Appendix A

Public and Agency Comments Received on the Draft EA and TVA's Response to Comments

Appendix B

Natural Resources Field Review

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MEMORANDUM

TO: Tennessee Valley Authority

FROM: Frank Amatucci and Nick Carmean, Biologists, Nashville Office

DATE: 3/4/2021

FILE: **3609511**

RE: Summary of Environmental Features for the Silicon Ranch Bell Buckle Solar Farm, Shelbyville, Bedford County, Tennessee

1.0 Introduction

Barge Design Solutions, Inc. (Barge) has been retained by Silicon Ranch Corporation (Silicon Ranch) to perform an ecology survey on an approximate 350-acre proposed Bell Buckle Solar Farm (Project Study Area), within the parcel number 050 008.00 owned by Claudia Price north of Frank Martin Road in Bedford County, TN for the purpose of identifying potential impacts to natural resources.

Prior to visiting the project study area, a resource review of available background site information was conducted using the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) database to determine if wetlands could be found within the area, as well as review with the Information for Planning and Consultation (IPaC) system for federally listed species. Topographic maps and the United States Geological Survey (USGS) National Hydrography Dataset (NHD) were also evaluated for potential jurisdictional waters. Additionally, major landscapes and vegetation units were identified using aerial imagery prior to surveying the study area, and again in the field before beginning field work.

Between July 8 and 9, 2020, Barge biologists Nick Carmean and Frank Amatucci performed an onsite investigation for the Bell Buckle Solar Farm Site. The investigation included the delineation of wetlands and watercourses, and identification of vegetation communities and habitat types that may be suitable for protected species with the state and federal agencies. The findings of this technical report are detailed below, and the following attachments are included subsequent to this report.

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- Attachment A – Figures
- Attachment B – NRCS Custom Soil Report
- Attachment C – Wetland and Waterbody Data Forms
- Attachment D – Photo Summary

2.0 Site Description

The project study area consists of land located between James Lawrence Road and State Route 223, and additional land located north of Frank Martin Road. The site is primarily utilized for pastureland and hunting with portions of surrounding woodland amongst a shallow limestone bed. A project Location Map depicting the area can be found in Attachment A, Figure 1. The project area has historically been utilized for agriculture and the surrounding land use consists of commercial facilities, residential homes, and fragmented woodlands. During the field investigations, cattle were observed in the southern half of the property.

The project study area is located north of Frank Martin Road in Shelbyville, Bedford County, Tennessee (Attachment A, Figure 1). This area falls within the Interior Plateau (71) Tennessee ecoregion, and is further categorized into the Inner Nashville Basin (71i) physiographic region of Tennessee. The project study area is within the Deason topographic quadrangle (Attachment A, Figure 2), and the project survey area is located within the HUC-12 Fall Creek (060400020306) lower watershed. This watershed is ultimately located within the HUC-8 Upper Duck River watershed (06040002), which is within the Lower Tennessee River Basin (Attachment A, Figure 3).

3.0 Soils

Eight (8) soil units consisting of silt loams, clay loams, and rock outcrop complexes were identified on-site. Only two (2) soil units are considered hydric for Bedford County, Tennessee. The Eagleville silty clay loam, frequently flooded (Ea) and Godwin silt loam, frequently flooded (Go) are rated as hydric for the project area, which accounts for 29.9-percent of the entire project study area. The dominant soil unit, Talbott silt loam, 2 to 5 percent slopes, eroded (TaB2), accounts for 27.5-percent of the project study area and is considered as non-hydric for the county. A Soil Map can be found within Attachment A, Figure 4, and a Custom Soil Resource Report from the NRCS can be found in Attachment B.

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4.0 Vegetation

The project area is mostly utilized as pastureland for cattle and hunting as observed with multiple baiting feeders and blinds. The low herbaceous growth of the pastures and between the wooded portions of the project study area include foxtail grass (*Setaria pumila*), orchard grass (*Dactylus glomerata*), perennial ryegrass (*Lolium perenne*), common vetch (*Vicia sativa*), bush clover (*Lespedeza cuneate*), common milk weed (*Asclepias syriaca*), little bluestem (*Schizachyrium scoparium*), and passion vine (*Passiflora incarnata*). In some of the wetter portions of the pastureland within the project study area, fox sedge (*Carex vulpinoidea*), spikerush (*Eleocharis palustris*), giant ironweed (*Vernonia gigantea*) and path rush (*Juncus tenuis*) were observed.

Native fragmented woodland was also observed along Benford Creek and much of the northern portion of the project study area. This forest community ranges between early successional forest to secondary growth mixed hardwood forest. Dominant vegetation in the woodland portion of the project area include red cedar (*Juniperus virginiana*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), bur oak (*Quercus macrocarpa*), shagbark hickory (*Carya ovata*), red oak (*Quercus rubra*), and black cherry (*Prunus serotina*) in the tree stratum; honeysuckle (*Lonicera tartarica*), privet (*Ligustrum sinense*) and blackberry (*Rubus argutus*) in the shrub stratum; and Virginia creeper (*Parthenocissus quinquefolia*), woodoats (*Chasmanthium latifolium*), Japanese silt grass (*Microstegium vimineum*), and wingstem (*Verbesina alternifolia*) in the herbaceous stratum.

In the northeastern corner of the project study area, pockets of exposed limestone bedrock were observed amongst the red cedar dominated groves. These pocket vegetative communities were observed with late populations of glade stonecrop (*Sedum pulchellum*) and flowering plains coreopsis (*Coreopsis tinctorial*). The exposed limestone pockets were not considered as a cedar glade natural community, due to the size and the disturbed nature of the surrounding area.

5.0 Water Resources

5.1 Wetland Boundary Identification

Wetland determinations were conducted by Barge biologists through observing hydrophytic vegetation, hydric soils, and wetland hydrology according the U.S. Army Corps of Engineers' *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0*. Sample points were chosen based upon representative portions of the study area to confirm visual estimates of field indicators. The Eastern Mountains and Piedmont Regional Wetland Determination Data Forms were completed at wetland and upland sample points (Attachment C). The boundaries of the wetlands were then marked in the field with pink flagging and coordinates were obtained with a GPS unit.

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5.2 Observed Wetlands

Eight (8) wetland and pond features were observed within the project study area. Of which, two (2) of the features were observed as man-made ponds, or a Palustrine Unconsolidated Bottom (PUB) feature. The remaining wetland systems were observed as either Palustrine Emergent (PEM), Palustrine Scrub-Shrub (PSS) or Palustrine Forested (PFO) wetland features. Each wetland or pond feature was verified with the positive identification of suitable hydrology, hydrophytic vegetation, and hydric soils. The locations of the delineated wetlands and ponds are provided in Figure 6 -- Existing Conditions Map (Attachment A), and Table 5.2 details the location and acreage of each wetland, as well as a photograph of each wetland feature is provided in Attachment D.

Table 5.2: Wetlands within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Estimated Amount of Aquatic Resource in Project Area	State Jurisdictional Status	Federal Jurisdictional Status
WTL-1	PSS	35.584362, -86.45851	0.63 acres	Yes	Yes
WTL-2	PFO	35.582983, -86.458354	0.21 acres	Yes	Yes
WTL-3	PEM	35.573474, -86.457475	0.04 acres	Yes	No
WTL-4	PEM/PUB	35.574855, -86.456221	0.04 acres	Yes	No
WTL-5	PEM	35.576453, -86.455939	0.09 acres	Yes	No
WTL-6	PEM	35.578426, -86.456012	0.10 acres	Yes	No
WTL-7	PFO	35.581623, -86.457464	0.02 acres	Yes	Yes
P-1	PUB	35.569478, -86.460013	0.09	No	No

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The two (2) man-made pond features within the project study area were WTL-4 and P-1. WTL-4 was observed to have established wetland fringe with vegetation along the margins of the open water. P-1 did not have established wetland fringe and appeared to be more consistently used by the cattle. Both of these features appeared to be isolated with no obvious sign of connection to nearby jurisdictional waters.

The remaining six (6) wetland features were determined as natural PEM, PSS and PFO ecological communities. WTL-1 was primarily PSS and WTLs-2 and 7 were primarily PFO. WTLs 3, 5 and 6 were all PEM wetland complexes within the project area and were not fringes to pond complexes.

Nearly all the wetland features were determined to be likely jurisdictional by TDEC, with the exception of P-1. Additionally, WTLs-1, 2, and 7 were determined to be jurisdictional by USACE guidelines due to the presence of a surface connection to other Waters of the United States (WOTUS). WTLs-3, 4, 5, and 6 are potentially isolated due to a lack of connection to other WOTUS either through a stream or conveyance feature. These isolated wetlands are likely jurisdictional per TDEC but will not be jurisdictional per the USACE.

5.3 Waterbody Identification

Perennial and intermittent streams were field verified as waters of the U.S. (WOTUS) based on the existence of biology, geomorphology (i.e. defined bed and bank, Ordinary High-Water Mark (OHWM)) and hydrology. For the purpose of this report, all ephemeral drainages were characterized by the presence of two (2) or more OHWM indicators using the *2005 USACE Regulatory Guidance Letter 05-05* and proximity to other adjoining jurisdictional features (i.e. wetlands and/or intermittent or perennial streams). Streams located within the project study area were verified and coordinates of the centerline were obtained with a GPS unit.

Additionally, all waterbody and/or non-wetland features were analyzed with TDEC's "Guidance for Making Hydrologic Determinations" to accurately determine the jurisdictional status of waters of the state. Hydrologic determinations were conducted by Nick Carmean (TN-QHP #1178-TN18) and Frank Amatucci (QHP-IT). The TDEC HD Field Data Sheets for all observed streams and wet weather conveyances are provided in Attachment D.

5.4 Observed Waterbodies

Lead Scientist Nick Carmean (TN-QHP #1178-TN12) and Frank Amatucci (QHP-IT), conducted the Hydrologic Determination (HD) site investigation in accordance with TDEC Rule 0400-40-17-.04. In addition, water features were considered regarding the Regulatory Guidance Letter No. 05-05. The site visit was conducted more than 48 hours following a significant rain event of greater than 1.0 inch. Upon commencement of the study, in the preceding 7-days, 0.37-inches of rain was observed. In the preceding two weeks, 1.79-inches and 1.37-inches of rain were observed, respectively. The precipitation for the

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preceding three months is considered “normal” based on the 30-year normal, as shown in Table 3 (Attachment C).

One (1) ephemeral stream (WWC) was delineated within the project study area. This WWC was determined based on secondary indicators while conducting the HD. Below is a brief description of the delineated WWC within the project study area. Table 2 (Attachment C) details the location and length of this drainage.

WWC-1 is a small tributary to Benford Creek. It was observed connecting an identified wetland to Benford Creek. This conveyance flows through an active cattle pasture. Obvious impacts to the bed and bank of this stream were observed throughout. Substrate in the conveyance was observed to be moderately sorted but consisted of primarily hard packed soils with gravel and cobble distributed throughout.

After review with the USACE, an additional ephemeral (EPH) channel and drainage swale were determined within the project study area. EPH-2 conveys excess surface water from Benford Creek and could potentially be the formation of an oxbow of the meandering perennial water. The delineated drainage swale (D-1) was observed between to agricultural fields and was moderately impacted by cattle. D-1 was observed with a lack of an OHWM and wetland indicators to be classified as a wetland or a stream jurisdictional to TDEC or the USACE.

Furthermore, Benford Creek and an Unnamed Tributary (UNT) to Benford Creek were inspected along the buildable limits of the project study area. Benford Creek is a perennial stream with a channel bottom of sand, gravel, and cobble. The UNT to Benford Creek was inspected as an intermittent stream with a channel bottom of silt, sand, and gravel. Both Benford Creek and its’ UNT are jurisdictional to TDEC and the USACE.

The location of the described waterbody resources are provided in Figure 6 -- Existing Conditions Map (Attachment D). A photograph of each individual feature is provided in Attachment F and Table 3 (Attachment C) details the location and length of the features. The TDEC Hydrologic Determination Field Data Sheets for the observed WWC is provided in Attachment E.

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Table 5.4: Drainage Features within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Estimated Amount of Aquatic Resource in Project Area	State Jurisdictional Status	Federal Jurisdictional Status
EPH-1	Ephemeral Stream / Wet Weather Conveyance	Start: 35.57454, -86.455971 End: 35.575857, -86.456032	540 LF	No	No[1]
EPH-2	Ephemeral Stream / Wet Weather Conveyance	Start: 35.580571, -86.457972 End: 35.581123, -86.457870	216 LF	No	No
D-1	Drainage Swale / Wet Weather Conveyance	Start: 35.577823, -86.454883 End: 35.578017, -86.457442	772 LF	No	No
Benford Creek	Perennial Stream	Start: 35.575575, -86.455107 End: 35.585483, -86.46111	5,073 LF	Yes	Yes
UNT to Benford Creek	Intermittent Stream	Start: 35.578859, -86.457679 End: 35.578968, -86.454645	922 LF	Yes	Yes

1: Federal jurisdiction status determined by the new revised Navigable Waters Protection Rule: Definition of "Waters of the United States", Federal Register April 21, 2020 (approved June 22,2020).

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6.0 Wildlife

Native wildlife was observed throughout the project study area. Identified wildlife were observed utilizing the fragmented forested portions of the site, the open pastureland, and the surrounding residential and industrial environments. Table 6.0 below details some of the observed wildlife during the field investigations. This list is a preliminary species presence list for the project study area.

TABLE 6.0: Observed Wildlife within the Project Area

Common Name	Scientific Name
Birds	
American robin	*Turdus migratorius*
Blue jay	*Cyanocitta cristata*
Carolina wren	*Thryothorus ludovicianus*
Cooper's hawk	*Accipiter cooperii*
Eastern towhee	*Pipilo erythrophthalmus*
European starling	*Sturnus vulgaris*
Field sparrow	*Spizella pusilla*
Great blue heron	*Ardea herodias*
House finch	*Haemorhous mexicanus*
Indigo bunting	*Passerina cyanea*
Killdeer	*Charadrius vociferus*
Northern cardinal	*Cardinalis cardinalis*
Northern mockingbird	*Mimus polyglottos*
Red tailed hawk	*Buteo jamaicensis*
Red-winged black-bird	*Agelaius phoeniceus*
Tufted titmouse	*Baeolophus bicolor*
Wood thrush	*Hylocichla mustelina*
Yellow warbler	*Setophaga petechia*

Common Name	Scientific Name
Mammals	
Eastern chipmunk	*Tamias striatus*
Eastern gray squirrel	*Sciurus carolinensis*
White-tailed deer	*Odocoileus virginianus*
Racoon	*Procyonidae lotor*
Nine Banded Armadillo	*Dasypus novemcinctus*
Coyote	*Canis latrans*
Reptiles	
Common Garter snake	*Thamnophis sirtalis*
Ground skink	*Scincella lateralis*
Amphibians	
Green frog	*Lithobates clamitans*
American toad	*Anaxyrus americanus*
Gray treefrog	*Hyla versicolor*
Fish	
Minnow spp.	--
Invertebrates	
Viceroy	*Limenitis archippus*
Monarch	*Danaus plexippus*

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6.1 Federal and State Listed Species

Tennessee Valley Authority (TVA) provided a preliminary heritage database query for the project study area and within the surrounding area, the county, and the watershed. No state or federally listed species were observed during the July 2020 site inspection. Table 6.1 details some of the potentially present federal and state protected species for the area.

