

## **Appendix A**

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

## Appendix A: SR Millington II Solar Facility Public Comments and Responses

Topic	Comment	Commentor(s)	Response
Archaeology	TDEC recommends project construction avoid the St. James Cemetery, and avoidance or further mitigation of archeological sites of unknown National Register Status.	Bryan Davidson, Policy Analyst, TDEC	The project will not impact the cemetery. A minimum 20-meter buffer will be maintained around the perimeter of the cemetery and archeological sites of unknown National Register Status. See section 3.8.2.2 of the EA.
Archeaology	Comment that if human remains are encountered or accidentally uncovered by earthmoving activities, all activity within the immediate area must cease. The county coroner or medical examiner, a local law enforcement agency, and the state archaeologist's office should be notified at once.	Bryan Davidson, Policy Analyst, TDEC	SR Millington II (SR MII) will comply with this requirement. Section 3.8.2.2 of the EA was edited to address this concern.
Water Resources	Comment that the proposed project will require an individual stormwater construction permit (CGP), including a Storm Water Pollution Prevention Plan (SWPPP).	Bryan Davidson, Policy Analyst, TDEC	SR MII will obtain an individual CGP and SWPPP prior to beginning construction. Section 1.4 of the EA was edited to reflect this.
Water Resources	Comment that an Aquatic Resource Alteration Permit will be required.	Bryan Davidson, Policy Analyst, TDEC	SR MII will obtain ARAP prior to initiating activity within the waters of the state. See Section 1.4 and 3.3.2.2 of the EA.
Water Resources	Comment that due to the considerable vegetation management around the panels involving herbicide application, care should be taken to follow manufacturer's directions and avoid herbicide application prior to predicted rainfall events or high winds to minimize any possibility of runoff or drift.	Bryan Davidson, Policy Analyst, TDEC	Manufacturer's directions and weather events (e.g., predicted rainfall or high winds) would be taken into account prior to application of herbicides in efforts to reduce potential runoff or drift. See Section 2.2.4 of the EA.
Overall Project	Project Support	Matt King Caroline Gillard Lucas Smith Gordon Niessen	Thank you for your comments.

## **Appendix B**

### **No Practical Alternatives Analysis**

**Final**  
**No Practicable Alternative Analysis – Millington II Solar Farm**  
**February 28, 2022**

**Introduction**

SR Millington II, LLC (SRM II) proposes constructing 472 acres of solar panels on a 957-acre property in Shelby County, Tennessee. A portion of the project falls within the Casper Creek 100-year floodplain (Zone AE) (Map No. 47157C0180G). Because the floodplain will be impacted, Presidential Executive Order 11988, Floodplain Management requires SRM II to "consider alternatives to avoid adverse effects and incompatible development in the floodplains." Further, per TVA NEPA regulations at 18 CFR 1318, TVA policy requires that adverse impacts of certain TVA actions affecting floodplains must be avoided to the extent practicable. The Alternatives Analysis below addresses the requirement of EO 11988. The Minimization section below addresses TVA's requirement to minimize any adverse impacts to natural and beneficial floodplain values.

**Alternatives Analysis**

In the Preferred Alternative, 26.59 acres of solar panels and one inverter are located within the Casper Creek floodplain. SRM II concludes that the proposed project is consistent with Executive Order 11988 because:

1. There is insufficient usable land within the project boundary outside of the floodplain for the number of panels required for this project. Reducing the number of panels would reduce the generating capacity of SRM II and result in SRM II not meeting its contractual obligations to TVA. Thus, relocating panels outside of the floodplain is not possible.
2. TVA's parameters of a suitable site for a solar project site include the property being
  - a. In close proximity to the power grid
  - b. Relatively flat
  - c. Having minimal natural or cultural resource constraints limiting development

SRM II selected the project site and preferred alternative because it meets the above requirements.

3. The Millington II project site is a combination of land parcels that SRM II acquired. While there may be additional suitable land nearby, SRM II contacted all the landowners around the project and have not been able to acquire additional land.

**Minimization**

SRM II has identified all practicable design measures to minimize harm to the floodplain and floodway. These measures include:

1. No development in or modification of the Casper Creek or Big Creek floodways
2. No solar panels will be placed in the Big Creek floodplain
3. The panels in the Casper Creek floodplain would be mounted on steel pilings, and the one inverter in the floodplain would be on a pile-supported elevated pad. The panels and inverter would be a minimum of one foot above the 100-year flood elevation and comply with the Shelby County floodplain ordinance.



4. The proposed placement of the panels and one inverter in the floodplain would not significantly increase 100-year flood elevations. Elevations for the Casper Creek 100-year floodplain (Zone AE) range from 291.3 to 309.2 feet within the project site. The use of pilings minimizes any changes to the elevations in the 100-year floodplain. All activities will adhere to the minimum standards of the National Flood Insurance Program published at 44 CFR §§ 60.1-60.8, and comply with local floodplain management regulations.
5. SR Millington II agrees to conduct construction in the floodplain during dry periods.
6. Some tree clearing would be required in the 100-year floodplain to accommodate the proposed panels. Trees will be cleared within 200 feet east, west, and south of the panel limits to reduce shade impacts on the panels. Disturbed areas would be seeded post-construction. During operation, SR Millington II would maintain the vegetation at a height ranging from 6 inches to 2 feet on the developed site.
7. Best management practices (BMPs) will be used as a minimum to control surface water runoff and erosion. These practices are described in Guidelines for Erosion and Sediment Control Planning and Implementation (EPA Environmental Protection Technology Series Report No. EPS-R2-72-015, August 1972). Disturbed areas will be reseeded as soon as possible with species adapted to existing conditions. The use of BMPs such as soil erosion and sediment control measures would minimize the potential for increased soil erosion and runoff. Due to the project disturbance area being greater than one acre, an NPDES Permit for discharges of stormwater associated with construction activities would be required. Application for the permit would require submitting an SWPPP describing the management practices utilized during construction to prevent erosion and runoff and reduce pollutants in stormwater discharges from the site. Following construction, soil stabilization and vegetation management measures would be implemented to reduce the potential for erosion impacts during site operations.
8. Before crossing areas harboring threatened or endangered species or areas specifically identified as "sensitive," SRM II will contract a biologist to determine if mitigation is needed to negate or minimize impacts to these areas.

## **Conclusion**

SR Millington II, LLC concludes that the above information demonstrates that there is no practicable alternative to constructing portions of the solar arrays and one inverter in the 100-year floodplain, and the identifies the steps necessary to minimize the impacts of solar panels and one inverter in the floodplain.

## **Appendix C**

### **Natural Resources Memo**



# SUMMARY OF ENVIRONMENTAL FEATURES FOR THE MILLINGTON II SOLAR PROJECT, MILLINGTON, SHELBY COUNTY, TENNESSEE

Prepared  
For: Silicon Ranch Corporation

Sent  
To: Tennessee Valley Authority

3609515  
August 2021

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ATTACHMENT C – WETLAND AND WATERBODY DATA FORMS

ATTACHMENT D – PHOTO SUMMARY

ATTACHMENT E – USFWS IPAC REPORT

ATTACHMENT F – USFWS BAT HABITAT DATA FORMS

## 1.0 INTRODUCTION

Barge Design Solutions, Inc. (Barge) has been retained by Silicon Ranch Corporation (Silicon Ranch) to perform desktop analysis on an approximately 968-acre proposed Millington II Solar Project (project study area), located east of Bethel Road, west of Big Creek Drainage Canal, south of Kerrville Rosemark Road, and north of Millington Arlington Road, for the purpose of identifying potential natural resources prior to the site visit.

The parcels within the study boundary and property owners are as follows:

Table 1.0: Properties Within the Project Study Area

Property Owner Name	Parcel Number	Approx. Acreage
Thomas, Bethel Evans Jr & Rubye Lynn Dobbins	D0116 00028	98.3
Ray, Ronald B, Dianne M	D0116 00408	86.54
Rounds, Ronald and Mary Family Trust	D0116 00409	80.36
Ceres Land Management and Consulting LLC	D0116 00048	66.77
Prital, Bindra Trust FBO Angad S Bindra FBO Govin B	D0116 00049	54.21
Ceres Land Management and Consulting LLC	D0116 00050	53.75
Ritpal Bindra Trust FBO Angad S Bindra and Pritpal Bindra Trust FBO Govin D	D0116 00051	72.58
Davis Mary Patricia D Revocable Living Trust	D0117 00048C	196.86
Longmire, Terry L	D0117 00049	196.26
Mccalla Frank and Jon Mccalla and Molly M Hampton and Betsy M Wiggins and ETAL	D0117 00096	57.26
Prital Bindra Trust FBO Angad S Bindra and Pritpal Bindra Trust FBO Govin D	D0116 00226	5.3

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

On April 14 and 15, 2021, Barge biologists Nick Carmean and Frank Amatucci performed an on-site investigation for the Millington II 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 attachments are included subsequent to this report:

- Attachment A – Figures
- Attachment B – NRCS Custom Soil Report
- Attachment C – Wetland and Waterbody Data Forms
- Attachment D – Photo Summary
- Attachment E – USFWS IPaC Preliminary Report
- Attachment F – USFWS Bat Habitat Data Forms

## 2.0 SITE DESCRIPTION

The project study area is primarily utilized for agriculture, with some irrigation systems in place. Parcel No. D0116 00226 located in the northwestern extent of the site is wooded, vacant land. There is also a small cemetery on the western portion of Parcel No. D0117 00049. A Project Location Map depicting the area can be found in Attachment A, Figure 1. The surrounding area includes wooded, vacant land, cultivated agricultural land, and residential properties.

The project study area is located east of Bethuel Road, west of Big Creek Drainage Canal, south of Kerrville Rosemark Road, and north of Millington Arlington Road in Millington, Shelby County, Tennessee (Attachment A, Figure 1). This area falls within the Mississippi Valley Loess Plains (74) Tennessee ecoregion and is further categorized into the Loess Plains (74b) physiographic region of Tennessee. The project study area is within the Millington, Tennessee, topographic quadrangle (Attachment A, Figure 2), and the project survey area is located within the HUC-12 Big Creek Upper (080102090301) and Big Creek Middle (080102090302) lower watersheds. These watersheds are ultimately located within the HUC-8 Loosahatchie River watershed (08010209), which is within the Mississippi River Basin (Attachment A, Figure 3).

## 3.0 SOILS

Fourteen soil units consisting of silt loams and sloped eroded complexes were identified on-site. For the project study area, two soil units are considered hydric for Shelby County, Tennessee. The Falaya silt loam (Fm) and Henry silt loam (He) are considered hydric and account for 51.5 percent and 7.9 percent of the project study area, respectively. The dominant soil unit for the project study area is the Falaya silt loam (Fm), and the second most dominant soil unit is the Grenada silt loam, 2 to 5 percent slopes (GaB), which accounts for 16.3 percent of the project study area and is considered as non-hydric. A Soil Unit Map can be found within Attachment A, Figure 4, and a Custom Soil Resource Report from the Natural Resources Conservation Service (NRCS) can be found in Attachment B.

## 4.0 VEGETATION

The project area is mostly utilized for agricultural fields with multiple seasonally planted crops. The planted fields were observed with last year's corn or soy production and this year's winter wheat harvest. In between the agricultural fields and the natural wooded portions of the project study area, low herbaceous growth areas were observed, which included foxtail grass (*Setaria pumila*), orchard grass (*Dactylus glomerata*), perennial ryegrass (*Lolium perenne*), common vetch (*Vicia sativa*), and Johnson grass (*Sorghum halepense*). In some of the wetter portions of the pastureland within the project study area, fox sedge (*Carex vulpinoidea*), spikerush (*Eleocharis palustris*), and poison ivy thickets (*Toxicodendron radicans*) were observed.

Native fragmented woodland was also observed along much of the riparian margin areas, especially along Big Creek and Casper Creek. This forest community ranges between early successional forest to secondary growth mixed hardwood forest. Dominant vegetation in the woodland portion of the project area includes white oak (*Quercus alba*), northern red oak (*Q. rubra*), southern red oak (*Q. falcata*), post oak (*Q. stellata*), water oak (*Q. nigra*), red cedar (*Juniperus virginiana*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*) American elm (*Ulmus americana*), black willow (*Salix nigra*), black walnut (*Juglans nigra*), and black cherry (*Prunus serotina*) in the tree stratum; honeysuckle (*Lonicera maakii*), privet (*Ligustrum sinense*), and blackberry (*Rubus argutus*) in the shrub stratum; and Virginia creeper (*Parthenocissus quinquefolia*), woodoats (*Chasmanthium latifolium*), Japanese silt grass (*Microstegium vimineum*), and wingstem (*Verbesina alternifolia*) in the herbaceous stratum.

## 5.0 WATER RESOURCES

### 5.1 Wetland Boundary Identification

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

### 5.2 Observed Wetlands

Seven wetland features were observed within the project study area, of which, five of the features were observed as Palustrine Emergent (PEM) wetland features, and the remaining wetland systems were observed as Palustrine Scrub-Shrub (PSS) or Palustrine Forested (PFO) wetland features. Each wetland or pond feature was verified with the positive identification of suitable hydrology, hydrophytic vegetation, and hydric soils. The locations of the delineated wetlands and



ponds are provided in Figure 6 -- Existing Conditions Map (Attachment A), and Table 5.2 details the location and acreage of each wetland. In addition, a photograph of each wetland feature is provided in Attachment D.

Table 5.2: Wetlands within the Project Study Area

Wetland I.D.	Description	Location Within Project Boundaries	Estimated Amount of Aquatic Resource in Project Area	State Jurisdictional Status	Federal Jurisdictional Status
WTL-1	PEM	35.349946, -89.837820	0.03 acres	No	Yes
WTL-2	PEM	35.350751, -89.847186	0.41 acres	No	Yes
WTL-3	PFO/PUB	35.359421, -89.844365	0.07 acres	No	Yes
WTL-4	PEM	35.359309, -89.832742	0.08 acres	No	No
WTL-5	PEM	35.357451, -89.829670	0.07 acres	No	Yes
WTL-6	PEM	35.363081, -89.805513	0.74 acres	Yes	Yes
WTL-7	PSS	35.357857, -89.807384	0.06 acres	Yes	Yes
2: USACE AJD issued on January 21, 2022 (MVM-2021-294); TDEC HD Concurrence on September 16, 2021					

WTL-1 was observed as an agricultural ditch PEM wetland, located in the southwestern portion of the project study area, adjacent to Center College Road. The wetland likely receives overland sheet flow from the surrounding agricultural fields, then conveys the excess surface water into a culvert under Center College Road and potentially into other Water of the United States (WOTUS) and Waters of the State. Saturated soils, a presence of a high water table within 2 inches from the surface, and water-stained leaves were observed for WTL-1, signifying positive indicators of wetland hydrology. WTL-1 was observed with a dominance of hydrophytic vegetation, such as soft rush (*Juncus effusus*) and fox sedge (*Carex vulpinoidea*). Soils within the wetland were depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil.

WTL-2 was observed as a roadside ditch PEM wetland, located along the southwestern limit of the project study area, adjacent to Center College Road and Bethuel Road. The wetland likely receives overland sheet flow from the surrounding agricultural fields and the adjacent roadways, then conveys the excess surface water into a culvert under Center College Road and potentially into other WOTUS and Waters of the State. Surface water of 2 inches, saturated soils, water-stained leaves, and a thin muck surface were observed for WTL-2, signifying positive indicators of wetland hydrology. WTL-2 was observed with a dominance of hydrophytic vegetation, such as dark-green bulrush (*Scirpus atrovirens*) and cattail (*Typha latifolia*). Soils within the wetland were

depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil.

