APPENDIX G

WETLAND DELINEATION ASSESSMENT

December 16, 2020

Geenex Solar
5960 Fairview Road, Suite 400
Charlotte, North Carolina 28210

Attn: Mr. Patrick Rust
P: (828) 598-3031
E: Patrick.rust@geenexsolar.com

Re: Wetland Delineation Report
Northern Bobwhite Solar
Springfield Road
Lebanon, Marion County, Kentucky
Terracon Project No. N1207222

Dear Mr. Rust:

Terracon is pleased to submit the wetland delineation report for the above-referenced project. Based on the results of the assessment, Terracon observed seven (7) wetlands, forty-five (45) streams, and thirty-five (35) ponds on the project site.

A cover letter addressed to the U.S. Army Corps of Engineers (USACE) has been included with the enclosed report; however, a copy of this report has not been provided to USACE by Terracon. A copy of the wetland delineation report and attached letter should be submitted to USACE for review and concurrence. The USACE can be contacted at the following address:

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

Terracon appreciates the opportunity to have worked for you on this project. If you have any questions regarding the content of this report, please contact me at (513) 612-9094 or via email at swest@terracon.com.

Sincerely,
TERRACON Consultants, Inc.

Cassie Brendel
Staff Scientist

for

Scott E. West
Group Manager

Wetland Delineation Report

Northern Bobwhite Solar

Springfield Road

Lebanon, Marion County, Kentucky

Date: December 16, 2020

Terracon Project No. N1207222

Prepared for:

Geenex Solar

Charlotte, North Carolina

Prepared by:

Terracon Consultants, Inc.

Cincinnati, Ohio

December 16, 2020

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
Northern Bobwhite Solar
Springfield Road
Lebanon, Marion County, Kentucky
Terracon Project No. N1207222

Regulatory Branch:

Terracon is pleased to submit the wetland delineation report prepared for Geenex Solar 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, seven (7) wetlands, forty-five (45) streams, and thirty-five (35) ponds are present at the 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

for

Scott E. West
Group Manager

Copy to: Mr. Patrick Rust
Geenex Solar
5960 Fairview Road, Suite 400
Charlotte, North Carolina 28210

TABLE OF CONTENTS

Page

Wetland Delineation Report
Northern Bobwhite Solar
Springfield Road
Lebanon, Marion County, Kentucky
Terracon Project No. N1207222
December 16, 2020

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Geenex (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 1,990-acre property, hereafter referred to as the project site. The project site is located in Lebanon, Marion County, Kentucky. The project site location is 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.

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 wetland areas at the project site.
- Mobilized to the project site to conduct the preliminary site visit.
- 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 were reviewed to identify drainages or potential wetlands within the project site. The project site appears to vary widely in elevation, ranging from approximately 800 feet above sea level (asl) to 960 feet asl throughout the project site. The USGS map indicates the presence of many perennial and intermittent streams and ponds across the project site. The eastern portion of the project site drains to the north-northeast into Logan Branch with a small, southeastern portion of the project site draining into Buck Branch. The central portion of the project site drains northward into an unnamed tributary of Servant Run. The western portion of the project site drains into Cartwright Creek and Casey Branch, a tributary of Cartwright Creek. The topographic map can be seen as Exhibit 1 in Appendix A.

3.2 National Wetlands Inventory Map

The NWI Map of the project site was reviewed to identify potential wetland areas. The map for the project site was 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 map depicts one freshwater, emergent wetland (PEM1C) in the northeastern portion of the project site and multiple freshwater ponds (PUBHh, PUBFH, and PUBH) and intermittent and perennial streams (R4SBC and R5UBH) across the project site, which appear to drain as depicted on the topographic map. The NWI map for the project site is included as Exhibit 2 in Appendix A.

3.3 Soil Survey

Data from the soil survey of Marion County, Kentucky was reviewed to identify soil types, including hydric soils. Data for the soil survey was compiled by the USDA NRCS, in 1991. 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:

- Cynthiana-Faywood-Rock outcrop complex, 20 to 60 percent slopes, eroded (CyF2): This soil is defined as shallow, moderately deep, well drained and is found in steep areas where rock

outcrops exist. The soil color is typically light yellowish brown to yellowish brown. This map unit is not classified as hydric.

- Elk silt loam, 2 to 6 percent slopes, rarely flooded (EkB): This soil is defined as deep, well drained, gently sloping and is typically found on stream terraces. The soil color is typically light yellowish brown to yellowish brown. This map unit is not classified as hydric.
- Elk silt loam, 6 to 12 percent slopes, eroded (EkC2): This soil is defined as deep, well drained, sloping and is typically found on stream terraces. The soil color is typically light yellowish brown to yellowish brown. This map unit is not classified as hydric.
- Fairmount-Rock outcrop complex, 20 to 50 percent slopes (FaF): This soil is defined as deep, moderately well drained and is typically found on side slopes in upland areas. The soil color is typically light yellowish brown to yellowish brown. This map unit is not classified as hydric.
- Faywood silty clay loam, 12 to 20 percent slopes, eroded (FaD2): This soil is defined as moderately deep, sloping, well drained and is typically found on ridgetops and side slopes in uplands. This map unit is not classified as hydric.
- Faywood silty clay loam, 6 to 12 percent slopes, eroded (FaC2): This soil is defined as moderately deep, sloping, well drained and is typically found on ridgetops and side slopes in uplands. This map unit is not classified as hydric.
- Faywood-Cynthiana complex, 20 to 30 percent slopes, eroded, very rocky (FcE2): This soil is defined as moderately deep and shallow, well drained. This soil is not classified as hydric.
- Lawrence silt loam, 0 to 2 percent slopes, rarely flooded (La): This soil is defined as deep, somewhat poorly drained, nearly level and is typically found on low stream terraces and upland ridgetops. The soil color ranges from grayish brown to yellowish brown. This map unit is classified as hydric.
- Lowell silty clay loam, 12 to 20 percent slopes, severely eroded (LoD2): This soil is defined as deep, well drained, moderately sloping and is typically found on uplands. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Lowell silty clay loam, 6 to 12 percent slopes, severely eroded (LpC3): This soil is defined as deep, well drained, moderately sloping and is typically found on uplands. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Lowell-Faywood silt loams, 12 to 20 percent slopes (uLfD): This soil is defined as deep, well drained, moderately sloping and is typically found on uplands. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Lowell-Faywood silt loams, 6 to 12 percent slopes (uLfC): This soil is defined as deep, well drained, moderately sloping and is typically found on uplands. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Lowell-Faywood silt loams, 2 to 6 percent slopes, eroded (uLsoB): This soil is defined as deep, well drained, moderately sloping and is typically found on uplands. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Newark silt loam, frequently flooded (Ne): This soil is defined as very deep, somewhat poorly drained, has very high water capacity, and is typically found in flood plains in river valleys. The soil color ranges from dark grayish brown to yellowish brown. This This map unit is 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 broad ridgetops. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Nicholson silt loam 6 to 12 percent slopes, eroded (NhC2): This soil is defined as deep, moderately well drained, gently sloping, and is typically found on broad ridgetops. The soil color ranges from grayish brown to yellowish brown. This map unit is not classified as hydric.
- Nolin silt loam, 0 to 2 percent slopes, frequently flooded (No): This soil is defined as moderately well drained, sloping, and is typically found along drainageways. The soil color ranges from grayish brown to yellowish brown. This map unit is classified as hydric.
- Otwell silt loam, 2 to 8 percent slopes (OtB): This soil is defined as deep, moderately well drained, gently sloping, and is typically found on low stream terraces. The soil color ranges from dark grayish brown to yellowish-brown. This map unit is not classified as hydric.
- Sandview silt loam, 2 to 6 percent slopes (SaB): This soil is defined as deep, well drained, gently sloping, and is typically found on upland ridges. The soil color ranges from dark grayish brown to yellowish-brown. This map unit is not classified as hydric.
- Shelbyville silt loam, 2 to 6 percent slopes (SeB): This soil is defined as deep, well drained, gently sloping, and is typically formed in loess and associated, underlying limestone residuum. The soil color ranges from dark brown to brown. This map unit is not classified as hydric.

3.4 Aerial Photographs

A recent aerial photograph (2018) of the project site was reviewed to evaluate land use and vegetative cover. The project site appears to predominantly consist of pasture and/or grasslands, with a minor row crop agriculture component, and with interspersed forested areas, streams, and ponds. Additionally, the aerials depict photo locations of observed water features across the project site. The aerial photographs are included as Exhibit 4 in Appendix A.

3.5 FEMA FIRM Data

Terracon reviewed FEMA FIRM data (Panel #s 21229C0200C, effective 2/17/2010; 21229C0215C, effective 2/17/2010; 211550075C, effective 1/6/2010; 21155C0160C, effective 1/6/2010; 21155C0180C, effective 1/6/2010; and 21158C0200C, 1/6/2010) to identify areas that may have elevated likelihoods of containing WOTUS. The FEMA FIRM data indicated that the majority of the project site is in Zone X, an area of minimal flood hazard; however, a 100-year flood plain, Zone AE, exists in the northeastern portion of the project site, along Logan Branch, and in the southwestern portion of the project site, along Cartwright Creek. The FEMA FIRM data are included as Exhibit 5 in Appendix A.

4.0 FIELD TECHNIQUES

Terracon personnel, Cassie Brendel and Jim Schwieterman conducted a reconnaissance of the project site on May 19-21, 27-28, September 8, and December 9, 2020, 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.

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.

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.
  - 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 May 19-21, 27-28, September 8, and December 9, 2020, Terracon performed field observations at the project site. The project site predominantly consisted of pasture and/or grasslands, with areas of row crop agricultural land, and with interspersed forested areas. 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.

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 wetland areas were narrowleaf cattail (*Typha angustifolia*), softstem bulrush (*Schoenoplectus tabernaemontani*), woolgrass (*Scirpus*

cyperinus), spikerush (*Eleocharis palustris*), brome-like sedge (*Carex bromoides*), reed canary grass (*Phalaris arundinacea*), fox sedge (*Carex vulpinoidea*), smartweed (*Polygonum hydropiperoides*), jewelweed (*Impatiens capensis*), and black willow (*Salix nigra*).

5.1.2 Pasture/Grassland Uplands

The dominant plant species observed in the pasture/grassland upland areas were Kentucky bluegrass (*Poa pratensis*), fescue (*Festucca* sp.), yellow foxtail (*Setaria pumila*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), and sweetbriar rose (*Rosa rubiginosa*).

5.1.3 Forested Uplands

The dominant plant species observed in the forested uplands were black walnut (*Juglans nigra*), red maple (*Acer rubrum*), sugar maple (*Acer saccharinum*), stinging nettle (*Urtica dioica),* chestnut hickory (*Carya glabra*), amur honeysuckle (*Lonicera maackii*), tulip poplar (*Liriodendron tulipifera*), shagbark hickory (*Carya ovata*), hackberry (*Celtis occidentalis*), and eastern redcedar (*Juniperus virginiana*).

5.1.4 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

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

Wetland	Size (acres)	Cowardin Classification	Water Sources	USACE Jurisdictional (Y/N)
A	0.09	PEM	Precipitation, Surface Runoff	Y
B	0.09	PEM	Precipitation, Surface Runoff, Stream 11	Y
C	0.04	PEM	Precipitation, Surface Runoff, Stream 11	Y
D	0.19	PEM	Precipitation, Surface Runoff, Pond 27	Y
E	0.01	PEM	Precipitation, Surface Runoff, Stream 9	Y
F	0.61	PEM	Precipitation, Surface Runoff, Stream 42	Y
G	0.38	PEM	Precipitation, Surface Runoff, Stream 49	Y
TOTAL	**1.41**			

PEM – Palustrine emergent wetland

The on-site wetlands are considered jurisdictional based on their significant nexus to Traditional Navigable Waters (TNWs).

5.3 Streams

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

Streams	Length (linear feet)	Flow Regime	Average Stream Width at Top of Bank (feet)	USACE Jurisdictional (Y/N)
1	1,319	Intermittent	7-9	Yes
2	513	Ephemeral	7-9	No
3	2,227	Ephemeral	5-7	No
4	600	Ephemeral	2-4	No
5	511	Ephemeral	5-7	No
6	1,658	Intermittent	2-4	Yes
7	284	Ephemeral	2-4	No
8	444	Ephemeral	1-3	No
9	4,349	Intermittent	2-4	Yes
10	122	Ephemeral	2-4	No
11	760	Intermittent	2-4	Yes
12	2,468	Perennial	5-7	Yes
13	973	Intermittent	5-7	Yes
14	2,603	Intermittent	5-7	Yes
15	285	Ephemeral	3-5	No
16	57	Ephemeral	2-4	No
17 (Casey Branch)	2,914	Perennial	10-12	Yes
18	1,412	Intermittent	3-5	Yes
19	1,933	Intermittent	3-5	Yes
20	1,144	Intermittent	3-5	Yes
21	3.145	Intermittent	3-5	Yes
22	4,931	Intermittent	5-7	Yes
23	1,832	Intermittent	3-5	Yes
24	2,028	Intermittent	3-5	Yes
25	1,503	Intermittent	3-5	Yes
26	123	Ephemeral	2-4	No
27 (Logan Branch)	1,064	Perennial	8-10	Yes
28	129	Ephemeral	2-4	No
29	1,132	Intermittent	5-7	Yes
30	139	Ephemeral	2-4	No
31	407	Intermittent	5-7	Yes
32	933	Intermittent	5-7	Yes
33	1,474	Intermittent	5-7	Yes
34	239	Ephemeral	2-4	No

35	884	Intermittent	4-6	Yes
36	1,038	Intermittent	4-6	Yes
37	1,522	Intermittent	5-7	Yes
38	194	Ephemeral	2-4	No
39	3,989	Perennial	10-12	Yes
40	109	Ephemeral	2-4	No
41	234	Ephemeral	2-4	No
42	225	Ephemeral	2-4	No
43	822	Intermittent	3-5	Yes
44	1,678	Intermittent	3-5	Yes
45	132	Ephemeral	2-4	No
TOTAL	**56,481 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 states that ephemeral features include ephemeral streams, swales, gullies, rills, and pools.