TABLE 6.1: Protected Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present (Y/N)
Mammal					
Gray Bat	*Myotis grisescens*	Endangered	Endangered	Live in caves year-round. During the winter, gray bats hibernate in deep, vertical caves. In summer, they roost in caves which are scattered along rivers.	N
Northern Long-eared Bat	*Myotis septentrionalis*	Endangered	Threatened	Hibernates during winter in caves, or occasionally in abandoned mines. Summer roosting season in late spring and summer months. Females will roost on trees with exfoliating bark, and/or trees with cracks, crevices, and hollows. Will rarely roost in barns or other similar shed-like structures	Y (Roost)
Indiana Bat	*Myotis sodalis*	Endangered	Endangered	Hibernates during winter in caves, or occasionally in abandoned mines. Summer roosting season in late spring and summer months. Females will roost on trees with exfoliating bark and/or trees with cracks, crevices, and hollows	Y (Roost)
Amphibian					
Hellbender	*Cryptobranchus alleganiensis*	Endangered	Historic	Specimen was observed in the Duck River at the Three Forks Bridge between Shelbyville and Tullahoma	N
Fish					
Coppercheek Darter	*Etheostoma aquali*	Threatened	-	Primarily in deep riffles, runs, and flowing pools; Duck and Buffalo River watersheds.	N
Ashy Darter	*Etheostoma cinereum*	Endangered	-	Duck River	N
Golden Darter	*Etheostoma denoncourti*	Need of Management	-	Duck River	N
Redband Darter	*Etheostoma luteovinctum*	Need of Management	-	Limestone streams; Nashville Basin & portions of Highland Rim.	N
Striated Darter	*Etheostoma striatulum*	Threatened	-	Bedrock pools of headwaters and creeks with large slabrock cover; upper Duck River watershed.	N
Flame Chub	*Hemitremia flammea*	Need of Management	-	Duck River	N
Saddled Madtom	*Noturus fasciatus*	Threatened	-	Duck River	N
Slenderhead Darter	*Percina phoxocephala*	Need of Management		Duck River	N
Insect					
Tennessee Clubtail	*Gomphus sandrius*	Rare	-	Slow streams with bare bedrock shores.	N

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TABLE 6.1 Cont'd: Protected Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present (Y/N)
Mollusk					
Tan Riffleshell	*Epioblasma florentina walkeri*	Endangered	Endangered	Duck River	N
Turgid Blossom Pearlymussel	*Epioblasma turgidula*	Endangered	Endangered	Duck River	N
Birdwing Pearlymussel	*Lemiox rimosus*	Endangered	Endangered	Duck River	N
Slabside Pearlymussel	*Pleuronaia dolabelloides*	Endangered	Endangered	Duck River	N
Fluted Kidneyshell	*Ptychobranchus subtentum*	Endangered	Endangered	Duck River	N
Smooth Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	Threatened	Duck River	N
Plant					
Limestone Blue Star	*Amsonia tabernaemontana var. gattingeri*	Special Concern	-	Glades, Barrens, And Rocky River Bars	N
Fen indian-plantain	*Arnoglossum plantagineum*	Extant	-	Moist areas along limestone stream bed that flows through a very high-quality Cedar Glade	N
Tennessee Milk-vetch	*Astragalus tennesseensis*	Special Concern	-	Glades	N
Leafy Prairie-clover	*Dalea foliosa*	Endangered	Endangered	Glades with little evidence of disturbance	N
Duck River Bladderpod	*Paysonia densipila*	Special Concern	-	Fields with fescue and some grazing	Y
Limestone Flame-flower	*Phemeranthus calcaricus*	Special Concern	-	Moist areas along limestone stream bed that flows through a very high-quality Cedar Glade	N
Virginia rose	*Rosa virginiana*	Historical	-	Limestone barens	N

6.1.1 Mammal Species

Suitable habitat for the Indiana bat (*Myotis sodalis*) and the northern long-eared bat (*Myotis septentrionalis*) was noted during the field inspection. A total of 27 potential bat roost trees were observed and documented within the fragmented wooded portions of the project area and are identified on the Existing Conditions Map (Attachment A, Figure 6). No suitable caves or potential hibernacula sites for all the federally listed bat species were observed within the project area.

In addition to identifying potential bat roost trees within the project area, the forested portions of the site were categorized in quality to provide suitable summer habitat for the listed bat species. The US Fish and Wildlife Service's *Range-Wide Indiana Bat Survey Guidelines* (March 2020) were utilized to determine the quality of habitat for Indiana bat and Northern long-eared bat within the project site. Furthermore, the USFWS Phase I habitat assessment data forms are provided in Attachment G. Below detailed the observed

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habitat within the project site. Photographs of some of the observed potential roost trees and each habitat area with the project site are provided in Attachment D.

Bat Habitat Assessment Methodology

The quality of bat habitat within the project site was based on the density and maturity of inspected woodland. It was also based on the presence of potential bat roost trees and their location within the surrounding woodland. Below are brief descriptions on the differences between Good, Marginal, and Poor habitat quality for the project:

Good – woodland areas that were rated as "good" were observed with a mature forest canopy and open understory that allows for travel corridors and foraging opportunities between trees and adequate areas to perform mist net surveys. Typically, these portions of woods lacked dense vines and tall saplings and shrubs.

Marginal – resembles that of the "good" quality habitat; however, "marginal" habitat was rated for observed semi-mature forest with younger trees and taller saplings and shrubs within the understory. This portion of the woodland area would be difficult to mist net for, especially between the thickets of undergrowth and the presence of dense vines intermittently throughout.

Poor – these areas of woodland were portions that were nearly absent of mature forest and are entirely dominated with dense tall saplings or shrubs. Mist netting would be nearly impossible within the thickets. Furthermore, for the Bedford County Solar project these portions of woodland were observed as dense young red cedar, especially in the northeastern corner of the project site.

Potential roost trees were also rated on a similar scale. Each tree was rated on its sheltering habitat quality, proper solar exposure, obstructions for traveling in and out of the sheltered area, and its height above the forest floor. For example: a shagbark hickory or dead tree, with many deep cracks and crevices, with little to no obstructing vines, and some solar exposure will be rated as "good". Whereas, a "poor" potential roost tree could be a younger shagbark hickory, or dead tree, with shallow crevices and/or woodpecker holes, multiple obstructing vines, and has little to no solar exposure.

Bat Habitat Survey Results

The site was observed with multiple forested vegetative communities that were categorized on quality to provide suitable bat habitat. These forested vegetative communities include, mature forest, mature riparian forest, semi-mature forest, red cedar thicket, and fence row/hunting easement young forest. The mature forest was observed in the northwestern corner of the project site, accounts for approximately 37.1-acres and was rated as "good" bat habitat. The mature riparian forest was observed along Bedford Creek through the northcentral portion of the project site, accounts for approximately 14.7-acres, and was rated as "good"

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bat habitat. The semi-mature forest was observed in disturbed portions of woodland where natural successional growth stages of forested vegetation varied. This portion of woodland was rated as "marginal" and was accounted for approximately 17.8-acres of the project site. The red cedar thicket was observed in the northeastern portion of the project site, accounts for approximately 40.1-acres, and was rated as "poor" bat habitat. Lastly, the fence row/hunting easement young forest community was observed in pockets throughout the project site, accounts for approximately 54.3-acres of woodland, and was rated as "poor" bat habitat

The data forms for each forested vegetative community and its potential for bat habitat within the project are provided in Attachment F. Additionally the Bat Habitat Map that represents the locations of woodlands and their quality of bat habitat within the project site is provided Attachment A, Figure 7.

Based on the current design of the solar farm within the project study area, most of the wooded area will potentially require tree removal for the development of the site. As proposed, the 19 observed potential bat roost trees will require removal. Since no known hibernacula for these federally listed bat species were within five (5) miles of the project study area, removal of these potential roost trees can be performed during the non-roost season (October 15 to March 31) with little to no impact to the species.

Additionally, potential foraging habitat for the gray bat (*Myotis grisescens*) is located on the property in streams and wetlands. However, this species feeds close to its roost cave. Given there were no caves on the proposed project site, it is unlikely that there will be any impact to this species.

6.1.2 Aquatic Species

As detailed in Table 6.2 above, there are one (1) amphibian, eight (8) fish, one (1) insect and six (6) mollusk aquatic species potentially present within the project study area. These aquatic species require flowing perennial stream habitats that were not observed within the project study area. Benford Creek, a perennial stream, was observed in the central excluded portion of the property. Silicon Ranch proposes to only develop within the non-aquatic portions of the site; however, a crossing of Benford Creek could be required to develop in the northeastern portion of the project study area.

No formal presence/absence survey of the listed aquatic species was performed within Benford Creek. As indicated in Table 6.1, the listed mussel, amphibian, and certain fish species are affiliated with the Duck River and are not anticipated to be impacted by the project. The coppercheek, redband and striated darters can potentially occupy the perennial waters of Benford Creek. However, after review of the observed resource, the stream lacks suitable habitat for these darter species. Benford Creek, within the project study area, was inspected with shallow slow-moving waters of a silt, sand, gravel and small cobble substrate, which lacks the deep pools and slabrock preferred by the listed darter species within the watershed.

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Henceforth, the listed aquatic species are not anticipated to be directly impacted with the development of the solar farm. Should a crossing of Benford Creek be required, adequate Best Management Practices (BMP) ought to be utilized to minimize adverse impacts with the stream feature and the potential presence of federal and state protected aquatic species.

6.1.3 Plant Species

As mentioned in the vegetation section, pockets of exposed limestone bedrock were observed in the northeastern corner of the project study area. These regions of exposed limestone and short herbaceous growth amongst the cedar groves were analyzed for potential as a natural glade vegetative community. Due to the ongoing disturbance from the current landowner, the formation of a natural glade or barren was not observed. Late season glade stonecrop was observed in these pocket formations, and none of the listed glade dependent plant species were observed. Therefore, impacts to limestone blue star, fen indian plantain, Tennessee milk vetch, leafy prairie clover, limestone flame flower and Virginia rose are not anticipated with the development of the project.

Habitat for the Duck River bladderpod was observed amongst the pasturelands of the project site. These areas were heavily impacted by cattle and hay harvesting. During the July 2020 site inspection, no specimens of Duck River bladderpod were observed. A presence/absence survey during the flowering season (between March thru May) might be required to determine the potential impacts with the species with the construction of the solar farm. After the installation of the solar farm, it could be possible for the Duck River bladderpod to remain present since solar farms maintain a low vegetation growth stage under the panels.

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Eight (8) wetlands, two (2) ephemeral streams (wet weather conveyance), and Benford Creek and an UNT to Benford Creek were identified during the field investigation of the project study area. The Existing Conditions Map (Figure 6, Attachment A) visually represents the jurisdictional boundaries of the wetlands and non-wetland waters delineated within and immediately adjacent to the project study area. Tables 5.2 and 5.4 also summarize the current location, square footage, or linear feet, and any additional characteristic of the features. Currently, all features are under review with TDEC and the USACE.

If you have any questions or require additional information, please contact me by phone at 615-252-4306 or email at Nick.Carmean@bargedesign.com. or Frank Amatucci at 615-252-4406 or email at Frank.Amatucci@bragedesign.com Thank you!

Sincerely,

Nick Carmean – TN-QHP
Project Biologist – Site Solutions
Barge Design Solutions, Inc.

cc: Matt Clabaugh, Barge Design Solutions, Inc.
Annie Bavis, Barge Design Solutions, Inc.
Frank Amatucci, Barge Design Solutions, Inc.

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615.254.1500 Phone
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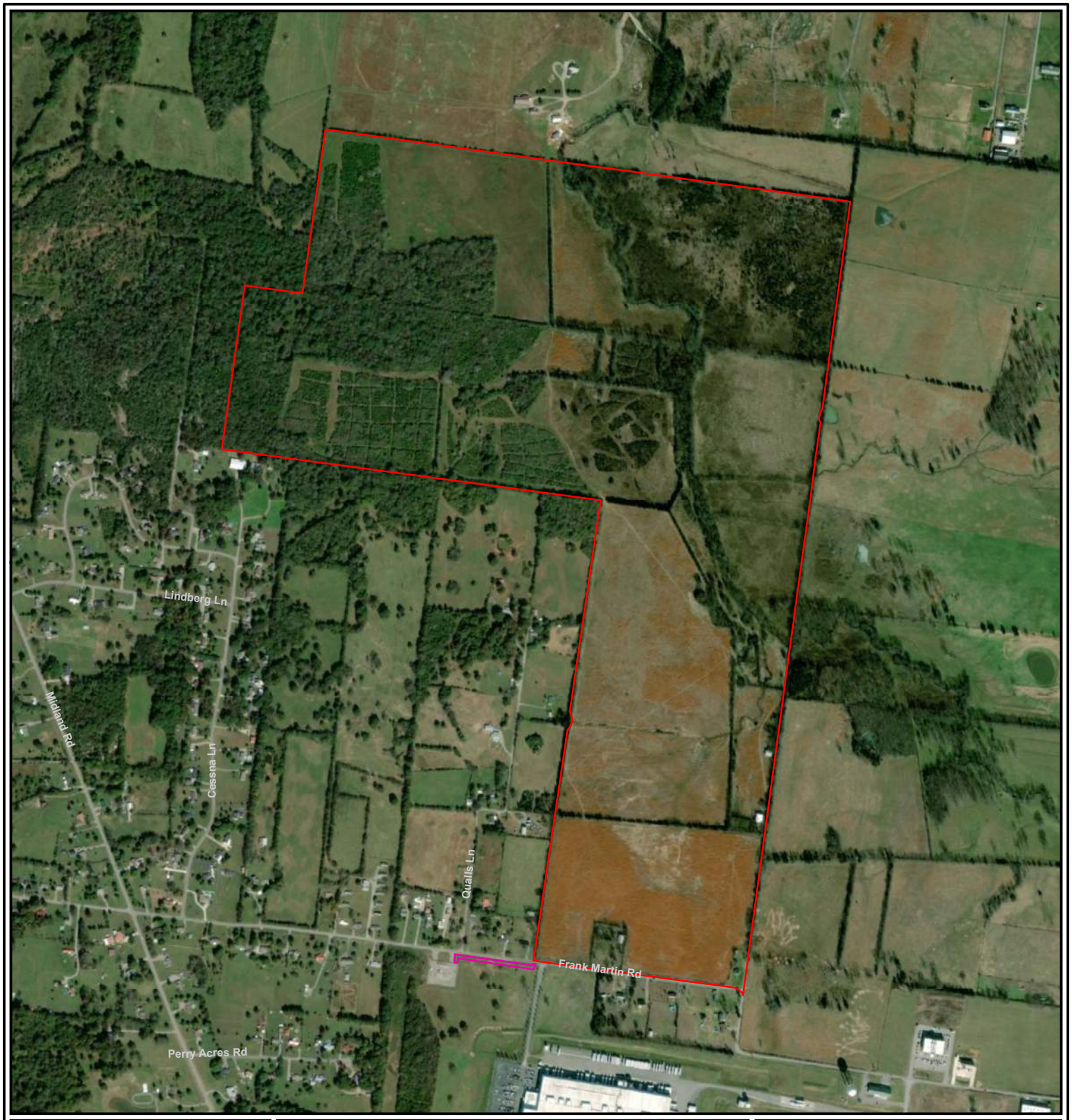
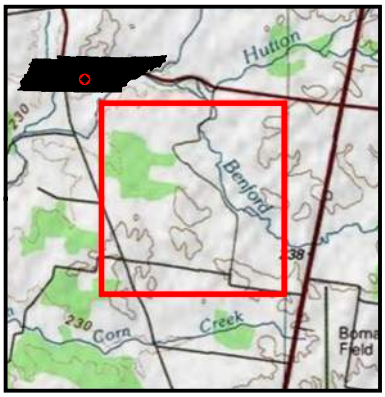
bargedesign.com

Attachment A – Figures





Project Study Area
Proposed Electric Easment

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: TN ROADS

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
PROJECT LOCATION MAP

PROJ NO: 3609511

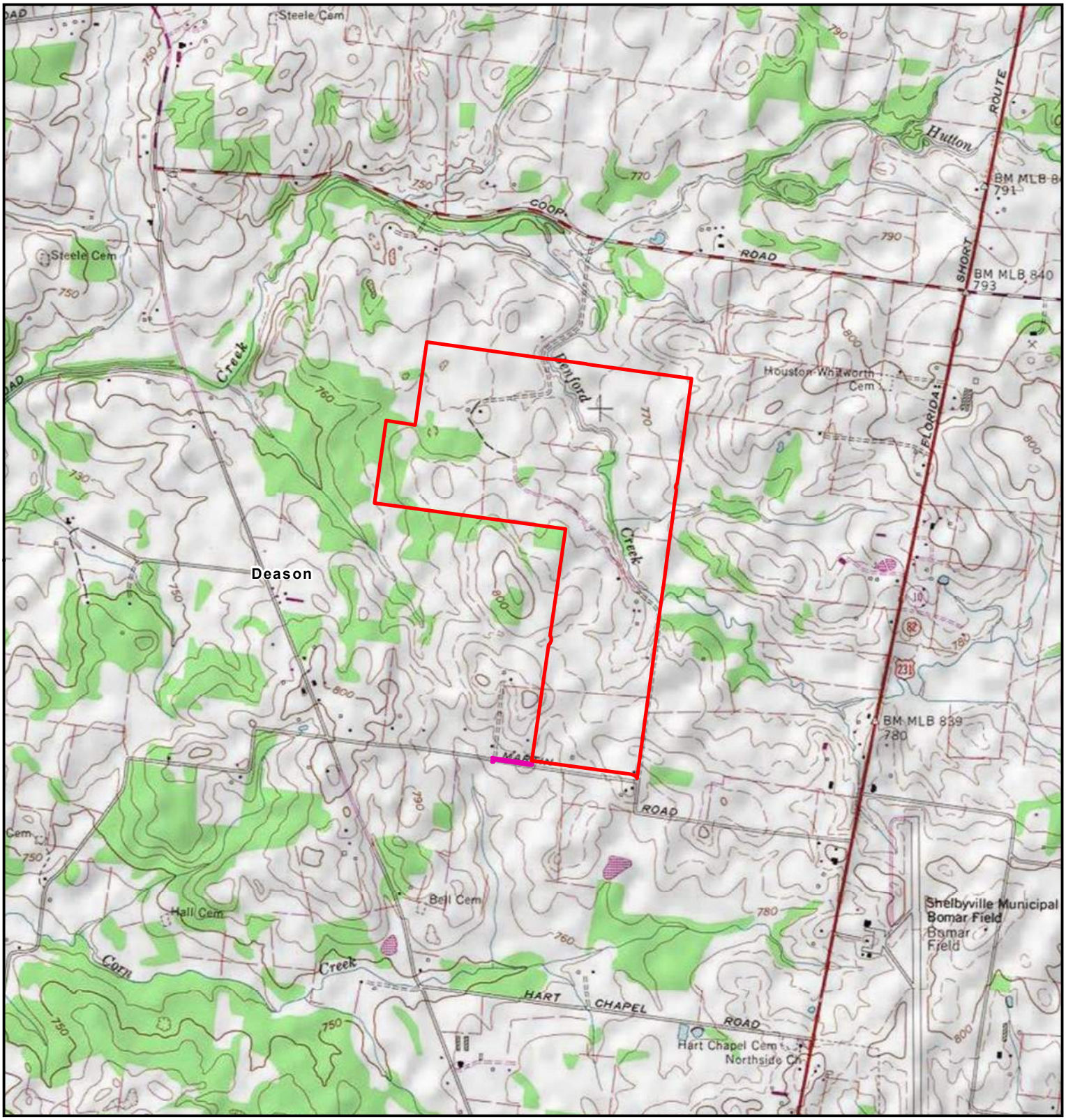
DATE: January, 2021

FIGURE 1

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permit_Maps\USACE_JD\Figure1_ProjectLocationMap.mxd



