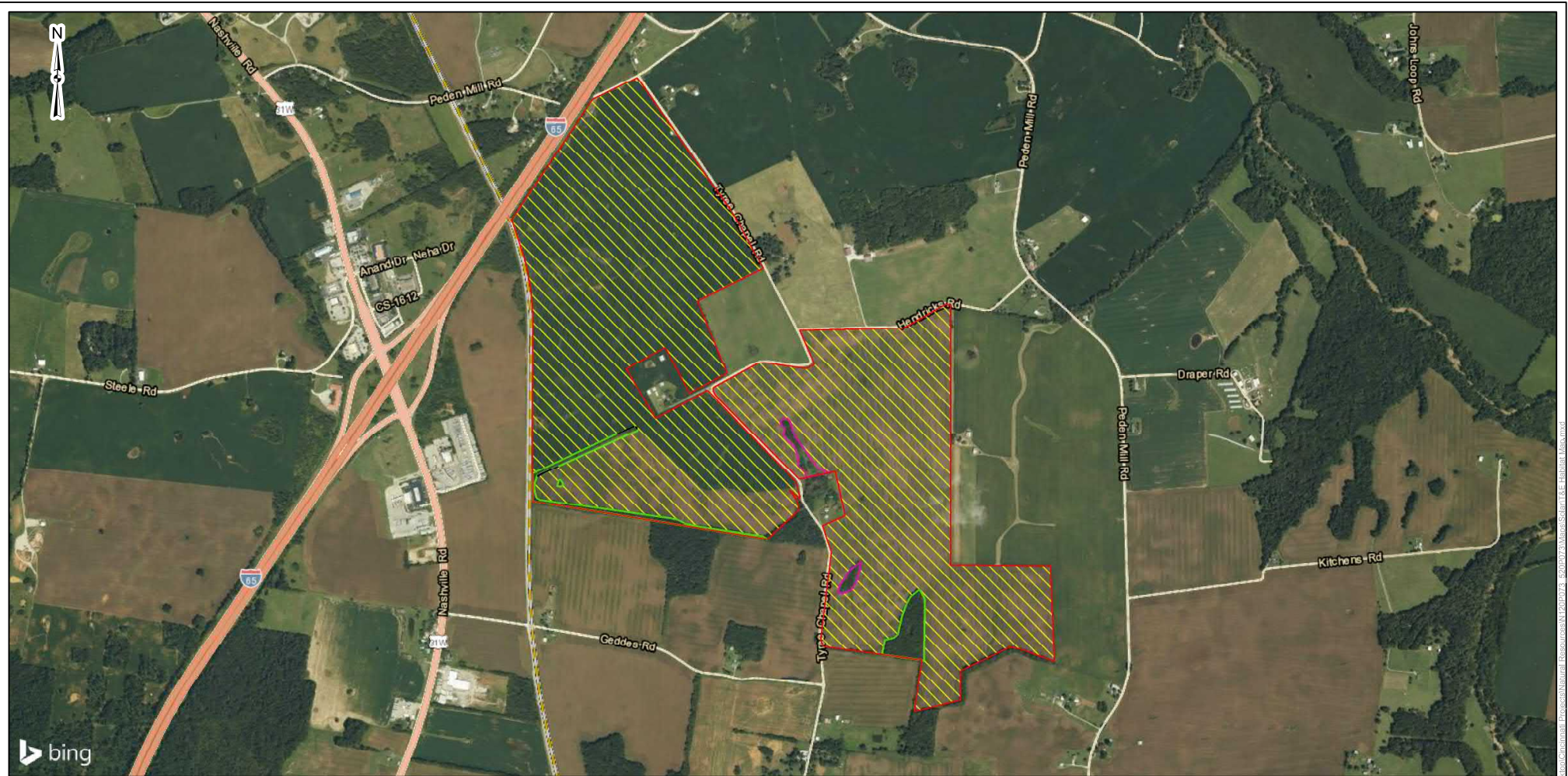
USGS Topographic Map

T&E Species Report
 Hoffman TVA Wetland Delineation
 Tyre Chapel Road
 Simpson County, Kentucky

Exhibit

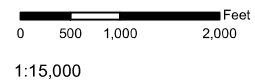
1

C:\Users\jimpatterson\OneDrive - Terracon Consultants\Projects\Natural Resources\N120P073 - 20210723\Map_Solution1_A_S_Docx_Misc\Map



- Legend**
- Project Site Boundary
 - Habitat Types and Bat Roost/Foraging Suitability**
 - Deciduous Forest, Open Understory (Suitable) - 522 acres +/-
 - Herbaceous Vegetation/Row-Crop Agriculture, (Not Suitable)
 - Scrub-Shrub, Thick Understory (Not Suitable)

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap



Project No.:
N120P073
Date:
4/30/2021
Drawn By:
MDP
Reviewed By:
SEW

Terracon

611 Lunken Park Drive Cincinnati, Ohio 45226
PH: (513) 321-5816 FAX: (513) 321-0294

Habitat Map

T&E Species Report
Hoffman TVA Wetland Delineation
Tyree Chapel Road
Simpson County, Kentucky

Exhibit

2

C:\Users\jmcintosh\OneDrive - Terracon\Documents\Projects\Natural Resources\Map Data\8 - 2020\2021\Map_Suitability\KCE_Habitat_Map.mxd

APPENDIX B – GROUND PHOTOGRAPHS

Photographic Documentation

Client: Horus Renewables
Location: Franklin, Kentucky

Project Number: N120P073
Photographer: C. Brendel, M. Perkins

Photograph No. 1

Date: November 4, 2020

Direction: North

Description:
Typical view of the forested area in the southeastern portion of the project site.



Photograph No. 2

Date: January 22, 2021

Direction: -

Description:
Potential Roost Tree in the forested area in the southeastern portion of the project site.



Photographic Documentation

Client: Horus Renewables
Location: Franklin, Kentucky

Project Number: N120P073
Photographer: C. Brendel, M. Perkins

Photograph No. 3

Date: February 3, 2021

Direction: South

Description:
Potential Roost Tree located in tree line in the western portion of the project site.



Photograph No. 4

Date: November 4, 2020

Direction: South

Description:
Karst hole in the forested area in southeastern portion of project site.



