LIST OF APPENDICES

Appendix A

Adamsville Solar Public Comments and Responses

Topic	Comment Topic	Commentor	Response
General	Project Support	Matthew Woods John Roberts Jerry Mitchell Andrea Selmer Pat Presley	Thanks for your support of the project
Air Quality	Fugitive dust	U.S. Environmental Protection Agency	Please refer to Section 2.5.1 which states, best management practices (BMPs) such has periodic watering, covering open-body trucks, and establishing a speed limit will be used to mitigate fugitive dust.
Air Quality	Gasoline and diesel emissions	U.S. Environmental Protection Agency	The EA has been edited in Section 3.7.1.1
Air Quality	Air quality monitoring	Tennessee Department of Environment and Conservation	The EA has been edited in Section 3.7.1.1 to acknowledge the presence of one air quality monitoring station for PM2.5 located approximately 40 miles from the Project Site.
Air Quality	Idling	Tennessee Department of Environment and Conservation	The EA has been edited in Section 3.7.2.2 to add the comment, "SRC will instruct the contractor to maintain their trucks with up-to-date emission control technologies and proper maintenance to minimize vehicle and equipment emissions and reduce vehicle idling to minimize the impact of mobile source emissions on ambient air quality." Also, the EA includes language stating SRC will evaluate the use of electric power lawn and portable earthmoving equipment.”
Air Quality	Open burning	Tennessee Department of Environment and Conservation	The EA has been edited in Section 3.7.2.2 to add the comment, "SRC will instruct the contractor to avoid burning on air quality alert days. Alert days occur when the air quality index (AQI) exceeds 150 on the AirNow website, https://www.airnow.gov/?city=Adamsville&state=TN&country=USA."

Topic	Comment Topic	Commentor	Response
Biological Resources	Endangered Species Act	U.S. Environmental Protection Agency	USFWS did not comment on the consultation letter submitted by TVA. A no-response action indicates that USFWS concurs with TVA's recommendation that the project may affect but is not likely to adversely impact any listed species or jeopardize the continued existence of the any candidate species or species under consideration for listing.
Environmental Justice	Contact with local community	U.S. Environmental Protection Agency	The following comment was added to Section 3.15.2.2, "SRC has sent mailers with project/contact information to neighboring landowners and cold called neighboring landowners to answer any questions or concerns they may have with the Project."
Noise	Noise reduction	Tennessee Department of Environment and Conservation	The EA has been edited in Section 3.6.2.2 to add the comment, "SRC will evaluate the use of electric power lawn and portable earthmoving equipment as a means of reducing noise from construction."
Water Resources	Permit requirements	Tennessee Department of Environment and Conservation	The EA is in agreement with TDEC’s comment on the permits required for this project and TDEC's comments. This is summarized in Section 1.4 of the EA.
Water Resources	Best management practices	U.S. Environmental Protection Agency	The EA is in agreement with the EPA's comments on the use of BMPs. Section 2.5.1 of the EA discusses how BMPS will be used to protect water resources.

Appendix B

Summary of the Environmental Features for the Adamsville Solar Project

SUMMARY OF ENVIRONMENTAL FEATURES FOR THE

ADAMSVILLE SOLAR PROJECT

ADAMSVILLE, MCNAIRY & HARDIN COUNTIES, TENNESSEE

Prepared For: Silicon Ranch Corporation

Sent To: Tennessee Valley Authority

36095-17
TVA# 412154
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CONTENTS

APPENDICES

1.0 INTRODUCTION

Barge Design Solutions, Inc. (Barge) has been retained by Silicon Ranch Corporation (Silicon Ranch) to perform a natural resource analysis on the approximately 295-acre proposed Adamsville Solar Project (Project Study Area), located in Adamsville, McNairy and Hardin Counties, Tennessee. The project study area also includes an electric transmission easement that is approximately 75 feet wide and 3,000 feet long that extends from the westernmost corner of the project study area to an existing substation on Elm Road. The project study area is located on the northwest side of Woods Road, approximately 1.85 miles northeast of the center of Adamsville at the intersection of US-64 and TN-22. The project study area encompasses two properties with parcel Nos. 054 41.00 and 068 6.03, both of which are currently owned by Dennis Vance Walker and Ashley Rockholt. The proposed electric interconnect follows the path of an existing electrical transmission line easement to connect with a substation owned by Pickwick Electric Cooperative.

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's) 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. The United States Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS's) Web Soil Survey and the Federal Emergency Management Agency (FEMA) flood mapping were also reviewed for solar farm feasibility within the project study area.

From October 24 through 26, 2022, Barge biologists Frank Amatucci (TN-QHP #1203-TN21) and Cameron Brueck performed an onsite investigation for the Adamsville Solar Project. The investigation included the delineation of wetlands and watercourses, as well as 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 appendices are included subsequent to this report.

- Appendix A – Figures
- Appendix B – NRCS Custom Soil Report
- Appendix C – Supplemental Tables
- Appendix D – Waterbody and Wetland Data Forms
- Appendix E – Photographic Summary
- Appendix F – State and Federal Concurrence Documents
- Appendix G – Rare, Threatened and Endangered Species Lists
- Appendix H – USFWS Bat Habitat Data Forms
- Appendix I – Bat Survey Report
- Appendix J – Whorled Sunflower Survey

2.0 SITE DESCRIPTION

The project study area is primarily utilized for agricultural and hunting purposes. The existing cropland was observed with soy and multiple stands of planted pine. The remainder of the project study area is forested with drainage valleys and potential timber forest plots with variable growth stages of woodland. Multiple hunting stands and blinds were observed throughout the forested and cropland portions of the project study area. A Project Location Map depicting the area can be found in Appendix A, Figure 1. The adjoining properties to the west, south, and east are comprised of agricultural fields, residential homes, and the limits of Adamsville, and the north is mostly forested with occasional residential homes.

The project study area is located on the northwest side of Woods Road approximately 1.85 miles northeast of the center of Adamsville at the intersection of US-64 and TN-22 in Adamsville, McNairy and Hardin Counties, Tennessee (Appendix A, Figure 1). The project study area lies mostly within the Milledgeville topographic quadrangle with the western side of the project study area extending into the Leapwood topographic quadrangle (Appendix A, Figure 2). The proposed electric transmission line easement passes through both the Milledgeville and Leapwood topographic quadrangles, as well as the Stantonville and Pittsburg Landing topographic quadrangles (Appendix A, Figure 2). The project study area and proposed electric easement corridor are located within the Beason Creek – Tennessee River (060400010508) HUC-12 watershed. This watershed is ultimately located within the Lower Tennessee – Beech Rivers (06040001) HUC-8 watershed, which is within the Tennessee River Basin (Appendix A, Figure 3).

The project study area also lies within the Southeastern Plains (65) Tennessee ecoregion and is further categorized into the Northern Hilly Gulf Coastal Plain (65e) sub-ecoregion region. The Northern Hilly Gulf Coastal Plains ecoregion is comprised of sand and clay formations with rolling hillslopes, and elevation reach up to 650 feet. Streams in this ecoregion are typically low-gradient and are sandy-bottomed. Native woodland within the Northern Hilly Gulf Coastal Plains ecoregion is commonly comprised of oak-hickory and oak-hickory-pine forests.

3.0 SOILS

A total of 26 soil units consisting of fine sandy loams, silt loams, loams, clays, and clay loams silty were identified within the project study area for Hardin and McNairy Counties, Tennessee. Only the Waverly fine sandy loam (Wa) is considered hydric within the Hardin County portion of the project study area, which accounts for 0.1 percent. Both the Hatchie silt loam, 0 to 2 percent slopes (Ha) and the Iuka fine sandy loam, 0 to 2 percent slopes, occasionally flooded (Iu) are considered as hydric soils for the McNairy County portion of the project study area, which account for 0.3 percent and 2.5 percent of the study area, respectively.

The Paden silt loam, 2 to 5 percent slopes (PaB) is the dominant soil unit for the project, which accounts for 21.8 percent of the study area. The Paden silt loam, 2 to 5 percent slopes, severely eroded (PaB3) is the second most dominant soil unit, which accounts for 18.9 percent of the project study area. A Soil Map can be found within Appendix A, Figure 4, and a Custom Soil Resource Report from the NRCS can be found in Appendix B.

4.0 VEGETATION

The project area is partially utilized for agricultural purposes, which is mostly comprised of cropland. In portions of the project study area that have not been vegetatively maintained, natural and successional communities have developed which include oak-hickory forest, riparian forest, mixed-growth hardwood forest, successional hardwood forest, red maple-hardwood swamp, shallow emergent marsh, and fallow fields. Additionally, planted stands of loblolly pine (*Pinus taeda*) and red cedar (*Juniperus virginiana*) were observed, which could potentially be for timber production. A vegetative community map depicting all the vegetative communities within the project study area is provided in Appendix A, Figure 6. Below are brief descriptions of each observed vegetative community and characteristics observed during the onsite evaluation.

In natural areas of the project study area, oak-hickory forests, riparian forests, and mixed-growth hardwood forests were encountered. These forested communities encompass approximately 59.5, 18.8, and 29.5 acres within the project study area, respectively. Multiple growth stages of oak-hickory forest community were observed throughout the project study area, which are represented on Figure 6. All three variable growth stages of the oak-hickory forest community were comprised of trees such as white oak (*Quercus alba*), southern and northern red oak (*Q. falcata* and *Q. rubra*), shagbark hickory (*Carya ovata*), pignut hickory (*C. glabra*), black cherry (*Prunus serotina*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), slippery elm (*Ulmus rubra*), common persimmon (*Diospyros virginiana*), and occasional saplings of red cedar with an undergrowth of woodland sedge (*Carex blanda*) and Christmas fern (*Polystichum acrostichoides*). The oak-hickory forest community is common throughout the project's ecoregion, and the observed overstory size for this forested community averaged approximately 20-inches in diameter at breast height (DBH) within the mature stands, 16-inches in the semi-mature stand, and 8-inches in the young stands.

The riparian forests were observed in three separate areas within the project study area and were observed with semi-mature and young growth stages. Both growth stages of the riparian forests were comprised of sweetgum (*Liquidambar styraciflua*), red maple, sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), slippery elm, sugarberry (Celtis laevigatta), basswood (*Tilia americana*), and an undergrowth of rivercane (*Arundinaria gigantea*), Christmas fern, and catbrier (*Smilax rotundifolia*). The riparian forest community is common throughout the project's ecoregion, and the observed overstory size for this forested community averaged approximately 14-inches in DBH in the semi-mature stand and 9-inches in the young stand.

Lastly, the mixed-growth hardwood forests were observed in portions of the site that could have been historically impacted during the development of the agricultural fields and adjacent residential properties. This vegetative community was observed with variable growth stages of trees from both the oak-hickory forests and riparian forests, as well as planted pine trees. The mixed-growth hardwood forests were comprised of northern and southern red oak, post oak, tulip poplar (*Liriodendron tulipifera*), sweetgum, slippery elm, red maple, red bud (*Cercis canadensis*), red cedar, black cherry, American beech, green ash, and an undergrowth of Christmas fern and longleaf wood oats (*Chasmanthium sessiliflorum*). The overstory size for this forested community averaged approximately 12-inches in DBH and is common throughout the ecoregion.

In portions of the project study area that have recently been disturbed, or were utilized for timber harvesting, successional hardwoods were prevalent. The successional hardwood vegetative community encompasses approximately 17.0 acres of the project study area. The successional hardwoods were established in areas that have naturally progressed to woody regions between actively maintained portions of the project study area. While mostly comprised of tree species from the surrounding naturally forested communities, the successional hardwoods were also observed with sassafras (*Sassafras albidum*) and honey locust (*Gleditsia triacanthos*) trees and flowering dogwood (*Cornus florida*) shrubs. The overstory size for this forested community averaged approximately 6-inches in DBH and is common throughout the ecoregion.

In addition to disturbed portions of the site, red maple-hardwood swamp was observed in the southern portion of the project study area, adjacent to a man-made pond. This vegetative community, which comprised less than an acre of land, was observed with hydrophytic species, such as red maple, slippery elm, and river birch (*Betula nigra*) trees, and rice cutgrass (*Leersia oryzoides*), woolgrass (*Scirpus cyperinus*), and beggar's tickseed (*Bidens connata*) in the understory. The overstory size for this forested community averaged approximately 7-inches in DBH and is common throughout the ecoregion.

Shallow emergent marsh and fallow fields were encountered where vegetative maintenance is sporadic or has ceased. Both the shallow emergent marsh and fallow field encompass 0.2 acres and 4.1 acres of the project study area, respectively. The fallow field vegetative community was

mostly documented within the existing electrical transmission easement and observed with upland terrestrial plants, such as orchard grass (*Dactylus glomerata*), red fescue (*Festuca rubra*), Queen Ann's lace (*Daucus carota*), and blackberry (*Rubus argutus*), whereas the shallow emergent marsh was comprised of hydrophytic plants such as woolgrass, fox sedge (*Carex vulpinoidea*), rice cutgrass, swamp smartweed (*Persicaria hydropiperoides*), and soft rush (*Juncus effusus*).

Cropland was observed as the most dominant vegetative community within the project study area, which encompasses approximately 141.9 acres of the site. The observed cropland was cultivated with soy throughout. Man-made farm ponds were also observed within some of the forested areas and agricultural fields; these could potentially be utilized for irrigation of the adjacent fields or drinking water for historic livestock.

5.0 WATER RESOURCES

From October 24 through 26, 2022, Barge biologists performed a field survey within the project study area to determine the presence or absence of jurisdictional waters. Both the U.S. Army Corps of Engineers (USACE) and Tennessee Department of Environment and Conservation (TDEC) methodologies were utilized to determine the jurisdiction of wetlands and non-wetland waters within the project study area.

A total of 23 jurisdictional and 23 non-jurisdictional features were identified within the project study area, all of which were considered as streams, ephemeral channels, erosional swales, wetlands, ponds, or drainage ditches. The sections below detail the features that were delineated within the project study area. The features identified onsite are listed in Table 1 and Table 2 (Appendix B) and are displayed in Figure 7 – Existing Conditions Maps (Appendix A).

Additionally, a site visit was performed by the same Barge biologist on August 30, 2023, to confirm or extend the delineated limits of features identified within the revised property limits of the project. No new wetlands or other waters were identified during the site visit. Only one intermittent stream and one ephemeral channel, that were previously delineated during the October 2022 site inspection, were further increased in linear feet within the revised project study area.

5.1 Non-Wetland Waters

Lead Scientist Frank Amatucci (TN-QHP #1203-TN21) and Cameron Brueck conducted the hydrologic determination (HD) site investigation in accordance with TDEC Rule 0400-40-17-.04. In addition, water features were considered regarding the USACE 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 in a 24-hour period. Upon commencement of the study, 0.00 inches of rain (CoCoRaHs #TN-CS-7) was observed in the preceding 7 days of October 24, 2022. Near mid-day on October 25, 2022, 0.83 inches of rainfall were recorded (CoCoRaHs #TN-CS-7) at the project study area, but no discernable flow was present in any of the observed streams even directly after this rainfall event. In the preceding 30 days, 1.84 inches of rain were observed. The

precipitation for the preceding three months is considered “drier than normal” based on the Antecedent Precipitation Tool (Table 3.1, Appendix C), indicating potential drought-like conditions.

Furthermore, the August 30, 2023, site inspection was conducted more than 48 hours following a significant rain event of greater than 1.0 inch in a 24-hour period. Upon commencement of the study, 0.52 inches of rain (CoCoRaHs #TN-CS-7) was observed in the preceding 7 days of August 30, 2023. In the preceding 30 days, 7.08 inches of rain were observed. The precipitation for the preceding three months is considered “wetter than normal” based on the Antecedent Precipitation Tool (Table 3.2, Appendix C)

Within the project study area, 9 streams (STR), 11 ephemeral streams (EPH), 11 erosional swales (ES), and 1 drainage ditch (D) were delineated. These waterbody features were based primarily on secondary indicators while conducting the HD. Below are brief descriptions of the delineated waterbody features within the project study area. Figure 7 – Existing Conditions Maps (Appendix A) illustrates their locations within the project study area, and Table 1 (Appendix C) details the locations and lengths of each feature. Photographs of each feature area are provided in Appendix E, and the HD data forms area provided in Appendix D.

5.1.1 Non-Wetland Waters Descriptions

STR-1 was observed as an intermittent stream that enters the project study area from the north and flows through a culvert into the northeastern portion of the project study area. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately strong, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The channel bottom is composed of clay with recent overlying deposits of sand, cobble, and gravel. Other than some remnant caddisfly casings, there was no evidence of aquatic life observed within the feature at the time of the site visit. STR-1 is assumed to be jurisdictional to TDEC and the USACE.

STR-2 was observed as an intermittent stream that enters the project study area from the north into the northcentral portion of the project study area. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately strong, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of clay with some deposition of sand and silt as bars and benches. Other than some remnant caddisfly casings, there was no evidence of aquatic life observed within the feature at the time of the site visit. The stream transitions to a potentially perennial stream after the confluence with STR-4 at end of reach before leaving the project study area to the east. STR-2 is assumed to be jurisdictional to TDEC and the USACE.

STR-3 was observed as an intermittent stream that starts downslope of wetland (WTL) WTL-1 in the eastern central portion of the project study area. The feature potentially originates from groundwater seepage below the berm of WTL-1 and conveys excess surface water to the

confluence with STR-2. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderate, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of silt and sand with observed presence of substrate sorting. STR-3 is assumed to be jurisdictional to TDEC and the USACE.

STR-4 was observed as an intermittent stream that starts at a headcut immediately offsite in the northwestern portion of the project study area. STR-4 conveys excess surface water to the confluence with STR-2. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately present, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of sand and silt with some depositional bars and benches and observed sorting. There was no aquatic life observed within the feature at the time of the site visit. STR-4 is assumed to be jurisdictional to TDEC and the USACE.

STR-5 was observed as an intermittent stream that begins at an eroded berm wall of pond (P) P-2 within the northwestern portion of the project study area. STR-5 conveys excess surface water to the confluence with STR-4. The stream may also be affiliated with a potential groundwater seep. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately present, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of sand and silt, with some recent alluvial deposits. There was no aquatic life observed within the feature at the time of the site visit. STR-5 is assumed to be jurisdictional to TDEC and the USACE.

STR-6 was observed as an intermittent stream that likely conveys excess surface water from the surrounding upland area into STR-4 in the northcentral portion of the project study area. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately present, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of sand and silt, with observed sorting and some recent alluvial deposits. There was no aquatic life observed within the feature at the time of the site visit. STR-6 is assumed to be jurisdictional to TDEC and the USACE.

STR-7 was observed as an intermittent stream that is likely affiliated with a potential groundwater seep at a moderate headcut. The feature likely conveys excess surface water from the surrounding upland area to the confluence with STR-6 in the northcentral portion of the project study area. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately present, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of sand and silt with some depositional bars and benches, as well as recent alluvial deposits. STR-7 is assumed to be jurisdictional to TDEC and the USACE.

STR-8 was observed as an intermittent stream in the eastern portion of the project study area. The feature likely drains excess surface water from WTL-4a. Further downslope the channel dissipates within WTL-4b and reforms at the downslope end of the same wetland feature. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was semi-moderately present and there was a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of sand and silt with some depositional bars and benches, as well as recent alluvial deposits. There was no aquatic life observed within the feature at the time of the site visit. STR-8 is assumed to be jurisdictional to TDEC and the USACE.

STR-9 (Stratton Branch) was observed as an intermittent stream that begins from the overflow of farm pond P-6 in the southern portion of the project study area. While no perceivable flow was observed throughout the evaluated reach, continuous bed and bank was moderately strong, as well as a presence of hydric soils on the channel bottom, indicating a potential intermittent stream. The stream channel bottom is composed of moderately sorted sand and silt with depositional bars and benches, as well as recent alluvial deposits. STR-9 is assumed to be jurisdictional to TDEC and the USACE.

EPH-1 was observed as an ephemeral stream to the USACE and as a wet weather conveyance (WWC) to TDEC in the northeastern portion of the project study area. The feature displayed a weak-moderate bed and bank throughout most of the feature, as well as a slight presence of riffle-pool sequences, and is within a natural upland drainage valley. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. A slight presence of Japanese stiltgrass (*Microstegium vimineum*) was observed within the channel, as well as fibrous roots of terrestrial plants. EPH-1 was observed with a channel bottom of sand and silt. EPH-1 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-2 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northern portion of the project study area, which directly drains into relic farm pond wetland WTL-1. The feature displayed a semi-moderate bed and bank, as well as two or more ordinary high-water mark (OHWM) indicators such as vegetative cut lines and wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. A slight presence of longleaf wood oats was observed within the channel, as well as fibrous roots of terrestrial plants. EPH-2 was observed with a channel bottom of sand and clay. EPH-2 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-4 was observed as a relatively short reach of ephemeral stream to the USACE and as a WWC to TDEC in the northwestern portion of the project study area. The feature displayed a semi-moderate bed and bank, as well as two or more OHWM indicators such as vegetative cut lines and wrack lines. No surface water or saturation was present within the reach during the site

visit, and no hydric soils were observed within the channel. A slight presence of longleaf wood oats and Christmas fern were detected within the channel. EPH-4 was observed with a channel bottom of sand and silt. EPH-4 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-5 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northwestern portion of the project study area, which drains excess stormwater runoff from the adjacent upland forest into P-2 and ultimately STR-5. The feature originates from a small headcut in a natural valley. EPH-5 displayed a semi-moderate bed and bank and was observed with two or more OHWM indicators, such as vegetative cut lines and sorting. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-5 was observed with a channel bottom of sand and silt. EPH-5 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-6 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northwestern portion of the project study area, which drains excess water from P-7 downslope toward the south beyond the project study area. The feature originates from a small headcut on the backside of the berm for P-7. The feature displayed a semi-moderate bed and bank and was observed with two or more OHWM indicators, such as vegetative cut lines and sorting. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-6 was observed with a channel bottom of sand and silt. EPH-6 is potentially jurisdictional to the USACE, with its connection between other Waters of the United States (WOTUS), and is non-jurisdictional to TDEC, as a WWC.

EPH-7 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northcentral portion of the project study area. The ephemeral channel of the feature displayed a semi-moderate bed and bank that was irregularly lost throughout but was observed with two or more OHWM indicators, such as vegetative cut lines and sorting. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-7 was observed with a channel bottom of sand and silt. EPH-7 is jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-8 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northcentral portion of the project study area. The feature likely drains excess surface water from nearby soybean fields and conveys stormwater downslope into STR-6. The feature displayed a semi-moderate bed and bank that was irregularly lost throughout but was observed with two or more OHWM indicators, such as vegetative cut lines and sorting. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-8 was observed with a channel bottom of sand and silt. EPH-8 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-9 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northcentral portion of the project study area. The feature likely drains excess surface water from surrounding upland forest and conveys stormwater downslope into EPH-10 and STR-7. The ephemeral channel of the feature displayed a semi-moderate bed and bank that was irregularly lost but was observed with two or more OHWM indicators, such as vegetative cut lines and wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-9 was observed with a channel bottom of sand and silt. EPH-9 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-10 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northcentral portion of the project study area. The feature likely drains excess surface water from surrounding upland forest and conveys stormwater downslope into STR-7. The feature displayed a semi-moderate bed and bank that was irregularly lost throughout but was observed with two or more OHWM indicators, such as vegetative cut lines and wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-10 was observed with a channel bottom of sand and silt. EPH-10 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-11 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the northcentral portion of the project study area. The feature likely drains excess surface water from nearby soybean fields and conveys stormwater downslope into STR-4. The feature displayed a moderate bed and bank throughout, and was observed with two or more OHWM indicators, such as vegetative cut lines and sorting. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-11 was observed with a channel bottom of sand and silt. EPH-11 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

EPH-12 was observed as an ephemeral stream to the USACE and as a WWC to TDEC in the southern portion of the project study area. The feature likely drains excess surface water from the western offsite upland forest and conveys stormwater downslope into STR-9 (Stratton Branch). The feature displayed a semi-moderate bed and bank that was irregularly lost throughout but was observed with two or more OHWM indicators, such as vegetative cut lines and wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. EPH-12 was observed with a channel bottom of sand, silt, and numerous terrestrial vegetation fibrous roots. EPH-12 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-1 was observed as an erosional swale that originates from agricultural field runoff directed towards STR-1 in the northeastern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as a defined channel. No surface water or

saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt and sand, as well as a moderate presence of fibrous roots. ES-1 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-2 was observed as an erosional swale that originates below P-1 and directs agricultural field runoff towards STR-1 in the northeastern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as weak wrack lines. No surface water or saturation was present within the reach during the site visit, but some hydric soils were observed at the beginning of the swale. Very little substrate sorting was observed within the channel, which was composed of silt and sand, as well as a moderate presence of fibrous roots. A moderate amount of terrestrial vegetation, such as sweetgum trees, was present within the channel. ES-2 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-3 was observed as an erosional swale that originates at the defined channel portion of a man-made drainage ditch that directs agricultural field runoff towards STR-2, in the northeastern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as a wrack lines. No surface water or saturation was present within the reach during the site visit, and hydric soils were only present at the end of reach prior to the confluence with STR-2. Very little substrate sorting was observed within the channel, which was composed of silt and sand, as well as a moderate presence of fibrous roots. ES-3 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-4 was observed as an erosional swale that originates from agricultural field and upland runoff in the south-central portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt and sand, as well as a moderate presence of fibrous roots. ES-4 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-5 was observed as an erosional swale that originates from upland forest runoff directed towards EPH-10 in the central portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt and sand, as well as a moderate presence of fibrous roots. ES-5 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-6 was observed as an erosional swale that originates in an upland forest area and presumably directs agricultural field runoff towards Stratton Branch in the southwestern portion of the project

study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt, sand, and organics, as well as a moderate presence of fibrous roots. ES-6 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-7 was observed as an erosional swale that originates in an upland pine stand and likely directs excess runoff towards Stratton Branch in the southwestern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt, sand, and organics, as well as a moderate presence of fibrous roots. Terrestrial vegetation such as green ash and Christmas fern was observed growing in the channel. ES-7 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-8 was observed as an erosional swale that originates from agricultural field runoff that likely goes subterranean and directs excess runoff towards STR-9 in the southwestern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which was composed of silt, sand, and organics, as well as a moderate presence of fibrous roots. Terrestrial vegetation such as green ash and Christmas fern was observed growing within the channel. ES- is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

ES-9 and ES-10 were observed as erosional swales that originate from agricultural field and upland forest runoff directed towards STR-9 in the southwestern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reaches during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channels, which were composed of silt, sand, and organics, as well as a moderate presence of fibrous roots. Terrestrial vegetation such as red maple and Christmas fern was observed growing within the channels. ES-9 and ES-10 are non-jurisdictional to the USACE, and are non-jurisdictional to TDEC, as WWCs.

ES-11 was observed as an erosional swale that originates from surrounding upland area runoff directed towards Stratton Branch in the southwestern portion of the project study area. Bed and bank was present and at least one OHWM indicator was detected, such as wrack lines. No surface water or saturation was present within the reach during the site visit, and no hydric soils were observed within the channel. Very little substrate sorting was observed within the channel, which

was composed of silt, sand, and organics, as well as a moderate presence of fibrous roots. Terrestrial vegetation such as Christmas fern was observed growing in the channel. ES-11 is non-jurisdictional to the USACE, and is non-jurisdictional to TDEC, as a WWC.

5.2 Wetlands

Six wetlands (WTL) were observed within the project study area. All wetlands were observed as Palustrine Forested (PFO) and Palustrine Emergent (PEM) wetland features. Each wetland was verified with the positive identification of suitable hydrology, hydrophytic vegetation, and hydric soils according to the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0*. Below are brief descriptions of the delineated wetland features within the project study area. The locations of the delineated wetlands are provided in Figure 7 – Existing Conditions Maps (Appendix A), and Table 2 (Appendix C) details the location and acreage of each wetland. The Atlantic and Gulf Coastal Plain Regional Wetland Determination Data Forms were completed at wetland and upland sample points and area provided in Appendix D, and photographs of each wetland feature are provided in Appendix E.

Furthermore, seven man-made ponds (P) were observed within the project study area. These features were identified as Palustrine Unconsolidated-Bottom (PUB) features and are also described below. The details of the location and acreage are provided in Appendix A and Appendix C, respectively. A photograph of the relic farm pond is provided in Appendix E.

5.2.1 Wetland Descriptions

WTL-1 was observed as a depressional PEM wetland along a hillslope in the east-central portion of the project study area. The wetland is likely a relic man-made pond that has naturally become established with hydrophytic vegetation. The depressional wetland likely collects surface water runoff from the surrounding forested hillslopes and EPH-2. No outfall was observed beyond the limits of WTL-1, which isolates the feature from other WOTUS. WTL-1 was observed with a presence of oxidized rhizospheres on living roots, surface soil cracks, and geomorphic position, indicating positive wetland hydrology. The wetland was observed with a dominance of hydric vegetation such as swamp smartweed, woolgrass, barnyard grass (*Echinochloa crus-galli*), and rough cocklebur (*Xanthium strumarium*). Hydric soils were also documented in WTL-1, which were observed with a shallow dark layer underlain by depleted hydric soils with a presence of oxidized rhizospheres. WTL-1 is jurisdictional to TDEC, and non-jurisdictional to the USACE, due to its relatively isolated from other WOTUS.

WTL-2 was observed as a fringe PEM wetland to farm pond P-7 in the southeastern portion of the project study area. The fringe wetland and pond likely collect surface water from the surrounding forested upland and agriculture field areas of the project study area. Excess surface water from P-7 and WTL-2 likely drains into EPH-6, which flows southeast beyond the southern project study area limits. It is assumed that EPH-6 connects to STR-8 adjacent to Woods Road, thereby connecting it to other WOTUS. WTL-2 was observed with a presence of surface water up

to 36 inches deep, geomorphic position, and a plant community that passes the FAC-neutral test, indicating positive wetland hydrology. The wetland was observed with a dominance of hydrophytic vegetation such as overhanging red maple and sycamore trees and swamp smartweed and soft rush in the herbaceous stratum. Hydric soils were also documented in WTL-2, which were observed with a surface layer of muck underlain by depleted grey soils with a presence of redox concentrations. WTL-2 is jurisdictional to TDEC and could potentially be jurisdictional to the USACE, due to the potential downslope connection to other WOTUS.

WTL-3 was observed as a potential floodplain PFO wetland immediately below the berm wall of WTL-2 and P-7 in the southeastern corner of the project study area. The wetland could potentially be a seep area downslope of P-7 and WTL-2, which flows southeast beyond the southern project study area limits. It is assumed that EPH-6 connects to STR-8 adjacent to Woods Road, thereby connecting it to other WOTUS. WTL-3 was observed with a presence of oxidized rhizospheres, drainage patterns, and geomorphic position, indicating positive wetland hydrology. The wetland was observed with a dominance of hydrophytic vegetation such as sweetgum, sugarberry, green ash, and Japanese stiltgrass. Hydric soils were also documented in WTL-3, which were observed with a shallow dark layer underlain by depleted grey soils with a presence of oxidized rhizospheres. WTL-3 is assumed to be jurisdictional to TDEC and potentially jurisdictional to the USACE due to the potential downslope connection to other WOTUS through EPH-6.

WTL-4 was observed as a floodplain PFO wetland in the eastern portion of the project study area. The wetland receives excess stormwater runoff from EPH-7 and slowly drains downslope towards STR-8. A low-lying berm bisects the northern (WTL-4a) and southern (WTL-4b) portions of wetland resource, but the upper reach of STR-8 connects the two wetland segments. STR-8 conveys excess surface water from WTL-4 downslope into STR-9, thereby, connecting it to other WOTUS. WTL-4 was observed with a presence of drainage patterns, geomorphic position, and a plant community that passes the FAC-neutral test, indicating positive wetland hydrology. The wetland was observed with a dominance of hydrophytic vegetation such as green ash, red maple, sweetgum, river birch, Japanese stiltgrass, and poison ivy (*Toxicodendron radicans*). Hydric soils were also documented in WTL-4, which were observed with a shallow dark layer underlain by depleted grey soils with a presence of redox concentrations. WTL-4 is jurisdictional to the USACE and TDEC due to the observable connectivity to other WOTUS.

WTL-5 was observed as a fringe PFO wetland to a man-made pond located on the limits of the southern portion of the project study area. The fringe wetland is likely affiliated with a perched water system established by the man-made pond. It is unknown if the pond and fringe wetland are connected to other WOTUS as the feature continues offsite. WTL-5 was observed with a presence of saturation near the surface, water table less than 12 inches below the surface, water marks, water-stained leaves, moss trim lines, and geomorphic position, indicating positive wetland hydrology. The wetland was observed with a dominance of hydrophytic vegetation such as sweetgum, river birch, red maple, and black willow in the tree stratum, as well as rice cut grass,

woolgrass, barnyard grass, and soft rush in the herbaceous stratum. Hydric soils were also documented in WTL-5, which were observed with a shallow dark layer underlain by depleted grey soils with a presence of redox concentrations. WTL-5 is jurisdictional TDEC and potentially jurisdictional to the USACE since no connectivity to other WOTUS can be confirmed without trespassing to offsite properties.

WTL-6 was observed as a sloped PFO wetland that drains into EPH-7 within the central portion of the project study area. The sloped wetland likely collects surface runoff from the surrounding agricultural fields prior to slowly draining into EPH-7 to the east. WTL-6 was observed with a presence of saturation near the surface, water-stained leaves, and drainage patterns, indicating positive wetland hydrology. The wetland was observed with a dominance of hydrophytic vegetation such as red maple, sweetgum, and green ash in the tree and sapling stratums, as well as Japanese siltgrass (*Microstegium vimineum*) and Chinese privet (*Ligustrum sinense*) in the herbaceous stratum. Hydric soils were also documented in WTL-6, which were observed with a shallow dark layer underlain by depleted grey soils with a presence of redox concentrations. WTL-6 is jurisdictional TDEC and jurisdictional to the USACE with its continuous surface connection to other jurisdictional resources through EPH-7.

Additionally, man-made farm ponds P-1 through P-7 were observed throughout the project study area. These man-made features were observed with elevated berms that were occasionally dominated with either upland or hydrophytic vegetation. The man-made ponds were determined to be PUB features, all of which were observed with a bottom substrate of silty-clay mud and organics. Each pond was observed with varying depths of water that ranged between a few inches up to three to four feet deep. P-1, P-3, P-4, and P-5 lacked an observable connection to other WOTUS or wetland features, including upon inspection of berm wall seepage, whereas P-2, P-6, and P-7 were observed with either a drainage connection to streams or have significant wetland fringe that could connect them to other waters. Therefore, P-2, P-6, and P-7 are anticipated to be jurisdictional to the USACE and TDEC, and P-3, P-4, and P-5 are assumed to be isolated from other WOTUS, could potentially connect to the local groundwater table, and are non-jurisdictional to the USACE and only jurisdictional to TDEC. Upon closer inspection with geotechnical boring information, P-1 was determined to be isolated from the local groundwater table, as well as other WOTUS, and therefore is non-jurisdictional to the USACE and TDEC.

5.3 State and Federal Concurrence

On March 6, 2023, TDEC released their official concurrence letter for the project study area. The assigned TDEC agent for the project concurred with the findings of the Hydrologic Determination Report, with the exception that all the ponds are jurisdictional to the state due to potential connection to groundwater. In light of newly acquired information from the geotechnical borings for the project, no groundwater table connection was observed within the proximity of P-1. Therefore, on May 19, 2023, TDEC confirmed that P-1 is a non-jurisdictional water of the state. The official TDEC Hydrologic Determination Concurrence Letters are provided in Appendix F.

On February 8, 2024, the USACE released their official Jurisdictional Determination for the project study area. Most of the findings of the Jurisdictional Determination Report, with exception of EPH-7 and WTL-6, which are now jurisdictional to the USACE. The official USACE Jurisdictional Determination Concurrence Letter is provided in Appendix F.

6.0 WILDLIFE

Native wildlife was observed throughout the project study area. Identified wildlife were observed utilizing the fragmented forested portions of the site and the surrounding residential and agricultural environments. A list of wildlife species observed during the October 2022 field inspection of the project study area is provided in Table 4 of Appendix C. The largest quantity of wildlife species was birds, which likely reflected the migratory season of the species. The observed wildlife species list is a preliminary species presence record for the project study area and can be seasonally biased.

7.0 FEDERAL AND STATE LISTED SPECIES

The USFWS IPaC online resource was reviewed for potential presence of federally listed animal and plant species within the project study area. A total of 20 federally listed species were identified as being potentially present within the project area, of which 4 are currently listed as proposed, candidate, or experimental species. The remaining 16 species are federally listed as threatened or endangered.

Additionally, the Tennessee Valley Authority (TVA) provided a heritage database query for the project site. The search criteria included aquatics (within the HUC boundary for the project), botany (within a 5-mile radius), known caves (within a 3-mile radius), terrestrial zoology (within a 3-mile radius), and natural areas (within a 3-mile radius). The records indicated 17 Tennessee state and/or federally listed species that are either deemed in need of management, threatened, or endangered. Of the 17 listed species on the TVA heritage database query, 10 are overlapped with the USFWS IPaC review. Additionally, the heritage database query identified one natural area present within 3-miles of the project study area. Therefore, 27 state and federally listed species and 1 natural area are listed as potentially occurring within the project area.

Of the 27 state and federally listed species for the project area, four are currently considered as deemed in need of management, candidate, proposed, or under review. Therefore, these species are not currently protected by the state or federal agencies. These four species include federally proposed endangered tricolored bat (*Perimyotis subflavus*), federally proposed threatened alligator snapping turtle (*Macrochelys temminckii*), federal candidate species monarch butterfly (*Danaus plexippus*), under review shortspire hornsnail (*Pleurocera curta*), and deemed in need of management highfin carpsucker (*Carpiodes velifer*) and flame chub (*Hemitremia flammea*). The remaining 21 state and federally protected species that could potentially occur within the project area are described below, as well as the nearby natural area. Table 5 in Appendix C details

the listed species for the project area. Both the preliminary USFWS IPaC and the TVA heritage database query summary are provided in Appendix G.

7.1 Mammal Species

Suitable summer roosting habitat for the northern long-eared bat (*Myotis septentrionalis*) was noted during the field inspection. More than 50 potential roost trees were observed and documented within the wooded portions of the project study area and are identified on the Existing Conditions Maps (Appendix A, Figure 7). Furthermore, state threatened and federally proposed endangered tricolored bat (*Perimyotis subflavus*) could potentially utilize the forested areas throughout the project area for summer roosting. No suitable caves or potential hibernacula sites for all the federally listed bat species were observed within the project area. Due to the lack of caves within the project study area and known caves within a 3-mile radius of the site, maternal roosting habitat for gray bat (*Myotis grisescens*) is not anticipated.

7.1.1 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 of 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 upper forest canopy, a presence of a semi-open mid canopy, and an 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, 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 intermittent 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.

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 little to no solar exposure. Furthermore, adequately sized culverts were analyzed for suitable roosting within the project study area

7.1.2 Bat Habitat Survey Results

Within the project study area, there is approximately 148.8 acres of forested land. Within the 148.8 acres of forested land, the project study area was observed with multiple forested vegetative communities that were categorized on quality to provide suitable bat roosting habitat. These forested vegetative communities include variable growth stages of oak-hickory forest, semi-mature and young growths of riparian forest, mixed-growth hardwood forest, successional forest, young red maple-hardwood swamp, and planted stands of loblolly pine and red cedar. Additionally, greater than 50 potential bat roost trees were identified within and immediately adjacent to the project study area. These potential bat roost trees were observed as almost entirely exfoliating bark on shagbark hickory trees. Additionally, only two large culverts greater than 36-inches in diameter, or squared, were inspected for bat habitation, which lacked roosting bats within them.

The oak-hickory forest community was the most dominant forested community for the project study area, which was observed with varying growth stages in certain regions of the site. In total there were 59.5 acres of oak-hickory forest within the project study area, which is further broken down into 9.2 acres of mature growth, 31.7 acres of semi-mature growth, and 18.6 acres of young dense growth. The mature stand of oak-hickory forest was rated as “good” bat habitat and was observed with multiple mature shagbark hickories that could provide potential bat roosting habitat. The semi-mature stand was rated between “good” and “marginal” based on the presence of a denser midstory and undergrowth and it too was observed with mature shagbark hickories that could provide potential bat roosting habitat. Lastly, the young stand was rate as “poor” due to the thick young sapling growths of the oak-hickory vegetative community. Little to no potential bat roost trees were documented within the young stand of oak-hickory forest.

The mixed-growth hardwood forest was the second most dominant community for the project study area. The mixed-growth hardwood forest encompasses 29.5 acres of the project study area and was rated between “marginal” and “poor,” which was based on the presence of a denser midstory and undergrowth. The mixed-growth hardwood forest was observed with occasional mature shagbark hickories that could provide potential bat roosting habitat.

The remaining natural forest communities for the project study area included the red maple-hardwood swamp and the varying growth stages of riparian forest. The red-maple hardwood swamp encompasses less than 0.1 acres of the project study area, only within the southern limit of the site. The swamp community was rated as “poor” for the lack of mature trees suitable for potential roost sites but is adequate for foraging opportunities, whereas the riparian forest encompasses 18.8 acres of the project study area, which is further broken down into 8.6 acres of semi-mature growth and 10.2 acres of young growth. The semi-mature stand was rated as “marginal” based on the presence of a varying midstory and undergrowth density, and the young stand was rate as “poor” due to the thick young sapling growths of the riparian forest vegetative

community. Both the semi-mature and young stands of the riparian forest were observed with a lack of potential roost trees, but the habitat could provide adequate foraging opportunities.

The historically disturbed portions of the site were observed with successional forest and planted stands of loblolly pine and red cedar. The successional forest encompasses 17.0 acres of the project study area, and the planted stands of coniferous trees encompass 22.2 acres of loblolly pine and 1.8 acres of red cedar. All of these historically disturbed portions of the site were documented with a lack of potential bat roosting sites, were observed with thick undergrowth of the midstory and understory vegetation and were rated as "poor" bat habitat.

In total, 29.4 acres of the project study area were rated as "good" for bat habitat, 41.2 acres as "marginal," and 78.2 acres as "poor." The data forms for each forested vegetative community and its potential for bat habitat within the project are provided in Appendix H. Additionally, the Bat Habitat Map that represents the locations of woodlands and their quality of bat habitat within the project site is provided in Appendix A, Figure 8.

7.1.3 Bat Survey Results

USFWS designated bat surveyors within Jackson Group were contracted to evaluate for the potential presence of Indiana bat and northern long-eared bat. Surveys were conducted between the dates of May 20 and May 24, 2023. The mist net surveys were performed in accordance with the 2023 Guidelines, which entail for every 123-acres (0.5km2) of potential summer habitat a minimum of 10 net nights of survey effort are required. In order to collect effective samples of the project study area, four net sites were established within the approximate 137-acres of suitable forested habitat within the overall 295-acre project study area. Net site locations were selected by a permitted bat biologist in the field and were based on the best possible net locations (e.g., streams, trails, corridors) that are typically the most effective places to survey.

A total of nine bats were captured during the survey effort. Bat species captured included eight eastern red bats (*Lasiurus borealis*) and one evening bat (*Nycticeius humeralis*). No threatened or endangered bats were captured during survey efforts. Detailed site-specific information, site diagrams, photographs, Mist Net Survey Data sheets, and the scientific collections permits for the project are provided in the Bat Survey Report, Appendix I.

7.2 Bird Species

The whooping crane is federally listed as an endangered species wherever found, except where listed as a non-essential experimental population, such as within Tennessee. The last surviving wild population of this species migrates between Texas and Canada, but a non-essential experimental population migrates between summer breeding grounds in Wisconsin and wintering grounds in Florida, traveling directly through Tennessee. Migrating whooping cranes prefer to roost in shallow, freshwater wetlands and will sometimes venture into croplands to feed. While unlikely, especially due to the low number of surviving individuals of this species, the project study area does contain large areas of pastureland and West Fork Mulberry Creek that migrating

whooping cranes could potentially utilize as a stopover point for feeding. However, the wetlands and other streams are likely too small to provide suitable temporary habitat for migrating members of this species.

While it is unknown whether whooping cranes utilize the project study area as a stopover point during migration, the site does occur in the center of the documented migration route for the Wisconsin-Florida population. No evidence of the species was observed during the March 2023 site investigation, and it is likely that whooping cranes would prefer to utilize the large wetlands and neighboring croplands along the Tennessee River to the east. Since the population that migrates through Tennessee is listed as a non-essential experimental population, individuals are treated as a threatened species on National Wildlife Refuge and National Park land but as a proposed species on private land. However, whooping cranes are still entitled to protections under the Migratory Bird Treaty Act (MBTA) and state laws. Due to the unlikely nature of whooping cranes utilizing the project study area as a stopover site during migration, development of the site would likely cause little to no adverse impacts to the species.

7.3 Reptile Species

The alligator snapping turtle (*Macrochelys temminckii*) is listed as a federally proposed threatened species and a state threatened species and known to occur within slow moving, deep waters of rivers, sloughs, oxbows, swamps, and lakes in middle and west Tennessee. Based on the October 22 and August 2023 site inspections, only one perennial stream and seven farm ponds were delineated within and immediately adjacent to the project study area. However, the perennial stream was documented to lack deep water, sloughs, or adjacent oxbows to provide suitable habitat for alligator snapping turtle. The delineated farm ponds within the project study area were observed with rather deep surface water, but the feature are relatively isolated from other waters beyond the project study area, likely making it unfavorable for the species. While not observed, the pond likely has a population of red-eared slider (*Trachemys scripta elegans*) and common snapping turtle (*Chelydra serpentina*). Alligator snapping turtle is not anticipated to be present within the aquatic features within the project study area. Therefore, the project is not likely to result in adverse impacts to the species.

7.4 Fish Species

The blue sucker (*Cycleptus elongatus*) is listed as threatened species to potentially occur within the project's watershed. Based on the October 2022 site inspections, only one perennial stream was observed within and immediately adjacent to the project study area. No streams observed within the project study area had flowing water at the time of the survey. The blue sucker prefers swiftly flowing water over firm substrates in large rivers and is known to occur in the Tennessee River drainage. The delineated perennial stream is likely not a large perennial stream, and at the time of the inspection was dry, potentially due to drought-like conditions. No large rivers with flowing water habitat were observed within the project study area; therefore, the blue sucker is not anticipated to be within the project study area.

7.5 Crayfish Species

The Hardin crayfish (*Orconectes wrighti*) is listed as endangered in the state of Tennessee and under federal review. This species of crayfish prefers small to medium sized streams with a channel substrate of sand and cobble. It is known to occur in the western tributaries of the Tennessee River in Hardin and McNairy Counties. While multiple small intermittent streams and one perennial stream were delineated, these streams had channel bottoms composed of clay, sand, and silt, which lacked the cobble or rock substrates that would provide potentially suitable habitat for the Hardin crayfish. Therefore, the Hardin crayfish is not anticipated to be present within the project study area.

7.6 Mollusk Species

There are 14 mollusk species listed as threatened or endangered that could potentially occur within the project's HUC watershed, as well within the USFWS IPaC review. These 14 species are the spectaclecase (*Cumberlandia monodonta*), fanshell (*Cyprogenia stegaria*), cracking pearlymussel (*Hemistena lata*), pink mucket (*Lampsilis abrupta*), ring pink (*Obovaria retusa*), Round hickorynut (*Obovaria subrotunda*), white wartyback (*Plethobasus cicatricosus*), orangefoot pimpleback (*Plethobasus cooperanius*), sheepnose (*Plethobasus cyphyus*), clubshell (*Pleurobema clava*), rough pigtoe (*Pleurobema plenum*), slabside pearlymussel (*Pleuronaia dolabelloides*), rabbitsfoot (*Quadrula cylindrica*), and Longsolid (*Fusconaia subrotuda*). All of these mollusk species are known to occur in the Tennessee River drainage, with most of these mollusks preferring medium to large rivers with moderate current and a few preferring large creeks to medium-sized rivers with moderate current. Only one perennial stream was delineated during the October 2022 site inspection. However, both the perennial stream and the remaining intermittent streams within the project study area lacked flowing water at the time of delineation survey. Furthermore, no medium to large rivers or streams with flowing water habitat were observed within the project study area. Therefore, none of these mollusk species are anticipated to be within the project study area.

7.7 Plants

State and federally listed Price's potato bean (*Apios priceana*) and whorled sunflower (*Helianthus verticillatus*) are listed on the USFWS IPaC review for the project study area. Price's potato bean prefers well-drained loams over limestone on rocky, sloping terrain, and the whorled sunflower prefers open prairies and will grow alongside roads, railroad tracks, agricultural fields, and transmission easements. Due to a lack of limestone and rocky, sloping terrain habitat being observed during the October 2022 site inspection, Price's potato-bean is not anticipated to be within the project study area.

However, the project study area did include an existing transmission easement and many margins along agricultural fields, indicating that suitable habitat for the whorled sunflower does occur within the project study area. As a result, TVA-approved botanist Mr. Mason Brock conducted a survey to attempt to locate any whorled sunflower specimen during the flowering season within the project study area. Mr. Brock performed his whorled sunflower survey on September 17 and 18, 2022, and compiled a report (Appendix J). His official report concluded that no populations of whorled sunflower were located in the project study area. Therefore, whorled sunflower is not anticipated to be within the project study area.

7.8 Migratory Bird Species

While the USFWS IPaC was noted with a lack of potential presence of migratory bird species of conservation concern within the project area, a significant quantity of migratory birds were observed during the October 2022 site inspection, Table 4 of Appendix C. The Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGPA) make it illegal to take, possess, import, export, transport, sell, or purchase any migratory bird or the part, nests, or eggs of such birds except under the terms of a valid federal permit.

Some of the observed migratory bird species include the yellow-rumped warbler (*Setophaga coronata*), Louisiana waterthrush (*Parkesia motacilla*), and eastern phoebe (*Sayornis phoebe*) were identified within the forested and riparian environments of the project study area. Whereas the eastern towhee (*Pipilo erythrophthalmus*), brown thrasher (*Toxostoma rufum*), and barn swallow (*Hirundo rustica*) were identified within the shrubby and anthropogenic portions of the project study area. While the presence of these birds could be seasonally biased during the migration season, these birds could also be covered by the MBTA during their respective breeding seasons.