WTL-3 was observed as a wooded PFO wetland and as a man-made pond feature, located in the northwestern limit of the project study area. The wetland receives excess surface water from ephemeral stream (EPH) EPH-1, which collects in the man-made pond portion of the feature. Excess surface water from the pond drains downslope into wet weather conveyance (WWC) WWC-2 where it then converts into overland sheet flow in the upland woodland. Surface water of 6 inches, saturated soils, water-stained leaves, aquatic fauna (tadpoles), and a thin muck surface were observed for WTL-3, signifying positive indicators of wetland hydrology. WTL-3 was observed with a dominance of hydrophytic vegetation, such as sugarberry (*Celtis laevigata*), black willow (*Salix nigra*), slippery elm (*Ulmus rubra*), soft rush, and marsh seedbox (*Ludwigia palustris*). Soils within the wetland were depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil. All excess surface water from WTL-3 likely drains via overland sheet flow into nearby stream (STR) STR-12.

WTL-4 was observed as an isolated PEM wetland, located in the northcentral portion of the project study area, adjacent to Center College Road. The wetland likely receives overland sheet flow from the surrounding agricultural fields and the adjacent roadway. Saturated soils, a presence of a high water table within 2 inches from the surface, and water-stained leaves were observed for WTL-4, signifying positive indicators of wetland hydrology. WTL-4 was observed with a dominance of hydrophytic vegetation, such as Japanese siltgrass (*Microstegium vimineum*) and fox sedge. Soils within the wetland were disturbed by recent tilling within the agricultural field but were observed as depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil. No connection to other WOTUS or Waters of the State was observed for WTL-4, and it is assumed that excess surface waters from the wetland feature drain into the surrounding agricultural field.

WTL-5 was observed as an isolated PEM wetland, located in a depression within the northcentral portion of the project study area, north of Aycock Road. The wetland likely collects overland sheet flow from the surrounding agricultural fields. Saturated soils, a presence of a high water table within 2 inches from the surface, a sparsely vegetated concave surface, and water-stained leaves were observed for WTL-5, signifying positive indicators of wetland hydrology. WTL-5 was observed with little to no vegetation. Soils within the wetland were disturbed by recent tilling within the agricultural field but were observed as depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil. No connection to other WOTUS or Waters of the State was observed for WTL-5.

WTL-6 was observed as an agricultural ditch PEM wetland, located within the northeastern portion of the project study area, adjacent to Kerrville Rosemark Road. The wetland likely receives overland sheet flow from the surrounding agricultural fields and conveys the excess surface water

east towards EPH-7 and ultimately Big Creek (STR-8). Saturated soils, a presence of the high water table within 1 inch from the surface, water-stained leaves, and a thin muck surface were observed for WTL-6, signifying positive indicators of wetland hydrology. WTL-6 was observed with a dominance of hydrophytic vegetation, such as black willow, poison ivy (*Toxicodendron radicans*), dark-green bulrush, and pickerel weed (*Pontederia cordata*). Soils within the wetland were depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil.

WTL-7 was observed as an agricultural ditch PSS wetland, located within the eastern portion of the project study area, adjacent to Big Creek. The wetland likely receives overland sheet flow from the surrounding agricultural fields and the surface waters from EPH-8, then conveys its excess surface water south into STR-9 and ultimately Big Creek (STR-8). Surface water of 2 inches, saturated soils, water-stained leaves, and a presence of reduced iron were observed for WTL-7, signifying positive indicators of wetland hydrology. WTL-7 was observed with a dominance of hydrophytic vegetation, such as black willow, box elder (*Acer negundo*), bedstraw (*Galium triflorum*), poison ivy, and trumpet creeper (*Campsis radicans*). Soils within the wetland were depleted under the topsoil layer with a moderate presence of redox concentrations, indicating hydric soil.

### 5.3 Waterbody Identification

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

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

### 5.4 Observed Waterbodies

Lead Scientist Nick Carmean (TN-QHP #1178-TN12) and Frank Amatucci (QHP-IT) conducted the Hydrologic Determination (HD) site investigation in accordance with TDEC Rule 0400-40-17-.04. In addition, water features were considered regarding the Regulatory Guidance Letter No. 05-05. The site visit was conducted more than 48 hours following a significant rain event of greater than 1.0 inch in a 24-hour period. Upon commencement of the study, 0.81 and 0.39 inches of rain, respectively, were observed in the preceding 7 days. In the preceding two weeks, 0.82 inches

and 0.84 inches of rain were observed, respectively. The precipitation for the preceding three months is considered “wet” based on the 30-year normal, as shown in Table 5.4.1.

Table 5.4.1: Calculation of Normal Weather Conditions – April Visit

Station: Memphis Weather Forecast Office, TN US USC00405956									
		Long-term rainfall records							
	Month	<a href="#">Minus One Std. Dev. (DRY)</a>	Normal (Mean inches)	<a href="#">Plus One Std. Dev. (WET)</a>	Actual Rainfall	Condition (dry, wet, normal)	Condition value	Month weight value	Product of previous two columns
1st Month Prior*	March	2.865689308	4.95	7.034310692	11.85	Wet	3	3	9
2nd Month Prior*	February	2.390966585	4.67	6.949033415	5.51	Normal	2	2	4
3rd Month Prior*	January	1.112614339	3.96	6.807385661	5.04	Normal	2	1	2
								Sum =	15
Note:					Condition Value				
If sum is:					Dry	1			
6-9	Then period has been drier than normal				Normal	2			
10-14	Then period has been normal				Wet	3			
15-18	Then period has been wetter than normal								
	Conclusions:								
	Overall, the prior 3 months are considered "wet" for precipitation.								

Five perennial streams (STR), seven intermittent streams, ten ephemeral streams (EPH), and 12 wet weather conveyances (WWC) were delineated with the project study area. Below are brief descriptions of the delineated streams within the project study area. Table 5.4.2 details the locations and lengths of each stream. The locations of the described streams are provided in Figure 6 - Existing Conditions Map (Attachment A). The TDEC Hydrologic Determination Field Data Sheets for the observed streams are provided in Attachment C. A photograph of each feature is provided in Attachment D.

Table 5.4.2: Non-Wetland Features within the Project Study Area

Waterbody I.D.	Description	Location Within Project Boundaries	Linear Feet within Project	Federal Jurisdictional Status	State Jurisdictional Status
STR-1	Perennial	Start 35.356516, -89.836525 End 35.349675, -89.836233	2,507	Yes	Yes
STR-2	Intermittent	Start 35.350216, -89.840338 End 35.350077, -89.84035	51	No	Yes
STR-3	Intermittent	Start 35.359486, -89.84232 End 35.358861, -89.842041	287	Yes	Yes
STR-4	Intermittent	Start 35.355993, -89.832179 End 35.351663, -89.836252	1,888	Yes	Yes
STR-5	Intermittent	Start 35.353741, -89.834472 End 35.353722, -89.834684	64	Yes	Yes
STR-6	Perennial	Start 35.360135, -89.827279 End 35.346181, -89.830889	5,759	Yes	Yes
STR-7	Perennial	Start 35.353089, -89.825225 End 35.352357, -89.826759	791	Yes	Yes
STR-8	Perennial	Start 35.365756, -89.80377 End 35.353532, -89.805355	4,511	Yes	Yes
STR-9	Intermittent	Start 35.357243, -89.807193 End 35.355171, -89.805165	1,275	Yes	Yes
STR-10	Intermittent	Start 35.360766, -89.816262 End 35.360636, -89.814539	526	Yes	Yes
STR-11	Perennial	Start 35.363965, -89.815636 End 35.359597, -89.804647	4,304	Yes	Yes
STR-12	Intermittent	Start 35.359475, -89.842618 End 35.358876, -89.842046	317	Yes	Yes
EPH-1	Ephemeral	Start 35.359332, -89.844958 End 35.359425, -89.844498	143	No	No
EPH-2	Ephemeral	Start 35.359332, -89.842803 End 35.359169, -89.842501	126	No	No
EPH-3	Ephemeral	Start 35.359199, -89.84265 End 35.359206, -89.842939	88	No	No
EPH-4	Ephemeral	Start 35.358679, -89.842291 End 35.358776, -89.84213	65	No	No
EPH-5	Ephemeral	Start 35.352494, -89.826082 End 35.352132, -89.826449	207	No	No
EPH-6	Ephemeral	Start 35.352225, -89.828992 End 35.350931, -89.829267	550	No	No
EPH-7	Ephemeral	Start 35.364491, -89.804541 End 35.364824, -89.804206	186	No	No
EPH-8	Ephemeral	Start 35.358791, -89.807656 End 35.358148, -89.807501	243	No	No
EPH-9	Ephemeral	Start 35.356136, -89.808066 End 35.355915, -89.806625	477	No	No
EPH-10	Ephemeral	Start 35.363952, -89.81509 End 35.363759, -89.815252	97	No	No
WWC-1	Wet Weather Conveyance	Start 35.350849, -89.840372 End 35.350216, -89.840338	233	No	No
WWC-2	Wet Weather Conveyance	Start 35.359446, -89.843995 End 35.359362, -89.843261	228	No	No
WWC-3	Wet Weather Conveyance	Start 35.356648, -89.831817 End 35.356125, -89.83206	213	No	No
WWC-4	Wet Weather Conveyance	Start 35.353383, -89.830522 End 35.352018, -89.82908	711	No	No
WWC-5	Wet Weather Conveyance	Start 35.351611, -89.828857 End 35.35159, -89.829119	85	No	No
WWC-6	Wet Weather Conveyance	Start 35.346658, -89.832267 End 35.346266, -89.830821	561	No	No
WWC-7	Wet Weather Conveyance	Start 35.346605, -89.83117 End 35.346365, -89.831404	130	No	No
WWC-8	Wet Weather Conveyance	Start 35.354004, -89.834033 End 35.353738, -89.834312	135	No	No
WWC-9	Wet Weather Conveyance	Start 35.362963, -89.804738 End 35.362896, -89.804029	213	No	No
WWC-10	Wet Weather Conveyance	Start 35.355578, -89.819839 End 35.355561, -89.820053	97	No	No
WWC-11	Wet Weather Conveyance	Start 35.36385, -89.81501 End 35.363853, -89.815112	31	No	No
WWC-12	Wet Weather Conveyance	Start 35.360361, -89.805728 End 35.360008, -89.805695	139	No	No

1: USACE AJD issued on January 21, 2022 (MVM-2021-294); TDEC HD Concurrence on September 16, 2021.

Of the 34 non-wetland features identified within the project area, four were determined by primary indicators as a STR. Specifically, STR-6, STR-7, STR-8 and STR-11 were determined to be streams based on the presence of fish within the water body. Multiple species were observed in these features, such as minnow species (*Pimephales sp.*), sunfish species (*Lepomis sp.*), and creek chubs (*Semotilus atromaculatus*).

The remaining features were determined as such by use of the secondary field indicator evaluation. They are as follows:

STR-1 is a straightened channel that runs through one of the agricultural fields from north to south. The feature is highly incised with a muddy clay bottom. Various alluvial deposits were noticed throughout given the surrounding agricultural runoff. Wrack lines were present but not abundant. Water reached from bank to bank and flow was observed throughout.

STR-2 is an intermittent stream that starts at a large headcut below WWC-1. Water was primarily pooled in the large plunge pool and below that, a slight amount of water was observed flowing south under Center College Road. Numerous frogs and eggs sacs were observed utilizing this feature. This feature also serves as part of the agricultural drainage system for the same field as STR-1.

STR-3 is located within a wooded area, runs north to south onto an adjacent property, and is highly incised. Alluvial deposits were noted through much of the reach along the edges of the water and within pool areas. Flow in this feature was steady but not heavy. Water occupied approximately 60 percent of the stream bed from bank to bank. No aquatic life was observed in the feature.

STR-4 is likely an intermittent stream and is a tributary to STR-1 that flows from the northeast to the southwest. Flow was observed throughout the feature, but water did not reach from bank to bank. Cattails (*Typha latifolia*) were observed growing within the channel and on depositional bars for approximately 10 meters. Small sections of filamentous algae were observed during the site visit within this feature.

STR-5 is also an intermittent stream that is a tributary to STR-4 and the downstream side of WWC-8. This short reach was incised and had a strong bed and bank. Alluvial deposits were observed throughout the reach given the minimal amount of flow observed at the time of the visit. Like other stream features, frogs were observed and heard within this feature.

STR-9 is intermittent and begins at a small headcut near the downslope end of WTL-7. This feature serves, as many within the study area do, as a part of the agricultural drainage system. The stream becomes incised after a large headcut within the upper portion of the reach. Water



and flow were observed throughout, and approximately 80 percent of the channel bottom bank to bank contained water during the site visit. No aquatic fauna was observed in the feature.

STR-10 begins within the agricultural field east of Armour Road and flows west to east toward Big Creek. The feature did not contain aquatic biota, but flow was present throughout. The stream bottom bank to bank was approximately 50 percent covered by the water in the feature. Wrack lines were abundant and a few were large in this stream.

STR-12, during the site visit, contained water in approximately 70 percent of the reach in mostly disconnected pools, but flow was observed between a few of the pools. Sinuosity in this feature is slight. No aquatic biota was observed during the site visit. Sorting was observed in areas that were not clay bottom, and alluvial deposits were observed within pooled areas and along the water's edge.

EPH-1 starts as overland drainage pattern and becomes a channelized feature quickly. Small pools were observed throughout the reach, and saturation was evident in the remainder of the channel. An OHWM was observed once the feature became channelized. Fibrous roots are present in approximately 25 percent of the bed.

EPH-2 is a short feature that had a moderate bed and bank throughout. Multiple pools of disconnected water without flow were observed. Leaf litter was completely absent from the feature. No aquatic biota was observed in the channel during the site visit.

EPH-3 contained very small pools of water in the channel but did not contain flow. No surface water was observed during the on-site surveys. Had the feature been flowing, there would be small riffle/pool complexes. Fibrous roots were present in approximately 20 percent of the stream bed. The feature lacks sinuosity and aquatic biota.

EPH-4 begins at a large headcut near the agricultural field edge/woodline and is a highly incised feature that had pools of water and no flow during the site visit. No vegetation, aquatic nor upland, was observed within the channel. The feature does contain slight sinuosity, but the reach is very short. No fibrous roots were observed given the deep incision.

EPH-5 begins at the agricultural field edge and is incised in the lower half of the feature. The lower half of the feature is disconnected from the floodplain but in the upper half is still connected. Small pools of water were observed in the feature, primarily in the bends of the stream. Alluvial deposits were noted in the reach given the proximity to the agricultural field. Wrack lines were present, primarily behind roots that cross the channel and a few rootwads along the bank.

EPH-6 has a strong bed and bank through approximately 80 percent of the channel but weakens near the top near the agricultural field. The feature starts at a headcut located at the edge of the

agricultural field. No water was observed in this feature and therefore no aquatic biota. No vegetation was present, and sinuosity was weak with one bend.

EPH-7 begins at the agricultural field edge and a very large head cut. There is no real observable sinuosity given the short distance and incision. Alluvial deposits were noted throughout the feature, especially near the downstream end at the confluence with a large pool in STR-8. Water was present in the lower 75 percent of the feature, but no flow was observed.

EPH-8 is a straight channel that has a nearly absent bed and bank at the uppermost end which transitions into a moderate channel near the bottom prior to entering WTL-7. Water is present at the lower end at the confluence with WTL-7, which is likely backflow from the wetland feature as there was no observable flow. Fibrous roots are present in the channel at the top and become less present near the bottom of the feature.

EPH-9 has an all but absent bed and bank near the top of the feature which becomes stronger downstream when the channel gains sinuosity prior to the confluence with STR-9. Leaf litter was observed within the top 25 percent of the reach. OHWM was obvious through most of the feature, excluding the uppermost portion of the reach. Pools of water were observed in various locations throughout the reach, but no flow was observed.

EPH-10 flows from the east and outside of the study area to the west and STR-11. Bed and bank is evident through approximately 85 percent of the reach. During the site visit, water was present in pools throughout the reach, but no flow was observed. Leaf litter was observed in three small pockets within the reach. A very small headcut was observed near the bottom of the feature.