Photographic Documentation

Client: Horus Renewables
Location: Franklin, Kentucky

Project Number: N120P073
Photographer: C. Brendel, M. Perkins

Photograph No. 5

Date: November 4, 2020

Direction: Southeast

Description:
Ephemeral Stream (S-2) located in the forested area in the southeastern portion of the project site.



Photograph No. 6

Date: November 4, 2020

Direction: Southeast

Description:
Shrub-scrub area in south-central portion of the project site.



Photographic Documentation

Client: Horus Renewables
Location: Franklin, Kentucky

Project Number: N120P073
Photographer: C. Brendel, M. Perkins

Photograph No. 7

Date: November 4, 2020

Direction: Southeast

Description:

Low quality wetland (W-A) located in western portion of the project site. Tree line containing potential bat habitat is visible in the background – see Photo #3.



Photograph No. 8

Date: November 4, 2020

Direction: East

Description:

General view of the agricultural uplands on site.



APPENDIX C – AGENCY DOCUMENTATION



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
<http://www.fws.gov/frankfort/>

In Reply Refer To:

April 30, 2021

Consultation Code: 04EK1000-2021-SLI-0192

Event Code: 04EK1000-2021-E-02656

Project Name: Hoffman TVA

Subject: Updated 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:

Your concern for the protection of endangered and threatened species is greatly appreciated. The purpose of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA) is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. The species list attached to this letter fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the ESA to provide information as to whether any proposed or listed species may be present in the area of a proposed action. This is not a concurrence letter; additional consultation with the Service may be required.

The Information in Your Species List:

The enclosed species list identifies federal trust species and critical habitat that may occur within the boundary that you entered into IPaC. For your species list to most accurately represent the species that may potentially be affected by the proposed project, the boundary that you input into IPaC should represent the entire “action area” of the proposed project by considering all the potential “effects of the action,” including potential direct, indirect, and cumulative effects, to federally-listed species or their critical habitat as defined in 50 CFR 402.02. This includes effects of any “interrelated actions” that are part of a larger action and depend on the larger action for their justification and “interdependent actions” that have no independent utility apart from the action under consideration (e.g.; utilities, access roads, etc.) and future actions that are reasonably certain to occur as a result of the proposed project (e.g.; development in response to a new road). If your project is likely to have significant indirect effects that extend well beyond the project footprint (e.g., long-term impacts to water quality), we highly recommend that you

coordinate with the Service early to appropriately define your action area and ensure that you are evaluating all the species that could potentially be affected.

We must advise you that our database is a compilation of collection records made available by various individuals and resource agencies available to the Service and may not be all-inclusive. This information is seldom based on comprehensive surveys of all potential habitats and, thus, does not necessarily provide conclusive evidence that species are present or absent at a specific locality. 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 note that "critical habitat" refers to specific areas identified as essential for the conservation of a species that have been designated by regulation. Critical habitat usually does not include all the habitat that the species is known to occupy or all the habitat that may be important to the species. Thus, even if your project area does not include critical habitat, the species on the list may still be present.

Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. 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 associated information. To re-access your project in IPaC, go to the IPaC web site (<https://ecos.fws.gov/ipac/>), select "Need an updated species list?", and enter the consultation code on this letter.

ESA Obligations for Federal Projects:

Under sections 7(a)(1) and 7(a)(2) of the ESA 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.

If a Federal project (a project authorized, funded, or carried out by a federal agency) may affect federally-listed species or critical habitat, the Federal agency is required to consult with the Service under section 7 of the ESA, 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>

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)). Recommended contents of a Biological Assessment are described at 50 CFR 402.12. 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.

ESA Obligations for Non-federal Projects:

Proposed projects that do not have a federal nexus (non-federal projects) are not subject to the obligation to consult under section 7 of the ESA. However, section 9 of the ESA prohibits certain activities that directly or indirectly affect federally-listed species. These prohibitions apply to all individuals subject to the jurisdiction of the United States. Non-federal project proponents can request technical assistance from the Service regarding recommendations on how to avoid and/or minimize impacts to listed species. The project proponent can choose to implement avoidance, minimization, and mitigation measures in a proposed project design to avoid ESA violations.

Additional Species-specific Information:

In addition to the species list, IPaC also provides general species-specific technical assistance that may be helpful when designing a project and evaluating potential impacts to species. To access this information from the IPaC site (<https://ecos.fws.gov/ipac/>), click on the text “My Projects” on the left of the black bar at the top of the screen (you will need to be logged into your account to do this). Click on the project name in the list of projects; then, click on the “Project Home” button that appears. Next, click on the “See Resources” button under the “Resources” heading. A list of species will appear on the screen. Directly above this list, on the right side, is a link that will take you to pdfs of the “Species Guidelines” available for species in your list. Alternatively, these documents and a link to the “ECOS species profile” can be accessed by clicking on an individual species in the online resource list.

Next Steps:

Requests for additional technical assistance or consultation from the Kentucky Field Office should be submitted following guidance on the following page <http://www.fws.gov/frankfort/PreDevelopment.html> and the document retrieved by clicking the “outline” link at that page. When submitting correspondence about your project to our office, please include the Consultation Tracking Number in the header of this letter. (There is no need to provide us with a copy of the IPaC-generated letter and species list.)

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

Consultation Code: 04EK1000-2021-SLI-0192

Event Code: 04EK1000-2021-E-02656

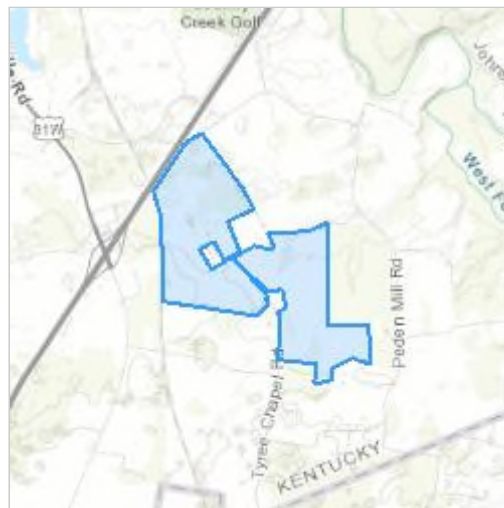
Project Name: Hoffman TVA

Project Type: POWER GENERATION

Project Description: Proposed solar project, timing and layout unknown

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.667986794581594,-86.54619786210196,14z>



Counties: Simpson County, Kentucky

Endangered Species Act Species

There is a total of 4 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 3 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 Fisheries¹, 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.