8.0 SUMMARY

A total of 9 jurisdictional streams, 11 ephemeral streams, 11 erosional swales, 6 wetlands, 7 man-made ponds, 1 drainage ditch, and greater than 50 potential bat roost trees were identified during the field investigation of the project study area. The Existing Conditions Maps (Figure 7, Appendix A) visually represents the boundaries of the wetland and non-wetland waters delineated within the project area, and the Bat Habitat Map visually represents good to poor habitat value throughout the project study area. Table 1 and Table 2 (Appendix C) summarize the current locations and linear footages or acres of each wetland and non-wetland feature, and Table 4 details the observed wildlife at the time of the site inspections. Lastly, the wetland and stream determination data forms for the delineated natural resources are provided in Appendix D, and photographs of all natural resources, including vegetative communities, are provided in Appendix E.

Additionally, no federally listed northern long-eared bat or whorled sunflower were observed utilizing the project study area, which is represented in their respective survey reports in Appendix I and J.

APPENDIX A – Figures

Project Study Area
Existing Transmission Easement

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: TN Streets

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
AERIAL SITE LOCATION MAP

PROJ NO: 3609517

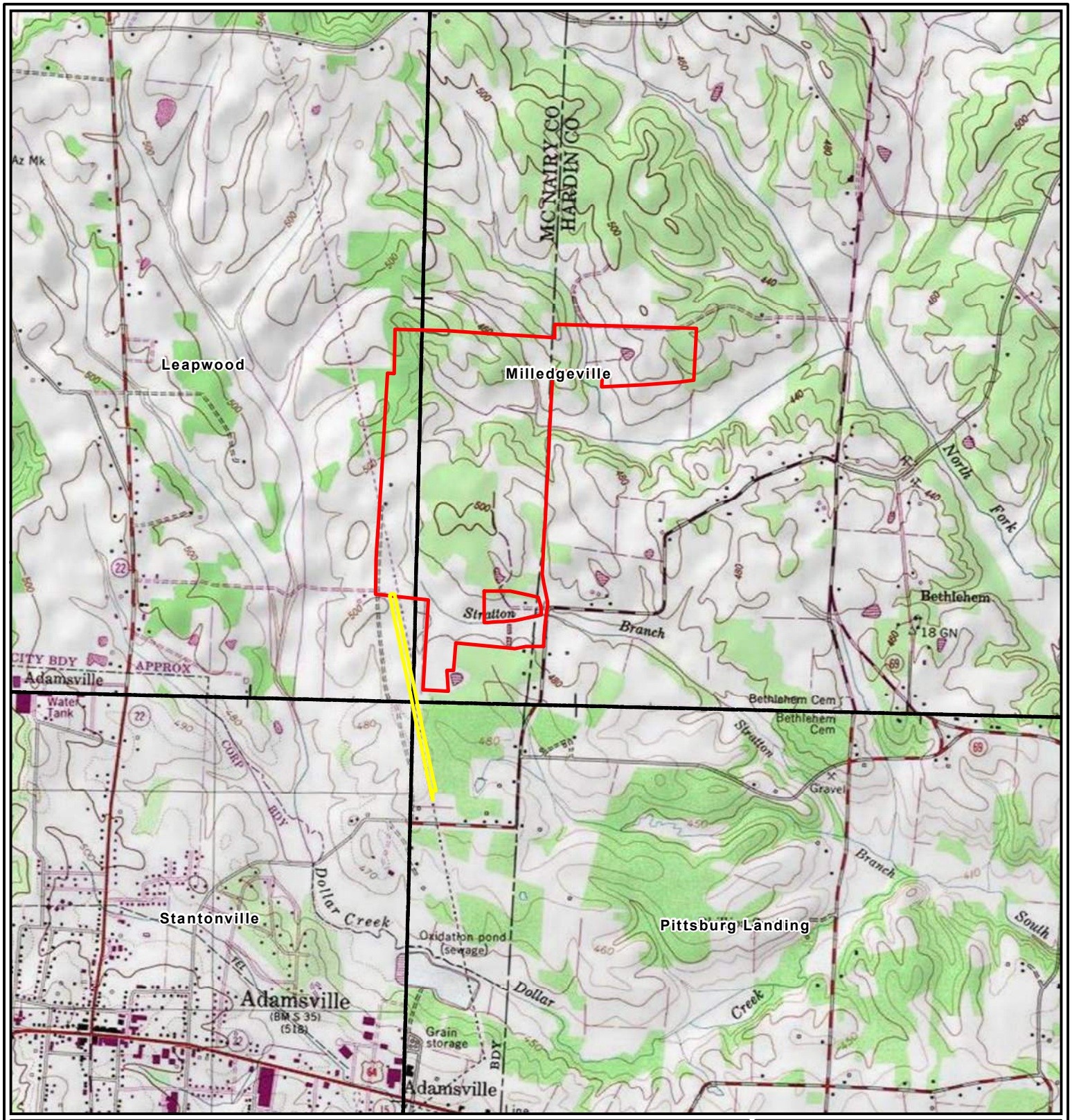
DATE: September 2023

FIGURE 1

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure1_AerialSiteLocationMap.mxd



LEAPWOOD, MILLEDGEVILLE, STANTONVILLE, & PITTSBURG LANDING 7.5 MINUTE QUADRANGLES

- Project Study Area
- Existing Transmission Easement
- 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
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
USGS SITE LOCATION MAP

PROJ NO: 3609517

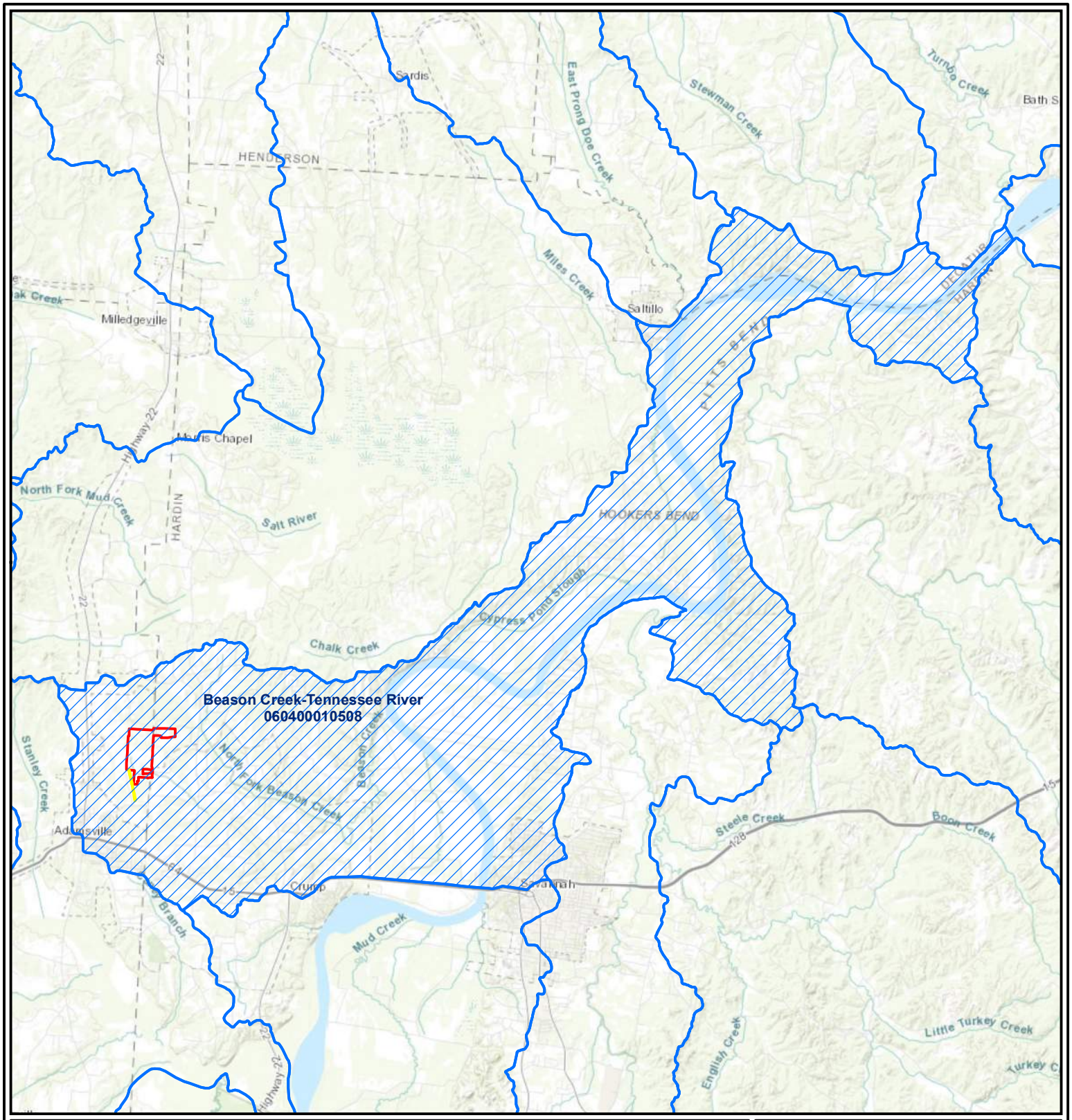
DATE: September 2023

FIGURE 2

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure2_USGSSiteLocationMap.mxd



Project Watershed
HUC 12 Watershed
Project Study Area
Existing Transmission Easement

N

1 inch = 2 miles

0 0.5 1 2 3 Miles

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

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
PROJECT WATERSHED MAP

PROJ NO: 3609517

DATE: September 2023

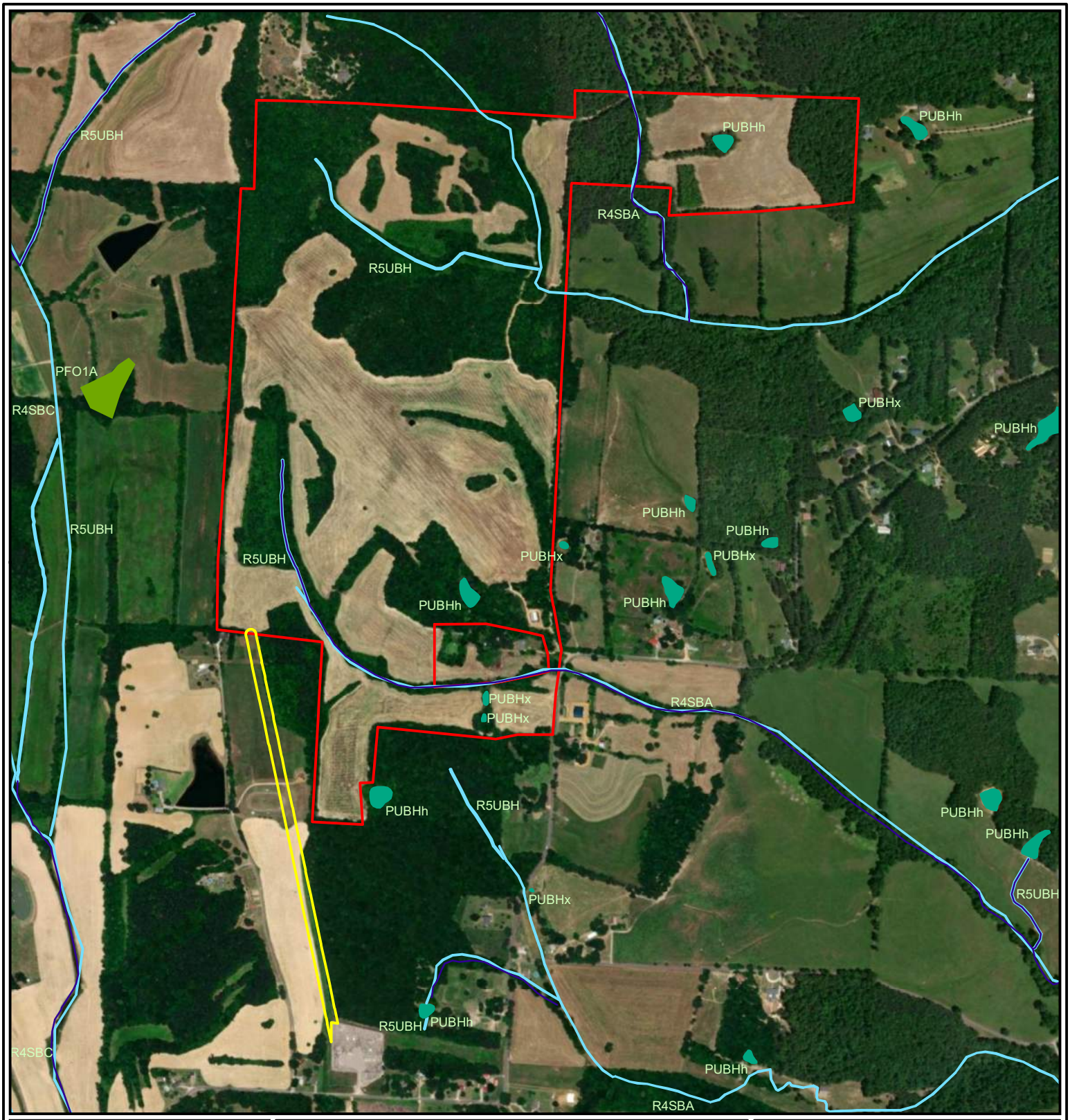
FIGURE 3

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure3_ProjectWatershedMap.mxd

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure4_ProjectSoilUnitMap.mxd



NWI Wetland

Wetland Type

- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

NHD Flowline

Feature Type

- Stream/River
- Project Study Area
- Existing Transmission Easement

N

1 inch = 1,000 feet

0 200 400 800 1,200 Feet

Basemap: ESRI World Imagery
Source Data: USFWS NWI (TN), USDA NHD Flowline (TN)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
NATIONAL WETLANDS INVENTORY MAP

PROJ NO: 3609517

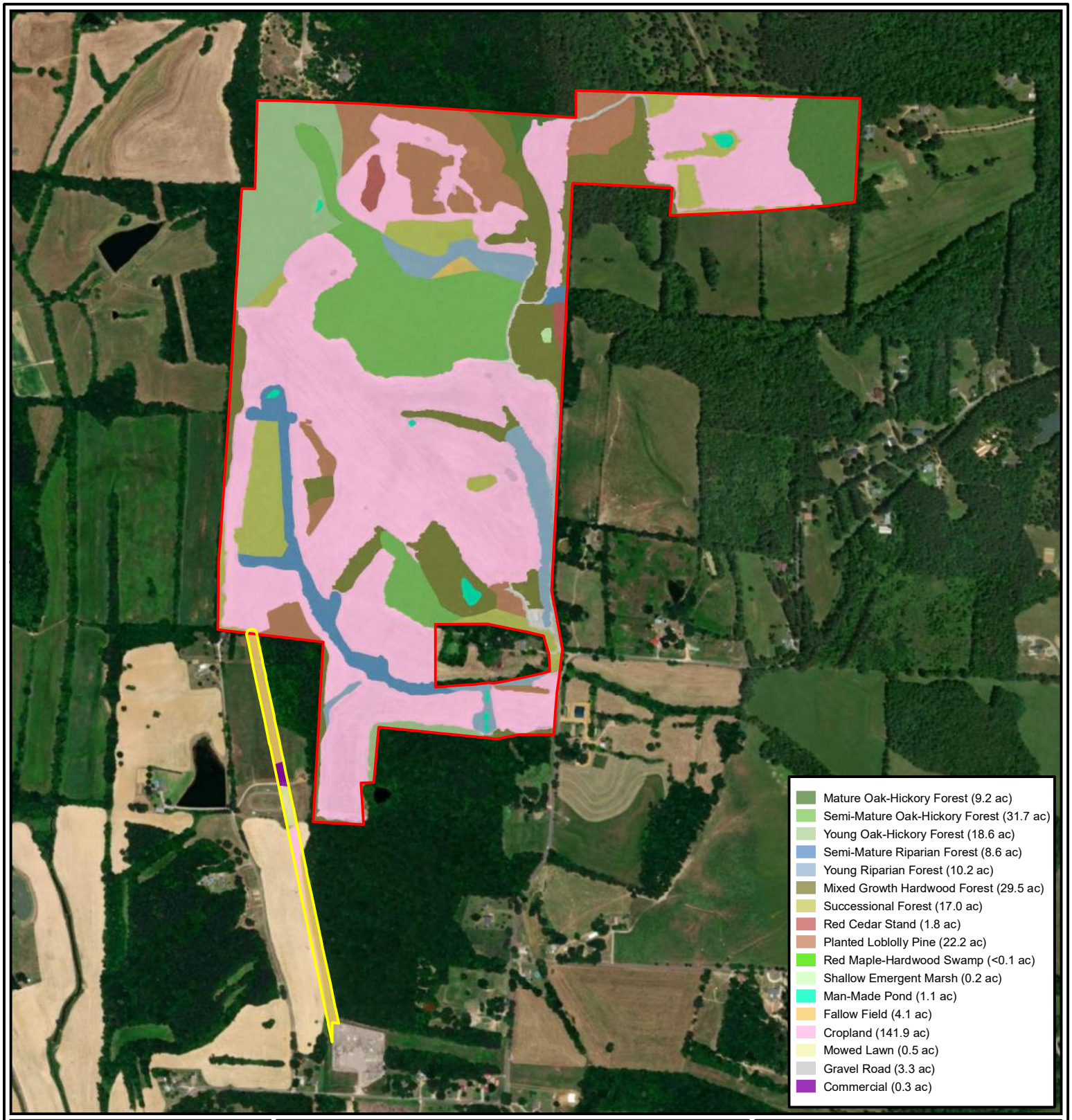
DATE: September 2023

FIGURE 5

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure5_NWI_Map.mxd



Project Study Area
Existing Transmission Easement

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
VEGETATIVE COMMUNITY MAP

PROJ NO: 3609517

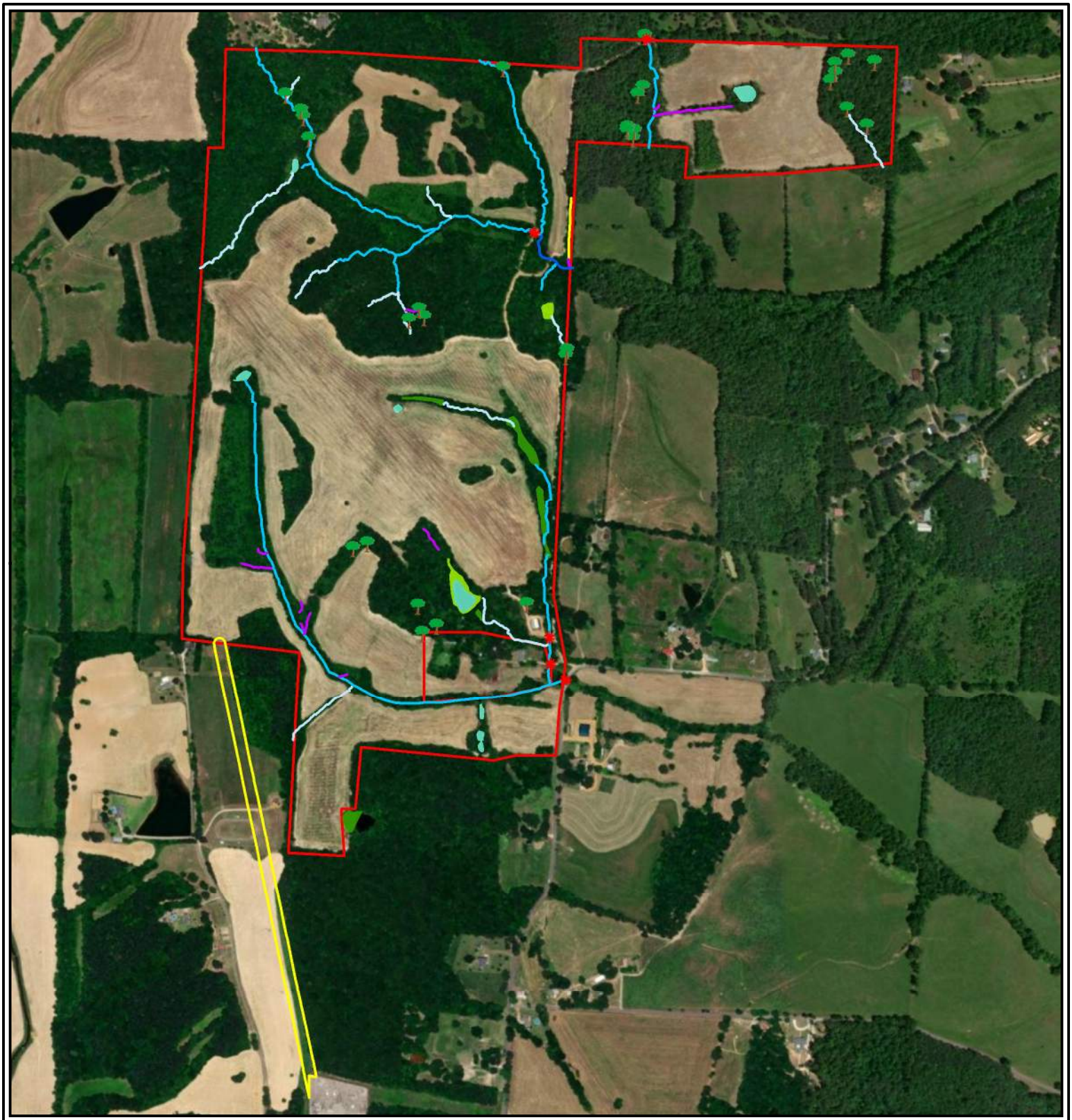
DATE: September 2023

FIGURE 6

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure6_VegetativeCommunityMap.mxd



Delineated Wetland
- PEM Wetland
- PFO Wetland
- Farm Pond

Delineated Waterbody
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Potential Bat Roost Tree
- Culvert Location
- Project Study Area
- Existing Transmission Easement

N

1 inch = 900 feet

0 200 400 800 1,200 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (OVERVIEW)

PROJ NO: 3609517

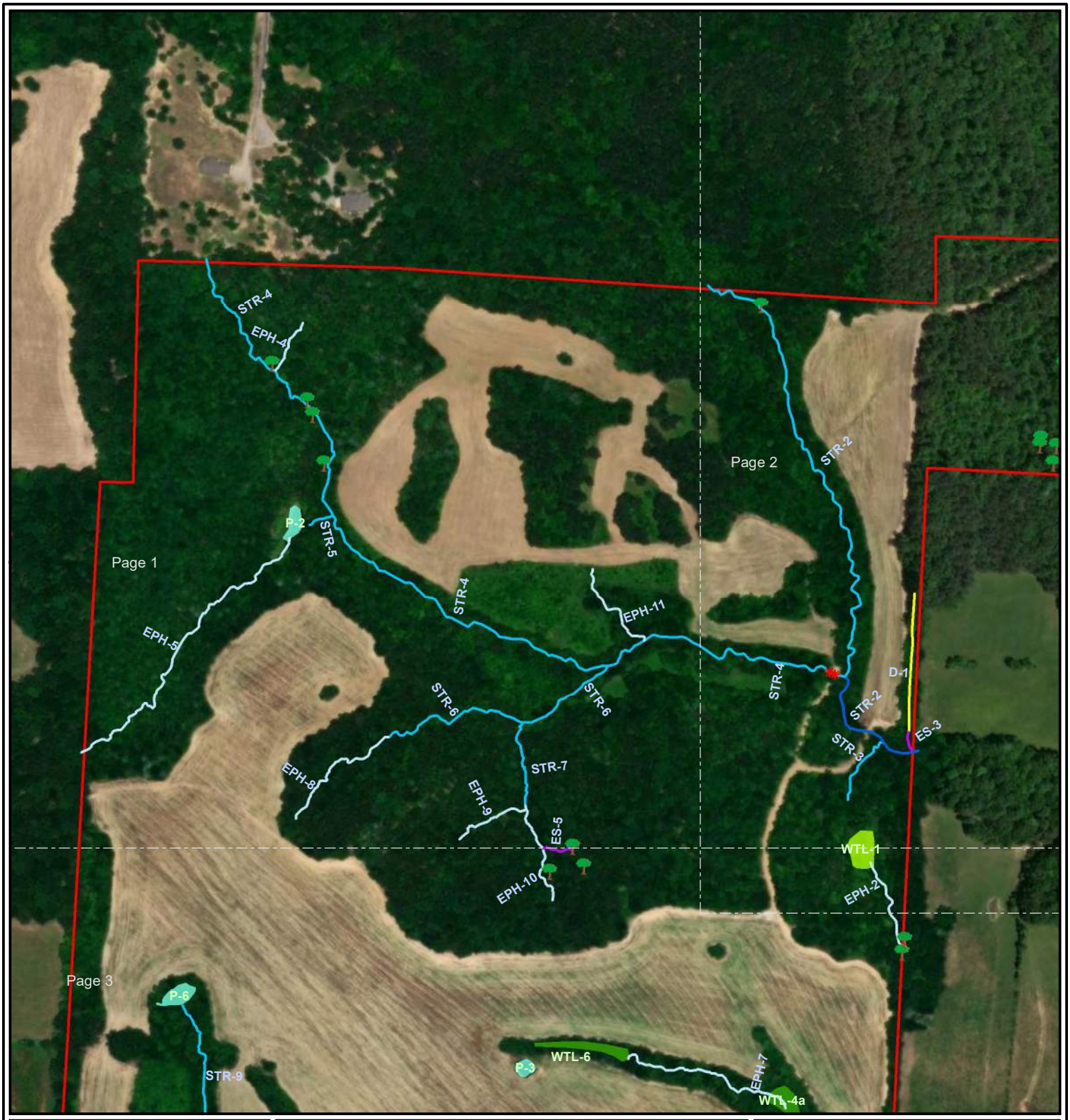
DATE: September 2023

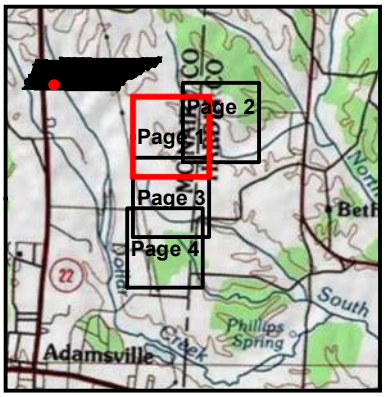
FIGURE 7a

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure7a_ExistingConditionsOverviewMap.mxd





Delineated Wetland
- PEM Wetland
- PFO Wetland
- Farm Pond

Delineated Waterbody
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Potential Bat Roost Tree
- Culvert Location
- Project Study Area
- Existing Transmission Easement

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

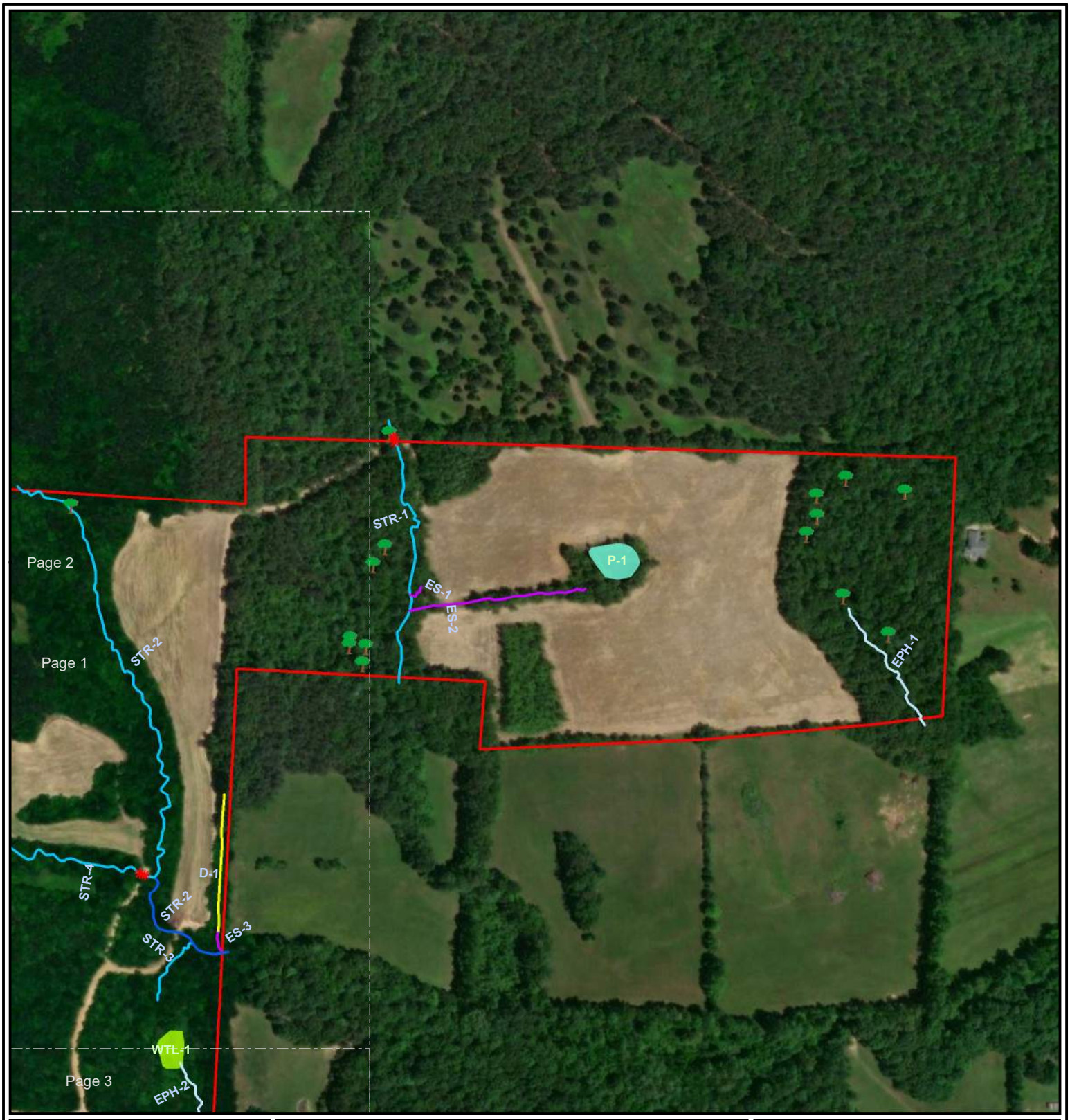
DATE: September 2023

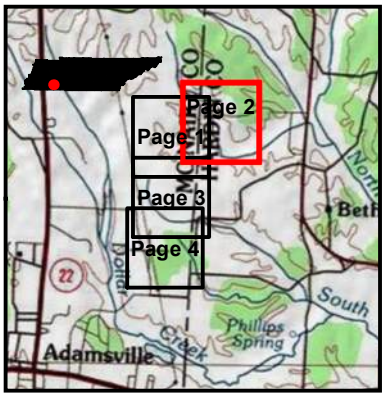
FIGURE 7b-1

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure7b_ExistingConditionsDetailedMap.mxd





Delineated Wetland
- PEM Wetland
- PFO Wetland
- Farm Pond

Delineated Waterbody
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Potential Bat Roost Tree
- Culvert Location
- Project Study Area
- Existing Transmission Easement

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

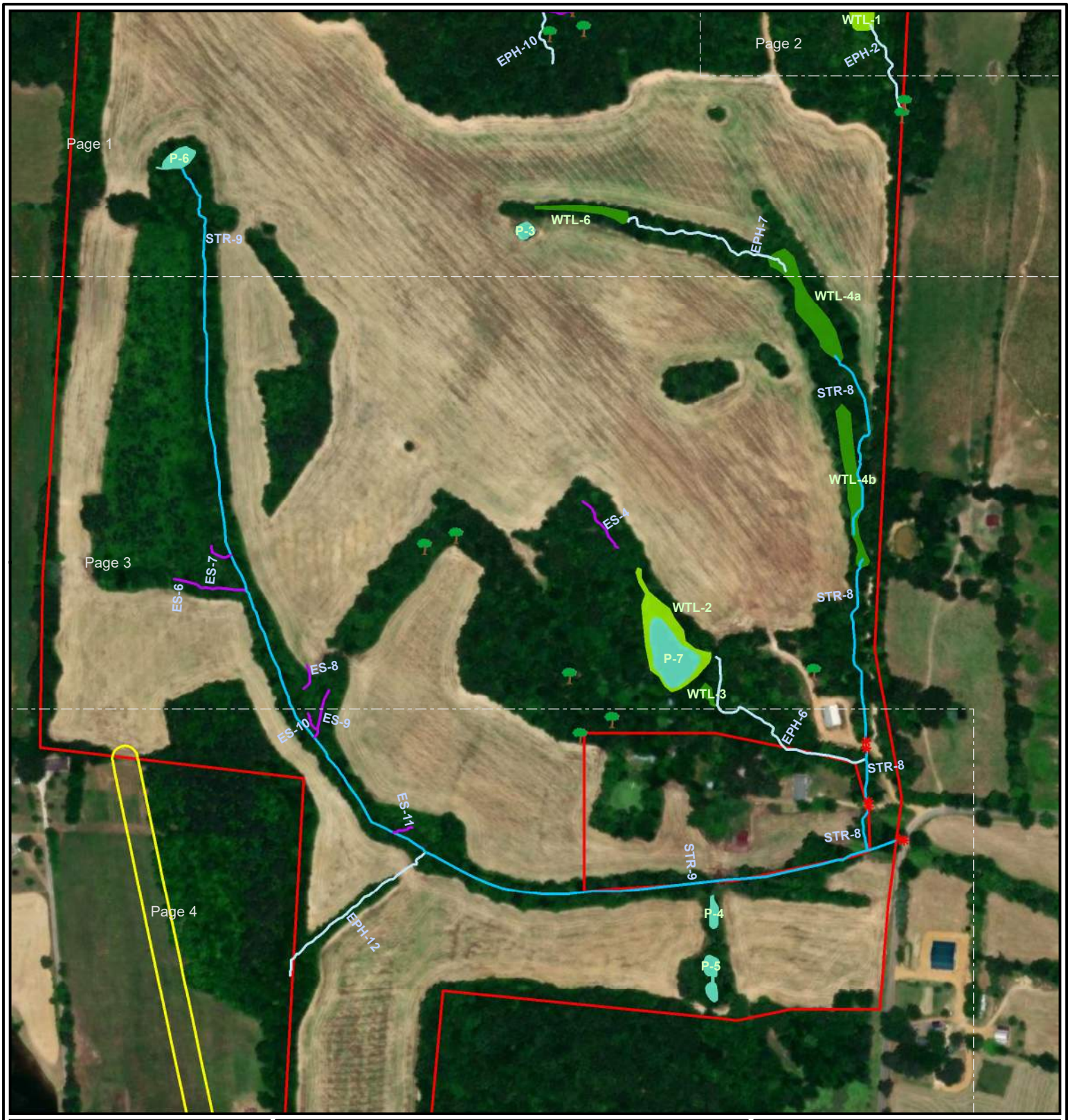
DATE: September 2023

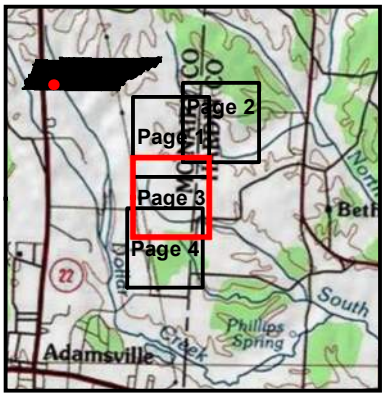
FIGURE 7b-2

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure7b_ExistingConditionsDetailedMap.mxd





Delineated Wetland
- PEM Wetland
- PFO Wetland
- Farm Pond

Delineated Waterbody
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Potential Bat Roost Tree
- Culvert Location
- Project Study Area
- Existing Transmission Easement

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

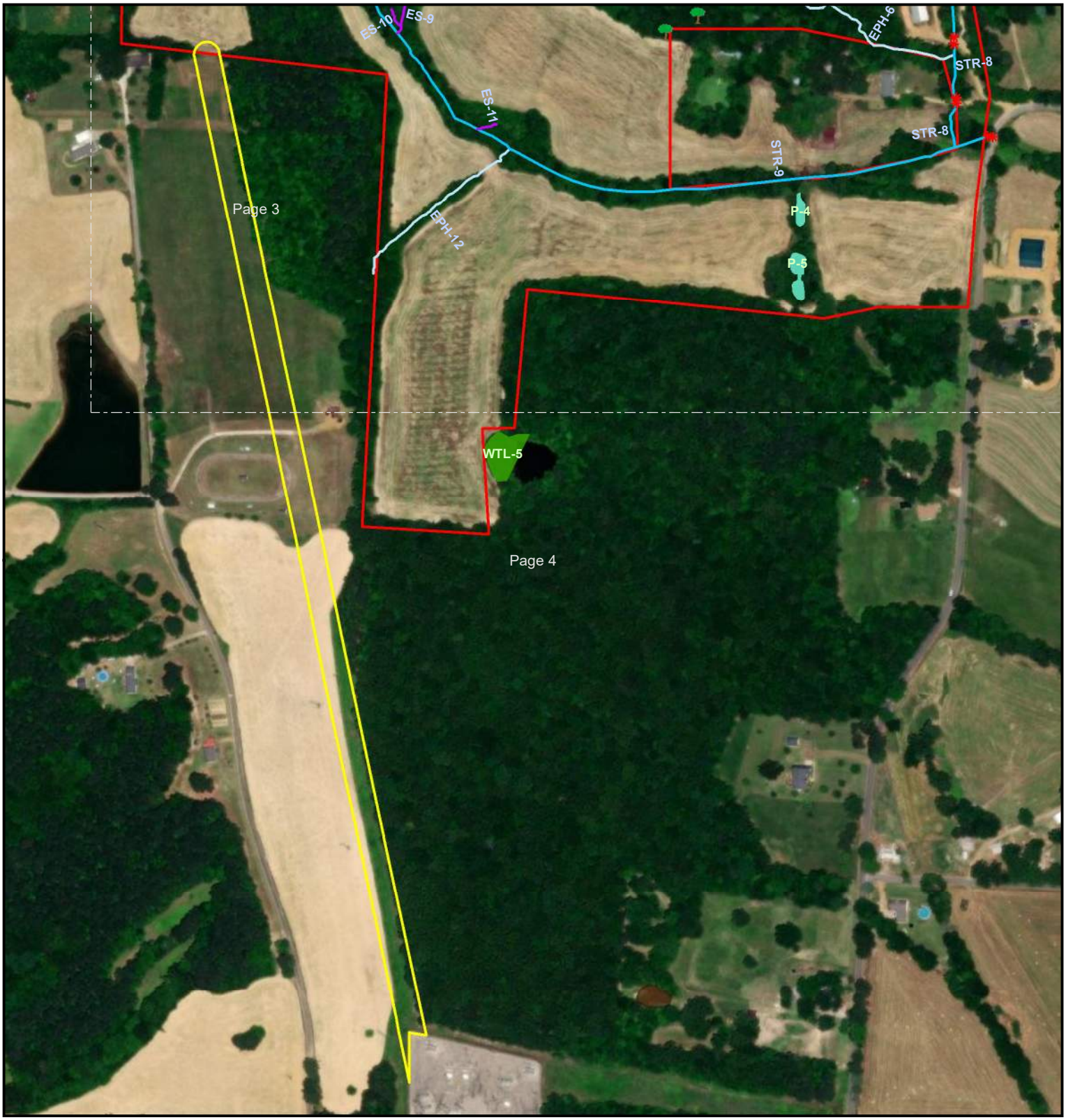
DATE: September 2023

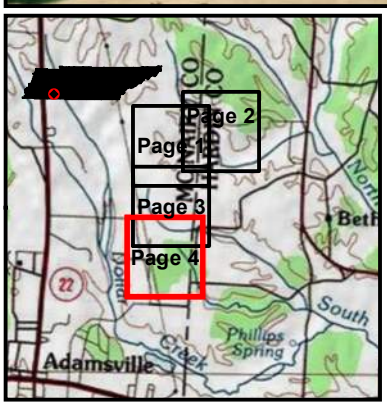
FIGURE 7b-3

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure7b_ExistingConditionsDetailedMap.mxd





Delineated Wetland
- PEM Wetland
- PFO Wetland
- Farm Pond

Delineated Waterbody
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Potential Bat Roost Tree
- Culvert Location
- Project Study Area
- Existing Transmission Easement

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (Oct 2022 & Aug 2023)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

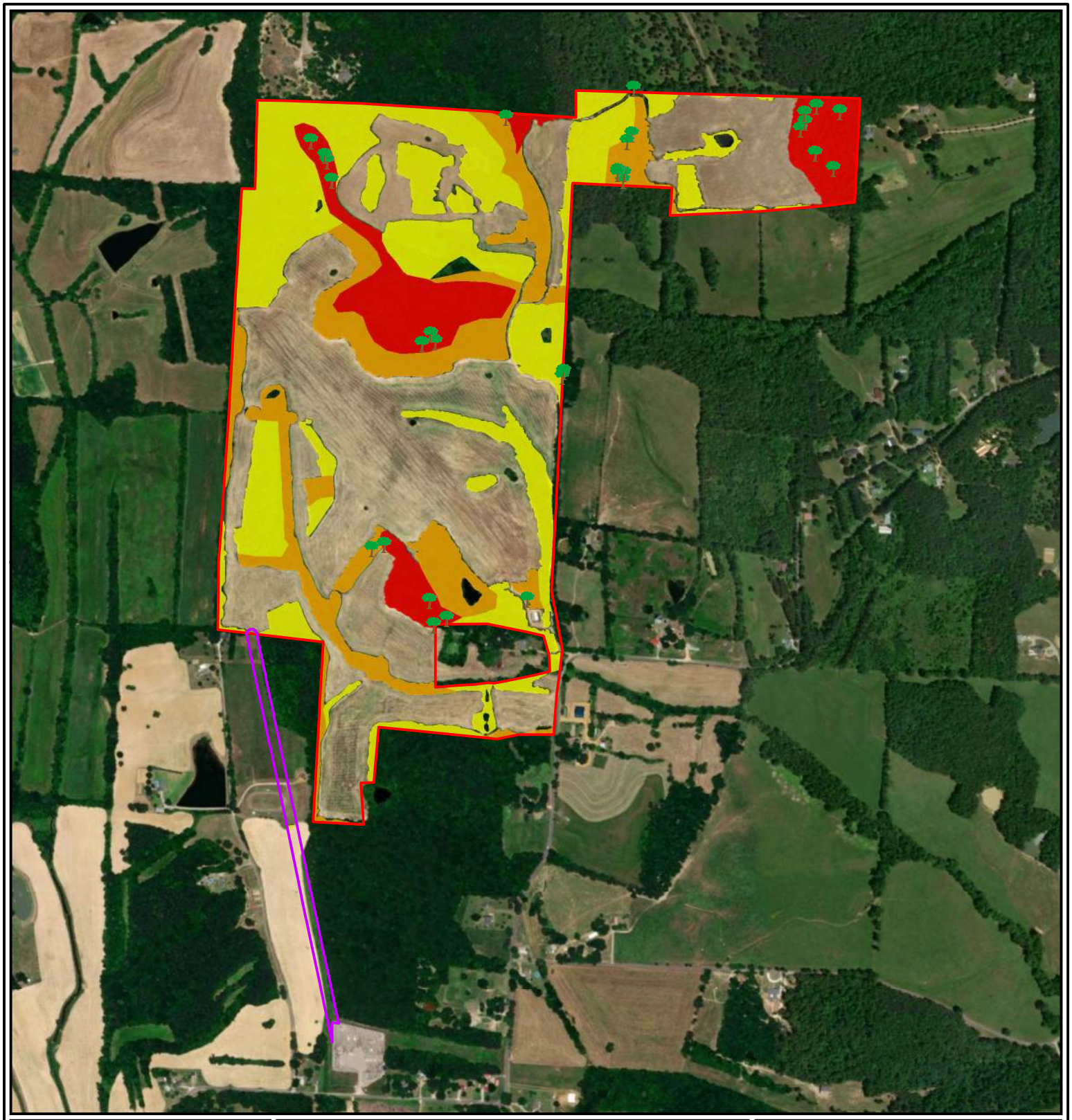
DATE: September 2023

FIGURE 7b-4

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure7b_ExistingConditionsDetailedMap.mxd



Bat Habitat
Quality
- Good (29.4 ac)
- Marginal (41.2 ac)
- Poor (78.2 ac)

- Potential Bat Roost Tree
- Project Study Area
- Existing Transmission Easement

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
BAT HABITAT MAP

PROJ NO: 3609517

DATE: September 2023

FIGURE 8

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\TVA_Natural_Resource_Memo\20230905_Updated_ProjectStudyArea\Figure8_BatHabitatMap.mxd

APPENDIX B – NRCS Custom Soil Report

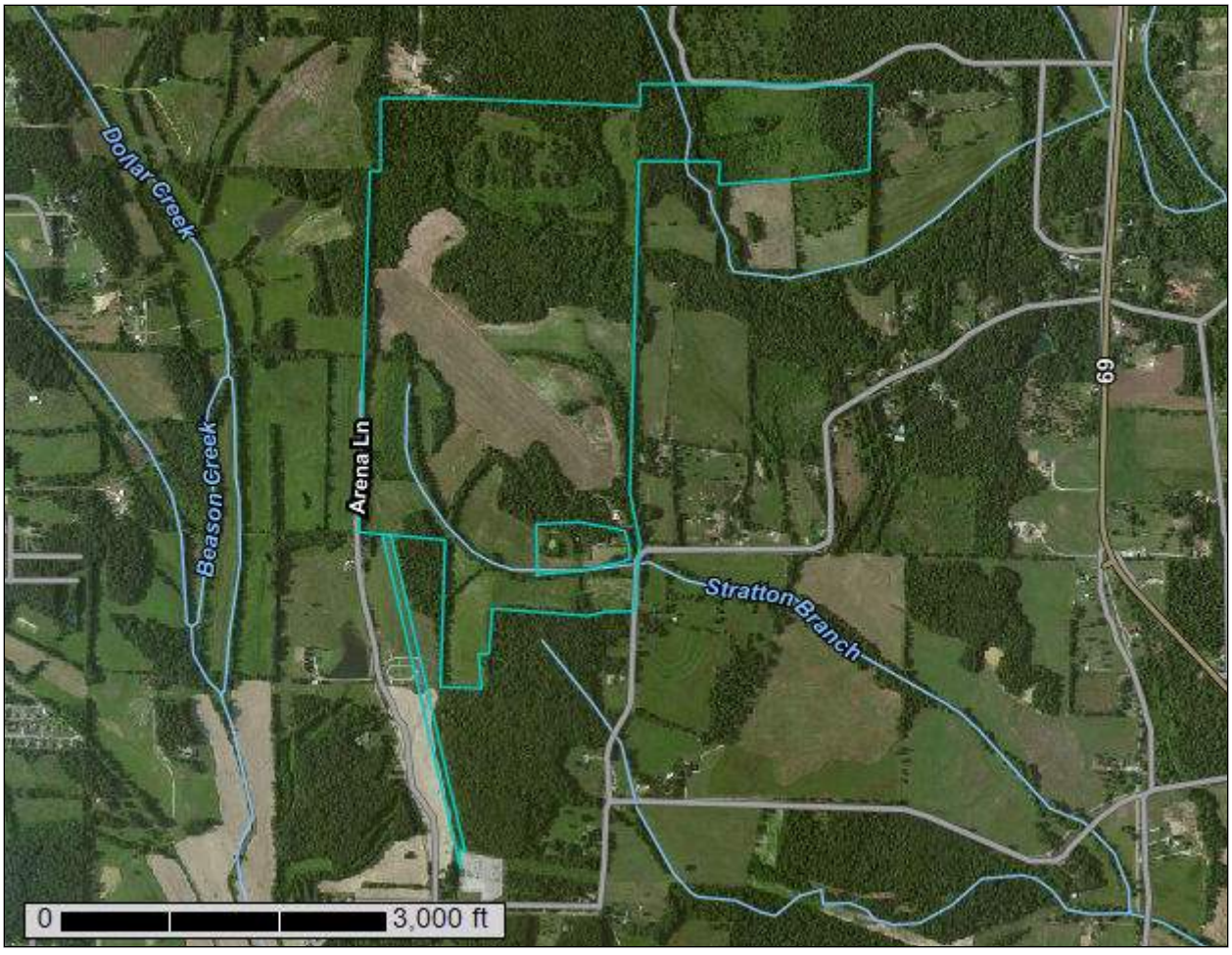
United States Department of Agriculture

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 Hardin County, Tennessee, and McNairy County, Tennessee



September 5, 2023

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.

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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.