WWC-1 is an agricultural drainage swale with a nearly absent bed and bank. The WWC is the upstream end of STR-2 and ends at a headcut. The feature has a clay bottom, and no soft sediment was observed at the time of the site visit. The feature did contain small pools of water, but these are likely due to the on-going precipitation. No flow was observed between these pools.

WWC-2 is essentially a drainage scour below WTL-3. The feature quickly loses bed and bank to become primarily overland flow. Small pools of water were observed in the upper reach immediately below WTL-3. Wrack lines were present but very minimal behind upland vegetation located sparsely within the feature.

WWC-3 is located upstream from STR-4 north of Aycock Road. The bed and back is moderate and riprapped near the culvert and is very weak at the top of the reach. Small pools of water were observed in the channel, but no flow was observed. No aquatic life was observed.

WWC-4 is a drainage feature from the agricultural field. The feature was primarily full of poison ivy, and the bed and bank was nearly absent in 85 percent of the channel. Small pools of water



were observed within the feature, but no flow was observed. Wrack lines were observed, but they were small and sporadic.

WWC-5 is a short drainage feature which begins as agricultural sheet flow. The feature starts at a small headcut and has a weak bed and bank throughout the feature. During the site investigation, there was slight surface saturation but no observable water within the feature. No hydric soil was observed in the channel bed.

WWC-6 is a linear drainage feature that was likely rerouted historically. Fibrous roots were abundant throughout the feature. Given the incision, bed and bank was present throughout. No water was observed in the feature and therefore no aquatic biota.

WWC-7 is a short drainage feature that starts in the agricultural field. Bed and bank truly begins near the tree line but is weak throughout the feature. No water was observed in the feature and therefore no aquatic biota. In being a drainage feature, there was no sinuosity.

WWC-8 is the upslope side of STR-5 east of Center College Road. Bed and bank is nearly absent at the top of the reach and poor near the culvert. Water was only observed upslope of the road crossing. The feature lacked sinuosity and aquatic biota. Leaf litter was observed at the top of the feature but was absent in the downslope region.

WWC-9 is an over widened drainage feature with little to no bed and bank. Feature is primarily a wide U-shape channel. facultative (FAC) vegetation was observed within the channel, but overall, the channel was primarily unvegetated. No water was observed in the feature, but portions of the reach were saturated.

WWC-10 is a drainage feature that connects two agricultural fields, one within the study area and one outside of the study area. Sinuosity is evident in the feature, primarily in one 90-degree bend. No vegetation or water was observed within the feature during the site visit. One medium headcut was observed within the feature, and bed and bank was moderate throughout the reach.

WWC-11 is a very short reach within the study area and begins at the agricultural field edge. The feature has a very weak bed and bank and is primarily U-shaped throughout. During the site visit, no water, vegetation, nor aquatic life was observed. A small portion of the reach contained a riffle/pool sequence which would have been filled if the feature had contained water.

WWC-12 is a very weak channel that nearly disappears at the confluence with STR-11. Canadian goldenrod (*Solidago canadensis*) was observed immediately adjacent to the feature and was overgrown across the channel. No water was observed during the site visit, but saturation was evident in small pockets. During the site visit, wrack lines were observed behind the goldenrod. No aquatic life was observed within the feature during the site visit.

## 6.0 WILDLIFE

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

Table 6.0: Observed Wildlife within the Project Area

Common Name	Scientific Name	Common Name	Scientific Name
<b>Birds</b>		<b>Mammals</b>	
American robin	<i>Turdus migratorius</i>	Eastern chipmunk	<i>Tamias striatus</i>
Barn Swallow	<i>Hirundo rustica</i>	Eastern gray squirrel	<i>Sciurus carolinensis</i>
Blue jay	<i>Cyanocitta cristata</i>	White-tailed deer	<i>Odocoileus virginianus</i>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	Raccoon	<i>Procyonidae lotor</i>
Brown Thrasher	<i>Toxostoma rufum</i>	Nine Banded Armadillo	<i>Dasypus novemcinctus</i>
Carolina wren	<i>Thryothorus ludovicianus</i>	Coyote	<i>Canis latrans</i>
Cooper's hawk	<i>Accipiter cooperii</i>	<b>Reptiles</b>	
Eastern Bluebird	<i>Sialia sialis</i>	Common Garter snake	<i>Thamnophis sirtalis</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Cottonmouth	<i>Agkistrodon piscivorus</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Eastern Box Turtle	<i>Terrapene carolina carolina</i>
European starling	<i>Sturnus vulgaris</i>	Ground skink	<i>Scincella lateralis</i>
Field sparrow	<i>Spizella pusilla</i>	Northern Water Snake	<i>Nerodia sipedon</i>
Great blue heron	<i>Ardea herodias</i>	River Cooter	<i>Pseudemys concinna</i>
House finch	<i>Haemorhous mexicanus</i>	<b>Amphibians</b>	
Indigo bunting	<i>Passerina cyanea</i>	American toad	<i>Anaxyrus americanus</i>
Killdeer	<i>Charadrius vociferus</i>	Gray treefrog	<i>Hyla versicolor</i>
Northern cardinal	<i>Cardinalis cardinalis</i>	Green frog	<i>Lithobates clamitans</i>
Northern mockingbird	<i>Mimus polyglottos</i>	Southern Leopard Frog	<i>Lithobates sphenoccephalus</i>
Mourning Dove	<i>Zenaida macroura</i>	Upland Chorus Frog	<i>Pseudacris feriarum</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>	<b>Fish</b>	
Red tailed hawk	<i>Buteo jamaicensis</i>	Creek Chub	<i>Semotilus atromaculatus</i>

Table 6.0: Observed Wildlife within the Project Area

Common Name	Scientific Name	Common Name	Scientific Name
Red-winged black-bird	<i>Agelaius phoeniceus</i>	Minnow spp.	<i>Pimephales sp.</i>
Tufted titmouse	<i>Baeolophus bicolor</i>	Mosquito fish	<i>Gambusia affinis</i>
Yellow warbler	<i>Setophaga petechia</i>	Green sunfish	<i>Lepomis cyanellus</i>
<b>Invertebrates</b>			
Eastern tiger swallowtail			<i>Papilio glaucus</i>

## 6.1 Federal and State Listed Species

Tennessee Valley Authority (TVA) provided a preliminary heritage database query for the project study area and within the surrounding area, the county, and the watershed. In addition, the USFWS IPaC online resource was reviewed for potential presence of federally listed animal and plant species within the project study area. No state or federally listed species were observed during the April 2021 site inspection. Table 6.1 details some of the potentially present federal and state protected species for the area.

Table 6.1: Protected Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present
<b>Mammal</b>					
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	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)
Indiana Bat	<i>Myotis sodalis</i>	Endangered	Endangered	Hibernates during winter in caves, or occasionally in abandoned mines. Summer roosting season in late spring and summer months. Females will roost on trees with exfoliating bark and/or trees with cracks, crevices, and hollows	Yes (Roosting)
<b>Birds</b>					
Interior Least Stern	<i>Sterna antillarum athalassos</i>	Endangered	Endangered	Coastal habitats along large rivers, harbors, bays and inlets with open flats for nesting. Has been documented along the Mississippi river shoreline in Tennessee.	No

Table 6.1: Protected Species Potentially within the Project Area

Common Name	Species	State Status	Federal Status	Habitat Type	Habitat Present
Piping Plover	<i>Charadrius melodus</i>		Endangered	Is known to migrate along the Mississippi River, but no known nesting spots are documented within Tennessee.	No
<b>Reptiles</b>					
Northern Pinesnake	<i>Pituophis melanoleucus melanoleucus</i>	Threatened	N/A	Well drained sandy soils in pine/oak woods; dry mountain ridges; E portions of west TN, E to lower elevations of the Appalachians	No

### 6.1.1 Mammal Species

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

#### 6.1.1.1 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 on the differences between Good, Marginal, and Poor habitat quality for the project:

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

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

Poor – these areas of woodland were portions that were nearly absent of mature forest and are entirely dominated with dense tall saplings or shrubs. Mist netting would be nearly impossible within the thickets.

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

#### 6.1.1.2 Bat Habitat Survey Results

The site was observed with multiple forested vegetative communities that were categorized on quality to provide suitable bat habitat. These forested vegetative communities include mature riparian forest, mixed growth forest, early successional forest, and fence row frequently disturbed young forest. The mature riparian forest was observed along both Casper Creek, in the center of the project study area, and Big Creek, along the eastern limit. The mature riparian forest accounts for approximately 21.35 acres and was rated as “marginal” bat habitat, due to the historic agricultural disturbance and channelization of the perennial streams. The mixed growth forest was observed in disturbed portions of woodland where natural growth stages of forested vegetation varied between early successional and semi-mature. This portion of woodland was rated as “marginal,” due to the varied growth stages of forested habitat and a slight presence of shrub and sapling undergrowth vegetation. The mixed growth forest accounted for approximately 6.44 acres of the project site. The early successional forest was observed throughout the project study area and was determined on the young growth stage of the forested community, a high presence of shrub, sapling and vine vegetation, and ongoing disturbance from the agricultural land use. The early successional forest accounts for approximately 9.87 acres and was rated as “poor” bat habitat. The fence row/agricultural field hedge row young forest community was observed in strips throughout the project study area, which accounts for approximately 10.76 acres of woodland, and was rated as “poor” bat habitat.

Additionally, isolated pockets of mature and young trees were observed sporadically throughout the project study area. This vegetative community was selectively maintained at varying growth stages and was rated between “poor” and “marginal.” Both the roadway trees to an adjacent cemetery and individual large growth trees were rated as “marginal” and account for approximately 2.06 acres of mature trees, whereas pockets of younger growth trees in spoil piles of the agricultural fields were rated as “poor” and account for approximately 0.70 acres of young trees.

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

Based on the current design of the solar farm within the project study area, most of the wooded area will potentially require tree removal for the development of the site. Most of the five observed potential bat roost trees will require removal. Since no known hibernacula for these federally listed bat species were within 5 miles of the project study area and the quantity of forested woodland removal is less than 100 acres, removal of these potential roost trees can be performed during the non-roost season (October 15 to March 31) with little to no impact to the species.

#### 6.1.2 Bird Species

As detailed in Table 6.1 above, the interior tern and piping plover were listed for the project area. Both the interior least tern and piping plover are typically located along the coastal areas of the Mississippi River. The Mississippi River is located well beyond the project area, and the potential installation of solar arrays will not adversely impact the two coastal bird species. Henceforth, the listed aquatic species are not anticipated to be directly impacted with the development of the solar farm.

In addition to the state and federally listed species listed in the TVA preliminary heritage database query, the bald eagle (*Haliaeetus leucocephalus*) has been documented in the region of the project study area. The bald eagle is federally protected by the Bald and Golden Eagle Protection Act with USFWS. The act prohibits the take of bald and golden eagles, as well as harassing, disturbing, or possessing remains of the two eagle species. Bald eagles are typically observed near large bodies of water where they forage and breed.

Big Creek could potentially provide suitable foraging habitat for the bald eagle. During the site investigation in April 2021, no bald eagles were observed foraging or nesting within the project study area or observed flying over the area. Impacts to the federally protect bald eagle with the project area are not anticipated during the installation of the solar arrays and associated facilities.

#### 6.1.3 Reptile Species

Northern pinesnakes are typically found across the southeast, throughout the Coastal Plain of North Carolina, South Carolina, Georgia, and throughout Florida, and in populations of the dry mountains of Virginia, Tennessee and Northern Georgia. This species is often found in longleaf pine or turkey oak forests. Occasionally, they are seen in abandoned fields and dry mountain ridges. Infertile, sandy soils are suitable habitat for pinesnakes to accommodate digging hibernacula and summer dens. The project study area consists of mainly silt loam soils and likely does not provided suitable habitat for the northern pinesnake.

Habitat for the northern pinesnake was not observed during the on-site investigation of the project study area. The region of the site has been heavily impacted by agriculture, and little to no pine trees and sandy soils were observed within the project study area. North of the project study area,

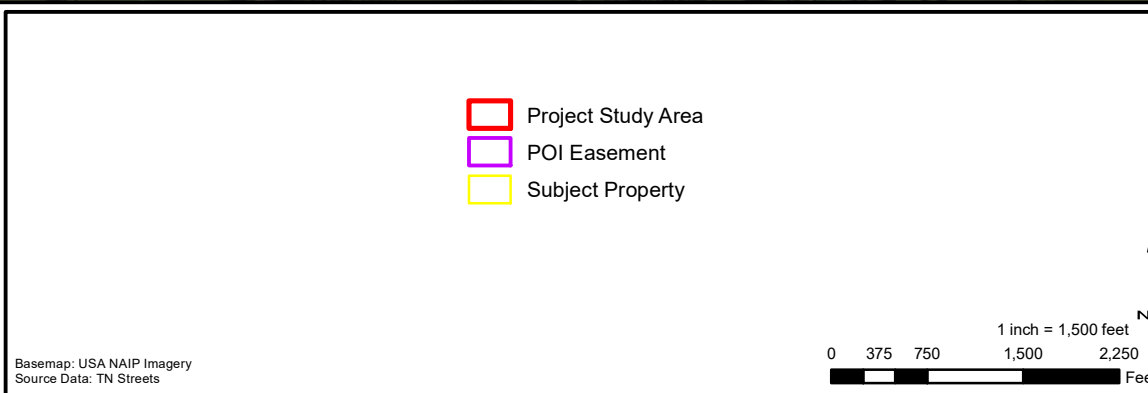
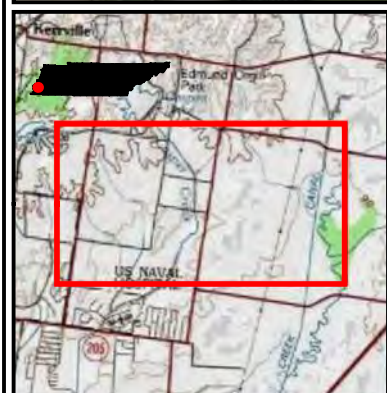
west of Center College Road, is a plantation of planted pine trees for timber harvest. The plantation is densely packed with loblolly pine (*Pinus taeda*) and was observed with compacted silty loam soils, which are still unfavorable for the northern pinesnake. Therefore, direct and indirect impacts to northern pinesnake are not anticipated with the development of the solar farm project.


## 7.0 SUMMARY

Five perennial streams, seven intermittent streams, ten ephemeral channels, 12 wet weather conveyances, and seven wetlands were identified during the field investigation of the project study area. The Existing Conditions Map (Figure 6, Attachment A) visually represents the jurisdictional boundaries of the wetlands and non-wetland waters delineated within and immediately adjacent to the project study area. Tables 5.2 and 5.4.2 also summarize the current location, square footage or linear feet, and any additional characteristic of the features.

