thoroughbred solar

Attachment E
Wetland Delineation Report

- **Wetland and Stream Delineation Report, February 2022**
- **Wetland and Stream Delineation Report Addendum, August 2022**

HALEY ALDRICH

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WETLAND AND STREAM DELINEATION REPORT
THOROUGHBRED SOLAR PROJECT
HART COUNTY, KENTUCKY

Prepared for:
Thoroughbred Solar, LLC

Prepared by:
Haley & Aldrich, Inc.

File No. 0203928-000
February 2022

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SIGNATURE PAGE FOR

WETLAND AND STREAM DELINEATION REPORT
THOROUGHBRED SOLAR PROJECT
HART COUNTY, KENTUCKY

PREPARED FOR
THOROUGHBRED SOLAR, LLC

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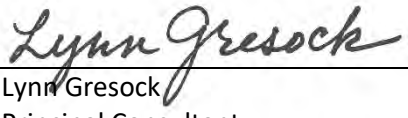

Lynn Gresock
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1. Regulatory Authorities

1.1 WATERS OF THE UNITED STATES

As defined by the United States Army Corps of Engineers (USACE), Waters of the United States include lakes, ponds, streams (intermittent and perennial), and wetlands which are regulated under Sections 401 and 404 of the Clean Water Act. Federally jurisdictional wetlands are defined as "those that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The USACE also regulates navigable waters under Section 10 of the Rivers and Harbor Act (33 United States Code [U.S.C.] 401 et seq.), which requires a permit from the USACE to construct any structure in or over any navigable waters of the United States, as well as any proposed action that would alter or disturb these waters (such as excavation/dredging or deposition of materials). If the proposed structure or activity affects the course, location, condition, or capacity of the navigable water, even if the proposed activity is outside the boundaries of the water body, a permit from the USACE is required. Depending on the type of project and quantity of impact, the permit may be an Individual Permit or may qualify under the USACE Nationwide Permit program.

1.2 WATERS OF THE STATE/COMMONWEALTH

Consistent with Section 401 of the Clean Water Act, a state is required to issue a Water Quality Certification for any project requiring a federal permit. The Section 401 certification is typically issued in conjunction with the USACE Section 404 permit. If authorization under the Nationwide Permit program is applicable, many of those Nationwide Permits incorporate the Water Quality Certification as a part of the authorization and conditions. The Commonwealth of Kentucky does not take jurisdiction over any wetlands or waters beyond that of the USACE. For example, Kentucky does not have an isolated wetlands permit program (Kentucky Energy and Environment Cabinet, 2021). Sinkholes may be protected by the Kentucky Division of Water (KDOW) if they have a direct connection to subsurface water. A KDOW Stream Construction Permit would be needed for construction activities in a stream channel, wetland, or sinkhole drain area.

2. Methodology

Prior to initiating field investigations, Haley & Aldrich, Inc. (Haley & Aldrich) conducted a desktop review of publicly available data to evaluate the presence of mapped wetlands and streams within the Study Area (the approximately 450-acre property illustrated in Figure 1). Data consulted include: United States Geological Survey (USGS) topographic quadrangle maps, National Wetland Inventory (NWI) maps, the Natural Resources Conservation Service (NRCS) County Soil survey, Federal Emergency Management Agency (FEMA) Flood Insurance maps, and the National Hydrography Dataset (NHD). Information gathered from the desktop review is described in Section 3, Site Setting.

The wetland and stream delineation field survey was performed in accordance with criteria set forth in the *Corps of Engineers Wetland Delineation Manual* (1987) and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Regional Supplement* (Version 2.0). Data was collected from one or more sample plots in each delineated wetland (depending on the size of the delineated area) and was recorded on USACE Routine Wetland Determination forms. The boundaries of wetlands were demarcated with pink survey ribbon (flagging) and located with a Trimble 3000 global positioning system (GPS) unit with reported sub-meter accuracy.

The Kentucky Wetland Rapid Assessment Method (KY-WRAM) is used to determine the existing quality and aid in permitting decisions. The KY-WRAM is made up of six metrics: wetland size and distribution, upland buffers and intensity of surrounding land use, hydrology, habitat alteration and habitat structure development, special situations, and vegetation, interspersions, and habitat features. Methodology described in the *Guidance Manual for KY-WRAM, Version 3.0 (2016)* was used for assessing the wetlands.

Hydrology was evaluated based on indicators that are divided into two categories, primary and secondary. The 1987 manual and 2012 supplement define hydrology as present when at least one primary indicator or two secondary indicators are identified. One primary indicator is sufficient to evaluate if hydrology is present; however, if primary indicators are absent then two or more of the secondary indicators are required to evaluate hydrology. If other probable hydrology evidence was found, then this was subsequently documented on the Routine Wetland Determination Form.

Hydrophytic vegetation was assessed by identifying plant species and their assigned wetland indicator rating of obligate (OBL), facultative wet (FACW), facultative (FAC), facultative upland (FACU), and upland (UPL) according to the *2016 National Wetland Plant List*. Vegetation in both upland and wetland communities was characterized using the areal dominance method, with a radius of 30 feet around the soil sample location for trees, a 15-foot-radius for saplings/shrubs, and a five-foot-radius for herbaceous plants.

Hydric soil indicators were evaluated using soil characteristics as defined in *Field Indicators of Hydric Soils in the United States (Version 8.0, 2016)*. Evidence of hydric soil indicators was recorded based on the presence of color matrix, hue, and redoximorphic features such as saturation, gleyed matrix, mottling, hydrogen sulfide odor, and organic/peat layers. Soil test pits were dug using a shovel to a depth of approximately 18 inches or refusal due the presence of a hard pan layer, rock, or hard fill materials. Soil color was described using the Munsell Color book, texture using United State Department of Agriculture (USDA) hand-texture methods, and the presence/absence of redoximorphic features, including depletions and concentrations.

Additional surface waters, including stream channels and drainage ways, found during field work would have been investigated, flagged, located with the GPS unit, and characterized on Stream Inventory Data Forms. To the extent practicable, these surface waters would be investigated to evaluate drainage patterns and potential connections to other Waters of the United States.

3. Site Setting

3.1 PHYSIOGRAPHY AND SOILS

The Study Area is located in the Mississippian Plateau of Kentucky which consists of karst terrain, a limestone plain characterized by sink holes, sinking streams, streamless valleys, springs, and caverns. The Study Area itself is typical of this physiographic province and had been cleared and primarily planted with hay, row-crops, or alfalfa fields. An approximately 23-acre upland woodlot is also present. Elevations within the Study Area range from 600 to 650 feet above mean sea level (ft amsl). A topographic map of the Study Area and surrounding region is provided as Figure 2.

Soil series units mapped by the NRCS web soil survey are listed in Table 1 and provided as Figure 2. Soil units, drainage class, and whether or not the soil unit is classified as hydric are also summarized in Table 1 below. Eleven soil types occur within the Study Area; none of them are hydric.

Table 1. Study Area Soils

Soil Map Unit Symbol	Soil Map Unit Name	Drainage Class	Hydric Conditions[1]
CaD	Caneyville silt loam, very rocky, 6 to 20 percent slopes	Well drained	Non-hydric
CrB2	Crider silt loam, 2 to 12 percent slopes, eroded	Well drained	Non-hydric
CrC2	Crider silt loam, 6 to 6 percent slopes, eroded	Well drained	Non-hydric
ElB	Elk silt loam, 2 to 6 percent slopes, rarely flooded	Well drained	Non-hydric
FdC	Fredonia-Hagerstown-Vertrees silt loams, rocky, 6 to 20 percent slopes	Well drained	Non-hydric
HdB	Hagerstown-Fredonia- Vertrees silt loams, rocky, 2 to 6 percent slopes	Well drained	Non-hydric
Np	Nolin silt loam, depressional, frequently flooded	Well drained	Non-hydric
RxE	Rock outcrop-Caneyville complex 12 to 30 percent slopes	Well drained	Non-hydric
VrB2	Vertrees silt loam, 2 to 6 percent slopes, eroded	Well drained	Non-hydric
VrC2	Vertrees silt loam, 6 to 12 percent slopes, eroded	Well drained	Non-hydric
VrC3	Vertrees silt loam, 6 to 12 percent slopes, severely eroded	Well drained	Non-hydric

[1] *Soils mapping source: USDA, NRCS web soil survey (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm).*

3.2 HYDROLOGY

The Study Area is located in the northern portion of the Lower Kentucky Region Watershed (Hydrologic Unit Code [HUC] 05100205). Most of the surface hydrology within the Study Area is generated by precipitation with some surface flow from neighboring areas. Total average annual precipitation is 52 inches of rain and 8 inches of snow (Source: http://usclimatedata.com as measured in nearby Horse Cave, Kentucky).

The NWI map identifies nine aquatic features mapped within the Study Area. Seven of these features are classified as open water, and the remaining two are classified as palustrine emergent (PEM) wetlands. Mapped wetlands identified within the Study Area are included in Table 2 below and are depicted on Figure 3. Based upon field review, the mapped open water areas and one of the mapped PEM wetlands were found to be associated with karst features rather than wetlands or waters. One NWI mapped open water feature was delineated as a forested wetland. All other NWI mapped features were determined to be upland areas.

Table 2. Federal and State Mapped Wetland and Streams

Name	Classification[1]	Status
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Open Water	Unprotected
NWI-mapped wetland	Emergent Wetland	Unprotected
NWI-mapped wetland	Emergent Wetland	Unprotected

Notes:

[1] NWI Wetland Data Sources.

4. Results

Field investigations to delineate wetlands and streams within and adjacent to the Study Area were completed by a Haley & Aldrich wetland scientist accompanied by an environmental professional on 8 and 9 November 2021. A total of one palustrine forested (PFO) wetland was identified, which was identified as a NWI mapped open water feature. This feature is summarized in Table 3 below and is depicted on Figure 4. No streams were identified within the Study Area.

Table 3. Delineated Wetland

Wetland	Wetland Community[1]	State Classification[2]	Area within Study Area	Jurisdiction[3]
Wetland W1	PFO	none	0.25 acre	Non-jurisdictional

Notes:

[1] Wetland classifications are based on the Cowardin classification system whereby: P = Palustrine; EM = Emergent; SS = Shrub Scrub; FO = Forested.

[2] The State/Commonwealth does not take jurisdiction over USACE non-jurisdictional wetlands.

[3] Based on field observations of hydrologic connections. If necessary, final federal jurisdiction can only be confirmed through consultation with USACE staff.

Representative photos of the delineated wetland feature and associated upland areas are included as Attachment A. The completed routine wetland determination is included as Attachment B. Wetland type was classified according to the Cowardin classification system (Cowardin, et al., 1979).

4.1 KARST FEATURES

Several karst features were observed on site of varying sizes and depressions. Two large holes were observed and noted on Figure 4. These were typified as having 10- to 12-foot shear sides with a maximum depression of up to 25 feet. These two holes were approximately 37,042 square feet (sq ft) and 4,764 sq ft in area. Both holes had the potential for a cave-like opening at the bottom of the depression. Haley & Aldrich did not descend into the bottom of these depressions to investigate further.

4.2 WETLAND DESCRIPTION

Wetland W-1 is a 0.25-acre (10,886 sq ft) PFO wetland that may have been a karst depression that has previously been filled. The center of the wetland was dominated by *Persicaria longiseta* (smartweed: FAC), *Microstegium vimineum* (Japanese stilt grass: FAC), and *Symphyotrichum lanceolatum* (lance-leaf aster: FAC). The forested edge was dominated by *Celtis occidentalis* (hackberry: FAC) and *Fraxinus pennsylvanica* (green ash: FAC). Positive indicators of hydrology within this wetland included geomorphic position, microtopographic relief, water-stained leaves, and a positive FAC-neutral test. Observed hydric soil indicators were Depleted Matrix (F3). The wetland scored a 46 using the KY-WRAM (Appendix C). No outflow was observed from this wetland. This wetland would likely be considered isolated and is therefore considered non-jurisdictional by the USACE due the lack of a hydrologic connection to jurisdictional Waters of the United States.