5.4 Other Waters

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

Pond	Size (acres)	Cowardin Classification	Water Sources	USACE Jurisdictional (Y/N)
1	0.24	PUBH	Precipitation, Surface Runoff,	N
2	0.29	PUBH	Precipitation, Surface Runoff	N
3	0.48	PUBH	Precipitation, Surface Runoff	N
4	0.89	PUBH	Precipitation, Surface Runoff	N
5	0.72	PUBH	Precipitation, Surface Runoff	N
6	1.38	PUBH	Precipitation, Surface Runoff	N
7	0.14	PUBH	Precipitation, Surface Runoff	N
8	0.33	PUBH	Precipitation, Surface Runoff	N
9	1.36	PUBH	Precipitation, Surface Runoff	N
10	2.74	PUBH	Precipitation, Surface Runoff	N
11	0.18	PUBH	Precipitation, Surface Runoff	N
12	0.34	PUBH	Precipitation, Surface Runoff	N
13	1.05	PUBH	Precipitation, Surface Runoff	N
14	0.23	PUBH	Precipitation, Surface Runoff	N
15	0.08	PUBH	Precipitation, Surface Runoff	N
16	0.15	PUBH	Precipitation, Surface Runoff	N
17	0.20	PUBH	Precipitation, Surface Runoff	N
18	2.5	PUBH	Precipitation, Surface Runoff, Stream 24	Y
19	0.48	PUBH	Precipitation, Surface Runoff	N

20	0.52	PUBH	Precipitation, Surface Runoff	N
21	0.26	PUBH	Precipitation, Surface Runoff	N
22	0.61	PUBH	Precipitation, Surface Runoff	N
23	1.16	PUBH	Precipitation, Surface Runoff	N
24	0.44	PUBH	Precipitation, Surface Runoff	N
25	1.84	PUBH	Precipitation, Surface Runoff, Stream 21	Y
26	0.77	PUBH	Precipitation, Surface Runoff, Stream 51	Y
27	0.09	PUBH	Precipitation, Surface Runoff	N
28	0.75	PUBH	Precipitation, Surface Runoff, Stream 53	Y
29	0.47	PUBH	Precipitation, Surface Runoff	N
30	0.29	PUBH	Precipitation, Surface Runoff	N
31	0.68	PUBH	Precipitation, Surface Runoff	N
32	0.59	PUBH	Precipitation, Surface Runoff, Stream 63	Y
33	2.74	PUBH	Precipitation, Surface Runoff, Stream 64	Y
34	0.21	PUBH	Precipitation, Surface Runoff	N
35	0.80	PUBH	Precipitation, Surface Runoff	N
TOTAL	**26.01 acres**			

PUBH – Palustrine unconsolidated bottom; diked or impounded

Terracon considers Ponds 18, 25, 26, and 28 to be jurisdictional based on their significant nexus to TNWs. The remainder of the on-site ponds do not appear to have significant nexus to TNWs and are considered non-jurisdictional. 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).

6.0 SUMMARY AND CONCLUSIONS OF FIELD OBSERVATIONS

A wetland delineation was conducted at an approximately 1,990-acre site located near Lebanon, Kentucky on May 19-21, 27-28, September 8, and December 9, 2020. A review of the project site 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

Seven (7) wetlands, totaling 1.41 acres, were observed across the project site during the site reconnaissance. Terracon considers the on-site wetlands jurisdictional based on their significant nexus to TNWs.

6.2 Streams

Forty-five (45) streams, totaling 56,481 linear feet, were observed across the project site during the site reconnaissance. Terracon considers Streams 1, 6, 9, 11-14, 17-25, 27, 29, 31-33, 35-37, 39, 43, and 44 to be jurisdictional based on their significant nexus to TNWs. The remainder of the streams on-site are considered non-jurisdictional based on their ephemeral flow status. This decision is based on 33 CFR 328.3(b)(3), which states that ephemeral features include ephemeral streams, swales, gullies, rills, and pools.

6.3 Ponds

Thirty-five (35) ponds, totaling 26.01 acres, were observed across the project site during the site reconnaissance. Terracon considers Ponds 18, 25, 26, and 28 to be jurisdictional based on their significant nexus to TNWs. The remainder of the on-site ponds do not appear to have significant nexus to TNWs and are considered non-jurisdictional. 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).

7.0 RECOMMENDATIONS

According to our preliminary site investigation, potential jurisdictional waters are present on the 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. 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:

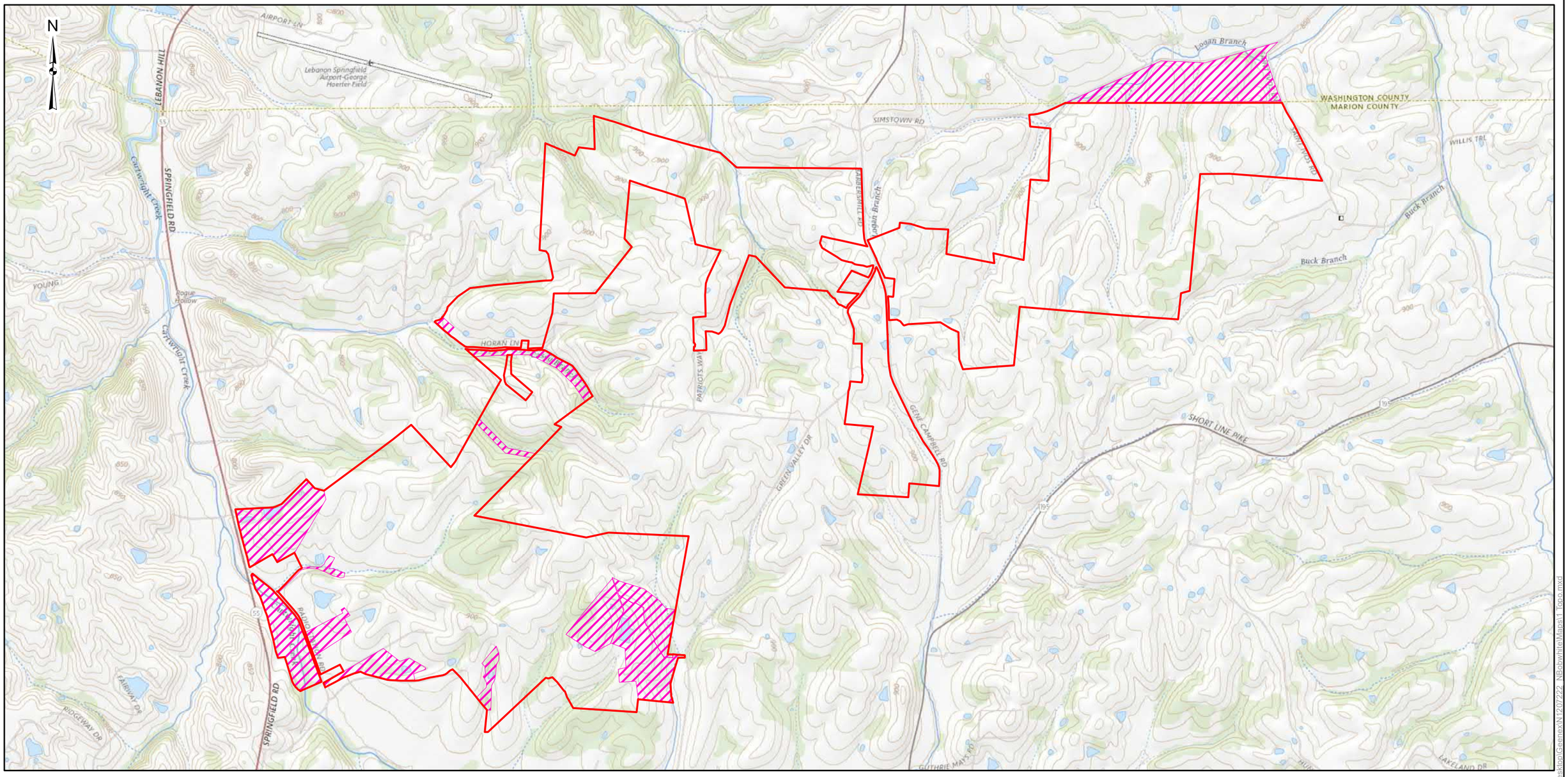
US Army Corps of Engineers
Louisville District
CELRL-RD, Room 752
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-0059

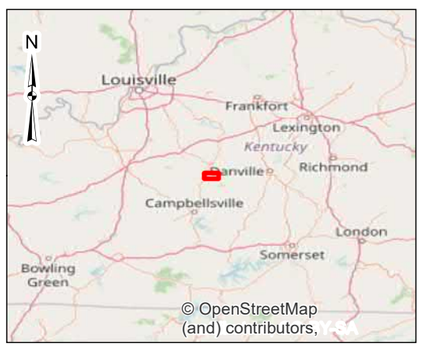
8.0 GENERAL COMMENTS

The wetland delineation was performed in accordance with generally accepted practices of this profession undertaken in similar studies at the same time and in the same geographical area. A wetland delineation, such as the one performed at this site, is of limited scope, is noninvasive, and cannot eliminate the potential that wetlands or waterbodies are present at the site beyond what is identified by the limited scope of this preliminary assessment. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. No biological assessment can wholly eliminate uncertainty regarding the potential for concerns in connection with a project. The limitations of this preliminary assessment should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either express or implied, are intended or made.

APPENDIX A – EXHIBITS





Legend

- Project Site Boundary
- Do Not Disturb Parcels

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.25 0.5 1

1:24,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

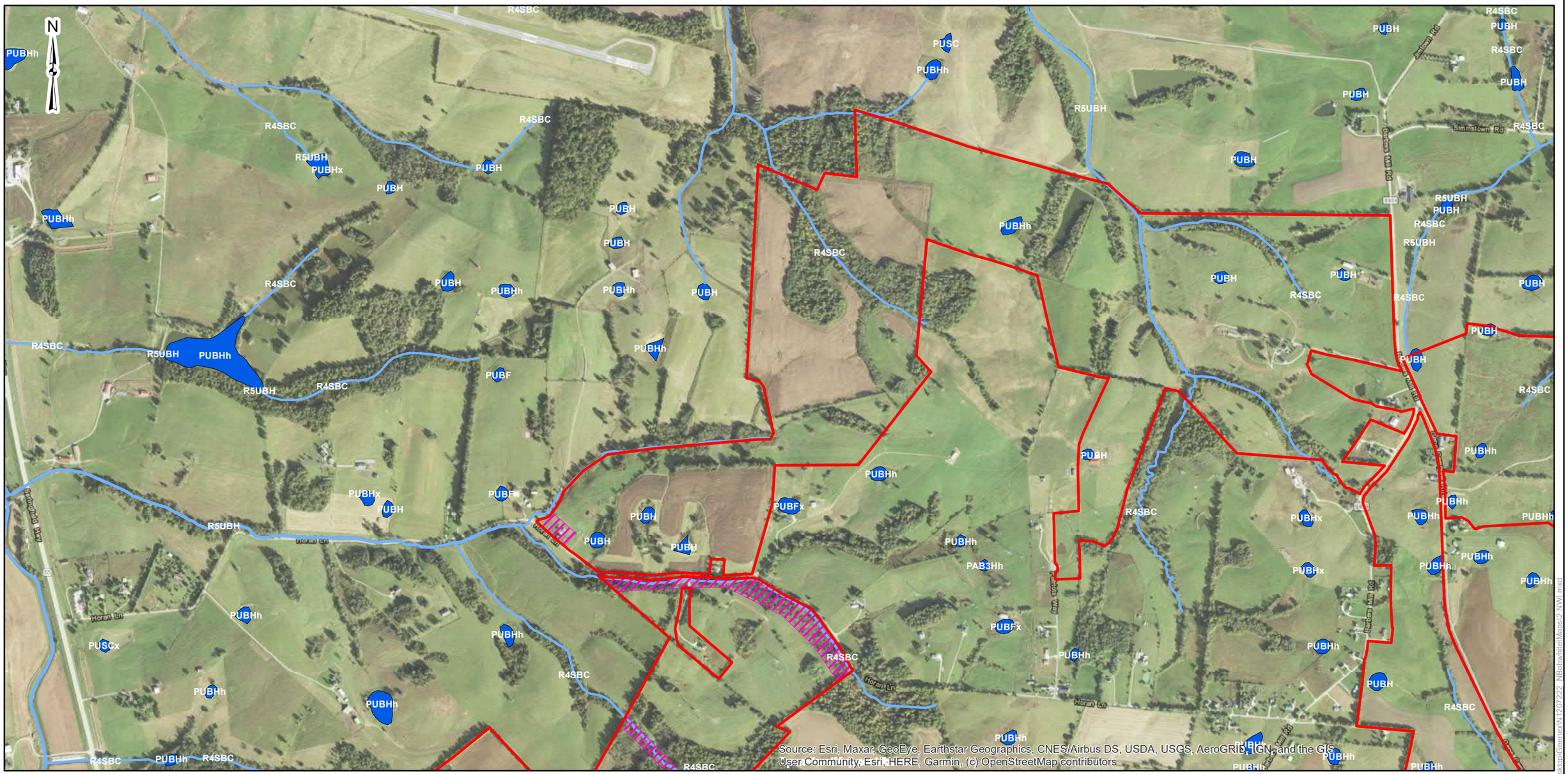
USGS Topographic Map

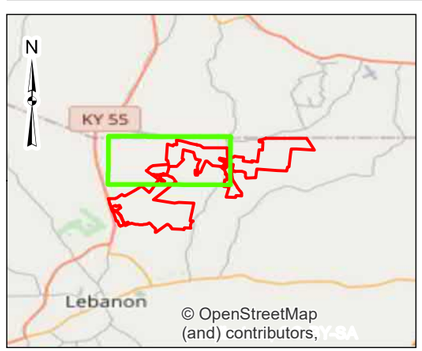
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