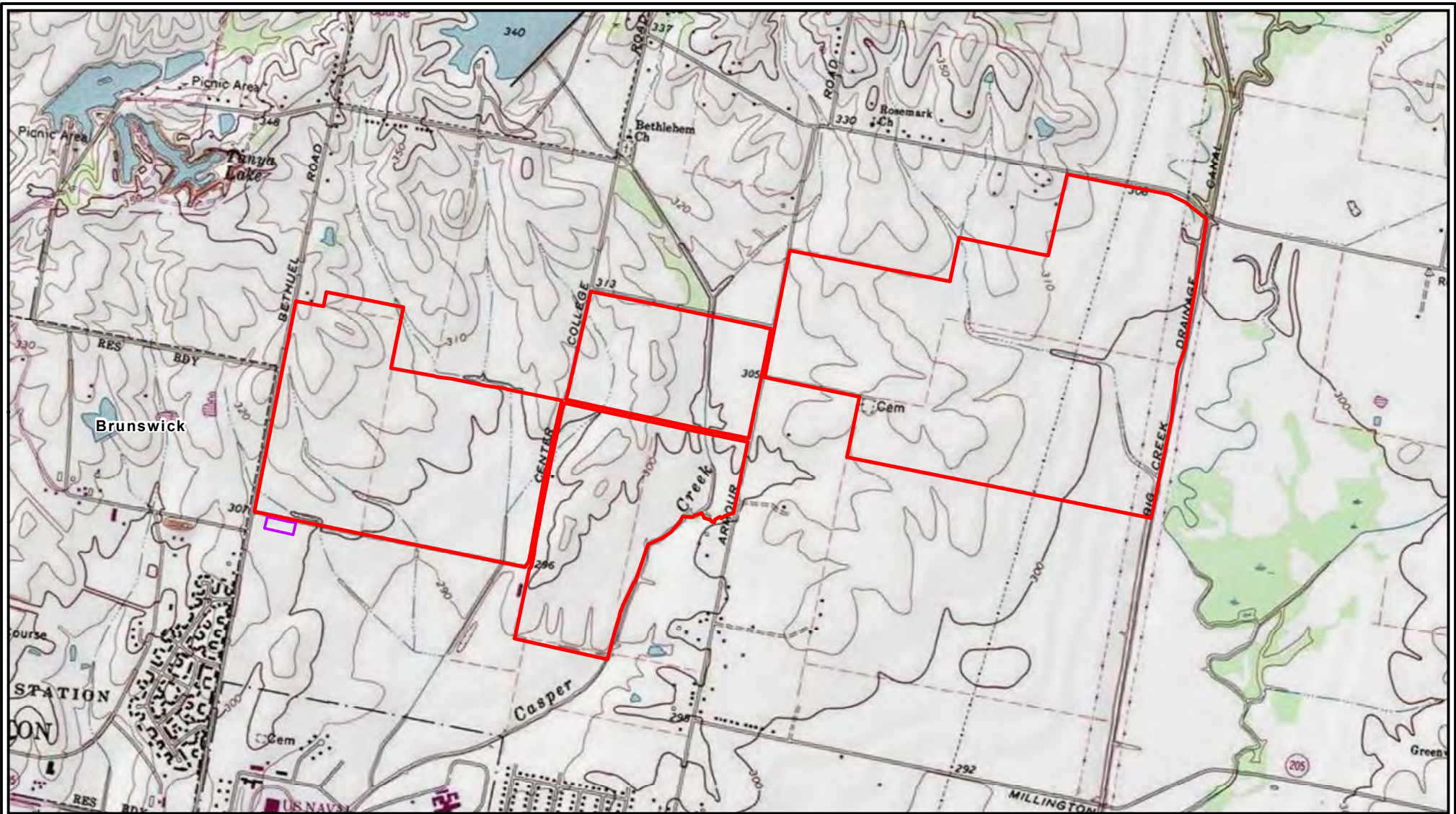
# ATTACHMENT A – FIGURES





PROJECT: Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>AERIAL SITE LOCATION MAP</b>	
PROJ NO: 3609515	<b>FIGURE 1</b>
DATE: August 2021	
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <b>BARGE</b>  <small>DESIGN • DEVELOPMENT • CONSTRUCTION</small>          615 3rd Avenue South, Suite 700          Nashville, TN 37210       </div> <div>  </div> </div>	

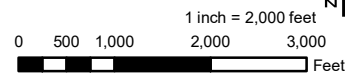




# BRUNSWICK 7.5 MINUTE QUADRANGLE

- Project Study Area
- POI Easement
- USGS 24k Topo Map Boundaries

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



PROJECT:  
Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

## TITLE: **USGS SITE LOCATION MAP**

PROJ NO: 3609515

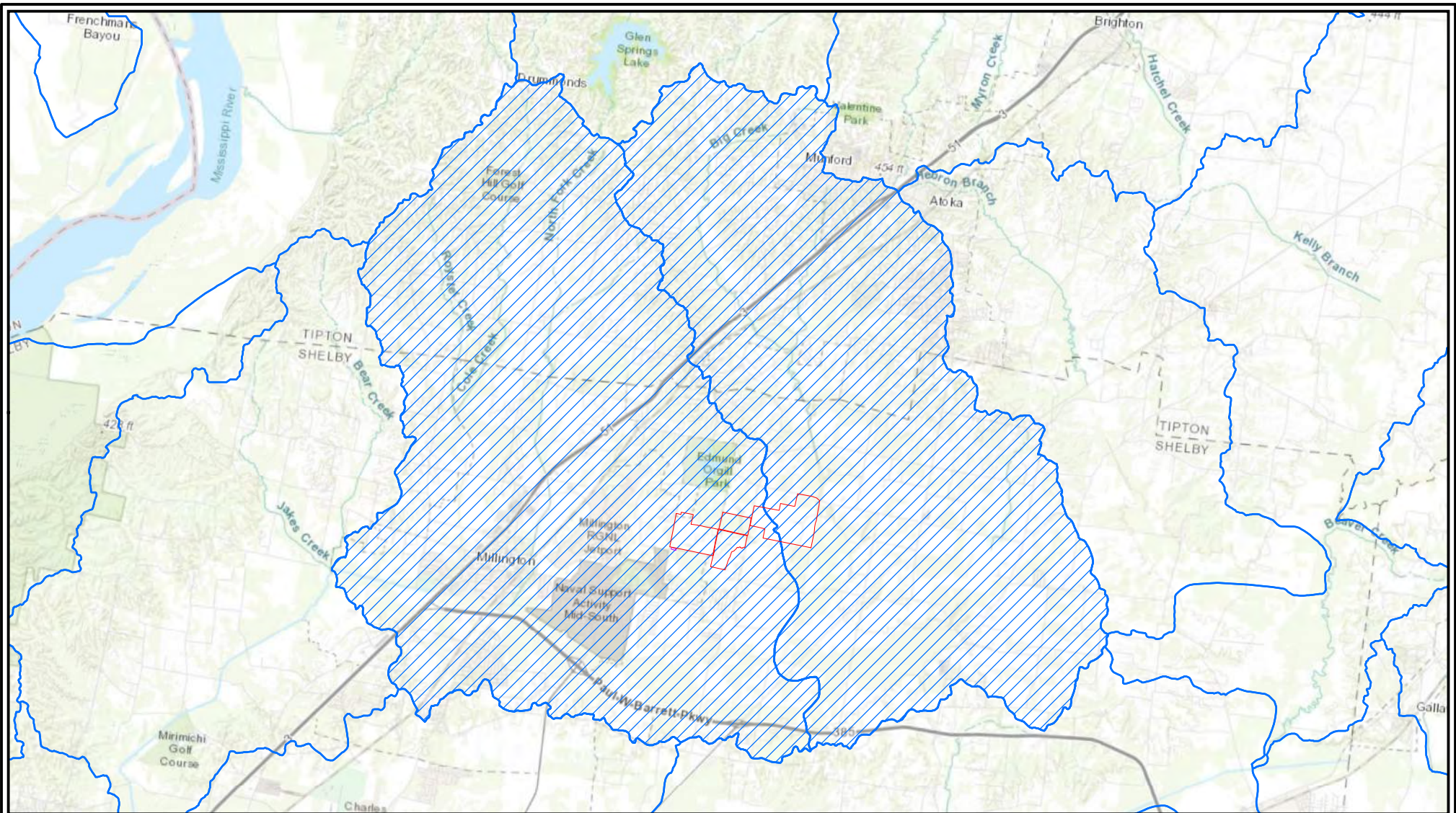
DATE: August 2021

## **FIGURE 2**





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Nashville, TN 37210







**BIG CREEK UPPER (080102090301) &  
BIG CREEK MIDDLE (080102090302) HUC 12 WATERSHEDS**

-  Project Watershed
-  HUC 12 Watershed
-  Project Study Area
-  POI Easement

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

1 inch = 12,698 feet  
0 0.5 1 2 3  
Miles

PROJECT:  
Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

TITLE:  
**HUC 12 WATERSHED MAP**

PROJ NO: 3609515

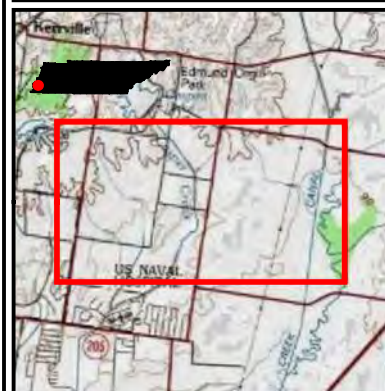
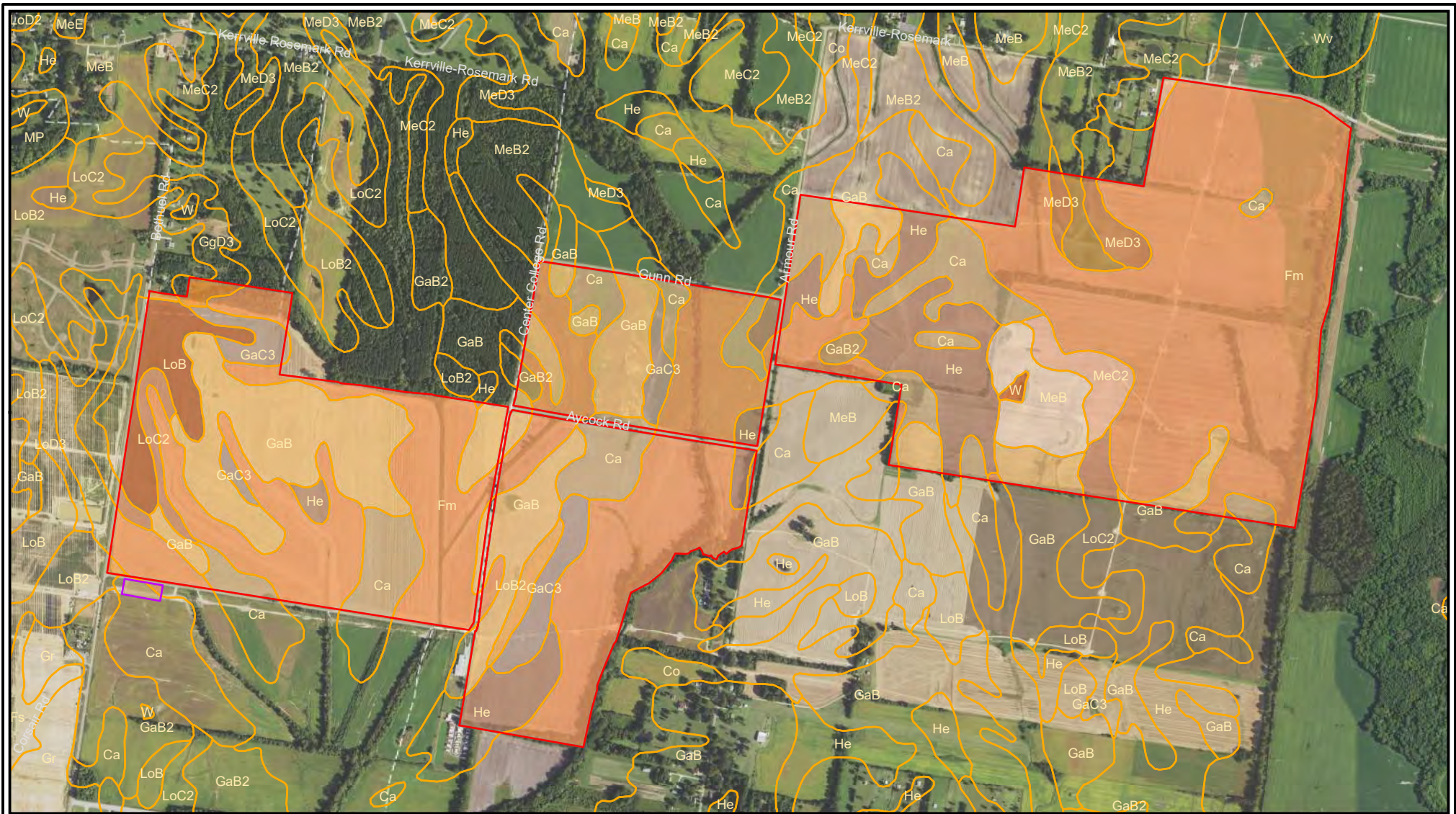
DATE: August 2021

**FIGURE 3**

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**SILICON RANCH**





### Project Soils

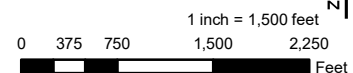
#### Soil Unit

Ca	He	MeB
Fm	LoB	MeC2
GaB	LoB2	MeD3
GaB2	LoC2	W

#### Soil Unit

Soil Unit	Project Study Area	POI Easement
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Basemap: USA NAIP Imagery  
Source Data: TN Streets; USDA Soil Survey (TN157)