4.3 STREAM DESCRIPTIONS

During the site visit, no streams or waterways were observed. A culvert was observed under L and N Turnpike Road connecting small, vegetated swales (Figure 4). These swales did not contain a bed, bank, or ordinary high-water mark, and it appeared the culvert was installed for roadside drainage only.

5. Conclusions

A total of one PFO wetland was delineated during November 2021 as part of an on-site wetland and stream delineation. The wetland scored a 46 using the KY-WRAM. The wetland had no visible outlet to jurisdictional Waters of the United States and would be considered non-jurisdictional by the USACE. No streams or other waterways were observed. If needed, a final determination of jurisdictional status can only be made through consultation with the USACE.

References

1. Cowardin, L.M., et al. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. 131 pp.

2. Kentucky Energy and Environment Cabinet. 2021. *401 Water Quality Certification.* Accessed at: §401 Water Quality Certification - Kentucky Energy and Environment Cabinet

3. Kentucky Energy and Environment Cabinet. March 2016. *Guidance Manual for KY-WRAM, Version 3.0.*

4. Munsell Color (Firm). Munsell Soil Color Charts. Grand Rapids, MI: Munsell Color, 2010.

5. U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual*. Environmental Laboratory, Vicksburg, MS, 92 pp.

6. U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*. U.S. Army Engineer Research and Development Center, Vicksburg, MS, 162 pp.

7. U.S. Army Corps of Engineers. 2016. *National Wetland Plant List*. Accessed at: https://www.lrp.usace.army.mil/Portals/72/2016%20National%20Wetland%20Plant%20List.pdf?ver=2016-06-16-094823-560.

8. USDA Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States,* Version 8.0.

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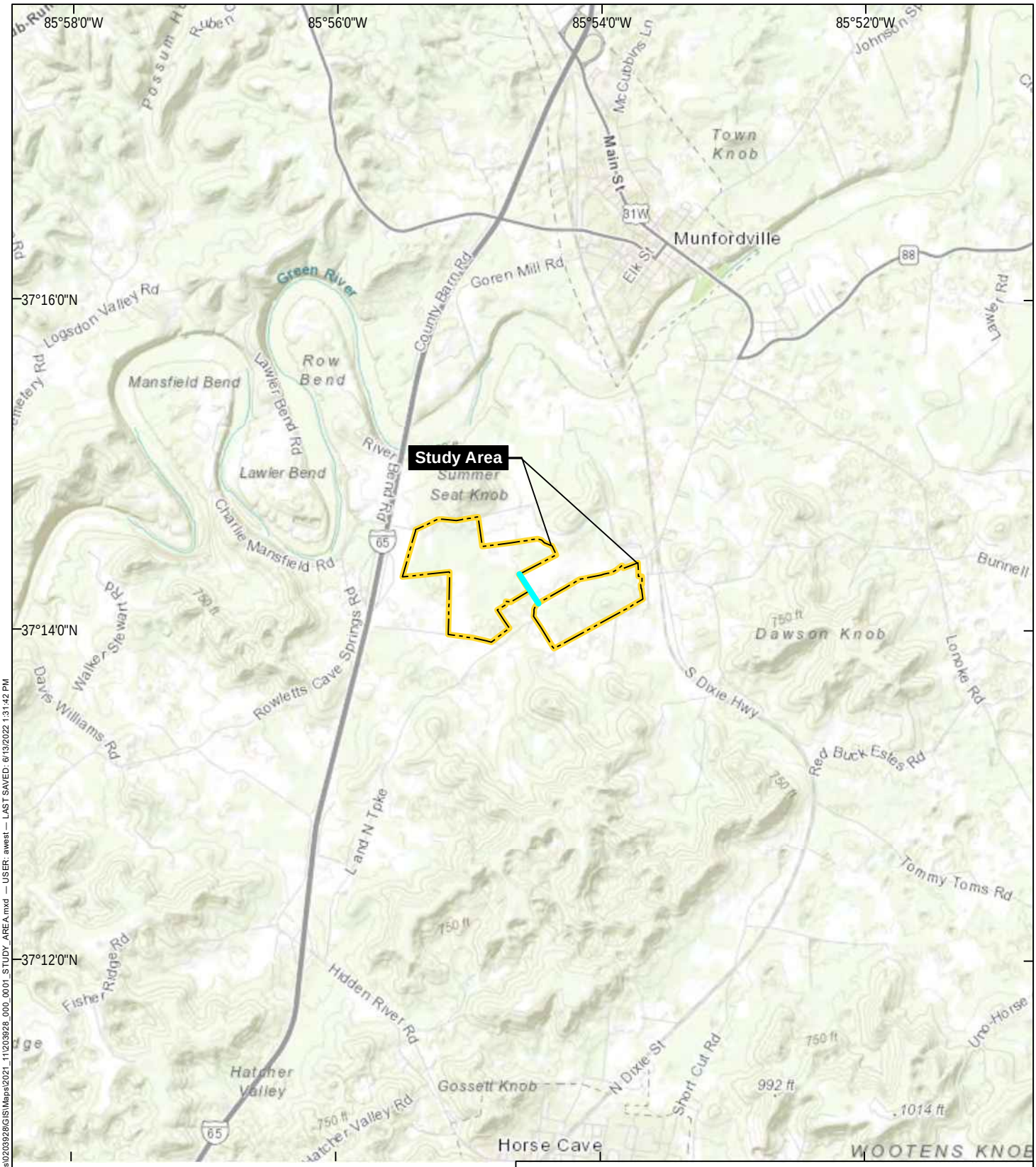
FIGURES



LEEWARD THOROUGHBRED SOLAR
HORSE CAVE, KENTUCKY

STUDY AREA OVERVIEW

MAP SOURCE: ESRI
SITE COORDINATES: 37°14'15"N, 85°54'37"W

APPROXIMATE SCALE: 1 IN = 5000 FT
JUNE 2022

FIGURE 1

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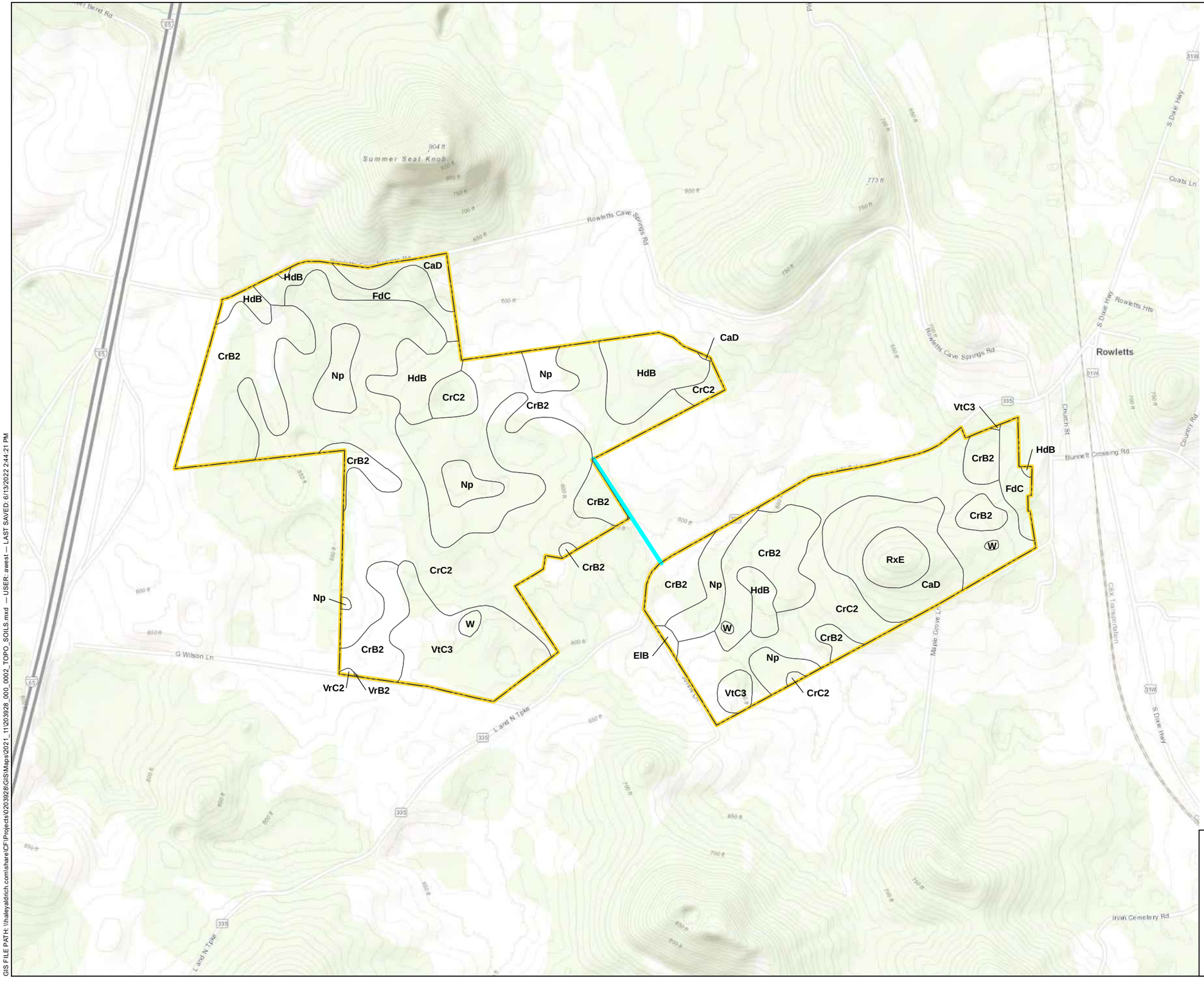

LEGEND

COLLECTOR LINE CORRIDOR

STUDY AREA

STUDY AREA SOILS

CaD - Caneyville silt loam, very rocky, 6 to 20 percent slopes
CrB2 - Crider silt loam, 2 to 6 percent slopes, eroded
CrC2 - Crider silt loam, 6 to 12 percent slopes, eroded
ElB - Elk silt loam, 2 to 6 percent slopes, rarely flooded
FdC - Fredonia-Hagerstown-Vertrees silt loams, rocky, 6 to 20 percent slopes
HdB - Hagerstown-Fredonia-Vertrees silt loams, rocky, 2 to 6 percent slopes
Np - Nolin silt loam, depressional, frequently flooded
RxE - Rock outcrop-Caneyville complex, 12 to 30 percent slopes
VrB2 - Vertrees silt loam, 2 to 6 percent slopes, eroded
VrC2 - Vertrees silt loam, 6 to 12 percent slopes, eroded
VtC3 - Vertrees silty clay loam, 6 to 12 percent slopes, severely eroded
W - Water

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. SOILS DATA SOURCE: U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE

3. BASE MAP SOURCE: ESRI

N

0 1,000 2,000
SCALE IN FEET

HALEY ALDRICH

LEEWARD THOROUGHBRED SOLAR
HORSE CAVE, KENTUCKY

TOPOGRAPHY AND SOILS SERIES

JUNE 2022

FIGURE 2

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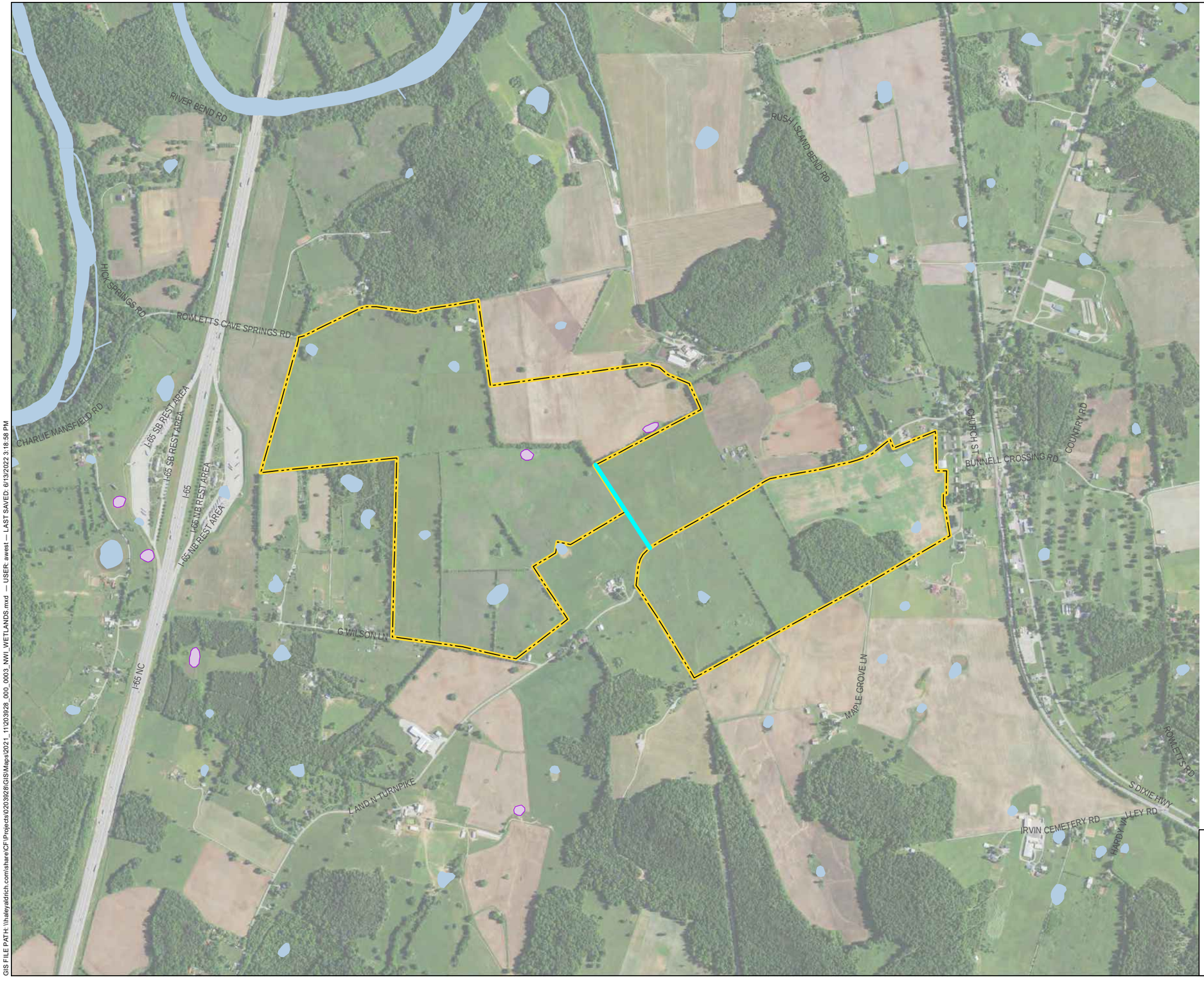

LEGEND

- COLLECTOR LINE CORRIDOR
- EMERGENT WETLAND
- OPEN WATER
- STUDY AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. WETLANDS AND OPEN WATER DATA SOURCE: UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) NATIONAL WETLANDS INVENTORY (NWI)
3. ROADS DATA SOURCE: KENTUCKY TRANSPORTATION CABINET (KYTC)
4. AERIAL IMAGERY SOURCE: KENTUCKY FROM ABOVE, 2020

N

0 1,250 2,500

SCALE IN FEET

HALEY ALDRICH

LEEWARD HART SOLAR
HORSE CAVE, KENTUCKY

FEDERAL AND STATE MAPPED AQUATIC RESOURCES

JUNE 2022

FIGURE 3

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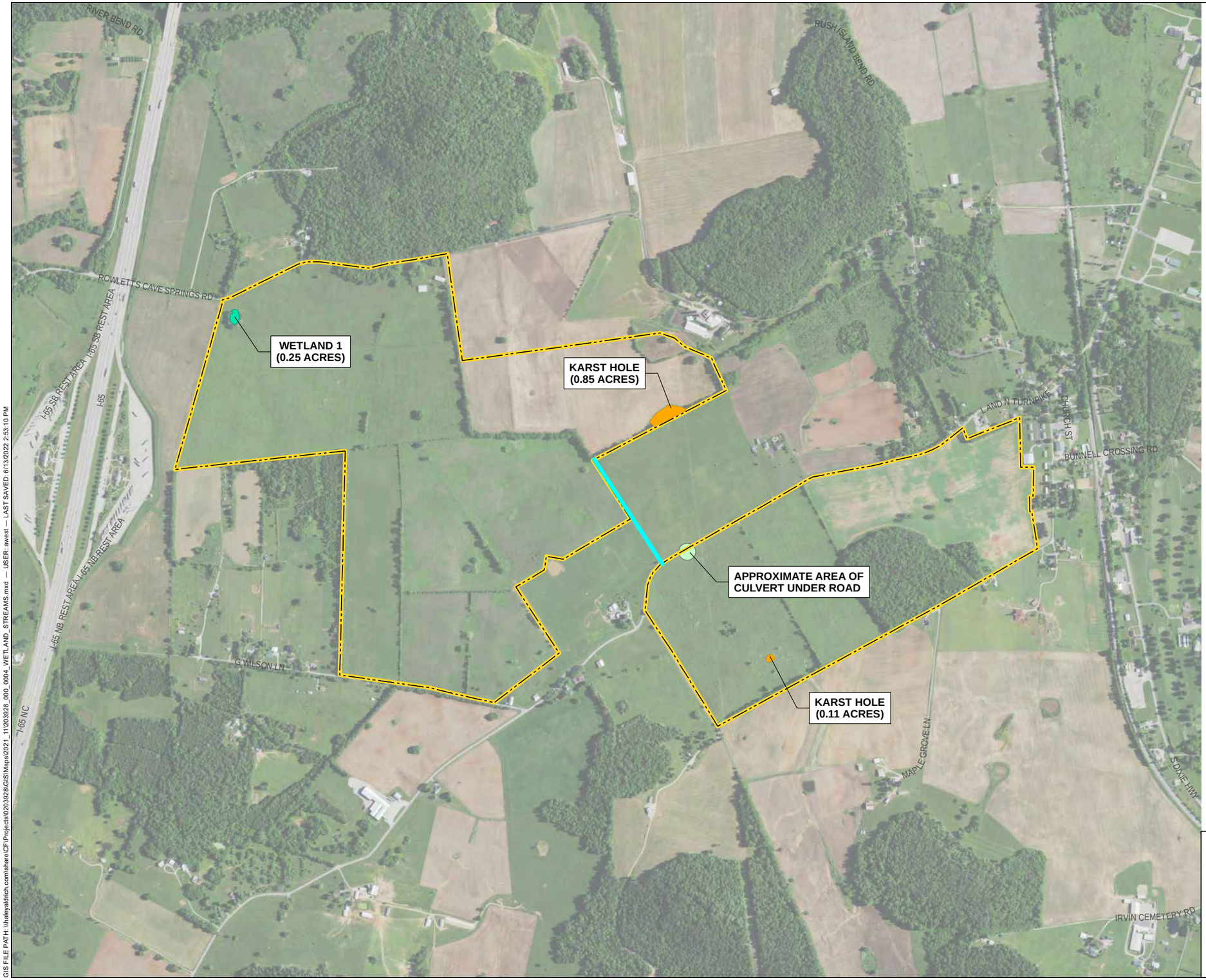

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LEGEND

- DELINEATED WETLAND
- DELINEATED KARST
- COLLECTOR LINE CORRIDOR
- STUDY AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. WETLANDS AND OPEN WATER DATA SOURCE: UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) NATIONAL WETLANDS INVENTORY (NWI)
3. ROADS DATA SOURCE: KENTUCKY TRANSPORTATION CABINET (KYTC)
4. AERIAL IMAGERY SOURCE: KENTUCKY FROM ABOVE, 2020

N

0 1,000 2,000

SCALE IN FEET

HALEY ALDRICH

LEEWARD THOROUGHBRED SOLAR
HORSE CAVE, KENTUCKY

DELINEATED WETLANDS, STREAMS AND KARST FEATURES

JUNE 2022

FIGURE 4

APPENDIX A

Photo Log

Photo 1: Forested (PFO) Wetland W-1 near Flag 5: View looking west.

Photo 2: Forested (PFO Wetland W-1 near Flag 11: View looking north.

Photo 3: Karst feature 1 with walls 10-15 feet high. Located within northern parcel in the Study Area

Photo 4: Karst feature 2. Located within southern parcel in the Study Area.

Photo 5: Wetland W-1 Upland Sample Plot 1 – hayed field looking north.

Photo 6: Wetland W-1 Upland Sample Plot 2 – old field looking east.

Photo 7: Upland soils at Upland Sample Plot 2.

Photo 8: Upland Sample Plot 11 – newly planted area, upland soils looking south

Photo 9: Upland Sample Plot 10 within bottom of Karst feature looking north.

Photo 10: Upland roadside drainage swale along L and N Turnpike Road looking southwest.

APPENDIX B

Routine Wetland Determination and Stream Inventory Data Forms

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse City / Hart Sampling Date: 8 Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP1

Investigator(s): T. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.23909470 Long: -85.91880910 Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No 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 ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= 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. Schedonorus pratensis	30	✓	FACU
2. Plantago lanceolata	5		FACU
3. Trifolium repens	10		FACU
4. Poa pratensis	40	✓	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		

50% of total cover: 42 20% of total cover: 16

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: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 73.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No X

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

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	5YR 4/4						clay loam	

[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: Hart Solar City/County: Horse C. / Hart Sampling Date: 8 Nov 2021

Applicant/Owner: Lacward State: Sampling Point: SP2

Investigator(s): T. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.233006 25 Long: -85.917026 37 Datum:

Soil Map Unit Name: NWI classification: Upland No

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____

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:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= 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: 1m)			
1. Solidago altissima	30	✓	FACU
2. Sorghum halepense	40	✓	FACU
3. Juncus tenuis	1		FACU
4. Andropogon gerardii	10		FAC
5. Panicum virgatum	10		FAC
6. Poa pratensis	10		FAC
7.			
8.			
9.			
10.			
11.			
	101 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
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: 6 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

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.)

SOIL

Sampling Point: SP2

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
0-17	10YR 4/4	100					clay loam	

[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: Hyt Solar City/County: Horse City / Hurt Sampling Date: 8 Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP3

Investigator(s): T. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.233114243 Long: -85.913094430 Datum:

Soil Map Unit Name: NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes 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 ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP3

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover: ____	20% of total cover: ____		

Sapling/Shrub Stratum (Plot size:)			
1. Rubus allegheniensis	10	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover: ____	20% of total cover: ____		

Herb Stratum (Plot size:)			
1. Conium maculatum	15		FACW
2. Solidago canadensis	40	✓	FACU
3. Sorghum halepense	20	✓	FACU
4. Poa pratensis	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	50	✓	FACU
2.			
3.			
4.			
5.			
	50 = Total Cover		
50% of total cover: 25	20% of total cover: 5		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

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.)