-
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
<p>Gray Bat <i>Myotis grisescens</i></p> <p>No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ The project area includes potential gray bat habitat. <p>Species profile: https://ecos.fws.gov/ecp/species/6329 General project design guidelines: https://ecos.fws.gov/docs/tess/ipac_project_design_guidelines/doc6422.pdf</p>	Endangered
<p>Indiana Bat <i>Myotis sodalis</i></p> <p>There is final critical habitat for this species. The location of the critical habitat is not available. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. <p>Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ecos.fws.gov/docs/tess/ipac_project_design_guidelines/doc6422.pdf</p>	Endangered
<p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. <p>Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ecos.fws.gov/docs/tess/ipac_project_design_guidelines/doc6422.pdf</p>	Threatened

Clams

NAME	STATUS
<p>Snuffbox Mussel <i>Epioblasma triquetra</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4135</p>	Endangered

Critical habitats

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



ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
OFFICE OF KENTUCKY NATURE PRESERVES

ZEB WEESE
EXECUTIVE DIRECTOR

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-573-2886
TELEFAX: 502-564-7484

April 30, 2021

Michael Perkins
Terracon Consultants, Inc
611 Lunken Park Drive
Cincinnati, OH 45226

Project: N120P073_TVA_Solar; N120P073
Project ID: 21-0144
Project Type: Standard (*customers will be invoiced), 1 mile buffer
(\$120 fee)
Site Acreage: 538.12
Site Lat/Lon: 36.664596 / -86.540351
County: Simpson
USGS Quad: FRANKLIN
Watershed HUC12: Sharps Branch-West Fork Drakes Creek

Dear Michael Perkins,

This letter is in response to your data request for the project referenced above. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Office of Kentucky Nature Preserves occur within your general project area. Your project does pose a concern at this time, therefore please see the attached reports and [report key](#) for more detailed information.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Office of Kentucky Nature Preserves, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Office of Kentucky Nature Preserves." The exact location of plants, animals, and natural communities, if released by the Office of Kentucky Nature Preserves, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Biological Assessment Branch (300 Sower Blvd - 4th Floor, Frankfort, KY, 40601. Phone: 502-782-7828).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the

Project ID: 21-0144

April 30, 2021

Page 2

result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions, or if I can be of further assistance, please do not hesitate to contact me.

Sincerely,

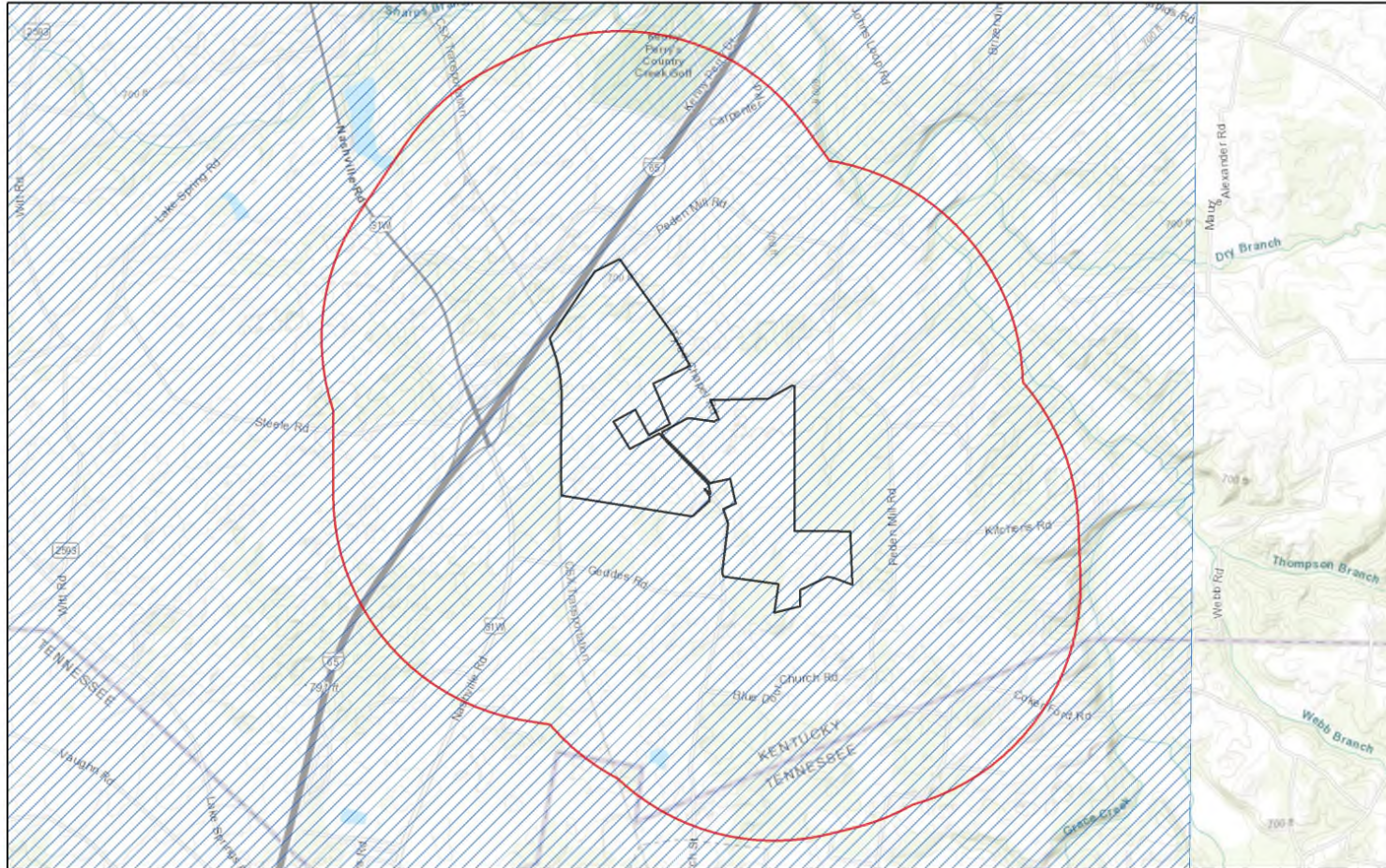
Elizabeth Mason
Geoprocessing Specialist