1

C:\Users\mdperkins\OneDrive - Terracon Consultants Inc\Desktop\Geotex\N1207222_NBobwhiteMap\s1 Topo.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

National Wetlands Inventory

Wetland Type

- Freshwater Pond
- Riverine

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

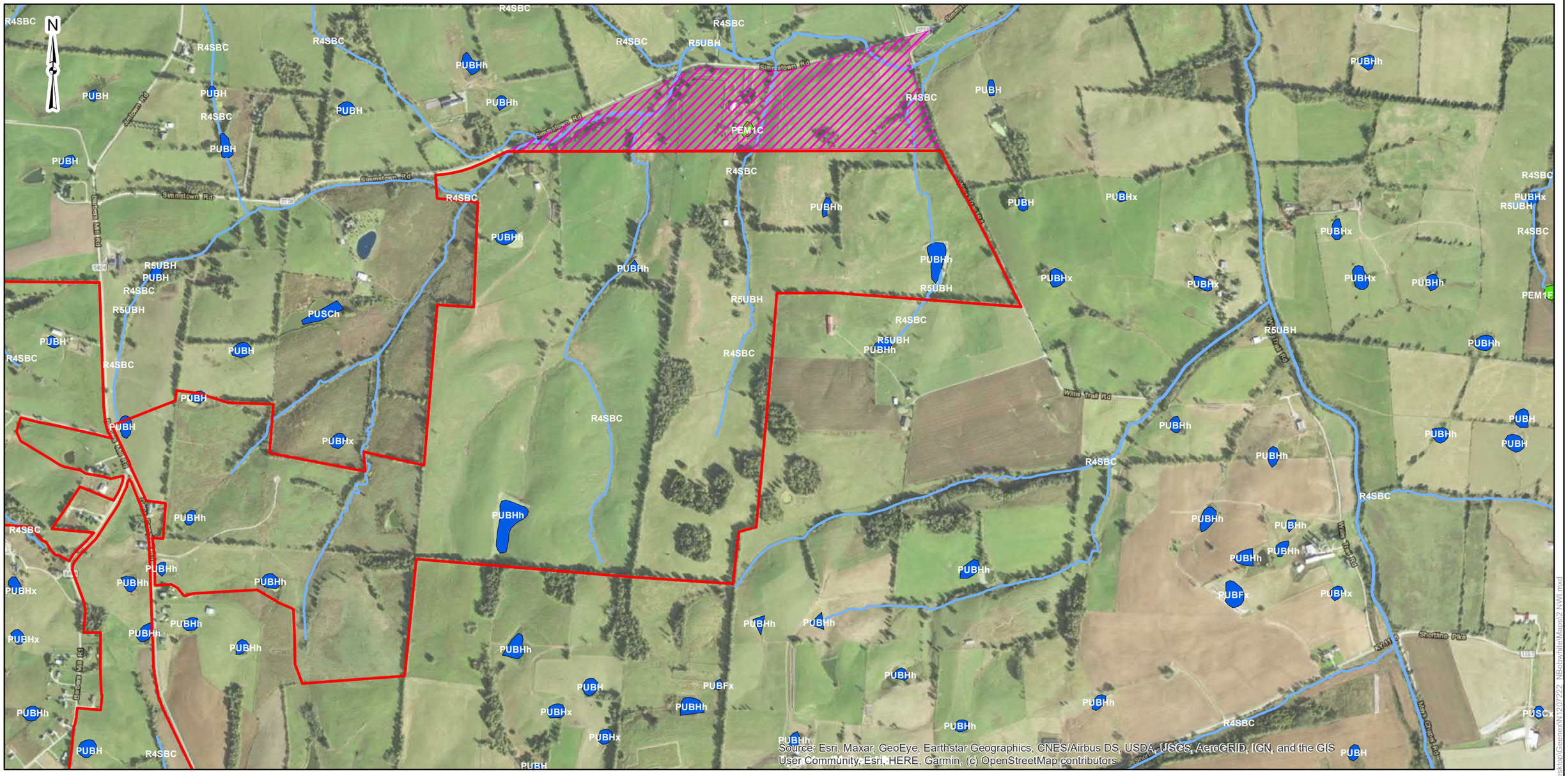
National Wetlands Inventory Map

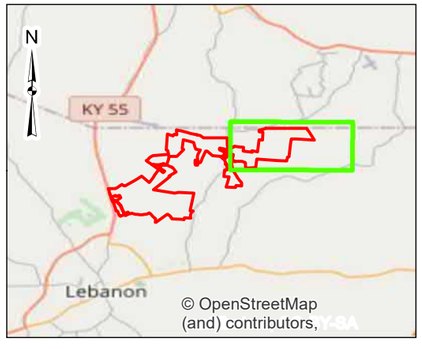
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

2

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\GeneralN1207222_NBobwhiteMaps2.NWI.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

National Wetlands Inventory

Wetland Type

- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

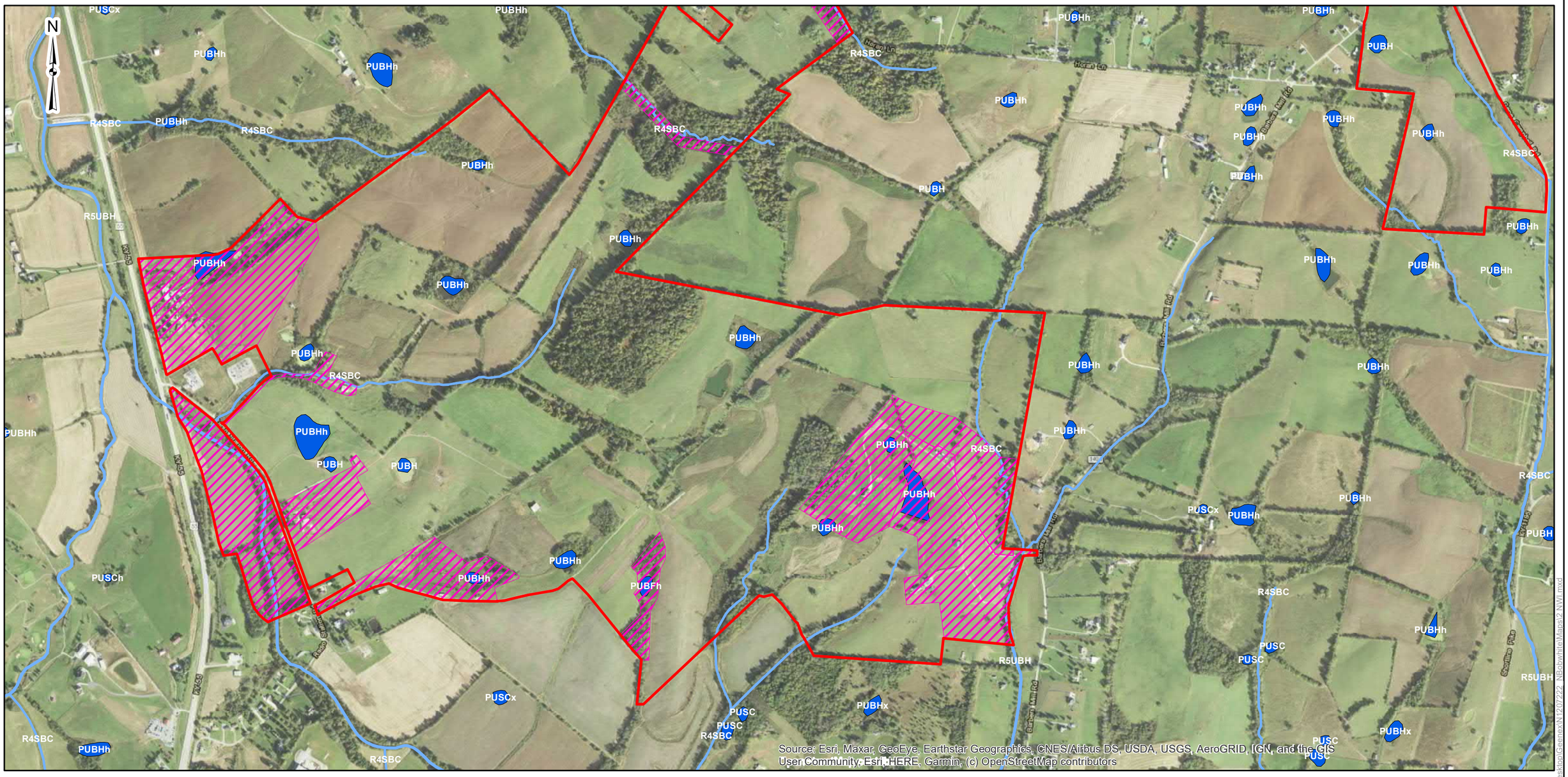
National Wetlands Inventory Map

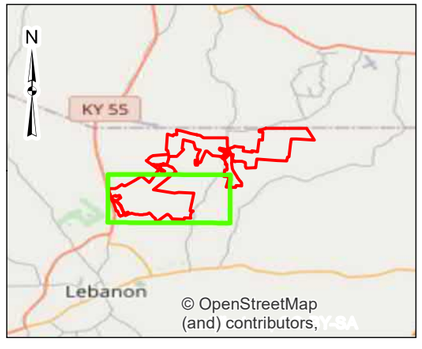
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

2

C:\Users\nderkins\OneDrive - Terracon Consultants Inc\Desktop\GeenexN1207222_NBobwhite\Maps\2 NWI.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

National Wetlands Inventory

Wetland Type

- Freshwater Pond
- Riverine

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

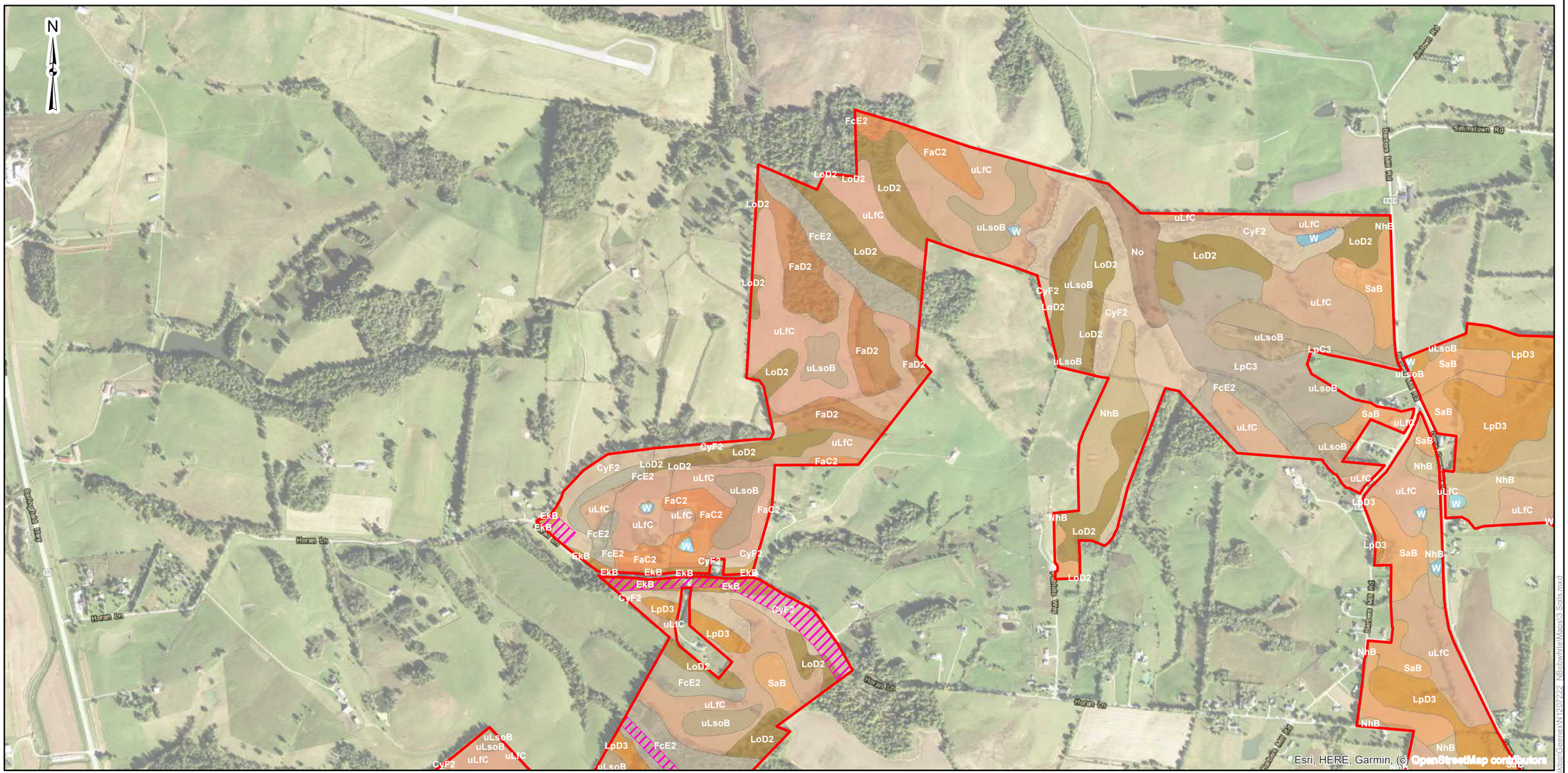
National Wetlands Inventory Map

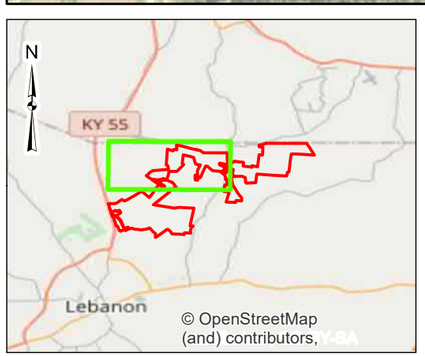
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