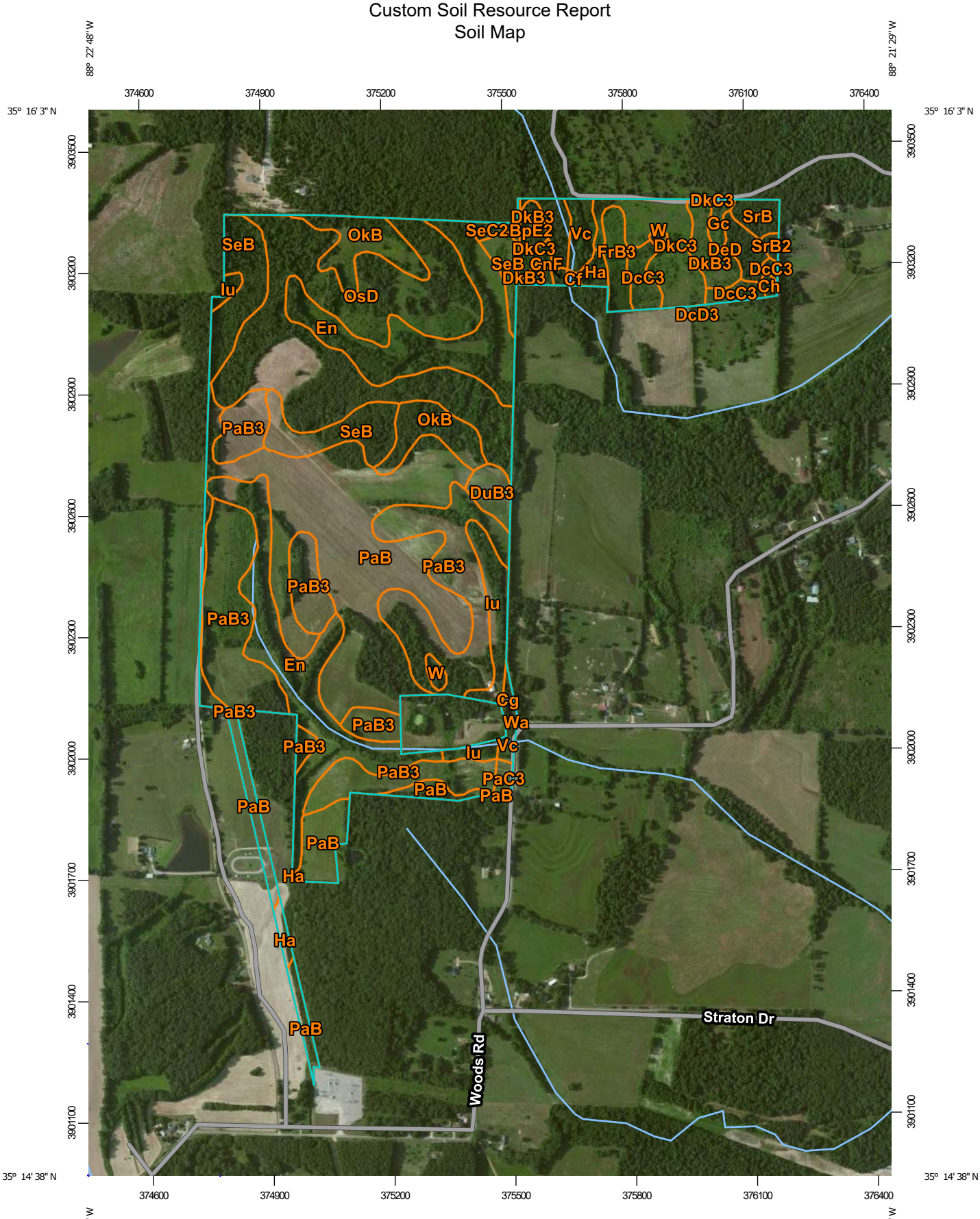
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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.



Map Scale: 1:12,900 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 scales ranging from 1:15,800 to 1:20,000.

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: Hardin County, Tennessee
Survey Area Data: Version 22, Sep 15, 2022

Soil Survey Area: McNairy County, Tennessee
Survey Area Data: Version 18, Sep 15, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Jun 6, 2011—Jun 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
BpE2	Boswell soils, 12 to 25 percent slopes, eroded	2.5	0.8%
Cf	Collins fine sandy loam (Iuka)	0.3	0.1%
Cg	Collins loam, local alluvium (Iuka)	0.8	0.3%
Ch	Collins silt loam (Iuka)	0.4	0.1%
CnF	Cuthbert fine sandy loam, 25 to 35 percent slopes (Luverne)	0.4	0.1%
DcC3	Dexter clay loam, 5 to 8 percent slopes, severely eroded	4.4	1.5%
DcD3	Dexter clay loam, 8 to 12 percent slopes, severely eroded	0.0	0.0%
DeD	Dexter loam, 8 to 12 percent slopes	2.7	0.9%
DkB3	Dulac silt loam, 2 to 5 percent slopes, severely eroded	5.6	1.9%
DkC3	Dulac silt loam, 5 to 8 percent slopes, severely eroded	10.7	3.6%
FrB3	Freeland loam, 2 to 5 percent slopes, severely eroded	3.5	1.2%
Gc	Gullied land, clayey materials	1.7	0.6%
Ha	Hatchie loam	1.2	0.4%
PaB	Paden silt loam, 2 to 5 percent slopes	0.0	0.0%
PaC3	Paden silt loam, 5 to 8 percent slopes, severely eroded	0.9	0.3%
SrB	Silerton silt loam, 2 to 5 percent slopes	2.2	0.7%
SrB2	Silerton silt loam, 2 to 5 percent slopes, eroded	0.6	0.2%
Vc	Vicksburg loam, local alluvium (Ochlockonee)	3.5	1.2%
W	Water	0.3	0.1%
Wa	Waverly fine sandy loam (Bibb)	0.0	0.0%
Subtotals for Soil Survey Area		**41.7**	**13.9%**
Totals for Area of Interest		**300.1**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DuB3	Dulac silt loam, 2 to 5 percent slopes, severely eroded	2.9	1.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
En	Enville fine sandy loam, occasionally flooded	41.1	13.7%
Ha	Hatchie silt loam, 0 to 2 percent slopes	0.9	0.3%
Iu	Iuka fine sandy loam, 0 to 2 percent slopes, occasionally flooded	7.4	2.5%
OkB	Oktibbeha clay loam, 2 to 5 percent slopes	12.8	4.3%
OsD	Oktibbeha and Sumter soils, 8 to 20 percent slopes	51.9	17.3%
PaB	Paden silt loam, 2 to 5 percent slopes	65.6	21.8%
PaB3	Paden silt loam, 2 to 5 percent slopes, severely eroded	56.6	18.9%
SeB	Silerton silt loam, 2 to 5 percent slopes	17.8	5.9%
SeC2	Silerton silt loam, 5 to 8 percent slopes, eroded	0.8	0.3%
W	Water	0.7	0.2%
Subtotals for Soil Survey Area		**258.5**	**86.1%**
Totals for Area of Interest		**300.1**	**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.

Hardin County, Tennessee

BpE2—Boswell soils, 12 to 25 percent slopes, eroded

Map Unit Setting

National map unit symbol: bzt8
Elevation: 380 to 560 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Boswell

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey marine deposits

Typical profile

H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 60 inches: clay

Properties and qualities

Slope: 12 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately 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 supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

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

Cf—Collins fine sandy loam (luka)

Map Unit Setting

National map unit symbol: bztm
Elevation: 330 to 720 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F

Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Iuka and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Iuka

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Loamy alluvium

Typical profile
H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 30 inches: loam
H3 - 30 to 60 inches: fine sandy loam

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 high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

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

Cg—Collins loam, local alluvium (Iuka)

Map Unit Setting
National map unit symbol: bztn
Elevation: 360 to 820 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Iuka and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Iuka

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 30 inches: loam
H3 - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 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 high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: NoneRare
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

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

Ch—Collins silt loam (Iuka)

Map Unit Setting

National map unit symbol: bztp
Elevation: 360 to 540 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Iuka

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 8 inches: silt loam

H2 - 8 to 30 inches: loam
H3 - 30 to 60 inches: fine sandy loam

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 high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

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

CnF—Cuthbert fine sandy loam, 25 to 35 percent slopes (Luverne)

Map Unit Setting

National map unit symbol: bztt
Elevation: 380 to 560 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Luverne

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Stratified clayey and/or loamy marine deposits

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 13 inches: sandy clay
H3 - 13 to 30 inches: clay loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

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

DcC3—Dexter clay loam, 5 to 8 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: bzv0
Elevation: 20 to 80 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Dexter

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Loess over loamy alluvium

Typical profile

H1 - 0 to 8 inches: clay loam
H2 - 8 to 38 inches: clay loam
H3 - 38 to 50 inches: clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

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

DcD3—Dexter clay loam, 8 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: bzv1
Elevation: 20 to 80 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Dexter

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Loess over loamy alluvium

Typical profile

H1 - 0 to 8 inches: clay loam
H2 - 8 to 38 inches: clay loam
H3 - 38 to 50 inches: clay loam

Properties and qualities

Slope: 8 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

DeD—Dexter loam, 8 to 12 percent slopes

Map Unit Setting

National map unit symbol: bzv4

Elevation: 20 to 80 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition
Dexter and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dexter

Setting
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Loess over loamy alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 38 inches: clay loam
H3 - 38 to 50 inches: clay loam

Properties and qualities
Slope: 8 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

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

DkB3—Dulac silt loam, 2 to 5 percent slopes, severely eroded

Map Unit Setting
National map unit symbol: 2w6fq
Elevation: 380 to 680 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition
Dulac and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dulac

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Silty loess over clayey alluvium

Typical profile

Ap - 0 to 2 inches: silt loam
Bt1 - 2 to 11 inches: silt loam
Bt2 - 11 to 23 inches: silty clay loam
Btx - 23 to 38 inches: silty clay loam
2Bt - 38 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 12 to 23 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.04 in/hr)
Depth to water table: About 11 to 20 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 supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

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

Minor Components

Providence

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tippah

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

DkC3—Dulac silt loam, 5 to 8 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2w6fr
Elevation: 380 to 680 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dulac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dulac

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Silty loess over clayey alluvium

Typical profile

Ap - 0 to 2 inches: silt loam
Bt1 - 2 to 11 inches: silt loam
Bt2 - 11 to 23 inches: silty clay loam
Btx - 23 to 38 inches: silty clay loam
2Bt - 38 to 60 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 12 to 23 inches to fragipan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.04 in/hr)
Depth to water table: About 11 to 20 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 supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

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

Minor Components

Providence

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tippah

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

FrB3—Freeland loam, 2 to 5 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: bzvq
Elevation: 400 to 500 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Freeland

Setting

Landform: Stream terraces
Parent material: Loess over loamy alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 18 inches: silty clay loam
H3 - 18 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 15 to 20 inches to fragipan
Drainage class: Moderately well 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 16 to 38 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

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

Gc—Gullied land, clayey materials

Map Unit Setting

National map unit symbol: bzvv
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

Gullied land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gullied Land

Interpretive groups

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

Ha—Hatchie loam

Map Unit Setting

National map unit symbol: bzvy
Elevation: 350 to 450 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Hatchie

Setting

Landform: Stream terraces
Parent material: Loess over loamy alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 20 inches: loam
H3 - 20 to 40 inches: silt loam
H4 - 40 to 60 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 18 to 30 inches to fragipan
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 15 to 29 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

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

PaB—Paden silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: bzwq
Elevation: 350 to 550 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Paden

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Parent material: Loess or silty alluvium over loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silt loam
H3 - 28 to 46 inches: silt loam
H4 - 46 to 67 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 30 inches to fragipan
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 13 to 33 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

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

PaC3—Paden silt loam, 5 to 8 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: bzww
Elevation: 350 to 550 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Paden

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Parent material: Loess or silty alluvium over loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 18 inches: silt loam
H3 - 18 to 36 inches: silt loam
H4 - 36 to 67 inches: clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 15 to 20 inches to fragipan
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 13 to 33 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

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

SrB—Silerton silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: bzy0
Elevation: 500 to 800 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Silerton

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Loess over clayey marine deposits

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silty clay loam
H3 - 24 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

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

SrB2—Silerton silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: bzy1
Elevation: 500 to 800 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Silerton

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Loess over clayey marine deposits

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 24 inches: silty clay loam
H3 - 24 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

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

Vc—Vicksburg loam, local alluvium (Ochlockonee)

Map Unit Setting

National map unit symbol: bzys
Elevation: 100 to 800 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Ochlockonee

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 60 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)

Interpretive groups

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

W—Water

Map Unit Setting

National map unit symbol: 1hvdh
Mean annual precipitation: 48 to 67 inches

Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Wa—Waverly fine sandy loam (Bibb)

Map Unit Setting
National map unit symbol: bzyt
Elevation: 50 to 450 feet
Mean annual precipitation: 48 to 67 inches
Mean annual air temperature: 49 to 73 degrees F
Frost-free period: 192 to 206 days
Farmland classification: Not prime farmland

Map Unit Composition
Bibb and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bibb

Setting
Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Stratified loamy and/or sandy alluvium

Typical profile
H1 - 0 to 6 inches: fine sandy loam
H2 - 6 to 48 inches: sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: NoneFrequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

McNairy County, Tennessee

DuB3—Dulac silt loam, 2 to 5 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 2w6fq
Elevation: 380 to 680 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 59 to 66 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Dulac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dulac

Setting

Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Silty loess over clayey alluvium

Typical profile

Ap - 0 to 2 inches: silt loam
Bt1 - 2 to 11 inches: silt loam
Bt2 - 11 to 23 inches: silty clay loam
Btx - 23 to 38 inches: silty clay loam
2Bt - 38 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 12 to 23 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.04 in/hr)
Depth to water table: About 11 to 20 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 supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

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

Minor Components

Providence

Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Tippah

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

En—Enville fine sandy loam, occasionally flooded

Map Unit Setting

National map unit symbol: c087
Elevation: 360 to 590 feet
Mean annual precipitation: 55 to 57 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Enville

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf
Parent material: Stratified loamy and/or sandy alluvium

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 60 inches: sandy loam

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 to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: NoneOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

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

Ha—Hatchie silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2vxxb
Elevation: 240 to 470 feet
Mean annual precipitation: 49 to 58 inches
Mean annual air temperature: 59 to 72 degrees F
Frost-free period: 200 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hatchie and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hatchie

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over loamy alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
Bt - 7 to 19 inches: silt loam
B/E - 19 to 26 inches: silt loam
2Btx - 26 to 60 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 22 to 30 inches to fragipan
Drainage class: Somewhat poorly drained
Runoff class: Low
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 8 to 17 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 supply, 0 to 60 inches: Low (about 4.8 inches)

Interpretive groups

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

Minor Components

luka

Percent of map unit: 5 percent
Landform: Natural levees
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Guyton

Percent of map unit: 5 percent
Landform: Fluviomarine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

lu—luka fine sandy loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2w6ff
Elevation: 310 to 470 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 59 to 72 degrees F
Frost-free period: 200 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

luka and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of luka

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy alluvium derived from sedimentary rock

Typical profile

A - 0 to 11 inches: fine sandy loam
C1 - 11 to 18 inches: fine sandy loam
C2 - 18 to 34 inches: sandy loam
Cg1 - 34 to 38 inches: fine sandy loam
Cg2 - 38 to 70 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 16 to 22 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

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

Minor Components

Bibb

Percent of map unit: 6 percent
Landform: Flood-plain steps
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Kinston

Percent of map unit: 4 percent
Landform: Drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

OkB—Oktibbeha clay loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: c08l
Elevation: 150 to 400 feet
Mean annual precipitation: 49 to 56 inches

Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Oktibbeha and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oktibbeha

Setting
Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Clayey marine deposits over residuum weathered from chalk

Typical profile
H1 - 0 to 4 inches: clay loam
H2 - 4 to 40 inches: clay
H3 - 40 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): 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 supply, 0 to 60 inches: Moderate (about 7.2 inches)

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

OsD—Oktibbeha and Sumter soils, 8 to 20 percent slopes

Map Unit Setting
National map unit symbol: c08n
Elevation: 150 to 400 feet
Mean annual precipitation: 49 to 56 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Oktibbeha and similar soils: 60 percent
Sumter and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oktibbeha

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey marine deposits over residuum weathered from chalk

Typical profile

H1 - 0 to 4 inches: clay loam
H2 - 4 to 40 inches: clay
H3 - 40 to 60 inches: clay

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately 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 supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Sumter

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey marine deposits

Typical profile

H1 - 0 to 10 inches: silty clay
H2 - 10 to 23 inches: silty clay
H3 - 23 to 32 inches: silty clay
Cr - 32 to 60 inches: bedrock

Properties and qualities

Slope: 8 to 20 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

Hydric soil rating: No

PaB—Paden silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: c08p
Elevation: 350 to 550 feet
Mean annual precipitation: 49 to 55 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Paden

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loess or silty alluvium over loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 32 inches: silt loam
H3 - 32 to 46 inches: silty clay loam
H4 - 46 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 22 to 36 inches to fragipan
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 18 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

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

PaB3—Paden silt loam, 2 to 5 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: c08q
Elevation: 350 to 550 feet
Mean annual precipitation: 49 to 55 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Paden

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loess or silty alluvium over loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 21 inches: silt loam
H3 - 21 to 41 inches: silty clay loam
H4 - 41 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 22 to 36 inches to fragipan
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 18 to 26 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

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

SeB—Silerton silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: c090
Elevation: 500 to 800 feet
Mean annual precipitation: 49 to 55 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Silerton

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Loess over clayey marine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silty clay loam
H3 - 28 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

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

SeC2—Silerton silt loam, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: c091

Elevation: 500 to 800 feet
Mean annual precipitation: 49 to 55 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Silerton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Silerton

Setting
Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Loess over clayey marine deposits

Typical profile
H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silty clay loam
H3 - 22 to 60 inches: clay

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.8 inches)

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

W—Water

Map Unit Setting
National map unit symbol: 1lm7d
Mean annual precipitation: 49 to 62 inches
Mean annual air temperature: 47 to 71 degrees F
Frost-free period: 176 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX C – Supplemental Tables

Table 1 – Non-Wetland Features within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Linear Feet within Project	HD Score	Federal Jurisdictional Status	State Jurisdictional Status
STR-1	Intermittent Stream	Start: 35.265904, -88.366872 End: 35.263796, -88.366722	851	25.75	Yes	Yes
STR-2	Intermittent / Perennial Stream	Start: 35.265238, -88.370731 End: 35.261523, -88.368481	1,918	24.25	Yes	Yes
STR-3	Intermittent Stream	Start: 35.261092, -88.369038 End: 35.261574, -88.368773	229	20.00	Yes	Yes
STR-4	Intermittent Stream	Start: 35.265350, -88.375633 End: 35.263886, -88.374391	2,879	23.75	Yes	Yes
STR-5	Intermittent Stream	Start: 35.263338, -88.374596 End: 35.263437, -88.374424	79	19.25	Yes	Yes
STR-6	Intermittent Stream	Start: 35.261626, -88.373680 End: 35.262126, -88.371565	801	22.00	Yes	Yes
STR-7	Intermittent Stream	Start: 35.260908, -88.372332 End: 35.261527, -88.372420	280	20.75	Yes	Yes
STR-8	Intermittent Stream	Start: 35.257766, -88.369098 End: 35.254549, -88.368724	1,475	21.25	Yes	Yes
STR-9 (Stratton Branch)	Intermittent Stream	Start: 35.259266, -88.375762 End: 35.253793, -88.368341	3,788	21.00	Yes	Yes
EPH-1	Ephemeral Stream	Start: 35.264521, -88.362133 End: 35.263503, -88.36144	462	12.75	No[3]	No[2] (WWC)
EPH-2	Ephemeral Stream	Start: 35.259891, -88.368502 End: 35.260656, -88.368886	301	15.00	No[3]	No[2] (WWC)
EPH-4	Ephemeral Stream	Start: 35.265009, -88.374529 End: 35.264606, -88.374656	175	13.00	No[3]	No[2] (WWC)
EPH-5	Ephemeral Stream	Start: 35.261341, -88.376677 End: 35.263000, -88.374818	997	16.50	No[3]	No[2] (WWC)
EPH-6	Ephemeral Stream	Start: 35.255132, -88.370305 End: 35.254640, -88.369592	692	13.75	Potential[1]	No[2] (WWC)
EPH-7	Ephemeral Stream	Start: 35.258937, -88.371348 End: 35.258466, -88.369612	568	13.00	Yes[3]	No[2] (WWC)
EPH-8	Ephemeral Stream	Start: 35.261000, -88.374620 End: 35.261553, -88.373705	440	13.00	No[3]	No[2] (WWC)
EPH-9	Ephemeral Stream	Start: 35.260596, -88.372695 End: 35.260977, -88.372241	249	13.50	No[3]	No[2] (WWC)
EPH-10	Ephemeral Stream	Start: 35.260154, -88.371891 End: 35.261110, -88.372245	341	13.50	No[3]	No[2] (WWC)
EPH-11	Ephemeral Stream	Start: 35.262916, -88.371635 End: 35.262400, -88.371213	321	14.50	No[3]	No[2] (WWC)
EPH-12	Ephemeral Stream	Start: 35.252622, -88.374425 End: 35.253660, -88.373083	585	14.50	No[3]	No[2] (WWC)
ES-1	Erosional Swale	Start: 35.264601, -88.366535 End: 35.264580, -88.366694	58	12.50	No[3]	No[2] (WWC)
ES-2	Erosional Swale	Start: 35.264562, -88.364876 End: 35.264304, -88.366795	540	10.00	No[3]	No[2] (WWC)

Table 1 – Non-Wetland Features within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Linear Feet within Project	HD Score	Federal Jurisdictional Status	State Jurisdictional Status
ES-3	Erosional Swale	Start: 35.261691, -88.368482 End: 35.261482, -88.368464	64	10.75	No[3]	No[2] (WWC)
ES-4	Erosional Swale	Start: 35.256396, -88.371517 End: 35.256031, -88.371134	183	11.50	No[3]	No[2] (WWC)
ES-5	Erosional Swale	Start: 35.260586, -88.371729 End: 35.260569, -88.372101	94	11.50	No[3]	No[2] (WWC)
ES-6	Erosional Swale	Start: 35.255908, -88.375686 End: 35.255873, -88.375068	229	14.00	No[3]	No[2] (WWC)
ES-7	Erosional Swale	Start: 35.256217, -88.375532 End: 35.256118, -88.375238	79	12.75	No[3]	No[2] (WWC)
ES-8	Erosional Swale	Start: 35.255191, -88.374350 End: 35.255028, -88.374392	81	12.00	No[3]	No[2] (WWC)
ES-9	Erosional Swale	Start: 35.255043, -88.374113 End: 35.254695, -88.374301	153	10.75	No[3]	No[2] (WWC)
ES-10	Erosional Swale	Start: 35.254847, -88.374340 End: 35.254773, -88.374245	63	11.75	No[3]	No[2] (WWC)
ES-11	Erosional Swale	Start: 35.253829, -88.373228 End: 35.253813, -88.373467	61	11.00	No[3]	No[2] (WWC)
D-1	Drainage Ditch	Start: 35.262758, -88.368476 End: 35.261691, -88.368505	418	--	No	No

1: Federal jurisdiction status determined by observable connection to RPW and NonRPW WOTUS or significant nexus

2: State Status determined by HD score (<19 is a WWC)

3: Federal jurisdiction status determined by issued Jurisdictional Determination Letter from the USACE

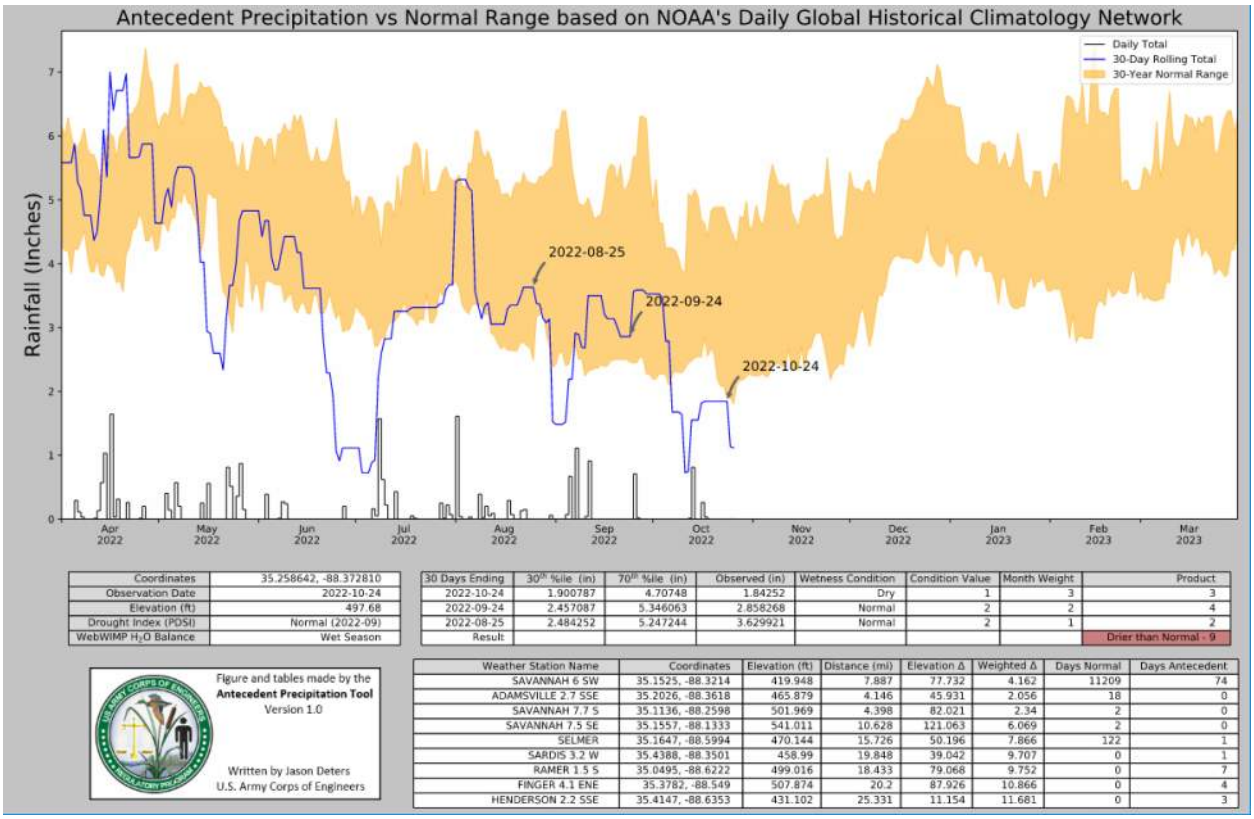
Table 2 – Wetlands within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Acreage within Project	Federal Jurisdictional Status	State Jurisdictional Status
WTL-1	PEM	35.368964, -88.368964	0.17	No[3]	Yes
WTL-2	PEM	35.255617, -88.370881	0.36	Potential[1]	Yes
WTL-3	PFO	35.254955, -88.370303	0.04	Potential[1]	Yes
WTL-4a	PFO	35.258019, -88.369216	0.43	Yes[1]	Yes
WTL-4b	PFO	35.257025, -88.368970	0.37	Yes[1]	Yes
WTL-5	PFO	35.251105, -88.373150	0.27	Potential[1]	Yes
WTL-6	PFO	35.258019, -88.369216	0.13	Yes[3]	Yes
P-1	PUB	35.264760, -88.364552	0.27	No[3]	No
P-2	PUB	35.263307, -88.374683	0.08	Yes[1]	Yes
P-3	PUB	35.258782, -88.372246	0.05	No[3]	Yes
P-4	PUB	35.253118, -88.370201	0.05	No[3]	Yes
P-5	PUB	35.252712, -88.370226	0.10	No[3]	Yes
P-6	PUB	35.259335, -88.375737	0.10	Potential[1]	Yes
P-7	PUB	35.255257, -88.370689	0.42	Potential[1]	Yes

1: Federal jurisdiction status determined by observable connection to RPW and NonRPW WOTUS, significant nexus, or is an isolated water

3: Federal jurisdiction status determined by issued Jurisdictional Determination Letter from the USACE

Table 3.1 – October 2022 Normal Weather Conditions



Coordinates	35.258642, -88.372810
Observation Date	2022-10-24
Elevation (ft)	497.68
Drought Index (PDSI)	Normal (2022-09)
WebWIMP H_2O Balance	Wet Season

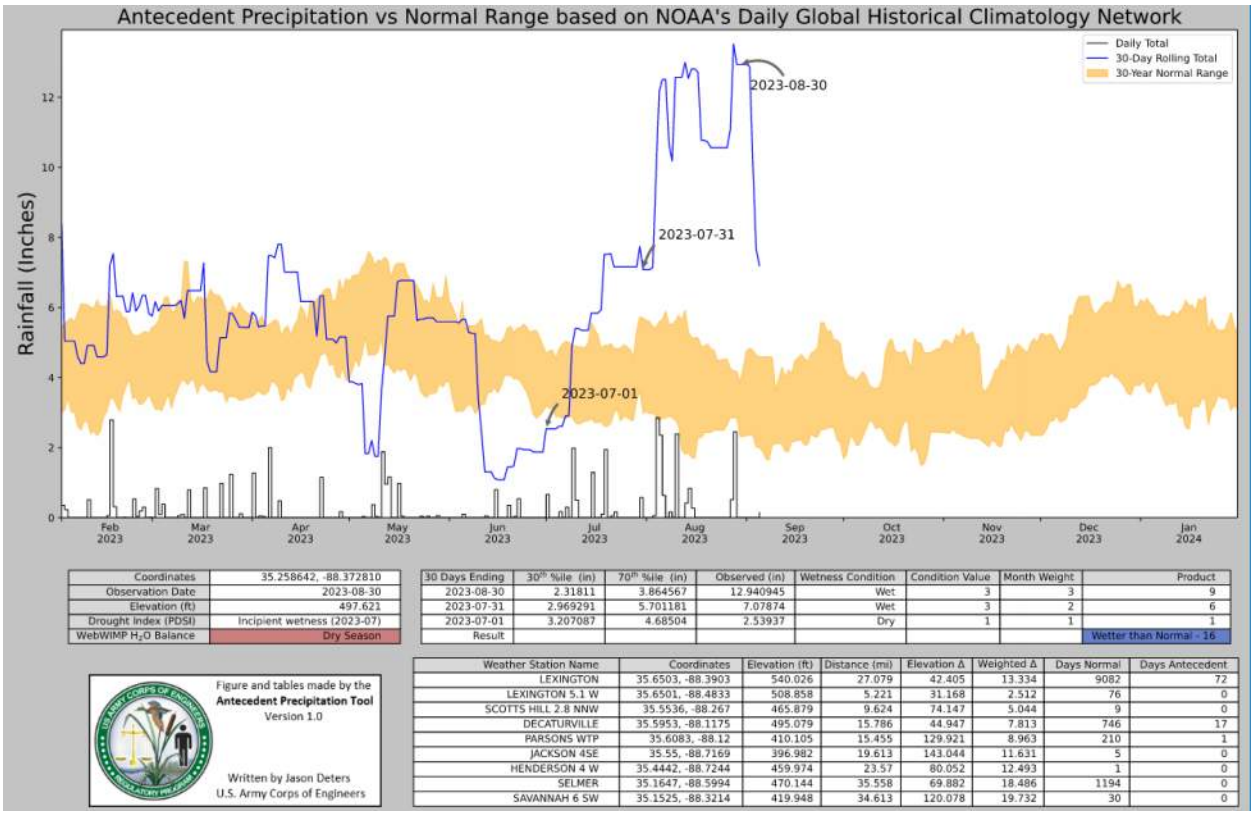
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-10-24	1.900787	4.70748	1.84252	Dry	1	3	3
2022-09-24	2.457087	5.346063	2.858268	Normal	2	2	4
2022-08-25	2.484252	5.247244	3.629921	Normal	2	1	2
Result							Drier than Normal - 9

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
SAVANNAH 6 SW	35.1525, -88.3214	419.948	7.887	77.732	4.162	11209	74
ADAMSVILLE 2.7 SSE	35.2026, -88.3618	465.879	4.146	45.931	2.056	18	0
SAVANNAH 7.7 S	35.1136, -88.2598	501.969	4.398	82.021	2.34	2	0
SAVANNAH 7.5 SE	35.1557, -88.1333	541.011	10.628	121.063	6.069	2	0
SELMER	35.1647, -88.5994	470.144	15.726	50.196	7.866	122	1
SARDIS 3.2 W	35.4388, -88.3501	458.99	19.848	39.042	9.707	0	1
RAMER 1.5 S	35.0495, -88.6222	499.016	18.433	79.068	9.752	0	7
FINGER 4.1 ENE	35.3782, -88.549	507.874	20.2	87.926	10.866	0	4
HENDERSON 2.2 SSE	35.4147, -88.6353	431.102	25.331	11.154	11.681	0	3

Table 3.2 – August 2023 Normal Weather Conditions



Coordinates	35.258642, -88.372810
Observation Date	2023-08-30
Elevation (ft)	497.621
Drought Index (PDSI)	Incipient wetness (2023-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-30	2.31811	3.864567	12.940945	Wet	3	3	9
2023-07-31	2.969291	5.701181	7.07874	Wet	3	2	6
2023-07-01	3.207087	4.68504	2.53937	Dry	1	1	1
Result							Wetter than Normal - 16

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
LEXINGTON	35.6503, -88.3903	540.026	27.079	42.405	13.334	9082	72
LEXINGTON 5.1 W	35.6501, -88.4833	508.858	5.221	31.168	2.512	76	0
SCOTTS HILL 2.8 NNW	35.5536, -88.267	465.879	9.624	74.147	5.044	9	0
DECATURVILLE	35.5953, -88.1175	495.079	15.786	44.947	7.813	746	17
PARSONS WTP	35.6083, -88.12	410.105	15.455	129.921	8.963	210	1
JACKSON 4SE	35.55, -88.7169	396.982	19.613	143.044	11.631	5	0
HENDERSON 4 W	35.4442, -88.7244	459.974	23.57	80.052	12.493	1	0
SELMER	35.1647, -88.5994	470.144	35.558	69.882	18.486	1194	0
SAVANNAH 6 SW	35.1525, -88.3214	419.948	34.613	120.078	19.732	30	0

Table 4 – Observed Wildlife within the Project Area

Common Name	Scientific Name
Birds	
American robin	*Turdus migratorius*
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tristis*
Barred owl	*Strix varia*
Barn swallow	*Hirundo rustica*
Blue jay	*Cyanocitta cristata*
Brown Thrasher	*Toxostoma rufum*
Carolina chickadee	*Poecile carolinensis*
Carolina wren	*Thryothorus ludovicianus*
Cooper's hawk	*Accipiter cooperii*
Dark-eyed junco	*Junco hyemalis*
Downy woodpecker	*Dryobates pubescens*
Eastern bluebird	*Sialia sialis*
Eastern towhee	*Pipilo erythrophthalmus*
Eastern phoebe	*Sayornis phoebe*
European starling	*Sturnus vulgaris*
Field sparrow	*Spizella pusilla*
Great Horned Owl	*Bubo virginianus*
Green heron	*Butorides virescens*
House finch	*Haemorhous mexicanus*
Louisiana waterthrush	*Parkesia motacilla*
Mourning dove	*Zenaida macroura*
Northern cardinal	*Cardinalis cardinalis*
Pileated woodpecker	*Dryocopus pileatus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Red-shouldered hawk	*Buteo lineatus*
Red tailed hawk	*Buteo jamaicensis*
Tufted titmouse	*Baeolophus bicolor*
White-breasted nuthatch	*Sitta carolinensis*
White-throated sparrow	*Zonotrichia albicollis*
Wild Turkey	*Meleagris gallopavo*
Yellow-Belied sapsucker	*Sphyrapicus varius*
Yellow-rumped warbler	*Setophaga coronata*

Common Name	Scientific Name
Mammals	
Eastern chipmunk	*Tamias striatus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern red bat	*Lasiurus borealis*
Evening bat	*Nycticeius humeralis*
Groundhog	*Marmota monax*
White-tailed deer	*Odocoileus virginianus*
Racoon	*Procyonidae lotor*
Red fox	*Vulpes vulpes fulvus*
Nine banded armadillo	*Dasypus novemcinctus*
Coyote	*Canis latrans*
Virginia opossum	*Didelphis virginiana*
Reptiles	
Black racer	*Coluber constrictor*
Eastern box turtle	*Terrapene carolina carolina*
Five-lined skink	*Plestiodon fasciatus*
Ground skink	*Scincella lateralis*
Northern water snake	*Nerodia sipedon*
Amphibians	
American toad	*Anaxyrus americanus*
Gray treefrog	*Hyla versicolor*
Green frog	*Lithobates clamitans*
Northern cricket frog	*Acris crepitans*
Southern leopard frog	*Lithobates sphenocephalus*
Spring peeper	*Pseudacris crucifer*
Upland chorus frog	*Pseudacris feriarum*
Invertebrates	
Cloudless sulfur	*Phoebis sennae*

Table 5 – Listed Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present	Observed
Mammal						
Gray bat	*Myotis grisescens*	Endangered	Endangered	Year-round resident in caves which mature females will roost in. During the summer months males and non-maternal females will utilize forested areas or anthropogenic resources.	No	No
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	Yes (Roosting)	No
Tricolored bat	*Perimyotis subflavus*	Threatened	Proposed Endangered	Hibernates during winter in caves, or occasionally in abandoned mines. Summer roosting season in late spring and summer months. Females will roost in leaf clusters in living or dead trees, as well as utilize cavities in living or dead trees and anthropogenic structures	Yes (Roosting)	No
Bird						
Whooping crane	*Grus americana*	N/A	Experimental Population, Non-Essential	Roost in shallow, freshwater wetlands with tall emergent vegetation such as bulrushes, cattails, and sedges. May venture into farmland to feed during migration. The only remaining population spends the winter in Aransas National Wildlife Refuge in Texas.	Yes	No
Reptile						
Alligator snapping turtle	*Macrochelys temminckii*	Threatened	Proposed Threatened	Slow moving, deep water of rivers, sloughs, oxbows, swamps, and lakes; middle and west Tennessee	No	No
Fish						
Highfin carpsucker	*Carpiodes velifer*	Deemed Need of Management		Known to inhabit medium to large rivers, mostly in Tennessee River drainage.	No	No
Flame chub	*Hemitremia flammea*	Deemed Need of Management		Springs and spring-fed streams with lush aquatic vegetation; Tennessee and middle Cumberland River watersheds.	No	No
Blue sucker	*Cycleptus elongatus*	Threatened		Swift waters over firm substrates in big rivers, known to occur in the Tennessee River drainage.	No	No
Crayfish						
Hardin crayfish	*Orconectes (Faxonius) wrighti*	Endangered	Under Review	Small-medium sized streams with cobble-sand substrates, under rocks or in leaf litter; western tributaries of the Tennessee River in Hardin and McNairy Counties.	No	No
Mollusk						
Spectaclecase	*Cumberlandia monodonta*	Endangered	Endangered	Large rivers in firm mud, beneath rock slabs, between boulders, and under tree roots. Known to inhabit the Tennessee River drainage.	No	No
Fanshell	*Cyprogenia stegaria*	Endangered	Endangered	Medium to large streams and rivers with coarse sand and gravel substrates; Cumberland and Tennessee River systems.	No	No

Table 5 – Listed Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present	Observed
Cracking pearlymussel	*Hemistena lata*	Endangered	Endangered	Medium-sized rivers of moderate current, deeply buried in mud, sand, gravel, and cobble substrates; Tennessee and Cumberland River systems.	No	No
Pink mucket	*Lampsilis abrupta*	Endangered	Endangered	Large rivers, prefers sand-gravel or rocky substrates with moderate to strong current; Tennessee and Cumberland River systems.	No	No
Ring pink	*Obovaria retusa*	Endangered	Endangered	Large rivers in gravel and sand bars; Tennessee and Cumberland River watersheds; many historic locations currently inundated	No	No
Round hickorynut	*Obovaria subrotunda*	Threatened	Threatened	Medium-large rivers in sand and gravel substrate with moderate flow within the Tennessee River	No	No
White wartyback	*Plethobasus cicatricosus*	Endangered	Endangered	Presumed to inhabit shoals and riffle in large rivers, Tennessee and Cumberland River systems. Very rare and possibly extirpated in TN.	No	No
Orangefoot pimpleback	*Plethobasus cooperianus*	Endangered	Endangered	Large rivers in sand-gravel-cobble substrates in riffles and shoals in deep flowing water; Cumberland and Tennessee river systems.	No	No
Sheepnose	*Plethobasus cyphyus*	Endangered	Endangered	Large to medium-sized rivers, in riffles and coarse sand/gravel substrate; Tennessee and Cumberland River systems.	No	No
Clubshell	*Pleurobema clava*	Endangered	Endangered	Small to medium-sized rivers and streams; deeply buried in sand/fine gravel or in clean, coarse sand/gravel runs; lower Cumberland and Tennessee rivers.	No	No
Rough pigtoe	*Pleurobema plenum*	Endangered	Endangered	Medium to large rivers in sand, gravel, and cobble substrates of shoals; Tennessee and Cumberland River systems.	No	No
Slabside pearlymussel	*Pleuronaia dolabelloides*	Endangered	Endangered	Large creeks to moderate sized rivers, in riffle/shoals of sand, fine gravel, and cobble substrates with moderate current; Tennessee River watershed.	No	No
Shortspire hornsnail	*Pleurocera curta*		Under Review	Prefer large rivers and are primarily found on gravel, cobble, bedrock, and mud in moderate currents.	No	No
Rabbitsfoot	*Quadrula cylindrica*		Threatened	Small to medium sized rivers of moderate current with clear, relatively shallow water and a mixture of sand and gravel substrates.	No	No
Longsolid	*Fusconaia subrotuda*		Threatened	Prefers in small streams to large rivers, and prefers a mixture of sand, gravel, and cobble substrates	No	No
Insect						
Monarch butterfly	*Danaus plexippus*		Candidate	Fallow fields or prairies with a presence of milkweed (*Asclepias spp.*) host plants for larval development.	Yes	Yes
Plant						
Price's potato-bean	*Apios priceana*	Endangered	Threatened	Thrives in open, wooded areas, often in forest gaps or along forest edges. Prefers mesic areas in open, low areas near streams or along the banks of streams and rivers. Grows in well-drained loams over limestone on rocky, sloping terrain.	No	No

Table 5 – Listed Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present	Observed
Whorled sunflower	*Helianthus verticillatus*	Endangered	Endangered	Grows in remnant prairie or woodland sites, as well as along roadsides, railroad tracks, and agricultural fields in moist soil	Yes	No

APPENDIX D – Wetland and Stream Determination Data Forms

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-1	Date/Time: 10/24/22/10:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, Hardin County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.265904, -88.366872
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.263796, -88.366722
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.42 sq mi (USGS Stream Stats)	County: Hardin
Soil Type(s) / Geology : BpE2: Boswell soils, 12 to 25 percent slopes, eroded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 25.75

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Channel flow through culvert under road at beginning of reach, adjacent to soy field

Waterbody Name: STR-1

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 16.25)	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 = 2.00)	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 = 7.50)	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 = 25.75

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

Notes :

- Moderate/strong bed and bank throughout reach with little sinuosity
- Riffle/glide/pool sequences present as well as sorting of cobble, gravel, and sand
- Fairly incised with weak connection to floodplain and moderate depositional bars and benches
- Weak headcuts and no grade controls observed
- Some recent alluvial deposits but little flow this season
- No flowing water but hydric soils present
- Very small amount of fibrous roots and no terrestrial vegetation in channel
- Weak/moderate macrobenthos, caddisfly casings found after flipping only five rocks
- Small amount of hydrophytes in channel, some spiderwort observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-2	Date/Time: 10/24/22/14:30
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.265238, -88.370731 End: 35.261523, -88.368481
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.33 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : En: Dexter loam, 8 to 12 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 24.25

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature fairly incised throughout reach, crosses dirt road used to access soy field near end of reach

Waterbody Name: STR-2

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 15.50)	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 = 2.25)	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 = 6.50)	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 = 24.25

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

Notes :

- Moderate/strong bed and bank throughout reach with some sinuosity
- Riffle-glide-pool sequences present with weak/moderate sorting of clay hard pan, sand, and silt
- Fairly incised, weak connection to floodplain with some depositional bars and benches present
- Weak/moderate recent alluvial deposits, however little flow this season
- Two or three small headcuts throughout reach with some weak grade controls and wrack lines
- No flowing water observed but hydric soils present throughout reach
- Very weak fibrous roots and no terrestrial vegetation observed in channel
- Remnant caddisfly casings found in a few rock flips
- No wetland vegetation present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-3	Date/Time: 10/24/22/14:42
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.261092, -88.369038 End: 35.261574, -88.368773
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Dexter loam, 8 to 12 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 20.00

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely affiliated with impounded hydrology of WTL-1, potential groundwater seep

Waterbody Name: STR-3

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 12.50)	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 = 2.00)	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 = 5.50)	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 = 20.00

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

Notes :

- Weak/moderate bed and bank throughout reach with moderate sinuosity
- Riffle-glide-pool sequences present with weak/moderate sorting of sand and silt
- Fairly incised, weak connection to floodplain with some depositional bars and benches present
- Weak/moderate recent alluvial deposits, however little flow this season
- Five small headcuts throughout reach with some weak grade controls and wrack lines
- No flowing water observed but hydric soils present throughout reach
- Very weak fibrous roots and no terrestrial vegetation observed in channel
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-4	Date/Time: 10/24/22/16:30
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.265350, -88.375633
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.263886, -88.374391
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.16 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 23.75

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely affiliated with impounded hydrology of offsite pond and potential groundwater seed
- Eventually forms confluence with STR-2

Waterbody Name: STR-4

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 16.25)	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 = 2.00)	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 = 5.50)	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 = 23.75

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

Notes :

- Moderate bed and bank throughout reach with moderate sinuosity
- Riffle-glide-pool sequences observed with some sorting of sand and silt
- Weak/moderate floodplain and some depositional bar and benches
- Weak/moderate recent alluvial deposits despite little flow this season
- Starts at a moderate headcut and has five smaller headcuts throughout with weak grade controls
- No flowing water observed but hydric soils present throughout reach
- Very weak fibrous roots observed and no terrestrial vegetation growing in channel
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-5	Date/Time: 10/24/22/17:14
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.263338, -88.374596
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.263437, -88.374424
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 19.25

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely affiliated with blown berm wall of P-2 and potential groundwater seep
- Forms confluence with STR-4 at end of reach

Waterbody Name: STR-5

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 11.75)	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 = 2.00)	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 = 5.50)	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 = 19.25

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

Notes :

- Moderate bed and bank throughout reach with some sinuosity
- Weak riffle-glide sequences with some sorting of sand and silt
- Weak/moderate connection to floodplain with loss of channel at lower reach
- Weak depositional bars and benches, as well as wrack lines
- Weak/moderate recent alluvial deposits despite little flow this season
- Starts at a moderate headcut and has roots acting as weak grade controls
- No flowing water but hydric soils observed throughout reach
- Very weak amount of fibrous roots and no terrestrial vegetation present in channel
- No aquatic biota or wetland plants

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-6	Date/Time: 10/25/22/15:20
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.261626, -88.373680 End: 35.262126, -88.371565
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.06 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 22.00

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely affiliated with a potential groundwater seep
- Forms confluence with STR-4

Waterbody Name: STR-6

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 14.00)	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 = 2.00)	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 = 6.00)	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 = 22.00

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

Notes :

- Moderate bed and bank throughout reach with moderate sinuosity
- Mostly weak riffle-glide sequences with weak/moderate depositional bars and benches
- Moderate sorting of sand and silt as well as recent alluvial deposits despite little flow this season
- Weak/moderate connection to floodplain at lower reach with loss of channel
- Starts at a moderate headcut and has others further downslope with a few roots acting as grade controls
- No flowing water but hydric soils present throughout reach
- Very weak amount of fibrous roots and no terrestrial vegetation in channel
- Some remnant caddisfly casings observed
- No wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-7	Date/Time: 10/25/22/15:40
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.260908, -88.372332 End: 35.261527, -88.372420
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.04 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : SeB: Silerton silt loam, 2 to 5 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 20.75

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely affiliated with a potential groundwater seep
- Forms confluence with STR-6

Waterbody Name: STR-7

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 13.25)	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 = 2.00)	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 = 5.50)	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 = 20.75

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

Notes :

- Moderate bed and bank throughout reach with moderate sinuosity
- Mostly weak riffle-glide sequences with weak depositional bars and benches
- Moderate sorting of sand and silt as well as recent alluvial deposits despite little flow this season
- Weak connection to floodplain, fairly incised
- Starts at a moderate headcut and has 2 others further downslope with a few roots acting as grade controls
- No flowing water but hydric soils present throughout reach
- Very weak amount of fibrous roots and no terrestrial vegetation in channel
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-8	Date/Time: 10/25/22/17:35
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.257766, -88.369098 End: 35.254549, -88.368724
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : 0.05 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : Iu: Iuka fine sandy loam, 0 to 2 percent slopes, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 21.25

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Feature likely drains excess runoff from adjacent soy field and WTL-4
- Enters culvert and goes outside of project study area limits before eventually forming confluence with Stratton Branch

Waterbody Name: STR-8

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 13.00)	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 = 2.25)	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 = 6.00)	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 = 21.25

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

Notes :

- Mostly moderate bed and bank throughout reach but brief loss mid reach
- Weak/moderate sinuosity with mostly riffle-glide sequences, some pools toward end of reach
- Moderate sorting of sand and silt with weak/moderate wrack lines
- Moderate connection to floodplain, floods into loss channel portion and WTL-4 at mid reach
- Some depositional bars and benches as well as recent alluvial deposits
- Starts at small headcut and has 2-3 others downslope with roots acting as grade controls
- No flowing water but hydric soils present throughout reach
- Very weak amount of fibrous roots and no terrestrial vegetation in channel
- No aquatic biota
- Weak amount of wetland plants such as Japanese silt grass present in channel

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-9	Date/Time: 10/26/22/10:30
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.259266, -88.375762 End: 35.253793, -88.368341
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet [ ] elevated [ ] average [ ] low [✓] abnormally dry [ ] unknown [ ] Source of recent & seasonal precip data :	
Watershed Size : 0.23 sq mi (USGS Stream Stats)	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 21.00

Secondary Indicator Score (if applicable) = STREAM

Justification / Notes :

Overall hydrologic determination is STREAM based on secondary indicator scores

- Stratton Branch
- Receives runoff from surrounding agriculture fields
- Begins below farm pond outfall

Waterbody Name: STR-9

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 13.25)	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 = 2.25)	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 = 5.50)	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 = 21.00

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

Notes :

- Moderate/strong bed and bank throughout reach with moderate sinuosity
- Riffle-glide-pool sequences observed with some sorting of sand and silt
- Weak/moderate connection to floodplain at upper reach, more incised at end of reach
- Weak/moderate depositional bars and benches as well as recent alluvial deposits
- Starts at a small headcut, has 2-3 others throughout reach with roots acting as grade controls
- No flowing water present but hydric soils observed throughout reach
- Very weak amount of fibrous roots and no terrestrial vegetation in channel
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-1	Date/Time: 10/24/22/12:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, Hardin County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.264521, -88.362133 End: 35.263503, -88.361441
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: Hardin
Soil Type(s) / Geology : DeD: Dexter loam, 8 to 12 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 12.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature drains the surrounding hilly landscape

Waterbody Name: EPH-1

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.00)	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 = 0.50)	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 = 3.25)	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 = 12.75

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

Notes :