PROJECT:  
Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

### TITLE: SOIL UNIT MAP

PROJ NO: 3609515

DATE: August 2021

FIGURE 4

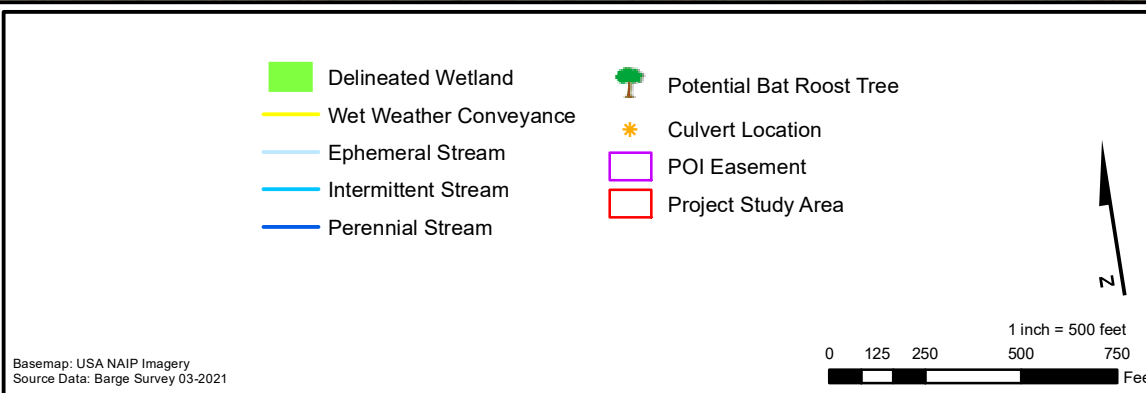
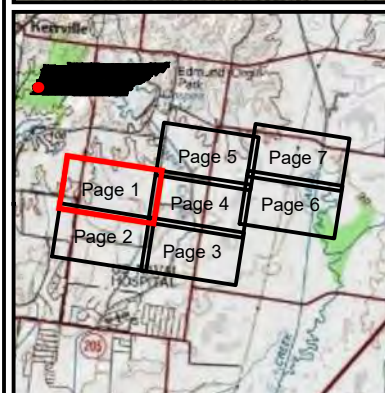
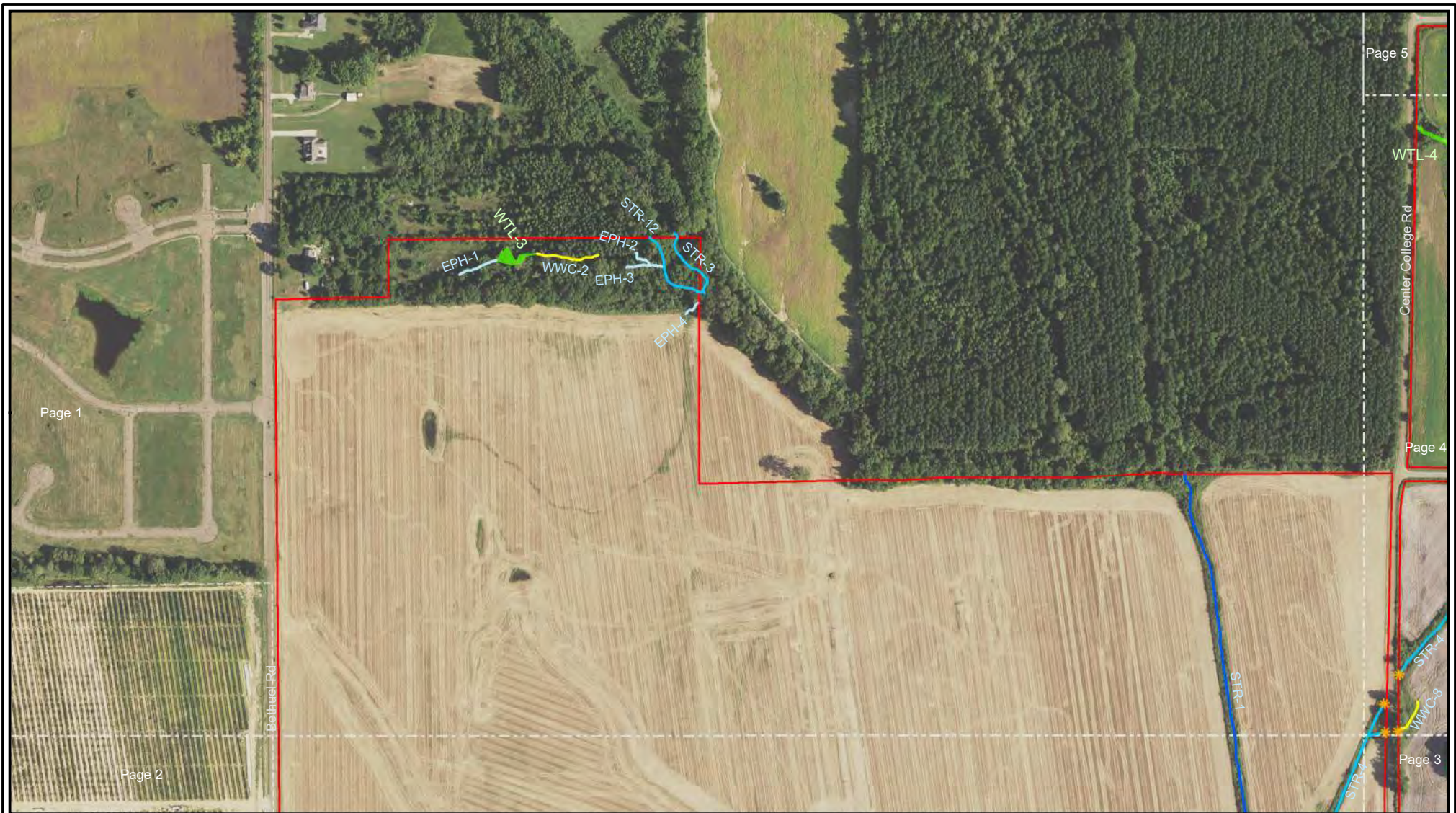
**BARGE**  
615 3rd Avenue South, Suite 700  
Nashville, TN 37210



**SILICON RANCH**



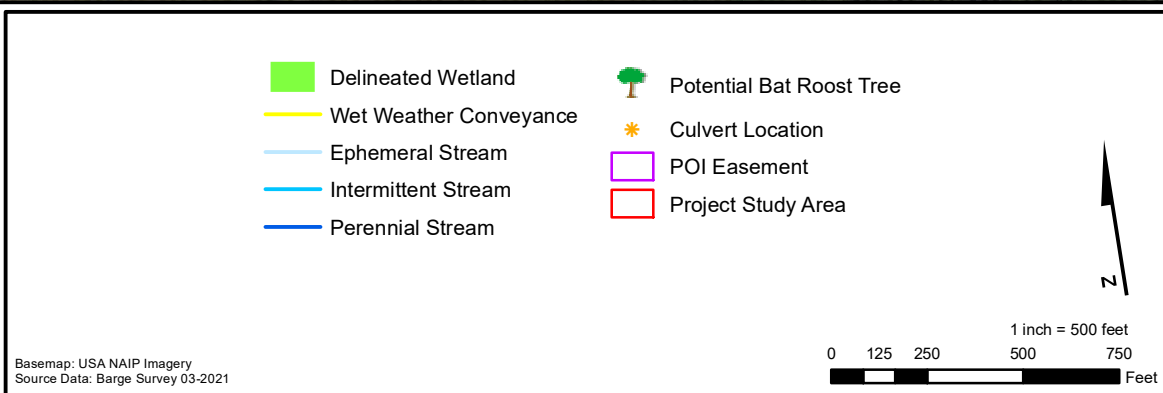
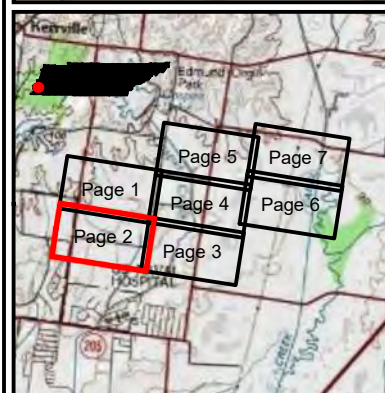
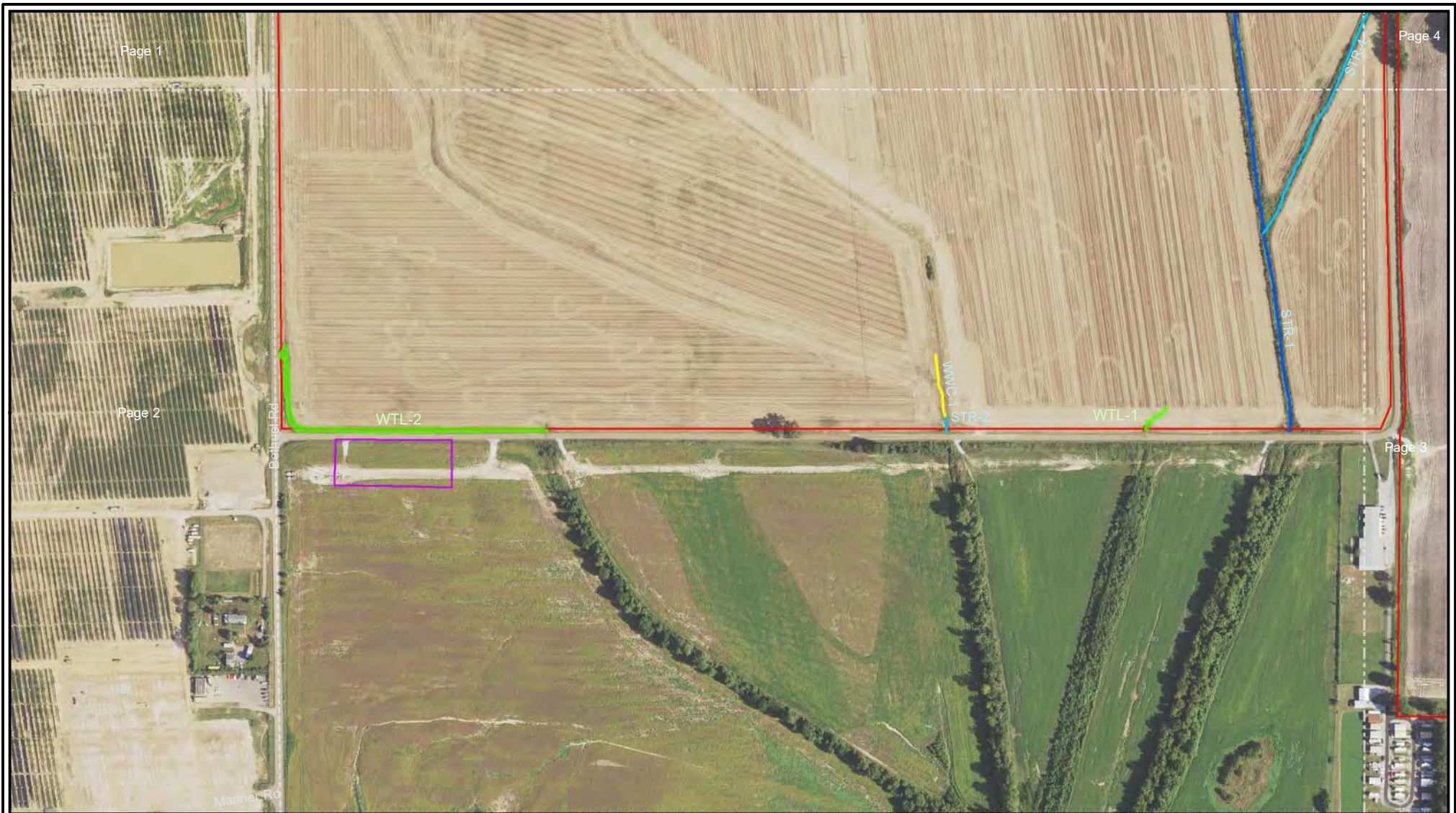








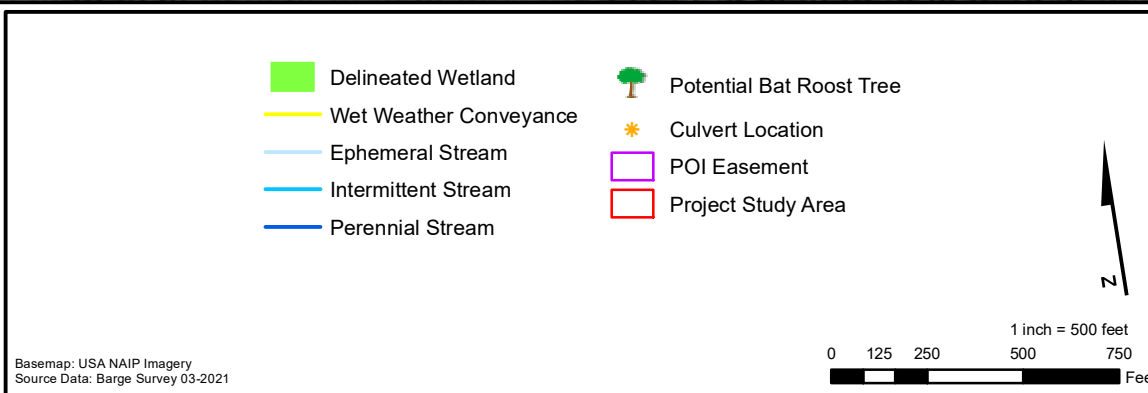
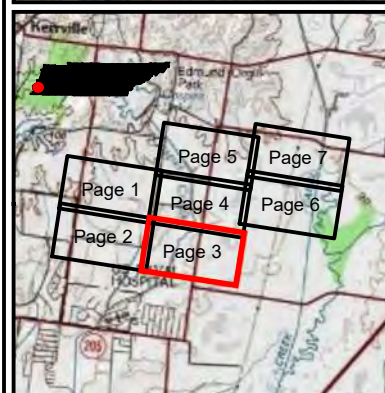
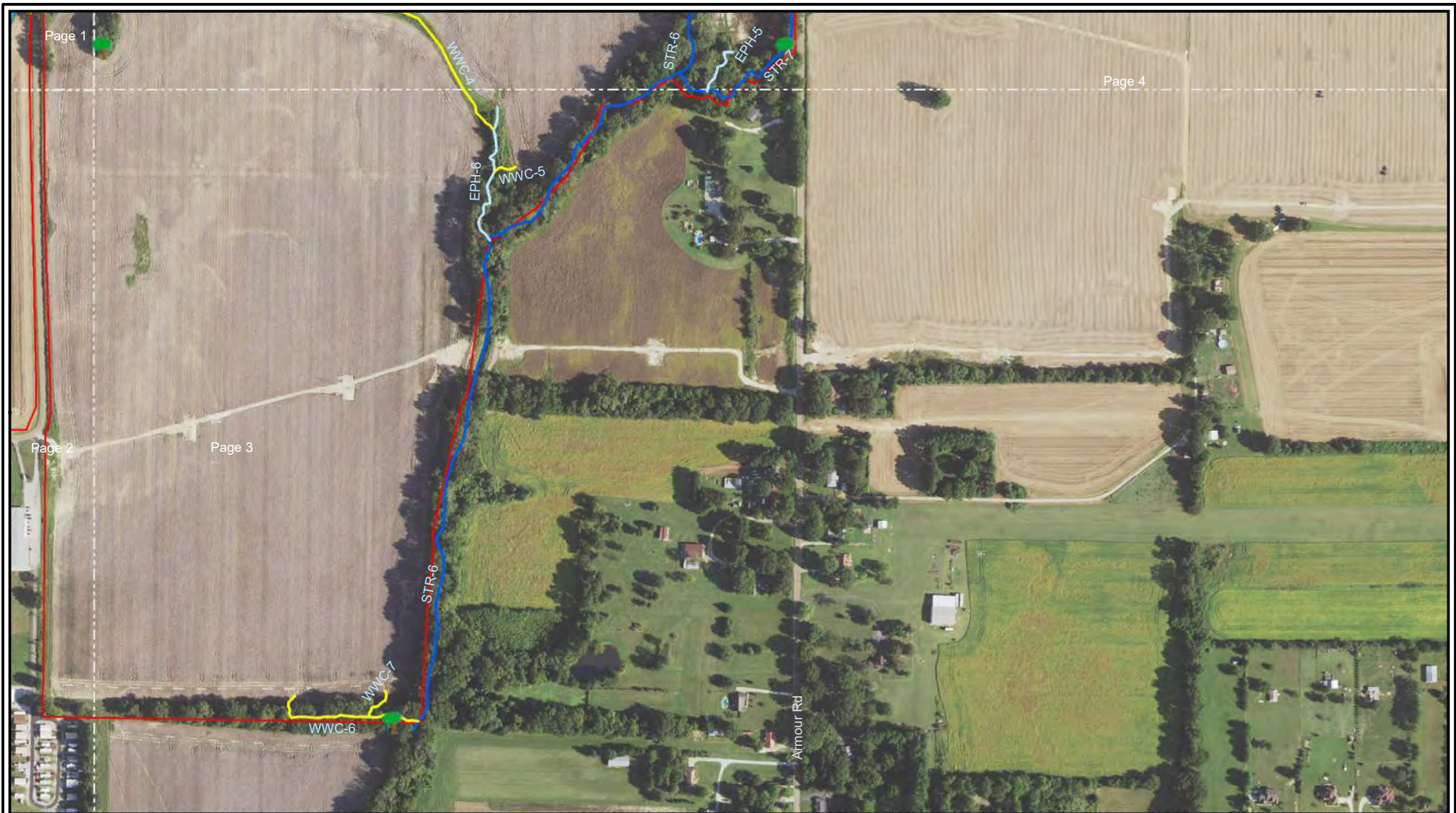
PROJECT:	
Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-1</b>
DATE: August 2021	
	