SOIL

Sampling Point: SP3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	5YR 4/4	95	5YR 4/6	5			clay loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse City / Hart Sampling Date: 8 Nov 2021

Applicant/Owner: Leeward State: _____ Sampling Point: SP4

Investigator(s): T. Walters Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: 37.233 60443 Long: -85.91499214 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No ✓
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 _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP4

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis laevigata	70	✓	FACW
2. Juniperus virginianus	20	✓	FACU
3.			
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover:	20% of total cover: 18		

Sapling/Shrub Stratum (Plot size:)			
1. Rosa multiflora	10	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 = Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size:)			
1. Conium maculatum	5		FACW
2. Arctium minus	10	✓	FACU
3. Rubus allegheniensis	2		FACU
4. Passiflora incarnata	10	✓	UPL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	27 = Total Cover		
50% of total cover:	20% of total cover: 5.4		

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: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ___ No ✓

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

T

SOIL

Sampling Point: SF 4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	85	10YR 5/8	15			clay loam	
10-16	10YR 4/4	100					clay loam	

[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: Hart Solar City/County: Horse City / Hart Sampling Date: 9 Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP5

Investigator(s): T. Walters Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: 37.23587020 Long: -85.91459015 Datum: _____

Soil Map Unit Name: _____ NWI classification: Open water

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

On Karst depression

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP5

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus taeda	40	✓	UPL
2. Quercus falcata	30	✓	FACU
3. Lizia julibrissin	20	✓	UPL
4.			
5.			
6.			
7.			
	70 = Total Cover		
50% of total cover:	20% of total cover: 14		

Sapling/Shrub Stratum (Plot size:)			
1. Rubus allegheniensis	90	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= 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: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: SP5

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR4/4						Loamy clay	
10+								Rock

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches):

Hydric Soil Present? Yes ___ No ✓

Remarks:

by Hart

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse Cr / Sampling Date: 8 Nov 2021

Applicant/Owner: Leeward State: _____ Sampling Point: SP6

Investigator(s): T. Walters Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: 37.239721 85 Long: -85.913185 91 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

✓

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No

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

Remarks:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP6

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		

50% of total cover: ____ 20% of total cover: ____

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

50% of total cover: ____ 20% of total cover: ____

Herb Stratum (Plot size:)			
1. Setaria faberi	10	✓	FACU
2. Verbena urticifolia	2		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= Total Cover		

50% of total cover: ____ 20% of total cover: ____

Woody Vine Stratum (Plot size:)			
1. Euonymus fortunei	40	✓	UPL
2. Euonymus hamiltonensis	10	✓	UPL
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: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

SOIL

Sampling Point: SP6

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/3						Silt loam	
7-17	10YR 4/4						Silt loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

/Hart KY

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse City Sampling Date: 9 Nov 2021

Applicant/Owner: Leeward State _____ Sampling Point: SP 7

Investigator(s): T. Walters Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: 37.24305459 Long: 85.92301876 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

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

Remarks: wetland 1

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP7

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Celtis occidentalis	10	✓	FAC
2. Fraxinus pennsylvanica	40	✓	FACW
3.			
4.			
5.			
6.			
7.			
	50 = Total Cover		

50% of total cover: 20% of total cover: 10

Sapling/Shrub Stratum (Plot size:)			
1. Quercus imbricaria	5	✓	FACU
2. Celtis occidentalis	5	✓	FAC
3. Fraxinus pennsylvanica	5	✓	FACW
4.			
5.			
6.			
7.			
8.			
9.			
	15 = Total Cover		

50% of total cover: 20% of total cover: 3

Herb Stratum (Plot size:)			
1. Microstegium vimineum	25	✓	FAC
2. Symphyotrichum lanceolatum	50	✓	FAC
3. Polystichum acrostichoides	20	✓	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		

50% of total cover: 20% of total cover: 19

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

50% of total cover: 20% of total cove

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 88 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ✓ No __

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

SOIL

Sampling Point: SP7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 5/2	90	10YR 5/6	10			clay loam	
6-18	2.5YR 5/4		10YR 3/4	5			clay loam	

[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) y

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. ✓ No ___

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County Horse City Hart Sampling Date 9 Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP 8

Investigator(s): T. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.242935 02 Long: -85.922614 52 Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ____

Water Table Present? Yes ____ No ✓ Depth (inches): ____

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

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

No hydrology

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: SP8

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= 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. Solidago canadensis	60	✓	FACU
2. Sorghum halepense	30	✓	FACU
3. Phytolacca americana	5		FACU
4. Passiflora incarnata	10		UPL
5. Poa pratensis	10		FAC
6. Setaria faberi	5		FACU
7.			
8.			
9.			
10.			
11.			
	120 = Total Cover		

50% of total cover: _____ 20% of total cover: 24

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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes _____ No ✓

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

SOIL

Sampling Point: SP8

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	5YR 4/4						clay loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse Cave / Hart Sampling Date: 9Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP9

Investigator(s): T. Walters. Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: 37.2424 3830 Long: -85.916 5868 1 Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

No hydro

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP9

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
Sp om halepense			
Verbascum thapsus			
	= Total Cover		
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size:)			
1 Datura stram	20	✓	FACU
2 Setaria Faber	15		UPL
3. Lonicera dentata onum	10		UPL
4.	5		FACU
5 Glycine	5		FAC
6. Schedonorus pratensis	50	✓	FACU
7. Solidago canadensis	10		FACW
8. 0			
9.			
10.			
11.			
	115 = Total Cover		
50% of total cover:	20% of total cover: 23		

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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes __ No ✓

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

SOIL

Sampling Point: SP-9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2						loam	
4+								Rock
ype:								

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Horse City / Hart Sampling Date: 9 Nov 2021

Applicant/Owner: Leeward State: KY Sampling Point: SP10

Investigator(s): T. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.23426349 Long: -85.90559613 Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

In Karst Hole

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP10

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus avium	30	✓	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	= 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. Phytolacca americana	30	✓	FACU
2. Schedonurus arundinaceus	70	✓	FACU
3. Conium maculatum	20		FACW
4. Symphyotrichum lanceolatum	5		FACW
5. Solidago canadensis	10		FACU
6.			
7.			
8.			
9.			
10.			
11.			
	135 = Total Cover		
50% of total cover:	20% of total cover: 27		
Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	10	✓	FACU
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: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes __ No ✓

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

SOIL Color (moist) Sampling Point: SP10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5YR 5/3		10YR 5/6	5			loam	
7-16			10YR 5/6	5			clay loam	

[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 :

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Hart Solar City/County: Hyde Cnty / Hart Sampling Date: 9/16/2021

Applicant/Owner: Leeward State: KY Sampling Point: SP11

Investigator(s): J. Walters Section, Township, Range:

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

Subregion (LRR or MLRA): Lat: 37.23896958 Long: -85.89686600 Datum:

Soil Map Unit Name: NWI classification:

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

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

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

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

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

Remarks:

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)
- aturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches):____

Water Table Present? Yes ____ No ____ Depth (inches):____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches):____

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: SP11

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= 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. Avena? Sativa	5	✓	UPL
2. Medicago sativum	5	✓	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	= 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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

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

__ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No ✓

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

newly planted ag field

SP 11

SOIL

Sampling Point:

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	7.5 YR 3/4	100					Clay loam	
7-16	7.5 YR 4/4	100					Clay loam	
16-18	7.5 YR 4/4	80	10 YR 4/6	20				

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

APPENDIX C

Kentucky Wetland Rapid Assessment Method Forms

KY-WRAM Rating Form Version 3.0	Kentucky Wetland Rapid Assessment Method (KY-WRAM) Kentucky Division of Water

Instructions:

The Kentucky Wetland Rapid Assessment Method is intended for use as a tool for functional assessment. The method supplements, but does not replace information used in the existing regulatory process for wetlands, such as delineation. It is intended for use on all types of wetland in Kentucky. This is a rapid assessment method with combined field and office prep time (GIS) of no more than 8 hours. This method does not replace quantitative assessments such as Indices of Biotic Integrity.

The Rater is *STRONGLY URGED* to read the Guidance Manual for using the Kentucky Wetland Rapid Assessment Method (KY-WRAM) for further elaboration and discussion of the questions below prior to using the rating forms. It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the KY-WRAM in order to properly categorize a wetland. To *properly* answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to the Scoring Boundary section in the Guidance Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

The KY-WRAM was developed by a Technical Working Group of state and federal agencies and Eastern Kentucky University. This method is modeled off of the Ohio Rapid Assessment Method (ORAM) with modifications influenced by North Carolina and Michigan's wetland rapid assessment methods.

The total score has been shown to be consistent year round; however, the ideal timeframe for use of this method is during the plant growing season when plant species can be reliably identified. It should be noted that the individual metrics may be scored differently between the seasons because certain metrics are easier to evaluate during the growing season (e.g., highly-invasive plant species coverage, special wetlands, vegetation components) and non-growing season (e.g., substrate/soil disturbance, hydrology).

Although the form may be filled out in a linear manner it is expected that the Rater will make note of wetland characteristics throughout the entire field evaluation. For example, alterations to the hydrology, substrate, or habitat, plant species encountered, and the amount of microtopography features present. This is an important step in evaluating the method properly.

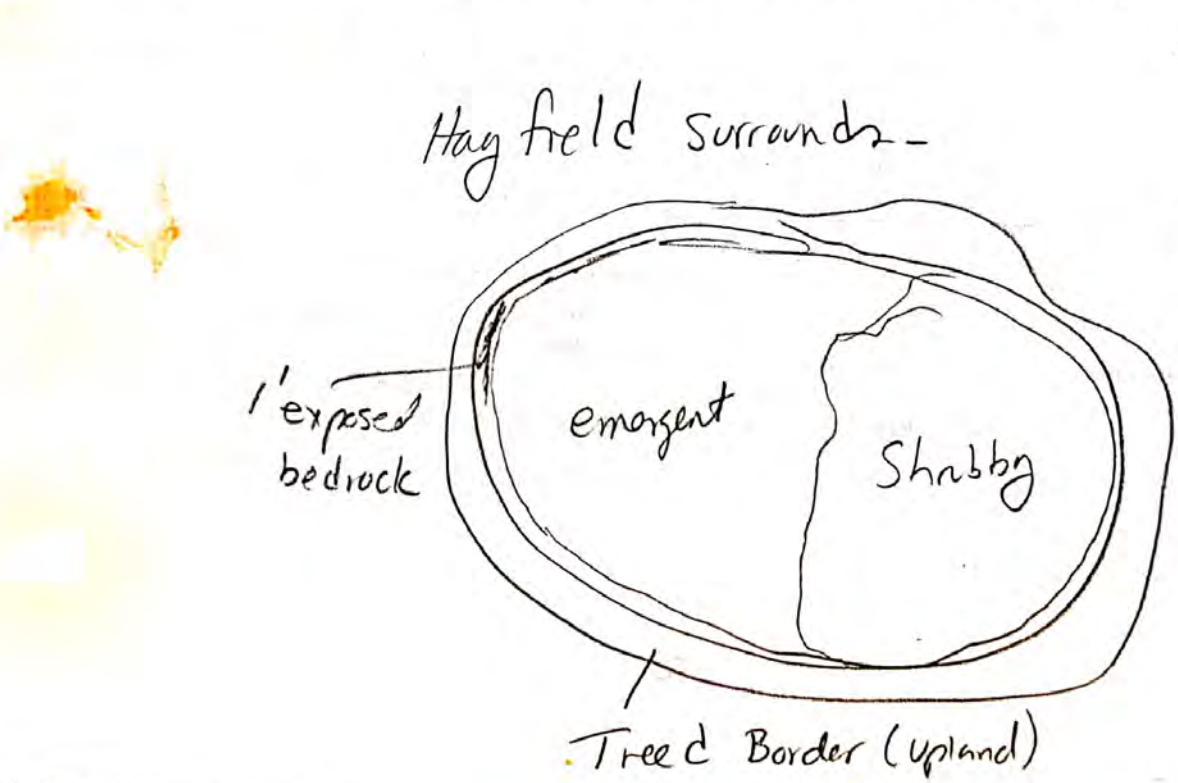
Background Information

Name of wetland: Wetland 1	Evaluator name: Tim Walters
Date of evaluation: Nov 2021	Phone number: 419-367-1422
Lat/Long coordinates: (decimal degrees)	Email: twalters@hartcrowser.com
County: Hart	Evaluator affiliation and address: Hart Crowser / Haley + Aldrich Portland, OR
USACE/WQC Project ID:	
Precipitation within the last 48 hours? Circle: Yes (No)	

Attachments: Complete and check (V) each box

- ☑ Attach map of wetland location. Use county road map or USGS 7.5 minute topographic map with location indicated.
- ☑ Attach color photographs of wetland including landscape shot of entire wetland (if possible), vegetation components, habitat types, hydrologic features, and other relevant site features.
- ☑ Attach prints of satellite imagery used for buffer and connectivity metrics. This should include multiple prints at appropriate scales. Prints should include labeled marks of the following: site location, Wetland Assessment Area, plant communities within the wetland, streams, 100 year floodplains, ponds, patches of open water, relevant upland features, and location of modification to wetland. Also include north arrow and scale of each print.