- Weak/moderate bed and bank, intermittent loss of channel mid and lower reach
- Some sinuosity with mostly glide/riffle sequences
- Weak sorting of sand and silt as well as a few depositional bars and benches
- Weak/moderate floodplain, floods into loss channel portions
- One small headcut at beginning of reach and two other throughout with weak grade controls
-No flowing water or hydric soils present
- Moderate amount of fibrous roots and a few terrestrial plants in channel
- No aquatic biota
- A few hydrophytes present in channel such as Japanese silt grass

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-2	Date/Time: 10/24/22/14:27
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.259891, -88.368502
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.260656, -88.368886
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 15.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature drains the surrounding hilly landscape, reach end at WTL-1

Waterbody Name: EPH-2

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 10.50)	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 = 0.50)	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 = 4.00)	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 = 15.00

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

Notes :

- Weak/moderate bed and bank, intermittent loss of channel mid and lower reach
- Moderate sinuosity throughout, weak sorting of sand and silt
- Weak riffle-glide sequences present with a few minor depositional bars and benches
- Weak/moderate floodplain, floods into loss channel portions
- One small headcut at start and four to five others throughout with weak grade controls
- No flowing water or hydric soils present
- Weak/moderate amount of fibrous roots and weak terrestrial vegetation (chasmanthium sessiliflorum)
- No aquatic biota
- Very weak presence of wetland plants (Japanese silt grass)

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-4	Date/Time: 10/24/22/16:35
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.265009, -88.374529
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.264606, -88.374656
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature drains surrounding upland forest into EPH-3

Waterbody Name: EPH-4

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.00)	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 = 0.50)	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 = 3.50)	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 = 13.00

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

Notes :

- Weak/moderate bed and bank with intermittent loss of channel mid reach
- Some sinuosity with weak sorting of sand and silt
- Weak riffle-glide sequences and wrack lines present
- Weak/moderate connection to floodplain, floods into loss channel portions
- Starts at a small headcut and had four small headcuts throughout rest of reach
- Moderate grade controls observed in the form of roots
- No flowing water or hydric soils present
- Weak/moderate fibrous roots present in channel
- Weak terrestrial vegetation in the channel (chasmanthium sessiliflorum and Christmas fern)
- No aquatic biota or wetland plants

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-5	Date/Time: 10/24/22/17:00
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.261341, -88.376677
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.263000, -88.374818
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 16.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature drains surrounding upland forest, ends at P-2

Waterbody Name: EPH-5

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 10.00)	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 = 2.00)	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 = 4.50)	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 = 16.50

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

Notes :

- Weak/moderate bed and bank with intermittent loss of channel mid reach
- Moderate sinuosity with weak sorting of sand and silt
- Weak riffle-glide sequences and wrack lines present
- Weak/moderate connection to floodplain, floods into loss channel portions
- Starts at a small headcut and had six small headcuts throughout rest of reach
- Moderate grade controls observed in the form of roots
- No flowing water, hydric soils present only in lower portion of reach
- Weak/moderate fibrous and no terrestrial plants present in channel
- No aquatic biota or wetland plants

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-6	Date/Time: 10/25/22/08:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.255132, -88.370305
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.254640, -88.369592
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : PaB3: Paden silt loam, 2 to 5 percent slopes, severely eroded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature drains portion of WTL-2 and excess waters from WTL-3

Waterbody Name: EPH-6

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 8.75)	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	✓ 2	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	✓ 2	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 = 2.00)	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 = 3.00)	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 = 13.75

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

Notes :

- Bed and bank weak/moderate throughout, intermittent loss of channel mid reach
- Some sinuosity and weak wrack lines
- Weak riffle-glide sequences and weak sorting of sand and silt
- Moderate connection to floodplain, floods into loss channel portions and WTL-3
- Starts at a small headcut and has a moderate amount of roots acting as grade controls
- No flowing water present but hydric soils observed only in lower reach
- Moderate amount of fibrous roots in channel
- Weak amount of terrestrial vegetation (privet) present in channel
- No aquatic biota or wetland plants observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-7	Date/Time: 10/25/22/10:05
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.258937, -88.371348
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	End: 35.258466, -88.369612
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : <0.01 sq mi	County: McNairy
Soil Type(s) / Geology : PaB3: Paden silt loam, 2 to 5 percent slopes, severely eroded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from surrounding soy field into WTL-4

Waterbody Name: EPH-7

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 7.50)	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 = 2.00)	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 = 3.50)	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 = 13.00

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

Notes :

- Weak/moderate bed and bank, intermittent loss of channel mid and lower reach
- Weak sinuosity with weak riffle-glide sequences
- Weak sorting of sand and silt and very weak recent alluvial deposits
- Weak/moderate connection to floodplain, floods into loss channel portions and WTI-4
- One very small headcut at beginning of reach and moderate amount of roots acting as grade controls throughout
- No flowing water but hydric soil observed only in lower reach
- Moderate amount of fibrous roots and weak amount of terrestrial vegetation (privet) in channel
- No aquatic biota
- Weak amount of wetland plants (Japanese silt grass) present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-8	Date/Time: 10/25/22/15:15
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.261000, -88.374620 End: 35.261553, -88.373705
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Ends at headcut where STR-6 begins

Waterbody Name: EPH-8

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.25)	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 = 0.75)	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 = 3.00)	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 = 13.00

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

Notes :

- Weak/moderate bed and bank, intermittent loss of channel mid and lower reach
- Weak/moderate sinuosity with weak riffle-glide sequences
- Weak sorting of sand and silt and very weak recent alluvial deposits
- Weak/moderate connection to floodplain, floods into loss channel portions
- Starts at a small headcut then has 2-3 more small headcuts throughout reach with log jam grade controls
- No flowing water or hydric soil observed
- Moderate amount of fibrous roots and weak amount of terrestrial vegetation (privet and cat briar) in channel
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-9	Date/Time: 10/25/22/15:50
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.260596, -88.372695 End: 35.260977, -88.372241
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : SeB: Silerton silt loam, 2 to 5 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Forms confluence with EPH-10

Waterbody Name: EPH-9

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.75)	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 = 0.75)	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 = 3.00)	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 = 13.50

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

Notes :

- Weak/moderate bed and bank with intermittent loss of channel mid reach
- Moderate sinuosity and some wrack lines
- Weak riffle-glide sequences with weak sorting of sand and silt
- Weak/moderate connection to floodplain, floods into loss channel portions
- Very weak recent alluvial deposits
- Starts at a small headcut and has two small ones downslope with log jam grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in the channel
- Weak terrestrial vegetation observed such as chasmanthium sessiliflorum and Christmas fern
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-10	Date/Time: 10/25/22/15:55
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.260154, -88.371891 End: 35.261110, -88.372245
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : SeB: Silerton silt loam, 2 to 5 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 13.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from adjacent soy field
- Transitions into STR-7 at end of reach

Waterbody Name: EPH-10

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.75)	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 = 0.75)	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 = 3.00)	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 = 13.50

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

Notes :

- Weak/moderate bed and bank with intermittent loss of channel mid reach
- Moderate sinuosity and some wrack lines
- Weak riffle-glide sequences with weak sorting of sand and silt
- Weak/moderate connection to floodplain, floods into loss channel portions
- Very weak recent alluvial deposits
- Starts at a small headcut and has two small ones downslope with log jam grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in the channel
- Weak terrestrial vegetation observed such as chasmanthium sessiliflorum
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-11	Date/Time: 10/25/22/16:30
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.262916, -88.371635
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	End: 35.262400, -88.371213
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 14.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Forms confluence with STR-4 at end of reach

Waterbody Name: EPH-11

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 10.75)	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 = 0.75)	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 = 3.00)	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 = 14.50

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

Notes :

- Moderate bed and bank throughout reach with moderate sinuosity
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, fairly incised
- Weak depositional bars and benches with very weak recent alluvial deposits
- Starts at a small headcut and has 2-3 further downslope with some roots acting as grade controls
- Weak/moderate wrack lines throughout reach
- No flowing water or hydric soils present
- Moderate amount of fibrous roots observed in channel
- Weak terrestrial vegetation such as chasmanthium sessiliflorum and Christmas Fern
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-12	Date/Time: 10/26/22/09:20
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.252622, -88.374425
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	End: 35.253660, -88.373083
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 14.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Likely historically channelized
- Forms confluence with Stratton Branch at end of reach

Waterbody Name: EPH-12

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 10.00)	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 = 1.00)	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 = 3.50)	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 = 14.50

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

Notes :

- Weak/moderate bed and bank with intermittent loss throughout the entire reach
- Weak/moderate sinuosity with moderate wrack lines
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, somewhat incised and historically channelized
- Weak depositional bars and benches and very weak recent alluvial deposits
- Starts at a small headcut and has 2 other small ones downslope with a moderate amount of root grade controls
- No flowing water or hydric soils present
- Moderate amount of fibrous roots in the channel and very weak amount of terrestrial vegetation (privet)
- No aquatic biota or wetland plants observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-1	Date/Time: 10/24/22/11:00
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, Hardin County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.264601, -88.366535 End: 35.264580, -88.366694
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : <0.01 sq mi	County: Hardin
Soil Type(s) / Geology : Vc: Vicksburg loam, local alluvium (Ochlockonee)	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 12.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Erosional swale originating at edge of adjacent soy field

Waterbody Name: ES-1

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 8.50)	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 = 0.50)	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 = 3.50)	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 = 12.50

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

Notes :

- Moderate bed and bank throughout short reach with some sinuosity
- Weak riffle-pool sequences, mostly riffle
- Weak sorting of silt and sand with a few wrack lines
- Fairly incised, weak connection to floodplain and few depositional bars and benches
- One small headcut at beginning of reach with no grade controls
- No flowing water or hydric soils observed
- Weak/moderate fibrous roots and some terrestrial vegetation in channel such as heath aster
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-2	Date/Time: 10/24/22/12:00
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, Hardin County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.264562, -88.364876 End: 35.264304, -88.366795
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: Hardin
Soil Type(s) / Geology : DcC3: Dexter clay loam, 5 to 8 percent slopes, severely eroded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 10.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature is likely a trickle flow from bermwall of P-1

Waterbody Name: ES-2

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 6.00)	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 = 2.00)	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 = 2.00)	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 = 10.00

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

Notes :

- Weak bed and bank throughout reach but intensifies near confluence with STR-1
- Weak sinuosity with mostly glide sequences throughout
- Very weak sorting of sand and silt
- Barely present floodplain, floods into adjacent soy field
- One headcut present at beginning of reach and no grade controls
- No flowing water but hydric soils present at beginning of reach
- Moderate fibrous roots and terrestrial vegetation present, sweetgum trees in channel
- No aquatic biota or wetland plants observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-3	Date/Time: 10/24/22/13:40
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.261691, -88.368482 End: 35.261482, -88.368464
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Dexter loam, 8 to 12 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 10.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature receives excess runoff from D-1 and conveys to STR-2

Waterbody Name: ES-3

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 5.75)	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 = 2.00)	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 = 3.00)	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 = 10.75

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

Notes :

- Weak bed and bank at start of reach but intensifies near confluence with STR-2
- Weak sinuosity and sorting of sand and silt
- Weak riffle-pool sequence, mostly glide
- One small headcut at beginning of feature and no grade controls
- No flowing water but hydric soils present at beginning of reach
- Moderate fibrous roots and weak terrestrial vegetation in channel (snakeroot)
- No aquatic biota or wetland plants

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-4	Date/Time: 10/25/22/09:10
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.256396, -88.371517 End: 35.256031, -88.371134
Previous Rainfall (7-days) : 0.00 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : <0.01 sq mi	County: McNairy
Soil Type(s) / Geology : PaB3: Paden silt loam, 2 to 5 percent slopes, severely eroded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 11.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature receives excess runoff from adjacent soy field

Waterbody Name: ES-4

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 = 0.75)	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 = 4.00)	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 = 11.50

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

Notes :

- Bed and bank weak/moderate, stronger at top of reach and dissipates to overland sheet flow
- Weak sinuosity and some wrack lines
- Mostly glide sequence and weak sorting of sand and silt
- Starts at a small headcut and has weak grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in channel throughout reach
- No aquatic biota, terrestrial vegetation, or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-5	Date/Time: 10/25/22/16:05
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.260586, -88.371729 End: 35.260569, -88.372101
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : SeB: Silerton silt loam, 2 to 5 percent slopes	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 11.50

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature receives excess runoff from soy field
- Forms confluence with EPH-10 at end of reach

Waterbody Name: ES-5

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 = 0.75)	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 = 4.00)	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 = 11.50

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

Notes :

- Weak/moderate bed and bank, stronger at bottom of reach prior to confluence with EPH-10
- Weak sinuosity and some wrack lines
- Mostly glide sequences with weak sorting of sand and silt
- One small headcut mid reach and weak grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in the channel throughout
- No terrestrial vegetation, aquatic biota, or wetland plants observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-6	Date/Time: 10/26/22/09:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.255908, -88.375686
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	End: 35.255873, -88.375068
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 14.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Likely historically channelized
- Forms confluence with Stratton Branch at end of reach

Waterbody Name: ES-6

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.75)	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 = 0.75)	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 = 3.50)	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 = 14.00

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

Notes :

- Moderate bed and bank with weak sinuosity throughout reach
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised and historically channelized
- Weak depositional bars and benches and very weak recent alluvial deposits
- Starts at a small headcut with 4 small ones downslope and a moderate amount of roots acting as grade controls
- No flowing water or hydric soils present
- Moderate amount of fibrous roots in channel
- Very weak terrestrial vegetation such as privet in the channel
- No aquatic biota or wetland plants observed

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-7	Date/Time: 10/26/22/10:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.256217, -88.375532 End: 35.256118, -88.375238
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet [ ] elevated [ ] average [ ] low [✓] abnormally dry [ ] unknown [ ] Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 12.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from surrounding pine stand
- Potential floodplain to Stratton Branch

Waterbody Name: ES-7

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 9.25)	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 = 0.50)	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 = 3.00)	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 = 12.75

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

Notes :

- Moderate bed and bank throughout reach with weak sinuosity
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised
- Weak depositional bars and benches and very weak recent alluvial deposits
- Starts at a small headcut and has another small headcut downslope
- Moderate amount of roots acting as grade controls
- No flowing water, hydric soils only observed at very end of reach near confluence with Stratton Branch
- Moderate amount of fibrous roots in channel
- Weak terrestrial vegetation such as Christmas fern and green ash observed
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-8	Date/Time: 10/26/22/11:20
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.255191, -88.374350
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	End: 35.255028, -88.374392
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 12.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from soy field
- Likely goes subterranean into Stratton Branch

Waterbody Name: ES-8

Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 8.50)	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 = 0.50)	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 = 3.00)	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 = 12.00

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

Notes :

- Weak/moderate bed and bank throughout reach with weak sinuosity, recently eroded channel
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised
- Weak depositional bars and benches and weak recent alluvial deposits
- Starts at a small headcut and has another small headcut downslope
- Weak amount of roots acting as grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in channel
- Weak terrestrial vegetation such as Christmas fern and green ash observed
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-9	Date/Time: 10/26/22/11:25
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.255043, -88.374113 End: 35.254695, -88.374301
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 10.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from adjacent soy field and upland area
- Forms confluence with Stratton Branch
- Potentially historically channelized

Waterbody Name: ES-9

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 7.25)	Absent	Weak	Moderate	Strong
1. Continuous bed and bank	0	✓	2	3
2. Sinuous channel	0	✓	2	3
3. In-channel structure: riffle-pool sequences	0	✓	2	3
4. Sorting of soil textures or other substrate	0	✓	2	3
5. Active/relic floodplain	0	0.5	1	1.5
6. Depositional bars or benches	0	✓	2	3
7. Braided channel	✓	1	2	3
8. Recent alluvial deposits	0	✓	0.5	1	1.5
9. Natural levees	✓	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 = 0.50)	Absent	Weak	Moderate	Strong
14. Subsurface flow/discharge into channel	✓	1	2	3
15. Water in channel and >48 hours since sig. rain	✓	1	2	3
16. Leaf litter in channel (January – September)	1.5	1	0.5	0
17. Sediment on plants or on debris	✓	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 = 3.00)	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed [1]	3	2	✓	0
21. Rooted plants in the thalweg [1]	3	✓	1	0
22. Crayfish in stream (exclude in floodplain)	✓	1	2	3
23. Bivalves/mussels	✓	1	2	3
24. Amphibians	✓	0.5	1	1.5
25. Macrobenthos (record type & abundance)	✓	1	2	3
26. Filamentous algae; periphyton	✓	1	2	3
27. Iron oxidizing bacteria/fungus	✓	0.5	1	1.5
28.Wetland plants in channel bed [2]	✓	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 = 10.75

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

Notes :

- Weak bed and bank throughout reach with weak sinuosity, potentially channelized
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised
- Weak depositional bars and benches and very weak recent alluvial deposits
- One small headcut mid reach
- Weak amount of roots acting as grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in channel
- Weak terrestrial vegetation such as Christmas fern and red maple observed
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-10	Date/Time: 10/26/22/11:27
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.254847, -88.374340
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	End: 35.254773, -88.374245
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 11.75

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from surrounding pine upland area
- Forms confluence with Stratton Branch

Waterbody Name: ES-10

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 8.25)	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 = 0.50)	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 = 3.00)	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 = 11.75

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

Notes :

- Weak/moderate bed and bank throughout reach with some sinuosity
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised
- Very weak recent alluvial deposits
- Starts at a small headcut and has one small one downslope
- Moderate amount of roots acting as grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in channel
- Weak terrestrial vegetation such as Christmas fern observed
- No aquatic biota or wetland plants present

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: ES-11	Date/Time: 10/26/22/11:45
Assessors/Affiliation: Barge Design Solutions - Frank Amatucci (TN QHP 1203-TN21), Cameron Brueck	Project ID : 3609517
Site Name/Description: Adamsville Solar Site	
Site Location: Adamsville, McNairy County, TN	
HUC (12 digit): 060400010508	Lat/Long: Start: 35.253829, -88.373228 End: 35.253813, -88.373467
Previous Rainfall (7-days) : 0.83 inches (CoCoRaHs #TN-CS-7)	
Precipitation this Season vs. Normal : abnormally wet ☐ elevated ☐ average ☐ low ☑ abnormally dry ☐ unknown ☐ Source of recent & seasonal precip data :	
Watershed Size : ~0.01 sq mi	County: McNairy
Soil Type(s) / Geology : En: Enville fine sandy loam, occasionally flooded	Source: USDA
Surrounding Land Use : Agricultural, woodland, and residential	
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 = 11.00

Secondary Indicator Score (if applicable) = WWC

Justification / Notes :

Overall hydrologic determination is WWC based on secondary indicator scores

- Feature likely drains excess runoff from surrounding upland area
- Forms confluence with Stratton Branch

Waterbody Name: ES-11

Secondary Field Indicator Evaluation

A. **Geomorphology** (Subtotal = 7.50)	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 = 0.50)	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 = 3.00)	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 = 11.00

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

Notes :

- Weak/moderate bed and bank throughout reach with weak sinuosity
- Weak riffle-glide sequences with weak sorting of sand, silt, and organics
- Weak connection to floodplain, incised
- Very weak depositional bars and benches and very weak recent alluvial deposits
- Starts at a small headcut and has one small one downslope
- Very weak amount of roots acting as grade controls
- No flowing water or hydric soils observed
- Moderate amount of fibrous roots in channel
- Weak terrestrial vegetation such as Christmas fern observed
- No aquatic biota or wetland plants present

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/24/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-1

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.368964 Long: -88.368964 Datum: NAD83

Soil Map Unit Name: OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes NWI classification: PEM

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- X 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)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Salix nigra*	5	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 =Total Cover		
50% of total cover: 3	20% of total cover: 1		
Herb Stratum (Plot size: 5 ft)			
1. *Persicaria hydropiperoides*	40	Yes	OBL
2. *Scirpus cyperinus*	20	Yes	OBL
3. *Echinochloa crus-galli*	10	No	FACW
4. *Xanthium strumarium*	10	No	FAC
5. *Symphyotrichum drummondii*	5	No	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 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	65	x 1 =	65
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	90 (A)		140 (B)

Prevalence Index = B/A = 1.56

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WTL-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
0-1	10YR 3/2	100					Loamy/Clayey	
1-18	10YR 4/2	70	10YR 6/6	30	C	PL/M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/24/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: UPL-1

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1-3

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.260766 Long: -88.368642 Datum: NAD83

Soil Map Unit Name: OsD: Oktibbeha and Sumter soils, 8 to 20 percent slopes NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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 ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juniperus virginiana*	65	Yes	FACU
2. *Ulmus rubra*	10	No	FAC
3. *Fraxinus pennsylvanica*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
	85	=Total Cover	
50% of total cover: 43		20% of total cover:	17
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	55	Yes	FAC
2. *Arundinaria gigantea*	25	Yes	FACW
3. *Carex blanda*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	70	x 3 =	210
FACU species	65	x 4 =	260
UPL species	0	x 5 =	0
Column Totals:	185 (A)		570 (B)

Prevalence Index = B/A = 3.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL-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 3/3	100					Loamy/Clayey	
2-18	10YR 5/4	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-2

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-3

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.255617 Long: -88.370881 Datum: NAD83

Soil Map Unit Name: PaB3: Paden silt loam, 2 to 5 percent slopes, severly eroded NWI classification: PUBHh

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed. Wetland fringe to relic pond

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 36
Water Table Present?	Yes X	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	25	Yes	FAC
2. *Platanus occidentalis*	15	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	40	=Total Cover	
50% of total cover: 20		20% of total cover:	8
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 5 ft)			
1. *Persicaria hydropiperoides*	60	Yes	OBL
2. *Juncus effusus*	30	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover:	18
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	90	x 1 =	90
FACW species	15	x 2 =	30
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	130 (A)		195 (B)

Prevalence Index = B/A = 1.50

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-4	10YR 3/2	100					Mucky Loam/Clay	
4-18	10YR 5/1	80	10YR 5/6	20	C	M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- X 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: UPL-2

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1-3

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.254857 Long: -88.370571 Datum: NAD83

Soil Map Unit Name: PaB: Paden silt loam, 2 to 5 percent slopes NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	30	Yes	UPL
2. *Quercus alba*	30	Yes	FACU
3. *Carya ovata*	20	Yes	FACU
4. *Ulmus alata*	10	No	FACU
5.			
6.			
7.			
8.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover:	18
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Juniperus virginiana*	15	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	10	Yes	FAC
2. *Quercus stellata*	10	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 1 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	75	x 4 =	300
UPL species	40	x 5 =	200
Column Totals:	125 (A)		530 (B)

Prevalence Index = B/A = 4.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-3	10YR 3/3	100					Loamy/Clayey	
3-18	10YR 5/4	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-3

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Depression/Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.254955 Long: -88.370303 Datum: NAD83

Soil Map Unit Name: PaB3: Paden silt loam, 2 to 5 percent slopes, severely eroded NWI classification: PFO

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed. Potential seep area downslope of WTL-2.

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	55	Yes	FACW
2. *Celtis laevigata*	25	Yes	FACW
3. *Liquidambar styraciflua*	20	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
50% of total cover: 50		20% of total cover:	20
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	20	Yes	FAC
2. *Ligustrum sinense*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover:	6
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: 6 (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	95	x 2 =	190
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		340 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-2	10YR 3/2	100					Loamy/Clayey	
2-18	10YR 5/1	80	10YR 5/6	20	C	PL/M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: UPL-3

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 1-3

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.254857 Long: -88.370571 Datum: NAD83

Soil Map Unit Name: PaB: Paden silt loam, 2 to 5 percent slopes NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus stellata*	30	Yes	UPL
2. *Quercus alba*	30	Yes	FACU
3. *Carya ovata*	20	Yes	FACU
4. *Ulmus alata*	10	No	FACU
5.			
6.			
7.			
8.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover:	18
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Juniperus virginiana*	15	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	10	Yes	FAC
2. *Quercus stellata*	10	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 1 (A)

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	75	x 4 =	300
UPL species	40	x 5 =	200
Column Totals:	125 (A)		530 (B)

Prevalence Index = B/A = 4.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-3	10YR 3/3	100					Loamy/Clayey	
3-18	10YR 5/4	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-4

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Depression/Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.258019 Long: -88.369216 Datum: NAD83

Soil Map Unit Name: lu: luka fine sandy loam, 0 to 2 percent slopes, occasionally flooded NWI classification: PFO

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought condition observed.

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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:
Microtopography observed

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

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	55	Yes	FACW
2. *Acer rubrum*	25	Yes	FAC
3. *Liquidambar styraciflua*	20	No	FAC
4. *Betula nigra*	15	No	FACW
5.			
6.			
7.			
8.			
	115	=Total Cover	
50% of total cover: 58		20% of total cover:	23
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover:	3
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	40	Yes	FAC
2. *Ligustrum sinense*	10	No	FAC
3. *Carex gracilescens*	10	No	UPL
4. *Toxicodendron radicans*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14
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	85	x 2 =	170
FAC species	105	x 3 =	315
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	200 (A)		535 (B)

Prevalence Index = B/A = 2.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WTL-4

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
0-3	10YR 3/2	100					Loamy/Clayey	
3-18	10YR 4/2	75	10YR 6/6	25	C	M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/25/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: UPL-4

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Agriculture field Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.258105 Long: -88.369907 Datum: NAD83

Soil Map Unit Name: PaB3: Paden silt loam, 2 to 5 percent slopes, severely eroded NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft)			
1. *Glycine max*	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-1	10YR 4/2	100					Loamy/Clayey	
1-18	10YR 6/4	90	10YR 5/6	10	C	M	Loamy/Clayey	Distinct 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: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR, P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/26/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-5

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Depression/Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.251105 Long: -88.373150 Datum: NAD83

Soil Map Unit Name: PaB: Paden silt loam, 2 to 5 percent slopes NWI classification: PUBHh

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X 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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- X Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 5
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:
Microtopography observed

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

Sampling Point: WTL-5

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liquidambar styraciflua*	30	Yes	FAC
2. *Betula nigra*	25	Yes	FACW
3. *Acer rubrum*	15	No	FAC
4. *Salix nigra*	10	No	OBL
5.			
6.			
7.			
8.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover:	16
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Liquidambar styraciflua*	20	Yes	FAC
2. *Acer rubrum*	15	Yes	FAC
3. *Betula nigra*	10	Yes	FACW
4.			
5.			
6.			
7.			
8.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover:	9
Herb Stratum (Plot size: 5 ft)			
1. *Leersia oryzoides*	30	Yes	OBL
2. *Scirpus cyperinus*	15	Yes	OBL
3. *Bidens connata*	15	Yes	FACW
4. *Juncus effusus*	10	No	OBL
5. *Echinochloa crus-galli*	10	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
50% of total cover: 40		20% of total cover:	16
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 8 (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	60	x 2 =	120
FAC species	80	x 3 =	240
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	205 (A)		425 (B)

Prevalence Index = B/A = 2.07

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WTL-5

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
0-3	10YR 3/2	100					Loamy/Clayey	
3-18	5Y 6/2	90	7.5YR 5/8	10	C	M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 10/26/22

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: UPL-5

Investigator(s): F. Amatucci and C. Brueck Section, Township, Range:

Landform (hillside, terrace, etc.): Agriculture Field Local relief (concave, convex, none): Convex Slope (%): 1-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.251162 Long: -88.373566 Datum: NAD83

Soil Map Unit Name: PaB: Paden silt loam, 2 to 5 percent slopes NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology X 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:
Drought conditions observed

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)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 5 ft)			
1. *Glycine max*	100	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	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: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

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
0-1	10YR 4/2	100					Loamy/Clayey	
1-18	10YR 6/3	90	10YR 5/6	10	C	M	Loamy/Clayey	Distinct 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: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR, P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adamsville Solar Site City/County: Adamsville / McNairy Sampling Date: 02/17/23

Applicant/Owner: Barge Design Solutions State: TN Sampling Point: WTL-6

Investigator(s): F. Amatucci Section, Township, Range:

Landform (hillside, terrace, etc.): Depression/slope Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR or MLRA): LRR P, MLRA 133A Lat: 35.258019 Long: -88.369216 Datum: NAD83

Soil Map Unit Name: PaB: Paden silt loam, 2 to 5 percent slopes NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present?	Yes 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)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ 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)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

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

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

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

Remarks:
Microtopography observed

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WTL-6

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	15	No	FACW
2. *Acer rubrum*	55	Yes	FAC
3. *Liquidambar styraciflua*	20	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	90	=Total Cover	
50% of total cover: 45		20% of total cover: 18	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15	=Total Cover	
50% of total cover: 8		20% of total cover: 3	
Herb Stratum (Plot size: 5 ft)			
1. *Microstegium vimineum*	35	Yes	FAC
2. *Ligustrum sinense*	15	Yes	FAC
3. *Smilax glauca*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	=Total Cover	
50% of total cover: 30		20% of total cover: 12	
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	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	135	x 3 =	405
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	165 (A)		465 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 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 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: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WTL-6

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
0-1	10YR 3/2	100					Loamy/Clayey	
1-18	10YR 4/2	75	10YR 6/6	25	C	M	Loamy/Clayey	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: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

This data form is revised from Atlantic and Gulf Coastal Plain Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 8.0, 2016.

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-1

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-1 is a relic man-made farm pond that receives excess surface water from EPH-2

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.260630, -88.368874
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	N
Soil Survey Map Units, Hydric Rating:	OsD: non-hydric
Cowardin Wetland Type(s):	PEM
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 25

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

6pts	>50 acres (west TN)	>25 acres (middle TN)	>10 acres (east TN *)	
5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	1

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 1

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	4
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 7

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.

5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1pts	Precipitation	1
3pts	Seasonal surface water	3
5pts	Perennial surface water (lake or stream)	

3b. Connectivity. Select all that apply and sum score

1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	

3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.

3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1

3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.

4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	
2pts	Seasonally inundated	2
1pt	Seasonally saturated in the upper 30cm (12in) of soil	

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	3
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 9

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	1

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	1

Metric 4 Total 4

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> $10m^2$, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 0

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or $1000m^2$ (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp.*, Spirodela* spp.*)* are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	1
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	1
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	0
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	
1pt	LOW Wetland has a low degree of interspersion.	1
0pt	NONE Wetland has no plan view interspersion	

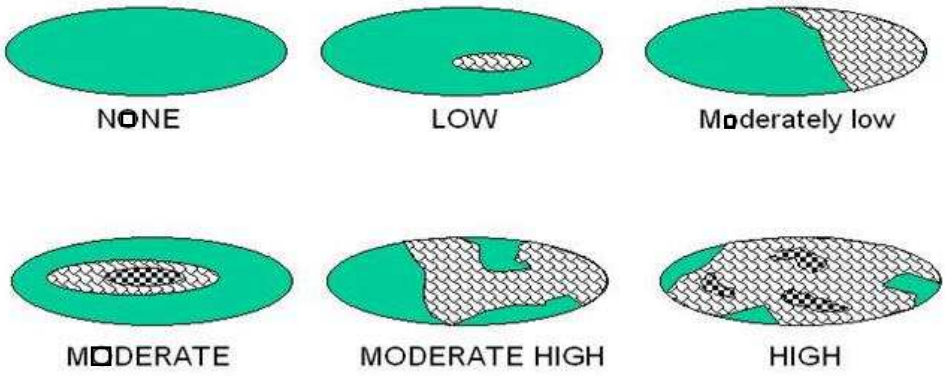


Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	
0pt Nearly absent. <5% areal cover of invasive species	0
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	
Coarse woody debris >15cm (6in) in diameter	
Standing dead trees >25cm (10in) diameter at breast height	
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	1

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 4

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	1
	Metric 2: Buffers and surrounding land use	7
	Metric 3: Hydrology	9
	Metric 4: Habitat	4
	Metric 5: Special Wetland Communities	0
	Metric 6: Plant communities, interspersion, microtopography	4
	TOTAL SCORE	25

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-2

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-2 is a a wetland fringe to a shallow man-made pond that receives excess surface water from ES-4

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.25569, -88.370915
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	Y (PUBh)
Soil Survey Map Units, Hydric Rating:	PaB3: non-hydric
Cowardin Wetland Type(s):	PEM/PUB
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 33

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

6pts	>50 acres (west TN)	>25 acres (middle TN)	>10 acres (east TN *)	
5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	2
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 2

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	4
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 7

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.

5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	
1pts	Precipitation	1
3pts	Seasonal surface water	3
5pts	Perennial surface water (lake or stream)	

3b. Connectivity. Select all that apply and sum score

1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	

3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.

3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	2
1pt	<0.4m (<15.7in)	

3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.

4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	3
2pts	Seasonally inundated	
1pt	Seasonally saturated in the upper 30cm (12in) of soil	

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	3
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 11

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	1

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	1

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	1

Metric 4 Total 4

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> $10m^2$, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 5

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or $1000m^2$ (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	1
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	1
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	0
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	0
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	
1pt	LOW Wetland has a low degree of interspersion.	1
0pt	NONE Wetland has no plan view interspersion	

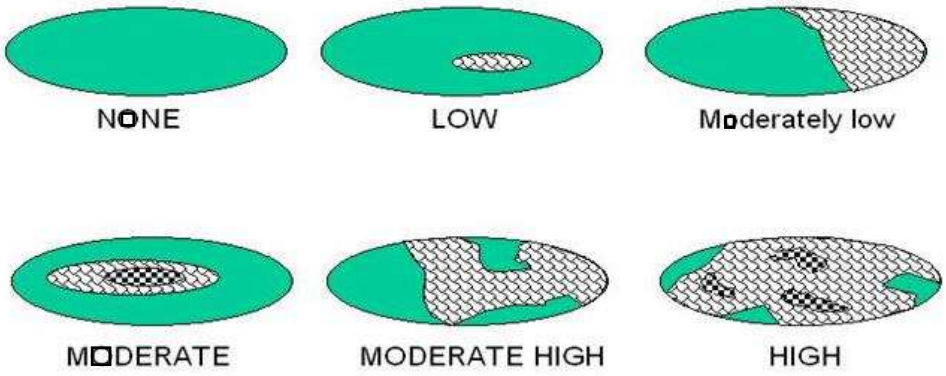


Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	
0pt Nearly absent. <5% areal cover of invasive species	0
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	
Coarse woody debris >15cm (6in) in diameter	
Standing dead trees >25cm (10in) diameter at breast height	
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	1

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 4

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	2
	Metric 2: Buffers and surrounding land use	7
	Metric 3: Hydrology	11
	Metric 4: Habitat	4
	Metric 5: Special Wetland Communities	5
	Metric 6: Plant communities, interspersion, microtopography	4
	TOTAL SCORE	33

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-3

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-3 is located below a berm wall, source hydrology is unkown

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.254989, -88.370290
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	N
Soil Survey Map Units, Hydric Rating:	PaB3: non-hydric
Cowardin Wetland Type(s):	PFO
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 30

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

6pts	>50 acres (west TN)	>25 acres (middle TN)	>10 acres (east TN *)	
5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	1

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
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10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 1

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	4
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 7

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score		
1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	
3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.		
4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	
2pts	Seasonally inundated	
1pt	Seasonally saturated in the upper 30cm (12in) of soil	1

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	3
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 8

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	

Metric 4 Total 7

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> $10m^2$, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 0

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or $1000m^2$ (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp.*, Spirodela* spp.*)* are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	0
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	1
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	1
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	
1pt	LOW Wetland has a low degree of interspersion.	1
0pt	NONE Wetland has no plan view interspersion	

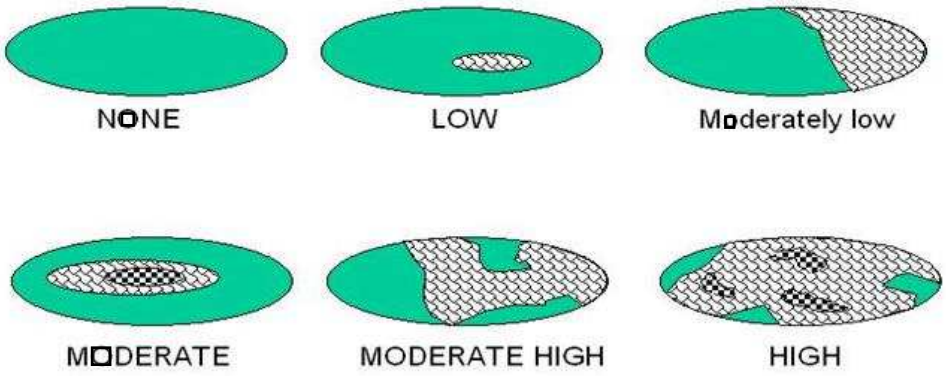

Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	-1
0pt Nearly absent. <5% areal cover of invasive species	
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	0
Coarse woody debris >15cm (6in) in diameter	0
Standing dead trees >25cm (10in) diameter at breast height	0
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	0

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 2

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	1
	Metric 2: Buffers and surrounding land use	7
	Metric 3: Hydrology	8
	Metric 4: Habitat	7
	Metric 5: Special Wetland Communities	5
	Metric 6: Plant communities, interspersion, microtopography	2
	TOTAL SCORE	30

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-4

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-4 is located in a wooded tree line between crop and an access road

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.257306, -88.369009
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	N
Soil Survey Map Units, Hydric Rating:	Iu: hydric
Cowardin Wetland Type(s):	PFO
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 25

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

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5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	2
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
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3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 2

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	1
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 4

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score		
1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	
3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.		
4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	
2pts	Seasonally inundated	
1pt	Seasonally saturated in the upper 30cm (12in) of soil	1

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 7

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	1

Metric 4 Total 6

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> $10m^2$, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 0

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or $1000m^2$ (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp.*, Spirodela* spp.*)* are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	1
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	1
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	1
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	2
1pt	LOW Wetland has a low degree of interspersion.	
0pt	NONE Wetland has no plan view interspersion	

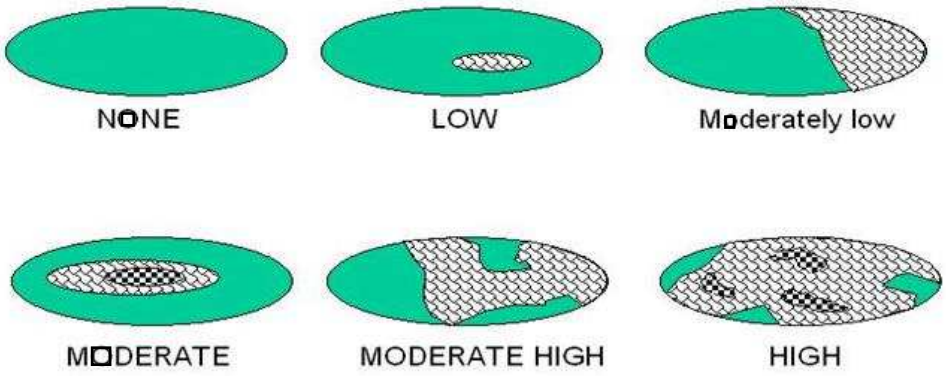


Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	-1
0pt Nearly absent. <5% areal cover of invasive species	
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	0
Coarse woody debris >15cm (6in) in diameter	1
Standing dead trees >25cm (10in) diameter at breast height	0
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	0

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 5

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	2
	Metric 2: Buffers and surrounding land use	4
	Metric 3: Hydrology	7
	Metric 4: Habitat	6
	Metric 5: Special Wetland Communities	0
	Metric 6: Plant communities, interspersion, microtopography	5
	TOTAL SCORE	24

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-5

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-5 is located in a wooded tree line between crop and an access road

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.251160, -88.373125
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	Y (PUBh)
Soil Survey Map Units, Hydric Rating:	PaB: non-hydric
Cowardin Wetland Type(s):	PFO
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 34

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

6pts	>50 acres (west TN)	>25 acres (middle TN)	>10 acres (east TN *)	
5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	2
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 2

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	1
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 4

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score		
1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	
3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	2
1pt	<0.4m (<15.7in)	
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.		
4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	3
2pts	Seasonally inundated	
1pt	Seasonally saturated in the upper 30cm (12in) of soil	

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	3
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 9

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	1

Metric 4 Total 6

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> 10m^2, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 5

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or 1000m^2 (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp., *Spirodela* spp.) are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	1
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	1
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	1
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	1

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	2
1pt	LOW Wetland has a low degree of interspersion.	
0pt	NONE Wetland has no plan view interspersion	

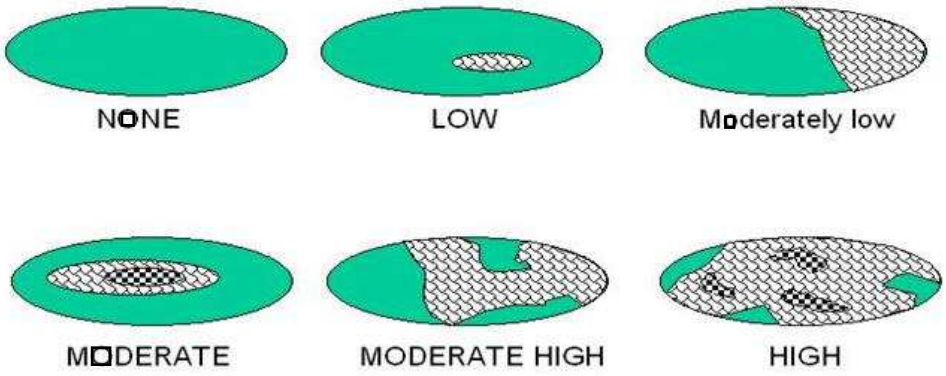


Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	-1
0pt Nearly absent. <5% areal cover of invasive species	
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	1
Coarse woody debris >15cm (6in) in diameter	0
Standing dead trees >25cm (10in) diameter at breast height	0
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	1

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 7

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	2
	Metric 2: Buffers and surrounding land use	5
	Metric 3: Hydrology	9
	Metric 4: Habitat	6
	Metric 5: Special Wetland Communities	5
	Metric 6: Plant communities, interspersion, microtopography	7
	TOTAL SCORE	34

Wetland Background Information

Name(s) of Field Personnel:	Frank Amatucci
Assessment Date:	10/24/2022
Agency/Organization:	Barge Design Solutions, Inc.
Office Address:	615 3rd Avenue South, Suite 700, Nashville, TN, 37210
Phone Number:	615-252-4406
E-mail Address:	frank.amatucci@bargedesign.com
Wetland Name(s):	WTL-6

Wetland Location:

Include drawing or map of project area limits or attach map showing location and project area limits, county, nearest street address, and narrative description of location, etc.

WTL-6 is located in a wooded tree line between crop and an access road

Watershed (12-Digit HUC):	Beason Creek 060400010508
Lat/Long (dd.dddd, -dd.dddd) or UTM Coordinates (m easting, m northing):	35.258019, -88.369216
Circle coordinate system used:	**NAD83** **WGS84** **UTM** **NAD27**
USGS Quad Name:	Milledgeville
Depicted on National Wetland Inventory Map: (Y/N)	N
Soil Survey Map Units, Hydric Rating:	PaB: non-hydric
Cowardin Wetland Type(s):	PFO
HGM Classification:	Non-HGM
Final Score:	Non-HGM TRAM Form 23

NON-HGM Tennessee Rapid Assessment Method for Wetlands

June 2015

State of Tennessee
Department of Environment and Conservation
Division of Water Resources
Natural Resources Unit
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243

Quantitative Rating

Metric 1. Wetland area (max 6 pts). Estimate the area of wetland and select the appropriate size class and assign score. Estimated areas should clearly place the wetland within the appropriate class.

6pts	>50 acres (west TN)	>25 acres (middle TN)	>10 acres (east TN *)	
5pts	25 - <50 acres (west TN)	10- 25 acres (middle TN)	7-<10 acres (east TN*)	
4pts	10 - <25 acres (west TN)	7-< 25acres (middle TN)	3-<7 acres (east TN*)	
3pts	3 - <10 acres(west TN)	3< 7 acres (middle TN)	1-<3 acres (east TN)	
2pts	0.3 - <3 acres (west TN)	0.5- <3 acres (middle TN)	0.5-<1 acres (east TN)	
1pt	0.1 - <0.3 acres(west TN)	<0.5 acres (middle TN)	<0.5 acres (east TN)	1

*More applicable to West Tennessee; use with discretion in Middle Tennessee, Consult TDEC-DWR Natural Resources Unit for use in East Tennessee.

Table 2. Metric to English conversion table with visual estimation sizes.

acres	ft^2	yd^2	ft on side	yd on side	ha	m^2	m on side
50	2,177,983	241,998	1476	492	20.2	202,000	449
25	1,088,992	120,999	1044	348	10.1	101,000	318
10	435,596	48,340	660	220	4.1	41,000	203
3	130,679	14,520	362	121	1.2	12,000	110
0.3	13,067	1,452	114	38	0.12	1,200	35
0.1	4,356	484	66	22	0.04	400	20

Metric 1 Total 1

Metric 2. Upland buffers and intensity of surrounding land uses (Max 14 points). Wetlands without upland "buffers", or that are located where human land use is more intensive, are often, but not always, more degraded and often have lower wildlife habitat resource value.

2a. Average Buffer Width (ABW). Calculate the average buffer width and select only one score. To calculate ABW, estimate buffer width on each side (max of 50m) and divide by the number of sides. Example: ABW of a wetland with buffers of 100m, 25m, 10m and 0m would be calculated as follows: ABW = (50m + 25m + 10m + 0m)/4 = 21.25m. Intensive land uses are not buffers, e.g. active row cropping, paved areas, housing developments, etc.		
7pts	WIDE. >50m (164ft) or more around perimeter.	
4pts	MEDIUM. 25m to <50m (82 to <164ft) around the perimeter.	
1pt	NARROW. 10m to <25m (32 to <82ft) around the perimeter.	1
0pts	VERY NARROW. <10m (<32ft) around perimeter.	
2b. Intensity of predominant surrounding land use(s) Select one, or choose up to two and average score, for the intensity of the predominant land use(s) outside the wetland's buffer zone.		
7pts	VERY LOW. 2nd growth or older forest, prairie, barren, wildlife area, etc.	
5pts	LOW. Old fallow field, shrub land, early successional young forest, etc.	5
3pts	MODERATELY HIGH. Residential, pasture, orchard, park, conservation tillage, mowed field, etc.	
1pt	HIGH. urban, industrial, row cropping, mining, construction, etc.	1

Metric 2 Total 4

Metric 3. Hydrology (Max 30 points). This metric evaluates the wetland's water budget, hydroperiod, the hydrologic connectivity of the wetland to other surface waters, and the degree to which the wetland's hydrology has been altered by human activity. **A wetland can receive no more than 30 points for Metric 3 even though it is possible to score more than 30 points.**

3a. Sources of Water. Select all that apply and sum the score. This question relates to a wetland's water budget. It also is reflective that wetlands with certain types of water sources, or multiple water sources, e.g. high pH groundwater or perennial surface water connections, can be very high quality wetlands or can have high functions and values.		
5pts	High pH groundwater (7.5-9.0)	
3pts	Other groundwater	3
1pts	Precipitation	1
3pts	Seasonal surface water	
5pts	Perennial surface water (lake or stream)	
3b. Connectivity. Select all that apply and sum score		
1pt	**100 year floodplain.** "Floodplain" is defined as "...the relatively level land next to a stream or river channel that is periodically submerged by flood waters. It is composed of alluvium deposited by the present stream or river when it floods." Where they are available, flood insurance rate maps (FIRMs) and flood boundary and floodway maps may be used.	
1pt	**Between stream/lake and other human land use.** This question asks whether the wetland is located between a surface water and a different adjacent land use, such that run-off from the adjacent land use could flow through wetland before it discharges into the surface water buffering it. "Different adjacent land uses" include agricultural, commercial, industrial, mining, or residential uses.	
1pt	**Part of a larger wetland or upland complex.** This question asks whether the wetland is in physical proximity to, or a part of, other nearby wetland or upland habitat areas.	
1pt	**Part of riparian corridor.**	
3c. Maximum water depth. Select only one and assign score. The evaluator *does not* need to actually observe the wetland when its water depth is greatest in order to award the maximum points for this question. The use of secondary indicators, as outlined in the 1987 Manual will be useful in answering this question.		
3 pts	>0.7m (27.6in)	
2pts	0.4 to 0.7m (15.7 to 27.6in)	
1pt	<0.4m (<15.7in)	1
3d. Duration of inundation/saturation. Select one or double check and average the scores if duration is uncertain. The use of ACOE 1987 Manual secondary indicators is necessary and expected in order to properly answer this question.		
4pts	Semi-permanently to permanently inundated or saturated	
3pts	Regularly inundated or saturated	
2pts	Seasonally inundated	
1pt	Seasonally saturated in the upper 30cm (12in) of soil	1

3e. Modifications to natural hydrologic regime. Check all observable modifications from list below. Score by selecting the most appropriate description of the wetland. Scores may be double checked and averaged. This question asks the evaluator to assess the "intactness" of, or lack of disturbance to, the natural hydrologic regime of the type of wetland that is being evaluated.

Once the evaluator has listed all possible past and ongoing disturbances, the evaluator should check the most appropriate category to describe the present state of the wetland. In instances where the evaluator believes that a wetland falls between two categories, or where the evaluator is uncertain as to which category is appropriate, it is appropriate to choose more than one and average the score.

The evaluator may check one or several of these possible disturbances, yet still determine that the natural hydrologic regime is intact. However, see Metric 4 where these same disturbances may be habitat alterations.

Check all that are observed present in or near the wetland.

	ditch(es), in or near the wetland		point source discharges to the (non-stormwater)
	tile(s), in or near the wetland		filling/grading activities in or near the wetland
	dike(s), in or near the wetland		road beds/RR beds in or near the wetland
	weir(s), in or near the wetland	x	dredging activities in or near the wetland
	stormwater inputs (addition of water)	x	other (specify) berms

Have any of the disturbances identified above caused or appear to have caused more than trivial alterations to the wetland's natural hydrologic regime.	YES Assign a score 1, 3 or 7, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 12 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 9.5.