Standard Occurrence Report
KNP monitored species within 1 Miles of Project Area

EO ID	Scientific Name	Common Name	GRank	SRank	SPROT	USES A	STWG	Last Obs Date	Precision	EO Rank	Lat / Lon	Directions	Habitat
18955	<i>Cave</i>		GU	SNR	N			No Date	S	E		Sensitive Element - Contact KSS at ksscaves.com	
18958	<i>Cave</i>		GU	SNR	N			No Date	S	E		Sensitive Element - Contact KSS at ksscaves.com	
10839	<i>Cryptobranchus alleganiensis alleganiensis</i>	Eastern Hellbender	G3T2	S2S3	S	SOMC	Y	1984-04-25	M	NR		Sensitive Element - Contact OKNP at naturepreserves@ky.gov	Confined to running waters of fairly large streams and rivers, especially in stretches with large flat stones.
15763	<i>Lanius ludovicianus</i>	Loggerhead Shrike	G4	S3S4B,S4N	S	SOMC	Y	1988	Q	NR	36.6875 / -86.5625	NE block of quad	

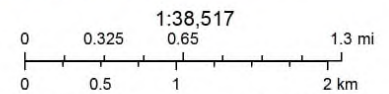
THESE DATA ARE VALID ONLY ON THE DATE ON WHICH THE REPORT WAS GENERATED.
 THESE DATA MAY ONLY BE USED FOR THE PROJECT NAMED ABOVE.

N120P073_TVA_Solar



April 30, 2021

- Project Boundary
- Buffered Project Boundary
- Element Occurrences



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Wetland Delineation Report
Hoffman TVA
Proposed Solar and Utility Transmission Line
Simpson County, Kentucky and Sumner &
Wilson Counties, Tennessee

Date: June 18, 2021

Terracon Project No. N120P073



Prepared for:

Horus Renewables
West Sacramento, California

Prepared by:

Terracon Consultants, Inc.
Cincinnati, Ohio

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials



June 18, 2021

US Army Corps of Engineers
Louisville District
CELRL-RD, Room 752
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-0059

Re: Wetland Delineation Report
Hoffman TVA
Proposed Solar Site and Utility Transmission Line Site
Simpson County, Kentucky and Sumner & Wilson Counties, Tennessee
Terracon Project No. N120P073

Regulatory Branch:

Terracon is pleased to submit the wetland delineation report prepared for Horus Renewables for the above-mentioned project. This assessment describes the observations made during our site visit and other sources of information used to investigate the project site for wetlands and other waterbodies. Based on the results of the assessment, one (1) wetland and three (3) streams are present at the proposed solar project site and eight (8) wetlands, thirty-four (34) streams, and twelve (12) ponds are present at the utility transmission line project site. At this time, we are requesting that your office perform a review of the report for the project site and advise our client if a permit will be required for any proposed activities.

If you have any questions concerning this report, please contact Scott West at (513) 612-9094 or by e-mail at swest@terracon.com.

Sincerely,
TERRACON Consultants, Inc.

Cassie Brendel
Staff Scientist

Scott E. West
Group Manager

Copy to: Mr. Braden Houston
Horus Renewables
3410 Industrial Blvd Ste 102
West Sacramento, CA, 95691

Terracon Consultants Inc. 611 Lunken Park Drive Cincinnati, OH 45226-1813

P 513-321-5816 F 513-321-0294 terracon.com



Environmental

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APPENDIX A – EXHIBITS

- Exhibit 1 – USGS Topographic Maps
- Exhibit 2 – National Wetlands Inventory Maps
- Exhibit 3 – NRCS SSURGO Soils Maps
- Exhibit 4 – Aerial Images (2018)
- Exhibit 5 – FEMA Flood Insurance Rate Maps (FIRMs)
- Exhibit 6 – Wetland Delineation Maps

APPENDIX B – GROUND PHOTOGRAPHS

APPENDIX C – USACE DATA SHEETS & TVA RAPID HABITAT ASSESSMENT FORMS

Wetland Delineation Report
Hoffman TVA
Proposed Solar Site and Utility Transmission Line Site
Simpson County, Kentucky and Sumner & Wilson Counties, Tennessee
Terracon Project No. N120P073
June 18, 2021

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by the Horus Renewables (client) to perform a wetland delineation to determine if wetlands or other waters under the jurisdiction of the United States Army Corps of Engineers (USACE) or the Kentucky Division of Water (KDOW) are present at the approximately 538-acre property, hereafter referred to as the proposed solar project site, and 21-mile linear 100 foot right-of-way (ROW), hereafter referred to as the utility transmission line project site. The proposed solar project site is located along Tyree Chapel Road in Franklin, Simpson County, Kentucky. The utility transmission line project site is located in Sumner and Wilson Counties, Tennessee and Simpson County, Kentucky. The project site locations are depicted on Exhibits 1 and 4 in Appendix A.

The purpose of performing this wetland delineation of the project site was to characterize the existing site conditions, observe the project site for suspect waterbodies and wetlands and provide a recommendation regarding whether or not suspect waterbodies (if observed) would be considered jurisdictional with the USACE or the KDOW.

It is important to note that the findings presented in this report represent Terracon's professional opinion, based upon field observations made during the site visit and our experience with current regulatory guidance under the Clean Water Act. In order to verify the delineation boundaries and jurisdictional classifications presented in this report, the USACE must review this report and make a jurisdictional determination.

2.0 SCOPE OF SERVICES

Terracon performed the following scope of work:

- Reviewed United States Geologic Survey (USGS) topographical maps, National Wetlands Inventory (NWI) maps, United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) soil maps and surveys, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), and aerial photographs to assist with identifying suspect Waters of the United States (WOTUS) and potential wetland areas at the project site.
- Mobilized to the project site to conduct the preliminary site visit.

Wetland Delineation Report

Hoffman TVA Sites ■ Simpson County, KY and Sumner & Wilson Counties, TN
June 18, 2021 ■ Terracon Project: N120P073



- Prepared a map showing approximate locations of suspect waterbodies or wetland areas observed during the site visit, if any.
- Completed a wetland delineation report that included site characterization information, a discussion of applicable data, and recommendations for the project site.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Prior to performing the delineation, several map and aerial photograph resources were reviewed to assist with identifying potential wetland areas at the project site. Each source of data is described in detail below.