DEASON 7.5 MINUTE QUADRANGLE

Project Study Area
Proposed Electric Easment
USGS 24k Topo Map Boundary

N

1 inch = 2,000 feet

0 500 1,000 2,000 3,000 Feet

Basemap: ESRI USA Topo Map
Source Data: ESRI 24K Boundaries

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
USGS TOPOGRAPHIC MAP

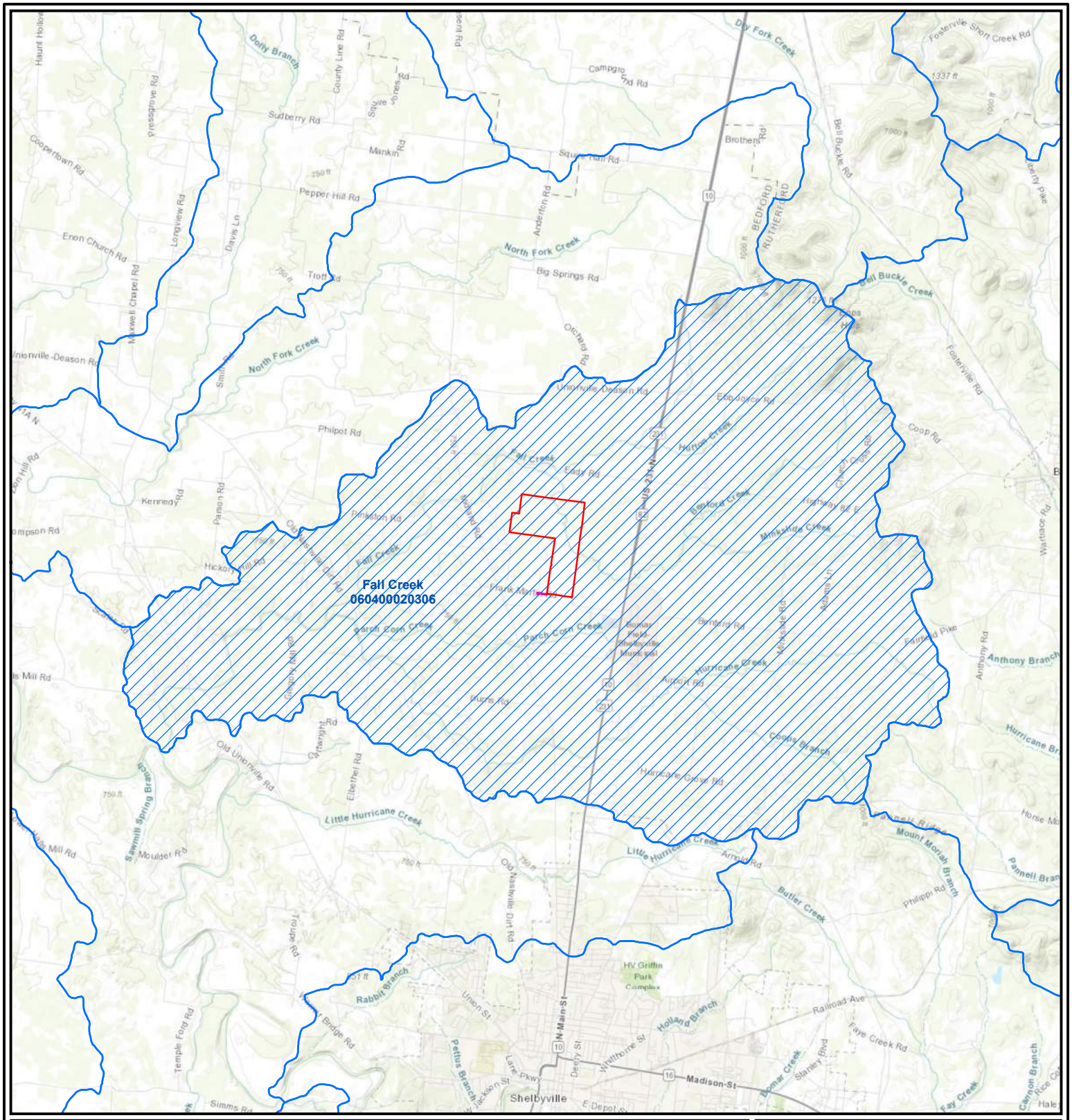
PROJ NO: 3609511
DATE: January, 2021

FIGURE 2

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permit_Maps\USACE_JD\Figure2_USGS_Map.mxd



PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
HUC 12 WATERSHED MAP

PROJ NO: 3609511

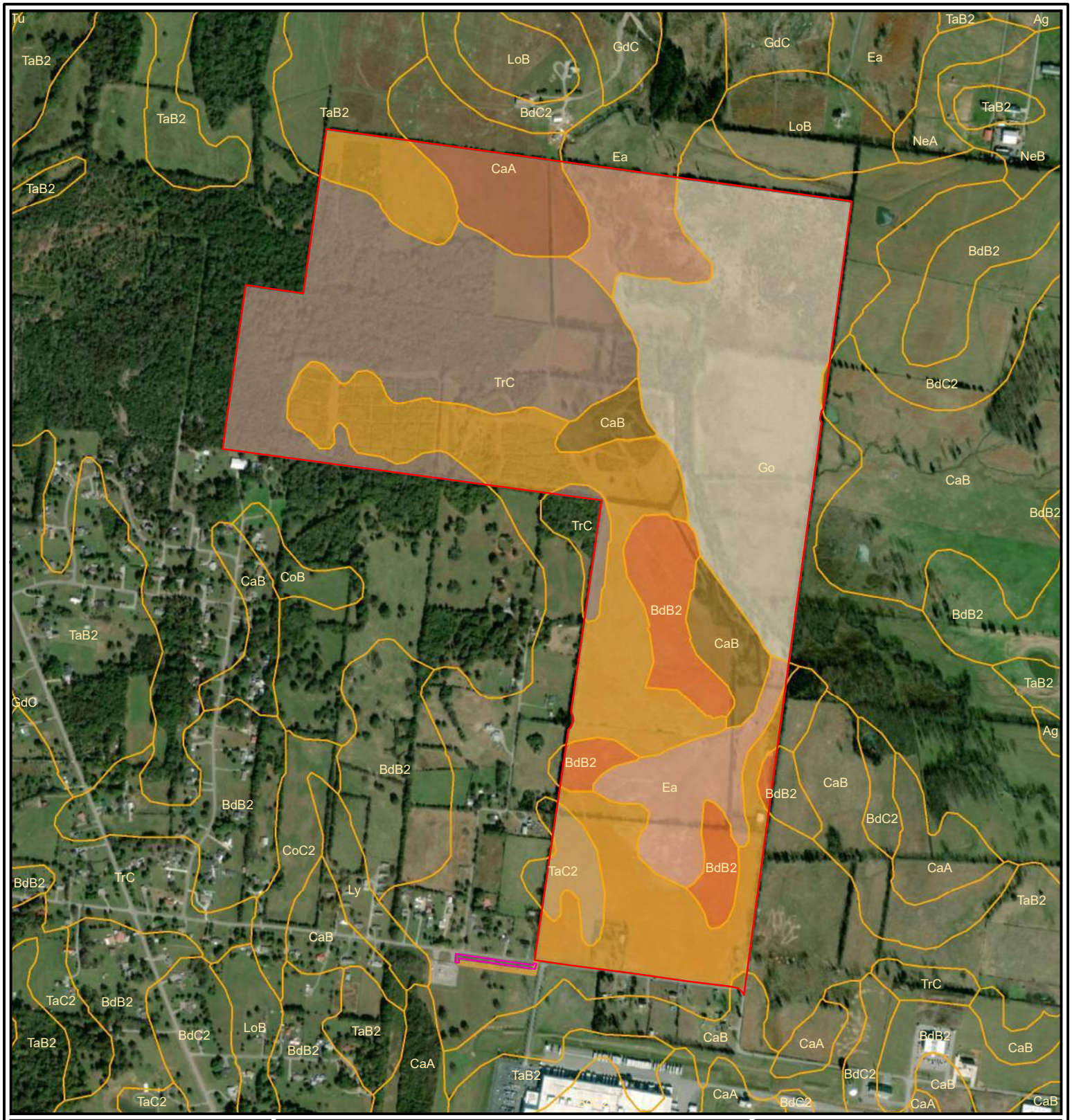
DATE: January, 2021

FIGURE 3

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permit_Maps\USACE_JD\Figure3_WatershedMap.mxd



Project Soils

Soil Unit

- BdB2
- CaA
- CaB
- Ea
- Go
- TaB2
- TaC2
- TrC

Soil Unit

Project Study Area

Proposed Electric Easement

1 inch = 1,000 feet

0 245 490 980 Feet

N

Basemap: ESRI World Imagery
Source Data: USDA Soil Survey TN003

PROJECT:

Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:

PROJECT SOIL MAP

PROJ NO: 3609511

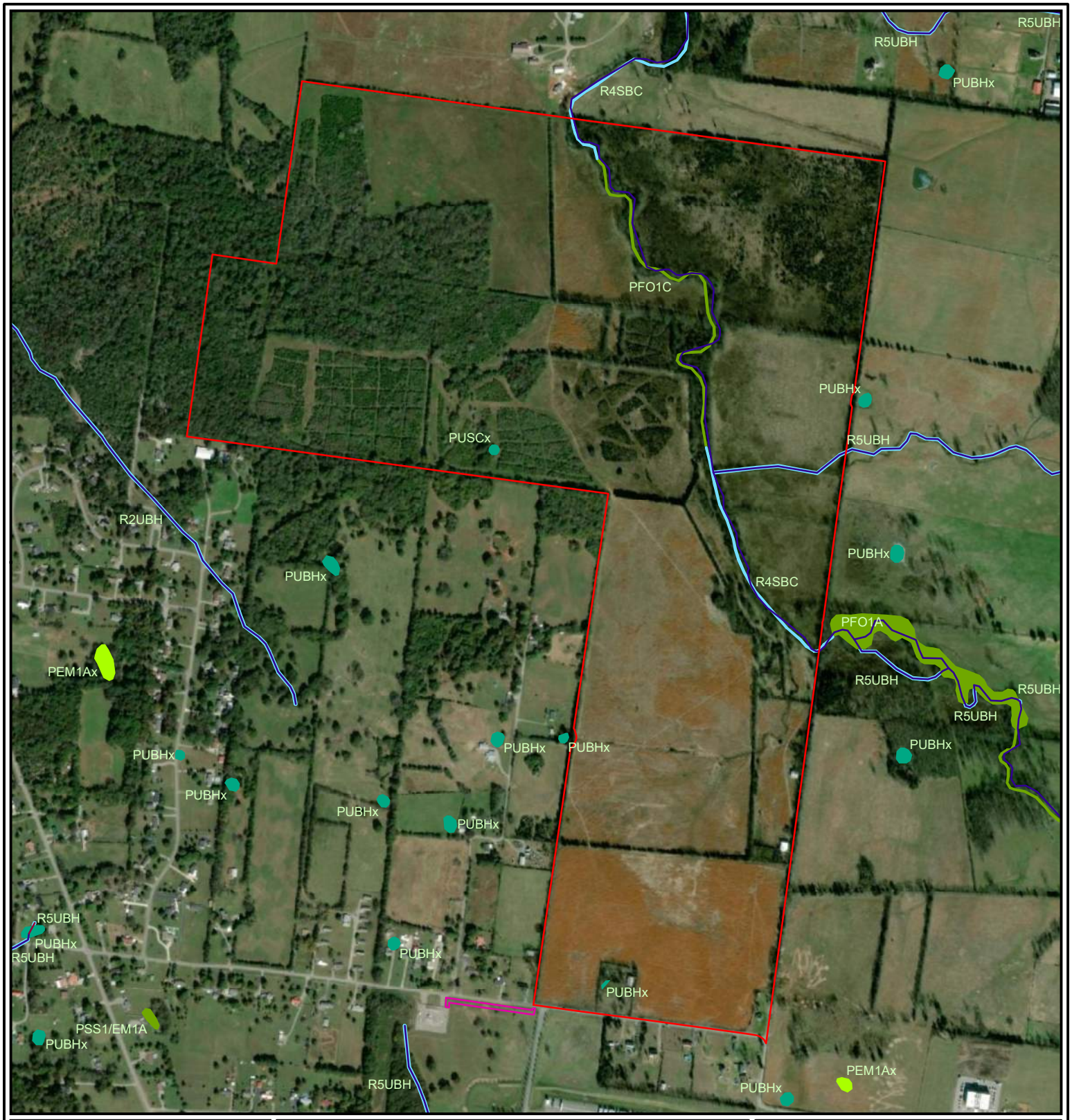
DATE: January, 2021

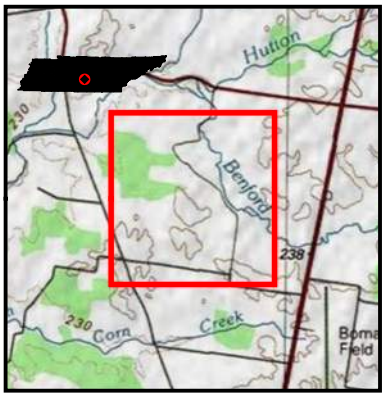
FIGURE 4

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permit_Maps\USACE_JD\Figure4_SoilMap.mxd





NWI Wetland

Wetland Type

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

NHD Flowline

Feature Type

- ArtificialPath
- StreamRiver
- Project Study Area
- Proposed Electric Easement

1 inch = 900 feet

0 250 500 1,000 Feet

N

Basemap: ESRI World Imagery
Source Data: USFWS NWI Wetland, USGS NHD Flowline

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
NATIONAL WETLANDS INVENTORY MAP

PROJ NO: 3609511

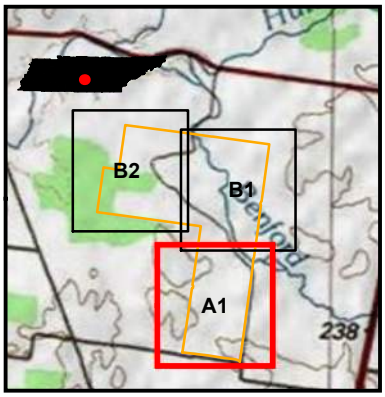
DATE: January, 2021

FIGURE 5

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permit_Maps\USACE_JD\Figure5_NWI_Map.mxd



Delineated Wetland
Perennial Stream
Ephemeral Stream / Wet Weather Conveyance
Project Study Area
Proposed Electric Easment

1 inch = 400 feet
0 80 160 320 480
Feet

N

Basemap: ESRI World Imagery
Source Data: Barge Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
EXISTING CONDITIONS MAP