Select one or double check adjoining numbers and average the score.		**score**
12pts	NONE OR NONE APPARENT. There are no modifications or no modifications that are apparent to the evaluator.	
7pts	RECOVERED. The wetland appears to have recovered from past modifications.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past modifications.	
1pt	RECENT OR NO RECOVERY. The modifications have occurred recently occurred, and/or the wetland has not recovered from past modifications, and/or the modifications are ongoing.	1

Metric 3 Total 7

Metric 4. Habitat Alteration and Development (Max 20 points). While hydrology may be the single most important determinant for the establishment and maintenance of specific types of wetlands and wetland processes, there is a range of other factors and activities which affect wetland quality and cause disturbances to wetlands that are unrelated to hydrology. These disturbances are termed "habitat alteration." In many instances, items checked as hydrologic disturbances in Question 3e will present as alterations to a wetland's habitat or disruptions in its development (successional state). In some instances, a disturbance may be appropriately considered under both Metric 3 and Metric 4. To determine the appropriate metric scores, the evaluator should carefully determine the actual cause of the disturbance to the wetland.

4a. Substrate/Soil Disturbance. Select one or double check and average. This question evaluates physical disturbances to the soil and surface substrates of the wetland. Note also that the labels on the scoring categories are intended to be descriptive but not controlling. In some instances, it may be more appropriate to consider the scoring categories as fixed locations on a disturbance continuum, from very high to very low or no disturbance.	Examples of substrate/soil disturbance include (circle all that apply): _x_ filling and grading ____plowing ____grazing (hooves) ____vehicle use (off-road vehicles, construction vehicles) ____sedimentation _x_ dredging, and other mechanical disturbances to the soil

Have any of soil or substrate disturbances caused or appear to have caused more than trivial alterations to the wetland's natural soils	YES Assign a score 1, 2 or 3, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 4 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 3.5.

Select one or double check adjoining numbers and average the score.		
4pts	NONE OR NONE APPARENT. There are no disturbances or no disturbances apparent to the evaluator.	
3pts	RECOVERED. The wetland appears to have recovered from past disturbances.	
2pts	RECOVERING. The wetland appears to be in the process of recovering from past disturbances.	2
1pt	RECENT OR NO RECOVERY. The disturbances have occurred recently, and/or the wetland has not recovered from past disturbances, and/or the disturbances are ongoing.	

4b. Habitat development. Select only one and assign score. This question asks the evaluator to assign an overall qualitative rating of how well-developed the wetland is in comparison to other ecologically and/or hydrogeomorphically similar wetlands. This question presumes knowledge of the types of wetlands and the range in quality typical of the region or access to data from reference standard examples. If unsure, score as GOOD or MODERATELY GOOD.

7pts	EXCELLENT. Wetland appears to represent the best of its type or class.	
6pts	VERY GOOD. Wetland appears to be a very good example of its type or class but is lacking in characteristics which would make it excellent.	
5pts	GOOD. Wetland appears to be a good example of its type or class but because of past or present disturbances, successional state, or other reasons, is not excellent.	
4pts	MODERATELY GOOD. Wetland appears to be a fair to good example of its type or class.	
3pts	FAIR. Wetland appears to be a moderately good example of its type or class but because of past or present disturbances, successional state, etc. is not good.	
2pts	POOR TO FAIR. Wetland appears to be a poor to fair example of its type or class.	2
1pt	POOR. Wetland appears not to be a good example of its type or class because of past or present disturbances, successional state, etc.	

4c. Habitat alteration. This question evaluates the "intactness" the natural habitat of the type of wetland that is being evaluated. This question does not discriminate between wetlands with different types of habitat. Check all possible alterations that are observed. All available information, field visits, aerial photos, maps, etc. can be used to identify possible alterations. Evaluate whether the alteration is trivial in relation to the wetlands overall habitat. Select the most appropriate score that best describes the present state of the wetland. It is appropriate to "double check" and average scores. **The evaluator may check one or several of these possible disturbances, yet still determine that the natural habitat is intact.**

Check all that are observed present in or near the wetland

	Mowing		Herbaceous layer/aquatic bed removal
	Grazing (cattle, horses, etc.)		Sedimentation
	Clearcutting	x	Dredging
x	Selective cutting	x	Row-crop or orchard farming
	Woody debris removal		Nutrient enrichment, e.g. nuisance algae
	Toxic pollutants		Other (specify):
x	Shrub/sapling removal		Other (specify):

Have any of the disturbances identified above caused or appeared to cause more than trivial alterations to the wetland's natural habitat.	YES Assign a score 1, 3 or 6, or an intermediate score, depending on degree of recovery from the disturbance.	NO Assign a score of 9 since there are no or no apparent modifications.	NOT SURE Choose "recovered" and assign a score of 6.

Select one score or double check adjoining numbers and average the score.		Score
9pts	NONE OR NONE APPARENT. There are no past or current alterations that are apparent to the evaluator.	
6pts	RECOVERED. The wetland appears to have recovered from past alterations.	
3pts	RECOVERING. The wetland appears to be in the process of recovering from past alterations.	3
1pt	RECENT OR NO RECOVERY. The alterations have occurred recently, and/or the wetland has not recovered from past alterations, and/or the alterations are ongoing.	1

Metric 4 Total 6

Metric 5. Special wetland communities. Assign points in left column if the wetland meets the associated criteria below. Refer to Narrative Rating for guidance. If wetland scores over 30 points within Metric 5 further determination needed to assess if the wetland exhibits outstanding ecological or recreational values as discussed in the Narrative Rating Section.			
5pts	> $10m^2$, sphagnum or other moss or vernal pools	5pts	Superior fish, waterfowl, bat, or amphibian breeding habitat
10pts 5pts 3pts	Ecological community with global rank (NatureServe): G1 (10pts), G2 (5pts), G2/G3 (3pts) or uncommon ecological resource in the ecoregion (habitat and/or species diversity, geology, wetland type, distribution/ occurrence) (10 pts)	5pts	Wetland contains and is a buffer for a headwater stream or wetland contributes significantly to the water quality of a 303(d) listed stream and/or to surface or and/or ground water
10pts	Older-aged mature forested wetland avg. DBH >= 30 inches	10 pts	Supports species Deemed in Need of Management by TWRA or TN Special Concern by TDEC

Metric 5 Total 0

Metric 6. Vegetation, Interspersion, and Microtopography (Max 20 points). **6a. Wetland Vegetation Communities** Check each community present both vertically and horizontally within the wetland with an area of at least 0.1 hectares or $1000m^2$ (0.2471 acres). Assign a score of 0 to 3 using Table 3 for 1-4 or Table 5 for 5-6. Sum the scores for the classes present.	Score
1)Aquatic Bed Includes areas of wetlands dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years. Floating aquatic species like duckweed (*Lemna* spp.*, Spirodela* spp.*)* are excluded from definition of "aquatic bed." Aquatic beds often occur as a distinct zone as an "understory" below shrubs or trees.	0
2)Emergent Includes areas of wetlands dominated by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. Common names for emergent communities include marsh, wet meadow, wet prairie, sedge meadow, and fens.	1
3)Shrub Includes areas of wetlands dominated by woody vegetation less than 1m (3ft.) - 6m (20 ft) tall with a dbh of <3in. The plant species include true shrubs, young trees, or trees or shrubs that are small or stunted because of environmental conditions. Shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable plant communities.	1
4)Forested Includes wetlands or areas of wetlands characterized by woody vegetation greater than 6m (20ft) or taller. Forested wetlands have an overstory of trees and often contain an understory of young trees and shrubs and an herbaceous layer, although the young tree/shrub and herbaceous layers can be largely missing from some types of forested wetlands. Some forested wetlands are "vernal pools".	1
5)Mudflats The "mudflat" class is equivalent to the "unconsolidated bottom/mud" class/subclass (PUB_3) described in Cowardin et al. (1979) and includes areas of wetlands characterized by exposed or shallowly inundated substrates with vegetative cover less than 30%.	0
6)Open water The "open water" class is equivalent to the "open water - unknown bottom" class in Cowardin et al. (1979) and includes areas that are 1) inundated, 2) un-vegetated, and 3) and "open", i.e. there is no "canopy" of any type of vegetation.	0

Table 3. Use this table to assign a cover score for Metric 6a to each of the vegetation communities identified on the preceding page. Refer to Table 4 for narrative description of "low," "moderate," and "high" quality.

Cover Scale	Description
0	The vegetation community is either 1) absent from wetland or 2) Comprises less than 0.1 ha (.2471 acres) of contiguous area within the wetland
1	Vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of low or moderate quality, or 2) if it comprises a significant part of the wetland's vegetation and is of low quality
2	Thee vegetation community is present and either, 1) comprises a significant part of the wetland's vegetation and is of moderate quality, or 2) the vegetation community comprises a small part of the wetland's vegetation but is of high quality
3	The vegetation community is of high quality and comprises a significant part, or more, of the wetland's vegetation

Table 4. Use this table in conjunction with Table 3 to determine what is a "low", "moderate," or " high" quality community.

Narrative	Description
Low	Low species richness and a predominance of invasive, non-native, or disturbance tolerant "weedy" species.
Moderate	Native species are the dominant component of the vegetation, although non-native or disturbance tolerant "weedy" species can also be present, and species richness is moderate to moderately high, but generally without the presence of rare, threatened, or endangered species.
High	A predominance of native species, with non-native species absent or virtually absent, and high species diversity and/or the presence of rare, threatened or endangered species.

Table 5. Mudflat and open water community cover scale.

0	Absent <0.1 ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 ha to < 4 ha (2.47 to 9.88 acres)
3	High 4 ha (9.88 acres) or more

6b. Horizontal (plan view) interspersion. Evaluate the wetland from a "plan view," i.e. as if the looking down upon it. See Figure 1.		Score
5pts	HIGH Wetland has a high degree of interspersion	
4pts	MODERATELY HIGH Wetland has a moderately high degree of interspersion	
3pts	MODERATE Wetland has a moderate degree of interspersion	
2pts	MODERATELY LOW Wetland has a moderately low degree of interspersion	2
1pt	LOW Wetland has a low degree of interspersion.	
0pt	NONE Wetland has no plan view interspersion	

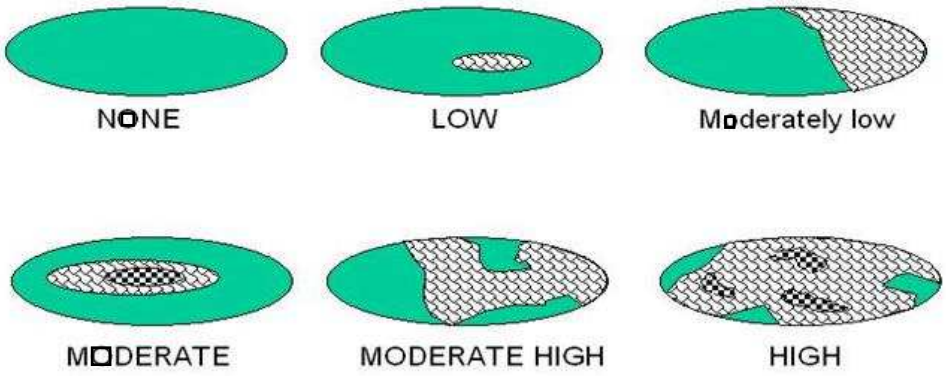


Figure 1. Hypothetical Wetlands for estimating degree of interspersion

6c. Coverage of Invasive Plant Species. Refer to Tennessee Exotic Pest Plant Council (http://www.tneppc.org/) for official list. Select only one and assign score.	Score
-5pts Extensive >75% areal cover of invasive species	
-3pts Moderate 25-75% areal cover of invasive species	
-1pts Sparse 5-25% areal cover of invasive species	-1
0pt Nearly absent. <5% areal cover of invasive species	
1pt Absent	
6d. Microtopography. Check each feature present in the wetland. Assign cover score of 0 to 3 using Table 6. Evaluate various microtopograhic habitat features often present in wetlands.	Score
Vegetated hummocks and tussocks	0
Coarse woody debris >15cm (6in) in diameter	1
Standing dead trees >25cm (10in) diameter at breast height	0
Amphibian breeding habitat, e.g. vernal pools with standing water of sufficient duration and depth to support reproduction, or habitat for frog reproduction	0

Table 6. Cover scale for microtopographic habitat features

Microtopographic habitat quality	**Narrative description**
0	Feature is absent or functionally absent from the wetland
1	Feature is present in the wetland in very small amounts or if more common, of low quality
2	Feature is present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of the highest quality

Metric 6 Total 5

NON-HGM TRAM Summary Worksheet

Non-HGM Quantitative Rating	Metric 1: Size	1
	Metric 2: Buffers and surrounding land use	4
	Metric 3: Hydrology	7
	Metric 4: Habitat	6
	Metric 5: Special Wetland Communities	0
	Metric 6: Plant communities, interspersion, microtopography	5
	TOTAL SCORE	23

APPENDIX E – Photographic Summary

Photo: 1
By: F. Amatucci
Date: October 24, 2022
Feature: STR-1
Lat: 35.265430
Long: -88.366833

Representative conditions of STR-1, facing upstream at beginning of reach.

Photo: 2
By: F. Amatucci
Date: October 24, 2022
Feature: STR-1
Lat: 35.264957
Long: -88.366644

Representative conditions of STR-1, facing downstream near mid reach.

Photo: 3
By: F. Amatucci
Date: October 24, 2022
Feature: STR-2
Lat: 35.263401
Long: -88.369289

Representative conditions of STR-2, facing upstream near mid reach.

Photo: 4
By: F. Amatucci
Date: October 24, 2022
Feature: STR-2
Lat: 35.261491
Long: -88.368628

Representative conditions of STR-2, facing downstream at end of reach before leaving property study area to the east.

Photo: 5
By: F. Amatucci
Date: October 24, 2022
Feature: STR-3
Lat: 35.261079
Long: -88.369104

Representative conditions of STR-3, facing downstream at start of reach downslope of WTL-1.

Photo: 6
By: F. Amatucci
Date: October 24, 2022
Feature: STR-3
Lat: 35.261442
Long: -88.368853

Representative conditions of STR-3, facing downstream at end of reach before confluence with STR-2.

Photo: 7
By: F. Amatucci
Date: October 24, 2022
Feature: STR-4
Lat: 35.263716
Long: -88.374461

Representative conditions of STR-4, facing downstream at start of reach after headcut that marks transition from EPH-3.

Photo: 8
Date: October 24, 2022
Feature: STR-4
Lat: 35.262745
Long: -88.373516

Representative conditions of STR-4 at mid reach, becomes more incised before eventually confluence with STR-2.

Photo: 9
Date: October 24, 2022
Feature: STR-5
Lat: 35.263224
Long: -88.374541

Representative conditions of STR-5, facing upstream at start of reach at eroded outfall from P-2.

Photo: 10
By: F. Amatucci
Date: October 24, 2022
Feature: STR-5
Lat: 35.263224
Long: -88.374541

Representative conditions of STR-5, facing downstream mid reach before confluence with STR-4.

Photo: 11
By: F. Amatucci
Date: October 25, 2022
Feature: STR-6
Lat: 35.261609
Long: -88.373657

Representative conditions of STR-6, facing downstream at start of reach after headcut that marks transition from EPH-8.

Photo: 12
By: F. Amatucci
Date: October 25, 2022
Feature: STR-6
Lat: 35.261712
Long: -88.372642

Representative conditions of STR-6, facing downstream mid reach before eventual confluence with STR-4.

Photo: 13
By: F. Amatucci
Date: October 25, 2022
Feature: STR-7
Lat: 35.261018
Long: -88.372310

Representative conditions of STR-7, facing downstream at start of reach after headcut that marks transition from EPH-10.

Photo: 14
By: F. Amatucci
Date: October 25, 2022
Feature: STR-7
Lat: 35.261494
Long: -88.372409

Representative conditions of STR-7, facing downstream at end of reach before confluence with STR-6.

Photo: 15
By: F. Amatucci
Date: October 25, 2022
Feature: STR-8
Lat: 35.257835
Long: -88.369110

Representative conditions of STR-8, facing downstream at start of reach after originating at bottom of WTL-4.

Photo: 16
By: F. Amatucci
Date: October 25, 2022
Feature: STR-8
Lat: 35.254589
Long: -88.368682

Representative conditions of STR-8, facing downstream at end of reach after flowing through culvert outlet and leaving project study area to the south.

Photo: 17
By: F. Amatucci
Date: October 26, 2022
Feature: STR-9 (Stratton Branch)
Lat: 35.254130
Long: -88.374008

Representative conditions of STR-9, facing downstream mid reach.

Photo: 18
By: F. Amatucci
Date: October 26, 2022
Feature: STR-9 (Stratton Branch)
Lat: 35.253777
Long: -88.368251

Representative conditions of STR-9, facing downstream at end of reach after culvert outlet and leaving project study area to the east.

Photo: 19
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-1
Lat: 35.264357
Long: -88.362118

Representative conditions of EPH-1, facing upstream at beginning of reach.

Photo: 20
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-1
Lat: 35.263896
Long: -88.361802

Representative conditions of EPH-1, facing downstream mid reach before leaving property study area to the south.

Photo: 21
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-2
Lat: 35.259936
Long: -88.368503

Representative conditions of EPH-2, facing downstream at start of reach after entering project study area from the east.

Photo: 22
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-2
Lat: 35.260560
Long: -88.368835

Representative conditions of EPH-2, facing downstream at end of reach before dissipating into WTL-1.

Photo: 23
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-4
Lat: 35.264891
Long: -88.374641

Representative conditions of EPH-4, facing upstream at beginning of reach.

Photo: 24
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-4
Lat: 35.264560
Long: -88.374893

Representative conditions of EPH-4, facing upstream at end of reach before confluence with EPH-3.

Photo: 25
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-5
Lat: 35.261562
Long: -88.376462

Representative conditions of EPH-5, facing downstream at start of reach after entering the property study limits from the west.

Photo: 26
By: F. Amatucci
Date: October 24, 2022
Feature: EPH-5
Lat: 35.262831
Long: -88.375045

Representative conditions of EPH-5, facing downstream at end of reach before dissipating into P-2.

Photo: 27
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-6
Lat: 35.254993
Long: -88.370210

Representative conditions of EPH-6, facing downstream mid reach where it drains excess water from WTL-3.

Photo: 28
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-6
Lat: 35.254685
Long: -88.369502

Representative conditions of EPH-6, facing downstream at end of reach before leaving property study area to the south.

Photo: 29
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-7
Lat: 35.258838
Long: -88.371079

Representative conditions of EPH-7, facing downstream at start of reach.

Photo: 30
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-7
Lat: 35.258610
Long: -88.369688

Representative conditions of EPH-7, facing downstream at end of reach before dissipating into WTL-4.

Photo: 31
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-8
Lat: 35.261159
Long: -88.374301

Representative conditions of EPH-8, facing upstream at beginning of reach.

Photo: 32
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-8
Lat: 35.261446
Long: -88.373916

Representative conditions of EPH-8, facing downstream at end of reach before transition into STR-6.

Photo: 33
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-9
Lat: 35.260917
Long: -88.372435

Representative conditions of EPH-9, facing upstream at beginning of reach.

Photo: 34
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-9
Lat: 35.260917
Long: -88.372435

Representative conditions of EPH-9, facing downstream at end of reach before confluence with EPH-10.

Photo: 35
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-10
Lat: 35.260267
Long: -88.372032

Representative conditions of EPH-10, facing upstream at beginning of reach.

Photo: 36
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-10
Lat: 35.260978
Long: -88.372288

Representative conditions of EPH-10, facing downstream at end of reach before transition into STR-7.

Photo: 37
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-11
Lat: 35.262724
Long: -88.371555

Representative conditions of EPH-11, facing downstream at beginning of reach.

Photo: 38
By: F. Amatucci
Date: October 25, 2022
Feature: EPH-11
Lat: 35.262317
Long: -88.371141

Representative conditions of EPH-11, facing upstream at end of reach before confluence with STR-4.

Photo: 39
By: F. Amatucci
Date: October 26, 2022
Feature: EPH-12
Lat: 35.252734
Long: -88.374409

Representative conditions of EPH-12, facing upstream at start of reach after entering property study area from the west.

Photo: 40
By: F. Amatucci
Date: October 26, 2022
Feature: EPH-12
Lat: 35.253560
Long: -88.373195

Representative conditions of EPH-12, facing downstream at end of reach before confluence with Stratton Branch.

Photo: 41
By: F. Amatucci
Date: October 24, 2022
Feature: ES-1
Lat: 35.264511
Long: -88.366576

Representative conditions of ES-1, facing upslope at end of reach before confluence with STR-1.

Photo: 42
By: F. Amatucci
Date: October 24, 2022
Feature: ES-2
Lat: 35.264404
Long: -88.366189

Representative conditions of ES-2, facing downslope mid reach before confluence with STR-1.

Photo: 43
By: F. Amatucci
Date: October 24, 2022
Feature: ES-3
Lat: 35.261689
Long: -88.368499

Representative conditions of ES-3, facing downslope mid reach before confluence with STR-2.

Photo: 44
By: F. Amatucci
Date: October 25, 2022
Feature: ES-4
Lat: 35.256286
Long: -88.371363

Representative conditions of ES-4, facing upslope mid reach.

Photo: 45
By: F. Amatucci
Date: October 25, 2022
Feature: ES-5
Lat: 35.260637
Long: -88.372111

Representative conditions of ES-5, facing downslope at beginning of reach before eventual confluence with EPH-10.

Photo: 46
By: F. Amatucci
Date: October 26, 2022
Feature: ES-6
Lat: 35.255796
Long: -88.375170

Representative conditions of ES-6, facing upslope at end of reach before confluence with Stratton Branch.

Photo: 47
By: F. Amatucci
Date: October 26, 2022
Feature: ES-7
Lat: 35.256036
Long: -88.375300

Representative conditions of ES-7, facing upslope at end of reach before confluence with Stratton Branch.

Photo: 48
By: F. Amatucci
Date: October 26, 2022
Feature: ES-8
Lat: 35.255146
Long: -88.374348

Representative conditions of ES-8, facing upslope at start of reach before going subterranean.

Photo: 49
By: F. Amatucci
Date: October 26, 2022
Feature: ES-9
Lat: 35.254863
Long: -88.374209

Representative conditions of ES-9, facing downslope mid reach before eventual confluence with Stratton Branch.

Photo: 50
By: F. Amatucci
Date: October 26, 2022
Feature: ES-10
Lat: 35.254774
Long: -88.374346

Representative conditions of ES-10, facing downslope at end of reach before confluence with ES-9.

Photo: 51
By: F. Amatucci
Date: October 26, 2022
Feature: ES-11
Lat: 35.253807
Long: -88.373244

Representative conditions of ES-11, facing downslope at end of reach before confluence with Stratton Branch.

Photo: 52
By: F. Amatucci
Date: October 24, 2022
Feature: D-1
Lat: 35.262342
Long: -88.368483

Representative conditions of D-1, man-made drainage ditch.

Photo: 53
By: F. Amatucci
Date: October 24, 2022
Feature: WTL-1
Lat: 35.260730
Long: -88.368924

Representative conditions of depressional WTL-1, relic farm pond at end of reach of EPH-2.

Photo: 54
By: F. Amatucci
Date: October 25, 2022
Feature: WTL-2
Lat: 35.255653
Long: -88.370903

Representative conditions of WTL-2, fringe wetland to farm pond.

Photo: 55
By: F. Amatucci
Date: October 25, 2022
Feature: WTL-3
Lat: 35.255016
Long: -88.370279

Representative conditions of WTL-3, facing downslope before draining into EPH-6.

Photo: 56
By: F. Amatucci
Date: October 25, 2022
Feature: WTL-4
Lat: 35.258520
Long: -88.369585

Representative conditions of floodplain WTL-4 where EPH-7 dissipates.

Photo: 57
By: F. Amatucci
Date: October 26, 2022
Feature: WTL-5
Lat: 35.251141
Long: -88.373206

Representative conditions of floodplain WTL-5, adjacent to offsite pond.

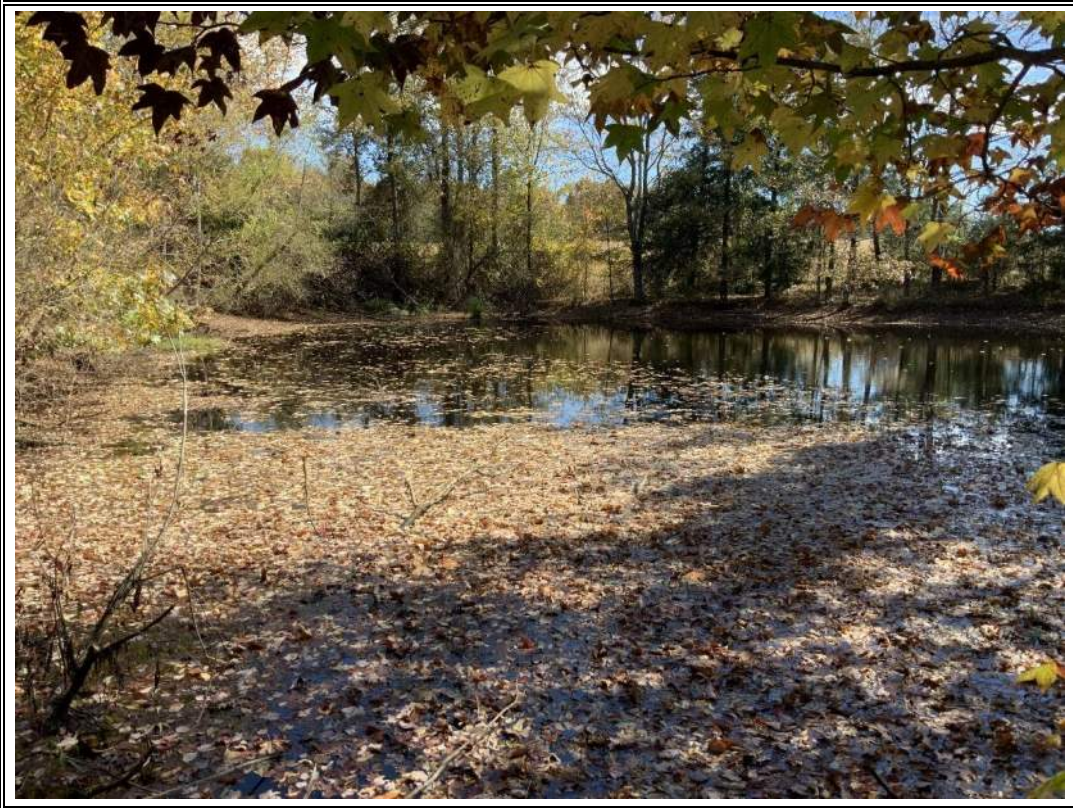


Photo: 58
By: F. Amatucci
Date: October 24, 2022
Feature: P-1
Lat: 35.264760
Long: -88.364552

Representative conditions of farm pond P-1.

Photo: 59
By: F. Amatucci
Date: October 24, 2022
Feature: P-2
Lat: 35.263307
Long: -88.374683

Representative conditions of relic farm pond P-2, has outfall that leads to STR-5.

Photo: 60
By: F. Amatucci
Date: October 25, 2022
Feature: P-3
Lat: 35.258782
Long: -88.372246

Representative conditions of farm pond P-3.

Photo: 61
By: F. Amatucci
Date: October 26, 2022
Feature: P-4
Lat: 35.253118
Long: -88.370201

Representative conditions of relic farm pond P-4.

Photo: 62
By: F. Amatucci
Date: October 26, 2022
Feature: P-5
Lat: 35.252712
Long: -88.370226

Representative conditions of farm pond P-5.

Photo: 63
By: F. Amatucci
Date: October 26, 2022
Feature: P-6
Lat: 35.259335
Long: -88.375737

Representative conditions of farm pond P-6.

Photo: 64
By: F. Amatucci
Date: October 25, 2022
Feature: P-7
Lat: 35.255315
Long: -88.370731

Representative conditions of farm pond P-7 with fringe WTL-2.

Photo: 65
By: F. Amatucci
Date: October 24, 2022
Feature: Cropland
Lat: 35.265068
Long: -88.366228

Representative cropland vegetative community observed within project study area. All cropland observed was soy fields.

Photo: 66
By: F. Amatucci
Date: October 24, 2022
Feature: Mixed Growth Hardwood Forest
Lat: 35.263655
Long: -88.367226

Representative mixed growth hardwood forest vegetative community observed within project study area.

Photo: 67
By: F. Amatucci
Date: October 24, 2022
Feature: Successional Forest
Lat: 35.263749
Long: -88.365413

Representative successional forest vegetative community observed within project study area.

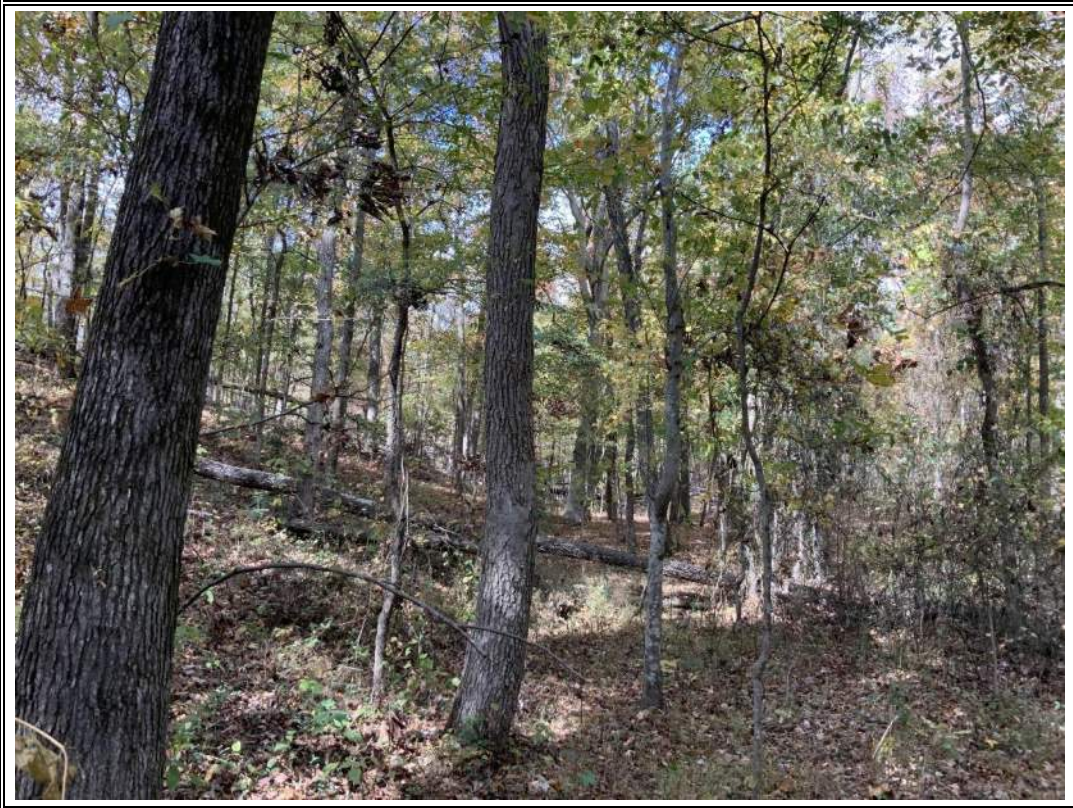


Photo: 68
By: F. Amatucci
Date: October 24, 2022
Feature: Mature Oak-Hickory Forest
Lat: 35.263718
Long: -88.361654

Representative mature oak-hickory forest vegetative community observed within project study area.

Photo: 69
By: F. Amatucci
Date: October 24, 2022
Feature: Shallow Emergent Marsh
Lat: 35.260702
Long: -88.368906

Representative shallow emergent marsh vegetative community observed within project study area.

Photo: 70
By: F. Amatucci
Date: October 24, 2022
Feature: Planted Loblolly Pine
Lat: 35.263545
Long: -88.370596

Representative planted loblolly pine vegetative community observed within project study area.

Photo: 71
By: F. Amatucci
Date: October 24, 2022
Feature: Young Oak-Hickory Forest
Lat: 35.262810
Long: -88.375396

Representative young oak-hickory forest vegetative community observed within project study area.

Photo: 72
By: F. Amatucci
Date: October 25, 2022
Feature: Fallow Field
Lat: 35.253085
Long: -88.375787

Representative fallow field vegetative community observed within project study area.

Photo: 73
By: F. Amatucci
Date: October 25, 2022
Feature: Semi-Mature Oak-Hickory Forest
Lat: 35.260976
Long: -88.373396

Representative semi-mature oak-hickory forest vegetative community observed within project study area.

Photo: 74
By: F. Amatucci
Date: October 25, 2022
Feature: Young Riparian Forest
Lat: 35.258104
Long: -88.369364

Representative young riparian forest vegetative community observed within project study area.

Photo: 75
By: F. Amatucci
Date: October 26, 2022
Feature: Red Maple-Hardwood Swamp
Lat: 35.251108
Long: -88.373168

Representative red maple-hardwood swamp vegetative community observed within project study area.

Photo: 76
By: F. Amatucci
Date: October 26, 2022
Feature: Semi-Mature Riparian Forest
Lat: 35.257687
Long: -88.375416

Representative semi-mature riparian forest vegetative community observed within project study area.

Photo: 77
By: F. Amatucci
Date: October 24, 2022
Feature: PRT-16
Lat: 35.264532
Long: -88.362263

Potential bat roost location with multiple shagbark hickory trees with exfoliating bark observed within project study area.

Photo: 78
By: F. Amatucci
Date: October 24, 2022
Feature: PRT-23
Lat: 35.264692
Long: -88.367004

Potential bat roost location with multiple shagbark hickory trees with exfoliating bark observed within project study area.

Photo: 79
By: F. Amatucci
Date: October 25, 2022
Feature: PRTs-40 & 41
Lat: 35.254743
Long: -88.371251

Potential bat roost location with multiple shagbark hickory trees with exfoliating bark observed within project study area.

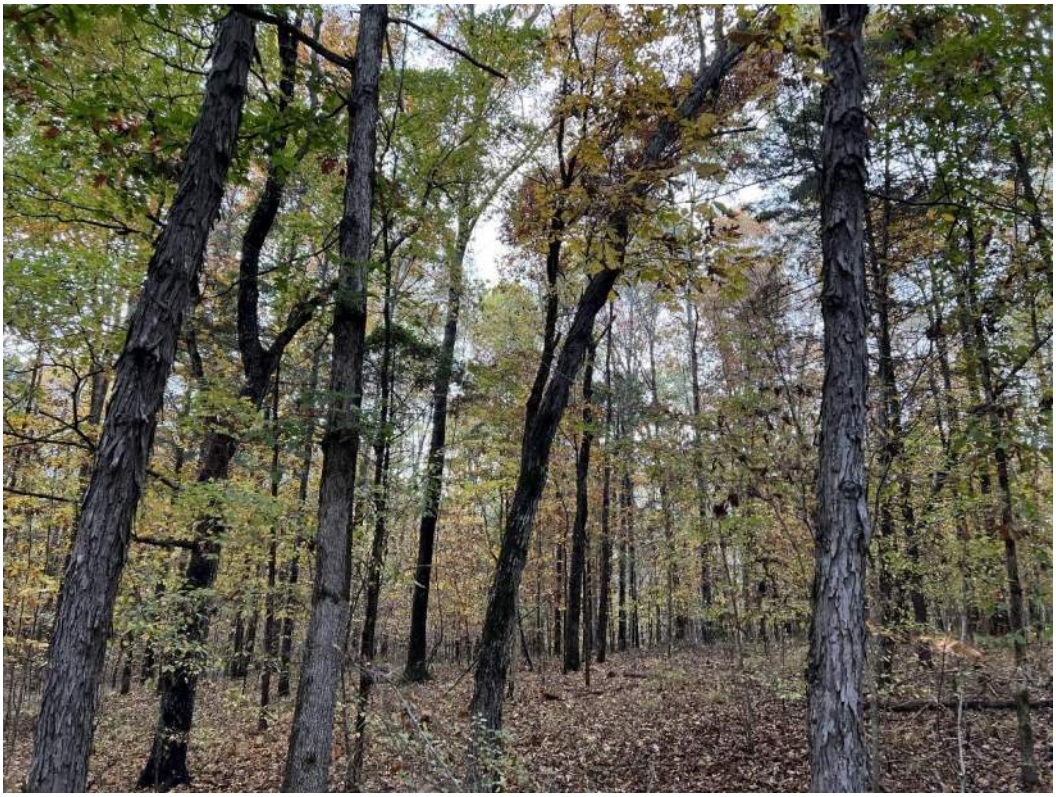


Photo: 80
By: F. Amatucci
Date: October 25, 2022
Feature: PRTs-48 – 50
Lat: 35.260634
Long: -88.371847

Potential bat roost location with multiple shagbark hickory trees with exfoliating bark observed within project study area.

Photo: 81
By: F. Amatucci
Date: August 30, 2023
Feature: Large Box Culvert
Lat: 35.254743
Long: -88.371251

Large box culvert for STR-9 (Stratton Branch) under Woods Road. Note the lack of roosting bats.

Photo: 82
By: F. Amatucci
Date: August 30, 2023
Feature: Large Culvert
Lat: 35.254132
Long: -88.368662

Large corigated metal pipe culvert for STR-8 under a residential driveway. Note the lack of roosting bats.

APPENDIX F – State and Federal Concurrence Documents

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL FIELD OFFICE
1625 Hollywood Drive
JACKSON, TENNESSEE
38305
PHONE (731) 513-1300 STATEWIDE 1-888-891-8332 FAX (731) 661-6283

March 6, 2023

Silicon Ranch Corporation
Mr. Max Orlet
222 Second Ave S. Suite 1900
Nashville, TN 37201

Re: Hydrologic Determination of Water Resources (DWR ID No. 31984)
Proposed Adamsville Solar Site
Tennessee River watershed, McNairy and Hardin County, TN

Mr. Mr. Orlet:

The Tennessee Department of Environment and Conservation, Division of Water Resources (TDEC-DWR) has reviewed the following report *"Hydrologic Determination Request Package for the Adamsville Solar Site"* for the proposed Adamsville Solar Site in McNairy and Hardin Counties. This report was prepared by Barge Design Solutions, Inc., and submitted on your behalf to our office on February 6, 2023, in support of jurisdictional hydrologic determinations of water features associated with the above referenced site. These water features are located on property located at 35.2540595 -88.3681959 McNairy and Hardin County, TN. Please note that all geographic coordinates provided in this letter have a limited precision and should be considered approximate. As part of our review, Division staff along with and Frank Amatucci, with Barge Design Solutions visited the site on February 17, 2023

Based on the information and documentation submitted in the report, our observations on-site, and the Division's rules and guidance regarding hydrologic determinations, the Division concurs with the jurisdictional determination of the assessed water features as documented in the submitted report and portrayed on *Figure 6a – Existing Conditions Map*, with the following exceptions. The feature denoted in the report as ponds P-1 through P-7 has been determined by TDEC to be jurisdictional according to rules. All the final determinations are summarized and are attached in modified Table 1 and 2 (*Attachment 1*) and the attached map as modified from the report (*Attachment 2*).

It is important to note that the Division's evaluation and concurrence is restricted to only the water features identified within the submitted report and as depicted on the attached map. Only the water features listed above were assessed as part of this hydrologic determination, therefore this correspondence is not intended to represent a comprehensive water resource inventory of the entire site. It is the property owner's responsibility to consider and report any additional water features within the property boundaries that may be affected by any construction activities associated with future development.

Any alterations to jurisdictional streams, wetlands, or open water features may only be performed under the coverage of, and conformance to, a valid *Aquatic Resource Alteration Permit (ARAP)* issued by the Division. ARAP applications and provisions are available on-line at https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap-.html.

Alterations to Wet Weather Conveyances typically may be performed without application or notification to the Division, provided they conform to the provisions found under *Tennessee Code Annotated § 69-3-108 (q).*

Please note that coverage under the *General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)* will be needed if the proposed land disturbance activity for this project is one acre or more in size. Information and applications regarding the Division's construction storm water program can be found online. A completed Notice of Intent form, an application fee, and a storm water pollution prevention plan should be submitted to the above address for review and coverage under this permit prior to any land disturbance.

Discharges and alterations to sinkholes may require the submittal of an application and written authorization under the provisions of TDEC Rules. Information and applications regarding the Underground Injection Control program may be seen online at https://www.tn.gov/environment/permit-permits/water-permits1/underground-injection-control-permit.html. Physical alterations or re-routing of surface hydrology to a sinkhole may require coverage under the *Class V Injection Control Permit*.

Hydrologic determinations are advised and governed by Tennessee Department of Environment and Conservation (TDEC) rules and regulations, and therefore only apply to the State's permitting process. Because these and other various water features on-site may potentially also be considered jurisdictional Waters of the United States, any alterations to them should only be performed after consultation with the U.S. Army Corps of Engineers.

We appreciate the opportunity to assess the jurisdictional status of these water features prior to site plan finalization and initiation of construction activities. Because natural variation and human activities can alter hydrologic conditions, the Division reserves the right to reassess the status of the water features in the future.

Thank you for your interest in water quality in Tennessee. Please contact April Caudill at 731-693-0377 or by email at AprilCaudill@tn.gov if you have any questions.

Respectfully,

Conner Franklin
Environmental Program Manager,
JEFO

Enclosures: *Attachment 1-Non-Wetland and Wetland Features within the Project Study Area*
Attachment 2 - Hydrologic Features Area Map

Cc: File copy
Frank Amatucci, Barge Design Solutions
USACE District Nashville: NashvilleRegulatory@usace.army.mil

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL FIELD OFFICE
1625 Hollywood Drive
JACKSON, TENNESSEE
38305
PHONE (731) 513-1300 STATEWIDE 1-888-891-8332 FAX (731) 661-6283

June 6, 2023

Mr. Max Orlet
Silicon Ranch Corporation
222 Second Ave S. Suite 1900
Nashville, TN 37201

Re: Hydrologic Determination of Water Resources (DWR ID No. 31984)
Proposed Adamsville Solar Site (Pond-1)
Tennessee River watershed, McNairy and Hardin County, TN

Mr. Mr. Orlet:

The Tennessee Department of Environment and Conservation, Division of Water Resources (TDEC-DWR) has reviewed the supplemental information submitted on May 19, 2023, to support the original *"Hydrologic Determination Request Package for the Adamsville Solar Site"* in McNairy and Hardin Counties. This supplemental information was prepared by Barge Design Solutions, Inc., and submitted on your behalf for the feature labeled Pond-1 in the original Hydrologic Determination Report submitted on January 27, 2023.

Pond-1 was previously determined to be a jurisdictional open water feature (pond) based upon the presumption of a groundwater connection. The supporting information provided is sufficient evidence that a groundwater connection is not present. As a result, Pond-1 is no longer considered jurisdictional. Please be aware that all remaining jurisdictional determinations summarized in the concurrence letter dated March 13, 2023 stand. Any alterations to jurisdictional streams, wetlands, or open water features may only be performed under the coverage of, and conformance to, a valid *Aquatic Resource Alteration Permit (ARAP)* issued by the Division. ARAP applications and provisions are available on-line at https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap-.html.

Alterations to Wet Weather Conveyances typically may be performed without application or notification to the Division, provided they conform to the provisions found under *Tennessee Code Annotated § 69-3-108 (q).*

Please note that coverage under the *General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)* will be needed if the proposed land disturbance activity for this project is one acre or more in size. Information and applications regarding the Division's construction storm water program can be found online. A completed Notice of Intent form, an application fee, and a storm water pollution prevention plan should be submitted to the above

address for review and coverage under this permit prior to any land disturbance.

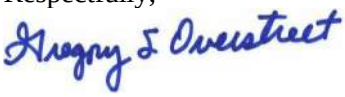
Discharges and alterations to sinkholes may require the submittal of an application and written authorization under the provisions of TDEC Rules. Information and applications regarding the Underground Injection Control program may be seen online at https://www.tn.gov/environment/permit-permits/water-permits1/underground-injection-control-permit.html. Physical alterations or re-routing of surface hydrology to a sinkhole may require coverage under the *Class V Injection Control Permit*.

Hydrologic determinations are advised and governed by Tennessee Department of Environment and Conservation (TDEC) rules and regulations, and therefore only apply to the State's permitting process. Because these and other various water features on-site may potentially also be considered jurisdictional Waters of the United States, any alterations to them should only be performed after consultation with the U.S. Army Corps of Engineers.

We appreciate the opportunity to assess the jurisdictional status of these water features prior to site plan finalization and initiation of construction activities. Because natural variation and human activities can alter hydrologic conditions, the Division reserves the right to reassess the status of the water features in the future.

Thank you for your interest in water quality in Tennessee. Please contact April Caudill at 731-693-0377 or by email at AprilCaudill@tn.gov if you have any questions.

Respectfully,



for

Conner Franklin
Environmental Program Manager, JEFO

Cc: File copy
Frank Amatucci, Barge Design Solutions
USACE District Nashville: NashvilleRegulatory@usace.army.mil

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
REGULATORY DIVISION
3701 BELL ROAD
NASHVILLE, TENNESSEE 37214

February 8, 2024

SUBJECT: File No.LRN-2023-00119, Approved and Preliminary Jurisdictional Determinations; Adamsville Solar Farm Property, Adamsville, McNairy and Hardin Counties, Tennessee

Mr. Max Orlet
Silicon Ranch Corporation
222 Second Ave S. Suite 1900
Nashville, TN 37201
E-copy: max.orlet@siliconranch.com

Dear Mr. Orlet:

This letter is in regard to your report entitled “Jurisdictional Determination Request", received January 31, 2023, which documented potential waters of the United States on a review area of approximately 294-acres. The JD Report, associated with the Adamsville Solar Farm property in Adamsville, McNairy and Hardin Counties, Tennessee, indicated your preference for eighteen (18) features of the potential waters of the U.S. on the review area to be reviewed as a preliminary jurisdictional determination (PJD) and twenty-eight (28) features to be reviewed as an approved jurisdictional determination (AJD). This project has been assigned File No. LRN-2023-00119, please refer to this number in any future correspondence.

The U.S. Army Corps of Engineers (USACE) has regulatory responsibilities pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Under Section 10, the USACE regulates any work in, or affecting, navigable waters of the U.S. It appears the review area does not include navigable waters of the U.S. and would not be subject to the provisions of Section 10. Under Section 404, the USACE regulates the discharge of dredged and/or fill material into waters of the U.S., including wetlands.

Preliminary Jurisdictional Determination Based on a desktop review on February 13, 2023, and January 24, 2024, and a site visit on February 17, 2023, 11,748 linear feet of streams, 1.6-acres of wetlands, and 0.6-acres of open waters were documented within the review area. This office has determined these features **may** be jurisdictional waters of the U.S. in accordance with 33 C.F.R. 331.2 and a PJD has been prepared. The PJD is non-binding, cannot be appealed and only provides a written indication that waters of the U.S, including wetlands, may be present on-site. For purposes of computation of impacts, compensatory mitigation requirements and other resource protection measures, a permit decision made on the basis of a PJD will treat all waters that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This determination is only valid for the

review areas shown on the attached map entitled “LRN-2023-00119, Enclosure 4”, attached to this letter.

Enclosed with this letter is a copy of the PJD. If you agree with the findings of this PJD and understand your options regarding the same, please sign and date the form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

U.S. Army Corps of Engineers
Nashville District
3701 Bell Rd.
Nashville, TN 37214
Attn: Jennifer Watson

Approved Jurisdictional Determination: Also enclosed is an approved jurisdictional determination for the features identified as the following: EPH-7/STR-8 and WTL-6, **determined jurisdictional**, and EPH-1, EPH-2, EPH-4, EPH-5, EPH-8, EPH-9, EPH-10, EPH-11, EPH-12, ES-1, ES-2, ES-3, ES-4, ES-5, ES-6, ES-7, ES-8, ES-9, ES-10, ES-11, D-1, WTL-1, P-1, P-3, P-4, and P5, **determined not jurisdictional**. I have determined that the features listed above that are designated as not jurisdictional are not waters of the United States subject to USACE jurisdiction. Therefore, you are not required to obtain Department of the Army authorization to discharge dredged or fill material within these areas. The rationale for this determination is provided in the attached Approved Jurisdictional Determination Memorandum For Record (MFR).

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in Sackett.

The approved jurisdictional determination expires five years from the date of this letter, unless new information warrants revision of the determination before the expiration date, or the District Engineer identifies specific geographic areas with rapidly changing environmental conditions that merit re-verification on a more frequent basis. This approved jurisdictional determination is only valid for the review areas area as shown on the enclosed map labeled “LRN-2023-00119, Enclosure 4”

If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeals Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Great Lakes and Ohio River Division, Division Office at the following address:

Regulatory Appeal Review Officer
ATTN: Ms. Katie McCafferty
Army Engineer Division
550 Main Street, Room 10-780
Cincinnati, OH 45202-3222
TEL (513) 684-2699

In order for an RFA to be accepted by the USACE, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date listed on the RFA form. **It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter**.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

We appreciate your awareness of the USACE regulatory program. If you have any questions, you may contact myself or Jennifer Watson at (615) 587-4716 or by e-mail at Jennifer.A.Watson2@usace.army.mil.

Sincerely,

Timothy C. Wilder
Chief, West Branch
Nashville Regulatory Division

Enclosures:

1. Enclosure 1 – AJD MFR
2. Enclosure 2 – PJD Form
3. Enclosure 3 – Appeal Form
4. Enclosure 4 – AJD-PJD Map

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NASHVILLE DISTRICT
3701 BELL ROAD
NASHVILLE TENNESSEE 37214

CELRN-RD February 8, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] [LRN-2023-00119][2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as

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[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

[3] 33 CFR 331.2.

[4] Regulatory Guidance Letter 05-02.