615 3rd Avenue South, Suite 700 Nashville, TN 37210	
	







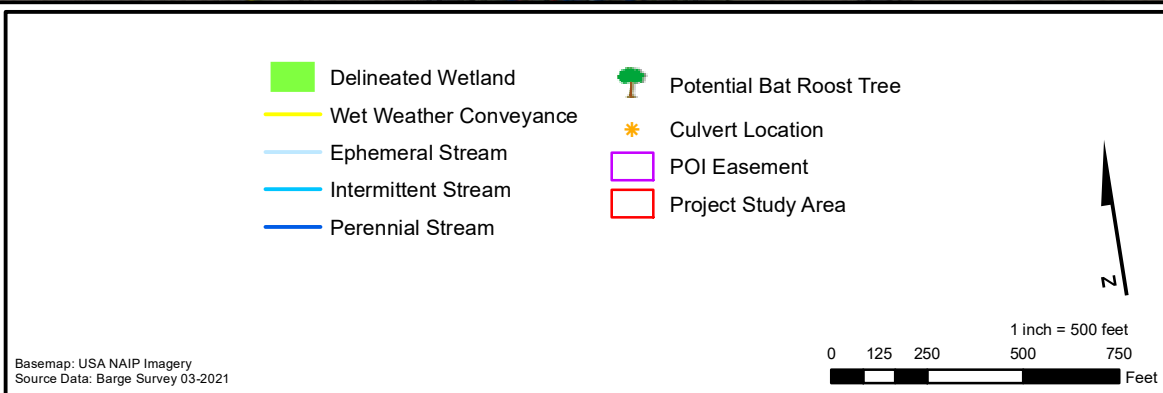
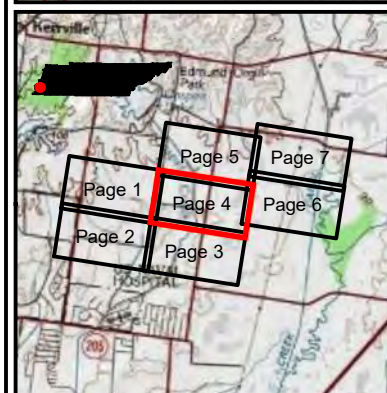
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Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-2</b>
DATE: August 2021	
	
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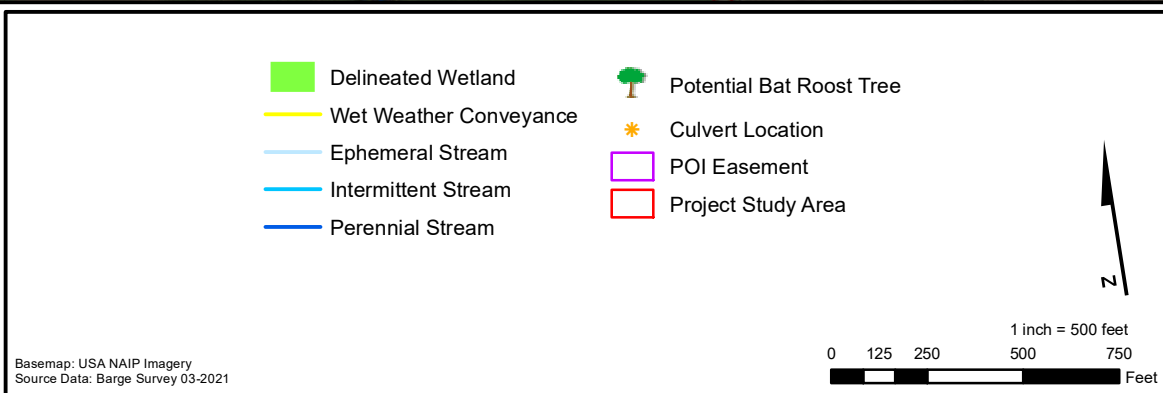
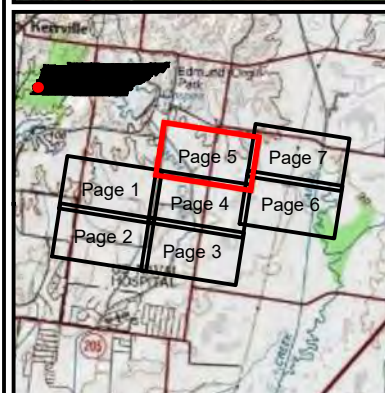
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Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE:	
<b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-3</b>
DATE: August 2021	
	
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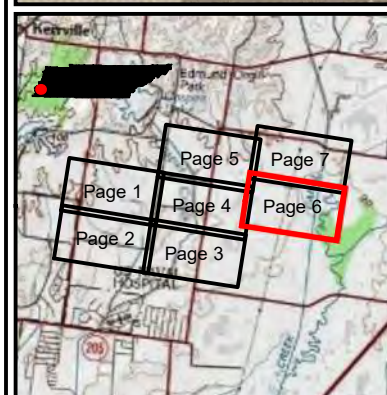
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Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-4</b>
DATE: August 2021	
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PROJECT:	
Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-5</b>
DATE: August 2021	
 	
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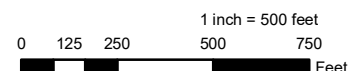






- Delineated Wetland
- Wet Weather Conveyance
- Ephemeral Stream
- Intermittent Stream
- Perennial Stream

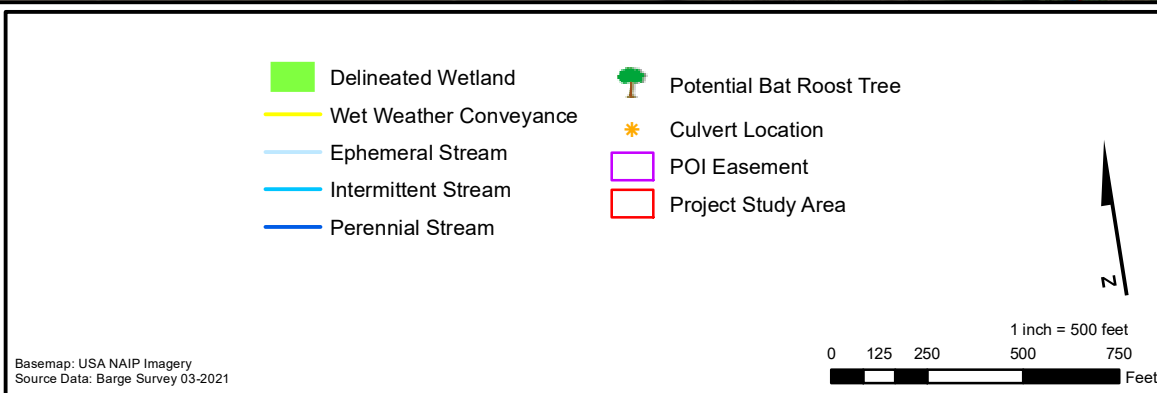
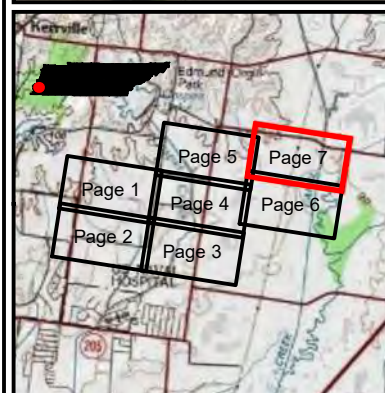
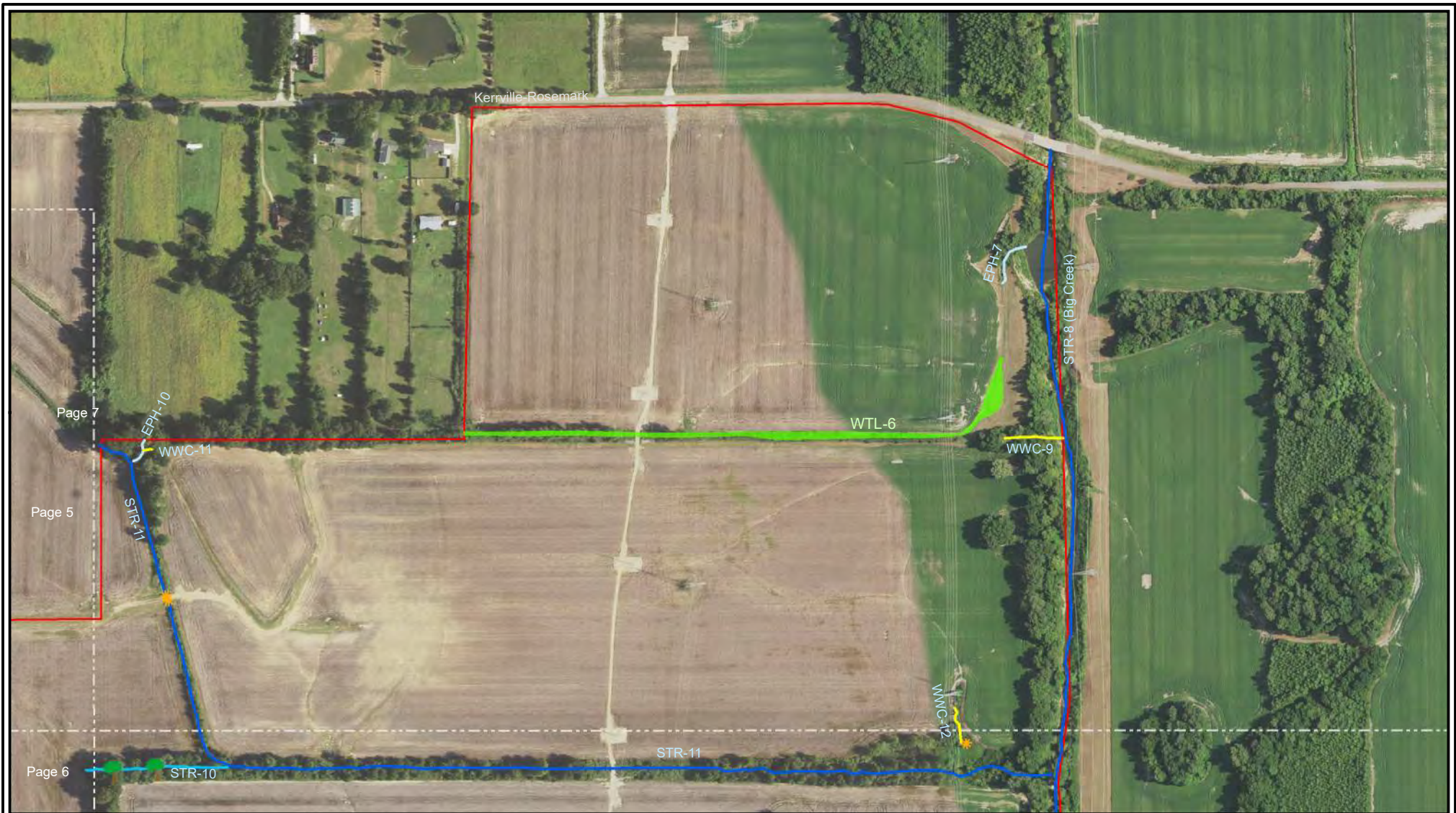
- 🌳 Potential Bat Roost Tree
- ✱ Culvert Location
- POI Easement
- Project Study Area



Basemap: USA NAIP Imagery  
Source Data: Barge Survey 03-2021



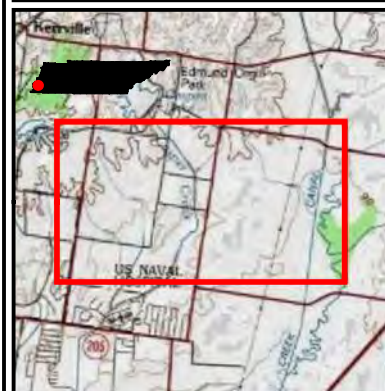
PROJECT:	
Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE: <b>EXISTING CONDITIONS MAP</b>	
PROJ NO: 3609515	<b>FIGURE 6-6</b>
DATE: August 2021	
 	
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PROJECT:		Silicon Ranch Corporation Millington II Solar Project Millington, Shelby County, Tennessee	
TITLE:		EXISTING CONDITIONS MAP	
PROJ NO: 3609515		FIGURE 6-7	
DATE: August 2021			
 615 3rd Avenue South, Suite 700 Nashville, TN 37210			





#### Bat Habitat Woodlands

Quality

- Good
- Marginal
- Poor

#### Potential Bat Roost Tree

Habitat Value

- Good
- Marginal
- Poor

Project Study Area

POI Easement

Basemap: USA NAIP Imagery  
Source Data: Barge Resource Survey April 2021

1 inch = 1,500 feet  
0 375 750 1,500 2,250 Feet

PROJECT:  
Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

TITLE:  
**BAT HABITAT MAP**

PROJ NO: 3609515

DATE: August 2021

**FIGURE 7**

**BARGE**  
DESIGN • DEVELOPMENT  
615 3rd Avenue South, Suite 700  
Nashville, TN 37210

**SILICON RANCH**

# ATTACHMENT B – NRCS CUSTOM SOIL REPORT





United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

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

# Custom Soil Resource Report for **Shelby County, Tennessee**

## Millington II Solar Project



August 17, 2021

# Preface

---

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

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

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](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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# 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

## Custom Soil Resource Report

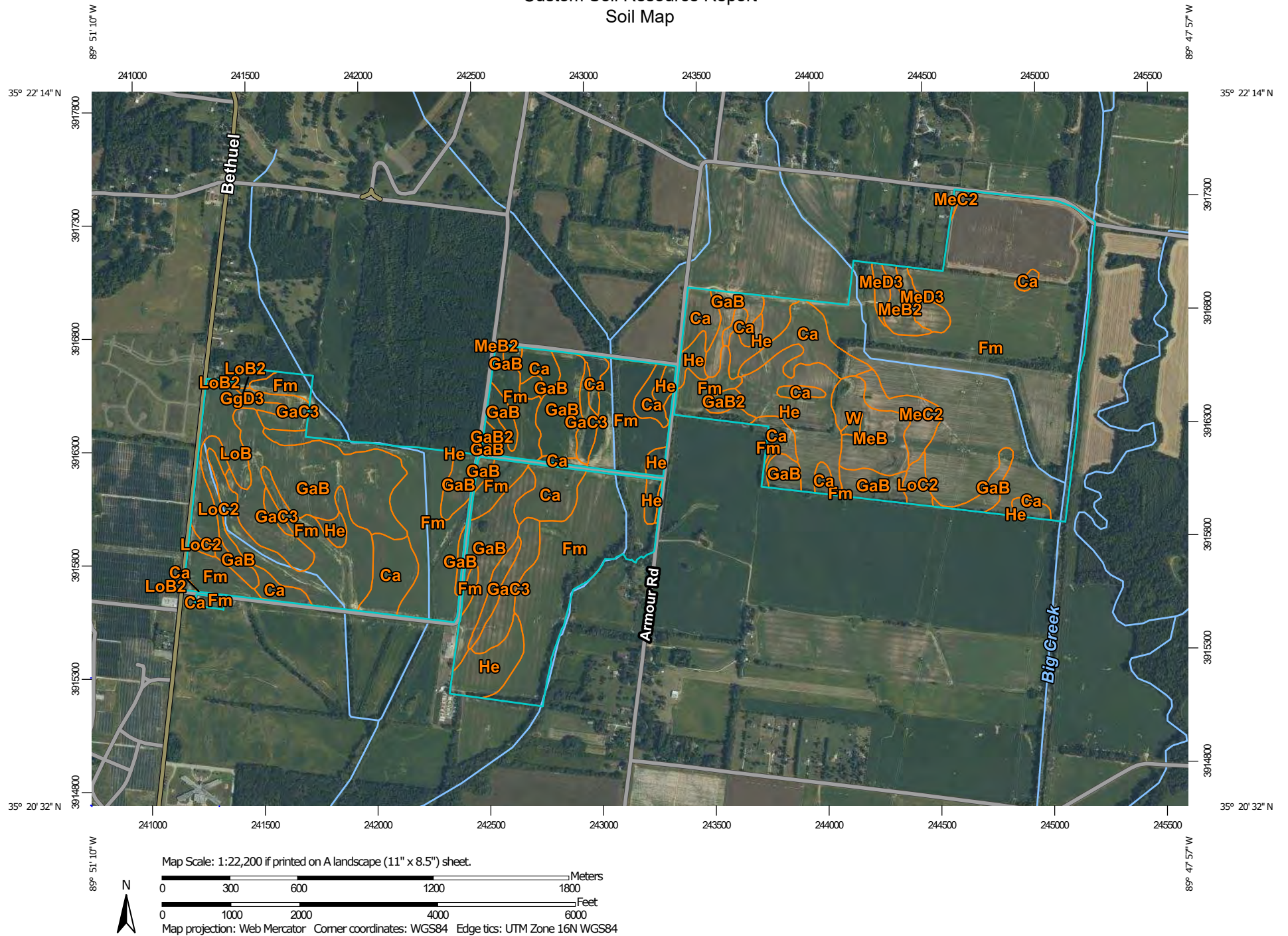
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

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

# Custom Soil Resource Report Soil Map




## Custom Soil Resource Report

### MAP LEGEND




















#### Area of Interest (AOI)







Area of Interest (AOI)

#### Soils


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

#### Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


#### Water Features

-  Streams and Canals

#### Transportation

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

#### Background

-  Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Shelby County, Tennessee  
Survey Area Data: Version 15, Jun 1, 2020

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

Date(s) aerial images were photographed: Sep 9, 2019—Sep 15, 2019

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



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ca	Calloway silt loam, 0 to 2 percent slopes	98.4	10.3%
Fm	Falaya silt loam	493.5	51.5%
GaB	Grenada silt loam, 2 to 5 percent slopes	156.4	16.3%
GaB2	Grenada silt loam, 2 to 5 percent slopes, eroded	4.3	0.4%
GaC3	Grenada silt loam, 5 to 8 percent slopes, severely eroded	28.8	3.0%
GgD3	Grenada complex, 5 to 12 percent slopes, severely eroded	2.7	0.3%
He	Henry silt loam	75.2	7.8%
LoB	Loring silt loam, 2 to 5 percent slopes	22.9	2.4%
LoB2	Loring silt loam, 2 to 5 percent slopes, eroded	6.8	0.7%
LoC2	Loring silt loam, 5 to 8 percent slopes, eroded	13.3	1.4%
MeB	Memphis silt loam, 2 to 5 percent slopes, northern phase	23.6	2.5%
MeB2	Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase	6.8	0.7%
MeC2	Memphis silt loam, 5 to 8 percent slopes, moderately eroded, northern phase	13.9	1.4%
MeD3	Memphis silt loam, 5 to 12 percent slopes, severely eroded, northern phase	10.6	1.1%
W	Water	1.3	0.1%
<b>Totals for Area of Interest</b>		<b>958.6</b>	<b>100.0%</b>

## 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.

## Custom Soil Resource Report

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.