Wetland Sketch (include north arrow, hydrologic features, plant communities and other habitat features)



Actual Wetland Size (indicate units):

Wetland Type (indicate NWI & HGM classifications):

Background Information (continued)

Narrative Discussion: List any additional site information or features that may be relevant to evaluation of the wetland. See Guidance Manual for the types of information that should be included here. Scoring comments should be placed on page 13.

According to IPAC, critical habitat exists. It may not exist on-site.

Narrative Rating

1. U.S. Fish and Wildlife Service (USFWS) Critical Habitat	
• Is any part of the wetland located within the same HUC-12 watershed designated as Critical Habitat? (see Narrative Discussion)	☑ Yes ☐ No
• Does any federal (G1/G2) or state-listed T/E plant or animal species (S or S2) occur within the wetland's HUC-12 watershed? (see Narrative Discussion)	☑ Yes ☐ No Acco.
• Does any S3 (state species of concern) species occur within the wetland's HUC-12 watershed? (see Narrative Discussion)	☑ Yes ☐ No
2. Rare Wetland Community Type	
• Does the wetland include a KSNPC rare wetland community?	☐ Yes ☑ No
• If YES, list the community type, the size of the rare community, and the percent of the wetland area.	
3. Scenic, Recreational, and Cultural Value	
• Does the wetland have scenic, recreational, or cultural value? (see Narrative Discussion)	☐ Yes ☑ No

Comments:

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

Metric 1. Wetland Size and Distribution – Maximum 9 points.

1a. Wetland Size – Maximum 6 points.
Using GIS, estimate the size of the wetland (i.e., Wetland Assessment Area). **Select one size class.**

Sources/assumptions for size estimate (list):			Score
	≥ 50 acres	6 pts	
	25 acres to <50 acres	5 pts	
	10 acres to <25 acres	4 pts	
Actual Wetland Size Estimate: 0.24 acres	3 acres to <10 acres	3 pts	1
	0.3 acre to <3 acres	2 pts	
Wetland area proposed to be impacted: ? %	0.1 to 0.3 acre	1 pts	
	< 0.1 acre	0 pts	

1b. Wetland Scarcity – Maximum 3 points.
Use USFWS National Wetlands Inventory (NWI) maps, aerial imagery, and other information to estimate percentage of wetland area remaining within a 2-mile radius from the wetland's center (use ArcGIS or by visual estimate). For this submetric, areas of open water within lakes, streams, rivers, and ponds (PUBX), etc. should be excluded. **Select the most appropriate category below.**

		Score
✓ 0 to 5% of surrounding 2-mile radius is wetland	3 pts	
6 to 20% of surrounding 2-mile radius is wetland	2 pts	3
>20% of surrounding 2-mile radius is wetland	1 pt	

Metric 1 Total: add 1a & 1b **(9 points max.)** 4

Wetland Size Estimate + Metric to English Conversion

acres	hectare	feet^2	ft on side	yard^2	yd on side	m^2	m on side
50	20.2	2,177,983	1,476	241,998	492	202,000	449
25	10.1	1,088,992	1,044	120,999	348	101,000	318
10	4.1	435,596	660	48,340	220	41,000	203
3	1.2	130,679	362	14,520	121	12,000	110
0.3	0.12	13,067	114	1,452	38	1,200	35
0.1	0.04	4,356	66	484	22	400	20

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

Metric 2. Buffers and Intensity of Surrounding Land Use – Maximum 12 points.

****Use color maps for all metric 2 sub-metrics.**

2a. Average Buffer Width around the Wetland's Perimeter – Maximum 4 points.

Draw the cardinal and ordinal lines from the centroid of the wetland and calculate average buffer width. Select only one score.

Buffers Include:	Non-Buffers Include:	
☐ shrubland, forest of any age, natural grassland, natural rock outcrops and cobble bars	☐ lawns, golf courses, manicured parkland	
☐ abandoned row crop field (vegetated & naturalizing)	☐ residential, commercial, industrial	
☑ hay field (non-row crop)	☑ roadways (including shoulders), parking lots	
☐ lightly managed forest (selectively logged)	☐ railroad tracks/beds	
☐ lightly managed parkland	☐ active agriculture: row crop field	
☐ other wetland, lake, or river	☐ conservation tillage, grazed pasture, utility right-of ways	
☐ Single-track dirt roads (non-motorized vehicle trails that are not sources of sediment)	☐ clear-cutting or heavily managed forest, mining, construction activity	
	☐ gravel or double-track dirt roads (includes ATV trails)	Score

Wide Buffer Width: 150 feet around the perimeter	4 pts	3
Medium Buffer Width: 75 to <150 feet around the perimeter	3 pts	
Narrow Buffer Width: 25 to <75 feet around the perimeter	2 pts	
Very Narrow Buffer Width: 0 (no buffer) to <25 feet around the perimeter	0 pts	

2b. Intensity of Surrounding Land Use within 1,000 feet of the Wetland – Maximum 4 points.

If a land use type in not listed, use the examples below to determine the category. Write in additional land use types here and indicate the land use category you assigned:

Land Use Category	Land Use Types:		Estimate % of each category here ↓		Score
	Estimate the percent coverage comprised by each of the four categories of land use below. Sum the points from all dominant land use categories (i.e., dominant is ≥25% total per category) and then average the score.				
Very Low:	☑ mature growth forest	☐ other wetland, lake, stream, river	0	4 pts	2
Low:	☐ shrubland/young forest ☑ hay field (non-row crop) ☐ lightly managed parkland	☐ old field ☐ single track and two track dirt roads ☐ one-lane paved road	70	2 pts	
Moderately High:	☐ residential & lawns ☐ manicured parkland ☐ golf course ☐ grazed pasture ☐ utility right-of-way	☐ conservation tillage ☐ recent logging and clear-cut (<5 years) ☐ two-lane road ☐ railroad ☐ man-made lake	30	1 pts	
High:	☐ commercial, industrial ☐ high-density residential ☐ heavily grazed pasture ☐ row crop field	☐ multi-lane paved roadway ☐ construction activity ☐ parking lot ☐ hazardous areas (mining, landfills, brownfields, etc.)	0	0 pts	

For scores ending in 0.5, round up

2c. Connectivity to Other Natural Areas – Maximum 4 points.

Use GIS with field adjustment if necessary. Evaluate the wetland's connectivity to habitat patches in the greater landscape either contiguously or via a corridor (≥ 30 ft wide) of natural vegetation. Habitat patches and corridors must be natural terrestrial habitat (i.e., shrubland, forest, natural rock outcrops, cobble bars, wetlands, and etc.). Large streams and rivers, roads, and "non-natural" habitat such as grassland are barriers that end patches and corridors.

Connected at:	Circle all categories that apply but report only the highest point value		Score
Up to 2500 ft. (can be more)	>50% of area is patch	4 pts	2
	<50% of area is patch *(minimum patch size requirement = 10 acres)*	2 pts	
Up to 1000 ft.	>25% of area is patch	2 pts	
	<25% of area is patch	0 pts	

Metric 2 Total: add 2a – 2c **(12 points max.)**	**Sub-total:** 7 11

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

Metric 3. Hydrology – Maximum of 29 points.

3a. Input of Water From an Outside Source – Maximum 10 points. Select all that apply.		Score
Surface Water: Inundation from a lake, pond, or stream overbank flow at least yearly (in a typical year)	4 pts	2
Groundwater: Score only if you observe direct evidence of groundwater (e.g. including, but not limited to, a spring or seep)	4 pts	
Precipitation: All wetlands receive some portion of their hydrological budget from this	2 pt	

3b. Hydrological Connectivity – Maximum 6 points. Select all that apply.		Score
100-Year Floodplain or abutting a smaller stream/creek. As defined in FEMA maps or NRCS alluvial soil maps if FEMA maps are unavailable.	2 pts	0
Between a Stream/Lake/Pond and Human Land Use. The wetland is located between a surface waterbody and any human land use, such that run-off from the adjacent land use could flow through the wetland before it discharges into the surface waterbody.	2 pts	
Wetland Complex. The wetland is part of a large scale (10+ acres) complex of *other* wetlands within 2500' of the assessment area boundary, with small areas of unmanicured/undeveloped vegetated uplands in between.	2 pts	

3c. Duration of Inundation/Saturation – Maximum 4 points.
Select the option(s) below that best describe(s) the dominant hydrologic characteristic of the wetland. "Dominant" is defined as comprising at least 25% of the wetland area. If separate areas have distinctly different hydrologic characteristics, select all that apply and average the points. Use US ACE hydrology indicators for assistance. Use NRCS growing season criteria to determine the growing season length for the county the wetland is in. If the wetland is in the NWI database, the Rater may consult the hydrology modifiers listed in the Classification Code for assistance.

			Score
Semi- to Permanently Inundated/ Saturated	(75 – 100% of growing season)	4 pts	2
Regularly Inundated/ Saturated	(25 – 75% of growing season)	3 pts	
Seasonally Inundated	(12.5 – 25% of growing season)	2 pts	
Seasonally Saturated in the Upper 12 Inches of Soil	(12.5 – 25% of growing season)	1 pt	

3d. Alterations to Natural Hydrologic Regime – Maximum 9 points.
Evaluate the intactness of the natural hydrologic regime of the wetland. Check all forms of observed hydrologic alteration(s) that are potentially influencing the wetland (e.g. alteration may be outside of the wetland). Keep in mind that some alternations do not need to be actively maintained to have permanent negative effects.

A hydrologic alteration may also impact the Substrate/Soil (submetric 4a) and/or Habitat (submetric 4b).

Low	High	Alteration	Low	High	Alteration
☐	☐	ditch(es) in or near the wetland	☐	☐	stormwater inputs (addition of water)
☑	☐	tile(s) in or near the wetland ?	☐	☐	non-stormwater discharge(s)
☐	☐	dike(s) in or near the wetland	☐	☐	road bed(s)/RR grades(s) in or near the wetland
☐	☐	weir(s) in or near the wetland	☐	☐	dredging activities in or near the wetland
☐	☐	stream channelization	☐	☐	filling/grading activities in or near the wetland
☐	☐	other(s) (specify)	**only consider anthropogenic alterations (e.g. exclude beaver activity)		

Select an option below that best describes the extent of wetland hydrology alteration. You may select **adjoining** options and average the points when appropriate.		Score
No Hydrologic Alterations Apparent	9 pts	7
The wetland hydrology appears to have been altered, but the wetland was resilient to alterations and the functions are intact or ~~near~~ optimal level. too young to be natural.	(7 pts)	
The wetland hydrology was altered but appears to retain some degree of functions.	3 pts	
Alterations are severely impacting the hydrology of the wetland.	1 pt	

Metric 3 Total: add 3a – 3d **(29 points max.)**	**Subtotal** 11 22

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

Metric 4. Habitat Alteration and Habitat Structure Development – Maximum 20 Points.

*** A substrate or habitat disturbance may also negatively impact hydrology (Submetric 3d) and substrate/habitat (Submetric 4a/4b).*

4a. Substrate/Soil Disturbance – Maximum 4 points.

Evaluate whether a physical disturbance has occurred to the soil and surface substrates of the wetland. Check all possible forms of observed substrate/soil disturbances **within the wetland** below.