2

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Geenie\N1207222_NBobwhiteMaps2 NWI.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Hydric Soils

Soil Map Unit

- CyF2-Cynthiana-Faywood-Rock outcrop complex, 20 to 60 percent slopes, eroded
- EkB-Elk silt loam, 2 to 6 percent slopes, rarely flooded
- FaC2-Faywood silty clay loam, 6 to 12 percent slopes, eroded
- FaD2-Faywood silty clay loam, 12 to 20 percent slopes, eroded
- FcE2-Faywood-Cynthiana complex, 20 to 30 percent slopes, eroded, very rocky
- LoD2-Lowell silty clay loam, 12 to 20 percent slopes, eroded
- LpC3-Lowell silty clay, 6 to 12 percent slopes, severely eroded
- LpD3-Lowell silty clay, 12 to 20 percent slopes, severely eroded
- NhB-Nicholson silt loam, 2 to 6 percent slopes
- No-Nolin silt loam, 0 to 2 percent slopes, frequently flooded
- SaB-Sandview silt loam, 2 to 6 percent slopes
- uLfC-Lowell-Faywood silt loams, 6 to 12 percent slopes
- uLsoB-Lowell-Sandview silt loams, 2 to 6 percent slopes
- W-Water

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

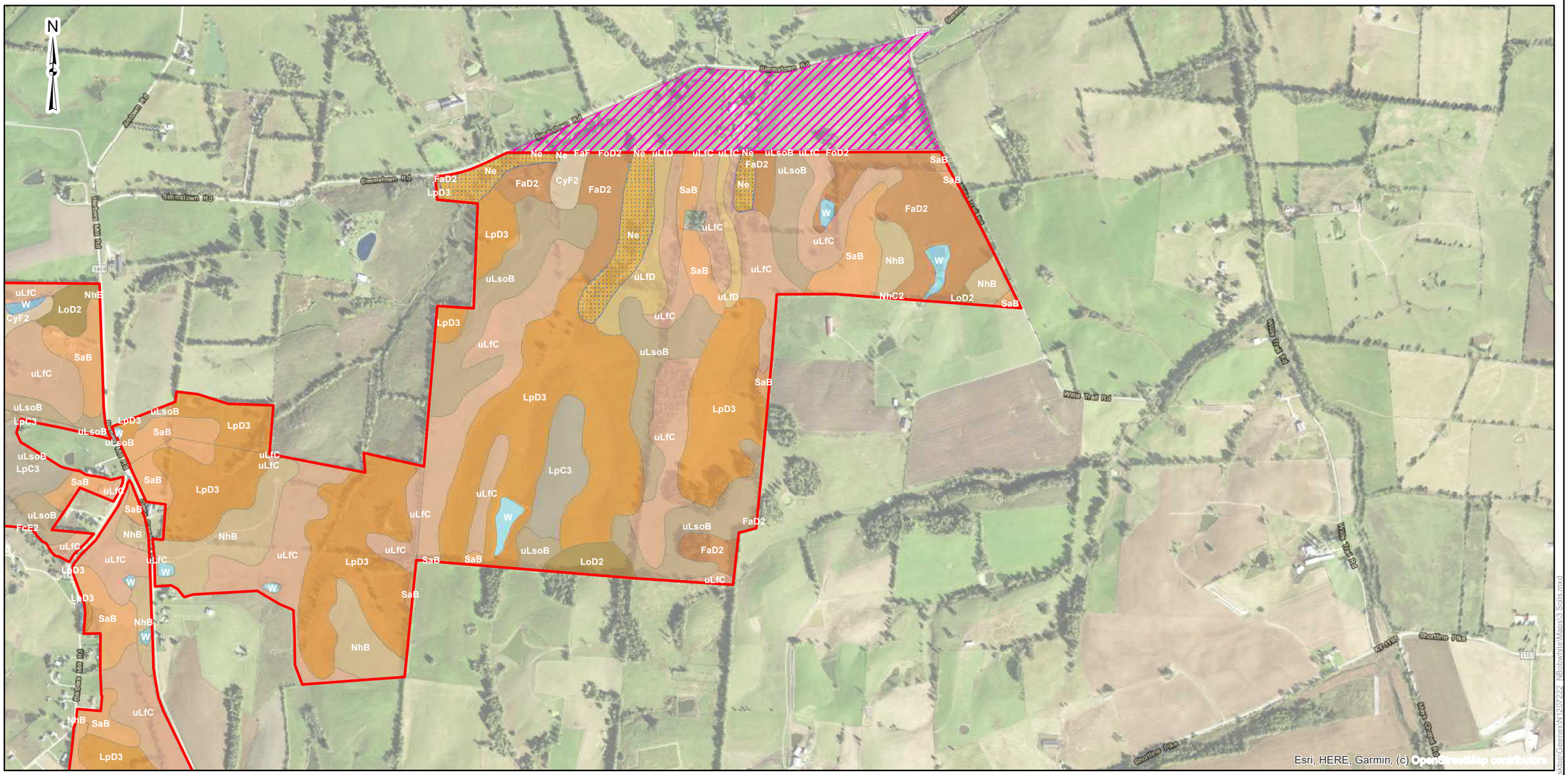
NRCS SSURGO Soils Map

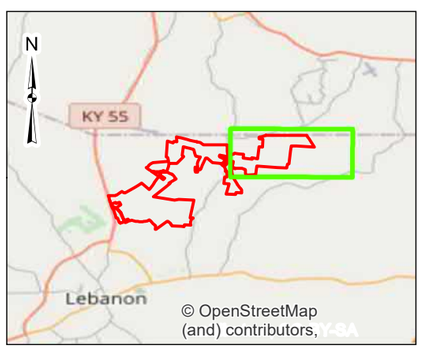
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

3

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Gearex\N1207222_NBowhiteMaps3 Soils.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Hydric Soils

Soil Map Unit

- CyF2-Cynthiana-Faywood-Rock outcrop complex, 20 to 60 percent slopes, eroded
- FaD2-Faywood silty clay loam, 12 to 20 percent slopes, eroded
- FaF-Fairmount-Rock outcrop complex, 20 to 50 percent slopes
- FcE2-Faywood-Cynthiana complex, 20 to 30 percent slopes, eroded, very rocky
- FoD2-Faywood silty clay loam, 12 to 20 percent slopes, eroded
- LoD2-Lowell silty clay loam, 12 to 20 percent slopes, eroded
- LpC3-Lowell silty clay, 6 to 12 percent slopes, severely eroded
- LpD3-Lowell silty clay, 12 to 20 percent slopes, severely eroded
- Ne-Newark silt loam, frequently flooded
- NhB-Nicholson silt loam, 2 to 6 percent slopes
- NhC2-Nicholson silt loam, 6 to 12 percent slopes, eroded
- SaB-Sandview silt loam, 2 to 6 percent slopes
- SeB-Shelbyville silt loam, 2 to 6 percent slopes
- uLfC-Lowell-Faywood silt loams, 6 to 12 percent slopes
- uLfD-Lowell-Faywood silt loams, 12 to 20 percent slopes
- uLsoB-Lowell-Sandview silt loams, 2 to 6 percent slopes
- W-Water

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

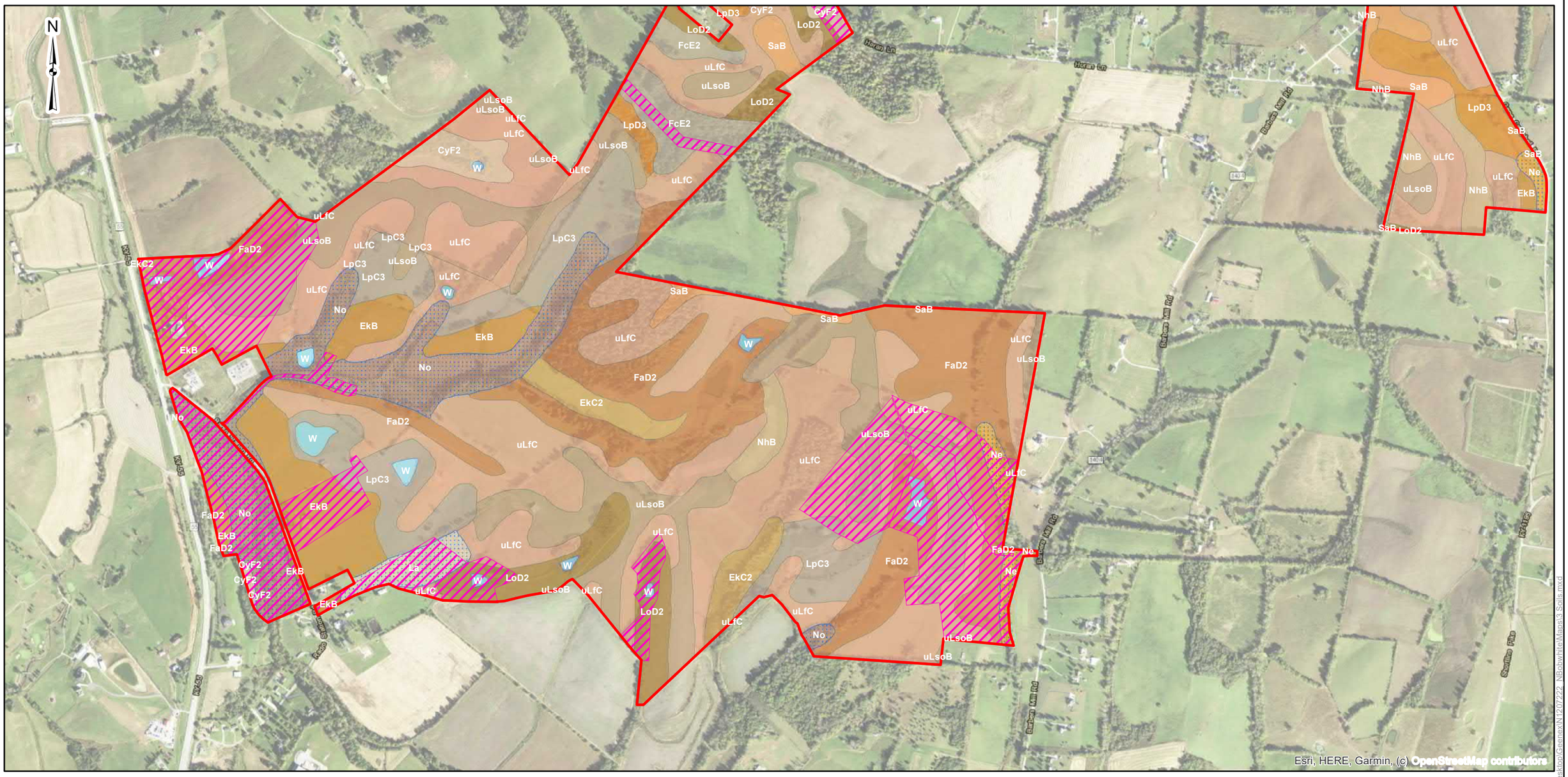
NRCS SSURGO Soils Map

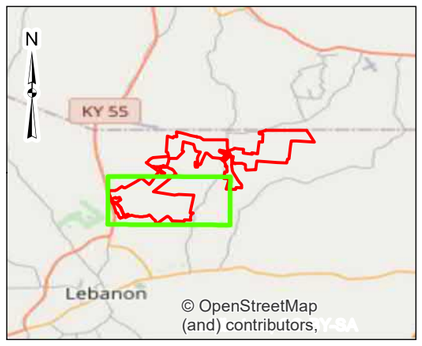
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

3

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Geenex\N1207222_NBobwhite\Mass3 Soils.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Hydric Soils

Soil Map Unit

- CyF2-Cynthiana-Faywood-Rock outcrop complex, 20 to 60 percent slopes, eroded
- EkB-Elk silt loam, 2 to 6 percent slopes, rarely flooded
- EkC2-Elk silt loam, 6 to 12 percent slopes, eroded
- FaD2-Faywood silty clay loam, 12 to 20 percent slopes, eroded
- FcE2-Faywood-Cynthiana complex, 20 to 30 percent slopes, eroded, very rocky
- La-Lawrence silt loam, 0 to 2 percent slopes, rarely flooded
- LoD2-Lowell silty clay loam, 12 to 20 percent slopes, eroded
- LpC3-Lowell silty clay, 6 to 12 percent slopes, severely eroded
- LpD3-Lowell silty clay, 12 to 20 percent slopes, severely eroded
- Ne-Newark silt loam, frequently flooded
- NhB-Nicholson silt loam, 2 to 6 percent slopes
- No-Nolin silt loam, 0 to 2 percent slopes, frequently flooded
- SaB-Sandview silt loam, 2 to 6 percent slopes
- uLfC-Lowell-Faywood silt loams, 6 to 12 percent slopes
- uLsoB-Lowell-Sandview silt loams, 2 to 6 percent slopes
- W-Water

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

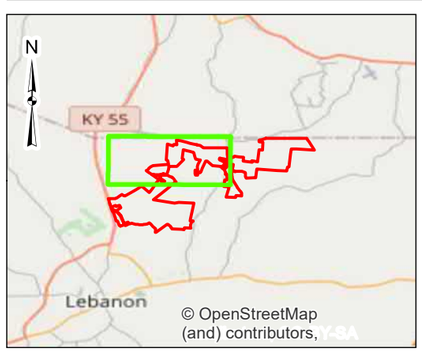
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH: (513) 321-5816 FAX: (513) 321-0294