PROJ NO: 3609511

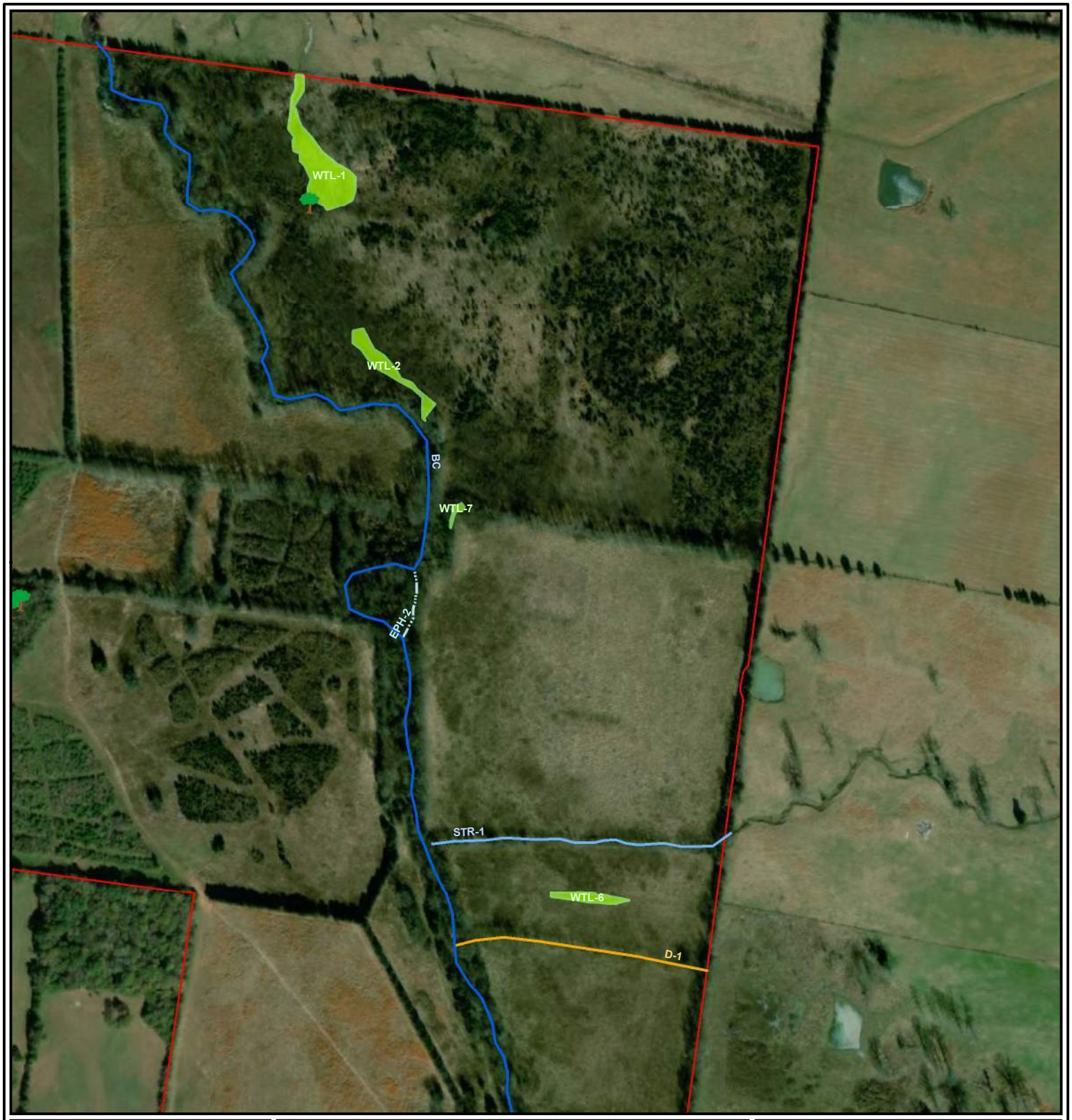
DATE: January, 2021

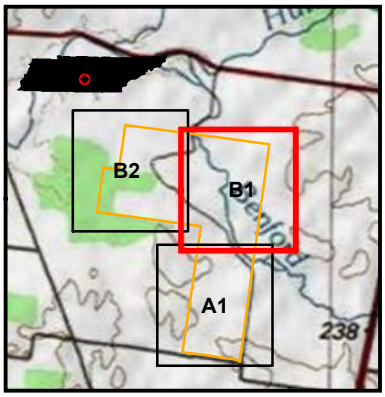
FIGURE 6-A1

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Technical_Memo\Figure6_ResourceMap.mxd





Delineated Wetland
Perennial Stream
Intermittent Stream
Ephemeral Stream / Wet Weather Conveyance
Drainage Swale
Potential Bat Roost Tree
Project Study Area

N

1 inch = 400 feet

0 80 160 320 480 Feet

Basemap: ESRI World Imagery
Source Data: Barge Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
EXISTING CONDITIONS MAP

PROJ NO: 3609511

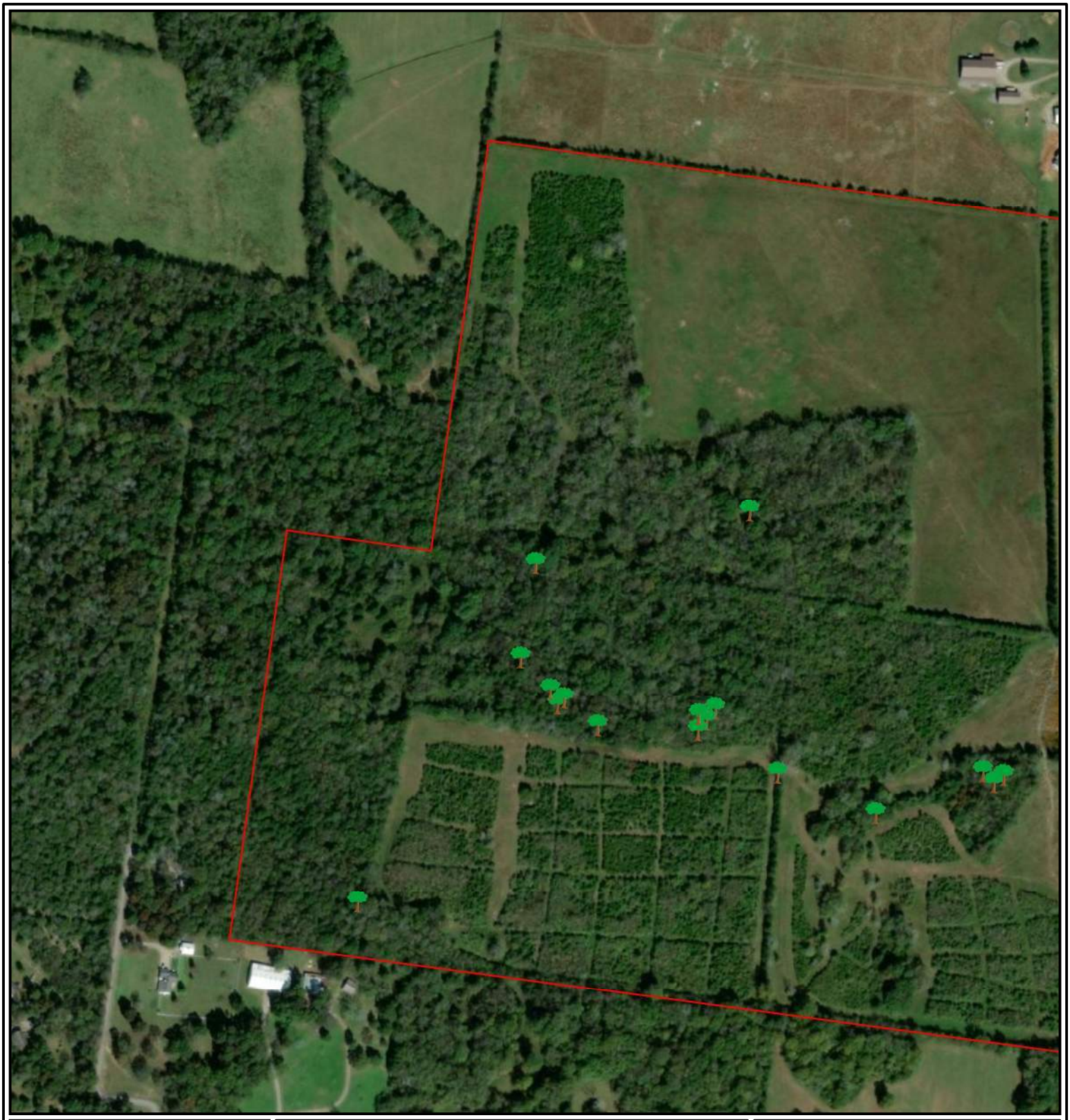
DATE: January, 2021

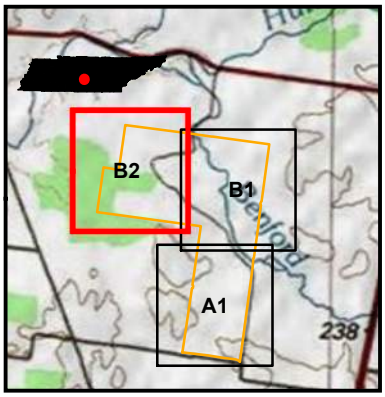
FIGURE 6-B1

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Technical_Memo\Figure6_ResourceMap.mxd





Potential Bat Roost Tree

Project Study Area

N

1 inch = 400 feet

0 80 160 320 480

Feet

Basemap: ESRI World Imagery
Source Data: Barge Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
EXISTING CONDITIONS MAP

PROJ NO: 3609511

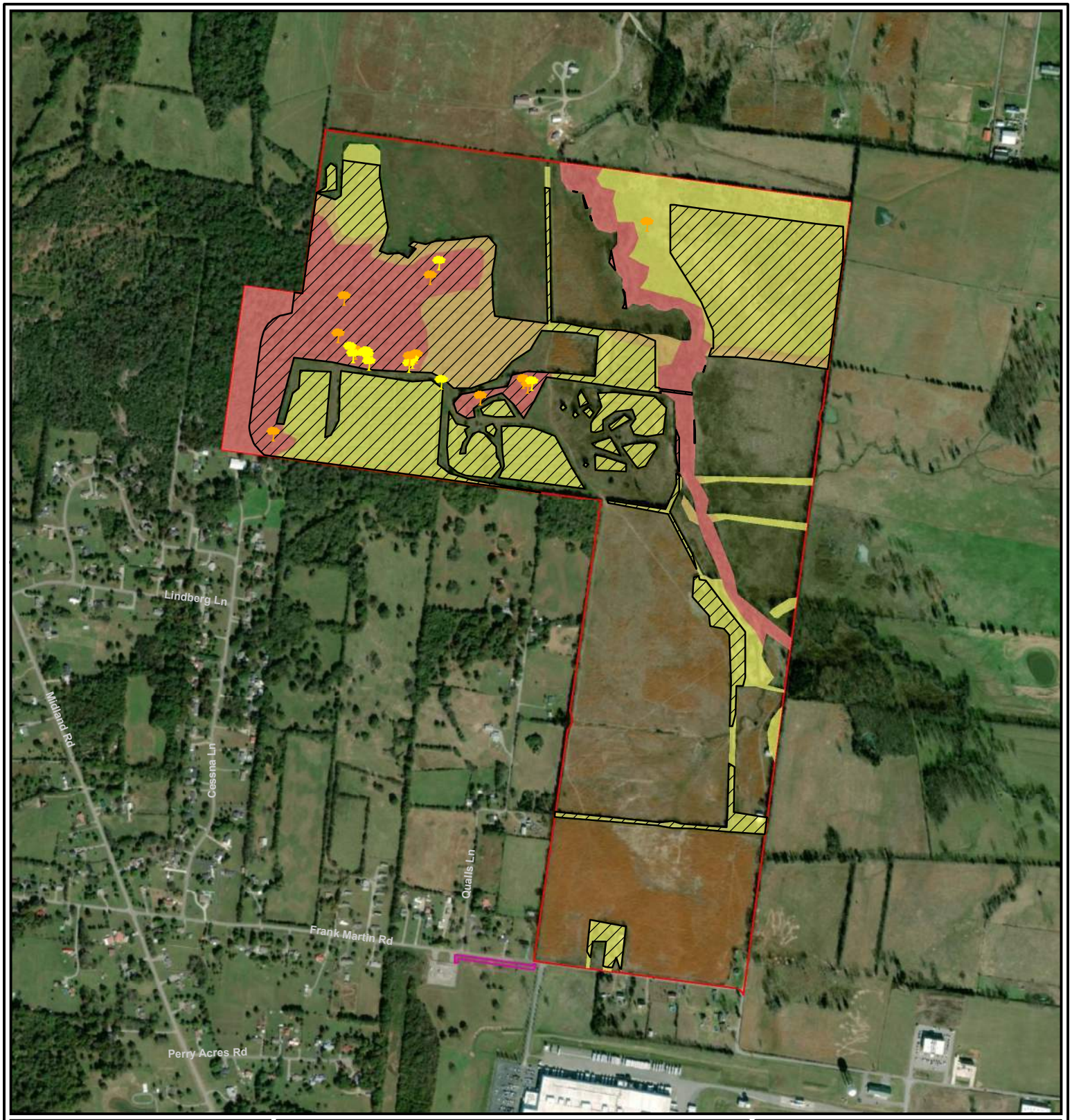
DATE: January, 2021

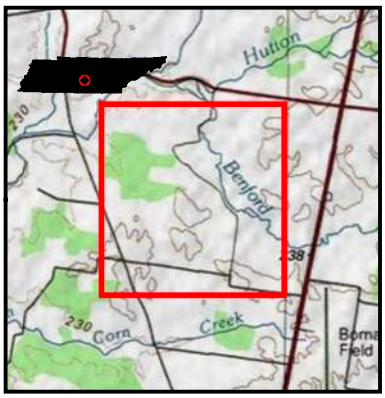
FIGURE 6-B2

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Technical_Memo\Figure6_ResourceMap.mxd





Potential Bat Roost Tree

Habitat Value

- Exceptional
- Good
- Marginal
- Poor

Bat Habitat Woodlands

Quality

- Good
- Marginal
- Poor

- Solar Array Tree Clearing Area
- Project Study Area
- Proposed Electric Easment

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: TN ROADS, Barge NR Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
BAT HABITAT QUALITY MAP

PROJ NO: 3609511

DATE: February, 2021

FIGURE 7

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Additional_EA_Maps\Figure7_BatHabitatMap.mxd

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Attachment B – NRCS Custom Soil Report

United States Department of Agriculture

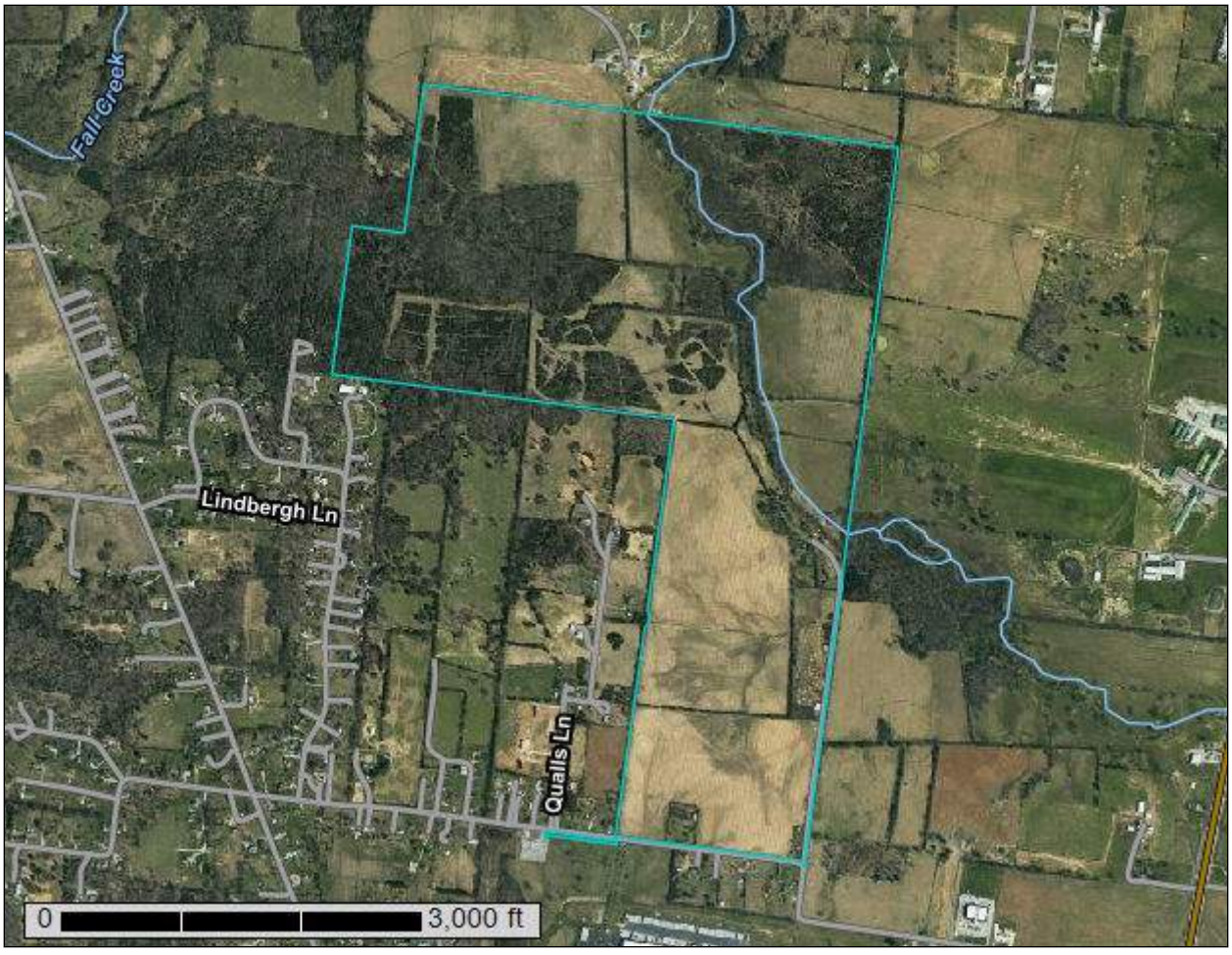
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Bedford County, Tennessee