Low	High	Alteration	Low	High	Alteration	Low	High	Alteration
☐	☑	filling	☐	☐	human-induced erosion or exposure	☐	☐	plowing, disking
☐	☐	grading	☐	☐	human-induced sedimentation or burial	☐	☐	intensive grazing (hooves)
☐	☐	logging	☐	☐	dredging (includes excavating)	☐	☐	off-road vehicle use
☐	☐	construction	☐	☐	vehicle use	☐	☐	other(s) (specify)

Select an option below that best describes the extent of wetland soil alteration. You may select **adjoining** options and average the points when appropriate. wetland looks to be sedimented in		Score
No Substrate or Soil Disturbance Apparent	4 pts	3
The wetland substrate or soil appears to have been altered, but the wetland was resilient to alterations	3 pts	
The wetland substrate or soil was altered but was somewhat resilient to alterations	2 pts	
The wetland substrate or soil was altered and was not resilient to alterations	1 pt	

4b. Habitat Alteration – Maximum 9 points.

Evaluate the intactness of the natural habitat and check all possible observed habitat alterations **within the wetland** below.

Utilize aerial photography and field evidence to determine if any habitat alteration has occurred. Determine the approximate pre-disturbance extent of vertical and horizontal habitat attributes (e.g., large woody debris, plant species diversity, hummocks, patchiness, niche diversity, etc.). Disregard changes attributable to wetland community succession or other natural processes.

Low	High	Alteration	Low	High	Alteration	Low	High	Alteration
☐	☐	barriers (e.g. road bed(s)/RR grades(s))	☐	☐	large woody debris (LWD) removal	☐	☒	sedimentation
☐	☐	tree plantation	☑	☑	grazing	☐	☐	dredging
☑	☐	selective cutting	☐	☐	rutting	☐	☐	filling/grading
☐	☐	clearcutting	☐	☐	Herbicide or chemical treatment	☐	☑	plowing/disking/farming
☐	☐	mowing or shrub removal	☐	☐	nutrient enrichment, e.g., nuisance algae	☐	☐	other(s) (specify)

Select an option below that best describes the extent of wetland habitat alteration. You may select **adjoining** options and average the points when appropriate.		Score
No Habitat Alterations Apparent	9 pts	3
The wetland habitat appears to have been altered, but the wetland was resilient to alterations and the functions are intact or near optimal level	7 pts	
The wetland habitat was altered but appears to retain some degree of functions	3 pts	
The alterations are severely limiting habitat function of the wetland	1 pt	

4c. Habitat Reference Comparison – Maximum 7 points.

Determine an overall qualitative rating of the wetland habitat quality in comparison to the best of its type remaining (i.e., any ecologically and/or hydrogeomorphically similar wetland habitat). Do **not** consider the best example for an area (i.e., compare, for example, emergent riverine wetlands to other emergent riverine wetlands). For instances where there is a clear distinction between wetland areas in terms of habitat structure development, the Rater may double-check non-adjoining options, but justification is required. See Guidance Manual for additional assistance.

Select an option below that best describes the wetland habitat structure development. If unclear which of two options is more appropriate, select **adjoining** options and average the points.			Score
Excellent:	Wetland appears to represent the best of its type.	7 pts	3
Good:	Wetland appears to be a good example of its type	5 pts	
Fair:	Wetland appears to be a fair example of its type.	3 pts	
Poor:	Wetland is a poor example of its type	1 pt	

Metric 4 Total: add 4a – 4c **(20 points max.)**	**Subtotal** 9	31

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

Metric 5: Special Wetlands — Maximum of 10 pts.

Metric 5: Special Wetlands — Maximum of 10 pts.

Check all that apply and score as indicated.

Numbers in brackets **[]** indicate point values.

Provide documentation for each selection (photos, checklists, maps, resource specialist concurrence, data sources, references, etc).

5a. Regulatory Protection / Critical Habitat	Score
☑ Known occurrence of federally threatened/endangered species or designated critical habitat within a HUC-12 watershed **[10]**.	10
☐ Known occurrence of other rare species with state rank S1 ***[10]**, S2 ***[5]**, S3***[3]**; *use higher rank if there are mixed ranks or qualifiers (i.e., S1/S2 [10] and S2/S3 [5]). Exclude records which are only "historic" (i.e., surveys have documented that the species is no longer there) within HUC-12 watershed.	

5b. High Ecological Value / Ranked Communities (See manual and key for ranked list of communities)	Score
☐ Appalachian seep/bog (S1S2) **[8]**	0
☐ Bottomland marsh (S1S2) **[8]**	
☐ Bottomland slough OR Coastal Plain Slough (S2) **[5]**	
☐ Calcareous seep/bog (S1) **[10]**	
☐ Coastal Plain forested acid seep (S1) **[10]**	
☐ Cypress (tupelo) swamp (S1) **[10]**	
☐ Sinkhole/depression marsh (S1S2) **[8]** — possibly? very shallow.	
☐ Sinkhole/depression pond (S2) **[5]** ?	
☐ Wet depression/sinkhole forest (S1S2) **[8]**	
☐ Wet bottomland hardwood forest (S2) **[5]**	
☐ Wet meadow (S1) **[10]**	
☐ Wet prairie (S1) **[10]**	

5c. Low-Quality Wetland **Check all that apply, but maximum score is -10 points:**	Score
☐ Wetland is < 1 acre and has >75% cover of invasive plants **[-10]**	0
☐ Wetland is <1 acre and is nonvegetated mined/excavated land **[-10]**	
☐ Wetland is <1 acre and is a constructed stormwater treatment pond **[-10]**	

Metric 5 Total: add 5a – 5c **(10 points max.)***	**Subtotal** 10 41

***Score can be negative**

57 67
15 70
137

Site: Hart County	Rater(s): T. Walters	Date: NW 2021

Metric 6. Vegetation, Interspersion, and Habitat Features – Maximum 20 points.

****For each Metric 6 sub-metric, do NOT consider the wetland type being assessed, especially for plant species diversity in 6a.**

6a. Wetland Vegetation Components – Maximum 9 points.
Determine the Qualitative Cover Score of each Vegetation Component. Using the Scoring Table below, start on the left and proceed to the right, until a point value is obtained for each Component. Vegetation Components may exist in overlapping layers, e.g., significant areas of shrub/sapling and/or herbaceous may exist under a forest canopy. Only groups of trees, clusters of shrubs, or dense patches of herbaceous stems may count toward area coverage. Do not include lone trees, shrub/saplings, or sparse patches of herbaceous stems. See Submetric 6c for list of Kentucky's most invasive wetland species. Check the box on the right to indicate how the score was determined for each Vegetation Component (i.e., F, S or H).

Qualitative Cover Scoring Table

Habitat component - *Check all that apply* →					F	S	H
Vegetation Component is **>0.1** acre	>25% of wetland area	Native species dominate the coverage	High native diversity	3 pts	·		
			Moderate to low native diversity	2 pts		/	2
		Invasive or non-native species dominate the coverage	Moderate to high native diversity	2 pts			
			Low native diversity	1 pt		/	/
	<25% of wetland area	Native species dominate the coverage	Moderate to high native diversity	2 pts			
			Low native diversity	1 pt		/	/
		Invasive or non-native species dominate the coverage	Moderate native diversity	1 pt		·	
			Low native diversity	0 pts			0
Vegetation Component is **<0.1** acre	>25% of wetland area	Native species dominate the coverage	Moderate to high native diversity	2 pts			
			Low native diversity	1 pt	·	·	P
		Invasive or non-native species dominate the coverage		0 pts			
	<25% of wetland area			0 pts			

Write in "absent" (don't score it a zero) if habitat is not present.

Forest Overstory Component (F) – Maximum 3 points. Qualitative cover score derived from table. Forested wetland areas are characterized by a group of trees at least 3 inches in DBH, regardless of height. absent — **Score** —

Shrub/Sapling Component (S) – Maximum 3 points. Qualitative cover score derived from table. Shrub/Sapling wetland areas are dominated by clusters of woody plants less than 3 inches in DBH and greater than 3.28 feet in height. Species include true shrubs, young trees, and stunted trees. **Score** 3

Herbaceous Component (H) – Maximum 3 points. Qualitative cover score derived from table. Herbaceous wetland areas are dominated by dense patches of erect, non-woody plants, regardless of size, and woody plants less than 3.28 feet in height. This component includes the robust-stemmed yellow pond lily (*Nuphar advena*) and American lotus (*Nelumbo lutea*). All floating-leaf species (including *Nymphaea* spp.) are **excluded** from the herbaceous component, and are instead included within the open water component (see Submetric 6b). **Score** 4

6a. Vegetative Components Score	7

Subtotal	48	7

Site: Hart County	Rater(s): T. Walker	Date: Nov 2021

6b. Open Water, Mudflat, and Aquatic Bed Habitats – Maximum 3 points.

Open water is an unobstructed, inundated area of water with few or no rooted emergent or non-tree woody plant species. For KY-WRAM, mudflats are considered areas with exposed mud substrate with little to no vegetation. This metric is designed to evaluate habitat for waterfowl, shorebirds, fish, and other wildlife.

This Habitat Component includes combined acreage from any of the following areas:

- **Small ponds (including farm ponds), streams and/or their floodwaters, pools, saturated sandbars, or other natural or constructed waters**
- **Seasonal standing water areas** (e.g., mudflats and dried-down vernal pools) that were inundated long enough during the growing season to support aquatic life. This includes the "understory" below a forest canopy.
- **Aquatic bed areas** (submerged aquatic vegetation). Aquatic bed is dominated by plants growing at or below the surface of the water for most of the growing season in most years. The KY-WRAM includes aquatic bed within the definition of open water, due to the potential difficulty in differentiating the two entities. For the purposes of the KY-WRAM, all floating-leaf aquatic taxa (e.g. water lilies, *Nymphaea* spp.), are included in the definition of aquatic bed (therefore, are included in the definition of open water).
- **100-foot wide strip of open water along a lake or river** (see Wetland Assessment Area guidelines in the *Guidance Manual*). When the Wetland is adjacent to a lake or large river, calculate the acreage of the 100-foot wide open water strip that is included within the Wetland (see KY-WRAM Wetland Assessment Area Boundary Guidelines). Divide the linear feet of shoreline length by 400. For example, if the vegetated portion of the wetland interfaces with 200 linear feet of a lake, then the extent of the lake's open water included within the Wetland would be calculated as: 200/400 = 0.5 acre. Open water ends where water depth is > 6.6 ft; the Rater may use depth charts to establish this, when available.
- **Shallow pools free of dense shrub canopy** (e.g., open area within an inundated shrub swamp).
- **Shallow pools free of densely-packed herbaceous vegetation** (e.g., open area within a marsh or bog).
- The indicators below are intended to provide guidance to determine if open water was present **when the wetland is currently dry.**
  - If the wetland is currently dry, use the appropriate USACE Wetland Delineation Regional Supplement to determine if indicators of open water are present (appropriate indicators are listed below).
  - One primary indicator OR two secondary indicators must be present to consider presence of open water. In the section indicated below, describe how you used indicators to determine your score.

Surface Water Present? ☐ **Yes** – How much? Score below ☒ **No** – Use indicators below, then assign score

Estimate the total coverage. Choose only 1 category.			**Score**
High:	2.5 acres or more	**3 pts**	
Moderate:	1.0 acre to <2.5 acres	**2 pts**	
Low:	0.25 acre to <1.0 acre	**1 pt**	0
Virtually Absent:	<0.25 acre	**0 pts**	

Open Water Hydrology Indicators – Information in parentheses represents US ACE Wetland Delineation Regional Supplement Hydrology Indicators that should be consulted for indicators of open water for the purposes of KY-WRAM.

Check Indicators present below:

Primary Indicators (must have 1)	OR →	**Secondary Indicators (must have 2)**
☐ Surface Water present on aerial imagery (A1)		☐ Sparsely vegetated concave surface (B8)
☐ Water marks (B1)		☐ Drainage patterns (B10)
☐ Inundation Visible of Aerial Imagery (B7)		☐ Moss trim lines (B16)
☐ Algal mat or crust (B4)		☑ Geomorphic position (D2)
☐ Presence of aquatic fauna (B13)		
☐ Presence of true aquatic plants (B14)		

Describe here how indicators were used to determine score:

Subtotal	0	48

Site: Hart County	Rater(s): T. Walters	Date: Nov 2021

6c. Coverage of Highly-Invasive Plant Species – Maximum 1 point.
Estimate the combined total coverage of **any** invasive species present in the wetland.