NRCS SSURGO Soils Map

Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

3



Legend

- Project Site Boundary
- Do Not Disturb Parcels

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

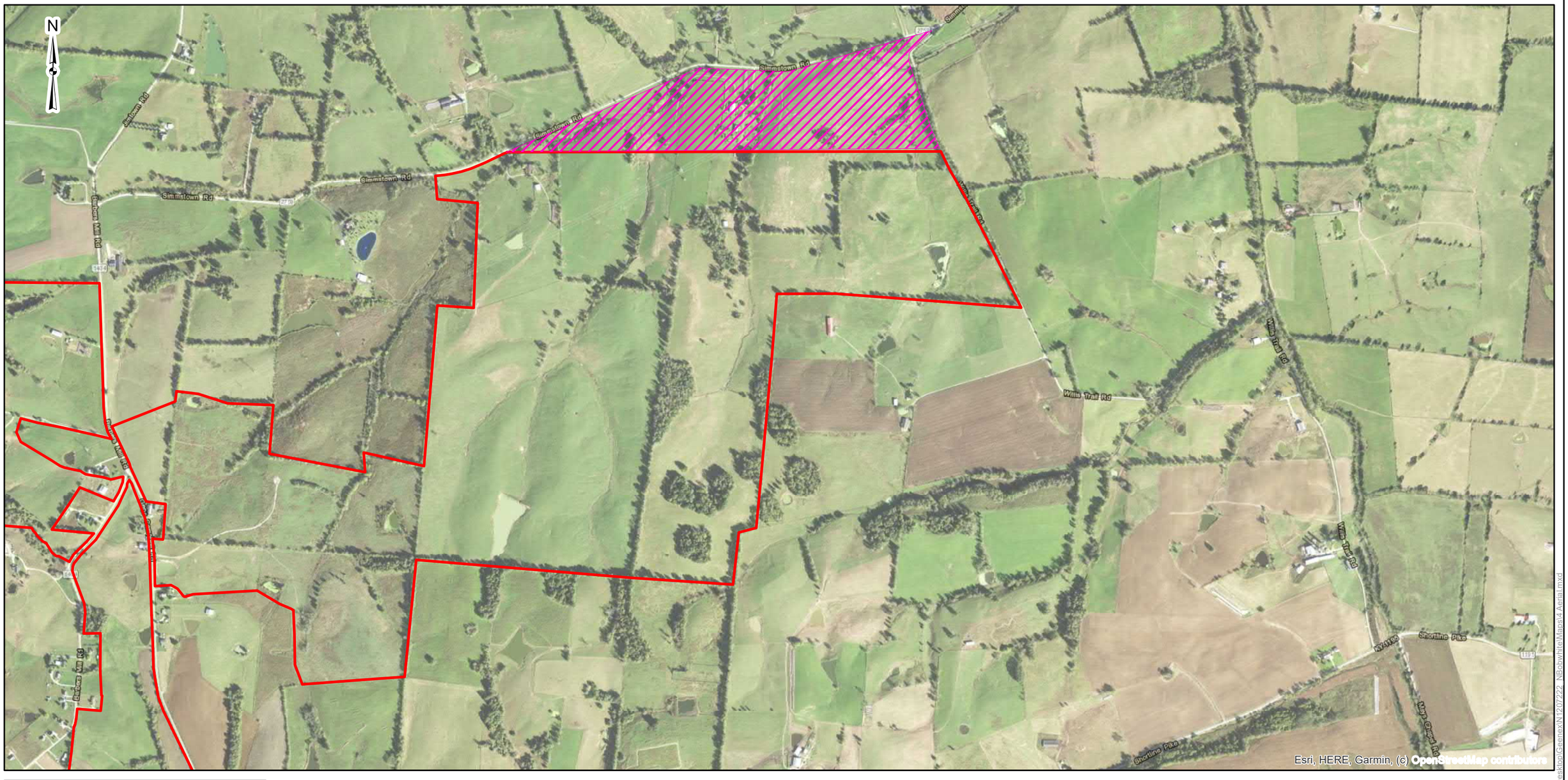
Aerial Image (2018)

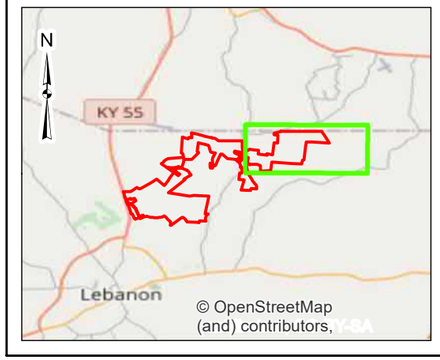
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

4

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Gearex\N1207222_NBobwhiteMaps\4 Aerial.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

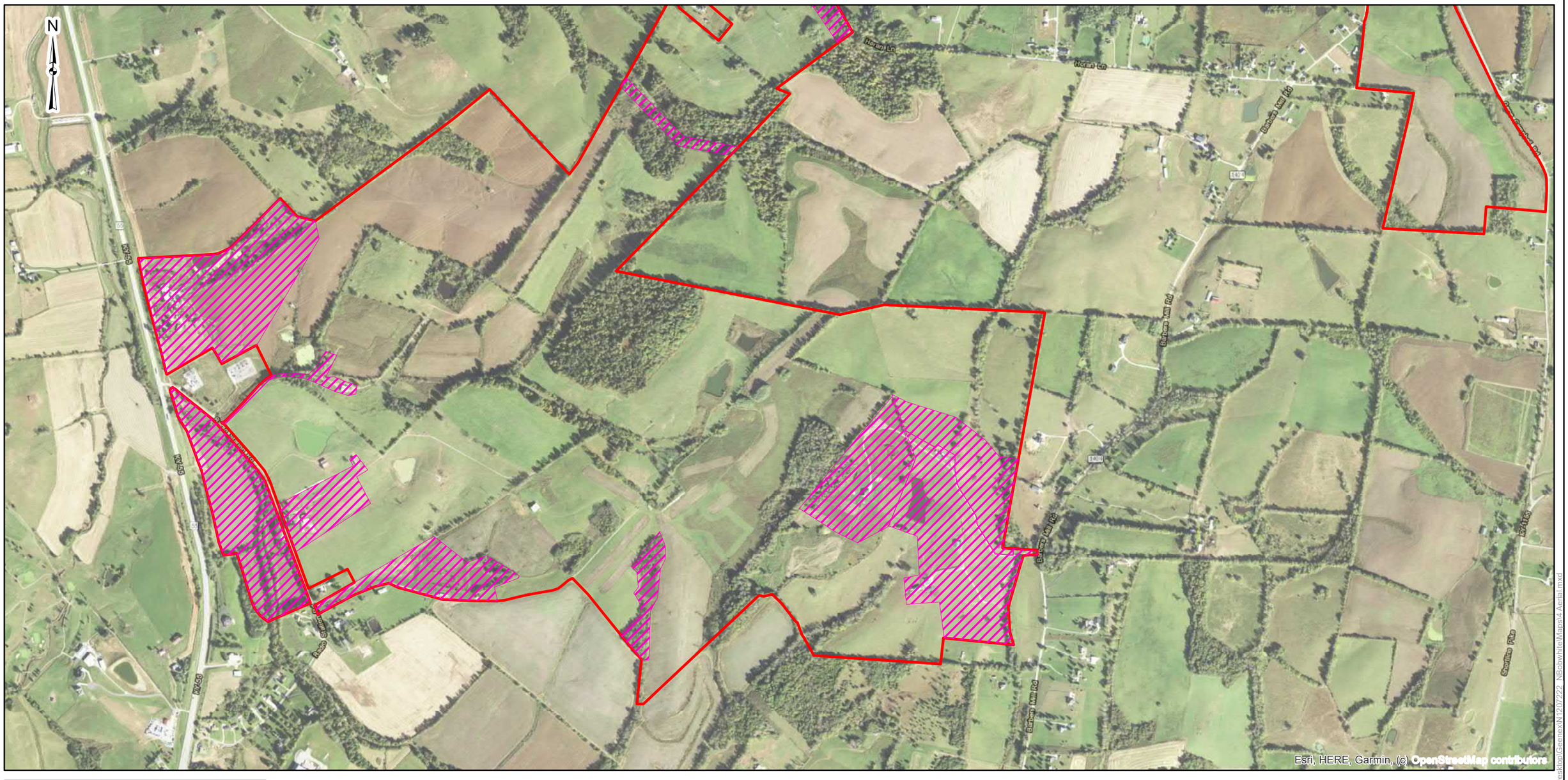
Aerial Image (2018)

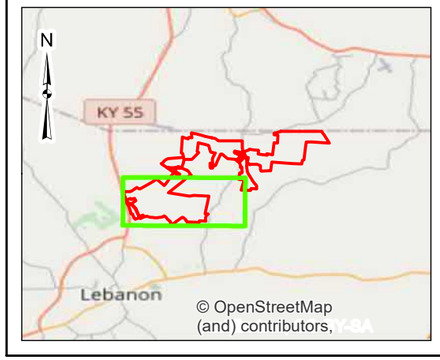
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

4

C:\Users\nderkins\OneDrive - Terracon Consultants Inc\Desktop\Geenex\N1207222_NBowhite\Mxds\4 Aerial.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

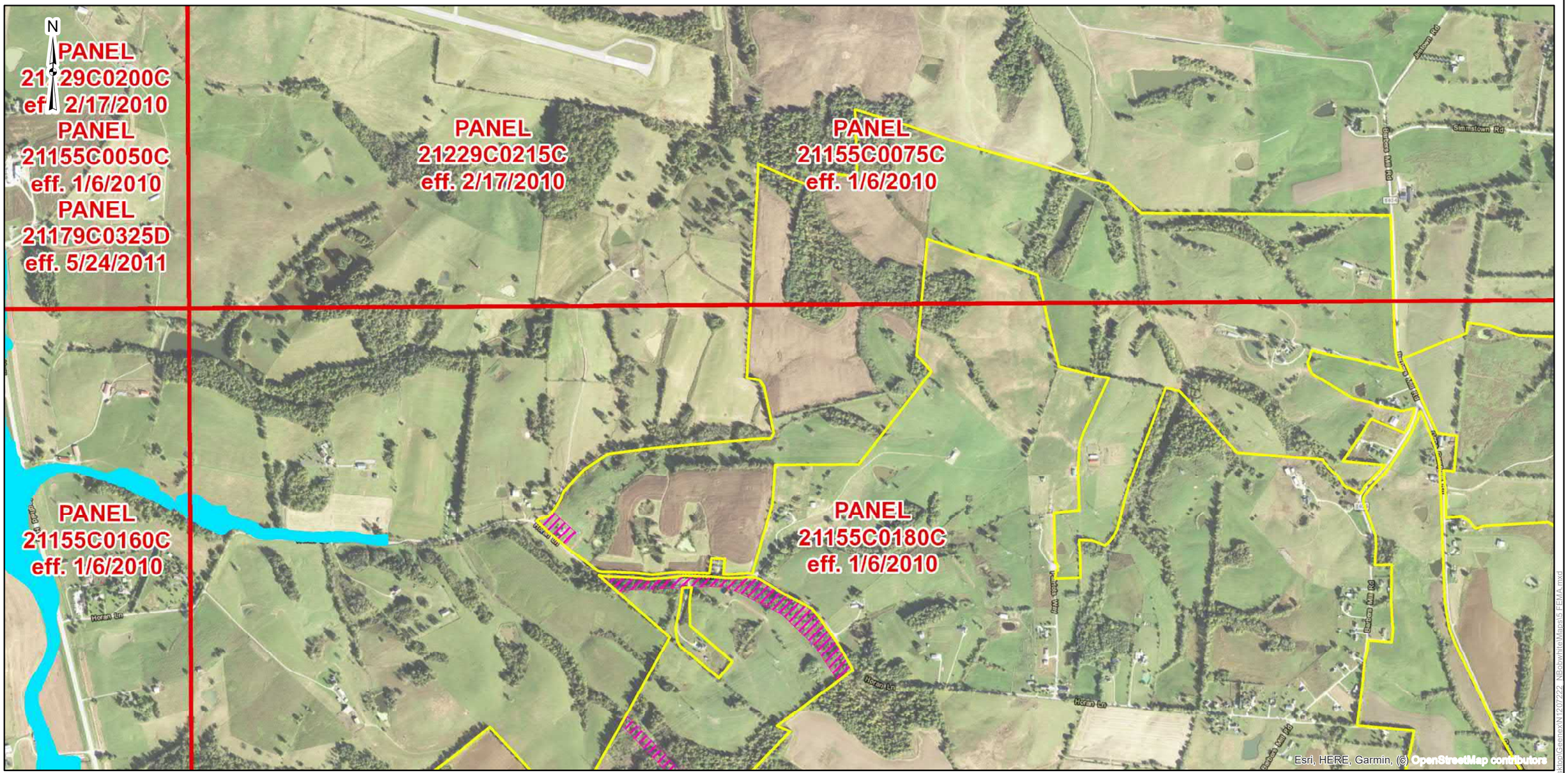
Terracon
611 Lunken Park Drive Cincinnati, Ohio 45226
PH: (513) 321-5816 FAX: (513) 321-0294

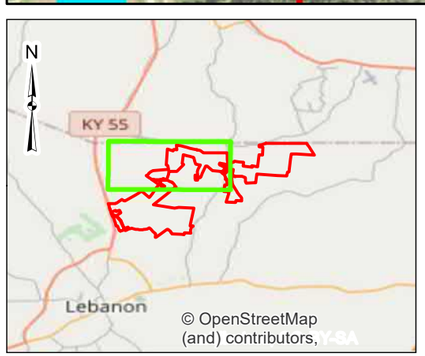
Aerial Image (2018)

Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

4





Legend

- Project Site Boundary
- Do Not Disturb Parcels

Flood Hazard Zones

Zone Type

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/7/2020
Drawn By:	MDP
Reviewed By:	SEW