SR Bell Buckle Solar Farm



January 25, 2021

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

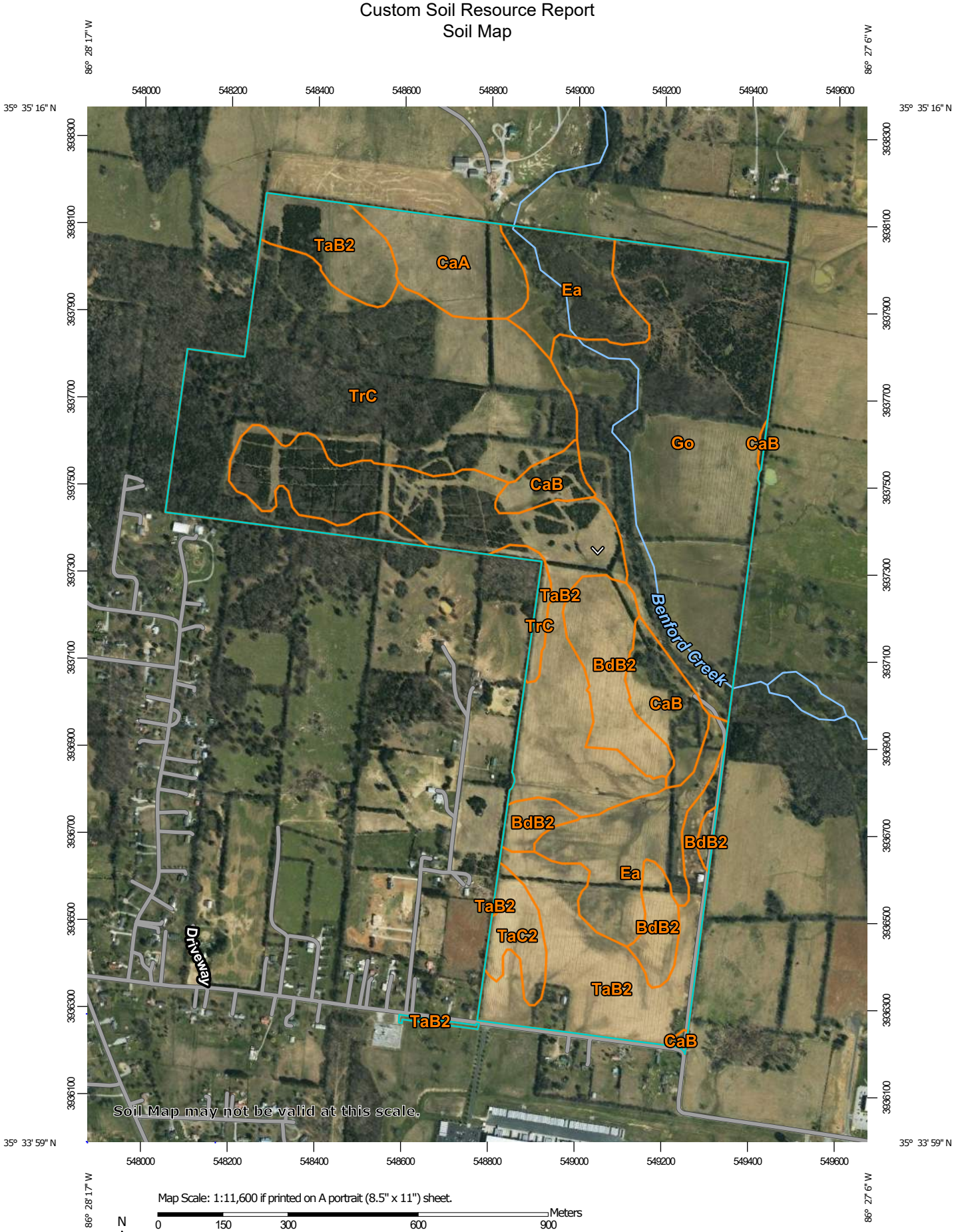
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:11,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Bedford County, Tennessee
Survey Area Data: Version 17, May 28, 2020

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

Date(s) aerial images were photographed: Mar 20, 2019—Mar 22, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BdB2	Bradyville silt loam, 2 to 5 percent slopes	23.6	6.4%
CaA	Capshaw silt loam, 0 to 2 percent slopes	15.8	4.3%
CaB	Capshaw silt loam, 2 to 5 percent slopes	14.6	4.0%
Ea	Eagleville silty clay loam, frequently flooded	34.9	9.5%
Go	Godwin silt loam, frequently flooded	86.1	23.4%
TaB2	Talbott silt loam, 2 to 5 percent slopes, eroded	96.7	26.3%
TaC2	Talbott silt loam, 5 to 12 percent slopes, eroded	6.6	1.8%
TrC	Talbott-Rock outcrop complex, 2 to 15 percent slopes	88.9	24.2%
Totals for Area of Interest		**367.2**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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

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

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

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

Bedford County, Tennessee

BdB2—Bradyville silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qh79
Elevation: 450 to 850 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 59 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Bradyville and similar soils: 91 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bradyville

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 6 inches: silt loam
Bt1 - 6 to 19 inches: silty clay loam
Bt2 - 19 to 48 inches: clay
R - 48 to 58 inches: bedrock

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 39 to 59 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

CaA—Capshaw silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: krvb
Elevation: 670 to 930 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Capshaw and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capshaw

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loess and/or clayey alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 13 inches: silt loam
H3 - 13 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Hydric soil rating: No

CaB—Capshaw silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: krvc
Elevation: 670 to 1,000 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Capshaw and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capshaw

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loess and/or clayey alluvium over clayey residuum weathered from limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 13 inches: silt loam
H3 - 13 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 40 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Hydric soil rating: No

Ea—Eagleville silty clay loam, frequently flooded

Map Unit Setting

National map unit symbol: krvk
Elevation: 600 to 1,000 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Eagleville and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Eagleville

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Clayey alluvium derived from limestone

Typical profile

H1 - 0 to 11 inches: silty clay loam
H2 - 11 to 32 inches: clay
R - 32 to 42 inches: bedrock

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Agee

Percent of map unit: 8 percent
Landform: Flood plains
Hydric soil rating: Yes

Go—Godwin silt loam, frequently flooded

Map Unit Setting

National map unit symbol: krvn
Elevation: 600 to 1,000 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Godwin and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Godwin

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Clayey alluvium derived from limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 30 inches: clay
H3 - 30 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water capacity: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Agee

Percent of map unit: 8 percent
Landform: Flood plains
Hydric soil rating: Yes

TaB2—Talbott silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: krwh
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 34 inches: clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

TaC2—Talbott silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: krwj
Elevation: 460 to 1,400 feet
Mean annual precipitation: 45 to 55 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 34 inches: clay
R - 34 to 44 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

TrC—Talbott-Rock outcrop complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: krwk

Elevation: 460 to 4,000 feet
Mean annual precipitation: 8 to 55 inches
Mean annual air temperature: 48 to 71 degrees F
Frost-free period: 110 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Talbott and similar soils: 60 percent
Rock outcrop: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Talbott

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey residuum weathered from limestone

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 30 inches: clay
R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope

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Attachment C – Wetland and Waterbody Data Forms

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-1	Date/Time: 7-8-20/0900
Assessors/Affiliation: N. Carmean & F. Amatucci (Barge Design Solutions, Inc)	Project ID : #3609510
Site Name/Description: Silicon Ranch Bell Buckle / Solar Farm	
Site Location: North of Frank Martin Road, Shelbyville, TN	
HUC (12 digit): 060400020306	Lat/Long: Start: 35.57454, -86.445971 End: 35.575857, -86.456032
Previous Rainfall (7-days) : 0.97 inches (CoCoRaHS TN-BF-4)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☑ low ☐ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : N/A	County: Madison Co.
Soil Type(s) / Geology : Ea - Eagleville silty clay loam, frequently flooded	Source: NRCS
Surrounding Land Use : Woodland, Agricultural Fields, Commercial utilities/facilities	
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe ☑ Moderate ☐ Slight ☑ Absent ☐	

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, vegetation composed of upland and FACU species	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☐	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☐	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precip >0.1" in local watershed	☐	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE: If any Primary Indicators 1-9 = "Yes", then no further investigation is necessary. However, assessors may choose to score secondary indicators as supporting evidence.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

Overall Hydrologic Determination = WWC

Secondary Indicator Score (if applicable) = 16.25

Justification / Notes :

WWC located downstream of linear wetland delineated. WWC connects the wetland to Benford Creek. Heavily impacted by historic cattle use.

Waterbody Name: WWC-1

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 6.75)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	1	✔ 2	3
2. Sinuous channel	0	✔ 1	2	3
3. In-channel structure: riffle-pool sequences	0	✔ 1	2	3
4. Sorting of soil textures or other substrate	0	✔ 1	2	3
5. Active/relic floodplain	0	0.5	✔ 1	1.5
6. Depositional bars or benches	✔ 0	1	2	3
7. Braided channel	✔ 0	1	2	3
8. Recent alluvial deposits	0	✔ 0.5	1	1.5
9. Natural levees	✔ 0	1	2	3
10. Headcuts	0	✔ 1	2	3
11. Grade controls	✔ 0	0.5	1	1.5
12. Natural valley or drainageway	0	0.5	✔ 1	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0 ✔		Yes = 3	

B. **Hydrology** (Subtotal = 4.0)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	✔ 0	1	2	3
15. Water in channel and >48 hours since sig. rain	✔ 0	1	2	3
16. Leaf litter in channel (January – September)	✔ 1.5	1	0.5	0
17. Sediment on plants or on debris	0	✔ 0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	0	✔ 0.5	1	1.5
19. Hydric soils in channel bed or sides of channel	No = 0		Yes = 1.5 ✔	

C. **Biology** (Subtotal = 5.5)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed [1]	3	2	✔ 1	0
21. Rooted plants in the thalweg [1]	✔ 3	2	1	0
22. Crayfish in stream (exclude in floodplain)	✔ 0	1	2	3
23. Bivalves/mussels	✔ 0	1	2	3
24. Amphibians	✔ 0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	✔ 0	1	2	3
26. Filamentous algae; periphyton	0	✔ 1	2	3
27. Iron oxidizing bacteria/fungus	✔ 0	0.5	1	1.5
28.Wetland plants in channel bed [2]	0	✔ 0.5	1	1.5

[1] Focus is on the presence of terrestrial plants.

[2] Focus is on the presence of aquatic or wetland plants.

Total Points = 16.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

1 medium headcut at transition from wetland to WWC. No upland plants located in channel

Bed and bank has been heavily impacted throughout the reach, although present through majority. Fibrous roots were evident in the channel. Dried periphyton was observed on rocks in channel. Substrate consisted of primarily hard packed clay with very little gravel/cobble observed. Sorting more evident near bottom of the reach, more cobble.

No aquatic fauna observed given the lack of water in the channel.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-8-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-1

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): wooded flat Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.584393 Long: -86.458465 Datum: WGS84

Soil Map Unit Name: Ea - Eagleville silty clay loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

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

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Gleditsia triacanthos*	20	Yes	FAC
2. *Juniperus virginiana*	15	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover: 7	
Sapling/Shrub Stratum (Plot size:)			
1. *Juniperus virginiana*	10	Yes	FACU
2. *Gleditsia triacanthos*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	
Herb Stratum (Plot size:)			
1. *Rubus argutus*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover: 4	
Woody Vine Stratum (Plot size:)			
1. *Campsis radicans*	15	Yes	FAC
2.			
3.			
4.			
5.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column Totals:	85 (A)		300 (B)

Prevalence Index = B/A = 3.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

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

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

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

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

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point: UPL-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: rock

Depth (inches): 6

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-8-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-2

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.583005 Long: -86.458299 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

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

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Celtis occidentalis*	25	Yes	FACU
3. *Ulmus rubra*	15	Yes	FAC
4.			
5.			
6.			
7.			
	70	=Total Cover	
50% of total cover: 35	20% of total cover: 14		
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2. *Ulmus rubra*	15	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	35	=Total Cover	
50% of total cover: 18	20% of total cover: 7		
Herb Stratum (Plot size:)			
1. *Symphyotrichum lateriflorum*	15	Yes	FACW
2. *Bidens aristosa*	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	=Total Cover	
50% of total cover: 10	20% of total cover: 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: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	30	x 3 =	90
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	125 (A)		330 (B)

Prevalence Index = B/A = 2.64

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-2

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

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

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-3

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.573278 Long: -86.45755 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UPL-3

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. *Echinochloa crus-galli*	30	Yes	FAC
2. *Juncus tenuis*	20	Yes	FAC
3. *Ranunculus repens*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55 =Total Cover		
50% of total cover: 28	20% of total cover: 11		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	55	x 3 =	165
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	55 (A)		165 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	98	10YR 5/6	2	C	M	Loamy/Clayey	Distinct redox concentrations
6-16	10YR 4/3	95	10YR 5/6	5	C	M	Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-4

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.574828 Long: -86.45625 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UPL-4

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. *Echinochloa crus-galli*	45	Yes	FAC
2. *Vernonia gigantea*	20	Yes	FAC
3. *Ranunculus repens*	5	No	FAC
4. *Rumex crispus*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75 =Total Cover		
50% of total cover: 38	20% of total cover: 15		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		225 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-4

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

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

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-5

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.576584 Long: -86.455911 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: UPL-5

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. *Juncus tenuis*	50	Yes	FAC
2. *Vernonia gigantea*	20	Yes	FAC
3. *Coreopsis tinctoria*	10	No	FAC
4. *Spiranthes vernalis*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85 =Total Cover		
50% of total cover: 43	20% of total cover: 17		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	85 (A)		255 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	90	10YR 5/6	10	C	M	Loamy/Clayey	Distinct redox concentrations
5-16	10YR 4/3	85	10YR 5/6	15	C	M	Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-6

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): pasture Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.578225 Long: -86.456008 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

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

Sampling Point: UPL-6

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. *Juncus tenuis*	75	Yes	FAC
2. *Vernonia gigantea*	10	No	FAC
3. *Ranunculus repens*	10	No	FAC
4. *Rumex crispus*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =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: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/3	95	10YR 5/6	5	C	M	Loamy/Clayey	Distinct redox concentrations
8-16	10YR 4/3	90	10YR 5/6	10	C	M	Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-8-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: UPL-A

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): none Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.58191 Long: -86.456222 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **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)
- x FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

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

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	55	Yes	FACW
2. *Ulmus rubra*	25	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover: 16	
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus pennsylvanica*	10	Yes	FACW
2. *Ulmus rubra*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	
Herb Stratum (Plot size:)			
1. *Carex frankii*	15	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	
Woody Vine Stratum (Plot size:)			
1. *Celastrus orbiculatus*	15	Yes	FACU
2.			
3.			
4.			
5.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	65	x 2 =	130
FAC species	30	x 3 =	90
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	125 (A)		295 (B)

Prevalence Index = B/A = 2.36

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 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** X **No** ___

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

SOIL

Sampling Point: UPL-A

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100					Loamy/Clayey	
8-18	10YR 4/4	85	10YR 4/6	15	C	M	Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-8-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: WTL-1

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.585045 Long: -86.459063 Datum: WGS84

Soil Map Unit Name: Ea - Eagleville silty clay loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- 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)
- x 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)
- x Microtopographic Relief (D4)
- x 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** X **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: WTL-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	35	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	35 =Total Cover		
50% of total cover: 18	20% of total cover: 7		
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 =Total Cover		
50% of total cover: 10	20% of total cover: 4		
Herb Stratum (Plot size:)			
1. *Carex frankii*	15	Yes	OBL
2. *Carex vulpinoidea*	10	Yes	OBL
3. *Bidens aristosa*	10	Yes	FACW
4. *Glyceria striata*	5	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40 =Total Cover		
50% of total cover: 20	20% of total cover: 8		
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: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	95 (A)		160 (B)

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of 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** X **No** ___

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

SOIL

Sampling Point: WTL-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2						Loamy/Clayey	
2-8	10YR 4/2	78	10YR 5/6	15	C	M	Loamy/Clayey	
			10YR 5/1	5	D	M		
			10YR 2/1	2	C	M		Faint redox concentrations
8-16	10YR 4/2	63	10YR 5/6	35	C	M	Loamy/Clayey	Prominent redox concentrations
			10YR 5/1	2	C	M		Faint redox concentrations

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-8-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: WTL-2

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.582898 Long: -86.458285 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ 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)
- x 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)

- x Surface Soil Cracks (B6)
- x Sparsely Vegetated Concave Surface (B8)
- x 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** X **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: WTL-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	55	Yes	FACW
2. *Ulmus rubra*	15	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover: 14	
Sapling/Shrub Stratum (Plot size:)			
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2. *Ulmus rubra*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover: 6	
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: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		225 (B)

Prevalence Index = B/A = 2.25

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of 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** X **No** ___

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

SOIL

Sampling Point: WTL-2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	60	10YR 5/6	40	C	M	Loamy/Clayey	Prominent redox concentrations
10-18	10YR 2/1	50	10YR 4/2	45	D	M	Loamy/Clayey	
			10YR 5/6	5	C	M		Prominent redox concentrations

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: WTL-3

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.573522 Long: -86.457094 Datum: WGS84

Soil Map Unit Name: Ea - Eagleville silty clay loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ 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)

- x Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- x 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** X **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: WTL-3

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. *Scirpus atrovirens*	20	Yes	OBL
2. *Juncus tenuis*	20	Yes	FAC
3. *Lythrum alatum*	10	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50 =Total Cover		
50% of total cover: 25	20% of total cover: 10		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	10	x 2 =	20
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		100 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of 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** X **No** ___

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

SOIL

Sampling Point: WTL-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	88	10YR 5/6	10	C	M	Loamy/Clayey	Prominent redox concentrations
			10YR 2/1	2	C	M		FeMn concentrations
4-16	10YR 4/2	62	10YR 5/6	30	C	M	Loamy/Clayey	Prominent redox concentrations
			10YR 2/1	8	C	M		Faint redox concentrations

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: WTL-4

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): catchment Local relief (concave, convex, none): concave Slope (%): 1%

Subregion (LRR or MLRA): LRR N Lat: 35.574840 Long: -86.456180 Datum: WGS84

Soil Map Unit Name: Ea - Eagleville silty clay loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** X **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: WTL-4

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. *Salix nigra*	10	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	10 =Total Cover		
50% of total cover: 5	20% of total cover: 2		
Herb Stratum (Plot size:)			
1. *Leersia oryzoides*	20	Yes	OBL
2. *Persicaria amphibia*	20	Yes	OBL
3. *Carex frankii*	15	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55 =Total Cover		
50% of total cover: 28	20% of total cover: 11		
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: 4 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		65 (B)

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of 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** X **No** ___

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

SOIL

Sampling Point: WTL-4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[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)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ 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 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

No soil core was observed at this location due to on going use by cattle and the obvious sign of fecal contamination. However, area is clearly inundated year round.