3.1 Topographic Map

The United States Department of the Interior Geologic Survey (USGS) 7.5-Minute Topographic Maps of the project site, including portions of the Franklin, KY, Portland, TN, Hunters Point, TN and Lebanon, TN Quadrangles, were reviewed to identify drainages or potential wetlands within the proposed project sites. The topographic maps can be seen as Exhibit 1 in Appendix A.

Proposed Solar Project Site

The project site appears to vary widely in elevation, ranging from approximately 700 feet above sea level (asl) to 770 feet asl throughout the project site. The USGS map indicates the presence of six ponds in the western and northern portions of the project site. The eastern and southern portions of the project site appear to drain to the east-northeast into a tributary of West Fork Drakes Creek. The western and northern portions of the project site do not have apparent drainage pathways.

Utility Transmission Line Project Site

The project site appears to vary widely in elevation, ranging from approximately 700 feet above sea level (asl) to 770 feet asl throughout the project site. The USGS map indicates the presence of multiple intermittent and perennial streams, as well as ponds across the site. Named streams include Cooks Branch, Spencer's Creek, and the Cumberland River in the southern portion, and Grace Creek, and West Fork Drakes Creek in the northern portion.

3.2 National Wetlands Inventory Map

The NWI Map of the project sites were reviewed to identify potential wetland areas. The map for the project sites were published by the U.S. Department of the Interior's Fish and Wildlife Service (USFWS) and depicts probable wetland areas based on stereoscopic analysis of high-altitude aerial photographs and analysis of infrared bands from remotely-sensed imagery. The NWI maps for the project sites are included as Exhibit 2 in Appendix A.

Wetland Delineation Report

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Proposed Solar Project Site

The NWI map depicts eight freshwater, excavated ponds (PUBHx, PUBSCx, and PUBFx) in the western and northern portions of the project site and two freshwater, excavated ponds (PUBHx and PUSCx) in the southern and eastern portions of the project site.

Utility Transmission Line Project Site

The NWI map depicts three perennial streams (R5UBH and R2UBH), four ponds (PUBHh and PUBHx), three intermittent streams (R4SBA and R4SBC), one forested wetland (PFO1A) and two emergent wetlands (PEM1C) throughout the northern portion of the site.

The NWI map depicts one lake (L1UBH), seven ponds (PUBHx, PAB, and PUBSx), one forested wetland (PFO1A), and eight intermittent streams (R4SBC) throughout the southern portion of the site.

3.3 Soil Survey

Data from the soil survey of Simpson County, Kentucky and Sumner and Wilson Counties, Tennessee was reviewed to identify soil types, including hydric soils. Data for the soil survey was compiled by the USDA NRCS, in 1985, 1997, and 1996, respectively. Hydric soils information was gathered from the 'National Hydric Soils List' (USDA NRCS, <https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/>). A soil survey map is included as Exhibit 3 in Appendix A.

The following soil types were identified within the project site boundaries on the soil survey map:

- Baxter gravelly silt loam, 12 to 20 percent slopes (BaD): This soil is defined as deep, well drained, and is typically found on karst uplands, steep hillsides, and ridgetops. The soil color is typically yellowish brown to strong brown. This map unit is not classified as hydric.
- Baxter gravelly silt loam, 2 to 6 percent slopes (BaB): This soil is defined as deep, well drained, and is typically found on karst uplands, steep hillsides, and ridgetops. The soil color is typically yellowish brown to strong brown. This map unit is not classified as hydric.
- Baxter gravelly silt loam, 6 to 12 percent slopes (BaC): This soil is defined as deep, well drained, and is typically found on karst uplands, steep hillsides, and ridgetops. The soil color is typically yellowish brown to strong brown. This map unit is not classified as hydric.
- Mountview silt loam, 2 to 6 percent slopes (MoB): This soil is defined as deep, well drained and is typically found on sloping broad ridgetops and plateau-like areas. The soil color is typically brown to strong brown. This map unit is not classified as hydric.
- Nicholson silt loam, 2 to 6 percent slopes (NhB): This soil is defined as deep, moderately well drained, gently sloping, and is typically found on smooth ridgetops and stream terraces. The soil color ranges from brown to yellowish brown. This map unit is classified as hydric.
- Nolin silt loam (No): This soil is defined as moderately deep, sloping, well drained and is typically found on level floodplains and depressions receiving runoff. The soil color ranges from brown to dark yellowish brown. This map unit is not classified as hydric.

Wetland Delineation Report

Hoffman TVA Sites ■ Simpson County, KY and Sumner & Wilson Counties, TN
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3.4 Aerial Photograph

Recent aerial photographs (2018) of the project site was reviewed to evaluate land use and vegetative cover. The aerial photographs are included as Exhibit 4 in Appendix A.

Proposed Solar Project Site

The project site appears to predominantly consist of row crop agriculture with a small forested area in the southeastern portion of the project site and a low-lying wooded/shrubby area in the eastern-central portion of the project site.

Utility Transmission Line Project Site

The project site appears to predominantly consist of scrub-shrub land, residential land, and agricultural land with various ponds and streams visible throughout the site.

3.5 FEMA FIRM Data

Terracon reviewed FEMA FIRM data to identify areas that may have elevated likelihoods of containing WOTUS. These data are included as Exhibit 5 in Appendix A.

Proposed Solar Project Site

Panel #s 47147C0140C, effective 4/16/2008; 21213C0190C, effective 3/17/2011; 21213C0195C; effective 3/17/2011; 47165C0025G, effective 4/17/2012 indicated that the entirety of the project site is in Zone X, an area of minimal flood hazard.

Utility Transmission Line Project Site

Panel #s 47147C0140C, effective 4/16/2008; 21213C0190C, effective 3/17/2011; 21213C0195C; effective 3/17/2011; 47165C0025G, effective 4/17/2012 indicated that a large portion of the northern portion of the site is in Zone A, 100-year floodplain, surrounding the perennial stream on site. A small portion of the southern portion of the site is also in Zone A, surrounding the lake on site. Otherwise, the remainder of the project site is in Zone X, an area of minimal flood hazard.