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

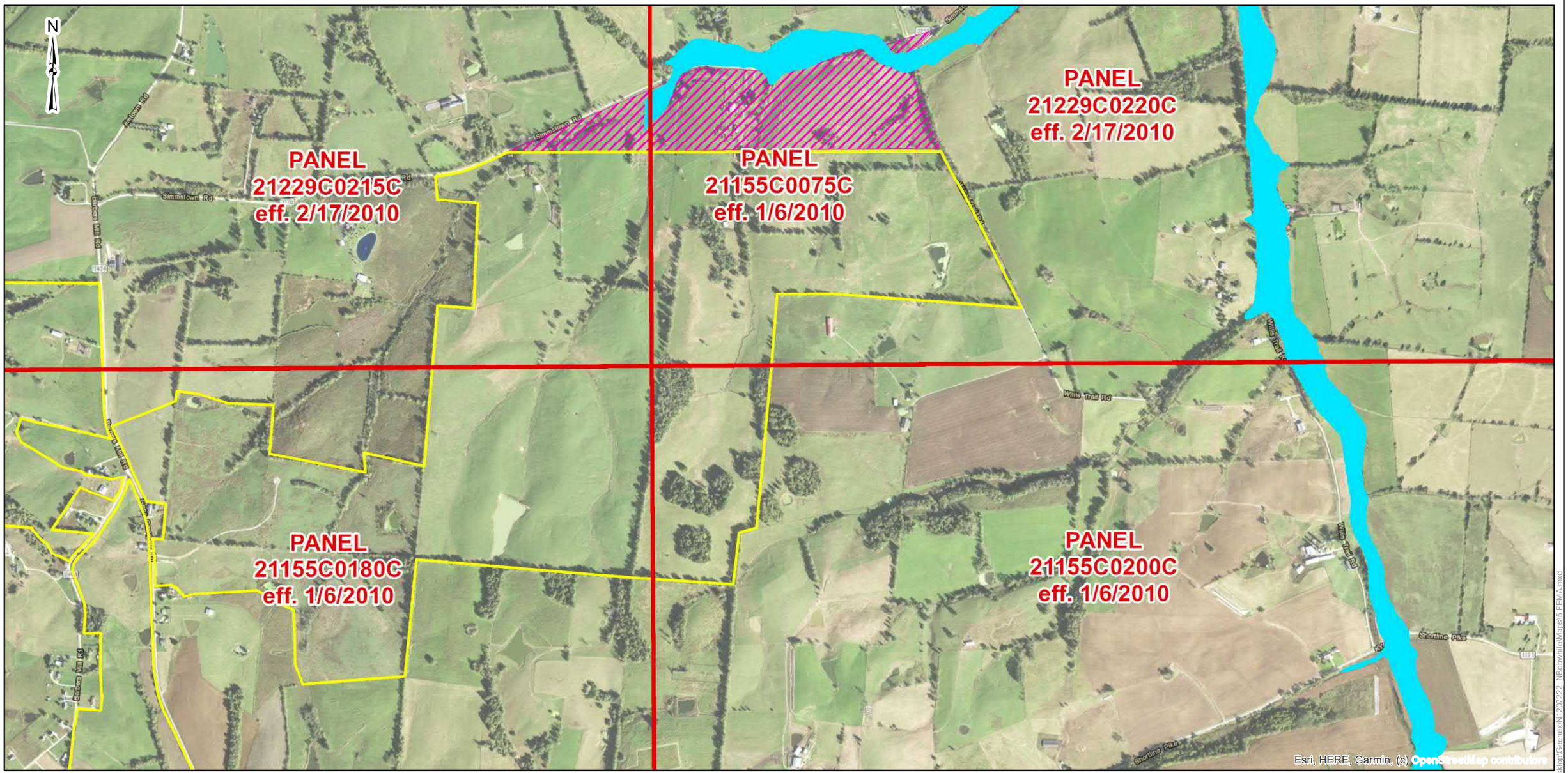
FEMA Flood Insurance Rate Map (FIRM)

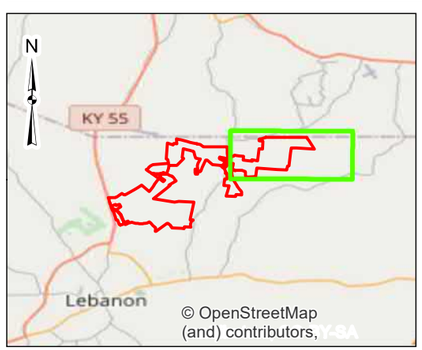
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

5

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Gearex\N1207222_NBobwhiteMaps\5 FEMA.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

Flood Hazard Zones

Zone Type

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/7/2020
Drawn By:	MDP
Reviewed By:	SEW

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

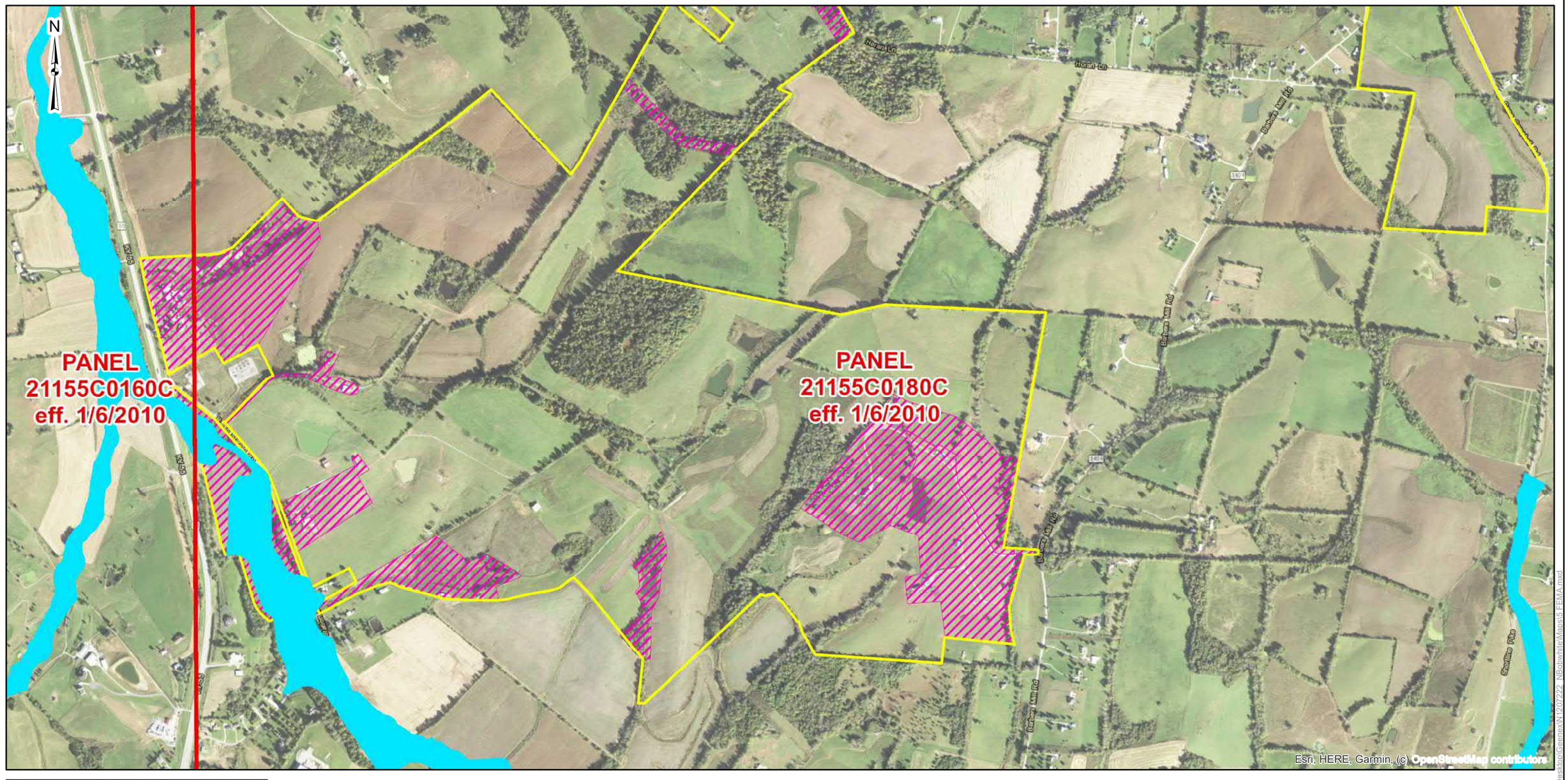
FEMA Flood Insurance Rate Map (FIRM)

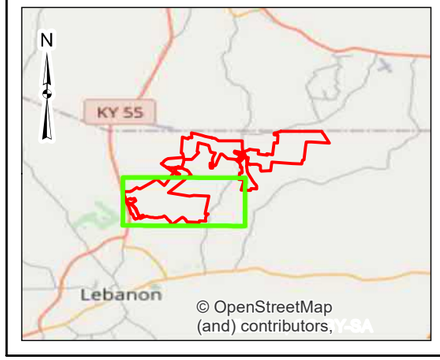
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

5

C:\Users\mdperkins\OneDrive - Terracon Consultants Inc\Desktop\Gens\N1207222_NBobwhiteMaps\5 FEMA.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels

Flood Hazard Zones

Zone Type

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Miles
0 0.125 0.25 0.5

1:12,000

Project No.:	N1207222
Date:	12/7/2020
Drawn By:	MDP
Reviewed By:	SEW

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

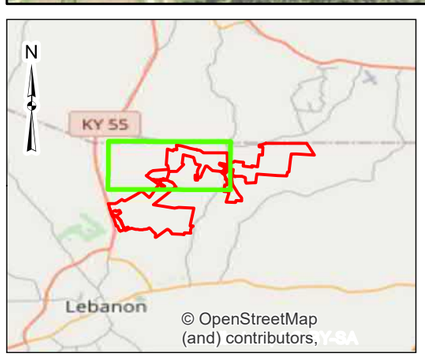
FEMA Flood Insurance Rate Map (FIRM)

Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

5

C:\Users\nderkins\OneDrive - Terracon Consultants Inc\Desktop\Geenex\N1207222_NBobwhite\Maps\5 FEMA.mxd



Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Wetlands
- Ponds
- Streams

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

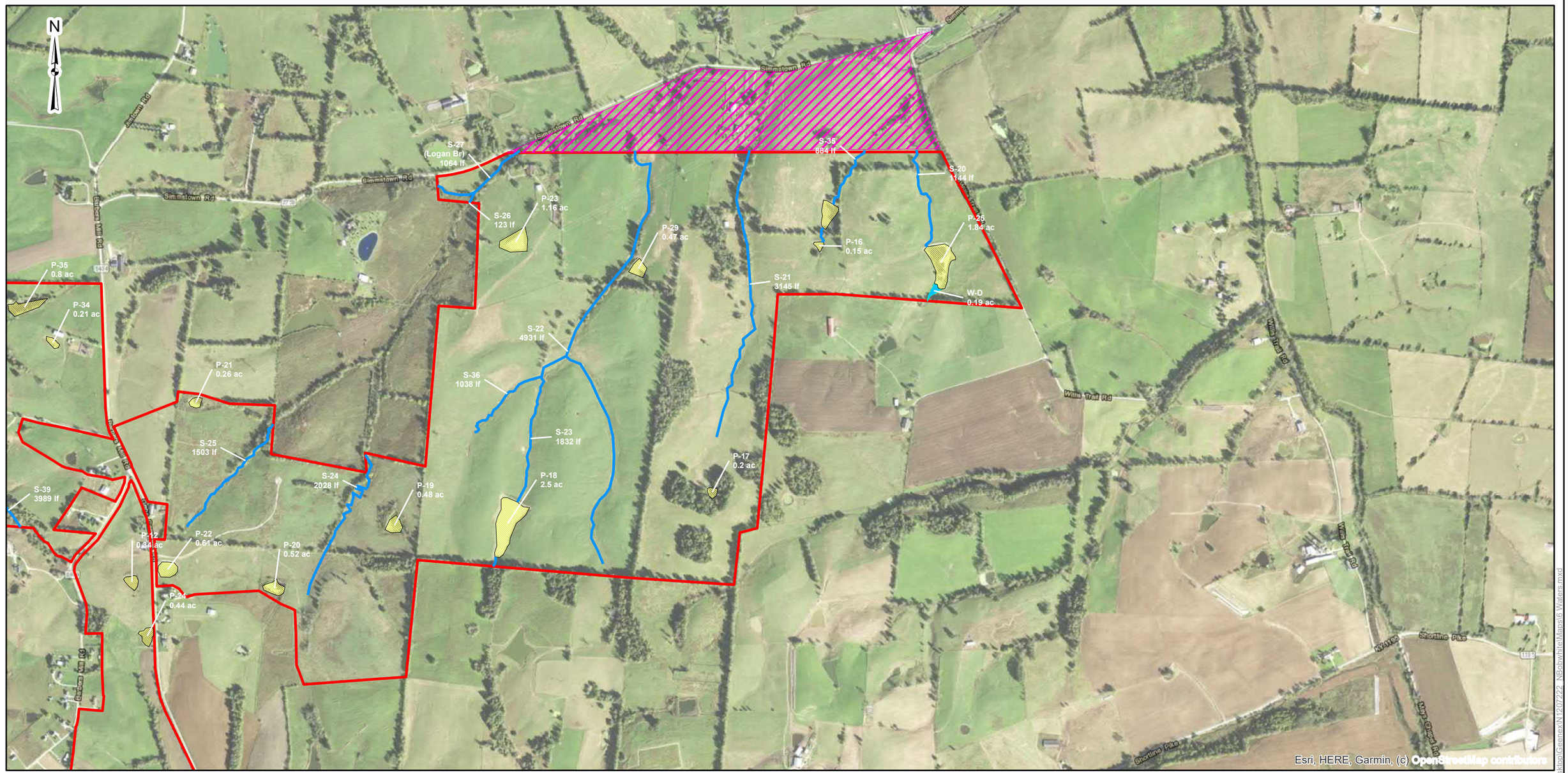
Wetland Delineation Map

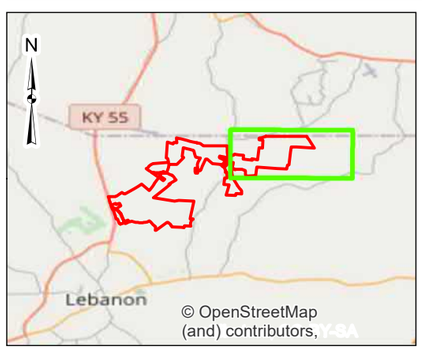
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