WETLAND DETERMINATION DATA SHEET – Eastern Mountains and Piedmont Region

Project/Site: Bell Buckle City/County: Bell Buckle/Bedford Sampling Date: 7-9-20

Applicant/Owner: Silicon Ranch State: TN Sampling Point: WTL-5

Investigator(s): NJC/FCA Section, Township, Range:

Landform (hillside, terrace, etc.): pasture Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR or MLRA): LRR N Lat: 35.576453 Long: -86.455939 Datum: WGS84

Soil Map Unit Name: Go -Godwin silt loam, frequently flooded NWI classification: n/a

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

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

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

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ 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)

- x Surface Soil Cracks (B6)
- x Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- x Crayfish Burrows (C8)
- x Saturation Visible on Aerial Imagery (C9)
- x Stunted or Stressed Plants (D1)
- x 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** X **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: WTL-5

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.			
2. *Carex vulpinoidea*	15	Yes	OBL
3. *Carex lupulina*	15	Yes	OBL
4. *Eleocharis palustris*	10	Yes	OBL
5. *Echinochloa crus-galli*	5	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	45 =Total Cover		
50% of total cover: 23	20% of total cover: 9		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	45 (A)		55 (B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

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

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of 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** X **No** ___

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

SOIL

Sampling Point: WTL-5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	85	10YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
6-12	10YR 3/2	60	10YR 5/6	40	C	M	Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 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 Mucky Mineral (F1) **(MLRA 136)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 122, 136)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ___ Red Parent Material (F21) **(MLRA 127, 147, 148)**

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)**
- ___ Red Parent Material (F21) **(outside MLRA 127, 147, 148)**
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: n/a

Depth (inches): ___

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

Remarks:

This data sheet is revised from Eastern Mountains and Piedmont Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

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bargedesign.com

Attachment D – Photo Summary

Photo: 1
By: N. Carmean
Date: July 8, 2020
Feature: WTL-1
Lat: 35.584281,
Long: -86.458659

View from the southwest of typical WTL-1 composition.

Photo: 2
By: N. Carmean
Date: July 8, 2020
Feature: WTL-1
Lat: 35.584442,
Long: -86.458516

View from the east of small portion of WTL-1 considered PEM.

Photo: 3
By: N. Carmean
Date: July 8, 2020
Feature: WTL-2
Lat: 35.583017,
Long: -86.458387

View from the north end of WTL-2 where wrack lines and visible flow patterns were observed.

Photo: 4
By: N. Carmean
Date: July 8, 2020
Feature: WTL-2
Lat: 35.582859,
Long: -86.458254

Representative conditions of WTL-2 near the center of the wetland.

Photo: 5
By: N. Carmean
Date: July 9, 2020
Feature: WTL-3
Lat: 35.573465,
Long: -86.457493

View from the west of the start of WTL-3

Photo: 6
By: N. Carmean
Date: July 9, 2020
Feature: WTL-3
Lat: 35.573489,
Long: -86.457310

View from the west of linear nature of WTL-3.

Photo: 7
By: N. Carmean
Date: July 9, 2020
Feature: WTL-4
Lat: 35.574831,
Long: -86.456255

View from the west of WTL-4 with established fringe wetland and hydrophytic vegetation.

Photo: 8
By: N. Carmean
Date: July 9, 2020
Feature: WTL-4
Lat: 35.574962,
Long: -86.456132

View from the northeast of WTL-4 with established fringe wetland and hydrophytic vegetation.

Photo: 9
By: F. Amatucci
Date: July 9, 2020
Feature: WTL-5
Lat: 35.576439,
Long: -86.456021

View from within WTL-5 area toward the east.

Photo: 10
By: N. Carmean
Date: July 9, 2020
Feature: WTL-5
Lat: 35.576439,
Long: -86.456021

View from within WTL-5 area toward the west.

Photo: 11
By: N. Carmean
Date: July 9, 2020
Feature: WTL-6
Lat: 35.578414,
Long: -86.456092

View from within WTL-6 area toward the east.

Photo: 12
By: N. Carmean
Date: July 9, 2020
Feature: WTL-6
Lat: 35.578414,
Long: -86.456092

View from within WTL-6 area toward the west.

Photo: 13
By: N. Carmean
Date: July 8, 2020
Feature: WWC-1/WTL-3
Lat: 35.574349,
Long: -86.455973

View WTL-3 immediately upstream of start of WWC-1

Photo: 14
By: N. Carmean
Date: July 8, 2020
Feature: WWC-1
Lat: 35.575525,
Long: -86.455983

View downstream from culverted crossing of WWC-1.

Photo: 15
By: N. Carmean
Date: July 8, 2020
Feature: WWC-1
Lat: 35.575525,
Long: -86.455983

View upstream from culverted crossing of WWC-1.

Photo: 16
By: F. Amatucci
Date: July 8, 2020
Feature: PRT-5
Lat: 35.580879,
Long: -86.461822

Potential bat roost tree rated as marginal.

Photo: 17
By: N. Carmean
Date: January 29, 2021
Feature: PRT-12 & 13
Lat: 35.581548,
Long: -86.466397

Shagbark hickories that provided “good” potential bat roost trees.

Photo: 18
By: N. Carmean
Date: January 29, 2021
Feature: Red Cedar Thicket
Lat: 35.583151,
Long: -86.455231

View of the red cedar thicket forested community that was rated as “poor” for bat habitat.

Photo: 19
By: N. Carmean
Date: January 29, 2021
Feature: Hunting Easement Woodland
Lat: 35.580470,
Long: -86.467757

View of the fence row/hunting easement community that was rated as “poor” for bat habitat. Note the density of young trees and vines.

Photo: 20
By: N. Carmean
Date: January 29, 2021
Feature: Mature Riparian Forest
Lat: 35.583178,
Long: -86.459365

View of the mature riparian forest community that was rated as “good” for bat habitat.

Photo: 21
By: N. Carmean
Date: January 29, 2021
Feature: Semi-mature Forest
Lat: 35.582605,
Long: -86.463425

View of the semi-mature forest community that was rated as “marginal” for bat habitat. Note the mixed growth stages of the forested community.

Photo: 22
By: N. Carmean
Date: January 29, 2021
Feature: Mature Forest
Lat: 35.581450,
Long: -86.465906

View of the mature forest community that was rated as “good” for bat habitat. Note the mixed the presence of shagbark hickories with exfoliating bark.

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Attachment E – USFWS IPaC Report

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Bedford County, Tennessee

Local office

Tennessee Ecological Services Field Office

(931) 528-6481
(931) 528-7075

446 Neal Street
Cookeville, TN 38501-4027

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Clams

NAME — STATUS

Fluted Kidneyshell Ptychobranchus subtentus — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1397

Rabbitsfoot Quadrula cylindrica cylindrica — Threatened
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/5165

Slabside Pearlymussel Pleuronaia dolabelloides — Endangered
Wherever found
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1518

Turgid Blossom (pearlymussel) Epioblasma turgidula — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7659

Flowering Plants

NAME — STATUS

Leafy Prairie-clover Dalea foliosa Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5498

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1C

FRESHWATER POND

- PUSCx
- PUBHx

RIVERINE

- R4SBC
- R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

615 3rd Ave S, Suite 700
Nashville, Tennessee 37210
615.254.1500 Phone
615.255.6572 Fax
bargedesign.com

Attachment F – USFWS Bat Habitat Data Forms

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Silicon Ranch - Bell Buckle Solar Farm Date: 1/28/20

Township/Range/Section: Shelbyville, Bedford Co., TN

Lat Long/UTM/ Zone: 35.5BC891, -86.458046 (NAD83) Surveyor: NJC/FCA

Brief Project Description

Property is currently utilized as pastureland, Hunting easements, and hayfied land use, which will be converted to solar farm usage.

Project Area

	Total Acres	Forest Acres	Open Acres
Project	367	~164	~203

	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
Proposed Tree Removal (ac)	—	~121 acres	~43 acres

Vegetation Cover Types

Pre-Project		Post-Project
Pastureland / Hayfields	—	Hayfield / fallow field under solar array
Red Cedar thicket	—	Partially converted
Native Riparian Corridor	—	Partially converted
Semi-mature forest	—	To remain
Mature forest	—	Partially converted

Landscape within 5 mile radius

Flight corridors to other forested areas?

Surrounding landscape is mostly agricultural with some regions of forested hillsides and riparian corridors. (Duck River to the South)

Describe Adjacent Properties (e.g. forested, grassland, commercial or residencial development, water sources)

Agricultural, Residential, commercial (Walmart Distribution facility), and pockets of woodland & water resources

Proximity to Public Land

What is the distance (mi.) from the project area to forested public lands (e.g., national or state forests, national or state parks, conservation areas, wildlife management areas)?

Henry Horton State Park ~12 miles

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description

Sample Site No.(s): _____

Mature Riparian Forest (Good) ~~Bad~~ 14.7-acres

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral: 216	Intermittent:	Perennial: 5,093	Describe existing condition of water sources: Bedford Creek observed with high amounts of pooling between small riffle areas
Pools/Ponds (# and size)	—	Open and accessible to bats? —		
Wetlands (approx. ac.)	Permanent:	Seasonal: 0.02		

Forest Resources at Sample Site

	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
Closure/Density	5	2	2	
Dominant Species of Mature Trees	Sycamore, Ash, Oak			
% Trees w/ Exfoliating Bark	N/A Not observed in this habitat			
Size Composition of Live Trees (%)	Small (3-8 in): 5	Med (9-15 in): 50	Large (>15 in): 45	
No. of Suitable Snags		N/A		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes

Additional Comments:

The Mature Riparian forest along the banks of Bedford Creek provides good foraging opportunities. The forest is restricted to a narrow corridor within the property.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description

Sample Site No.(s): _____

Red Cedar Thicket (Poor) upper Northeast corner of site 40.1-acres

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: Isolated depressional wetlands dominated with thick saplings
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent 0.21 WTL-2	Seasonal 0.63 WTL-1		

Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
	1	2	6	
Dominant Species of Mature Trees	Young Ash, Red Cedar, sycamore, Oak			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	65	20	15	
No. of Suitable Snags		1		

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? No

Additional Comments:

The Red Cedar thicket community in the northeastern corner of the site does not provide good roosting habitat and is dense with young saplings ~~and small~~

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): _____
Mature Forest (Good) 37.1-acres

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: N/A
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
	6	1	1	
Dominant Species of Mature Trees	Oak, hickory, Ash, cedar,			
% Trees w/ Exfoliating Bark	26 PRTs counted			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10	20	70	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes

Additional Comments:

The Mature forest community was observed in the northwestern portion of the site with an open understory good for foraging and potential mist net sites.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description
Sample Site No.(s): _____
Semi-mature forest (Marginal) 17.8 Acres

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources: N/A
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
	4	5	3	
Dominant Species of Mature Trees	Oak, hickory, Ash, Cedar, Elm, Sycamore			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	20	70	10	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? Yes (marginally)

Additional Comments:

The semi-mature forest was observed along margins of ag. fields adjacent to mature forest where natural succession of the vegetative community was observed. Foraging and mist net surveys is likely difficult in this area.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Use additional sheets to assess discrete habitat types at multiple sites in a project area
Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area
A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description

Sample Site No.(s): _____

Fence lows, Hunting Easements, Young forest (Poor) 54.3-acres

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral: 597	Intermittent: 922	Perennial: —	Describe existing condition of water sources: Agricultural ponds, streams ditches, wet meadows
Pools/Ponds (# and size)	0.04	Open and accessible to bats? Yes		
Wetlands (approx. ac.)	Permanent: ~~0.08~~	Seasonal: 0.03 WTL-3		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50 '): 0	Midstory (20-50'): 2	Understory (<20'): 6	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81=100%
Dominant Species of Mature Trees	Oak, Ash, Maple, Sycamore, Hickory			
% Trees w/ Exfoliating Bark	N/A	to Young		
Size Composition of Live Trees (%)	Small (3-8 in): 90	Med (9-15 in): ~~10~~ 8	Large (>15 in): ~~0~~ 2	
No. of Suitable Snags				

Standing dead trees with exfoliating bark, cracks, crevices, or hollows. Snags without these characteristics are not considered suitable.

IS THE HABITAT SUITABLE FOR INDIANA BATS? NO

Additional Comments:

This young ~~forest~~ Wooded community was observed along fencelines and within Hunting areas of the site Netting & foraging opportunities is nearly absent.

Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

Photographic Documentation: habitat shots at edge and interior from multiple locations; understory/midstory/canopy; examples of potential suitable snags and live trees; water sources

Appendix C

Glint and Glare Analysis

SR Bell Buckle Solar Project

Barge Design Solution, LLC

Bedford County, Tennessee

Glint & Glare Analysis

October 21, 2020

Capitol Airspace Group

capitolairspace.com

(703) 256 - 2485

Summary

Barge Design Solution, LLC is proposing to construct solar arrays near the town of Bell Buckle in Bedford County, Tennessee (***Figure 1***). On behalf of Barge Design Solution, LLC, Capitol Airspace performed a Glint and Glare Analysis utilizing the Solar Glare Hazard Analysis Tool (SGHAT) in order to identify the potential for glare impacts. Specifically, this analysis considered the potential for glare impacts on aircraft approaching Bomar Field-Shelbyville Municipal Airport (SYI) Runway 18/36. Additionally, this analysis considered the potential for glare impacts on nearby residences and roadways.

The results of the analysis indicate that there are no predicted glare occurrences for approaches to Bomar Field-Shelbyville Municipal Airport (SYI) as a result of proposed single-axis tracking solar arrays. Since Bomar Field-Shelbyville Municipal Airport (SYI) is a non-towered airport, this analysis did not consider the potential for impact on air traffic control tower personnel. These results conform to, and are in accordance with, the FAA's interim policy for *Solar Energy System Projects on Federal Obligated Airports*.

Additionally, there is no predicted glare for residences or roadways as a result of the proposed single-axis tracking solar arrays. These results are based on the application of FAA glint and glare standards in the absence of non-aviation regulatory guidelines.