Selected invasive plant species. Remember to include any species found on the KY-EPPC list that is within the assessment area.
(Print the complete KY-EPPC list and take into the field)
*These native invasive plants are being included for the purposes of the KY-WRAM (i.e., everything on the KY-EPPC list are exotics)

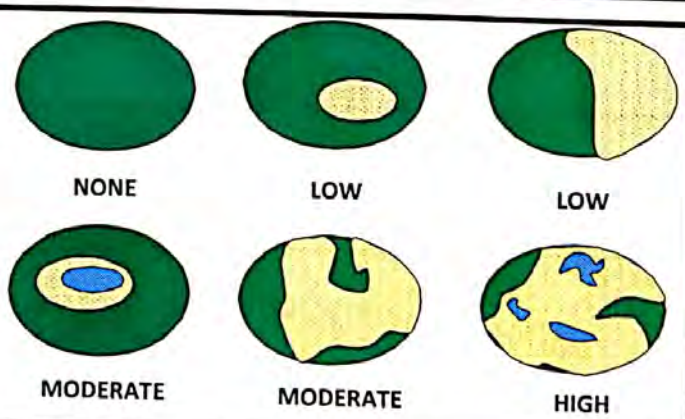
- ☑ *Alliaria petiolata* (Garlic Mustard)
- ☐ *Alternanthera philoxeroides* (Alligator Weed)
- ☑ *Conium maculatum* (Poison Hemlock)
- ☐ *Euonymus fortunei* (Winter Creeper)
- ☐ *Lespedeza cuneata, L. bicolor, L. stipulacea, L. striata, L. thunbergii* (non-native *Lespedeza*)
- ☑ *Ligustrum sinense, L. vulgare* (Privet)
- ☐ *Lonicera japonica* (Japanese Honeysuckle)
- ☐ *Lonicera maackii* (Bush Honeysuckle)
- ☐ *Lythrum salicaria* (Purple Loosestrife)
- ☑ *Microstegium vimineum* (Japanese Stilt Grass)
- ☐ *Myriophyllum aquaticum, M. spicatum* (parrotfeather and Eurasion watermilfoil)
- ☑ *Phalaris arundianacea* (Reed Canary Grass)*
- ☐ *Phragmites australis* (Common Reed)
- ☐ *Polygonum cuspidatum* (Japanese knotweed)
- ☐ *Rhamnus cathartica* (Common Buckthorn)
- ☐ *Rosa multiflora* (Multiflora Rose)
- ☐ *Typha ssp.* (Cattail species)*
- ☐ Other(s): specify below

Estimate the total coverage. Choose only 1 category.			Score
Virtually Absent:	<1% aerial coverage of invasive species	1 pt	-3
Nearly Absent:	1% to <5% aerial coverage of invasive species	0 pts	
Low:	5% to <25% aerial coverage of invasive species	-1 pt	
Moderate:	25% to <75% aerial coverage of invasive species	-3 pts	
Extensive:	>75% aerial coverage of invasive species	-5 pts	

Additional invasive plant species present (list here):

6d. Horizontal (plan view) Interspersion – Maximum 5 points

Evaluate the wetland from a "plan view," i.e., imagine as if you are hovering above the wetland looking down upon it . The figure shows hypothetical wetlands for estimating the amount of habitat interspersion including growing season vegetation communities and open water. Only include open water that is 6.6 feet deep or less and does not include inundated areas below herbaceous and shrub vegetation. If unclear, select **adjoining** options and average the points.



		Score
Wetland has a high degree of interspersion	5 pts	1
Wetland has a moderate degree of interspersion	3 pts	
Wetland has a low degree of interspersion	1 pt	
Wetland has no interspersion	0 pts	

Subtotal -2 46

Site:	Rater(s):	Date:

6e. Microtopographic Features – Maximum 12 points (i.e., 3 points per feature). Choose only one category for each.

1. Hummocks/Tussocks/Tree Mounds, e.g., sedge/grass tussocks, decayed nursery logs (remnants of large logs), root tip-up mounds (uprooted trees), etc. Percent coverage is based on total area of the wetland and includes the depressional matrix within any group of raised features.

Absent: 0 pt No features present	Low: 1 pt Present but <1% of the area	Moderate: 2 pts 1% to 5% of the area	High: 3 pts >5% of the area	Score
				0

2. Large Woody Debris (LWD). per log, average width ≥6 inches (e.g., fallen trees and/or large branches, etc.)

Virtually Absent: 0 pt < 1 per acre	Low: 1 pt 1 to 5 per acre	Moderate: 2 pts 6 to 10 per acre	High: 3 pts >10 per acre	Score
				0

3. Large Snags (≥12 inches DBH).

Absent: 0 pt No snags present	Low: 1 pt Present but <1 per acre	Moderate: 2 pts 1 to 5 per acre	High: 3 pts >5 per acre	Score
				0

4. Amphibian Breeding/Nursery Habitat, e.g., temporary pools with standing water of sufficient duration and depth to support frog and/or salamander reproduction. Permanent areas of vegetated standing water along the edges of ponds, lakes, and some streams also serve as amphibian habitat **(see Manual for description of habitat quality).**

Virtually Absent: 0 pt < 5% of the area	Low: 1 pt Present in small amounts (5% to 10% of the area) but of low to moderate quality	Moderate: 2 pts Present in moderate or greater amounts (>10% of the area) but of low to moderate quality **OR** Present in small amounts (5% to 10% of the area) but of highest quality	High: 3 pts Present in moderate or greater amounts (>10% of the area) and of highest quality	Score
				0

	6e. Microtopographic Features Score 0

Metric 6 Total: add 6a – 6e **(20 points max.)**	**Total Score** 46

KY-WRAM Summary

Narrative Rating		**Circle One**
Question 1: USFWS Critical Habitat, Federal T/E Species, or State-ranked (S1, S2, or S3) species present?	YES	(NO)
Question 2: KSNPC Rare Wetland Community Type Present?	YES	(NO)
Question 3: Wetland has Scenic, Cultural, or Recreational Value?	YES	(NO)

Quantitative Rating	**Score**	**Maximum**
Metric 1: Wetland Size and Distribution		9
Metric 2: Upland Buffers and Intensity of Surrounding Land Use		12
Metric 3: Hydrology		29
Metric 4: Habitat Alteration and Habitat Structure Development		20
Metric 5: Special Situations		10
Metric 6: Vegetation, Interspersion, and Habitat Features		20
Total Score =		**100 pts. Max.**

Site:	Rater(s):	Date:

Scoring Comments:

Flat - inside possible karst feature - now filled? in

HGM definitions:

RIVERINE: Occur in flood plains and riparian corridors in association with stream channels of any flow regime. Dominant water sources are overbank flow or subsurface hydraulic connections.

DEPRESSIONAL: Occur in topographic depressions. Dominant water sources are precipitation, ground water discharge, and water from adjacent uplands. Water moves vertically.

SLOPE: Occur where there is a discharge of ground water to the land surface. Normally occur on sloping land; gradient may be slight to steep. Water does not pool but flows downslope in one direction.

FLAT: Occur most commonly on historic flood plain terraces – where the channel has incised so deeply that it rarely or never floods onto the flood plain. Main source of water is precipitation, and they have poor vertical drainage. They receive no groundwater discharge, which distinguishes them from depressional and slope wetlands.

[redacted]

30 August 2022
File No. 0203928

Thoroughbred Solar, LLC
6688 N. Central Expressway, Suite 500
Dallas, Texas 75206

Attention: Rob Kalbouss

Subject: Wetland and Stream Delineation Report Addendum for
Thoroughbred Solar Project
Hart County, Kentucky

Dear Mr. Kalbouss:

This Wetland and Stream Delineation Report Addendum summarizes the results of field work performed by Haley & Aldrich, Inc. (Haley & Aldrich) to locate and identify wetlands and streams in support of Thoroughbred Solar, LLC's proposed Thoroughbred Solar Project (Project).

The Project site is located west of Rowletts in Hart County, Kentucky (see Figure 1). A wetland and stream delineation was originally completed on approximately 450 acres in 2021. This addendum documents an additional field delineation effort conducted in August 2022 for approximately 80 acres that have been added to the Project site. The additional 80 acres is the Study Area that is the subject of this report and is highlighted in yellow on Figure 1.

Site Setting

PHYSIOGRAPHY AND SOILS

The Study Area is located in the Mississippian Plateau of Kentucky which consists of karst terrain, a limestone plain characterized by sink holes, sinking streams, streamless valleys, springs, and caverns. The Study Area itself is typical of this physiographic province and had been cleared and primarily planted with hay or row-crops. Elevations within the Study Area range from 600 to 640 feet above mean sea level (ft amsl). A topographic map of the Study Area and surrounding region is provided as Figure 2.

Soil series units mapped by the NRCS web soil survey are listed in Table 1 and provided as Figure 2. Soil units, drainage class, and whether the soil unit is classified as hydric are also summarized in Table 1 below. Six soil types occur within the Study Area; none of them are hydric.

Table 1. Study Area Soils

Soil Map Unit Symbol	Soil Map Unit Name	Drainage Class	Hydric Conditions[1]
CaD	Caneyville silt loam, very rocky, 6 to 20 percent slopes	Well-drained	Non-hydric
CrB2	Crider silt loam, 2 to 12 percent slopes, eroded	Well-drained	Non-hydric
CrC2	Crider silt loam, 6 to 6 percent slopes, eroded	Well-drained	Non-hydric
FdC	Fredonia-Hagerstown-Vertrees silt loams, rocky, 6 to 20 percent slopes	Well-drained	Non-hydric
HdB	Hagerstown-Fredonia-Vertrees silt loams, rocky, 2 to 6 percent slopes	Well-drained	Non-hydric
Np	Nolin silt loam, depressional, frequently flooded	Well-drained	Non-hydric

Notes:

[1] Soils mapping source: USDA, Natural Resource Conservation Service (NRCS) web soil survey.

HYDROLOGY

The Study Area is located in the northern portion of the Lower Kentucky Region Watershed (Hydrologic Unit Code [HUC] 05100205). Most of the surface hydrology within the Study Area is generated by precipitation with some surface flow from neighboring areas. Total average annual precipitation is 52 inches of rain and 8 inches of snow (Source: http://usclimatedata.com as measured in nearby Horse Cave, Kentucky).

The National Wetlands Inventory (NWI) map identifies one aquatic feature mapped within the Study Area, as shown on Figure 3. The NWI aquatic feature was mapped as open water. No streams were indicated in the NWI mapping.

Results

A wetland and stream delineation was conducted within the additional Study Area by two Haley & Aldrich wetland scientists on 22 August 2022. No streams, wetlands, or ponds were identified.

The northern parcel was an active corn field during the site visit. One small stand of trees and upland herbaceous vegetation were located within the agricultural field. This upland vegetation stand within the agricultural field was hackberry (*Celtis occidentalis*), red maple (*Acer rubrum*), Canada wild rye *(Elymus canadensis),* Kentucky blue grass (*Poa pratensis*), and white clover (*Trifolium repens*). The southern parcel was an active hayfield dominated by Kentucky blue grass, white clover, tall redtop (*Tridens flavus*), and tall rye grass (*Schedonorus arundinaceus*). Representative photos of the upland areas are included as Attachment A. During the site visit, the NWI-mapped open water feature was not observed and determined to not be present, as it was currently an active corn field.

Conclusions

No streams, wetlands, or ponds were observed or delineated during the August 2022 wetland and stream delineation. A total of one Palustrine Forested (PFO) wetland was delineated during November 2021 as part of an on-site wetland and stream delineation. The wetland scored a 46 using the Kentucky Wetlands Rapid Assessment Method (KY-WRAM). The wetland had no visible outlet to jurisdictional Waters of the United States and would be considered non-jurisdictional by the USACE. No streams or other waterways were observed during the November 2021 site visit. If needed, a final determination of jurisdictional status can only be made through consultation with the USACE.