4.0 FIELD TECHNIQUES

Terracon personnel conducted a reconnaissance of the project site on November 4, 2020, January 20-22, January 27, and February 2, 2021 to characterize the existing site conditions and observe for the presence of wetlands and potential jurisdictional waters. Characteristics of jurisdictional waters and wetland areas were assessed utilizing the criteria detailed in sections 4.1 and 4.2 of this report. The evaluation methods generally followed the routine on-site determination method referenced in the 1987 USACE Manual and 2012 Eastern Mountains and Piedmont Regional Supplement.

Wetland Delineation Report

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4.1 Wetland Observations

Wetlands generally have three essential characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Based on NWI data, aerial imagery and topographical data, on-site areas were investigated for potential wetland properties. Additional areas were investigated, based on observations made during the site reconnaissance. Data regarding the three essential characteristics was gathered within observed suspect wetland areas to further delineate boundaries.

4.1.1. Plant Community Assessment

Suspect areas were visually observed to determine the species, when possible, and absolute percentage of ground cover for four stratum of plant community types. Herbs were generally observed within a five-foot radius, shrubs/saplings within a fifteen-foot radius, and trees and vines within a thirty-foot radius of the observation location.

For each species of vegetation observed, their wetland indicator status was evaluated. Indicator status was determined using the NRCS Plants Database. Indicator categories for vegetation are presented below:

- Obligate Wetland (OBL) - occur almost always (estimated probability greater than 99%) under natural conditions in wetlands.
- Facultative Wetland (FACW) - usually occur in wetlands (estimated probability 67% - 99%) but occasionally found in non-wetlands.
- Facultative (FAC) - equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).
- Facultative Upland (FACU) - usually occur in non-wetlands (estimated probability 67% - 99%) but occasionally found in wetlands.
- Obligate Upland (UPL) – rarely occur in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The percent cover of each stratum was determined and dominance was evaluated. Dominant species were the most abundant species that accounted for more than 20 percent of the absolute percent coverage of the stratum. The number of dominant species with an indicator status of OBL, FACW, and/or FAC was compared to the total number of dominant species across all strata. Typically, when more than 50 percent of the dominant species had an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation was present.

Wetland Delineation Report

Hoffman TVA Sites ■ Simpson County, KY and Sumner & Wilson Counties, TN
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If the percentage of dominant species with an indicator status of OBL, FACW, and/or FAC was less than 50 percent, prevalence index and morphological adaptations may have been evaluated to confirm if hydrophytic vegetation was present or absent.

4.1.2. Hydric Soils Assessment

After Terracon evaluated wetland vegetation, subsurface soil samples were collected using a soil probe or similar method. The samples were collected to a depth of approximately 15 inches below ground surface and were visually compared to Munsell Soil Color Charts (Munsell, 2009), which aided in the evaluation of hydric soil characteristics. The soil samples were further examined for hydric soil indicators including, but not limited to, histosol, thick dark surface, sandy gleyed matrix, sandy redox, loamy gleyed matrix, redox dark surface, and/or redox depressions. If these or other hydric soil indicators were observed in the subsurface soil sample, the observation location was considered to have hydric soil.

4.1.3 Wetland Hydrology Assessment

Visual indicators of wetland hydrology were evaluated. Examples of primary wetland hydrology indicators include, but are not limited to, surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, iron deposits, inundation visible on aerial imagery, sparsely vegetated concave surface, and water-stained leaves. If at least one primary or two secondary indicators were observed, the observation location was considered to have wetland hydrology.

4.1.4 Classification of Wetlands

Upon completion of the review of the three wetland criteria at each area, a wetland determination was made. Under normal circumstances, if one or more of the wetland criteria were not identified, the area was not considered to be a wetland. If all three wetland indicators were identified, the area was classified as wetland. Additional observations were made throughout the wetland area to define the wetland/non-wetland boundary. Vegetation, soil and hydrology assessment data from at least one location within the wetland and one upland location outside of the wetland were recorded on a USACE Wetland Determination Form (Data Sheet).

4.2 Other Waters Observations

Terracon also made observations of site features that may be considered a jurisdictional waterbody. If a potential jurisdictional waterbody was identified, observations regarding its characteristics were recorded. Potential jurisdictional waterbodies were evaluated based on the observation of the following characteristics:

- Flow Characteristics:
 - Perennial: contains water at all times except during extreme drought.

Wetland Delineation Report

Hoffman TVA Sites ■ Simpson County, KY and Sumner & Wilson Counties, TN
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- Intermittent: carries water a considerable portion of the time, but ceases to flow occasionally or seasonally.
- Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.
- Ordinary High-Water Mark:
 - The limit line on the shore established by the fluctuation of the water surface. It is shown by such things as a clear line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, the presence of litter and debris or other features influenced by the surrounding area.
- Bank Shape Descriptions:
 - Undercut: banks that overhang the stream channel
 - Steep: bank slope of approximately greater than 30 degrees
 - Gradual: bank slope of approximately 30 degrees or less
- Aquatic Habitat Descriptions:
 - Pool: deeper portion of a stream where water flows slower than in neighboring, shallower portions, smooth surface, and finer substrate
 - Riffle: shallow area in a stream where water flows swiftly over gravel and rock or other coarse substrate resulting in a rough flow and a turbulent surface
 - Run: section of a stream with a low or high velocity and with little or no turbulence on the surface of the water.

5.0 FIELD OBSERVATIONS RESULTS

On November 4, 2020, January 20-22, January 27, and February 2, 2021 Terracon performed field observations at the project site. The proposed solar project site predominantly consisted of row crop agricultural land, and with a small forested area located in the southeastern portion of the project site. Karst features such as sinkholes and limestone cobble were observed in low-lying areas across the project site. The utility transmission line project site consisted of an existing utility line right of way ranging from Lebanon, Tennessee to Franklin, Kentucky. Ground photographs, included in Appendix B, provide an indication of the physical characteristics observed during the site visit. Please refer to Appendix A: Exhibit 6 for a map of waters observed on the project site.

Descriptions of the observed areas are listed in the following sections.

5.1 Plant Communities Found at Project Site

5.1.1 Emergent Wetlands

The dominant plant species observed in the emergent wetlands were phragmites (*Phragmites australis*), cattail (*Typha angustifolia*), box elder (*Acer negundo*) saplings, and Virginia whitegrass (*Leersia virginica*).