## Shelby County, Tennessee

### Ca—Calloway silt loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t239

*Elevation:* 200 to 520 feet

*Mean annual precipitation:* 51 to 56 inches

*Mean annual air temperature:* 47 to 71 degrees F

*Frost-free period:* 195 to 240 days

*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Calloway and similar soils:* 100 percent

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

#### Description of Calloway

##### Setting

*Landform:* Loess hills

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Parent material:* Loess

##### Typical profile

*Ap - 0 to 7 inches:* silt loam

*Bw - 7 to 19 inches:* silt loam

*Eg - 19 to 27 inches:* silt loam

*Btx - 27 to 62 inches:* silt loam

*C - 62 to 80 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 15 to 30 inches to fragipan

*Drainage class:* Somewhat poorly 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 7 to 21 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 4.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

## **Fm—Falaya silt loam**

### **Map Unit Setting**

*National map unit symbol:* m19n  
*Elevation:* 250 to 450 feet  
*Mean annual precipitation:* 46 to 63 inches  
*Mean annual air temperature:* 53 to 72 degrees F  
*Frost-free period:* 226 to 240 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Falaya and similar soils:* 91 percent  
*Minor components:* 9 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Falaya**

#### **Setting**

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

#### **Typical profile**

*H1 - 0 to 60 inches:* silt 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  
(0.57 to 1.98 in/hr)  
*Depth to water table:* About 6 to 24 inches  
*Frequency of flooding:* OccasionalNone  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very high (about 12.6 inches)

#### **Interpretive groups**

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

### **Minor Components**

#### **Waverly**

*Percent of map unit:* 9 percent  
*Landform:* Flood plains  
*Landform position (three-dimensional):* Talf  
*Hydric soil rating:* Yes

## **GaB—Grenada silt loam, 2 to 5 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2v7sf  
*Elevation:* 260 to 480 feet  
*Mean annual precipitation:* 51 to 55 inches  
*Mean annual air temperature:* 46 to 71 degrees F  
*Frost-free period:* 193 to 207 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

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

### **Description of Grenada**

#### **Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit, footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Noncalcareous loess

#### **Typical profile**

*Ap - 0 to 7 inches:* silt loam  
*Bw - 7 to 23 inches:* silt loam  
*Eg - 23 to 26 inches:* silt loam  
*Btx - 26 to 60 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 5 percent  
*Depth to restrictive feature:* 18 to 33 inches to fragipan  
*Drainage class:* Moderately well 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 16 to 29 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

#### **Interpretive groups**

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

## **GaB2—Grenada silt loam, 2 to 5 percent slopes, eroded**

### **Map Unit Setting**

*National map unit symbol:* 2v7sd

*Elevation:* 260 to 480 feet

*Mean annual precipitation:* 51 to 55 inches

*Mean annual air temperature:* 47 to 71 degrees F

*Frost-free period:* 193 to 207 days

*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Grenada and similar soils:* 100 percent

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

### **Description of Grenada**

#### **Setting**

*Landform:* Loess hills

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Fine-silty noncalcareous loess

#### **Typical profile**

*Ap - 0 to 6 inches:* silt loam

*Bw - 6 to 24 inches:* silt loam

*Eg - 24 to 28 inches:* silt loam

*Btx - 28 to 79 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 5 percent

*Depth to restrictive feature:* 17 to 36 inches to fragipan

*Drainage class:* Moderately well 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 12 to 28 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 6.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

## **GaC3—Grenada silt loam, 5 to 8 percent slopes, severely eroded**

### **Map Unit Setting**

*National map unit symbol:* 2v7sc

*Elevation:* 260 to 480 feet

*Mean annual precipitation:* 45 to 61 inches

*Mean annual air temperature:* 50 to 70 degrees F

*Frost-free period:* 206 to 220 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Grenada and similar soils:* 100 percent

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

### **Description of Grenada**

#### **Setting**

*Landform:* Loess hills

*Landform position (two-dimensional):* Footslope, backslope

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Loess

#### **Typical profile**

*Ap - 0 to 6 inches:* silt loam

*Bw - 6 to 14 inches:* silt loam

*E - 14 to 18 inches:* silt loam

*Btx - 18 to 79 inches:* silt loam

#### **Properties and qualities**

*Slope:* 5 to 8 percent

*Depth to restrictive feature:* 10 to 20 inches to fragipan

*Drainage class:* Moderately well drained

*Runoff class:* Medium

*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

*Available water supply, 0 to 60 inches:* Low (about 4.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No



## **GgD3—Grenada complex, 5 to 12 percent slopes, severely eroded**

### **Map Unit Setting**

*National map unit symbol:* m19z  
*Elevation:* 210 to 490 feet  
*Mean annual precipitation:* 46 to 63 inches  
*Mean annual air temperature:* 53 to 72 degrees F  
*Frost-free period:* 226 to 240 days  
*Farmland classification:* Not prime farmland

### **Map Unit Composition**

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

### **Description of Grenada**

#### **Setting**

*Landform:* Loess hills  
*Landform position (three-dimensional):* Base slope  
*Parent material:* Loess

#### **Typical profile**

*H1 - 0 to 6 inches:* silt loam  
*H2 - 6 to 22 inches:* silt loam  
*H3 - 22 to 26 inches:* silt loam  
*H4 - 26 to 40 inches:* silt loam  
*H5 - 40 to 60 inches:* silt loam

#### **Properties and qualities**

*Slope:* 5 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Moderately well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 12 to 30 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very low (about 1.6 inches)

#### **Interpretive groups**

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

## He—Henry silt loam

### Map Unit Setting

*National map unit symbol:* m1b2  
*Elevation:* 210 to 410 feet  
*Mean annual precipitation:* 46 to 63 inches  
*Mean annual air temperature:* 53 to 72 degrees F  
*Frost-free period:* 226 to 240 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

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

### Description of Henry

#### Setting

*Landform:* Stream terraces  
*Landform position (three-dimensional):* Tread  
*Parent material:* Loess

#### Typical profile

*H1 - 0 to 9 inches:* silt loam  
*H2 - 9 to 20 inches:* silt loam  
*H3 - 20 to 60 inches:* silt loam  
*H4 - 60 to 90 inches:* silt

#### 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 low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 6 to 15 inches  
*Frequency of flooding:* NoneOccasional  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very low (about 1.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3w  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* Yes

## **LoB—Loring silt loam, 2 to 5 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2v7sn  
*Elevation:* 260 to 410 feet  
*Mean annual precipitation:* 35 to 63 inches  
*Mean annual air temperature:* 47 to 71 degrees F  
*Frost-free period:* 189 to 240 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

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

### **Description of Loring**

#### **Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Loess

#### **Typical profile**

*Ap - 0 to 5 inches:* silt loam  
*Bt - 5 to 30 inches:* silt loam  
*Btx - 30 to 48 inches:* silt loam  
*C - 48 to 79 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 5 percent  
*Depth to restrictive feature:* 26 to 35 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 21 to 27 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 5.1 inches)

#### **Interpretive groups**

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

## **LoB2—Loring silt loam, 2 to 5 percent slopes, eroded**

### **Map Unit Setting**

*National map unit symbol:* 2v7sm

*Elevation:* 260 to 410 feet

*Mean annual precipitation:* 35 to 63 inches

*Mean annual air temperature:* 47 to 71 degrees F

*Frost-free period:* 189 to 240 days

*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Loring and similar soils:* 100 percent

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

### **Description of Loring**

#### **Setting**

*Landform:* Loess hills

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Loess

#### **Typical profile**

*Ap - 0 to 6 inches:* silt loam

*Bt - 6 to 24 inches:* silt loam

*Btx - 24 to 48 inches:* silt loam

*C - 48 to 80 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 5 percent

*Depth to restrictive feature:* 24 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 12 to 28 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:* C/D

*Hydric soil rating:* No

## **LoC2—Loring silt loam, 5 to 8 percent slopes, eroded**

### **Map Unit Setting**

*National map unit symbol:* m1b7

*Elevation:* 210 to 410 feet

*Mean annual precipitation:* 46 to 63 inches

*Mean annual air temperature:* 53 to 72 degrees F

*Frost-free period:* 226 to 240 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Loring and similar soils:* 100 percent

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

### **Description of Loring**

#### **Setting**

*Landform:* Loess hills

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

*Parent material:* Loess

#### **Typical profile**

*H1 - 0 to 7 inches:* silt loam

*H2 - 7 to 28 inches:* silt loam

*H3 - 28 to 50 inches:* silt loam

*H4 - 50 to 60 inches:* silt loam

#### **Properties and qualities**

*Slope:* 5 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 12 to 28 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Very low (about 2.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

## **MeB—Memphis silt loam, 2 to 5 percent slopes, northern phase**

### **Map Unit Setting**

*National map unit symbol:* 2t23y  
*Elevation:* 300 to 540 feet  
*Mean annual precipitation:* 50 to 54 inches  
*Mean annual air temperature:* 47 to 71 degrees F  
*Frost-free period:* 182 to 220 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

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

### **Description of Memphis**

#### **Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve, tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-silty noncalcareous loess

#### **Typical profile**

*Ap - 0 to 7 inches:* silt loam  
*Bt1 - 7 to 18 inches:* silty clay loam  
*Bt2 - 18 to 74 inches:* silt loam  
*C - 74 to 108 inches:* silt loam

#### **Properties and qualities**

*Slope:* 2 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* 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:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very high (about 13.1 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Ecological site:* F134XY002AL - Northern Deep Loess Summit - PROVISIONAL  
*Hydric soil rating:* No

**MeB2—Memphis silt loam, 2 to 5 percent slopes, moderately eroded, northern phase**

**Map Unit Setting**

*National map unit symbol:* 2t23z  
*Elevation:* 300 to 540 feet  
*Mean annual precipitation:* 50 to 54 inches  
*Mean annual air temperature:* 47 to 71 degrees F  
*Frost-free period:* 182 to 220 days  
*Farmland classification:* All areas are prime farmland

**Map Unit Composition**

*Memphis, eroded, north, and similar soils:* 88 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Memphis, Eroded, North**

**Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Fine-silty noncalcareous loess

**Typical profile**

*Ap - 0 to 6 inches:* silt loam  
*Bt1 - 6 to 18 inches:* silty clay loam  
*Bt2 - 18 to 74 inches:* silt loam  
*C - 74 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 2 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* 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:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very high (about 13.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Ecological site:* F134XY002AL - Northern Deep Loess Summit - PROVISIONAL  
*Hydric soil rating:* No

**MeC2—Memphis silt loam, 5 to 8 percent slopes, moderately eroded, northern phase**

**Map Unit Setting**

*National map unit symbol:* 2y70s  
*Elevation:* 300 to 540 feet  
*Mean annual precipitation:* 50 to 54 inches  
*Mean annual air temperature:* 47 to 71 degrees F  
*Frost-free period:* 182 to 220 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Memphis, northern phase, and similar soils:* 95 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Memphis, Northern Phase**

**Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Fine-silty noncalcareous loess

**Typical profile**

*Ap - 0 to 6 inches:* silt loam  
*Bt1 - 6 to 18 inches:* silty clay loam  
*Bt2 - 18 to 74 inches:* silt loam  
*C - 74 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 5 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*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:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very high (about 13.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 3e  
*Hydrologic Soil Group:* B  
*Ecological site:* F134XY002AL - Northern Deep Loess Summit - PROVISIONAL  
*Hydric soil rating:* No



**MeD3—Memphis silt loam, 5 to 12 percent slopes, severely eroded, northern phase**

**Map Unit Setting**

*National map unit symbol:* 2zddj  
*Elevation:* 300 to 540 feet  
*Mean annual precipitation:* 50 to 54 inches  
*Mean annual air temperature:* 47 to 71 degrees F  
*Frost-free period:* 182 to 220 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Memphis, northern phase, and similar soils:* 93 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Memphis, Northern Phase**

**Setting**

*Landform:* Loess hills  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Parent material:* Fine-silty noncalcareous loess

**Typical profile**

*Ap - 0 to 2 inches:* silt loam  
*Bt - 2 to 42 inches:* silt loam  
*C - 42 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 5 to 12 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Medium  
*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:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Very high (about 13.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* F134XY002AL - Northern Deep Loess Summit - PROVISIONAL  
*Hydric soil rating:* No

## **W—Water**

### **Map Unit Composition**

*Water:* 100 percent

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

# References

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- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)

# ATTACHMENT C – WETLAND AND WATERBODY DATA FORMS

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-1		Date/Time: 4/14/21 0815
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: West of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.356516, -89.836525 End: 35.349675, -89.836233
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.98 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 31**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

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

<b>B. Hydrology</b> (Subtotal = 10.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		0	1	2	<del>3</del>
15. Water in channel and >48 hours since sig. rain		0	1	2	<del>3</del>
16. Leaf litter in channel (January – September)		<del>1.5</del>	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 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 8.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <del>channel bed</del> <sup>1</sup>		<del>0</del>	2	1	0
21. Rooted plants in <del>the thalweg</del> <sup>1</sup>		<del>0</del>	2	1	0
22. Crayfish in stream (exclude in floodplain)		0	1	✓ 2	3
23. Bivalves/mussels		<del>0</del>	1	2	3
24. Amphibians		0	0.5	✓ 2	1.5
25. Macroinbenthos (record type & abundance)		<del>0</del>	1	2	3
26. Filamentous algae; periphyton		<del>0</del>	1	2	3
27. Iron oxidizing bacteria/fungus		<del>0</del>	0.5	1	1.5
28. Wetland plants in <del>channel bed</del> <sup>2</sup>		<del>0</del>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 31

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

### Notes :

Incised ag ditch with flow from bank to bank. No cobble/gravel substrate to look for macroinvertebrates, but assume presence within sandy substrate. No plants in the feature, upland or wetland. Plenty of snakes, be careful!