[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in Tennessee due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

   b.

   i. EPH-1 is not a water of the United States
   ii. EPH-2 is not a water of the United States
   iii. EPH-4 is not a water of the United States
   iv. EPH-5 is not a water of the United States
   v. EPH-7/STR-8 is a water of the United States (Section 404)
   vi. EPH-8 is not a water of the United States
   vii. EPH-9 is not a water of the United States
   viii. EPH-10 is not a water of the United States
   ix. EPH-11 is not a water of the United States
   x. EPH-12 is not a water of the United States
   xi. ES-1 is not a water of the United States
   xii. ES-2 is not a water of the United States
   xiii. ES-3 is not a water of the United States
   xiv. ES-4 is not a water of the United States
   xv. ES-5 is not a water of the United States
   xvi. ES-6 is not a water of the United States
   xvii. ES-7 is not a water of the United States
   xviii. ES-8 is not a water of the United States
   xix. ES-9 is not a water of the United States
   xx. ES-10 is not a water of the United States
   xxi. ES-11 is not a water of the United States
   xxii. D-1 is not a water of the United States
   xxiii. WTL-1 is not a water of the United States
   xxiv. WTL-6 is a water of the United States (Section 404)
   xxv. P-1 is not a water of the United States
   xxvi. P-3 is not a water of the United States
   xxvii. P-4 is not a water of the United States
   xxviii. P-5 is not a water of the United States

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

3. REVIEW AREA. The AJD review area is limited to the specified review areas depicted on the attached figure on an area of 294-acres near Adamsville in McNairy and Hardin Counties, Tennessee (Latitude: 36.446164° N, Longitude -88.298679° W). The site is dominated by agricultural land with a few spots of upland/bottomland forest. The project study area is within the Milledgeville, Tennessee, topographic quadrangle, with the western portion extending into the Leapwood topographic quadrangle. The project study area and proposed electric easement corridor are located within the Beason Creek – Tennessee River (060400010508) HUC-12 watershed. This watershed is ultimately located within the Lower Tennessee – Beech Rivers (06040001) HUC-8 watershed, which is within the Tennessee River Basin. No previous jurisdictional determination requests are associated with the site.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. N/A

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS N/A

6. SECTION 10 JURISDICTIONAL WATERS: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10. N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The

rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

a. TNWs (a)(1): N/A

b. Interstate Waters (a)(2): N/A

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): N/A

e. Tributaries (a)(5):

Resource Name	Size	Criteria	Rationale
EPH-7/STR-8		This feature is a natural, man altered, or man made water body that flows directly or indirectly into a traditional navigable water (TNW). This tributary has been determined to meet the relatively permanent standard. The tributary typically flows year-round or has continuous flow at least seasonally.	75% of this tributary had strong/moderate/weak indicators of intermittent/perennial flow. This determination is supported by field documentation of continuous bed and bank was semi-moderately present and there was a presence of hydric soils on the channel bottom. The stream channel bottom is composed of sand and silt with some depositional bars and benches, as well as recent alluvial deposits. EPH-7 drains WTL-6 and flows through WTL-4a and WTL-4b before returning to a channel-only tributary that flows off the property and into STR-9 (Stratton Branch). Based on the information above we have determined that the resource meets the definition of “waters of the United States”.

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7):

Resource Name	Size	Criteria	Rationale
WTL-6	0.13-acres	This wetland feature has been determined to have a continuous surface connection to a jurisdictional resource. This wetland has been determined to be abutting a jurisdictional water	This determination is supported by Field Verification and desktop review of DEM and aerial imagery. This feature flows directly into EPH 7/STR-8. Based on the information above we have determined that the resource meets the definition of "waters of the United States".

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as "generally non-jurisdictional" in the preamble to the 1986 regulations (referred to as "preamble waters").[6] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water.

Resource Name	Size	Criteria	Rationale
WTL-1	0.17-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation,	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1980 and meets the description of a preamble water.

[6] 51 FR 41217, November 13, 1986.

		settling basins or rice growing.	Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-1	0.27-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1980 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-3	0.05-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 2008 and 2010 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-4	0.05-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation,	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1985 and meets the description of a preamble water.

		settling basins or rice growing.	Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-5	0.10-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1985 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance.

Resource Name	Size	Criteria	Rationale
D-1	418 LF	Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water	This determination is supported by a straight dug manmade channel, vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the

			definition of “waters of the United States”.
ES-1	58 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-2	540 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-3	64 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow.

			Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-4	183 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-5	94 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-6	229 LF	Swales or erosional features (e.g., gullies,	This determination is supported by vegetated channel, weak to

		small washes characterized by low volume, infrequent, or short duration flow)	no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-7	79 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-8	81 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the

			Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-9	153 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-10	63 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-11	61 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume,

			infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered "generally not jurisdictional" under the Rapanos guidance and therefore does not meet the definition of "waters of the United States".

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland.
N/A

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

Resource Name	Size	Criteria	Rationale
EPH-1	462 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-2	301 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-4	175 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-5	997 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-8	440 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-9	249 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-10	341 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-11	321 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-12	585 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of "waters of the United States".

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. Consultant report dated January 31, 2023
   I. Field photos (consultant field visit conducted October 24, 2022)
   II. Hydrologic Determination Field Data Sheets
   III. Wetland Delineation Sheets
   IV. Feature Description Narratives
   V. USGS Topo Map
   VI. Watershed Map
   VII. Soils Map
   VIII. Precipitation Data

b. USACE field visit conducted February 17, 2023
   I. Field Verification Photos
   II. Site Visit Notes

c. National Regulatory Viewer Layers accessed February 13, 2023
   I. National Wetland Inventory

II. National Hydrography Dataset
III. USA Soils Map Units
IV. 3DEP Digital Elevation Model (DEM)
V. 3DEP Hill Shade

d. Google Earth accessed January 31, 2024
   I. Historic aerial imagery

e. Historicaerials.com accessed January 24, 2024
   I. Historic aerial imagery

10. OTHER SUPPORTING INFORMATION. N/A

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Max Orlet, Silicon Ranch Corporation	File No. LRN-2023-00119	Date: 02/08/2024

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL WITHOUT PREJUDICE	C
	PERMIT DENIAL WITH PREJUDICE	D
X	APPROVED JURISDICTIONAL DETERMINATION	E
X	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable
You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial
You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable
You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
Jennifer Watson Nashville District, U.S. Army Corps of Engineers Regulatory Branch 3701 Bell Road Nashville, Tennessee 37214 615-587-4716; Jennifer.A.Watson2@usace.army.mil	Regulatory Appeals Review Officer ATTN: Katherine McCafferty Army Engineer Division 550 Main Street, Room 10-780 Cincinnati, Ohio 45202-3222 Phone: (513) 684-2699 Katherine.A.McCafferty2@usace.army.mil

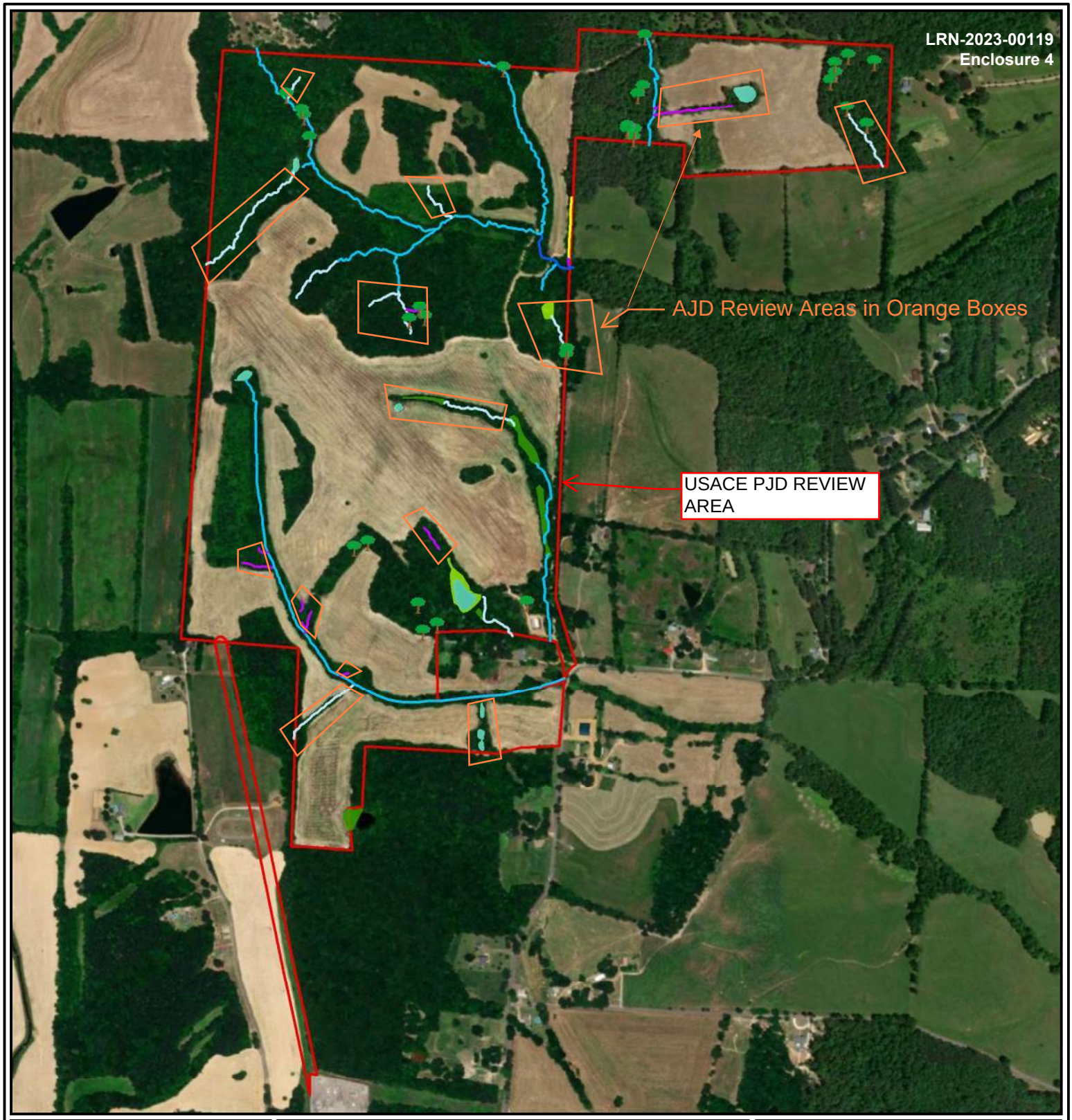
SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:
Email address of appellant and/or agent:	Telephone number:



Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

N

1 inch = 900 feet

0 200 400 800 1,200 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (OVERVIEW)

PROJ NO: 3609517

DATE: February 2023

FIGURE 6a

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permitting\Figure6a_ExistingConditionsOverviewMap.mxd

U.S. Army Corps of Engineers (USACE)

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

For use of this form, see Sec 404 CWA, Sec 10 RHA, Sec 103 MPRSA; the proponent agency is CECW-COR.

Form Approved -
OMB No. 0710-0024
Expires 2024-04-30

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the review area that may be subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice or FOIA request as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in any resulting jurisdictional determination (JD), which may be made available to the public on the District's website and/or on the Headquarters USACE website.

Disclosure Submission of requested information is voluntary; however, if information is not provided, the request for a JD cannot be evaluated nor can a PJD be issued.

The Agency Disclosure Notice (ADN)

The public reporting burden for this collection of information, 0710-0024, is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

SECTION I - BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 2024-01-29

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:
Mr. Max Orlet, Silicon Ranch Corporation, 222 Second Avenue S., Suite 1900, Nashville, Tennessee 37201

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:
Nashville, Adamsville Solar Farm Site, LRN-2023-00119

D. PROJECT LOCATION AND BACKGROUND INFORMATION:
(*USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES*)

State: Tennessee County/Parish/Borough: McNairy & Hardin City: Wildersville

Center coordinates of site (*lat/long in degree decimal format*): Latitude: 35.264760 ° Longitude: -88.36455 °

Universal Transverse Mercator: 16

Name of nearest waterbody: Stratton Branch

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

☒ Office (*Desk*) Determination. Date: 2024-01-24

☒ Field Determination

Date(s): February 17, 2023

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	STR-1	35.265904	-88.366872	851 LF	non-wetland waters	Section 404

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	STR-2	35.265238	-88.370731	1,198 LF	non-wetland waters	Section 404
	STR-3	35.261092	-88.369038	229 LF	non-wetland waters	Section 404
	STR-4	35.265350	-88.375633	2,879 LF	non-wetland waters	Section 404
	STR-5	35.263338	-88.374596	79 LF	non-wetland waters	Section 404
	STR-6	35.261626	-88.373680	801 LF	non-wetland waters	Section 404
	STR-7	35.260908	-88.372332	280 LF	non-wetland waters	Section 404
	STR-8	35.257766	-88.369098	1,219 LF	non-wetland waters	Section 404
	STR-9 (Stratton Branch)	35.257419	-88.375556	3,788 LF	non-wetland waters	Section 404
	EPH-6	35.255132	-88.370305	424 LF	non-wetland waters	Section 404
	EPH-7	35.258937	-88.371348	568 LF	non-wetland waters	Section 404
	WTL-2	35.255617	-88.370881	0.36-acres	PEM	Section 404
	WTL-3	35.254955	-88.370303	0.04-acres	PFO	Section 404
	WTL-4a	35.258019	-88.369216	0.43-acres	PFO	Section 404
	WTL-4b	35.257025	-88.368970	0.37-acres	PFO	Section 404
	WTL-5	35.251105	-88.373150	0.27-acres	PFO	Section 404
	WTL-6	35.258964	-88.371564	0.13-acres	PFO	Section 404
	P-2	35.263307	-88.374683	0.08-acres	Open Waters	Section 404
	P-6	35.259335	-88.375737	0.10-acres	Open Waters	Section 404

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	P-7	35.255257	-88.370689	0.42-acres	OW	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD or no JD whatsoever, which do not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the USACE has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD or reliance on no JD whatsoever; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of USACE permit authorization based on a PJD or no JD whatsoever constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the USACE will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

F. SUPPORTING DATA. Data reviewed for PJD (*check all that apply)*
Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:

Map: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☒ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

Rationale: _____

☐ Data sheets prepared by the USACE:

☐ Corps navigable waters' study:

☒ U.S. Geological Survey Hydrologic Atlas:

Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☐ U.S. Geological Survey map(s). Cite scale & quad name:

7.5 Minute Index: Millegeville

☒ USDA Natural Resources Conservation Service Soil Survey.

Citation: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ National Wetlands Inventory map(s).

Cite Name: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☐ State/Local Wetland Inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____. (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (*Name & Date*): Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

or ☒ Other (*Name & Date*): Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch
Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch and USACE SIte visit photos from 2/17/2023

☐ Previous determination(s). File no. and date of response letter:

☐ Other information (*please specify*):

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

Name of Regulatory Staff Member Completing PJD	Date	Signature of Regulatory Staff Member Completing PJD
Jennifer Watson	2024-01-29	WATSON.JENNIFER.A.1607600119 Digitally signed by WATSON.JENNIFER.A.1607600119 Date: 2024.01.29 08:56:36 -06'00'
Name of Person Requesting PJD	Date	Signatureof Person Requesting PJD *(REQUIRED, unless obtaining the Signature is Impracticable*

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

APPENDIX G – Rare, Threatened and Endangered Species List

IPaC **U.S. Fish & Wildlife Service**

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

Hardin and McNairy counties, 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.

---

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 Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Whooping Crane Grus americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Reptiles

NAME	STATUS
Alligator Snapping Turtle Macrochelys temminckii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

Clams

NAME	STATUS

Clubshell Pleurobema clava — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3789

Cracking Pearlymussel Hemistena lata — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4130

Fanshell Cyprogenia stegaria — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4822

Longsolid Fusconaia subrotunda — Threatened
Wherever found
There is **final** critical habitat for this species.
https://ecos.fws.gov/ecp/species/9880

Orangefoot Pimpleback (pearlymussel) Plethobasus cooperianus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1132

Pink Mucket (pearlymussel) Lampsilis abrupta — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7829

Ring Pink (mussel) Obovaria retusa — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4128

Rough Pigtoe Pleurobema plenum — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6894

Round Hickorynut Obovaria subrotunda — Threatened
Wherever found
There is **final** critical habitat for this species.
https://ecos.fws.gov/ecp/species/9879

Sheepnose Mussel Plethobasus cyphyus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6903

Spectaclecase (mussel) Cumberlandia monodonta — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7867

White Wartyback (pearlymussel) Plethobasus cicatricosus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2549

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS

Price''s Potato-bean Apios priceana — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7422

Whorled Sunflower Helianthus verticillatus — Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/3375

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.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence 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). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles 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 Rapid Avian Information Locator (RAIL) Tool.

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. Please contact your local Fish and Wildlife Service Field Office if you have questions.

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 https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The data in this location indicates there are no migratory birds of conservation concern expected to occur in this area.

There may be migratory birds in your project area, but we don���t have any survey data available to provide further direction. For additional information, please refer to the links above for recommendations to minimize impacts to migratory birds or contact your local FWS office.

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 list of migratory birds that potentially occur 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 Rapid Avian Information Locator (RAIL) 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 or migrating in my 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 query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. 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 (NWI)

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.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

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.

heritage review for TVA CEC xxxxxx on ESCS 41215 Adamsville Solar PPA EA HDB Query Feature, OBJECTID 1, (1*)

Records of state- and federal-listed Aquatic Animals points located within the HUC boundary of ESCS 41215 Adamsville Solar PPA EA HDB Query

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)
Carpiodes velifer	Highfin Carpsucker	E - Verified extant (viability not assessed)	TN	S2S3	D	
Cumberlandia monodonta	Spectaclecase	E - Verified extant (viability not assessed)	TN	S2S3	E	E
Cycleptus elongatus	Blue Sucker	H? - Possibly historical	TN	S2	T	
Cyprogenia stegaria	Fanshell	E - Verified extant (viability not assessed)	TN	S1	E	E, XN
Hemistena lata	Cracking Pearlymussel	H - Historical	TN	S1	E	E, XN
Hemitremia flammea	Flame Chub	E - Verified extant (viability not assessed)	TN	S3	D	
Lampsilis abrupta	Pink Mucket	E - Verified extant (viability not assessed)	TN	S2	E	E
Lampsilis ovata	Pocketbook	H - Historical	TN	S5		
Leptoxis praerosa	Onyx Rocksnail	H - Historical	TN	S3		
Lithasia armigera	Armored Rocksnail	H - Historical	TN	S1S2		
Lithasia geniculata	Ornate Rocksnail	H - Historical	TN	S2		
Lithasia salebrosa	Muddy Rocksnail	H - Historical	TN	S2		
Obovaria olivaria	Hickorynut	H - Historical	TN			
Obovaria retusa	Ring Pink	E - Verified extant (viability not assessed)	TN	S1	E	E, XN
Orconectes wrighti	Hardin Crayfish	E - Verified extant (viability not assessed)	TN	S2	E	UR
Plethobasus cicatricosus	White Wartyback	E - Verified extant (viability not assessed)	TN	S1	E	E, XN
Plethobasus cooperianus	Orange-foot Pimpleback	BC - Good or fair estimated viability	TN	S1	E	E, XN
Plethobasus cyphyus	Sheepnose	BC - Good or fair estimated viability	TN	S2S3	E	E
Pleurobema clava	Clubshell	H - Historical	TN	SH	E	E, XN
Pleurobema cordatum	Ohio Pigtoe	E - Verified extant (viability not assessed)	TN			
Pleurobema plenum	Rough Pigtoe	E - Verified extant (viability not assessed)	TN	S1	E	E, XN
Pleurocera alveare	Rugged Hornsnail	H - Historical	TN	S2		
Pleurocera curta	Shortspire Hornsnail	H - Historical	TN	S2		UR
Pleuronaia dolabelloides	Slabside Pearlymussel	H - Historical	TN	S2	E	E
Quadrula cylindrica	Rabbitsfoot	Not ranked	TN			T
Typhlichthys subterraneus	Southern Cavefish	H - Historical	TN	S3		

Records of state- and federal-listed Plants and Champion Trees points located within a 5 Mile radius search of ESCS 41215 Adamsville Solar PPA EA HDB Query Feature, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)

Records of state- and federal-listed Caves points located within a 3 Mile radius search of ESCS 41215 Adamsville Solar PPA EA HDB Query Feature, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)

Records of state- and federal-listed Terrestrial Animals points located within a 3 Mile radius search of ESCS 41215 Adamsville Solar PPA EA HDB Query Feature, OBJECTID 1

Scientific Name	Common Name	EO Rank (2*)	State	State Rank (3*)	State Status (4*)	Federal Status (4*)

Records of Heritage Natural Areas points located within a 3 Mile radius search of ESCS 41215 Adamsville Solar PPA EA HDB Query Feature, OBJECTID 1

MA Name	MA Type	MA Unit Code	State	Acres	Status	Key ID No
BEASON CREEK WETLAND - TWRA	NI		TN	460.14		Y

1* Source: TVA Regional Natural Heritage Database; USFWS Information for Planning and Consultation (IPaC) resource list (https://ecos.fws.gov/ipac/) -If Relevant
2* EO = Element Occurrence; Common ranks: A= Excellent est. viability/ecol. Integrity; B= Good est. viability/ecol. Integrity; C= Fair est. viability/ecol. Integrity; E= Verified extant (viability/ecological integrity not assessed); H= Historical; X= Extirpated; NR= Not ranked. See Heritage Data Viewer Handbook for more ranks.
3* State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S5 = Secure; SX = Presumed Extirpated. See Heritage Data Viewer Handbook for more ranks.
4* Status Codes: D= Deemed in Need of Management; DM= Delisted, still being monitored; E= Endangered; LE= Listed Endangered; LT= Listed Threatened; C= Candidate; PS= Partial Status; T= Threatened; E-P= Endangered/Possibly Extirp.; E-PT= Endangered/Proposed Threatened; RARE= Rare; SLNS= State listed, no status; S= Special Concern; S-P= Special Concern/Possibly Extirp.; S-CE= Special Concern/Commerc. Exploited; T-CE= Threatened/Commerc. Exploited
5* See Heritage Data Viewer Handbook for full scope of Natural Areas as well as definitions of Natural Area types and units.

APPENDIX H – USFWS Bat Habitat Data Forms

INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Silcon Ranch - Adamsville Solar Project Date: Oct. 26/2022

Township/Range/Section: Adamsville, McNairy & Hardin Co, TN

Lat Long/UTM/ Zone: 35.258597, -88.372935 Surveyor: FCA, CMB

Brief Project Description

Two farm properties proposed for solar farm development, comprised of cropland + woodland

Project Area

	Total Acres	Forest Acres	Open Acres
Project 294 ac & easement	299	~ 146.6	~ 152.4

Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres- no clearing
	UNK →		→

Vegetation Cover Types

Pre-Project	Post-Project
Cropland	Solar Development
Oak-Hickory forest	UNK
Riparian forest	Potentially remain
Mixed Growth Hardwood forest	UNK
Successional forest	Potentially remain
Red cedar + Loblolly stands	
Red Maple Hardwood Swamp	

Landscape within 5 mile radius

Flight corridors to other forested areas?

forested areas to the north and south of the project study area

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

Agricultural, Residential, forested, Commercial, Stratton Branch North fork Beason Creek

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)?

~3 miles Beason Creek Wetland (TWRA)

August 2023 Property Revisions*
Total Acreage = 295 ac
Forested Acreage= 148.8 ac
Open Acreage = 146.2 ac

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):

Oak-Hickory forest (Mature - "Good" 8.7ac) (Semi-Mature "Good" - 20.2 ac) (Young - "Poor" 18.2 ac)

Water Resources at Sample Site

	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
Stream Type (# and length)	7 ~ 3,445	#3 ~ 1,680 LF	—	Erosional ephemeral streams & Intermittent stream as a headwater
Pools/Ponds (# and size)		Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		1 0.05 ac		

Forest Resources at Sample Site

M/Semi/Young →

	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	5/3/1	3/4/6	1/2/4	
Dominant Species of Mature Trees	Shagbark Hickory, NOS red oak, White oak Post Oak, Chinkapin Oak, Pignut Hickory			
% Trees w/ Exfoliating Bark	~ 10%			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10/30/70	40/30/20	50/40/10	
No. of Suitable Snags		~ 40		

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 (Mature & Semi-Mature)

Additional Comments:

Observed in plots of variable growth stages
- Mature + Semi-Mature had older growth, more PRTs and better flight corridors
- Young was thick stand of saplings

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

August 2023 Property Revisions*
Mature Acreage: 9.2 ac
Semi-moderate: 31.7 ac
Young: 18.6 ac

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)

Riparian Forest (Semi-Mature "Marginal" 11.5ac) (Young "Poor" 10.1ac)

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	2 1,304 LF	2 4,288 LF	—	Headwaters to Stratton Branch with narrow forested Buffer
Pools/Ponds (# and size)	3 0.62 ac	Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		1.80 ac		

Forest Resources at Sample Site

Semi/Young →

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')
	4/2	3/4	2/4

1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%

Dominant Species of Mature Trees	River birch, sweetgum, Box elder, Sycamore Green ash, slippery elm, Sugarberry, Red Maple		
% Trees w/ Exfoliating Bark	0		
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)
	20/30	40/40	40/30
No. of Suitable Snags		0	

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 (Semi-Mature)

Additional Comments:

- Observed along 2 stream valleys but was observed with an narrow buffer and thick understory of river cane & Catbriar.
- Could be good foraging habitat

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

August 2023 Property Revisions*
Semi-moderate: 8.6 ac
Young: 10.2

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): Mixed Growth Hardwood forest ("Marginal" 19.6 ac) ("Poor" 8.2 ac)

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral: 990 LF	Intermittent: 2,769 LF	Perennial: —	Describe existing condition of water sources: Large Intermittent Streams
Pools/Ponds (# and size)	0.42 ac	Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent:	Seasonal: 0.51 ac		

Forest Resources at Sample Site				
Closure/Density	Canopy (> 50'): 5/3	Midstory (20-50'): 3/5	Understory (<20'): 3/4	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
Marginal/Poor → Dominant Species of Mature Trees	Oak, Ash, Elm, Sweetgum, Tulip poplar, red cedar, Black cherry			
% Trees w/ Exfoliating Bark	0			
Size Composition of Live Trees (%)	Small (3-8 in): 20/40	Med (9-15 in): 40/30	Large (>15 in): 40/30	
No. of Suitable Snags		~10		

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 (Marginal - older growth)

Additional Comments:

- Observed with variable growth in trees
  - Where understory is less dominant score went to Marginal
  - Along streams it is terraced above & could provide adequate roosting & foraging habitat

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

August 2023 Property Revisions*
Total acreage: 29.5

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): Successional forest "Poor" 17.5 ac

Red Cedar + Loblolly Stands "Poor" 23.8 ac

Water Resources at Sample Site				
Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	321 LF	—	—	
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%
Dominant Species of Mature Trees	Mix from Hardwood Forest			
% Trees w/ Exfoliating Bark	0			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	60	20	20	
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:
Appeared in areas recently timbered with a thick dominance of saplings

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

August 2023 Property Revisions*
Successional forest: 17.0 ac
Red Cedar: 1.8 ac
Planted Pine: 22.2 ac

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 Maple - Hardwood Swamp "Poor" 0.1 ac

Water Resources at Sample Site

Stream Type (# and length)	Ephemeral	Intermittent	Perennial	Describe existing condition of water sources:
	—	—	—	man-made pond with swamp fringe
Pools/Ponds (# and size)	1	Open and accessible to bats? Yes		
Wetlands (approx. ac.)	Permanent 0.27 ac	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%
	3	5	3	
Dominant Species of Mature Trees	Red Maple, Black willow, River Birch			
% Trees w/ Exfoliating Bark	0			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	30	50	20	
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 (foraging)

Additional Comments:

Good foraging habitat over the man-made pond portion but no roosting sites available

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

August 2023 Property Revisions*
Total acreage: >0.1 ac

APPENDIX I – Bat Survey Report

Bat Survey Report
Adamsville Solar Project

McNairy and Hardin County, Tennessee

Prepared by:

Jackson Group
3945 Simpson Lane
Richmond, KY 40475
www.jacksongroupco.com

Prepared for:

Barge Design Solutions
615 3rd Ave South, Suite 700
Nashville, TN 37210

June 26, 2023

Table of Contents

Jackson Group
501.339.3580 | 3925 Simpson Lane | Richmond, KY 40475
jacksongroupco.com

1.0 INTRODUCTION

Projects within the state of Tennessee lie within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*M. septentrionalis*). Jackson Group was contracted by Barge Design to conduct a summer mist-net survey to determine the presence or probable absence of threatened and endangered (T&E) bat species for the proposed Adamsville Solar project located in McNairy and Hardin Counties, TN.

A mist net survey study plan was subsequently submitted to the US Fish and Wildlife resources (USFWS). The study plan was approved to conduct mist net surveys on 12 May 2023. Study plan approval is provided in Appendix E.

1.1 Project Description

Silicon Ranch is developing utility-scale, ground-mounted Solar Photovoltaic (PV) projects throughout the Southeastern United States. The Adamsville Solar project site is located approximately is located approximately one 1.5 miles northeast of the City of Adamsville. The Project Site is a 293-acre property of which approximately 171 acres would be permanently disturbed. The 0existing Pickwick Transmission Line will connect Adamsville Solar to the North Adamsville Substation.

2.0 METHODS

Federal and State permitted biologists conducted a mist net survey according to the 2023 Range-Wide Indiana Bat and Northern Long-eared Survey Guidelines (USFWS 2023), to evaluate presence/probable absence T&E bat species within the proposed Project area (federal and state permits are provided in Appendix D). Surveys were conducted on and between 20 May – 24 May 2023. Per the 2023 Guidelines, for every 123 acres (0.5km^2) of potential summer habitat a minimum of 10 net nights of survey effort are required. Net-nights are to be distributed in a manner that effectively samples the project area. There are approximately 137 acres of fragmented suitable forested habitat within the 293-acre project area. Therefore, 20 net-nights were distributed across 4 net sites in order to effectively survey the fragmented forest within the project boundary. Net site locations were selected by a permitted bat biologist in the field and were based on the best possible net locations (e.g., streams, trails, corridors) that are typically the most effective places to survey. Additionally, all netting was conducted using the most current National White-Nose Syndrome (WNS) Decontamination Protocol.

Upon capture, bats were removed from the nets, identified to species, weighed, measured, and released unharmed near the point of capture. The following data was recorded for each individual captured: species, age, reproductive condition, right forearm length (millimeters), weight (grams), time of capture, and WNS damage index score based upon Reichard and Kunz's (2009) Wing Damage Index. All bats were identified to species based upon distinctive morphological characteristics (e.g. body size, hair color, ear length, tragus shape, presence/absence of a keeled calcar, etc.). Age was determined by the degree of epiphyseal – diaphyseal fusion. Adult female bats were considered reproductive if they were pregnant (based upon palpation of the abdomen), or bore signs of nursing young (i.e. lack of hair surrounding the teats). Males were considered reproductive if the testes were descended into the scrotum.

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501.339.3580 | 3925 Simpson Lane | Richmond, KY 40475
jacksongroupco.com

3.0 RESULTS

3.1 Mist-Netting Survey

A total of nine bats were captured during the survey effort. Bat species captured included eastern red bat (*Lasiurus borealis*, n=8), and evening bat (*Nycticeius humeralis*, n=1). No threatened or endangered bats were captured during survey efforts. Detailed site-specific information and site diagrams are provided on the Mist Net Survey Data sheets in Appendix B. Mist net site net set photographs can be found in Appendix C and scientific collections permits in Appendix D.

3.2 Radio Telemetry

No threatened or endangered bats were captured during survey efforts; therefore, no radio tracking was conducted.

4.0 DISCUSSION

This summer mist net survey was conducted with the appropriate level of effort and under the appropriate conditions to investigate the presence/absence of threatened and endangered bat species at the proposed Puryear Solar Farm Project. A total of nine bats, comprised of two species, were captured during survey efforts. No threatened or endangered bat species were captured during the mist net survey efforts. No winter habitat was observed within the Project area.

The species captured during the survey are representative of bat species known to occur in the region. Given that the species captured during the survey are ubiquitous on the landscape and the absence of federally threatened or endangered bats, it is the opinion of Jackson Group that the proposed Project will not likely adversely affect threatened and endangered bat species populations in the project area.

Jackson Group
501.339.3580 | 3925 Simpson Lane | Richmond, KY 40475
jacksongroupco.com

5.0 REFERENCES

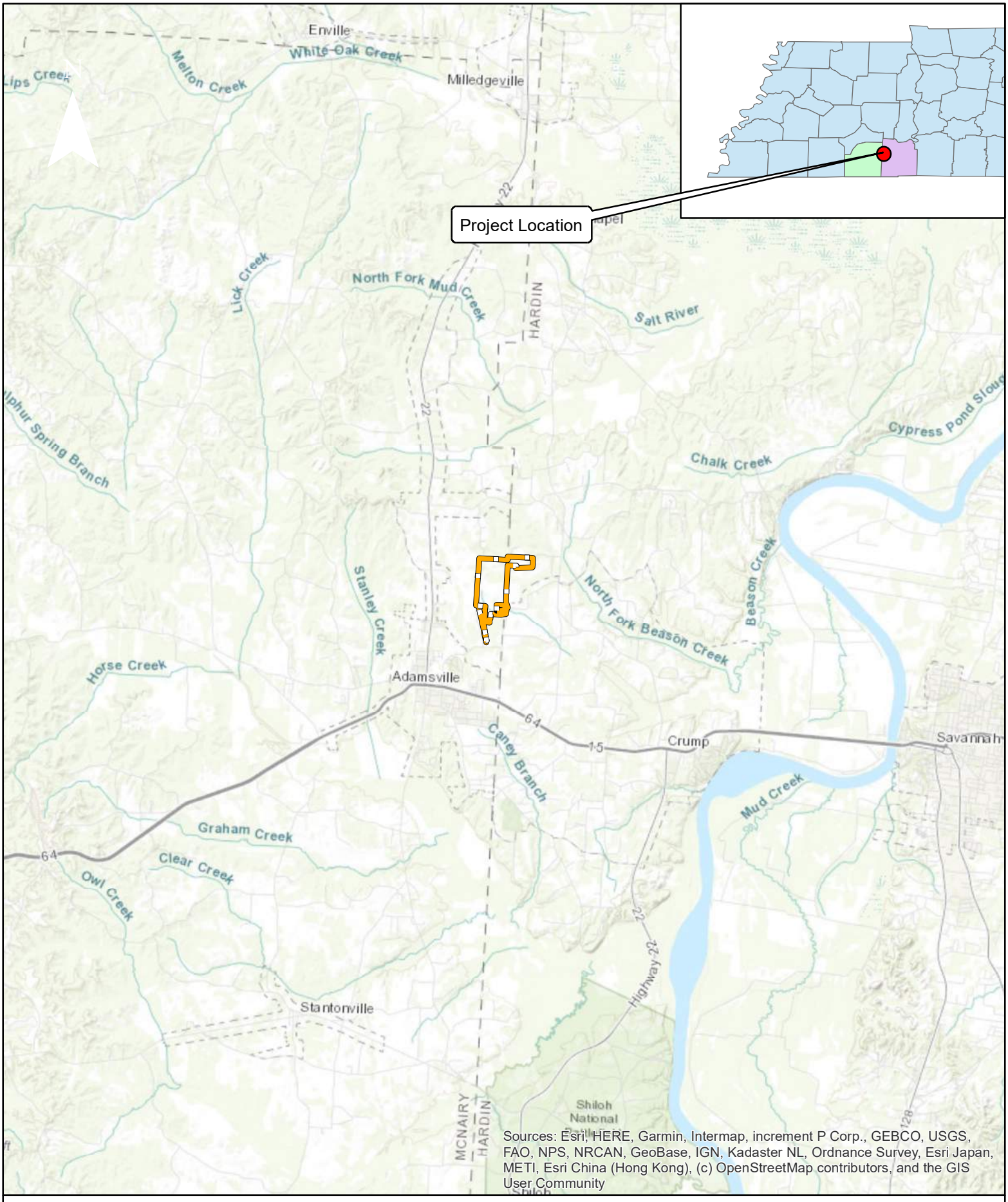
United States Fish and Wildlife Service (USFWS). 2020. White Nose Syndrome Decontamination Protocol, U.S Fish and Wildlife Service, Version 09.13.2018.

United States Fish and Wildlife Service (USFWS). 2023. Range-Wide Indiana Bat and Northern Long-eared bat Survey Guidelines, March 2023.

Jackson Group
501.339.3580 | 3925 Simpson Lane | Richmond, KY 40475
jacksongroupco.com

Appendix A

Project Mapping



Project Boundary

2 1 0 2 Miles


N
Net Site 4, Net B
Net Site 3, Net C
Net Site 3, Net B
Net Site 4, Net A
Net Site 3, Net A
Net Site 2, Net C
Net Site 2, Net B
Net Site 2, Net A
Net Site 1, Net A
Net Site 1, Net B
Net Site 1, Net C
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Net Sites
Project Boundary
1,000 500 0 1,000 Feet

Appendix B

Bat Capture Data Sheets

Site No. 1	**Project Name:** Adamsville Solar Project
Date: May 21, 2023	

Net Site Diagram

Comments:

Dominant Vegetation
Acer rubrum
Liquidambar styraciflua
Quercus stellata
Ulmus americana
Smilax rotundifolia

Nets by Habitat

Unit	River	Stream	Pond	Road Rut	Corridor	Cave/ Mine	Forest Edge	Interior Forest	Wetland
A	☐	☐	☐	☐	☐	☐	☐	☐	☑
B	☐	☐	☐	☐	☐	☐	☐	☐	☑
C	☐	☐	☑	☐	☐	☐	☐	☐	☐

No. of Poles X Net Length

Unit	Net Length	Net Height	Total
A	9	5	45
B	9	5	45
C	6	5	30
		Total Area	120

Other Species:

CEC Bat Capture Data Sheet

Site No. 1	**Project Name:** Adamsville Solar Project		**Date:** May 21, 2023
County: McNairy	**State:** Tennessee (TN)	**Client:** Tennessee Valley	**Surveyors:** STG
Permit # (State & Fed): ES07358A-13 & 1487 (TN)			

No.	Time	Species	Age	Sex	Repro. Cond.[1]	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type

[1]**Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended
[2]**Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm
[3]**Wind Code :** 0- Calm (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Moon Phase:	Percent
Waxing Crescent	6%

	Rise	Set
Moon	07:57	22:21
Sun	05:45	19:55

Time	Temp	Sky[2]	Wind[3]
19:50	74 °F	0	1
20:50	67 °F	1	1
21:50	67 °F	0	1
22:50	65 °F	0	1
23:50	64 °F	0	0
00:50	63 °F	0	1

Net Coordinates		
Unit	**Latitude**	**Longitude**
A	35.256288	-88.371266
B	35.256007	-88.371051

CEC Bat Capture Data Sheet

Site No. 1	**Project Name:** Adamsville Solar Project		**Date:** May 23, 2023
County: McNairy	**State:** Tennessee (TN)	**Client:** Tennessee Valley	**Surveyors:** STG & GET
Permit # (State & Fed): ES07358A-13 & 1487 (TN)			

No.	Time	Species	Age	Sex	Repro. Cond.[1]	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type
1	21:30	LABO	A	F	P	40	15	A/2		0	

[1]**Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended
[2]**Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm
[3]**Wind Code :** 0- Calm (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Moon Phase:	Percent
Waxing Crescent	18%

	Rise	Set
Moon	08:43	00:00
Sun	05:44	19:56

Time	Temp	Sky[2]	Wind[3]
19:50	69 °F	1	0
20:50	63 °F	2	0
21:50	61 °F	0	0
22:50	60 °F	0	0
23:50	58 °F	1	0
00:50	58 °F	2	0

Net Coordinates		
Unit	**Latitude**	**Longitude**
A	35.256288	-88.371266
B	35.256007	-88.371051
C	35.255364	-88.370279

Site No. 2	**Project Name:** Adamsville Solar Project
Date: May 22, 2023	

Net Site Diagram

Comments:

Dominant Vegetation
Carya glabra
Quercus alba
Quercus marilandica
Carpinus caroliniana
Juniperus virginiana

Nets by Habitat

Unit	River	Stream	Pond	Road Rut	Corridor	Cave/ Mine	Forest Edge	Interior Forest	Wetland
A	☐	☑	☐	☐	☐	☐	☐	☐	☐
B	☐	☑	☐	☐	☐	☐	☐	☐	☐
C	☐	☐	☐	☐	☐	☐	☐	☐	☑

No. of Poles X Net Length

Unit	Net Length	Net Height	Total
A	6	7.5	45
B	6	7.5	45
C	9	7.5	67.5
		Total Area	157.5

Other Species:

CEC Bat Capture Data Sheet

Site No. 2	**Project Name:** Adamsville Solar Project		**Date:** May 22, 2023
County: McNairy	**State:** Tennessee (TN)	**Client:** Tennessee Valley	**Surveyors:** STG
Permit # (State & Fed): ES07358A-13 & 1487 (TN)			

No.	Time	Species	Age	Sex	Repro. Cond.[1]	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type

[1]**Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended
[2]**Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm
[3]**Wind Code :** 0- Calm (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Moon Phase:	Percent
Waxing Crescent	11%

	Rise	Set
Moon	07:48	23:14
Sun	05:44	19:55

Time	Temp	Sky[2]	Wind[3]
19:50	78 °F	3	0
20:50	76 °F	3	0
21:50	76 °F	3	1
22:50	74 °F	2	1
23:50	71 °F	1	1
12:45	70 °F	1	0

Net Coordinates		
Unit	**Latitude**	**Longitude**
A	35.262803	-88.373813
B	35.263322	-88.374331

CEC Bat Capture Data Sheet

Site No. 2	**Project Name:** Adamsville Solar Project		**Date:** May 24, 2023
County: McNairy	**State:** Tennessee (TN)	**Client:** Tennessee Valley	**Surveyors:** STG & GET
Permit # (State & Fed): ES07358A-13 & 1487 (TN)			

No.	Time	Species	Age	Sex	Repro. Cond.[1]	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type

[1]**Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended
[2]**Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm
[3]**Wind Code :** 0- Calm (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Moon Phase:	Percent
Waxing Crescent	26%

	Rise	Set
Moon	09:42	00:38
Sun	05:43	19:57

Time	Temp	Sky[2]	Wind[3]
19:55	77 °F	2	0
20:55	73 °F	1	1
21:55	70 °F	0	1
22:55	67 °F	0	0
23:55	67 °F	0	0
00:55	63 °F	0	0

Net Coordinates		
Unit	**Latitude**	**Longitude**
A	35.262803	-88.373813
B	35.263322	-88.374331
C	35.263187	-88.374742

CEC Bat Capture Data Sheet

Site No. #3	**Project Name:** TVA Adamsville			**Date:** 20 May 2023	
County: Hardin	**State:** TN	**Client:** TVA		**Surveyors:** JD Withide & Jed Scott	
Photo #:	**Permit # (State & Fed):** TWRA 1487 USFWS ES148282-6				

#	Time	Species	Age	Sex	Repro. Cond.*	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type
1	22:30	LABO	—	—	—	—	—	A/2.5	Excised Net		
2	23:15	LABO	A	F	Preg	39.01	18.0	B/2.0	—	—	—
3	23:45	"	A	F	Preg	40.83	18.0	B/1.0	—	—	—
4	"	"	A	M	—	39.84	14.0	B/2	—	—	—
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

Moon Phase: Waxing Crescent **%** 5.7

	Rise	Set
Moon:	6:57a	22:20
Sun:	5:46a	19:56

Time	Temp	Sky**	Wind***	# Bats
19:45	65.7	1	0	0
20:30	63.7	1	0	0
21:30	62.2	1	0	0
22:30	61.4	1	0	1
23:30	60.7	1	0	1
12:30	59.2	1	0	1
Ave				

Net(s) and/or Acoustic Unit(s) Lat/Long (DD.dddd):

#	N	W
A	35.265165	-88.368191
B	35.265204	-88.367901
C	35.265362	-88.367639
1		
2		

Acoustic Unit Serial #		Brand
1		
2		
3		

***Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended

** **Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm

*** **Wind Code :** 0- Clam (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

CEC Bat Capture Data Sheet

Site No.	#3 Night 2	**Project Name:**	Adamsville	**Date:**	22 May 2023
County:	Hardin	**State:** TN	**Client:** TVA	**Surveyors:**	JDW & J. Scott
Photo #:		**Permit # (State & Fed):** TWRA 1467 USFWS ES146282-6			

#	Time	Species	Age	Sex	Repro. Cond.*	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type
1	21:45	LABO	A	F	Preg	40.27	18.0	B/1	—	—	—
2	23:15	NYHU	A	m	—	36.09	14.0	B/5.0	—	—	A04490
3	12 mid	LABO	A	m	—	40.04	14.0	B/1	—	—	—
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

Moon Phase: Waxing Crescent **%** 11.4

	Rise	Set
Moon:	7:48 am	23:14
Sun:	5:45a	19:56

Time	Temp	Sky**	Wind***	# Bats
19:45	75.3	2	0	0
20:30	72.7	2	0	0
21:30	71.6	2	0	0
22:30	71.4	5	0	1
22:45	67.9	2	0	0
23:30	67.5	2	0	1
12:30a	65.3	2	0	1
Ave				

Net(s) and/or Acoustic Unit(s) Lat/Long (DD.dddd):

#	N	W
A	35.266165	-88.368191
B	35.265204	-88.367901
C	35.265362	-88.367639
1		
2		

	Acoustic Unit Serial #	Brand
1		
2		
3		

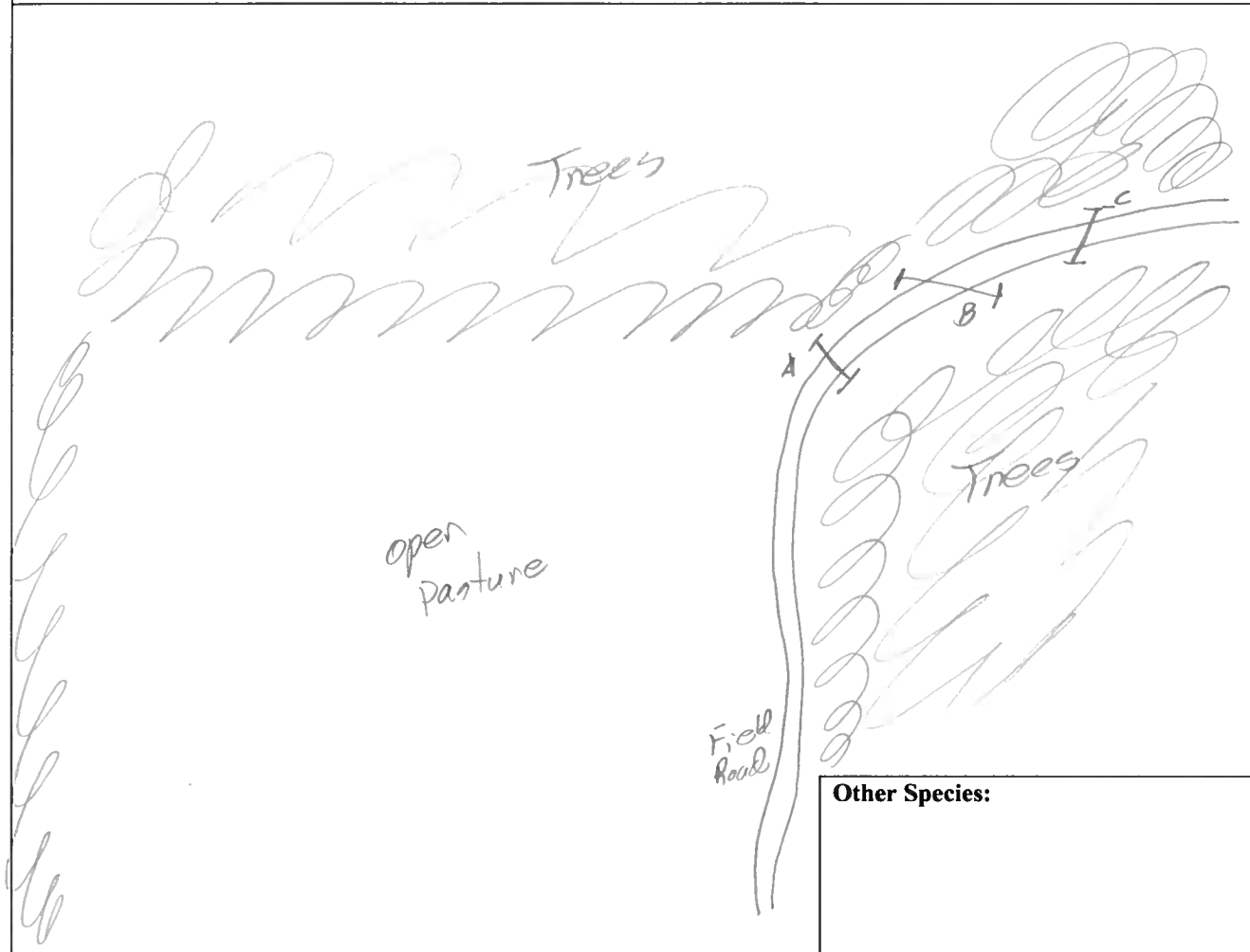
***Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended

** **Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm

*** **Wind Code :** 0- Clam (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Site No.: # 3	Project Name: TVA Adamsville	Date: 21 May 2023

Net Site Diagram



Other Species:

Dominant Vegetation

1	Pine
2	White oak
3	hickory
4	Eastern Red Cedar
5	Sweetgum

Net(s) or Acoustic Unit(s) by Habitat

Habitat	A	B	C	Acoustic
River				
Stream				
Pond				
Road Rut				
Corridor	X	X	X	
Cave/mine				
Total				

No. of Poles X Net length

A 46.6 sq m	=	5.2	X	9
B 62.4 sq m	=	5.2	X	12
C 46.6 sq m	=	5.2	X	9
D	=		X	

Comments:

CEC Bat Capture Data Sheet

Site No.	#4	**Project Name:**	Adamsville	**Date:**	23 May 2023
County:	Hardin	**State:** TN	**Client:** TVA	**Surveyors:**	J.D. Wilhide + Jed Scott
Photo #:		**Permit # (State & Fed):**	TWRA 1487 USFWS ES148262-6		

#	Time	Species	Age	Sex	Repro. Cond.*	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type
1	2345	LABO	A	F	Preg	41.60	20.0	B/40	—	—	—
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

Moon Phase: Waxing Crescent — **%** 14.1

	Rise	Set
Moon:	2043	12:00a 5/24
Sun:	945	1957

Time	Temp	Sky**	Wind***	# Bats
14:30	74.3	0	0	0
20:30	67.9	0	0	0
21:30	65.3	1	0	0
22:30	63.7	1	0	0
23:30	62.0	0	0	0
12:30	62.2	0	0	1
Ave				

Net(s) and/or Acoustic Unit(s) Lat/Long (DD.dddd):

#	N	W
A	35.265220	-88.362452
B	35.265664	-88.363239
C		
1		
2		

	Acoustic Unit Serial #	Brand
1		
2		
3		

***Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended

**** Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm

***** Wind Code :** 0- Clam (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

CEC Bat Capture Data Sheet

Site No.	#4 night 2	**Project Name:**	Adamsville	**Date:**	24 May 2023
County:	Hardin	**State:** TN	**Client:** TVA	**Surveyors:**	JDW & J. Scott
Photo #:		**Permit # (State & Fed):**	TWRA 1487 USFWS ES148262-6		

#	Time	Species	Age	Sex	Repro. Cond.*	RFA (mm)	Mass (g)	Net/ Ht	Guano/ Hair	Wing Score	Band # Type
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											

no bats

Moon Phase:		**%**
Waxing Crescent		26.0
	Rise	**Set**
Moon:	12:02a	9:42a
Sun:	5:44a	7:58p

Time	Temp	Sky**	Wind***	# Bats
20:00	71.0	1	0	0
21:00	66.0	1	0	0
22:00	65.8	1	0	0
23:00	64.3	0	0	0
12mid	62.7	0	0	0
Ave				

Net(s) and/or Acoustic Unit(s) Lat/Long (DD.dddd):

#	N	W
A	35.265220	-88.362452
B	35.265664	-88.363259
C		
1		
2		

	Acoustic Unit Serial #	Brand
1		
2		
3		

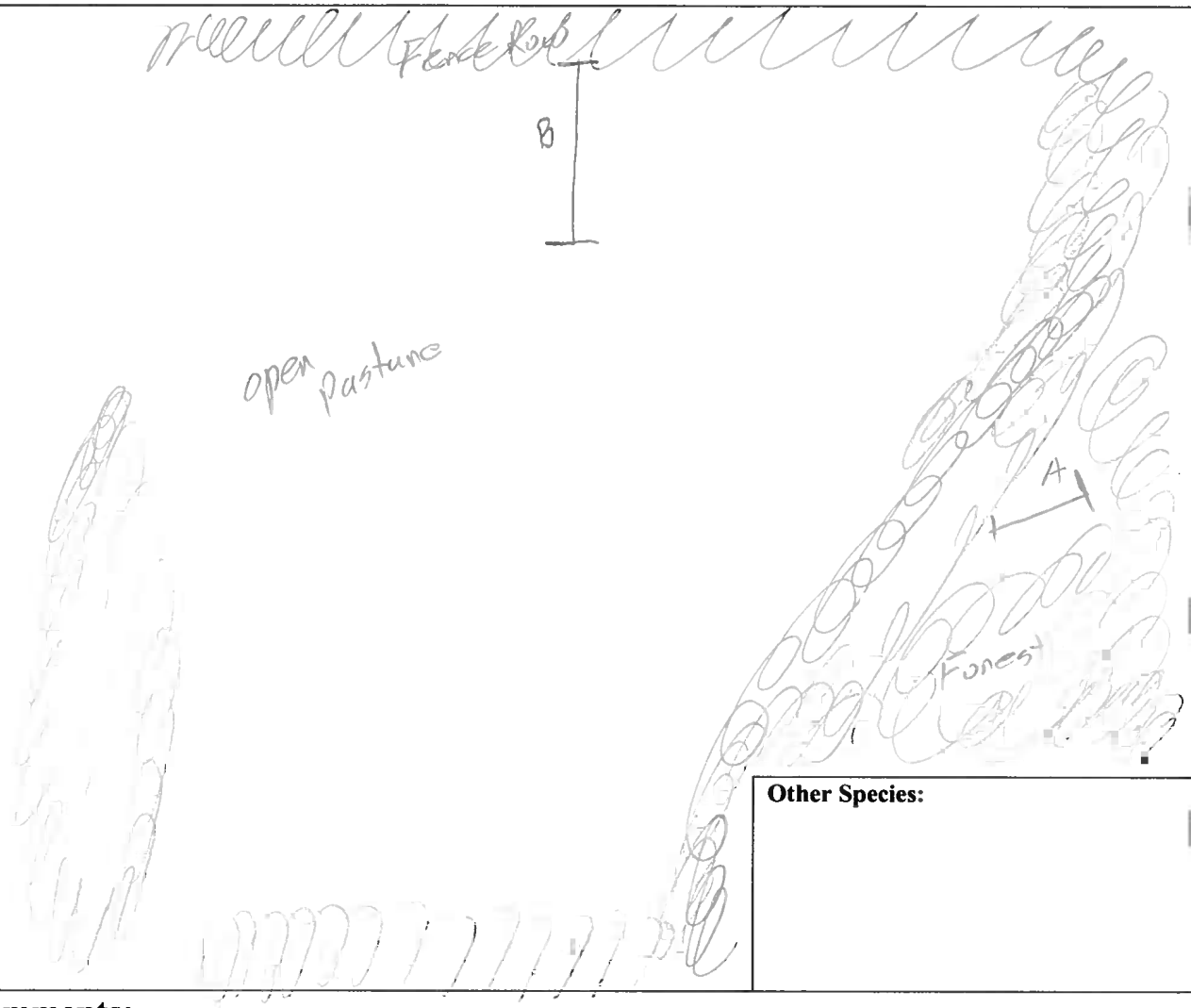
***Repro. Cond (Reproductive Condition):** (P) pregnant; (L) lactating; (PL) post-lactating; (NR) non-reproductive, (TD) testes descended

**** Sky Code:** 0- Clear, 1- Few Clouds, 2- Partly Cloudy, 3- Cloudy or Overcast, 4- Smoke or Fog, 5- Drizzle or Light rain, 6- Thunderstorm

***** Wind Code :** 0- Clam (0 mph), 1- Light wind (1-3 mph), 2- Light breeze (4-7 mph), 3- Gentle breeze (8-12 mph), 4- Moderate breeze (13-18 mph)

Site No.: #4	Project Name: Adamsville	Date: 23 May 2023

Net Site Diagram



Dominant Vegetation

1. Sweetgum
2. Pine
3. Eastern Red Cedar
4. Shagbark hickory
5. Oak

Net(s) or Acoustic Unit(s) by Habitat

Habitat	A	B	C	Acoustic
River				
Stream				
Pond				
Road Rut				
Corridor	X			
Cave/mine				
Edge		X		
Total				

No. of Poles X Net length

A 46.8 sq m	=	5.2	X	9
B 93.6 sq m	=	5.2	X	18
C	=		X	
D	=		X	

Other Species:

Comments:

Appendix C
Photographs

Net Site 1, Net A

Net Site 1, Net B

Net Site 1, Net C

Net Site 2, Net A

Net Site 2, Net B

Net Site 2, Net C

Net Site 3, Net A

Net Site 3, Net B

Net Site 3, Net C

Net Site 4, Net A

Net Site 4, Net B

Captured red bat

Captured evening bat

Appendix D

State and Federal Scientific Collection Permits

NATIVE ENDANGERED & THREATENED SP. RECOVERY

Permit Number: ES07358A

Version Number: 13

Effective: 2023-03-17 **Expires:** 2027-12-31

Issuing Office:

Department of the Interior

U.S. FISH AND WILDLIFE SERVICE

ES Bloomington Permit Office
5600 American Boulevard, West, Suite 990
Bloomington, Minnesota 55437-1458
permitsR3ES@fws.gov

Digitally signed by

KAREN HERRINGTON

Digitally signed by KAREN HERRINGTON
Date: 2023.03.15 09:10:11 -05'00'

Midwest Region Ecological Services Program Leader

Permittee:

CIVIL AND ENVIRONMENTAL CONSULTANTS, INC.