Wetland Delineation Report

Hoffman TVA Sites ■ Simpson County, KY and Sumner & Wilson Counties, TN

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5.1.2 Forested Uplands

The dominant plant species observed in the forested uplands were black walnut (*Juglans nigra*), red maple (*Acer rubrum*), white grass (*Leersia virginica*), amur honeysuckle (*Lonicera maackii*), tulip poplar (*Liriodendron tulipifera*), shagbark hickory (*Carya ovata*), and hackberry (*Celtis occidentalis*).

5.1.3 Agricultural Uplands

The dominant plant species observed in the row crop agricultural upland portions of the site were remnants of corn (*Zea mays*) and soybeans (*Glycine max*).

5.2 Wetland Area Description

Proposed Solar Project Site

The following wetlands were observed at the project site during the site reconnaissance.

Wetland	Size (acres)	Cowardin Classification	Water Sources	USACE Jurisdiction (Y/N)	TVARAM Scores	Anticipated Impacts
A	0.22	PEM	Precipitation, Surface Runoff	N		X
TOTAL	0.22					

PEM – Palustrine emergent wetland

Wetland A appears to be a former pond that has been filled in. The wetland had been impacted by agricultural machinery at the time of the site reconnaissance resulting in being sparsely vegetated. Based on the lack of surface connection to Traditional Navigable Waters (TNWs), it is Terracon’s opinion that this wetland is not jurisdictional to the USACE. This decision is based on 33 CFR 328.3(b)(1), which includes waters or water features that are not identified in 33 CFR 328.3(a)(1), (2), (3), or (4).

Utility Transmission Line Project Site

The following wetlands were observed at the project site during the site reconnaissance.

Wetland	Size (acres)	Cowardin Classification	Water Sources	USACE Jurisdiction (Y/N)	TVARAM Scores	Anticipated Impacts (acres)
A	1.49	PEM	Precipitation, Surface Runoff	Y	32	0.51
B	0.01	PEM	Precipitation, Surface Runoff	N	15	0
C	0.06	PEM	Precipitation, Surface Runoff	N	19	0
D	0.10	PEM	Precipitation, Surface Runoff	Y	38	0

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E	0.01	PEM	Precipitation, Surface Runoff	Y	26	0
F	2.63	PEM	Precipitation, Surface Runoff	N	64	0
G	0.98	PEM	Precipitation, Surface Runoff	Y	35	0
H	0.08	PEM	Precipitation, Surface Runoff	N	19	0
TOTAL	5.36					0.51 acres
	acres					

PEM – Palustrine Emergent Wetland; PSS – Palustrine Scrub-Shrub Wetland; PFO – Palustrine Forested Wetland

Wetlands B, C, F, and H do not appear have significant connection to any on-or-off site TNWs and are therefore believed to be considered non-jurisdictional to the USACE. This decision is based on 33 CFR 328.3(b)(1), which includes waters or water features that are not identified in 33 CFR 328.3(a)(1), (2), (3), or (4). The remaining on-site wetlands appear to have a connection to TNWs and are considered jurisdictional to the USACE.

5.3 Streams

Proposed Solar Project Site

The following streams were observed at the project site during the site reconnaissance. All three streams terminated in karst features and did not have connection to TNWs.

Streams	Length (linear feet)	Flow Regime	Average Stream Width at Top of Bank (feet)	USACE Jurisdiction (Y/N)	TVARAM SCORES	Anticipated Impacts
1	451	Ephemeral	7-9	No	N/A	X
2	442	Ephemeral	7-9	No	N/A	X
3	462	Ephemeral	5-7	No	N/A	X
TOTAL	1,355 lf					

Ephemeral streams on the project site are not federally regulated under the Navigable Waters Protection Rule of 2020, while intermittent and perennial streams are regulated. This designation is based on 33 CFR 328.3(b)(3), which identifies ephemeral features as ephemeral streams, swales, gullies, rills, and pools.

Utility Transmission Line Project Site

The following streams were observed at the project site during the site reconnaissance.

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Streams	Length (linear feet)	Flow Regime	Average Stream Width at Top of Bank (feet)	USACE Jurisdiction (Y/N)	TVARAM Scores	Anticipated Impacts (linear feet)
1 (West Fork Dry Creek)	487	Perennial	7-9	Y	68	0
2	101	Intermittent	7-9	Y	34	
3	106	Ephemeral	5-7	N	N/A	81
4	659	Ephemeral	2-4	N	N/A	
5	106	Ephemeral	5-7	N	N/A	190
6	172	Intermittent	2-4	Y	34	0
7	83	Ephemeral	2-4	N	N/A	0
8 (Grace Creek)	138	Perennial	1-3	Y	40	0
9	154	Ephemeral	2-4	N	N/A	0
10 (Cumberland River)	122	Perennial	2-4	Y	68	0
11	112	Intermittent	2-4	Y	25	0
12	296	Ephemeral	5-7	N	N/A	0
13	106	Ephemeral	5-7	N	N/A	0
14	33	Ephemeral	5-7	N	N/A	0
15	37	Ephemeral	3-5	N	N/A	0
16	116	Intermittent	2-4	Y	20	0
17	54	Intermittent	10-12	Y	34	0
18	114	Ephemeral	3-5	N	N/A	0
19	102	Perennial	3-5	Y	37	0
20	205	Intermittent	3-5	Y	35	0
21 (Dry Fork Creek)	113	Perennial	3-5	Y	41	0
22	116	Intermittent	5-7	Y	24	0
23	105	Intermittent	3-5	Y	34	0
24	105	Intermittent	3-5	Y	34	0
25	361	Ephemeral	3-5	N	N/A	0
26 (Spencer Creek)	133	Perennial	2-4	Y	47	0
27 (Cooks Branch)	136	Perennial	8-10	Y	44	0
28	200	Intermittent	2-4	Y	23	0
29	109	Ephemeral	5-7	N	N/A	0
30A	133	Ephemeral	2-4	N	N/A	0
30B	373	Intermittent	5-7	N	N/A	0
31	126	Ephemeral	5-7	N	N/A	0

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32	105	Ephemeral	5-7	N	N/A	0
33	117	Intermittent	5-7	Y	27	0
TOTAL	5,535 lf					271 lf

Streams 3-5, 7, 9, 12-15, 18, 25, 29, 30, 31, and 32 are considered ephemeral, which are considered non-jurisdictional features to the USACE. This designation is based on 33 CFR 328.3(b)(3), which identifies ephemeral features as ephemeral streams, swales, gullies, rills, and pools. The remainder of on-site streams are considered intermittent or perennial, which are considered jurisdictional to the USACE.