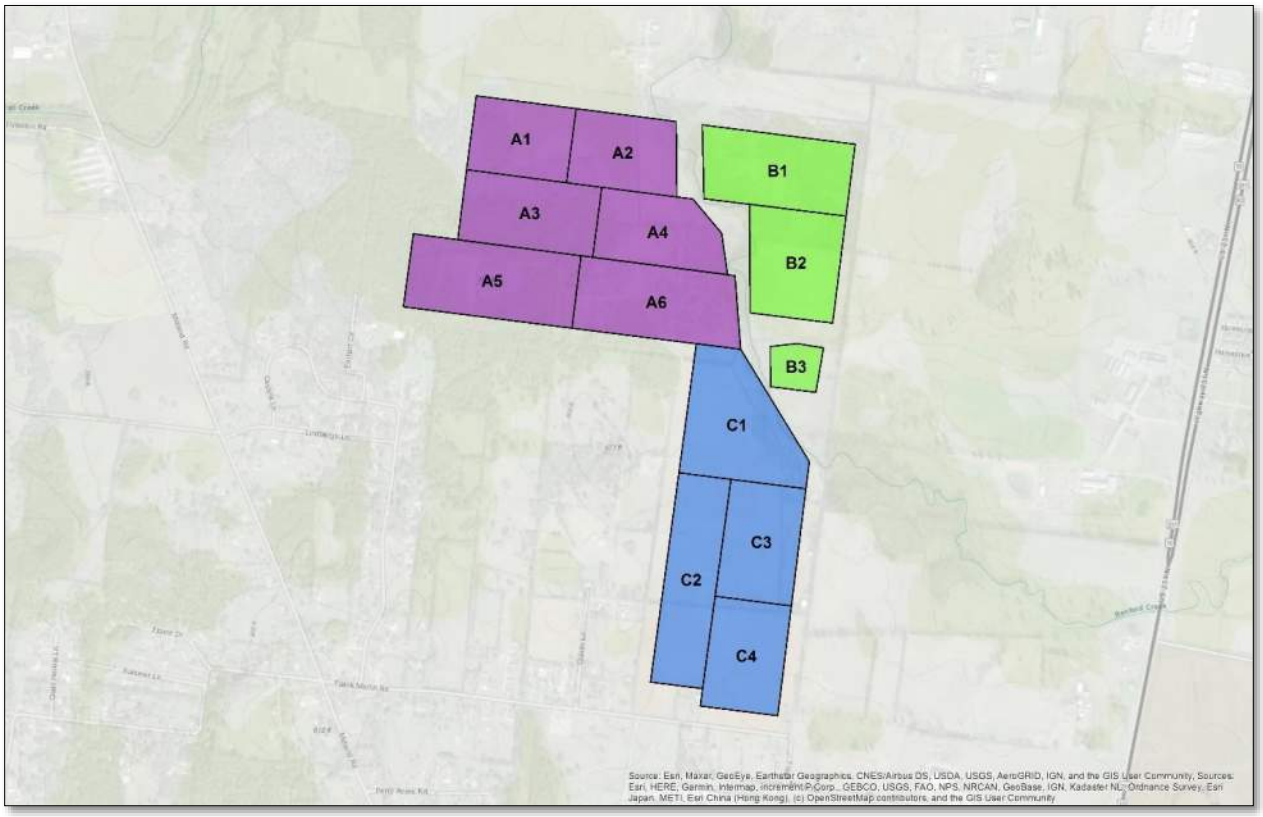

Figure 1: Location and identification of SR Bell Buckle Solar Project solar parcels

Methodology

In cooperation with the Department of Energy (DOE), the Federal Aviation Administration (FAA) developed and validated the Sandia National Laboratories Solar Glare Hazard Analysis Tool (SGHAT), now licensed through ForgeSolar. The FAA requires the use of the SGHAT in order to enhance safety by providing standards for measuring the ocular impact of proposed solar energy systems on pilots and air traffic controllers. ForgeSolar has enhanced the SGHAT for glare hazard analysis beyond the aviation environment. These enhancements include a route module for analyzing roadways as well as an observation point module for analyzing residences.

The SGHAT analyzes potential for glare over the entire calendar year in one-minute intervals from when the sun rises above the horizon until the sun sets below the horizon. The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. The SGHAT does not account for physical obstructions between reflectors and receptors. When glare is found, SGHAT classifies the ocular impact into three categories:

Green: Low potential for temporary after-image
Yellow: Potential for temporary after-image
Red: Potential for permanent eye damage

The FAA interim policy for *Solar Energy System Projects on Federally Obligated Airports* requires the absence of red or yellow predicted glare occurrences in the cockpit. This analysis utilized the FAA approved default SGHAT setting which simulates the pilot's view from the cockpit. No glare occurrences of any category are allowed for ATCT personnel. Currently, there are no defined standards for acceptable ocular impact on residences or roadways.

Data

Solar array specifications (***Table 1***) as well as residence locations were provided by Barge Design Solution, LLC. The SGHAT determines site elevations unless entered manually. Runway end coordinates, elevations, threshold crossing heights, and visual glidepath angles were obtained from the FAA National Flight Data Center (NFDC) National Airspace System Resource (NASR) dataset.

Table 1: SR Bell Buckle Solar Project solar array specifications

Parameter	Value
Axis tracking:	Single-axis rotation
Tracking axis orientation:	180°
Tracking axis tilt:	0°
Max tracking angle:	60°
Resting angle:	30°
Panel material:	Smooth glass with anti-reflection coating
Reflectivity:	Varies with sun
Slope error:	Correlates with material

Results

Bomar Field-Shelbyville Municipal Airport (SYI)

Runway 18/36

The SGHAT results do not predict glare occurrences along the Runway 18 or Runway 36 approach paths (dashed purple line, ***Figure 2***).

Figure 2: Bomar Field-Shelbyville Municipal Airport (SYI) approach paths (dashed lines)

Residences

The SGHAT assessed the potential for glare occurrences at 179 discrete observation point receptors (purple points, ***Figure 3*** & ***Figure 4***). Each observation point was assessed at an eight-foot first story viewing height and a 16-foot second story viewing height. The SGHAT results do not predict glare occurrences for any of the 179 observation points at either viewing height as a result of single-axis tracking arrays.

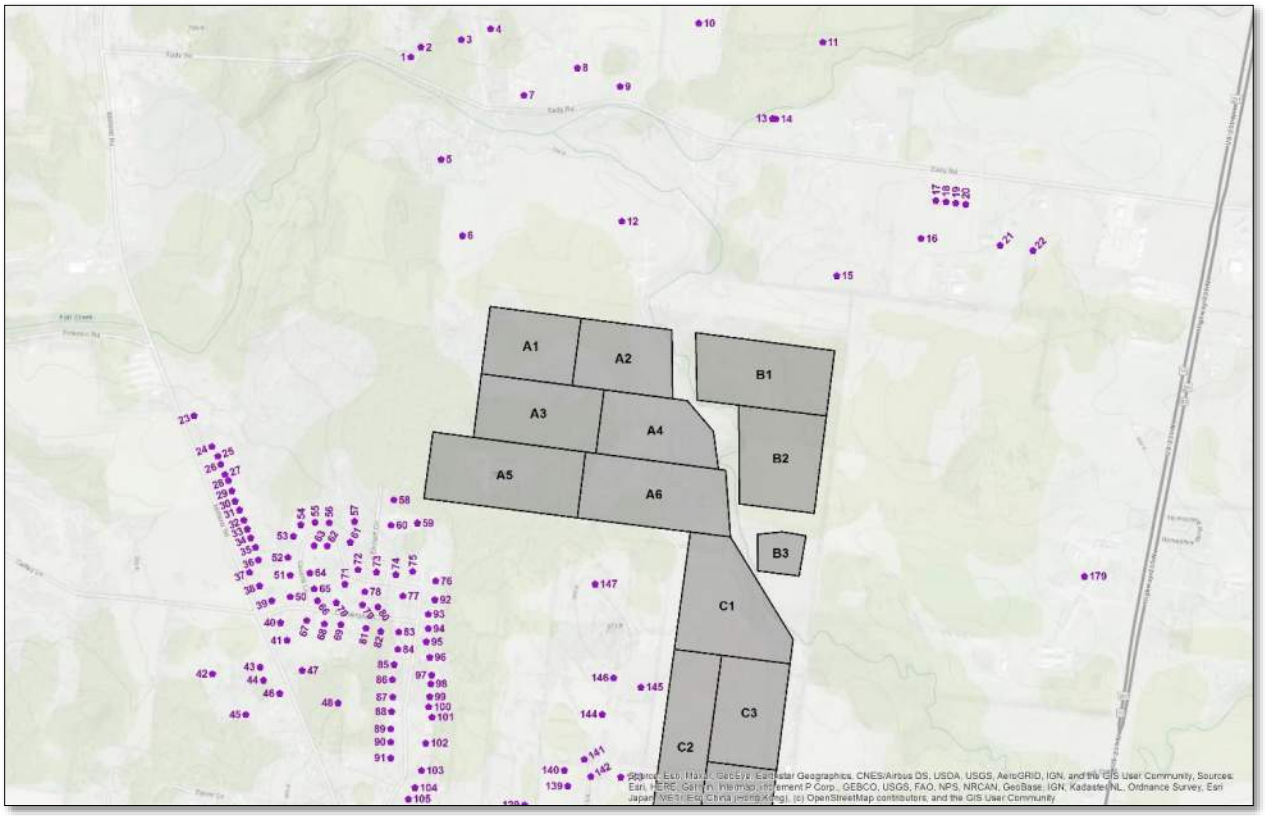

Figure 3: SR Bell Buckle solar parcels with surrounding discrete observation point receptors (purple points)

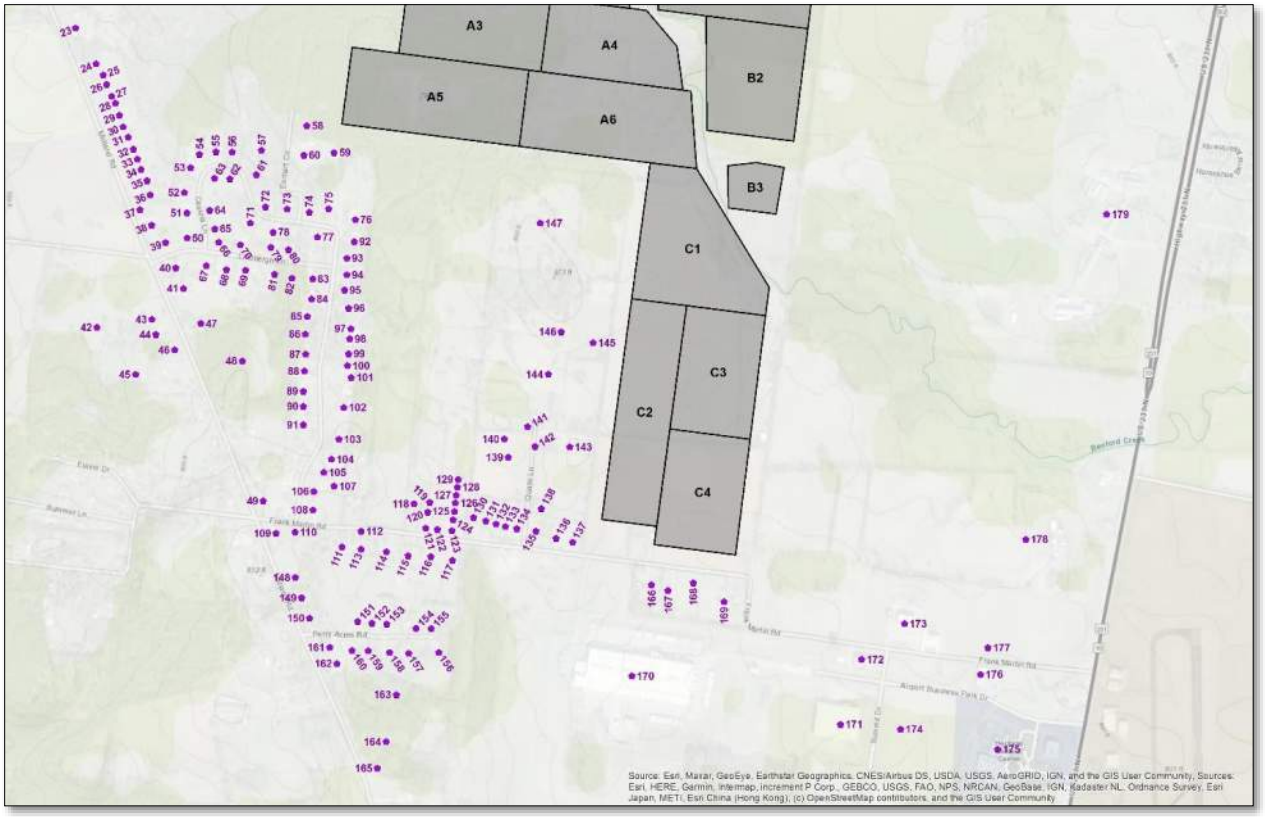

Figure 4: SR Bell Buckle solar parcels with surrounding discrete observation point receptors (purple points)

Routes

The SGHAT assessed the potential for glare occurrences along seven route receptors (solid lines, ***Figure 5***). Each roadway was assessed at a four-foot car viewing height and an eight-foot truck viewing height. The SGHAT results do not predict glare occurrences for any of the roadways at either viewing height as a result of single-axis tracking arrays.

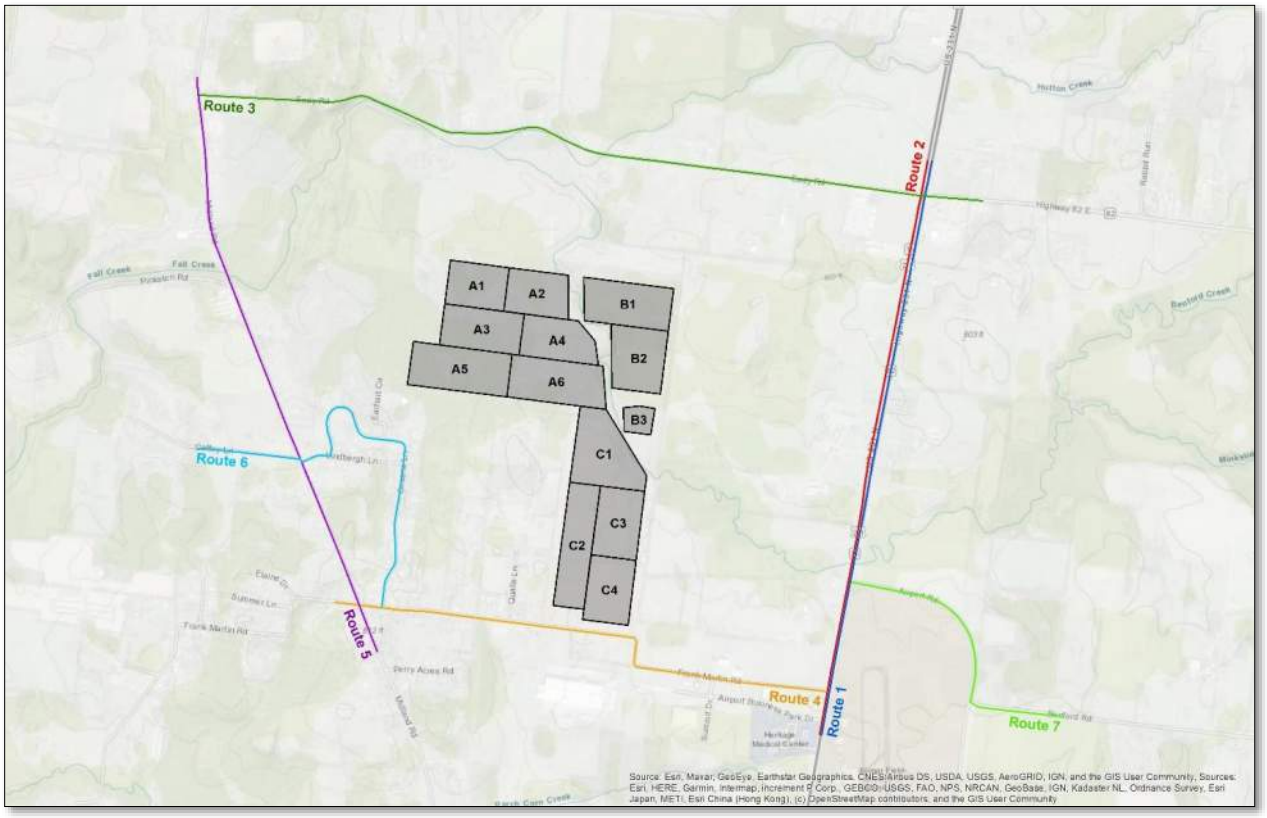

Figure 5: Roadway receptors (solid lines)

Conclusion

The SGHAT does not predict any glare occurrences for aircraft approaching Bomar Field-Shelbyville Municipal Airport (SYI) Runway 18/36 as a result of single-axis tracking arrays. These findings are compliant with the FAA interim policy for *Solar Energy System Projects on Federally Obligated Airports*. Additionally, the SGHAT does not predict any glare occurrences for nearby residences or roadways as a result of single-axis tracking arrays. As noted in the assumptions, the glint and glare analysis does not consider vegetation, fencing, or other natural obstructions. This glint and glare analysis takes the most conservative approach in assessing the possibility of glare occurrences.

Table 2: Annual glare occurrence summary

Receptor	Green Glare (Hours:Minutes)	Yellow Glare (Hours:Minutes)	Red Glare (Hours:Minutes)
SYI – Runway 18	0:00	0:00	0:00
SYI – Runway 36	0:00	0:00	0:00
Route 1 – Cars	0:00	0:00	0:00
Route 2 – Cars	0:00	0:00	0:00
Route 3 – Cars	0:00	0:00	0:00
Route 4 – Cars	0:00	0:00	0:00
Route 5 – Cars	0:00	0:00	0:00
Route 6 – Cars	0:00	0:00	0:00
Route 7 – Cars	0:00	0:00	0:00
Route 1 – Trucks	0:00	0:00	0:00
Route 2 – Trucks	0:00	0:00	0:00
Route 3 – Trucks	0:00	0:00	0:00
Route 4 – Trucks	0:00	0:00	0:00
Route 5 – Trucks	0:00	0:00	0:00
Route 6 – Trucks	0:00	0:00	0:00
Route 7 – Trucks	0:00	0:00	0:00
Residences (First Story)	0:00	0:00	0:00
Residences (Second Story)	0:00	0:00	0:00

If you have any questions regarding the findings in this analysis, please contact ***Rick Coles*** or ***Jason Auger*** at (703) 256-2485.