Sincerely yours,

HALEY & ALDRICH, INC.

Audrey West
Assistant Project Manager

Lynn Gresock
Principal Consultant

Enclosures:

References
Figure 1 – Study Area Overview
Figure 2 – Topography and Soils Series
Figure 3 – Federal and State Mapped Aquatic Resources
Figure 4 – Delineated Features, Photo Location, and Land Cover
Attachment A – Photo Log

References

1. Cowardin, L.M., et al. 1979. *Classification of wetlands and deepwater habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Washington D.C. 131 pp.

2. Kentucky Energy and Environment Cabinet. 2021. *401 Water Quality Certification.* Accessed at: §401 Water Quality Certification - Kentucky Energy and Environment Cabinet

3. Kentucky Energy and Environment Cabinet. March 2016. *Guidance Manual for KY-WRAM, Version 3.0.*

4. Munsell Color (Firm). Munsell Soil Color Charts. Grand Rapids, MI: Munsell Color, 2010.

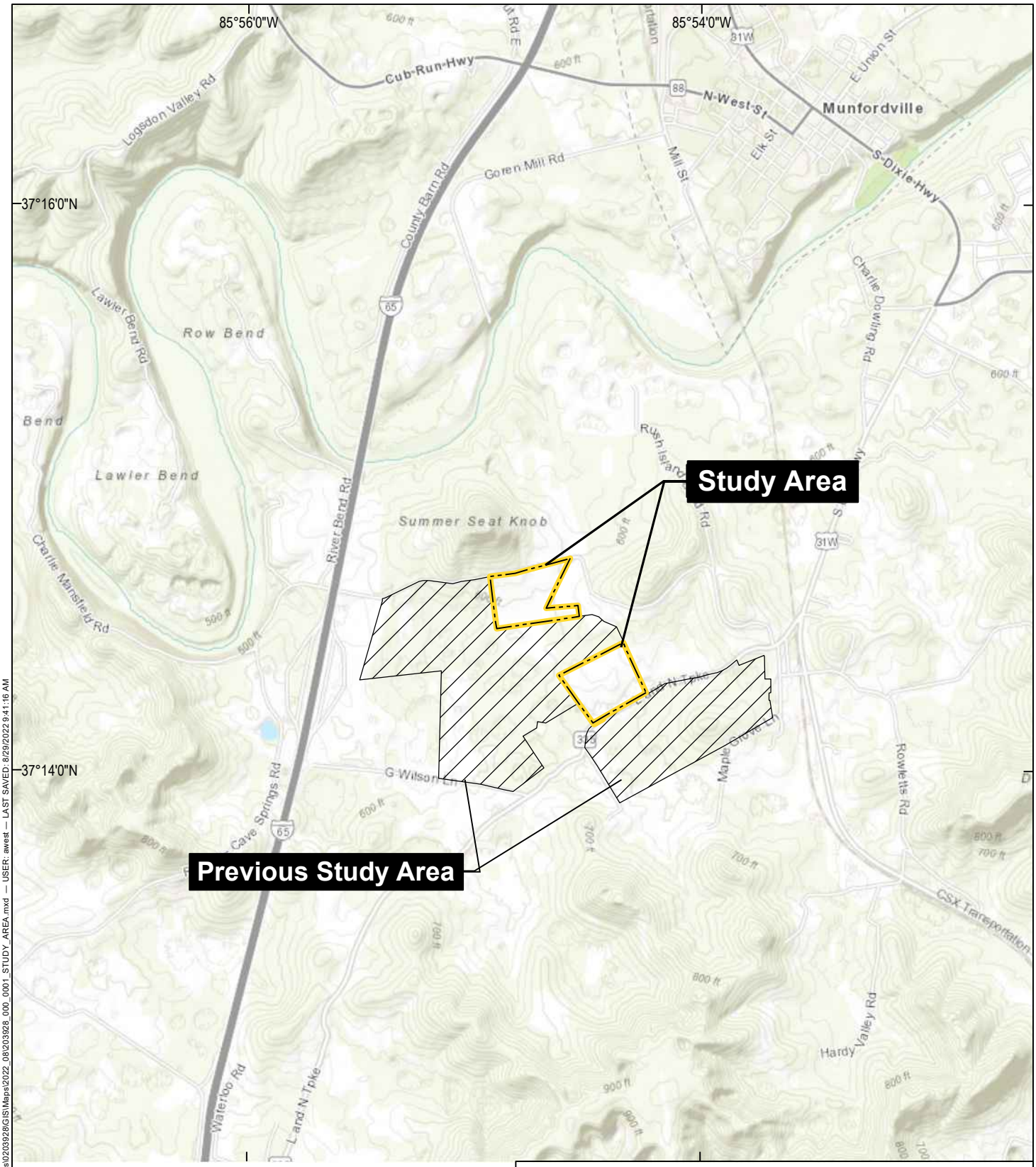
5. U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual*. Environmental Laboratory, Vicksburg, MS, 92 pp.

6. U.S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region*. U.S. Army Engineer Research and Development Center, Vicksburg, MS, 162 pp.

7. U.S. Army Corps of Engineers. 2016. *National Wetland Plant List*. Accessed at: https://www.lrp.usace.army.mil/Portals/72/2016%20National%20Wetland%20Plant%20List.pdf?ver=2016-06-16-094823-560.

8. USDA Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States,* Version 8.0.

FIGURES



KY

N

MAP SOURCE: ESRI
SITE COORDINATES: 37°14'15"N, 85°54'37"W

HALEY ALDRICH

THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY

STUDY AREA OVERVIEW

APPROXIMATE SCALE: 1 IN = 5000 FT
AUGUST 2022

FIGURE 1

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LEGEND

Study Area

Previous Study

Soil Map Unit

CaD-Caneyville silt loam, very rocky, 6 to 20 percent slopes

CrB2-Crider silt loam, 2 to 6 percent slopes, eroded

CrC2-Crider silt loam, 6 to 12 percent slopes, eroded

Np-Nolin silt loam, depressional, frequently flooded

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. SOILS DATA SOURCE: U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE

3. BASE MAP SOURCE: ESRI

N

0 1,000 2,000

SCALE IN FEET

HALEY ALDRICH

THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY

TOPOGRAPHY AND SOILS SERIES

AUGUST 2022

FIGURE 2

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0203928\GIS\Maps\2022_08\203928_000_0002_TOPO_SOILS.mxd — USER: awest — LAST SAVED: 8/29/2022 11:13:17 AM

LEGEND

- EMERGENT WETLAND (PEM)
- OPEN WATER (PUB)
- Study Area
- Previous Study Area

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. WETLANDS AND OPEN WATER DATA SOURCE: UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) NATIONAL WETLANDS INVENTORY (NWI)
3. ROADS DATA SOURCE: KENTUCKY TRANSPORTATION CABINET (KYTC)
4. AERIAL IMAGERY SOURCE: KENTUCKY FROM ABOVE, 2020

N

0 1,250 2,500

SCALE IN FEET

HALEY ALDRICH

THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY

FEDERAL AND STATE MAPPED AQUATIC RESOURCES

AUGUST 2022

FIGURE 3

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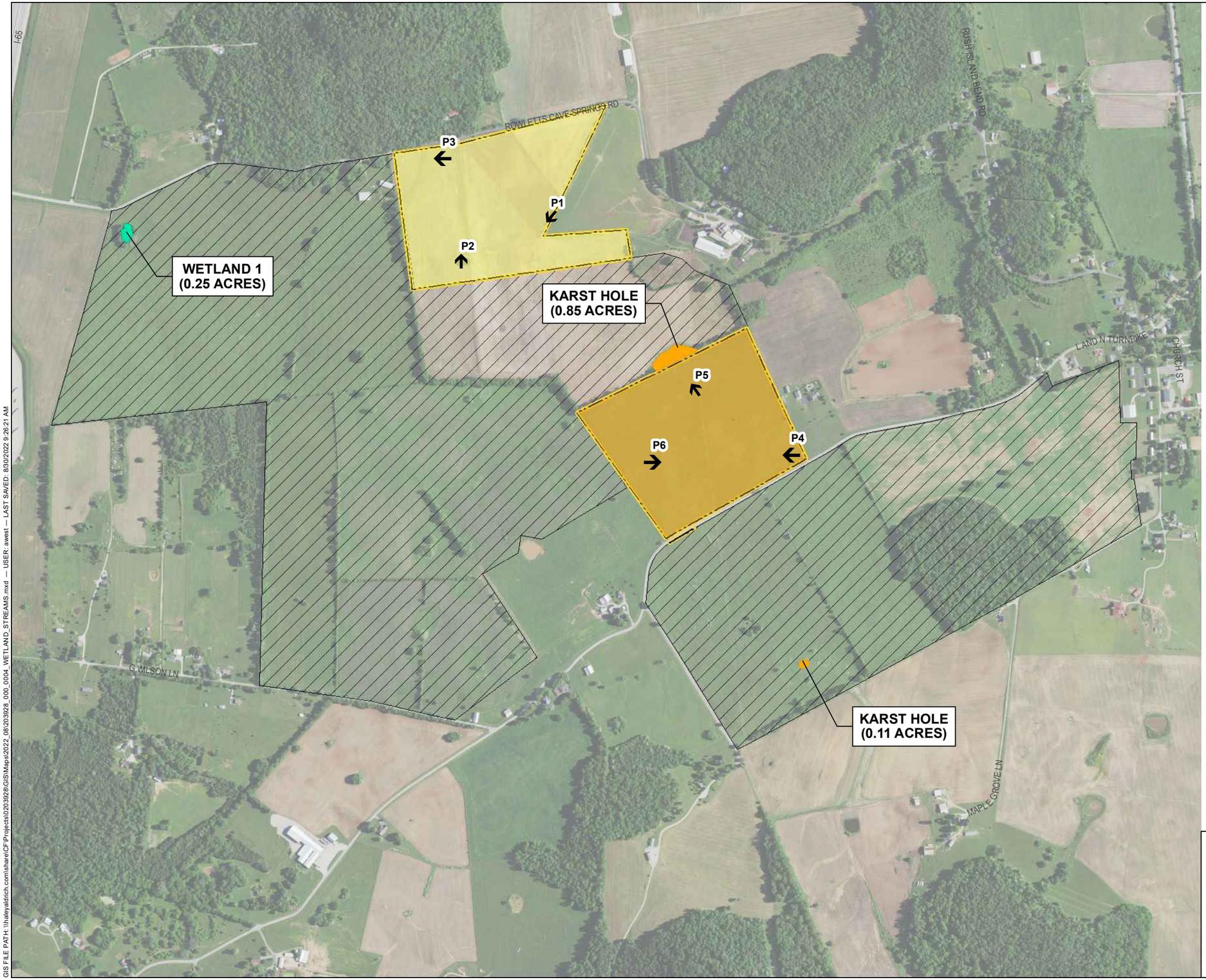

LEGEND

- Photo Location
- Row Crop
- Hay Field
- Delineated Wetland
- Delineated Karst
- Study
- Previous Study

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ROADS DATA SOURCE: KENTUCKY TRANSPORTATION CABINET (KYTC)
3. AERIAL IMAGERY SOURCE: KENTUCKY FROM ABOVE, 2020

N

0 790 1,580
SCALE IN FEET

HALEY ALDRICH

THOROUGHBRED SOLAR
HART COUNTY, KENTUCKY

DELINEATED FEATURES, PHOTO LOCATION AND LAND COVER

AUGUST 2022

FIGURE 4

GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0203928\GIS\Maps\2022_08\203928_000_0004_WETLAND_STREAMS.mxd — USER: awest — LAST SAVED: 8/30/2022 9:26:21 AM

ATTACHMENT A

Photo Log

Photo 1: Agricultural field: View looking southwest.

Photo 2: Upland vegetation within agricultural field: View looking north.

Photo 3: Agricultural field: View looking west.

Photo 4: Hay field: View looking west.

Photo 5: Hay field: View looking northwest.

Photo 6: Hay field: View looking east.