6

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Gearex\N1207222_NBobwhiteWaters6 Waters.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Wetlands
- Ponds
- Streams

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

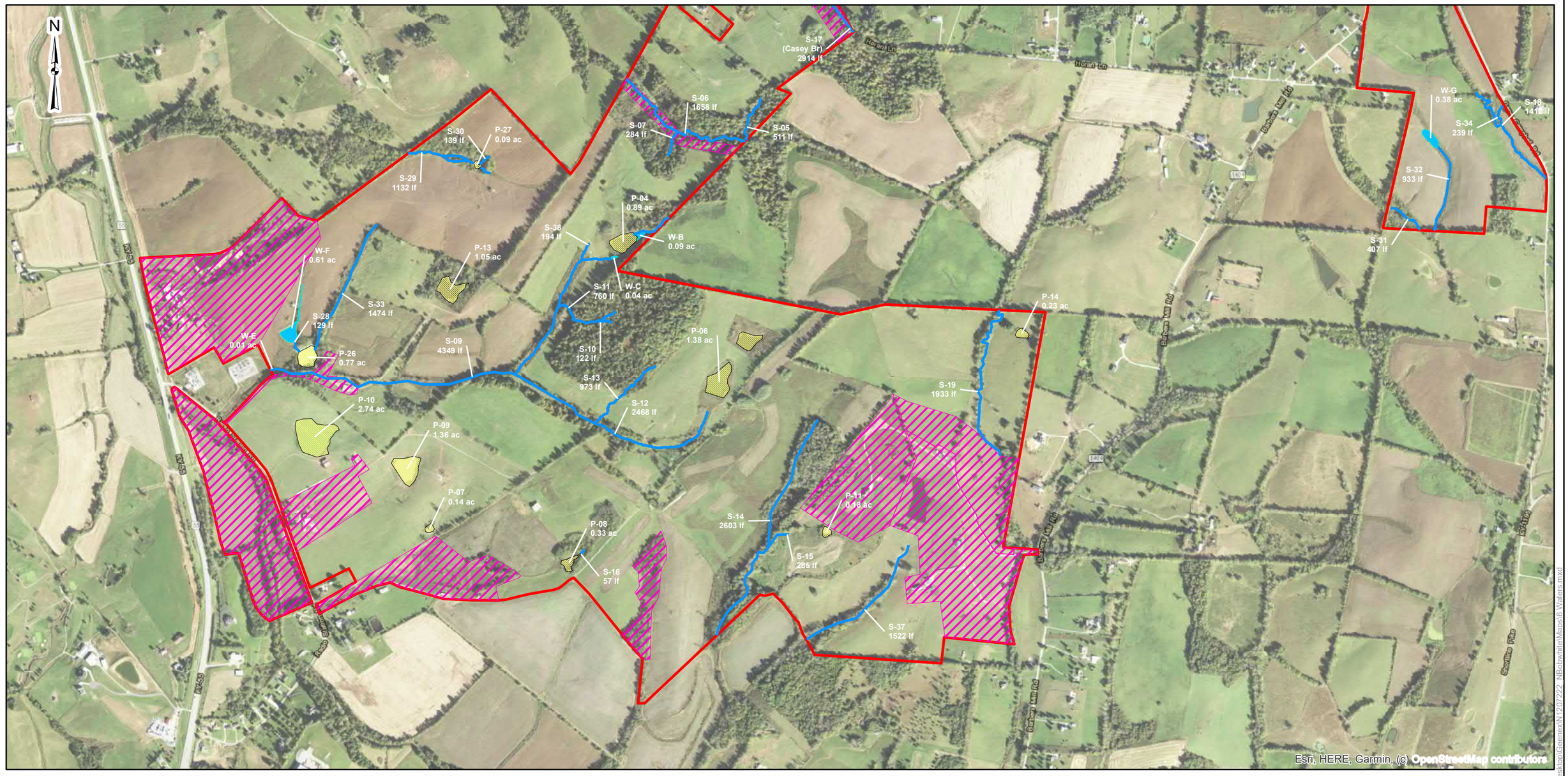
Wetland Delineation Map

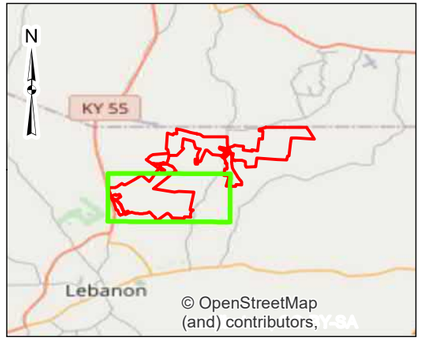
Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

6

C:\Users\mdperkins\OneDrive - Terracon Consultants Inc\Desktop\GeenexN1207222_NBobWhiteMapsToWaters.mxd





Legend

- Project Site Boundary
- Do Not Disturb Parcels
- Wetlands
- Ponds
- Streams

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.125 0.25 0.5 Miles

1:12,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

Wetland Delineation Map

Wetland Delineation Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

6

C:\Users\mderkins\OneDrive - Terracon Consultants Inc\Desktop\Geenex\N1207222_NBobwhite\Maps\6 Waters.mxd

APPENDIX B – GROUND PHOTOGRAPHS

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 1 **Date:** May 19, 2020 **Direction:** West **Description:** Downstream view of Stream 1.	

Photograph No. 2 **Date:** May 19, 2020 **Direction:** South **Description:** General overview of Wetland A.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 3 **Date:** May 19, 2020 **Direction:** Northwest **Description:** Downstream view of Stream 3.	

Photograph No. 4 **Date:** May 20, 2020 **Direction:** Southwest **Description:** General overview of grass pasture.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 5 **Date:** May 20, 2020 **Direction:** East **Description:** Upstream view of the confluence of Stream 5 and 6.	

Photograph No. 6 **Date:** May 20, 2020 **Direction:** North **Description:** General overview of Wetland C looking towards Pond 4.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 7 **Date:** May 20, 2020 **Direction:** West **Description:** General overview of Pond 4.	

Photograph No. 8 **Date:** May 20, 2020 **Direction:** Southwest **Description:** View of Pond 13.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 9 **Date:** May 20, 2020 **Direction:** East **Description:** View of Pond 5.	

Photograph No. 10 **Date:** May 20, 2020 **Direction:** North **Description:** Upstream view of Stream 9.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 11 **Date:** May 20, 2020 **Direction:** Northeast **Description:** Upstream view of Stream 13.	

Photograph No. 12 **Date:** May 20, 2020 **Direction:** North **Description:** Upstream view of Stream 14.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 13 **Date:** May 20, 2020 **Direction:** Northeast **Description:** View of Pond 8.	

Photograph No. 14 **Date:** May 20, 2020 **Direction:** South **Description:** View of Pond 16.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 15 **Date:** May 20, 2020 **Direction:** West **Description:** Downstream view of Stream 17 (Casey Branch).	

Photograph No. 16 **Date:** May 21, 2020 **Direction:** South **Description:** General overview of Pond 27.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 17 **Date:** May 21, 2020 **Direction:** South **Description:** General overview of Wetland D.	

Photograph No. 18 **Date:** May 21, 2020 **Direction:** West **Description:** General overview of Pond 17.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 19 **Date:** May 21, 2020 **Direction:** North **Description:** Downstream view of Stream 24.	

Photograph No. 20 **Date:** May 21, 2020 **Direction:** South **Description:** View of Pond 19.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 21 **Date:** May 21, 2020 **Direction:** Southwest **Description:** Upstream view of Stream 54.	

Photograph No. 22 **Date:** May 21, 2020 **Direction:** North **Description:** Downstream view of Stream 25.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 23

Date: May 21, 2020

Direction: South

Description:
View of Pond 21.

Photograph No. 24

Date: May 21, 2020

Direction: Northeast

Description:
Downstream view of Stream 26.

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 25 **Date:** May 21, 2020 **Direction:** East **Description:** Upstream view of Stream 60 (Cartwright Creek).	

Photograph No. 26 **Date:** May 21, 2020 **Direction:** Southeast **Description:** Upstream view of Stream 32.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 27 **Date:** May 21, 2020 **Direction:** North **Description:** General overview of Pond 28.	

Photograph No. 28 **Date:** May 21, 2020 **Direction:** South **Description:** Upstream view of Stream 30.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 29 **Date:** May 27, 2020 **Direction:** Southeast **Description:** View of the confluence of Stream 30 and Stream 60 (Cartwright Creek).	

Photograph No. 30 **Date:** May 27, 2020 **Direction:** North **Description:** General overview of grass field for cattle grazing.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 31 **Date:** May 27, 2020 **Direction:** Southwest **Description:** General overview of Pond 33.	

Photograph No. 32 **Date:** May 27, 2020 **Direction:** Northeast **Description:** View of Pond 34.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 33 **Date:** May 27, 2020 **Direction:** West **Description:** Downstream view of Stream 60 (Cartwright Creek).	

Photograph No. 34 **Date:** May 27, 2020 **Direction:** Northwest **Description:** Downstream view of Stream 39.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 35 **Date:** May 27, 2020 **Direction:** West **Description:** View of Pond 40.	

Photograph No. 36 **Date:** May 27, 2020 **Direction:** South **Description:** General view of agricultural field onsite.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 37 **Date:** May 27, 2020 **Direction:** West **Description:** View of Pond 42.	

Photograph No. 38 **Date:** May 27, 2020 **Direction:** North **Description:** Upstream view of Stream 41.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 39 **Date:** May 28, 2020 **Direction:** Southwest **Description:** View of Pond 44.	

Photograph No. 40 **Date:** May 28, 2020 **Direction:** North **Description:** Upstream view of Stream 51.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 41 **Date:** May 28, 2020 **Direction:** North **Description:** Upstream view of the confluence of Stream 46 and 47.	

Photograph No. 42 **Date:** May 28, 2020 **Direction:** North **Description:** View of Pond 46.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 43 **Date:** May 28, 2020 **Direction:** East **Description:** View of Wetland E near Pond 46.	

Photograph No. 44 **Date:** May 28, 2020 **Direction:** Southeast **Description:** Downstream view of Stream 48.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 45 **Date:** May 28, 2020 **Direction:** West **Description:** View of Pond 48.	

Photograph No. 46 **Date:** May 28, 2020 **Direction:** Northwest **Description:** View of Wetland H near Stream 49.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 47 **Date:** May 28, 2020 **Direction:** Northwest **Description:** View of Pond 49.	

Photograph No. 48 **Date:** May 28, 2020 **Direction:** Northeast **Description:** Upstream view of Stream 58.	

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer**:	C.Brendel & J. Schwieterman

Photograph No. 49 **Date:** May 28, 2020 **Direction:** West **Description:** Upstream view of Stream 50.	

Photograph No. 50 **Date:** May 28, 2020 **Direction:** West **Description:** View of Pond 52.	

APPENDIX C – DATA SHEETS

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon/Marion Sampling Date: 5/20/20
Applicant/Owner: Geenex State: KY Sampling Point: WA/WB
Investigator(s): C. Brendel / J. Schwietzman Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

Wetlands A/B

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes X No

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WA/WB

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)			
1. Eleocharis palustris	15		OBL
2. Carex vulpinoidea	50	X	FACW
3. Panicum virgatum	10		FAC
4. _____			
5. _____			
6. _____			
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
	75 = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	75 (A)		145 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

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

Sampling Point: WA/WB

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 5/4	80	10YR 5/6	20	C	M	loamy clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon/Marion Sampling Date: 5/20/20
Applicant/Owner: Geenex State: KY Sampling Point: WC
Investigator(s): C. Brendel, J. Schweiterman Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 3
Water Table Present?	Yes X	No ___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 4

Wetland Hydrology Present? Yes ____ No ____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WC

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)			
1. Schoenoplectus tabernaemontani	15		OBL
2. Carex sulphurea	30	x	FACW
3. Impatiens capensis	5		OBL
4. Panicum virgatum	50	x	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
50% of total cover: _____	20% of 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	30	x 2 =	60
FAC species	50	x 3 =	150
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	95 (A)		225 (B)

Prevalence Index = B/A = 2.4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

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

Sampling Point: WC

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR5/2	75	7.5YR5/8	25	C	M	Loamy clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon / Marion Sampling Date: 5/21/20

Applicant/Owner: Geenex State: KY Sampling Point: WD/E/F/G/H

Investigator(s): C. Brendel / J. Schwieterman Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: _____ NWI classification: N/A

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

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

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

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

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

Remarks:

Wetlands D/E/F/G/H

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 4
Water Table Present?	Yes X	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 4

Wetland Hydrology Present? Yes X No _____

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WD/E/F/G/H

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size:)			
1. Polygonum hydropiperoides	10		OBL
2. Schoenoplectus fabernaemontani	50	X	OBL
3. Carex vulpinoidea	40	X	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

50% of total cover: _____ 20% of 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	40	x 2 =	80
FAC species	10	x 3 =	30
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	100 (A)		160 (B)

Prevalence Index = B/A = 1.6

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

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

Sampling Point: WD/E/F/G/H

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 5/2	80	10YR 5/6	20	C	M	Loamy clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon/Marion Sampling Date: 5/20/20
Applicant/Owner: Geenex State: KY Sampling Point: UP
Investigator(s): C. Brendel, J. Schwieterman Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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 on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: UP-1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Sapling Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		
Herb Stratum (Plot size: _____)			
1. Setaria pumila	30	x	FAC
2. Trifolium pratense	30	x	FACU
3. Trifolium repens	30	x	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: _____	20% of total cover: _____		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover: _____	20% of 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: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	30	x 3 =	90
FACU species	60	x 4 =	240
UPL species		x 5 =	
Column Totals:	90 (A)		330 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No X