Appendix D

USDA Prime Farmland Coordination

Annie Bavis

From: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Sent: Friday, October 2, 2020 3:08 PM
To: Ashley Pilakowski
Subject: FW: Solar Farm FPPA Reviews

Importance: High

FYI – please see below. This is a brand new development for us. Please edit draft EAs as appropriate. We will use this email as our justification if we receive any pushback from the public.

Thank you,
Ashley

From: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Sent: Friday, October 02, 2020 3:47 PM
To: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Subject: RE: Solar Farm FPPA Reviews

Ashley,

This will apply to all TVA solar farm RFPs where power is being purchased and no federal funding is involved in the construction process.

Best,

Aaron Friend
State Soil Scientist - Tennessee
USDA-NRCS
801 Broadway
675 U.S. Courthouse
Nashville, TN 37203
Mobile: 615-202-6092

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From: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Sent: Friday, October 2, 2020 2:41 PM
To: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Subject: RE: Solar Farm FPPA Reviews

Hi Aaron,

Thank you so much for responding so quickly. Can you please just confirm that this conclusion applies to any solar farm in which TVA is only purchasing the power, and not funding the construction? If so, we will cease contacting your office for these projects moving forward.

Thank you,
Ashley

From: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Sent: Friday, October 02, 2020 3:28 PM
To: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Subject: RE: Solar Farm FPPA Reviews

Ashley,

I have followed up with all of my resources and have come to the conclusion that the solar farm in questions do not require an FPPA reviews. This decision is based on the fact that no federal funds are being used in the construction process. I hope this decision helps clarify and streamline activities on your end. Please let me know if you have any questions or concern.

Have a great weekend!

Aaron Friend
State Soil Scientist - Tennessee
USDA-NRCS
801 Broadway
675 U.S. Courthouse
Nashville, TN 37203
Mobile: 615-202-6092

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From: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Sent: Friday, October 2, 2020 10:03 AM
To: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Subject: RE: Solar Farm FPPA Reviews

Hi Aaron,

I tried calling your mobile, but it seems your VM is not set up. Please give me a call on my cell when you have a chance (240) 838-6348.

Thank you,
Ashley

From: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Sent: Thursday, October 01, 2020 5:20 PM

To: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Subject: Re: Solar Farm FPPA Reviews

Ashely,

I am available after 11:00. The mobile line is perfect.

Aaron

Get Outlook for iOS

From: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Sent: Thursday, October 1, 2020 3:17:12 PM
To: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Subject: RE: Solar Farm FPPA Reviews

Hi Aaron,

Are you available to discuss tomorrow? I'd like to talk through these projects if possible. Can I reach you on your mobile number listed below?

Thanks,

Ashley Pilakowski
NEPA Specialist
NEPA Program

Tennessee Valley Authority
400 W. Summit Hill Drive, WT 11B
Knoxville, TN 37902

865-632-2256 (w)
aapilakowski@tva.gov

From: Friend, Aaron - NRCS, Nashville, TN <aaron.friend@usda.gov>
Sent: Thursday, October 01, 2020 2:25 PM
To: Pilakowski, Ashley Anne <aapilakowski@tva.gov>
Subject: Solar Farm FPPA Reviews

Good afternoon Ashely,

I am the new Tennessee State Soil Scientist for the NRCS and point of contact for FPPA reviews within the state. We have recently received FPPA request for the Skyhawk Solar Facility and the McKellar Solar Facility. Based on our understanding of these projects, there is no need for an FPPA review since no federal funding is involved in the actual construction of these solar farms.

Can you please clarify any funding and/or contractual arrangement that may warrant an FPPA review?

Regards,

Aaron Friend
State Soil Scientist - Tennessee
USDA-NRCS
801 Broadway
675 U.S. Courthouse
Nashville, TN 37203
Mobile: 615-202-6092

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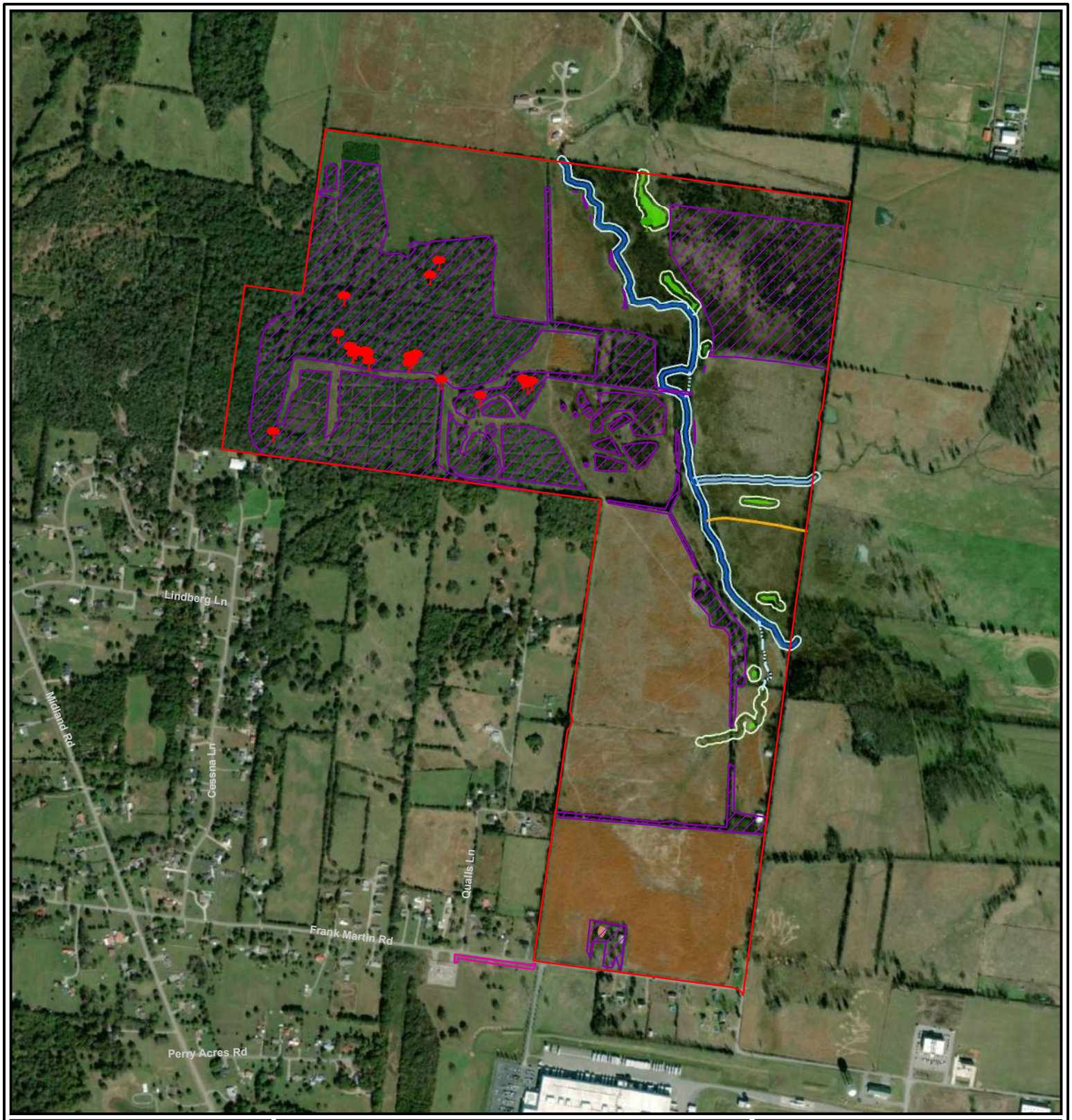
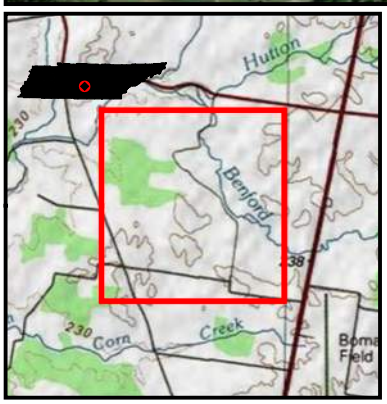
Appendix E

Tree Clearing Map and Bat Habitat map





- Solar Array Tree Clearing
- Potential Bat Roost Tree to Remain
- Potential Bat Roost Tree to be Removed
- Jurisdictional Wetland
- Non-Jurisdictional Pond
- Wetland 30-Foot Buffer
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream / Wet Weather Conveyance
- Drainage Swale
- Stream 30-Foot Buffer
- Project Study Area
- Proposed Electric Easment

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: TN ROADS, Barge NR Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
AREA OF POTENTIAL TREE CLEARING MAP

PROJ NO: 3609511

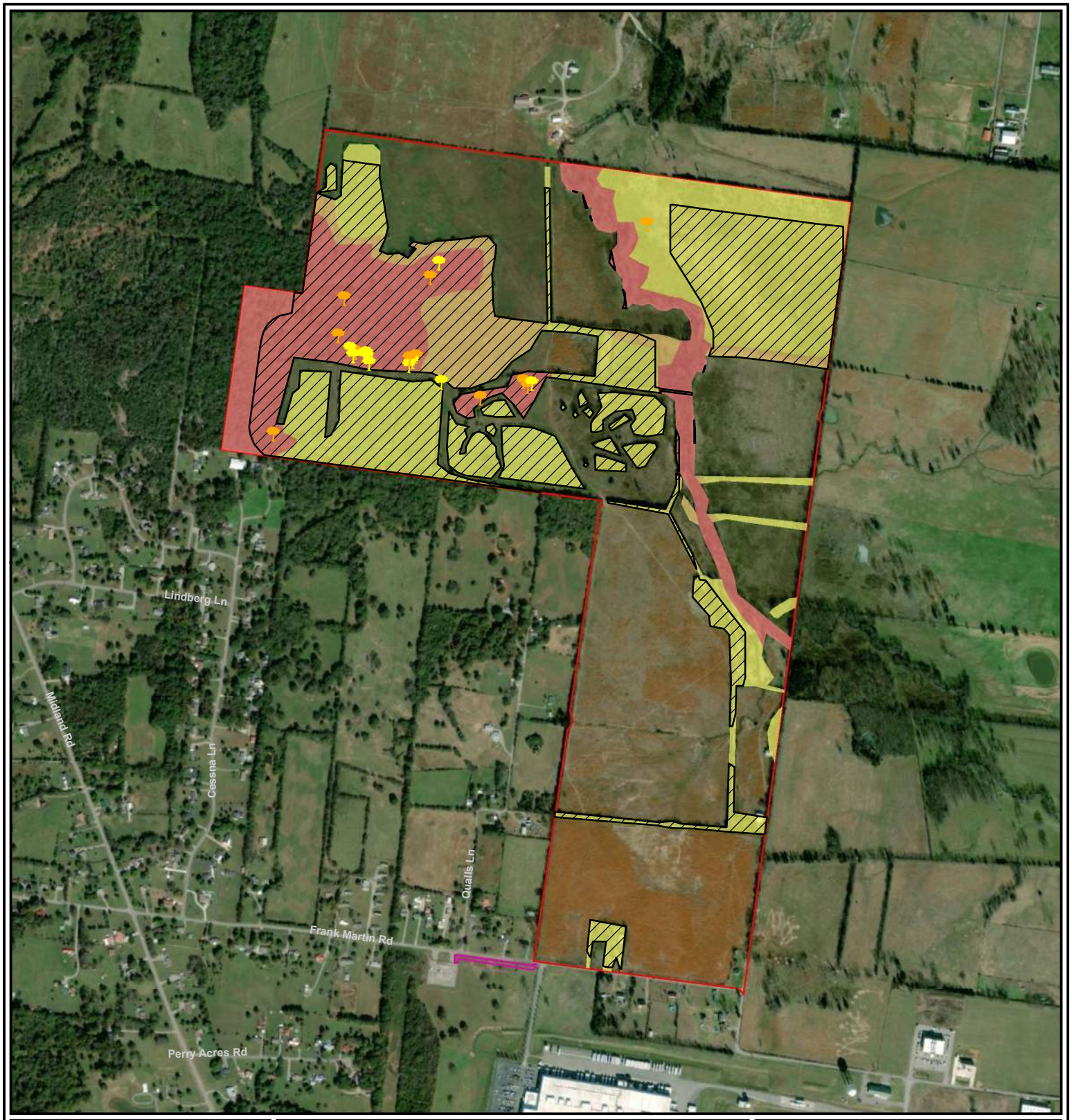
DATE: February, 2021

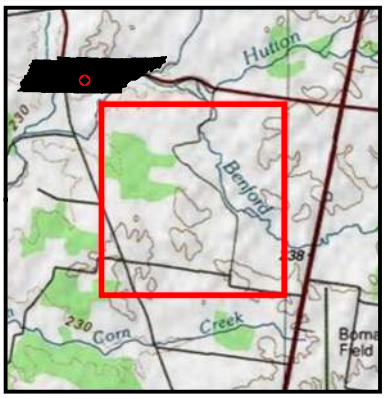
FIGURE 1

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Additional_EA_Maps\Figure1_TreeClearingMap.mxd





Potential Bat Roost Tree

Habitat Value

- Exceptional
- Good
- Marginal
- Poor

Bat Habitat Woodlands

Quality

- Good
- Marginal
- Poor

- Solar Array Tree Clearing Area
- Project Study Area
- Proposed Electric Easment

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: TN ROADS, Barge NR Survey

PROJECT:
Silicon Ranch Corporation
Bell Buckle Solar Farm
Shelbyville, Bedford County, Tennessee

TITLE:
BAT HABITAT QUALITY MAP

PROJ NO: 3609511

DATE: February, 2021

FIGURE 7

BARGE DESIGN SOLUTIONS
615 3rd Avenue South, Suite 700
Nashville, TN 37210

SILICON RANCH

Path: F:\36\36095\3609511\03_PROJECT_EXECUTION\EWR\GIS\MXD\Additional_EA_Maps\Figure7_BatHabitatMap.mxd

Appendix F

Cultural Resources Consultation Coordination

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
www.tnhistoricalcommission.org

November 23, 2020

Mr. Clinton E. Jones
Tennessee Valley Authority
Biological and Cultural Compliance
400 West Summit Hill Drive
Knoxville, TN 37902

RE: TVA / Tennessee Valley Authority, Silicon Ranch Solar Facility, Bell Buckle, Bedford County, TN

Dear Mr. Jones:

In response to your request, we have reviewed the cultural resources survey report and accompanying documentation submitted by you regarding the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Considering the information provided, we concur that no historic properties eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions or comments may be directed to Jennifer Barnett (615) 687-4780, Jennifer.Barnett@tn.gov.

Your cooperation is appreciated.

Sincerely,

E. Patrick McIntyre, Jr.
Executive Director and
State Historic Preservation Officer

EPM/jmb

December 4, 2020

Ms. Marianne Shuler, Senior Specialist,
Archaeologist and Tribal Liaison
Cultural Compliance
Tennessee Valley Authority
400 West Summit Hill Drive
460 WT 7D-K
Knoxville, TN 37902

Dear Ms. Shuler:

Thank you for sending the letter and Phase I archaeological survey report for the proposed Purchase Power Agreement with SR Bell Buckle, LLC, a subsidiary of Silicon Ranch Corporation for their new solar facility in Bedford County, Tennessee. We wish to consult under Section 106 of the National Historic Preservation Act.

The Chickasaw Nation supports the proposed undertaking and is not presently aware of any specific historic properties, including those of traditional religious and cultural significance, in the project area. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation officer, at (580) 272-1106, or by email at karen.brunso@chickasaw.net.

Sincerely,

Lisa John, Secretary
Department of Culture and Humanities

cc: mmshuler@tva.gov

GWYᏯ DᏏᏴ
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918-453-5000 • www.cherokee.org

Office of the Chief

Chuck Hoskin Jr.
Principal Chief

Bryan Warner
Deputy Principal Chief

December 21, 2020

Marianne Shuler
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902

Re: Bell Buckle Solar Project

Ms. Marianne Shuler:

The Cherokee Nation (Nation) is in receipt of your correspondence about **Bell Buckle Solar Project**, and appreciates the opportunity to provide comment upon this project. Please allow this letter to serve as the Nation's interest in acting as a consulting party to this proposed project.

The Nation maintains databases and records of cultural, historic, and pre-historic resources in this area. Our Historic Preservation Office reviewed this project, cross referenced the project's legal description against our information, and found instances where this project intersects or adjoins such resources. This resource, according to the related report, is considered ineligible to be listed in the National Register of Historic Places. Thus, this Office does not object to the project proceeding as long as the following stipulations are observed:

1) The Nation requests that Tennessee Valley Authority (TVA) re-contact this Office for additional consultation if there are any changes to the scope of or activities within the APE;

2) The Nation requests that TVA halt all project activities immediately and re-contact our Offices for further consultation if items of cultural significance are discovered during the course of this project; and

3) The Nation requests that TVA conduct appropriate inquiries with other pertinent Tribal and Historic Preservation Offices regarding historic and prehistoric resources not included in the Nation's databases or records.

If you require additional information or have any questions, please contact me at your convenience. Thank you for your time and attention to this matter.

Wado,

Elizabeth Toombs

Elizabeth Toombs, Tribal Historic Preservation Officer
Cherokee Nation Tribal Historic Preservation Office
[redacted]