530 EAST OHIO STREET SUITE G

INDIANAPOLIS, IN 46204

US

Name and Title of Principal Officer:

RYAN SLACK

Authority: Statutes and Regulations: 16 U.S.C. 1539 (a), 16 U.S.C. 1533 (d) 50 CFR 17.22, 50 CFR 17.32, 50 CFR 13

Location where authorized activity may be conducted:

ON LANDS SPECIFIED WITHIN THE ATTACHED SPECIAL TERMS AND CONDITIONS

Reporting requirements:

See permit conditions for reporting requirements.

An annual report is due on 1/31 following each year that this permit is in effect.

Authorizations and Conditions:

A. General Conditions set out in Subpart B of 50 CFR 13, and specific Conditions contained in Federal regulations cited above, are hereby made a part of this permit. All activities authorized herein must be carried out in accord with and for the purposes described in the application submitted. Continued validity, or renewal of this permit is subject to complete and timely compliance with all applicable Conditions, including the filing of all required information and reports.

B. The validity of this permit is also conditioned upon strict observance of all applicable foreign, state, local, tribal, or other Federal law. Necessary state and/or local permits where applicable, must also be acquired and observed; this permit is invalid without such permits.

C. Valid for use by those identified in the List of Authorized Individuals.

C.1. Authorized Individuals:

Only individuals on the attached List of Authorized Individuals (LAI) are authorized to conduct activities pursuant to this permit. The LAI, printed on U.S. Fish and Wildlife Service (USFWS) letterhead, and signed and dated by the Region 3 permit issuing office or a Region 3 lead species Field Office, may identify special conditions or circumstances under which individuals can conduct authorized activities and it must be retained with these Authorizations and Conditions. Each named individual shall be responsible for compliance with the Authorizations and Conditions of this permit.

Trained assistants not named on the attached LAI may work on permitted activities under the direct and on-site supervision of the individuals named on the LAI. "On-site supervision" is defined as having the Permittee at a distance close enough to enable immediate assistance to a supervised individual, as needed, while the supervised individual conducts an authorized activity. Trained assistants may not work independently at a site. **At least one Permittee must remain present at each mist-net/harp trap site while it is being operated.**

Permittee shall replace outdated LAIs and attach the subsequent current updated version of the LAI to this recovery permit upon receipt. **This permit will be considered invalid without a current attached LAI.**

C.2. To request changes to the LAI, the Permittee (Principal Officer for business permits) shall submit an amendment request via ePermits (epermits.fws.gov). The request shall be submitted at least 30 days prior to the desired effective date. The Permittee shall submit a $50.00 processing fee unless fee exempt [see 50 CFR 13.11 (d)], the request should include a desired effective date and shall include the following information:

a. The name of each individual (first name, middle initial, last name) to be appended to the LAI, confirmation that the individual is not permitted under another business or individual Federal recovery permit, and indicate the species they will be working with and the activities they will be conducting;

b. The resume/qualifications of each person, including specific information on previous professional experience working with the species/activity affected by the request. Information should include: the approximate number of hours of focused activity with each species in occupied habitat; approximate numbers of each species the applicant has worked with at each site (i.e., indicate the number specimens at specific sites or specific activities); names, dates, and location of areas surveyed; and experience with similar species;

c. For each individual: the names, titles, organizations, emails, and telephone numbers of a minimum of two references who can verify experience with the species (reference letters are preferred and always appreciated); and

d. The names of any individuals to be deleted from the LAI.

D. Acceptance of this permit serves as evidence that the Permittee understands and agrees to abide by the terms of this permit and all sections of Title 50 Code of Federal Regulations (CFR), Parts 13 and 17, pertinent to issued permits (https://www.ecfr.gov/current/title-50/chapter-I/subchapter-B/part-13 and https://www.ecfr.gov/current/title-50/part-17 (https://www.ecfr.gov/current/title-50/part-17)). Section 11 of the Endangered Species Act of 1973, as amended, provides for civil and criminal penalties for failure to comply with permit conditions.

A request for permit renewal and the $100 application processing fee must be received **at least 30 days prior to the expiration date** of this permit to continue conducting authorized activities under the expired permit while your application is being processed (subject to compliance with 50 CFR, Parts 13.21 and 13.22). Please use https://fwsepermits.servicenowservices.com/fws to obtain specific information regarding the new ePermitting process to apply for and submit your digital recovery permit application and application processing fee. When these requirements are not met, this permit becomes invalid on the expiration date. *Unless otherwise instructed within the Authorizations and Conditions*, **annual reports** are due by January 31 following each year your permit is in effect and shall be submitted to all offices identified in the permit Conditions.

E. Permittees, as identified under C.1. are authorized to take (capture with mist nets, harp trap, handle, identify, radio-tag, band, collect non-intrusive measurements, and release) Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), northern long-eared bat (*Myotis septentrionalis*) Ozark big-eared bat (*Corynorhinus townsendii igens*) and Virginia big-eared bat (*C.t.virginianus*) for scientific research aimed at recovery of the species including presence/absence surveys, studies to document habitat use, population monitoring, and evaluation of potential impacts. This permit does **not** authorize the collection of voucher specimens.

F. Activities are authorized at the following locations:

F.1. Within the U.S. Fish and Wildlife Service (USFWS) Region 2: Oklahoma, upon receipt of written concurrence from the Field Supervisor, and upon coordination with Ozark Plateau National Wildlife Refuge prior to (1) surveys of caves known to be used by federally-listed bats, and (2) examinations of caves suspected of containing federally-listed bat species (some presence/absence surveys may require the presence of a U.S. Fish and Wildlife Service Biologist), and as outlined in Condition G.

F.2. Within the USFWS Region 3: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin, upon receipt of written concurrence from the Field Supervisor, as outlined in Condition G.

F.3. Within the USFWS Region 4: Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee, upon receipt of written concurrence from the Field Supervisor, as outlined in Condition G.

F.4. Within the USFWS Region 5: Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia and West Virginia, upon receipt of written concurrence from the Field Supervisor, as outlined in Condition G.

F.5. Within the USFWS Region 6: Kansas, Montana, Nebraska, North Dakota, South Dakota, and Wyoming, upon receipt of written concurrence from the Field Supervisor, as outlined in Condition G.

G. Permittee shall notify and request approval from the USFWS Field Supervisor for the state in which activities are proposed to occur at least 15 days prior to conducting any activities. Contact information is available at: https://www.fws.gov/media/region-3-recovery-permit-contact-information. Your request for this site-specific approval must be in writing and must indicate:

G.1. Species for which proposed activities are being conducted.

G.2. Location of proposed activities, including project site, county, and state.

G.3. A complete description of activities (i.e., proposed project plan, including purpose and need, surveys, methods, etc.).

G.4. Dates when the project is proposed to take place.

G.5. Evidence that Permittee has received any required contracts to complete the activities.

G.6. Whether all annual reporting requirements have been fulfilled.

You may proceed with only the activities described in your written concurrence letter, upon receipt from the applicable USFWS Field Supervisor. ***Your concurrence letter must be carried with this permit to authorize site-specific activities.***

H. Permittee shall adhere to the following conditions involving capture and handling of bats:

H.1. Bats may be captured with mist nets following the protocol included in the Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines. Guidelines are available at: https://fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines. Note: Permittee must use the most up-to-date version of the Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines, available on the USFWS website page, for your summer surveys. The monitoring interval for mist nets is +/- 10 minutes and may not exceed 15 minutes. Captured bats may be held for a maximum of 30 minutes, unless injured. In extenuating circumstances, bats shall be held for no longer than 45 minutes.

H.2. Bats may be captured with harp traps with written concurrence from the Field Supervisor in the state in which trapping is proposed. Harp traps must be continually monitored. Captured bats may be held for a maximum of 30 minutes, unless injured. In extenuating circumstances, bats shall be held for no longer than 45 minutes.

At least one named Permittee must remain present at each mist net and harp trap site while it is being operated.

H.3. Permittee shall carry out non-intrusive measurements on all captured bats. Data shall be recorded for all bats captured and include, but not be limited to, the data requested in any automated or species-specific data sheet provided by the USFWS (e.g., Bat Reporting Spreadsheet). Handling should be limited to the maximum extent practicable and should cease immediately at signs of undue stress (e.g., bat becoming unresponsive, etc.). Bats that appear stressed from handling should be placed in a dark, quiet location away from activity where it can safely fly away after recovery, and should be checked to ensure successful recovery before leaving the study site. Photographs of the identifying characteristics for each individual federally-listed species captured are encouraged. The Permittee may be requested to provide individual photographs after submittal of annual reporting data.

H.4. Lipped metal bands having a unique identifier may be applied to the forearm of captured bats prior to release. No more than one band per bat may be used. Bands should be applied to the forearm of captured bats prior to release. Position the band on the wing so that when the bat is hanging upside down, the band numbers are right-side up. A single band should be placed on the right forearm of each male and the left forearm of each female bat.

H.5. Radio transmitters may be applied during spring, summer, and fall roosting and migration periods via nontoxic skin bond adhesive. The total weight of the transmitter may not exceed 5% of the bat's body weight and the total weight of the package (forearm band, transmitter and adhesive) may not exceed 6% of the bat's body weight. The lightest package (both transmitter and adhesive) capable of accomplishing the required task should be used, especially with pregnant females and newly volant juveniles. Bats carrying transmitters must be monitored daily for at least three days, or until the transmitter falls off, whichever occurs first.

H.6. No trapping activities shall occur within 20 meters of a known Indiana bat maternity roost site, either natural or artificial roosts, unless Permittee receives prior written approval from the USFWS Field Supervisor for the state in which the activities are proposed to occur.

H.7. Equipment used to capture and handle bats shall be cleaned and decontaminated, including personal gear such as boots and gloves, using products cited in decontamination guidelines and in compliance with label directions. The most recent decontamination guidance is found on the web at: https://www.whitenosesyndrome.org/topics/decontamination.

H.8. Regarding any Permittee who is not authorized to take Ozark big-eared bat (OZBB) and Virginia big-eared bat (VABB), the USFWS acknowledges that incidental (unintentional) capture of these co-occurring listed bat species may potentially occur while conducting lawful survey activities directed at authorized bat species. Permittee shall be observant and cautious to eliminate or minimize "take" of co-occurring listed species to the maximum extent practicable. In the event of incidental (unintentional) capture of OZBB or VABB, Permittee shall immediately remove the bat(s) from the net/trap after capture, document with a photograph and release at the capture site. Do not put these bat species in holding cages, bags, or containers. Within 48 hours, you must notify the USFWS in the state in which you are working of the incidental capture (see https://www.fws.gov/media/region-3-recovery-permit-contact-information (https://www.fws.gov/media/region-3-recovery-permit-contact-information)).

H.9. Regarding any Permittee who is authorized, you shall immediately remove Ozark big-eared bats and Virginia big-eared bats from the net/trap after capture, then process and release each individual. When there are multiple bats in the net, OZBBs and VABBs shall be removed first and processed as quickly as possible. If this is not possible, the species shall be placed into a HOLDING CAGE and held no longer than 10 minutes. Place the cage in a dark, quiet location, and process all as soon as possible. Do not put these bat species in holding bags, nor in an individual holding bag or container (*C. t. ingens* and *C. t. virginianus* are highly social and being held individually in a bag increases stress and can lead to mortality). Holding cage options include small rubber/plastic/vinyl coated soft-sided (mesh) pet carriers or modified standard minnow traps with rubber coated mesh where the top of the trap is either a plastic bucket or flower pot with a hole in the center (contact the OZBB or VABB Lead Recovery Biologist for further information on acceptable enclosures -- see Condition P for contact information). A holding cage shall contain only

multiple OZBBs, or only multiple VABBs (avoid overcrowding). Do not place other species/subspecies in either cage(s). Holding cages shall be decontaminated using the most current White-nose Syndrome decontamination guidance after a night of use (https://www.whitenosesyndrome.org/topics/decontamination). Do not decontaminate holding cages within a single net night.

When an OZBB or VABB appear to be going into shock (i.e., becomes limp and unresponsive), place the bat in a dark, quiet location either on a rock or other flat surface considered the safest option for the bat in that situation to recover (removed from capture activities and predators) and monitor it periodically. Do not continue to handle the bat, nor place it in a holding cage or in a holding cage with other OZBBs or VABBs. If the stressed bat recovers, release it immediately without an attempt to gather additional data, collect samples, apply a band or a transmitter, etc.

H.10. When carrying out mist-netting and handling of bats under this permit, Permittee must use COVID-specific Personal Protective Equipment (PPE) in addition to the PPE already identified by the USFWS and states for mitigating the risk of spread of the fungus that causes white-nose syndrome, which includes the use of disposable gloves, disposable or site-dedicated clothing, and adherence to decontamination procedures. COVID-specific PPE is a non-vented N95 respirator (no exhalation valve) or any respirator or mask that provides a similar level of protection filtering exhaled air (https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource1quest3.html#half).

I. Upon determination that endangered or threatened bats are present at previously undocumented sites, Permittee shall notify the following within 48 hours: the USFWS Regional Recovery Permit Coordinator, the Species Recovery Lead (See below), and the USFWS Field Office within the geographic location of study areas at https://www.fws.gov/media/region-3-recovery-permit-contact-information

J. Accidental injury or mortality may not exceed two (2) specimens. In the event that any accidental injury or mortality occurs, all activities must cease. The Permittee must report any bat mortality or serious injury within 24 hours to the applicable USFWS Field Office in the state in which the incident occurred (contact information provided at: https://www.fws.gov/media/region-3-recovery-permit-contact-information. Written notification must also be made within 48 hours to the Minnesota office Regional Recovery Permit Coordinator and the Species Recovery Lead (See below). The Permittee's statement must document the cause of the injury or mortality, and identify all remedial measures employed by the Permittee to eliminate future mortality or injury events. Based on consultation between the USFWS offices, decisions will be made regarding remedial measures that will be implemented and whether and/or when any of the authorized activities may continue. The Species Recovery Lead Office will provide a decision within five (5) business days concerning the disposition of any injured or dead specimen. Dead or moribund bats may be retained for further study only with the written permission of the USFWS. Any bats that are not authorized for retention are to be chilled and promptly transferred to the USFWS Species Recovery Lead for potential necropsy and/or contaminants analysis. Permitted activities may resume upon receipt of written approval from the Species Recovery Lead Office.

K. This permit is non-transferable.

L. Permittee must carry a copy of this permit at all times when conducting the authorized activities. Shipments of collected biological materials should also be accompanied by a copy of this permit. Note that this permit is limited to the above activities and identified species.

M. Issuance of this permit does not constitute permission to conduct these activities on National Wildlife Refuges or any other public or private lands; such permission must be obtained separately from the appropriate landowner or land manager before beginning these authorized activities. This permit, neither directly nor by implication, grants the right of trespass.

N. Upon locating a dead, injured, or sick federally listed species, under circumstances not addressed in this authorization, initial notification must be made immediately to the USFWS Field Office in the State in which the specimen is found at https://www.fws.gov/media/region-3-recovery-permit-contact-information (https://www.fws.gov/media/region-3-recovery-permit-contact-information). Notification should also be made by the next business day to the USFWS' Regional Minnesota Office Recovery Permit Coordinator identified below. Those offices will confer with the USFWS' Division of Law Enforcement as appropriate and determine next steps. Care should be taken in handling sick, injured, or dead specimens to ensure effective treatment or to preserve biological materials for later analysis. In conjunction with the care of sick or injured endangered or threatened species, and the preservation of biological materials from a dead individual, the finder should take responsible steps to ensure that the site is not unnecessarily disturbed.

O. An Annual Report of all activities conducted under the authority of this permit is due by January 31 following **each year** this permit is in effect. When assisting with netting, the permit number of the individual responsible for each capture should be recorded on the data collection form. Reports shall be sent electronically and your transmittal email must cite your Federal permit number, Permittee name, and the Annual Report year in the subject line (***Note: thumb drives/flash drives and links to documents cannot be accepted***). In addition, copies of all publications and reports resulting from work conducted under this permit must be submitted as they become available. Failure to furnish any reports required by this permit is cause for permit revocation and/or denial of future permit applications. At a minimum, your report shall include:

O.1. The "Bat Reporting Spreadsheet" is required for reporting data and can be found on the FWS website (https://fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines). Prior to reporting, check the permits website to ensure you are using the most up to date form. Using the reporting form will help standardize data collection and increase efficiency in reporting.

O.2. The date, time, geographic locations (including datum and projection information), species, age, sex, and weight of all bats encountered.

O.3. A description of locations surveyed where no bats were encountered.

O.4. Band numbers of all bats banded.

O.5. Information on any injuries and/or mortalities and disposition of specimens.

O.6. Location and characteristics of roost trees and bat colonies.

O.7. Copies of any separate reports and/or publications resulting from work conducted under the authority of this permit.

O.8. A completed data collection sheet as found in the Survey Guidelines, cited in Condition H.1.

O.9. Data shall be submitted for all bats captured and include, but not be limited to, the data requested in any automated or species-specific data sheet provided by the USFWS (e.g., the reporting spreadsheets found on the current Range-wide Indiana Bat Summer Survey Guidelines website cited in Condition H.1. or other species-specific data sheets). Photographs of the identifying characteristics for each individual federally listed species captured are encouraged. The Permittee may be requested to provide individual photographs after submittal of annual reporting data.

O.10. Copies of all site-specific authorization letters required under Condition G.

IF NO ACTIVITIES OCCURRED OVER THE COURSE OF THE YEAR, INDICATION OF SUCH SHALL BE SUBMITTED AS AN ANNUAL REPORT.

P. Copies of your reports shall be sent to **all offices** indicated below. Your transmittal letter (or email) must cite your Federal permit number, Permittee name, and the Annual Report year in the subject line. Electronic copies shall be submitted in MS Word, Portable Document Format, Rich Text Format, or other file format that is compatible with the receiving office (**thumb drives/flash drives and links to documents cannot be accepted**).

P.1. Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service – Midwest Region (Region 3)
Ecological Services – Endangered Species
5600 American Blvd. W., Suite 990
Bloomington, Minnesota 55437-1458
(612/713-5343; fax 612/713-5292)
permitsR3ES@fws.gov

P.2. Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service – Southwest Region (Region 2)
Endangered Species Permits Office
P.O. Box 1306
Albuquerque, New Mexico 87103-1306
(505/248-6420; fax 505/248-6788)
permitsR2ES@fws.gov

P.3. Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service – Southeast Region (Region 4)
Endangered Species Permits Office
1875 Century Blvd.
Atlanta, Georgia 30345-3301
(404/679-7097; fax 404/679-7081)
permitsR4ES@fws.gov

P.4. Regional Recovery Permits Coordinator
U.S. Fish and Wildlife Service – Northeast Region (Region 5)
Endangered Species Division
300 Westgate Center Drive
Hadley, Massachusetts 01035-9589
(413/253-8212; fax 413/253-8482)
permitsR5ES@fws.gov

P.5. ESA Assistant Recovery Coordinator & Permits Coordinator
U.S. Fish and Wildlife Service – Mountain-Prairie Region (Region 6)
Endangered Species Permits Office
Denver Federal Center, P.O. Box 25486
Denver, Colorado 80225-0489
(303/236-4224; fax 303/236-0027)
permitsR6ES@fws.gov

P.6. Keith Lott
U.S. Fish and Wildlife Service Ohio Field Office
4625 Morse Road, Suite 104 Columbus, Ohio 43230

(614/416-8993; fax 614/416-8994)
Keith_Lott@fws.gov

Additionally, based on species, reports and publications shall be submitted to the following:

P.7. ***For studies involving gray bat:***

Vona Kuczynska
U.S. Fish and Wildlife Service
Missouri Field Office
101 Park DeVille Drive, Suite A
Columbia, Missouri 65203-0007
(573/234-2132; fax 573/234-2181)

P.8. ***For studies involving Indiana bat:***

Lori Pruitt
U.S. Fish and Wildlife Service
Indiana Field Office
620 S. Walker Street
Bloomington, Indiana 47403-2121
(812/334-4261; fax 812/334-4273)

P.9. ***For studies involving northern long-eared bat:***

Jill Utrup
U.S. Fish and Wildlife Service
Minnesota-Wisconsin Field Office
4101 American Blvd. E.
Bloomington, Minnesota 55425-1665
(952/252-0092; fax 952/646-2873)

P.10. ***For studies involving Ozark big-eared bat:***

Richard Stark
U.S. Fish and Wildlife Service
Ozark Plateau National Wildlife Refuge
9014 East 21st Street
Tulsa, Oklahoma 74129

(918/382-4520; fax 918/581-7467)

P.11. ***For studies involving Virginia big-eared bat:***

Liz Stout
U.S. Fish and Wildlife Service
West Virginia Field Office
6263 Appalachian Highway
Davis, West Virginia 26260
elizabeth_stout@fws.gov (https://mail.google.com/mail/?view=cm&fs=1&tf=1&to=elizabeth_stout@fws.gov)
FW5_WVFO@fws.gov (https://mail.google.com/mail/?view=cm&fs=1&tf=1&to=FW5_WVFO@fws.gov)

P.12. Additionally, based on geographic area, reports and publications shall be submitted to the applicable offices found at https://www.fws.gov/service/3-200-59-scientific-purposes-enhancement-propagation-or-survival-permits-recovery-permits.

cc: FWS/Regional Offices –Region 2, 3, 4, 5 and 6 (Attn: Regional Recovery Permit Coordinator)
FWS, TE Coordinator: Illinois-Iowa, Indiana, Michigan, Minnesota-Wisconsin, Missouri, Ohio
DNR/DOC, TE Coordinator: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin

END

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

Scientific Collection Permit : 1487 **Issue date:** 2/23/2023 **Expiration date:** 2/23/2024

Pursuant to authority of T.C.A. 70-2-213: J.D. Wilhide

and the following additional permittees:
Tim Nehus, Chris Catron, John Nunley, Jose Garcia, Matthew Skelton, Casey Hertwig, Cole Liggett, Caleb Duke, Jedidiah Scott, Jackie Rocky, Ryan Slack, Will Methvin, Dan Spradlin, Scott Goodfellow, Ryan Kelso

are granted permission to take the following species:

Collect fishes, crayfish and mussels at project sites. , Hairy-tailed mole (using small mammal traps)., Bats, including listed species following USFWS requirements., Animals will be released at site of capture or relocated within the same waterway. Streamside Salamander (Ambystoma barbouri)

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
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Restricted to the following locations:

Statewide, depending on contract. Must have TWRA Regional approval prior to any field work.

TENNESSEE WILDLIFE RESOURCES AGENCY

ELLINGTON AGRICULTURAL CENTER
P. O. BOX 40747
NASHVILLE, TENNESSEE 37204

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Restricted to the following collection methods:
Electrofishing, Gillnets & Seines, Hand and Dipnets, SCUBA, Small Mammal traps (No snap traps), Mist nets, Harp traps

Subject to the following rules:

Wildlife may not be held longer than 24 hours without prior approval. All containers and equipment utilized in the collection of amphibians and reptiles shall be decontaminated and disinfected for ranavirus and other pathogens. This permit is invalid unless accompanied by all applicable federal permits.

No species listed by TWRA as endangered, threatened, in need of management, or of greatest conservation need may be taken without approval; release these species immediately. Report the occurance of endangered or threatened species to TWRA within five days.

Prior to collecting in the field, you are required to notify the TWRA Regional Dispatcher with the name(s) of person(s) doing the collecting, where, when and what species you will be collecting. Contact information is attached.

Executive Director, Tennessee Wildlife Resources Agency

2/23/2023
Date

The State of Tennessee
AN EQUAL OPPORTUNITY EMPLOYER

Appendix E

Agency Study Plan Approval

From: Sykes, Robbie <robbie_sykes@fws.gov>

Sent: Friday, May 12, 2023 6:22 PM

To: Jeremy Jackson; Tennessee ES, FWS

Cc: Kris.Thoemke@bargedesign.com; Hamrick, Elizabeth Burton

Subject:RE: FWS 2023-0079558. Proposed Bat Survey for the Adamsville Solar Project in McNairy and Hardin Counties, TN

Jeremy,

We have reviewed the mist net survey proposal for the proposed Adamsville Solar Project property in McNairy and Hardin Counties, and the plan appears to be appropriate in terms of documenting presence/probable absence of the Indiana bat, northern long-eared bat, and tricolored bat. We approve the survey plan, and look forward to reviewing the results of the survey.

Sincerely,

Robbie Sykes
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
446 Neal Street
Cookeville, TN 38501
(tele. 931/525-4979)

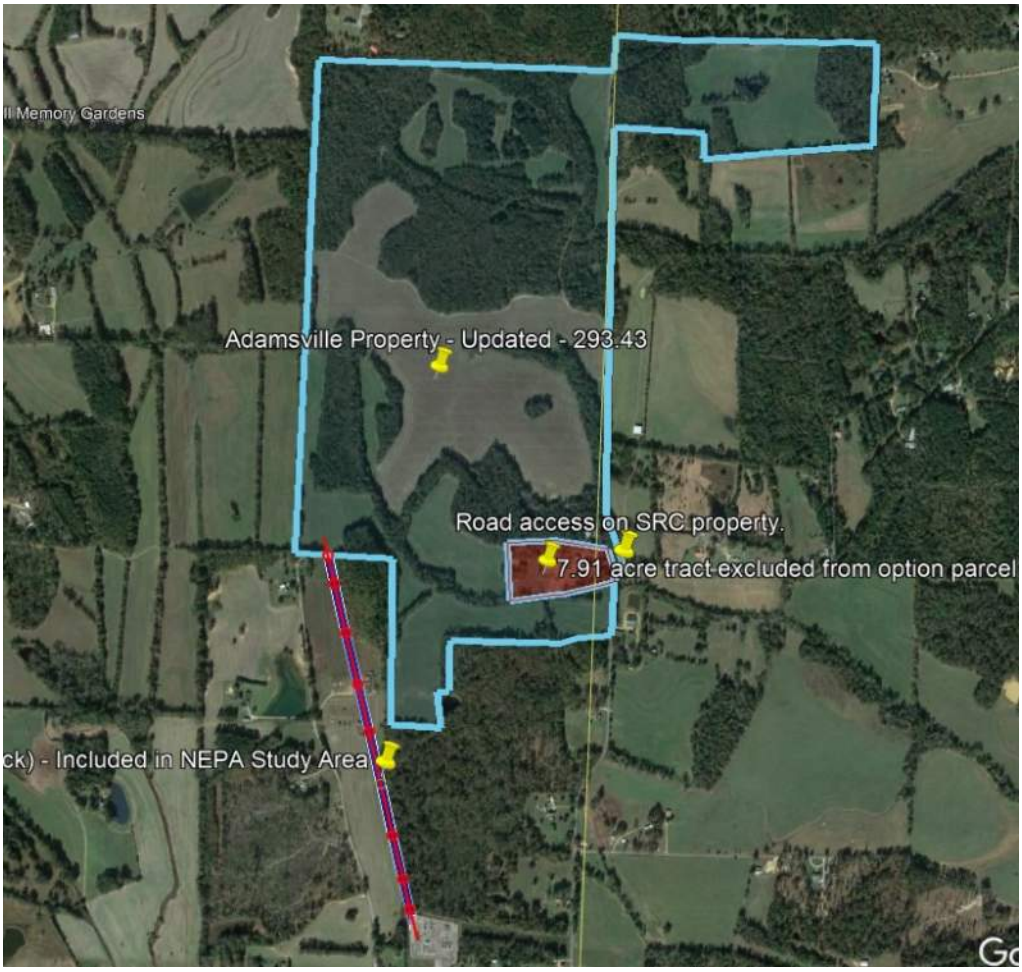
APPENDIX J – Whorled Sunflower Survey

Report on Whorled Sunflower (*Helianthus verticillatus*) Survey for Adamsville Site, McNairy-Hardin County, Tennessee

September 2022, by Mason Brock

During September 17-18th 2022, surveys were conducted over an area in McNairy and Hardin County Tennessee northeast of Adamsville for the presence of whorled sunflower (*Helianthus verticillatus*), a federally endangered plant species. **No populations of whorled sunflower** were located in this portion of the Project Site.

Site Overview



Methodology

Whorled sunflower was surveyed for in suitable habitat across the project boundary, including in easement corridor located in the southwest, and excluding the immediate vicinity around the homesite. The margins of the agricultural fields and the power line corridor in the southwest were specifically targeted, while the forest

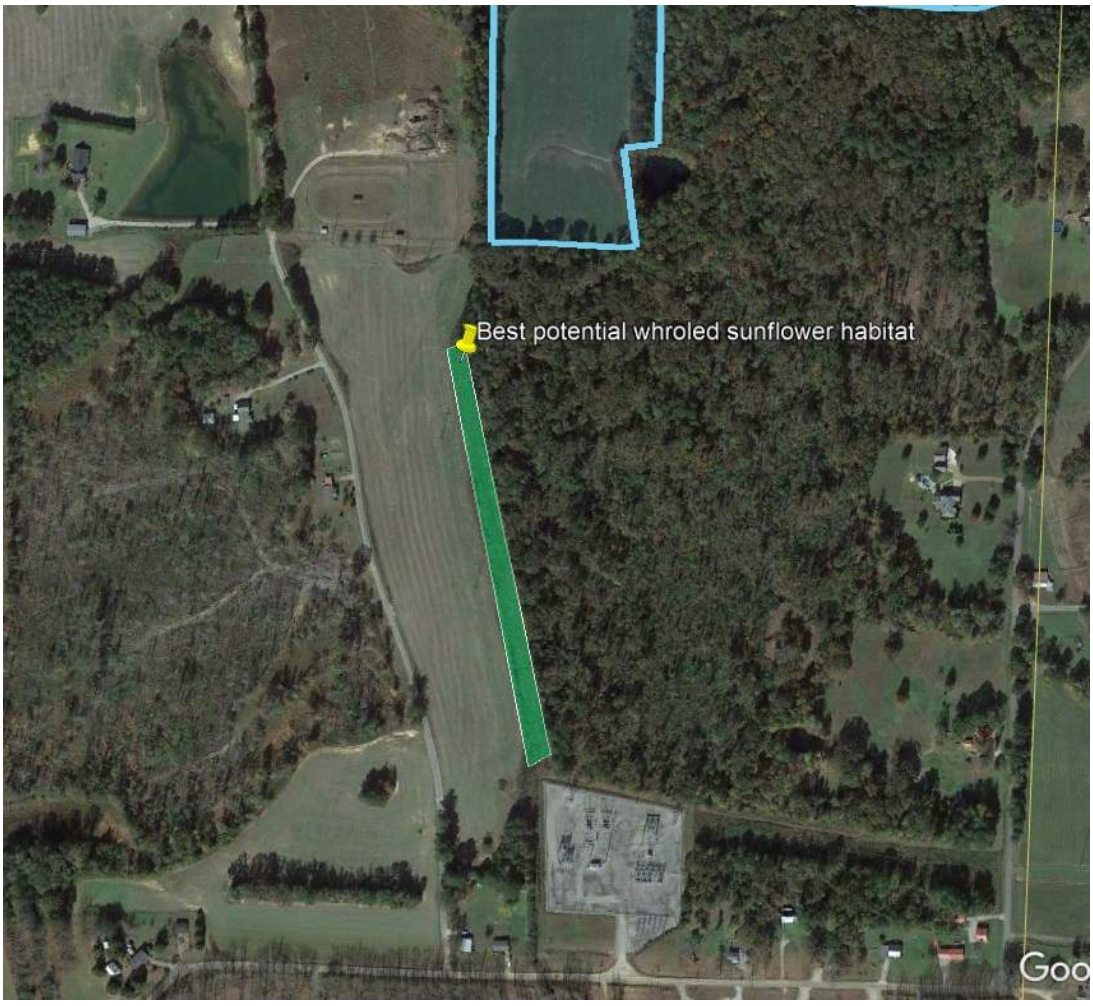
interior (a highly unlikely habitat for whorled sunflower) was avoided. Roughly six miles of forest edge and powerline were surveyed in total on the property (chosen via random walk), all of which were thought to have at least some likelihood for harboring whorled sunflower populations.

Despite areas of suitable habitat, no populations were located.

Description of potential whorled sunflower habitat

Whorled sunflower has few populations left in the wild. In Tennessee it is only known from the geologic Coastal Plain physiographic region, with all populations confined to roadside and railroad right-of-ways and powerlines. It is currently found in forest edge ecotone. Soils are typically mesic to wet-mesic. The likely historic habitat for whorled sunflower was the wet prairie and low meadow communities of the Coastal Plain physiographic region. These communities have now become very rare in west Tennessee due to habitat destruction and persist only as occasional peripheral margins.

For a globally rare species, whorled sunflower shows a somewhat high degree of tolerance of ecologically disturbance in the few localities that remain. It is not always associated with conservative species, and at one site in Tennessee it persists even in an artificially introduced gravel of a railroad bank. However this is not likely indicative of a weedy nature of the species, as the few small remaining populations that exist in Tennessee are in steep decline and it is expected to become extirpated from the state under current trends (TN Heritage Program, personal communication).



The most likely habitat for whorled sunflower at the project site is located in the southernmost section of the easement corridor. This infrequently mowed strip has the remnants of wet prairie and low meadow ecological communities that would have been more widespread historically. Conservative plant species found in the section of this corridor include *Eurybia hemispherica*, *Helianthus angustifolius*, *Helianthus mollis*, *Sophronanthe pilosa*, and *Tridens strictus.*

Photos of site

Pond with wet emergent-herbaceous margins

Dry sandy oak woodland with open understory

Dry creekbed with deeply incised banks

Wet prairie remnants in powerline cut

Contact information

Mason Brock

Botanist at Austin Peay State University and Tennessee Natural Heritage Program

Cell: (859) 953-0283

Email: masebrock@gmail.com

Appendix C

Adamsville Solar Site HD Concurrence Letters

STATE OF TENNESSEE
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
ENVIRONMENTAL FIELD OFFICE
1625 Hollywood Drive
JACKSON, TENNESSEE
38305
PHONE (731) 513-1300 STATEWIDE 1-888-891-8332 FAX (731) 661-6283

March 6, 2023

Silicon Ranch Corporation
Mr. Max Orlet
222 Second Ave S. Suite 1900
Nashville, TN 37201

Re: Hydrologic Determination of Water Resources (DWR ID No. 31984)
Proposed Adamsville Solar Site
Tennessee River watershed, McNairy and Hardin County, TN

Mr. Mr. Orlet:

The Tennessee Department of Environment and Conservation, Division of Water Resources (TDEC-DWR) has reviewed the following report *"Hydrologic Determination Request Package for the Adamsville Solar Site"* for the proposed Adamsville Solar Site in McNairy and Hardin Counties. This report was prepared by Barge Design Solutions, Inc., and submitted on your behalf to our office on February 6, 2023, in support of jurisdictional hydrologic determinations of water features associated with the above referenced site. These water features are located on property located at 35.2540595 -88.3681959 McNairy and Hardin County, TN. Please note that all geographic coordinates provided in this letter have a limited precision and should be considered approximate. As part of our review, Division staff along with and Frank Amatucci, with Barge Design Solutions visited the site on February 17, 2023

Based on the information and documentation submitted in the report, our observations on-site, and the Division's rules and guidance regarding hydrologic determinations, the Division concurs with the jurisdictional determination of the assessed water features as documented in the submitted report and portrayed on *Figure 6a – Existing Conditions Map*, with the following exceptions. The feature denoted in the report as ponds P-1 through P-7 has been determined by TDEC to be jurisdictional according to rules. All the final determinations are summarized and are attached in modified Table 1 and 2 (*Attachment 1*) and the attached map as modified from the report (*Attachment 2*).

It is important to note that the Division's evaluation and concurrence is restricted to only the water features identified within the submitted report and as depicted on the attached map. Only the water features listed above were assessed as part of this hydrologic determination, therefore this correspondence is not intended to represent a comprehensive water resource inventory of the entire site. It is the property owner's responsibility to consider and report any additional water features within the property boundaries that may be affected by any construction activities associated with future development.

Any alterations to jurisdictional streams, wetlands, or open water features may only be performed under the coverage of, and conformance to, a valid *Aquatic Resource Alteration Permit (ARAP)* issued by the Division. ARAP applications and provisions are available on-line at https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap-.html.

Alterations to Wet Weather Conveyances typically may be performed without application or notification to the Division, provided they conform to the provisions found under *Tennessee Code Annotated § 69-3-108 (q).*

Please note that coverage under the *General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)* will be needed if the proposed land disturbance activity for this project is one acre or more in size. Information and applications regarding the Division's construction storm water program can be found online. A completed Notice of Intent form, an application fee, and a storm water pollution prevention plan should be submitted to the above address for review and coverage under this permit prior to any land disturbance.

Discharges and alterations to sinkholes may require the submittal of an application and written authorization under the provisions of TDEC Rules. Information and applications regarding the Underground Injection Control program may be seen online at https://www.tn.gov/environment/permit-permits/water-permits1/underground-injection-control-permit.html. Physical alterations or re-routing of surface hydrology to a sinkhole may require coverage under the *Class V Injection Control Permit*.

Hydrologic determinations are advised and governed by Tennessee Department of Environment and Conservation (TDEC) rules and regulations, and therefore only apply to the State's permitting process. Because these and other various water features on-site may potentially also be considered jurisdictional Waters of the United States, any alterations to them should only be performed after consultation with the U.S. Army Corps of Engineers.

We appreciate the opportunity to assess the jurisdictional status of these water features prior to site plan finalization and initiation of construction activities. Because natural variation and human activities can alter hydrologic conditions, the Division reserves the right to reassess the status of the water features in the future.

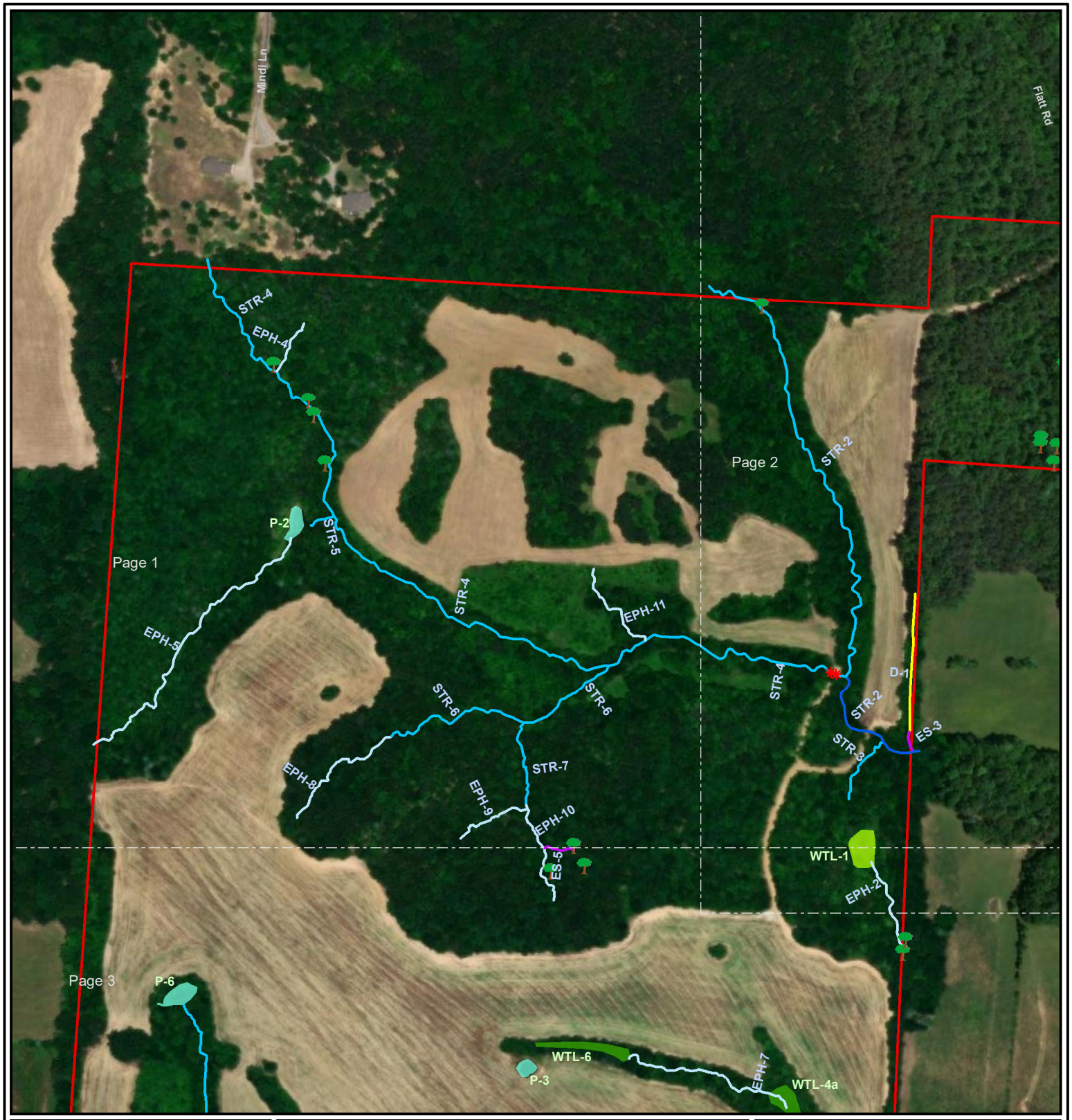
Thank you for your interest in water quality in Tennessee. Please contact April Caudill at 731-693-0377 or by email at AprilCaudill@tn.gov if you have any questions.