5.4 Other Waters

Proposed Solar Project Site

Other waters were not observed at the project site during the site reconnaissance.

Utility Transmission Line Project Site

The following ponds were observed at the project site during the site reconnaissance.

Pond	Size (acres)	Cowardin Classificati on	Water Sources	USACE Jurisdiction (Y/N)	Anticipated Impacts (acres)
A	0.70	PUBHx	Precipitation, Surface Runoff,	N	0.09
B	0.10	PUBHx	Precipitation, Surface Runoff	N	0
C	0.12	PUBHx	Precipitation, Surface Runoff	N	0
D	0.25	PUBHh	Precipitation, Surface Runoff	N	0.02
E	0.02	PUBHx	Precipitation, Surface Runoff	N	0
F	0.01	PUBHx	Precipitation, Surface Runoff	N	0
G	0.03	PUBHx	Precipitation, Surface Runoff	N	0
H	0.22	PUBHx	Precipitation, Surface Runoff	N	0
I	0.02	PUBHx	Precipitation, Surface Runoff	N	0
J	0.06	PUBHx	Precipitation, Surface Runoff	N	0
K	0.01	PUBHx	Precipitation, Surface Runoff	N	0
L	0.01	PUBHx	Precipitation, Surface Runoff	N	0
TOTAL	1.55 acres				0.11 acres

PUBHh/PUBHx – Palustrine unconsolidated bottom; diked or impounded

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The on-site ponds do not appear to have connections to TNWs and are therefore considered non-jurisdictional to the USACE. This designation is based on 33 CFR 328.3(b)(3), which identifies ephemeral features as ephemeral streams, swales, gullies, rills, and pools.

6.0 SUMMARY AND CONCLUSIONS OF FIELD OBSERVATIONS

A wetland delineation was conducted at an approximately 538-acre proposed solar site located near Franklin, Kentucky and at an approximately 21-mile linear utility transmission line site located near Lebanon, Tennessee and Franklin, Kentucky on November 4, 2020, January 20-22, 27, and February 2, 2021. A review of the project sites was conducted utilizing readily available information including, but not limited to, topographical, aerial, soils, floodplain, and wetland data. In addition, a preliminary site visit was performed to characterize the existing site conditions and observe the project site for suspect waterbodies and wetlands (if any). A summary of field observations and conclusions concerning jurisdictional status is outlined in the following sections.

6.1 Wetlands

Proposed Solar Project Site

One wetland, totaling 0.22-acres, was observed on the project site during the site reconnaissance. Terracon considers the on-site wetland to be non-jurisdictional based on the lack of significant nexus to TNWs. This decision is based on 33 CFR 328.3(b)(1), which includes waters or water features that are not identified in 33 CFR 328.3(a)(1), (2), (3), or (4). All delineated, on-site water features will be avoided, and impacts are not anticipated.

Utility Transmission Line Project Site

Eight (8) wetlands, totaling 5.36-acres, were observed on the project site during the site reconnaissance. Wetlands B, C, F, and H do not appear have significant connection to any on-or-off site TNWs and are therefore considered non-jurisdictional to the USACE. This decision is based on 33 CFR 328.3(b)(1), which includes waters or water features that are not identified in 33 CFR 328.3(a)(1), (2), (3), or (4). The remaining on-site wetlands appear to have a connection to TNWs and are considered jurisdictional to the USACE. Approximately 0.51 acres of Wetland A may potentially be impacted by transmission line pole replacement and upgrade activities.

6.2 Streams

Proposed Solar Project Site

Three (3) streams, totaling 1,355 linear feet, were observed on the project site during the site reconnaissance. These streams are considered non-jurisdictional based on their ephemeral flow status and lack of connection, due to termination in karst features, to TNWs. This decision is based on 33 CFR 328.3(b)(3), which defines ephemeral features as including ephemeral streams, swales, gullies, rills, and pools. All delineated, on-site water features will be avoided, and impacts are not anticipated.

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Utility Transmission Line Project Site

Thirty-three (33) streams, totaling 5,535 linear feet, were observed on the project site during the site reconnaissance. Streams 3-5, 7, 9, 12-15, 18, 25, 29, 30, 31, and 32 are considered ephemeral, which are considered non-jurisdictional features to the USACE. This designation is based on 33 CFR 328.3(b)(3), which identifies ephemeral features as ephemeral streams, swales, gullies, rills, and pools. The remainder of on-site streams are considered intermittent or perennial, which are considered jurisdictional to the USACE. Approximately 271 linear feet of ephemeral Stream 3 and ephemeral Stream 4 may potentially be impacted by transmission line pole replacement and upgrade activities.

6.3 Other Waters

Proposed Solar Project Site

Other waters were not observed on the project site during the site reconnaissance.

Utility Transmission Line Project Site

Twelve (12) ponds, totaling 1.55-acres, were observed on the project site during the site reconnaissance. The on-site ponds do not appear to have connections to TNWs and are therefore considered non-jurisdictional to the USACE. This designation is based on 33 CFR 328.3(b)(3), which identifies ephemeral features as ephemeral streams, swales, gullies, rills, and pools. Approximately 0.11 acres of Ponds A and D may potentially be impacted by transmission line pole replacement and upgrade activities.

7.0 RECOMMENDATIONS

According to our preliminary site investigation, one (1) wetland and three (3) streams on the proposed solar project site and eight (8) wetlands, thirty-four (34) streams, and twelve (12) ponds at the utility transmission line project site. However, for all on-site areas, only the USACE can make the final determination on the jurisdictional status of waterbodies, and on the need for permit processing and compensatory mitigation. Additionally, non-jurisdictional wetlands, ponds, and streams may also be considered Waters of the State and could potentially be regulated by the KDOW. However, at this time, it is Terracon's understanding that the State of Kentucky is not regulating isolated wetlands and ephemeral streams. Again, Terracon recommends a copy of this report be submitted to the USACE for their final determination of the findings of this delineation on the site. The USACE can be contacted at the following address:

US Army Corps of Engineers
Louisville District