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

Sampling Point: UP

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 5/4	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon/Marion Sampling Date: 5/20/20
Applicant/Owner: Geenex State: KY Sampling Point: UP
Investigator(s): C. Brendel, J. Schwieterman Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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 on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UP-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Juglans nigra	30	X	FACU
2. Acer rubrum	20	X	FAC
3. Acer saccharinum	20	X	FACW
4. Liriodendron tulipifera	30	X	FACU
5.			
6.			
7.			
	100	= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
		= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Herb Stratum (Plot size:)			
1. Lonicera maackii	20	X	UPL
2. Urtica dioica	30	X	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	= Total Cover	

50% of total cover: _____ 20% of total cover: _____

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

50% of total cover: _____ 20% of 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: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 16.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	20	x 3 =	60
FACU species	110	x 4 =	440
UPL species	20	x 5 =	100
Column Totals:	150 (A)		600 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

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

Sampling Point: UP

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	7.5YR 5/4	100						

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: N. Bobwhite Solar City/County: Lebanon/Marion Sampling Date: 5/20/20
Applicant/Owner: Geenex State: KY Sampling Point: UP
Investigator(s): C. Brendel, J. Schwieterman Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD83
Soil Map Unit Name: NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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 on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

APPENDIX H

THREATENED AND ENDANGERED SPECIES ASSESSMENT

December 16, 2020

Geenex Solar
5960 Fairview Road, Suite 400
Charlotte, North Carolina 28210

Attn: Mr. Patrick Rust
P: (828) 598-3031
E: Patrick.rust@geenexsolar.com

Re: Threatened and Endangered Species Report
Northern Bobwhite Solar Project
Springfield Road
Lebanon, Marion County, Kentucky
Terracon Project No. N1207222

Dear Mr. Rust:

Terracon is pleased to submit the Threatened and Endangered (T&E) Species Review report for the above referenced project. The purpose of our services was to characterize the existing site conditions in an effort to identify any potential habitat for T&E species and submit a report of the findings.

Terracon appreciates the opportunity to have worked for you on this project. If you have any questions regarding the content of this report, please contact me at (513) 612-9094 or via email at swest@terracon.com.

Sincerely,
TERRACON Consultants, Inc.

Cassie Brendel
Staff Scientist

for
Scott E. West
Group Manager

Threatened and Endangered Species Review

Northern Bobwhite Solar Project

Springfield Road

Lebanon, Marion County, Kentucky

Date: December 16, 2020

Terracon Project No. N1207222

Prepared for:

Geenex Solar

Charlotte, North Carolina

Prepared by:

Terracon Consultants, Inc.

Cincinnati, Ohio

TABLE OF CONTENTS

Threatened and Endangered Species Review
Northern Bobwhite Solar Project
Springfield Road
Lebanon, Marion County, Kentucky
Terracon Project No. N1207222
December 16, 2020

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Geenex Solar (client) to perform a Threatened and Endangered (T&E) Species Review in an effort to identify any known occurrences of state and federally listed T&E species or any areas of designated critical habitat on or in the vicinity of the proposed, approximately 1,990-acre property, hereafter referred to as the project site. The site is located east of Springfield Road along Green Valley Drive, Gene Campbell Road, and Horan Lane in Lebanon, Marion County, Kentucky. The project site location is depicted on Exhibit 1 and 4 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.

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 Kentucky Department of Natural Resources (KDNR) 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

Terracon has requested a file review by the USFWS and the KDNR 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. At the issuance of this report, neither the USFWS nor KDNR have responded to our inquiry. Additionally, Terracon has reviewed the USFWS Information for Planning and Conservation (IPaC) website for a list of threatened, endangered, and candidate to be listed species for Marion County, Kentucky. The IPaC documentation is included as Appendix C. The IPaC listed three species, which are discussed below. Critical habitat for these species was not identified within project site boundaries. Representative site photographs are included in Appendix B.

- The Indiana bat (*Myotis sodalis*) and Gray bat (*Myotis grisescens*) are federally-listed endangered species, and the Northern long-eared bat (*Myotis septentrionalis*) is federally-listed threatened species which are known to occur in Marion 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, Gray Bat, and Northern long-eared bat for winter hibernacula. In addition to on-site streams, forested areas containing mature trees and with relatively open understories were observed within the site boundaries. Therefore, it is Terracon's opinion that potential habitat was identified on the project site. Due to the presence of potential habitat, any tree clearing should be performed seasonally (between October 1st and March 31st) or additional investigations and consultation with regulatory agencies and may be necessary.

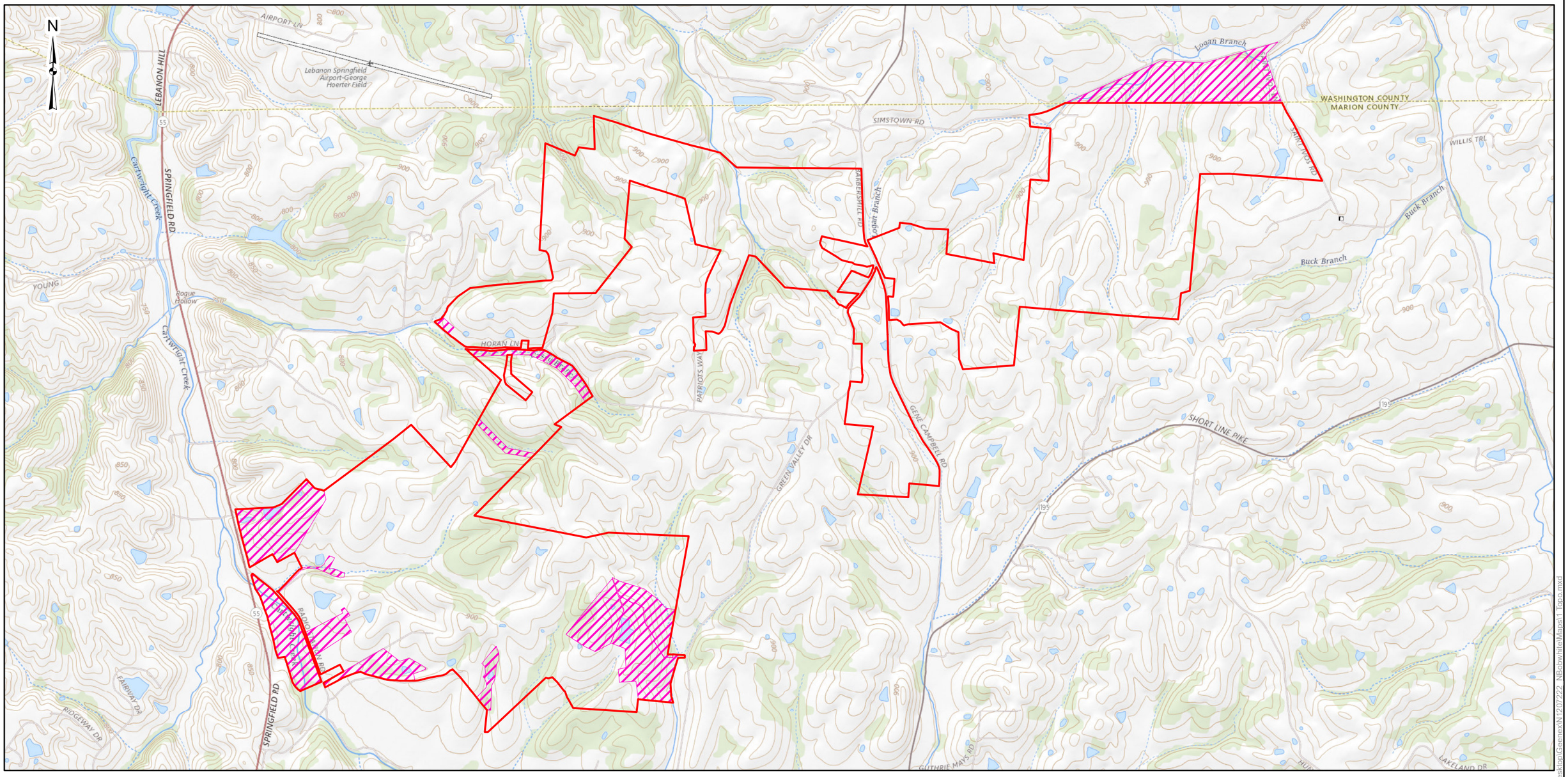
4.0 SUMMARY AND CONCLUSION

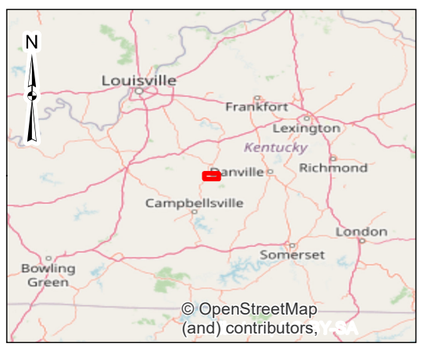
A T&E species review of an approximately 1,990-acre property located near Lebanon, Marion County, Kentucky was conducted on May 19-21, 27, 28, September 8, and December 9, 2020. A review of the project site was conducted utilizing readily available information including, but not limited to, IPaC documentation, aerial imagery and other available data to assist with the findings. In addition, a preliminary site visit was performed to characterize the existing site conditions and observe the project site for potential T&E habitat. A summary of field observations are outlined in the following section.

Terracon has reviewed the USFWS IPaC website for a list of threatened, endangered, and candidate species to be listed in the vicinity of the project site for Marion County, Kentucky, which listed three species. Due to the presence of potential habitat for the Indiana and Northern long-eared bats, any tree clearing would need to be performed seasonally or additional investigations and consultation with regulatory agencies may be necessary.

Appendices

APPENDIX A – EXHIBIT





Legend

- Project Site Boundary
- Do Not Disturb Parcels

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 0.25 0.5 1 Miles

1:24,000

Project No.:	N1207222
Date:	12/10/2020
Drawn By:	MDP
Reviewed By:	SEW

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

SITE LOCATION MAP

T&E Species Report
Northern Bobwhite Solar Site
Lebanon, Marion County, Kentucky

Exhibit

1

C:\Users\mdperkins\OneDrive - Terracon Consultants Inc\Desktop\GeenexN1207222_NBobWhiteMaps\1 Topo.mxd

APPENDIX B – GROUND PHOTOGRAPHS

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 1

Date: May 19, 2020

Direction: West

Description:
Downstream view of perennial stream entering a riparian corridor from an upland pasture.

Photograph No. 2

Date: May 19, 2020

Direction: South

Description:
Representative view of wetland habitat on-site.

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 3 **Date:** May 20, 2020 **Direction:** Southwest **Description:** General overview of upland pasture.	

Photograph No. 4 **Date:** May 20, 2020 **Direction:** Southwest **Description:** General overview of pond surrounded by young growth forest and pasture.	

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 5

Date: May 27, 2020

Direction: South

Description:
General view of agricultural field onsite.

Photograph No. 6

Date: May 20, 2020

Direction: North

Description:
Representative view of wetland/stream habitat on-site.

Terracon
Consulting Engineers & Scientists

Photographic Documentation

Client:	Geenex Solar	**Project Number:**	N1207222
Location:	Northern Bobwhite Solar Project	**Photographer:**	C.Brendel & J. Schwieterman

Photograph No. 7

Date: May 20, 2020

Direction: West

Description:
General view of a perennial stream on-site with surrounding upland pasture/riparian corridor.

Photograph No. 8

Date: May 27, 2020

Direction: North

Description:
General view of a perennial stream on-site with surrounding mature forest.

APPENDIX C – IPAC 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: June 17, 2020
Consultation Code: 04EK1000-2020-SLI-1333
Event Code: 04EK1000-2020-E-03489
Project Name: N Bobwhite

Subject: List of threatened and endangered species that may occur in your proposed project location, and/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: 04EK1000-2020-SLI-1333

Event Code: 04EK1000-2020-E-03489

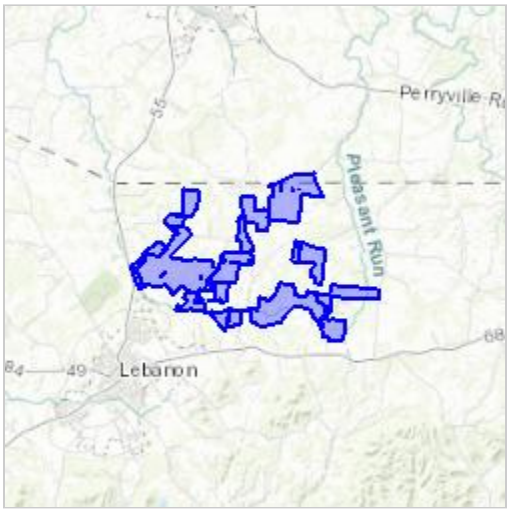
Project Name: N Bobwhite

Project Type: POWER GENERATION

Project Description: Wetland delineation

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/37.606508943161536N85.23151065426907W



Counties: Marion, KY | Washington, KY

Endangered Species Act Species

There is a total of 3 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 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.

---

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://ecos.fws.gov/ipac/guideline/design/population/21/office/42431.pdf

Indiana Bat *Myotis sodalis*	Endangered

There is **final** critical habitat for this species. Your location is outside 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://ecos.fws.gov/ipac/guideline/design/population/1/office/42431.pdf

Northern Long-eared Bat *Myotis septentrionalis*	Threatened

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

Species profile: https://ecos.fws.gov/ecp/species/9045
General project design guidelines:
https://ecos.fws.gov/ipac/guideline/design/population/10043/office/42431.pdf

Critical habitats

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