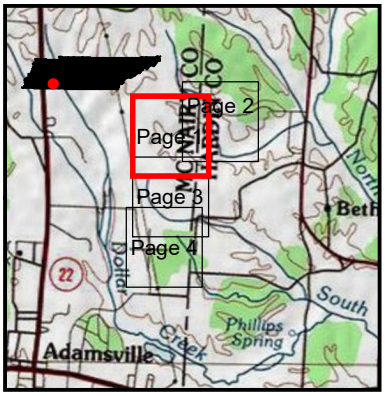
Respectfully,

Conner Franklin
Environmental Program Manager,
JEFO

Enclosures: *Attachment 1-Non-Wetland and Wetland Features within the Project Study Area*
Attachment 2 - Hydrologic Features Area Map

Cc: File copy
Frank Amatucci, Barge Design Solutions
USACE District Nashville: NashvilleRegulatory@usace.army.mil





Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Culvert Location

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

DATE: February 2023

FIGURE 6b-1

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

SILICON RANCH

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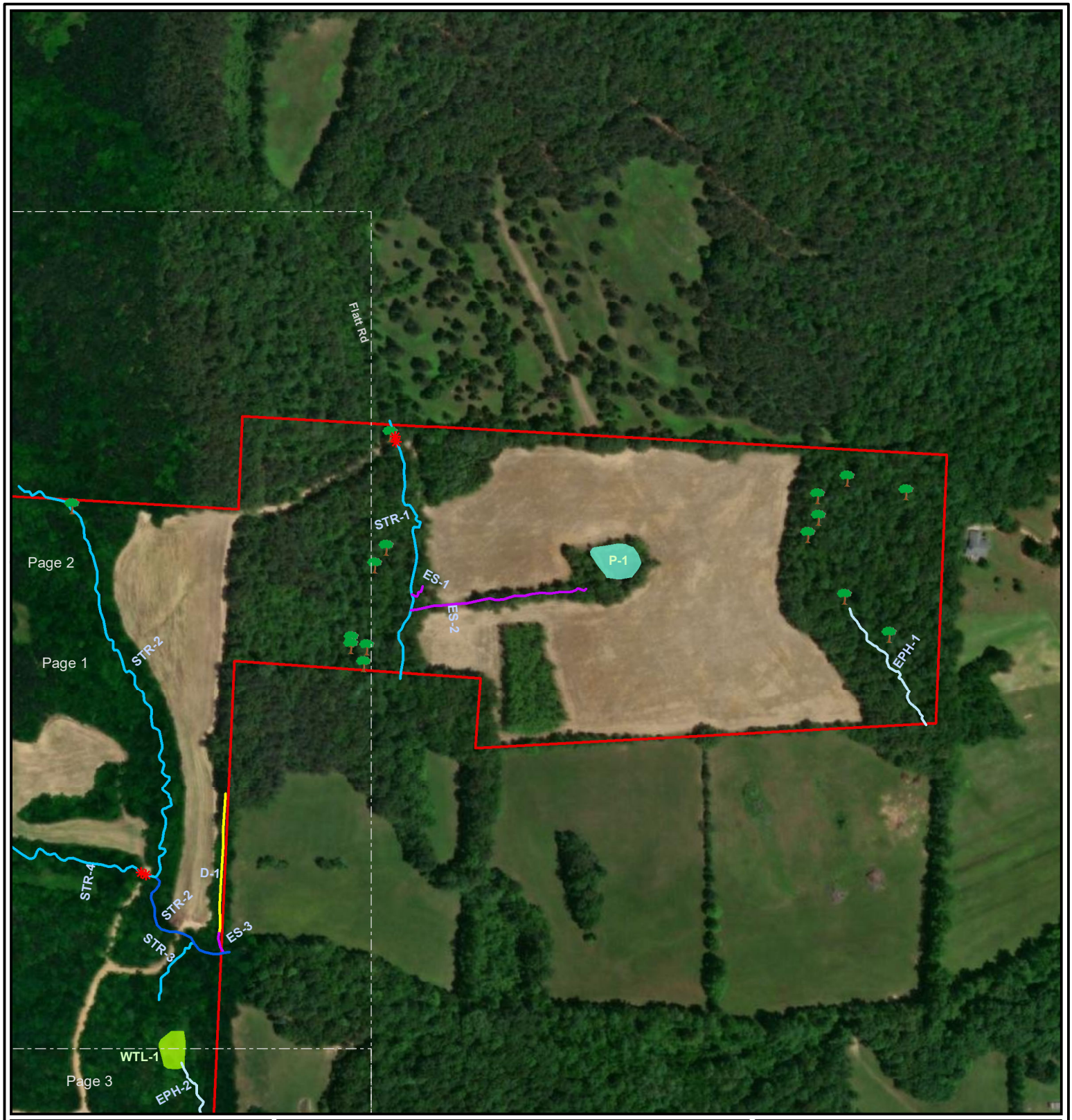
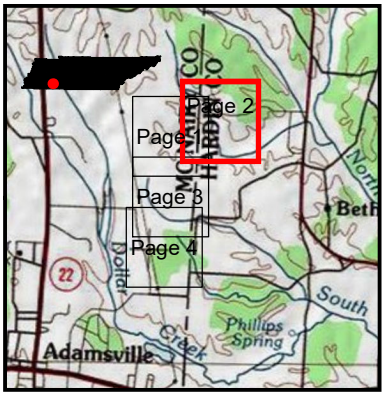




Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Culvert Location

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

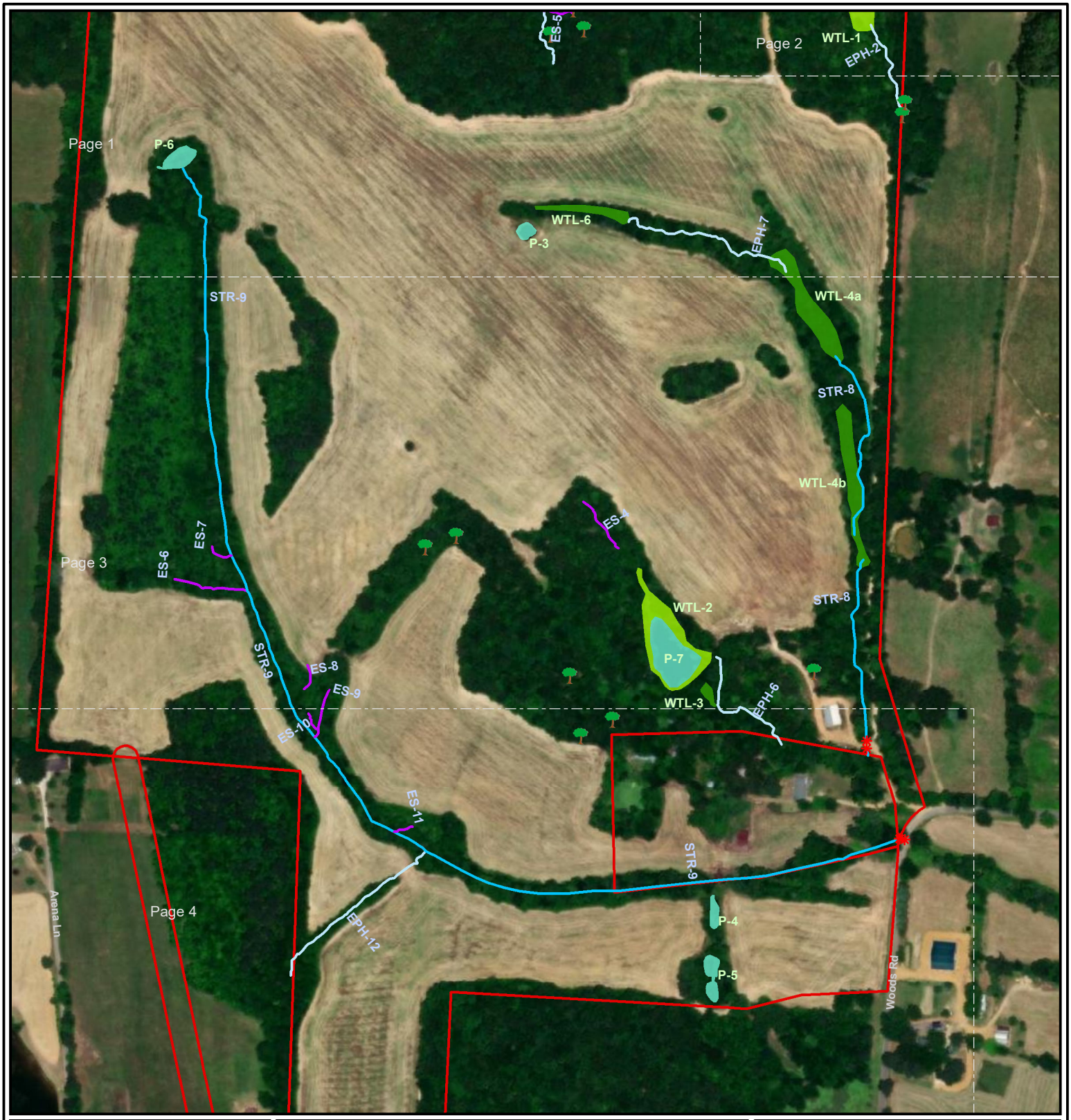
DATE: February 2023

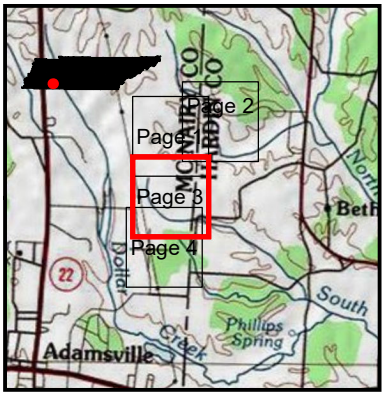
FIGURE 6b-2

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permitting\Figure6b_ExistingConditionsDetailedMap.mxd





Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Culvert Location

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

DATE: February 2023

FIGURE 6b-3

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

SILICON RANCH

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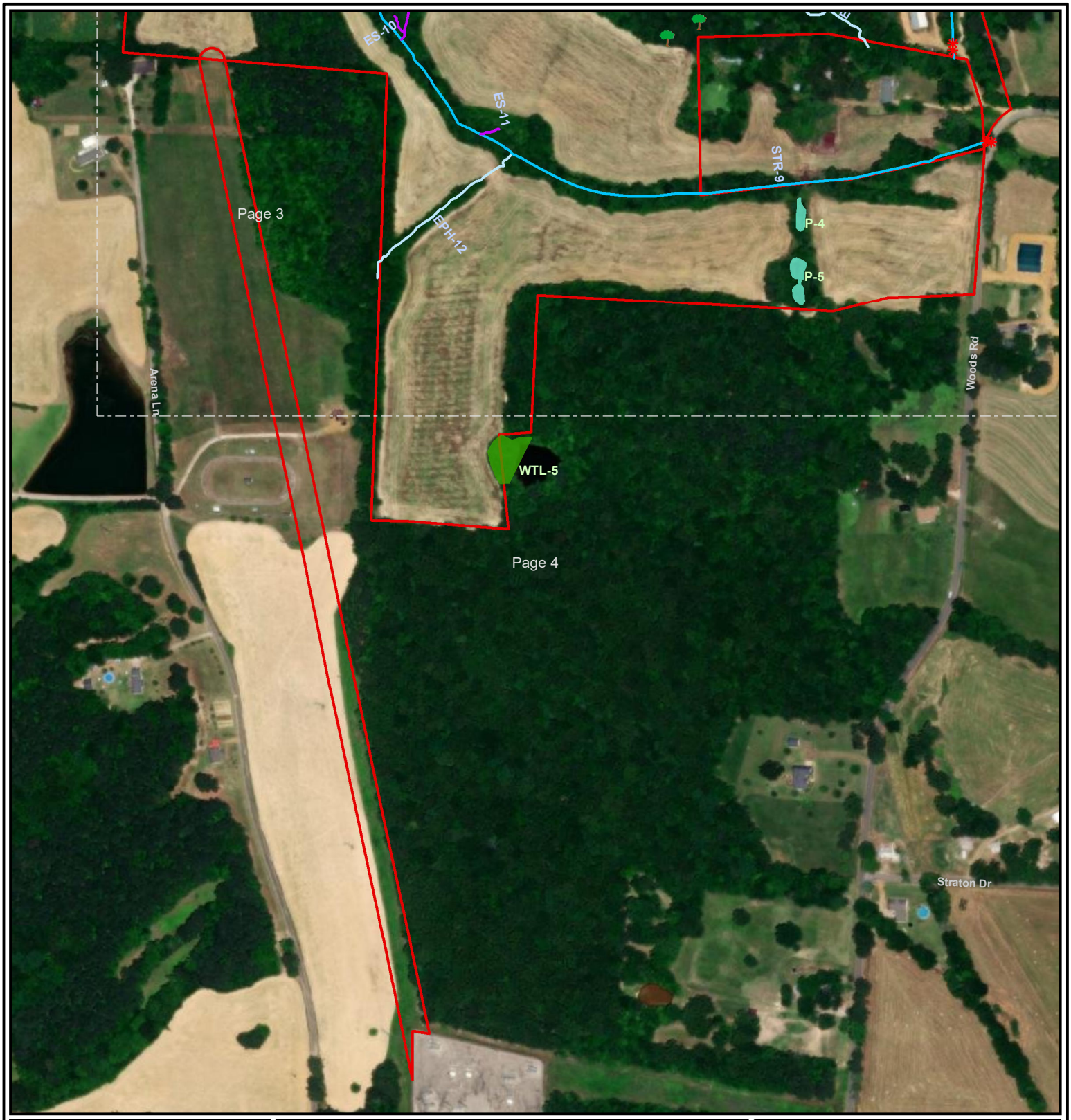

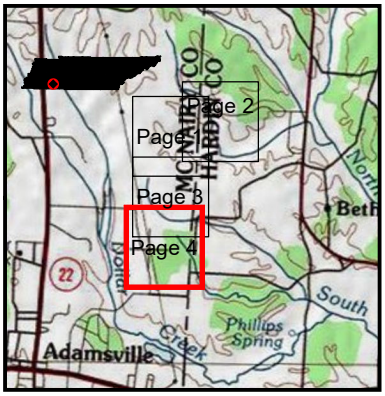

Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch
- Culvert Location

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

N

1 inch = 400 feet

0 100 200 400 600 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (DETAILED)

PROJ NO: 3609517

DATE: February 2023

FIGURE 6b-4

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

SILICON RANCH

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Appendix D

USACE Approved Jurisdictional Determination

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
REGULATORY DIVISION
3701 BELL ROAD
NASHVILLE, TENNESSEE 37214

February 8, 2024

SUBJECT: File No.LRN-2023-00119, Approved and Preliminary Jurisdictional Determinations; Adamsville Solar Farm Property, Adamsville, McNairy and Hardin Counties, Tennessee

Mr. Max Orlet
Silicon Ranch Corporation
222 Second Ave S. Suite 1900
Nashville, TN 37201
E-copy: max.orlet@siliconranch.com

Dear Mr. Orlet:

This letter is in regard to your report entitled “Jurisdictional Determination Request", received January 31, 2023, which documented potential waters of the United States on a review area of approximately 294-acres. The JD Report, associated with the Adamsville Solar Farm property in Adamsville, McNairy and Hardin Counties, Tennessee, indicated your preference for eighteen (18) features of the potential waters of the U.S. on the review area to be reviewed as a preliminary jurisdictional determination (PJD) and twenty-eight (28) features to be reviewed as an approved jurisdictional determination (AJD). This project has been assigned File No. LRN-2023-00119, please refer to this number in any future correspondence.

The U.S. Army Corps of Engineers (USACE) has regulatory responsibilities pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Under Section 10, the USACE regulates any work in, or affecting, navigable waters of the U.S. It appears the review area does not include navigable waters of the U.S. and would not be subject to the provisions of Section 10. Under Section 404, the USACE regulates the discharge of dredged and/or fill material into waters of the U.S., including wetlands.

Preliminary Jurisdictional Determination Based on a desktop review on February 13, 2023, and January 24, 2024, and a site visit on February 17, 2023, 11,748 linear feet of streams, 1.6-acres of wetlands, and 0.6-acres of open waters were documented within the review area. This office has determined these features **may** be jurisdictional waters of the U.S. in accordance with 33 C.F.R. 331.2 and a PJD has been prepared. The PJD is non-binding, cannot be appealed and only provides a written indication that waters of the U.S, including wetlands, may be present on-site. For purposes of computation of impacts, compensatory mitigation requirements and other resource protection measures, a permit decision made on the basis of a PJD will treat all waters that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This determination is only valid for the

review areas shown on the attached map entitled “LRN-2023-00119, Enclosure 4”, attached to this letter.

Enclosed with this letter is a copy of the PJD. If you agree with the findings of this PJD and understand your options regarding the same, please sign and date the form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

U.S. Army Corps of Engineers
Nashville District
3701 Bell Rd.
Nashville, TN 37214
Attn: Jennifer Watson

Approved Jurisdictional Determination: Also enclosed is an approved jurisdictional determination for the features identified as the following: EPH-7/STR-8 and WTL-6, **determined jurisdictional**, and EPH-1, EPH-2, EPH-4, EPH-5, EPH-8, EPH-9, EPH-10, EPH-11, EPH-12, ES-1, ES-2, ES-3, ES-4, ES-5, ES-6, ES-7, ES-8, ES-9, ES-10, ES-11, D-1, WTL-1, P-1, P-3, P-4, and P5, **determined not jurisdictional**. I have determined that the features listed above that are designated as not jurisdictional are not waters of the United States subject to USACE jurisdiction. Therefore, you are not required to obtain Department of the Army authorization to discharge dredged or fill material within these areas. The rationale for this determination is provided in the attached Approved Jurisdictional Determination Memorandum For Record (MFR).

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in Sackett.

The approved jurisdictional determination expires five years from the date of this letter, unless new information warrants revision of the determination before the expiration date, or the District Engineer identifies specific geographic areas with rapidly changing environmental conditions that merit re-verification on a more frequent basis. This approved jurisdictional determination is only valid for the review areas area as shown on the enclosed map labeled “LRN-2023-00119, Enclosure 4”

If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeals Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Great Lakes and Ohio River Division, Division Office at the following address:

Regulatory Appeal Review Officer
ATTN: Ms. Katie McCafferty
Army Engineer Division
550 Main Street, Room 10-780
Cincinnati, OH 45202-3222
TEL (513) 684-2699

In order for an RFA to be accepted by the USACE, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date listed on the RFA form. **It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter**.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

We appreciate your awareness of the USACE regulatory program. If you have any questions, you may contact myself or Jennifer Watson at (615) 587-4716 or by e-mail at Jennifer.A.Watson2@usace.army.mil.

Sincerely,

Timothy C. Wilder
Chief, West Branch
Nashville Regulatory Division

Enclosures:

1. Enclosure 1 – AJD MFR
2. Enclosure 2 – PJD Form
3. Enclosure 3 – Appeal Form
4. Enclosure 4 – AJD-PJD Map

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NASHVILLE DISTRICT
3701 BELL ROAD
NASHVILLE TENNESSEE 37214

CELRN-RD February 8, 2024

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Pre-2015 Regulatory Regime Approved Jurisdictional Determination in Light of *Sackett v. EPA*, 143 S. Ct. 1322 (2023) ,[1] [LRN-2023-00119][2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4] For the purposes of this AJD, we have relied on section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the Clean Water Act (CWA) implementing regulations published by the Department of the Army in 1986 and amended in 1993 (references 2.a. and 2.b. respectively), the 2008 *Rapanos-Carabell* guidance (reference 2.c.), and other applicable guidance, relevant case law and longstanding practice, (collectively the pre-2015 regulatory regime), and the *Sackett* decision (reference 2.d.) in evaluating jurisdiction.

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. The features addressed in this AJD were evaluated consistent with the definition of “waters of the United States” found in the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. This AJD did not rely on the 2023 “Revised Definition of ‘Waters of the United States,’” as

---

[1] While the Supreme Court’s decision in *Sackett* had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, interstate water, or territorial seas that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

[3] 33 CFR 331.2.

[4] Regulatory Guidance Letter 05-02.

[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

amended on 8 September 2023 (Amended 2023 Rule) because, as of the date of this decision, the Amended 2023 Rule is not applicable in Tennessee due to litigation.

1. SUMMARY OF CONCLUSIONS.

   a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

   b.

   i. EPH-1 is not a water of the United States
   ii. EPH-2 is not a water of the United States
   iii. EPH-4 is not a water of the United States
   iv. EPH-5 is not a water of the United States
   v. EPH-7/STR-8 is a water of the United States (Section 404)
   vi. EPH-8 is not a water of the United States
   vii. EPH-9 is not a water of the United States
   viii. EPH-10 is not a water of the United States
   ix. EPH-11 is not a water of the United States
   x. EPH-12 is not a water of the United States
   xi. ES-1 is not a water of the United States
   xii. ES-2 is not a water of the United States
   xiii. ES-3 is not a water of the United States
   xiv. ES-4 is not a water of the United States
   xv. ES-5 is not a water of the United States
   xvi. ES-6 is not a water of the United States
   xvii. ES-7 is not a water of the United States
   xviii. ES-8 is not a water of the United States
   xix. ES-9 is not a water of the United States
   xx. ES-10 is not a water of the United States
   xxi. ES-11 is not a water of the United States
   xxii. D-1 is not a water of the United States
   xxiii. WTL-1 is not a water of the United States
   xxiv. WTL-6 is a water of the United States (Section 404)
   xxv. P-1 is not a water of the United States
   xxvi. P-3 is not a water of the United States
   xxvii. P-4 is not a water of the United States
   xxviii. P-5 is not a water of the United States

2. REFERENCES.

   a. Final Rule for Regulatory Programs of the Corps of Engineers, 51 FR 41206 (November 13, 1986).

b. Clean Water Act Regulatory Programs, 58 FR 45008 (August 25, 1993).

c. U.S. EPA & U.S. Army Corps of Engineers, Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in *Rapanos v. United States & Carabell v. United States* (December 2, 2008)

d. *Sackett v. EPA*, 598 U.S. _, 143 S. Ct. 1322 (2023)

3. REVIEW AREA. The AJD review area is limited to the specified review areas depicted on the attached figure on an area of 294-acres near Adamsville in McNairy and Hardin Counties, Tennessee (Latitude: 36.446164° N, Longitude -88.298679° W). The site is dominated by agricultural land with a few spots of upland/bottomland forest. The project study area is within the Milledgeville, Tennessee, topographic quadrangle, with the western portion extending into the Leapwood topographic quadrangle. The project study area and proposed electric easement corridor are located within the Beason Creek – Tennessee River (060400010508) HUC-12 watershed. This watershed is ultimately located within the Lower Tennessee – Beech Rivers (06040001) HUC-8 watershed, which is within the Tennessee River Basin. No previous jurisdictional determination requests are associated with the site.

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), INTERSTATE WATER, OR THE TERRITORIAL SEAS TO WHICH THE AQUATIC RESOURCE IS CONNECTED. N/A

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, INTERSTATE WATER, OR THE TERRITORIAL SEAS N/A

6. SECTION 10 JURISDICTIONAL WATERS: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10. N/A

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the pre-2015 regulatory regime and consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the pre-2015 regulatory regime. The

rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource, including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

a. TNWs (a)(1): N/A

b. Interstate Waters (a)(2): N/A

c. Other Waters (a)(3): N/A

d. Impoundments (a)(4): N/A

e. Tributaries (a)(5):

Resource Name	Size	Criteria	Rationale
EPH-7/STR-8		This feature is a natural, man altered, or man made water body that flows directly or indirectly into a traditional navigable water (TNW). This tributary has been determined to meet the relatively permanent standard. The tributary typically flows year-round or has continuous flow at least seasonally.	75% of this tributary had strong/moderate/weak indicators of intermittent/perennial flow. This determination is supported by field documentation of continuous bed and bank was semi-moderately present and there was a presence of hydric soils on the channel bottom. The stream channel bottom is composed of sand and silt with some depositional bars and benches, as well as recent alluvial deposits. EPH-7 drains WTL-6 and flows through WTL-4a and WTL-4b before returning to a channel-only tributary that flows off the property and into STR-9 (Stratton Branch). Based on the information above we have determined that the resource meets the definition of “waters of the United States”.

f. The territorial seas (a)(6): N/A

g. Adjacent wetlands (a)(7):

Resource Name	Size	Criteria	Rationale
WTL-6	0.13-acres	This wetland feature has been determined to have a continuous surface connection to a jurisdictional resource. This wetland has been determined to be abutting a jurisdictional water	This determination is supported by Field Verification and desktop review of DEM and aerial imagery. This feature flows directly into EPH 7/STR-8. Based on the information above we have determined that the resource meets the definition of “waters of the United States”.

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified as “generally non-jurisdictional” in the preamble to the 1986 regulations (referred to as “preamble waters”).[6] Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA as a preamble water.

Resource Name	Size	Criteria	Rationale
WTL-1	0.17-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation,	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1980 and meets the description of a preamble water.

[6] 51 FR 41217, November 13, 1986.

		settling basins or rice growing.	Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-1	0.27-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1980 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-3	0.05-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 2008 and 2010 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-4	0.05-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation,	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1985 and meets the description of a preamble water.

		settling basins or rice growing.	Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.
P-5	0.10-acres	Artificial lakes and ponds created by the excavation and/or diking of dry land to collect and retain water which are used exclusively for such purposes as stock watering, irrigation, settling basins or rice growing.	This determination is supported by review of historical aerials, recent aerials, DEM, and photographs and was determined to be excavated in uplands between 1960 and 1985 and meets the description of a preamble water. Based on the information above, we have determined that this resource does not meet the definition of “waters of the United States”.

b. Describe aquatic resources and features within the review area identified as “generally not jurisdictional” in the *Rapanos* guidance. Include size of the aquatic resource or feature within the review area and describe how it was determined to be non-jurisdictional under the CWA based on the criteria listed in the guidance.

Resource Name	Size	Criteria	Rationale
D-1	418 LF	Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water	This determination is supported by a straight dug manmade channel, vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the

			definition of “waters of the United States”.
ES-1	58 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-2	540 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-3	64 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow.

			Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-4	183 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-5	94 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-6	229 LF	Swales or erosional features (e.g., gullies,	This determination is supported by vegetated channel, weak to

		small washes characterized by low volume, infrequent, or short duration flow)	no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-7	79 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-8	81 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the

			Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-9	153 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-10	63 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume, infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered “generally not jurisdictional” under the Rapanos guidance and therefore does not meet the definition of “waters of the United States”.
ES-11	61 LF	Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)	This determination is supported by vegetated channel, weak to no bed and bank, leaf litter throughout resource and is characterized by low volume,

			infrequent, and short duration flow. Based on the information above, we have determined that this feature is considered "generally not jurisdictional" under the Rapanos guidance and therefore does not meet the definition of "waters of the United States".

c. Describe aquatic resources and features identified within the review area as waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA. Include the size of the waste treatment system within the review area and describe how it was determined to be a waste treatment system. N/A

d. Describe aquatic resources and features within the review area determined to be prior converted cropland in accordance with the 1993 regulations (reference 2.b.). Include the size of the aquatic resource or feature within the review area and describe how it was determined to be prior converted cropland.
N/A

e. Describe aquatic resources (i.e. lakes and ponds) within the review area, which do not have a nexus to interstate or foreign commerce, and prior to the January 2001 Supreme Court decision in "*SWANCC*," would have been jurisdictional based solely on the "Migratory Bird Rule." Include the size of the aquatic resource or feature, and how it was determined to be an "isolated water" in accordance with *SWANCC*. N/A

f. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the pre-2015 regulatory regime consistent with the Supreme Court's decision in *Sackett* (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

Resource Name	Size	Criteria	Rationale
EPH-1	462 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-2	301 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-4	175 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-5	997 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-8	440 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-9	249 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-10	341 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-11	321 LF	This watercourse has been determined to not meet the relatively permanent standard. The watercourse generally flows only in response to precipitation.	This watercourse had moderate indicators of ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of “waters of the United States”.
EPH-12	585 LF	This watercourse has been determined to not meet the	This watercourse had moderate indicators of

		relatively permanent standard. The watercourse generally flows only in response to precipitation.	ephemeral flow. This determination is supported by field verification. It flows only in response to rainfall, it had moderate to weak bed and bank/OHWM indicators, it had no base flow, subsurface flow, or groundwater connection, and there was vegetation growing in the channel. Based on the information above we have determined that the subject resource does not meet the definition of "waters of the United States".

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

a. Consultant report dated January 31, 2023
   I. Field photos (consultant field visit conducted October 24, 2022)
   II. Hydrologic Determination Field Data Sheets
   III. Wetland Delineation Sheets
   IV. Feature Description Narratives
   V. USGS Topo Map
   VI. Watershed Map
   VII. Soils Map
   VIII. Precipitation Data

b. USACE field visit conducted February 17, 2023
   I. Field Verification Photos
   II. Site Visit Notes

c. National Regulatory Viewer Layers accessed February 13, 2023
   I. National Wetland Inventory

II. National Hydrography Dataset
III. USA Soils Map Units
IV. 3DEP Digital Elevation Model (DEM)
V. 3DEP Hill Shade

d. Google Earth accessed January 31, 2024
   I. Historic aerial imagery

e. Historicaerials.com accessed January 24, 2024
   I. Historic aerial imagery

10. OTHER SUPPORTING INFORMATION. N/A

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Max Orlet, Silicon Ranch Corporation	File No. LRN-2023-00119	Date: 02/08/2024

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL WITHOUT PREJUDICE	C
	PERMIT DENIAL WITH PREJUDICE	D
X	APPROVED JURISDICTIONAL DETERMINATION	E
X	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- **ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.**

- **OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.**

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.**

- **APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.**

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable
You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial
You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable
You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
Jennifer Watson Nashville District, U.S. Army Corps of Engineers Regulatory Branch 3701 Bell Road Nashville, Tennessee 37214 615-587-4716; Jennifer.A.Watson2@usace.army.mil	Regulatory Appeals Review Officer ATTN: Katherine McCafferty Army Engineer Division 550 Main Street, Room 10-780 Cincinnati, Ohio 45202-3222 Phone: (513) 684-2699 Katherine.A.McCafferty2@usace.army.mil

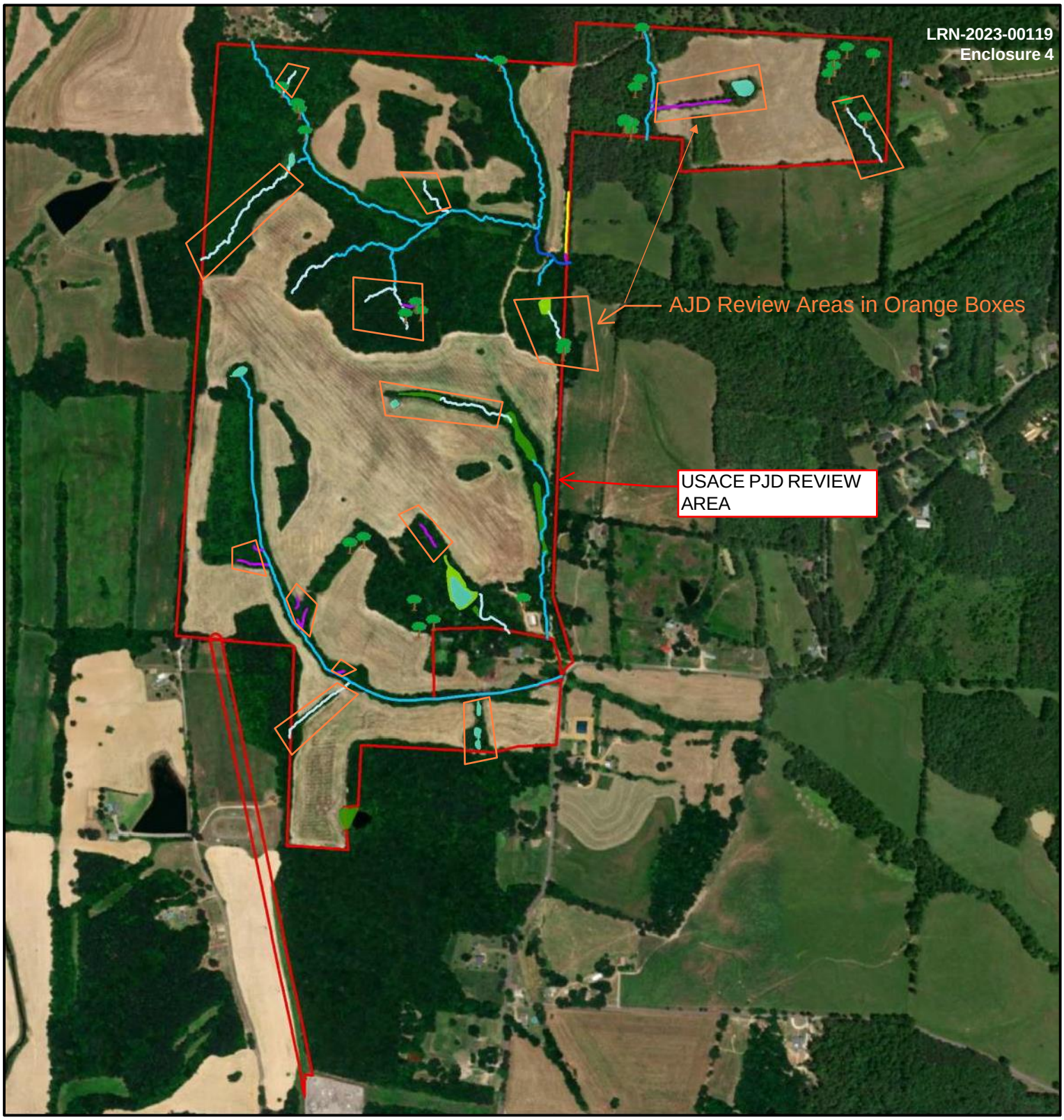
SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:
Email address of appellant and/or agent:	Telephone number:



Revised 2/23/2023

Delineated Waterbody

Feature Type
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Erosional Swale
- Drainage Ditch

Delineated Wetland

Feature Type
- PEM Wetland
- PFO Wetland
- Farm Pond
- Potential Bat Roost Tree
- Project Study Area

1 inch = 900 feet

0 200 400 800 1,200 Feet

Basemap: ESRI World Imagery
Source Data: Barge Field Survey (October 2022)

PROJECT:
Silicon Ranch Corporation
Adamsville Solar Project
Adamsville, McNairy & Hardin Counties, TN

TITLE:
EXISTING CONDITIONS MAP (OVERVIEW)

PROJ NO: 3609517

DATE: February 2023

FIGURE 6a

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

SILICON RANCH

Path: F:\36\36095\3609517\03_PROJECT_EXECUTION\EWR\GIS\MXD\Permitting\Figure6a_ExistingConditionsOverviewMap.mxd

U.S. Army Corps of Engineers (USACE)

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

For use of this form, see Sec 404 CWA, Sec 10 RHA, Sec 103 MPRSA; the proponent agency is CECW-COR.

Form Approved -
OMB No. 0710-0024
Expires 2024-04-30

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the review area that may be subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice or FOIA request as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in any resulting jurisdictional determination (JD), which may be made available to the public on the District's website and/or on the Headquarters USACE website.

Disclosure Submission of requested information is voluntary; however, if information is not provided, the request for a JD cannot be evaluated nor can a PJD be issued.

The Agency Disclosure Notice (ADN)

The public reporting burden for this collection of information, 0710-0024, is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

SECTION I - BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 2024-01-29

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:
Mr. Max Orlet, Silicon Ranch Corporation, 222 Second Avenue S., Suite 1900, Nashville, Tennessee 37201

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:
Nashville, Adamsville Solar Farm Site, LRN-2023-00119

D. PROJECT LOCATION AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Tennessee County/Parish/Borough: McNairy & Hardin City: Wildersville

Center coordinates of site (*lat/long in degree decimal format*): Latitude: 35.264760 ° Longitude: -88.36455 °

Universal Transverse Mercator: 16

Name of nearest waterbody: Stratton Branch

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

☒ Office (*Desk*) Determination. Date: 2024-01-24

☒ Field Determination

Date(s): February 17, 2023

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	STR-1	35.265904	-88.366872	851 LF	non-wetland waters	Section 404

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	STR-2	35.265238	-88.370731	1,198 LF	non-wetland waters	Section 404
	STR-3	35.261092	-88.369038	229 LF	non-wetland waters	Section 404
	STR-4	35.265350	-88.375633	2,879 LF	non-wetland waters	Section 404
	STR-5	35.263338	-88.374596	79 LF	non-wetland waters	Section 404
	STR-6	35.261626	-88.373680	801 LF	non-wetland waters	Section 404
	STR-7	35.260908	-88.372332	280 LF	non-wetland waters	Section 404
	STR-8	35.257766	-88.369098	1,219 LF	non-wetland waters	Section 404
	STR-9 (Stratton Branch)	35.257419	-88.375556	3,788 LF	non-wetland waters	Section 404
	EPH-6	35.255132	-88.370305	424 LF	non-wetland waters	Section 404
	EPH-7	35.258937	-88.371348	568 LF	non-wetland waters	Section 404
	WTL-2	35.255617	-88.370881	0.36-acres	PEM	Section 404
	WTL-3	35.254955	-88.370303	0.04-acres	PFO	Section 404
	WTL-4a	35.258019	-88.369216	0.43-acres	PFO	Section 404
	WTL-4b	35.257025	-88.368970	0.37-acres	PFO	Section 404
	WTL-5	35.251105	-88.373150	0.27-acres	PFO	Section 404
	WTL-6	35.258964	-88.371564	0.13-acres	PFO	Section 404
	P-2	35.263307	-88.374683	0.08-acres	Open Waters	Section 404
	P-6	35.259335	-88.375737	0.10-acres	Open Waters	Section 404

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	P-7	35.255257	-88.370689	0.42-acres	OW	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD or no JD whatsoever, which do not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the USACE has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD or reliance on no JD whatsoever; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of USACE permit authorization based on a PJD or no JD whatsoever constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the USACE will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

F. SUPPORTING DATA. Data reviewed for PJD (*check all that apply*)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:

Map: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☒ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

Rationale:

☐ Data sheets prepared by the USACE:

☐ Corps navigable waters' study:

☒ U.S. Geological Survey Hydrologic Atlas:

Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ USGS NHD data.

☒ USGS 8 and 12 digit HUC maps.

☐ U.S. Geological Survey map(s). Cite scale & quad name:

7.5 Minute Index: Millegeville

☒ USDA Natural Resources Conservation Service Soil Survey.

Citation: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☒ National Wetlands Inventory map(s).

Cite Name: Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

☐ State/Local Wetland Inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____. (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (*Name & Date*): Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch

or ☒ Other (*Name & Date*): Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch
Report submitted by Barge Solutions on January 31, 2023: LRN-2023-00119_20230131_AJD-RQST_Adamsville-Silicon-Ranch and USACE SIte visit photos from 2/17/2023

☐ Previous determination(s). File no. and date of response letter:

☐ Other information (*please specify*):

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

Name of Regulatory Staff Member Completing PJD	Date	Signature of Regulatory Staff Member Completing PJD
Jennifer Watson	2024-01-29	WATSON.JENNIFER.A.1607600119 Digitally signed by WATSON.JENNIFER.A.1607600119 Date: 2024.01.29 08:56:36 -06'00'
Name of Person Requesting PJD	Date	Signatureof Person Requesting PJD *(REQUIRED, unless obtaining the Signature is Impracticable*

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

Appendix E

USFWS ESA Concurrence Letter

Tennessee Ecological Services Field Office

FWS Log No: 2023-0079558

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act. If project design changes are made or new information becomes available, please submit new plans for review.

Field Supervisor Date

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

November 13, 2023

Mr. Daniel Elbert
U.S. Fish and Wildlife Service
Tennessee Field Office
446 Neal Street
Cookeville, Tennessee 38501

Dear Mr. Elbert:

TENNESSEE VALLEY AUTHORITY (TVA) – ADAMSVILLE SOLAR PROJECT – REQUEST FOR CONCURRENCE – PROJECT CODE: 2023-0079558

TVA has entered into a Power Purchase Agreement (PPA) with SR Adamsville, LLC (Adamsville Solar), a wholly owned subsidiary of Silicon Ranch Corporation (SRC) to purchase the power generated by Adamsville Solar (Project) in McNairy and Hardin Counties, Tennessee. The Project is anticipated to provide up to 25 megawatts (MW) alternating current (AC) in generating capacity at the Point of Interconnection (POI). The proposed solar facility would be constructed and operated by Adamsville Solar. TVA would purchase the electric output generated by the proposed solar facility for an initial term of 20 years, subject to satisfactory completion of all applicable environmental reviews. The POI would be a new switchyard built by SRC within the Project Site. The switchyard would transmit the electricity to the existing Local Power Company (LPC), Pickwick Electric Cooperative's (PEC's) transmission line (TL) that terminates at the North Adamsville substation. The substation would transmit the power to the TVA grid. The Project Site is a 295-acre property, consisting of approximately 215 acres that will be directly impacted by the placement of fencing and will contain panels and an existing 0.6-mile right-of-way (ROW) and TL owned by PEC. While the design of the facility is being finalized, the conceptual plan includes approximately 74,682 First Solar Series 6+ or Series 7 modules being placed within the approximately 170 acre fenced area. Approximately 6.2 acres of interior access roads would be constructed to access the panels. Specific details about the scope of this project can be found in the draft Environmental Assessment (EA) available online at: https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/adamsville-solar-project . Threatened and endangered species survey reports can also be found in the appendices at the link provided.

Review of the TVA Regional Natural Heritage database and the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) website identified nineteen species listed as federally endangered, threatened, candidate, or delisted and monitored under the Endangered Species Act (ESA) that have the potential to occur within the project area in McNairy and Hardin Counties, Tennessee. These species include one insect (monarch butterfly), three mammals (gray bat, northern long-eared bat (NLEB), and tricolored bat), one bird (whooping crane), one reptile (alligator snapping turtle), two plants (Prices' potato-bean and whorled sunflower), and twelve mussels (clubshell, cracking pearly mussel, fanshell, longsolid, orangefoot pimpleback, pink mucket, ring pink, rough pigtoe, round hickorynut, sheepnose mussel, spectaclecase, and white wartyback) that have the potential to occur within the project boundary based on historic

range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No federally designated critical habitats for these species are present within or adjacent to the project action area, therefore no adverse modification of critical habitats would occur.

Field-based delineation identified six wetlands (1.77 acres) and seven open water bodies (1.07 acres) with the Project Site. A total of 12 ephemeral stream reaches (5,131 linear feet), and nine intermittent streams (12,300 linear feet), were also identified. Final site design has not yet been determined, but the preliminary design indicates that direct impacts to surface water features would be minimal. Construction and operation of Adamsville Solar would result in minimal impacts to jurisdictional resources. A total of five stream crossings will be required, which will be appropriately culverted and designed to maintain surface water flow of the crossed streams. The current design estimates up to 1.33 acres of forested wetland would be converted to emergent or scrub/shrub wetland however SRC is working to avoid all impacts to wetlands. With the use of proper best management practices (BMPs), Clean Water Act (CWA) Sections 404 and 401 permitting, and compliance with all federal, state, and local regulations, surface water and wetland impacts are expected to be minor.

In April 2023, TVA aquatic biologists performed a field survey at Adamsville Solar. Most streams onsite were already in poor condition due to ongoing poor land management practices. All stream crossings observed during field surveys had perched or clogged culverts with significant erosion and lack of sediment controls on access roads. There is no habitat for federally listed aquatic species anywhere on or adjacent to the proposed action area. Any stream or section of a stream that potentially supported aquatic life was opportunistically sampled, but only common, widespread species were captured and identified. Therefore, TVA has determined that the proposed actions would have No Effect on the aforementioned federally listed aquatic species.

Under a contract with Barge Design Solutions, Inc. The Jackson Group conducted a Phase 1 Bat Habitat Assessments on May 20-24, 2023, according to the 2023 Range-Wide Indiana Bat and Northern Long-eared Survey Guidelines (USFWS, 2023) to determine presence of habitat for Indiana bat, northern long-eared bat (NLEB), and tricolored bat (TCB). No suitable caves or potential winter roosting hibernacula sites were identified within the Project Site. Two large culverts greater than 36-inches in diameter exist in the Project Site; however, surveys determined there was no evidence of bat roosting within the structures. The quality of summer roosting bat habitat within the Project Site was based on the presence of potential bat roost trees, solar exposure of those roost trees, density, and maturity of the woodland, as well as proximity to aquatic foraging habitat. There are approximately 148.8 acres of forested land within the Project Site. Summer roosting habitat ranged from poor to good quality. Forested vegetative communities found within the project site include mature oak-hickory forest, mature and semi-mature riparian forest, mixed growth hardwood forest, and successional forest. A total of 50 potential Indiana bat and NLEB bat roost trees were identified within and immediately adjacent to the project study area. Identified potential Indiana bat and NLEB roost trees were live shagbark hickory trees, or other live and dead trees with exfoliating bark, cracks, or crevices. Approximately 29.4 acres of the total forested habitat was determined to be “good” quality summer roosting habitat and was comprised of mature riparian forests and mature oak-hickory forests. Approximately 41.2 acres was determined to be “marginal” quality habitat and was comprised of younger hardwood forest with a variety of age classes throughout the canopy

and midstory as well as areas of dense vines and saplings and shrubs. Approximately 78.2 acres are considered “poor” habitat and were comprised of early successional forests that were too dense for bat travel. Of the forested habitat identified, only the habitat characterized as “good” and “marginal” quality would be considered suitable for summer roosting Indiana bats, NLEBs , and TCBs. The wetlands and streams on site offer suitable foraging habitat for all bat species. The proposed project could remove approximately 26.0 acres of “good” quality summer roosting habitat, 35.8 acres of “marginal”, and 54.0 acres of “poor” quality summer roosting habitat. Tree clearing would be conducted only during the winter window (October 15 – March 31) when federally protected bats are not present out on the landscape. See Appendix A at the aforementioned link for the Bat Habitat Assessment.

Phase 2 Bat Presence/Absence Mist Net Surveys were conducted by Jackson Group from May 20-24, 2023, according to the 2023 Range-Wide Indiana Bat and Northern Long-eared Survey Guidelines (USFWS, 2023). Based on the amount of forested habitat within the Project Area two net sites were established. Net site locations were selected by a permitted bat biologist in the field and were based on the best possible net locations (e.g., streams, trails, corridors) that are typically the most effective places to survey. The surveys were conducted at four net sites for a total of twenty net nights. Proposed netting plans were approved by USFWS, Cookeville on May 12, 2023. A total of nine bats were captured during the survey effort. Bat species captured included eight eastern red bats (*Lasiurus borealis*) and one evening bat (*Nycticeius humeralis*). No threatened or endangered bats were captured during survey efforts. See Appendix A at the aforementioned link for the Bat Survey Report.

According to the USFWS map of Endangered Bats of Tennessee, the Project Site falls within an area where they consider gray bats likely to be present and Indiana and NLEBs are likely absent. There are no known hibernacula for gray bats, Indiana bats, NLEBs, or TCBs within ten miles of the project and no caves are known within three miles or from the Project Site. The closest known records of gray bat and tricolored bat are from a hibernaculum approximately 14.6 miles away in Hardin County. The closest NLEB records are pre-white-nose syndrome acoustic records approximately 12.9 miles away in McNairy County. The closest known Indiana bat records are from a maternity colony discovered in 2013 approximately 15.9 miles away in McNairy County. Mist net surveys did not result in captures of any federally protected bat species. Due to the lack of impacts to hibernacula, lack of documented presence on the Project site, winter tree removal, and minimal impacts to surface water, ***TVA has determined that proposed actions may affect but are not likely to adversely affect gray bat, Indiana bat, and NLEB . TVA also has determined that proposed actions would not jeopardize the continued existence of the TCB.***

Whooping cranes themselves were not observed on site during the September 2023 site inspections. However, suitable stop-over migration foraging habitat was present in agricultural fields, pasture, and ponds on site. Fields and pasture lands would be converted to solar arrays; however, the ponds on site would not to be impacted. Loss of this relatively small amount of suitable migration habitat would not result in significant impacts to the experimental population of whooping cranes that could migrate through the area. In addition, there is an abundance of similarly suitable agricultural land in the immediate surrounding area. Therefore, ***TVA has determined that the proposed actions would not jeopardize the continued existence of the whooping crane.***

The alligator snapping turtle was not observed on site. The project site lacks the preferred habitat of deep water of rivers, sloughs, oxbows, swamps, and lakes and this species is not found in isolated ponds or wetlands. The closest known record of this species is approximately 24.4 miles away in McNairy County. Potential project impacts to surface waters are expected to be minimal (up to 1.33 acres of wetlands that may converted from forest to emergent or scrub-shrub wetland to reduce panel shading). Buffers around streams and wetlands as well as other BMPs would be used to protect these features during construction. Due to low likelihood of presence and minimal impacts to marginal habitat, ***TVA has determined that the proposed actions would not jeopardize the continued existence of the alligator snapping turtle.***

Adult monarch butterflies were observed across the site during field reviews in October 2022. No caterpillars or eggs were observed; however, milkweed was observed along the margins of agricultural fields and farm ponds. Proposed impacts may remove small amounts of habitat for this species. Similarly suitable habitat is available across the area, thus loss of the small amounts of habitat on the project site would not be significant. Therefore, ***TVA has determined that the proposed actions would not jeopardize the continued existence of monarch butterfly.***

Botany field surveys were conducted in September 2022 to determine whether suitable habitat for federally listed plant species occurs within the project action area. Price's potato bean was not found on site. The project site lacked the preferred habitat of open wooded areas, forest edges, and low areas along stream banks. No whorled sunflowers were observed within the Project Site. Whorled sunflower is found in a range of sites, including around agriculture fields which are abundant onsite. Loss of this relatively small amount of suitable habitat would not result in significant impacts to whorled sunflower due to an abundance of similarly suitable agricultural land in the immediate surrounding area. ***TVA has determined that the proposed actions would not affect Price's potato bean and whorled sunflower.***

We respectfully request concurrence with our determinations. Should you have any questions or wish to discuss the project in more detail, please contact Elizabeth Hamrick by email, ecburton@tva.gov.

Sincerely,

W. Douglas White
Manager
Biological Compliance

EKM:ABM
Enclosures

Appendix F

Cultural Resources Consultation Information

Kris Thoemke

From: Harle, Michaelyn S <mharle@tva.gov>
Sent: Monday, June 26, 2023 12:46 PM
To: Kris Thoemke; Smith, Elizabeth
Subject: FW: Adamsville Solar, Silicon Ranch Solar Photovoltaic Generating Facility, CRMS 32184860736 - Project # SHPO0001564

Well that was quick!!

From: TN Help <tnhelp@service-now.com>
Sent: Monday, June 26, 2023 1:19 PM
To: Beliles, Emily <ebeliles@tva.gov>
Cc: Osborne, James W Jr <jwosborn@tva.gov>; Harle, Michaelyn S <mharle@tva.gov>
Subject: Adamsville Solar, Silicon Ranch Solar Photovoltaic Generating Facility, CRMS 32184860736 - Project # SHPO0001564

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

2023-06-26 12:18:15 CDT

James Osborne
TVA

RE: Tennessee Valley Authority (TVA), Adamsville Solar, Silicon Ranch Solar Photovoltaic Generating Facility, CRMS 32184860736, Project#: SHPO0001564, Hardin County, McNairy County, TN

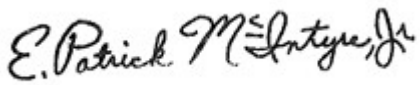
Dear James Osborne:

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 find 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. Please provide your Project # when submitting any additional information regarding this undertaking. Questions or comments may be directed to Casey Lee, who drafted this response, at Casey.Lee@tn.gov, +16152533163.

Sincerely,



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

Ref:MSG8791691_3QcOUzZJseKUbtMew4oG