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-2		Date/Time: 4/14/21 0900
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.350216, -89.840338 End: 35.350077, -89.84035
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.10 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 23.5**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

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

<b>B. Hydrology</b> (Subtotal = 8.5 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
14. Subsurface flow/discharge into channel	0		✓ 1		2		3
15. Water in channel and >48 hours since sig. rain	0		1		2		<del>3</del>
16. Leaf litter in channel (January – September)	<del>1.5</del>		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 <input type="checkbox"/>				Yes = 1.5 <input checked="" type="checkbox"/>		

<b>C. Biology</b> (Subtotal = 7 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
20. Fibrous roots in <del>channel bed</del> <sup>1</sup>	<del>0</del>		2		1		0
21. Rooted plants in <del>the thalweg</del> <sup>1</sup>	<del>0</del>		2		1		0
22. Crayfish in stream (exclude in floodplain)	<del>0</del>		1		2		3
23. Bivalves/mussels	<del>0</del>		1		2		3
24. Amphibians	0		0.5		✓ 2		1.5
25. Macroinvertebrates (record type & abundance)	<del>0</del>		1		2		3
26. Filamentous algae; periphyton	<del>0</del>		1		2		3
27. Iron oxidizing bacteria/fungus	<del>0</del>		0.5		1		1.5
28. Wetland plants in <del>channel bed</del> <sup>2</sup>	<del>0</del>		0.5		1		1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 23.5

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

### Notes :

Starts below large headcut at downstream side of WWC-1. Water in deep plunge pool at this point, flow obvious from plunge pool under Center College Road off site. Multiple frogs observed as well as egg sacs. Large amount of ag field sediment runoff located in plunge pool area.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-3		Date/Time: 4/14/21 1015
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359486, -89.84232 End: 35.358861, -89.842041
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.29 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination</b> = Stream
<b>Secondary Indicator Score (if applicable)</b> = 25

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 9 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 7.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 8.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		0	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		0	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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 25

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

### Notes :

Water throughout channel, but not much flow observed. Incised with filamentous algae and moderate size wrack lines throughout the channel. Frogs observed in multiple locations. Some small pockets of leaf litter within the feature.

Large areas of erosion along the banks.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-4		Date/Time: 4/14/21 1100
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: West and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.355993, -89.832179 End: 35.351663, -89.836252
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.19 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 25.5**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 9 )					<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>				Yes = 3 <input type="checkbox"/>			

<b>B. Hydrology</b> (Subtotal = 10 )					<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input type="checkbox"/>				Yes = 1.5 <input checked="" type="checkbox"/>			

<b>C. Biology</b> (Subtotal = 6.5 )					<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>					3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>					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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>					0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 25.5

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

### Notes :

Channelize/incised ag drainage feature. Water bank to bank throughout most of the feature with moderate flow.

T. latifolia observed mid reach for approx 8-10 meters. Utilized by frogs, but no other aquatic life readily observable.

Riffle/pool at times, but pools small and riffles moderate. Potentially more evident with higher flow. Alluvial deposits from adjacent ag field. Depositional bars were the base of most of the latifolia.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-5		Date/Time: 4/14/21 1120
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: West and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.353741, -89.834472 End: 35.353722, -89.834684
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 21**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 7 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 8.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 21

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

### Notes :

Very short feature on the downslope end of WWC-8. Short reach somewhat similar to STR-4, but flow is weak. Water is relatively deep and no aquatic veg in the channel. Again, with most stream features on this site frogs were observed utilizing the feature.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-6 (Casper Creek)		Date/Time: 4/14/21 1400
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: West of Armour Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.360135, -89.827279 End: 35.346181, -89.830889
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 2.54 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) =**

#### Justification / Notes :

Fish and macroinvertebrates observed throughout. Sunfish, darters, minnows, creek chubs, empheroptera, diptera, and other genus/species observed.



# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-7		Date/Time: 4/14/21 1600
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: West of Armour Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.353089, -89.825225 End: 35.352357, -89.826759
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.16 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) =**

#### Justification / Notes :

Creek chub and minnow species observed through most of the reach. Albeit not abundant, still present

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-8 (Big Creek)		Date/Time: 4/15/21 1200
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of East Kerrville Rosemark Road		
HUC (12 digit): Big Creek Upper - 080102090301		Lat/Long: Start: 35.365756, -89.80377 End: 35.353532, -89.805355
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 27.94 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) =**

#### Justification / Notes :

Large perennial with fish and macros.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-9		Date/Time: 4/15/21 1100
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of East Kerrville Rosemark Road		
HUC (12 digit): Big Creek Upper - 080102090301		Lat/Long: Start: 35.359332, -89.844958 End: 35.359425, -89.844498
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.61 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 24.25**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 9.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 8.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 6 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		0	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		0	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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> 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 :

Very short feature on the downslope end of WWC-8. Short reach somewhat similar to STR-4, but flow is weak. Water is relatively deep and no aquatic veg in the channel. Again, with most stream features on this site frogs were observed utilizing the feature.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-10		Date/Time: 4/15/21 1350
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of East Kerrville Rosemark Road		
HUC (12 digit): Big Creek Upper - 080102090301		Lat/Long: Start: 35.360766, -89.816262 End: 35.360636, -89.814539
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.05 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) = 23**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 7.25 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
1. Continuous bed and bank	0	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	<del>3</del>
2. Sinuous channel	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
3. In-channel structure: riffle-pool sequences	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	3
4. Sorting of soil textures or other substrate	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	3
5. Active/relic floodplain	<del>0</del>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
6. Depositional bars or benches	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input type="checkbox"/>	3
7. Braided channel	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
8. Recent alluvial deposits	0	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
9. Natural levees	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
10. Headcuts	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
11. Grade controls	<del>0</del>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
12. Natural valley or drainageway	0	<input type="checkbox"/>	0.5	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0 <input checked="" type="checkbox"/>				Yes = 3 <input type="checkbox"/>		

<b>B. Hydrology</b> (Subtotal = 9.75 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
14. Subsurface flow/discharge into channel	0	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	3
15. Water in channel and >48 hours since sig. rain	0	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	3
16. Leaf litter in channel (January – September)	<del>1.5</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	0.5	<input type="checkbox"/>	0
17. Sediment on plants or on debris	0	<input type="checkbox"/>	0.5	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	1.5
18. Organic debris lines or piles (wrack lines)	0	<input type="checkbox"/>	0.5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.5
19. Hydric soils in channel bed or sides of channel	No = 0 <input type="checkbox"/>				Yes = 1.5 <input checked="" type="checkbox"/>		

<b>C. Biology</b> (Subtotal = 6 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>	<del>0</del>	<input type="checkbox"/>	2	<input type="checkbox"/>	1	<input type="checkbox"/>	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>	<del>0</del>	<input type="checkbox"/>	2	<input type="checkbox"/>	1	<input type="checkbox"/>	0
22. Crayfish in stream (exclude in floodplain)	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
23. Bivalves/mussels	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
24. Amphibians	<del>0</del>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
25. Macroinvertebrates (record type & abundance)	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
26. Filamentous algae; periphyton	<del>0</del>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
27. Iron oxidizing bacteria/fungus	<del>0</del>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>	<del>0</del>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 23

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

### Notes :

Likely intermittent, but obvious flow at time of visit. Seeps contributed to flow. No aquatic life in the channel. No veg upland or wetland was in the channel. Feature was straightened historically. No roots and no leaf litter. Wrack lines frequent, but not large.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-11		Date/Time: 4/15/21 1430
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of East Kerrville Rosemark Road		
HUC (12 digit): Big Creek Upper - 080102090301		Lat/Long: Start: 35.363965, -89.815636 End: 35.359597, -89.804647
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input checked="" type="checkbox"/> average <input type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/>		
Watershed Size : 0.61 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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 = Stream**

**Secondary Indicator Score (if applicable) =**

#### Justification / Notes :

Straightened for maximized ag acreage. Shiner sp., minnow sp., creek chub.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: STR-12		Date/Time: 4/14/21 1035
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359475, -89.842618 End: 35.358876, -89.842046
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.05 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 20.5</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 7.5 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
1. Continuous bed and bank	0		1		2	<input checked="" type="checkbox"/>	3
2. Sinuous channel	0	<input checked="" type="checkbox"/>	1		2		3
3. In-channel structure: riffle-pool sequences	0		<input checked="" type="checkbox"/>		2		3
4. Sorting of soil textures or other substrate	0		1	<input checked="" type="checkbox"/>	2		3
5. Active/relic floodplain	<input checked="" type="checkbox"/>		0.5		1		1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/>		1		2		3
7. Braided channel	<input checked="" type="checkbox"/>		1		2		3
8. Recent alluvial deposits	0		0.5		<input checked="" type="checkbox"/>		1.5
9. Natural levees	<input checked="" type="checkbox"/>		1		2		3
10. Headcuts	<input checked="" type="checkbox"/>		1		2		3
11. Grade controls	<input checked="" type="checkbox"/>		0.5		1		1.5
12. Natural valley or drainageway	0		0.5		<input checked="" type="checkbox"/>		1.5
13. At least second order channel on existing USGS or NRCS map	No = 0 <input checked="" type="checkbox"/>				Yes = 3 <input type="checkbox"/>		

<b>B. Hydrology</b> (Subtotal = 7 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
14. Subsurface flow/discharge into channel	0		<input checked="" type="checkbox"/>		2		3
15. Water in channel and >48 hours since sig. rain	0		1	<input checked="" type="checkbox"/>	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		<input checked="" type="checkbox"/>		1.5
19. Hydric soils in channel bed or sides of channel	No = 0 <input type="checkbox"/>				Yes = 1.5 <input checked="" type="checkbox"/>		

<b>C. Biology</b> (Subtotal = 6 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>	<input checked="" type="checkbox"/>		2		1		0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>	<input checked="" type="checkbox"/>		2		1		0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/>		1		2		3
23. Bivalves/mussels	<input checked="" type="checkbox"/>		1		2		3
24. Amphibians	<input checked="" type="checkbox"/>		0.5		1		1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/>		1		2		3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/>		1		2		3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/>		0.5		1		1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>	<input checked="" type="checkbox"/>		0.5		1		1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 20.5

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

### Notes :

Moderately strong bed and bank. No headcuts or grade controls. Water present in nearly 70 percent of channel bottom with little flow. No veg in channel and no aquatic life in feature. No leaf litter present in channel. Wrack lines frequent but not large.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-1		Date/Time: 4/14/21 1019
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359332, -89.844958 End: 35.359425, -89.844498
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : GgD3 - Grenada complex, 5 to 8 percent slopes, severely eroded		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 11**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

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

<b>B. Hydrology</b> (Subtotal = 2.5 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
14. Subsurface flow/discharge into channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
15. Water in channel and >48 hours since sig. rain	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
16. Leaf litter in channel (January – September)	1.5	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	0.5	<input type="checkbox"/>	0
17. Sediment on plants or on debris	0	<input checked="" type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
18. Organic debris lines or piles (wrack lines)	0	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
19. Hydric soils in channel bed or sides of channel	No = 0 <input checked="" type="checkbox"/>				Yes = 1.5 <input type="checkbox"/>		

<b>C. Biology</b> (Subtotal = 4.5 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>	3	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>	3	<input checked="" type="checkbox"/>	2	<input type="checkbox"/>	1	<input type="checkbox"/>	0
22. Crayfish in stream (exclude in floodplain)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
23. Bivalves/mussels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
24. Amphibians	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
25. Macroinvertebrates (record type & abundance)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
26. Filamentous algae; periphyton	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
27. Iron oxidizing bacteria/fungus	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 11

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

### Notes :

Starts as surface sheet flow and then becomes a channelized feature. Fibrous roots present in about 25 percent abundance throughout the bed. Small pools throughout and surface saturation throughout. Bed and bank weak at top of feature and more present near the bottom of the feature.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-2		Date/Time: 4/14/21 1024
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359332, -89.842803 End: 35.359169, -89.842501
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 14.25**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 6 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 14.25

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

### Notes :

Decent bed and bank. No leaf litter. Multiple pools of water throughout, no flow. No aquatic life no wetland veg. Fibrous roots are present but only in about 20% abundance. Wrack lines present sporadically.



# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-3		Date/Time: 4/14/21 1027
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359199, -89.84265 End: 35.359206, -89.842939
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 12</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 4 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 12

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

### Notes :

Feature with no sinuosity that starts at surface sheet flow concentration point. Very small pools of water in the channel. No aquatic life and veg. Small pool/riffle complexes if there was flow in the feature. This feature appears to be a part of the EPH-1/WTL-3 complex. Roots present in approximately twenty (20) percent of the channel bed.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-4		Date/Time: 4/14/21 1050
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Bethuel Road and North of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.358679, -89.842291 End: 35.358776, -89.84213
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 17**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 8 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 6 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		0	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		0	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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 17

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

### Notes :

Starts at a large headcut near the ag field edge/woodline. Bed and bank throughout except near the end of the reach.

Pools of water in the channel, no flow. No veg aquatic or upland. Slight sinuosity, but reach is very short. No fibrous roots given the deep incision. Wrack lines present, but primarily washed out.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-5		Date/Time: 4/14/21 1343
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of Aycock Road and west of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.352494, -89.826082 End: 35.352132, -89.826449
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :   abnormally wet   elevated   average   low   abnormally dry   unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 15**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 6.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 15

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

### Notes :

Slight sinuosity and pools primarily in the bends. Alluvial deposits were noted but not abundant. Wrack lines are present primarily behind roots that cross the channel/rootwads in the channel banks. No aquatic life present within the feature. Floodplain primarily disconnected due to incision, but still present near the top of the reach.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-6		Date/Time: 4/14/21 1409
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of Aycock Road and west of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.352225, -89.828992 End: 35.350931, -89.829267
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 16.5**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 8.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 2.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 16.5

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

### Notes :

Bed and bank strong throughout 80%, weakens near top of reach. Starts at small headcut near the ag field edge.

No water within channel. Fibrous roots are present at ~10% density. Little sinuosity, primarily straight. Alluvial deposits present with a lack of bars or benches. No aquatic life given there was no water.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-8		Date/Time: 4/15/21 0840
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.364491, -89.804541 End: 35.364824, -89.804206
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal :   abnormally wet   elevated   average   low   abnormally dry   unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 17.5</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 7.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 6 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		0	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		0	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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 17.5

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

### Notes :

Starts at a very large headcut near the ag field edge. No real sinuosity given the short distance from ag to STR-8 (Big Creek). Above the feature is a WTL-6, but no observable connection with upland in between. Alluvial deposits present especially near the bottom of the channel. Water was present throughout lower 75%, but there was no flow. No aquatic life observed. Slight amount of IOB within the lower portion of the channel.



# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-8		Date/Time: 4/15/21 1005
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.358791, -89.807656 End: 35.358148, -89.807501
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

Overall Hydrologic Determination = WWC
Secondary Indicator Score (if applicable) = 12.75

Justification / Notes :

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 4.5 )	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank	0	✓	2	3
2. Sinuous channel	✓	1	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	✓	1	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	✓	1	2	3
11. Grade controls	✓	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 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3.25 )	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	✓	1	2	3
15. Water in channel and >48 hours since sig. rain	0	✓	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 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>	3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>	✓	2	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. Macroinvertebrates (record type & abundance)	✓	1	2	3
26. Filamentous algae; periphyton	✓	1	2	3
27. Iron oxidizing bacteria/fungus	0	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>	✓	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> 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 :

Bed and bank nearly absent near top of reach and transitions to moderate as the channel becomes WTL-7. No sinuosity and water present as the the feature transitions into WTL. Aquatic life was not readily observed. Roots within channel present near the top of the reach and gradually become less as the channel transitions.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-9		Date/Time: 4/15/21 1010
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.356136, -89.808066 End: 35.355915, -89.806625
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 16.5</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 8.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 3 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 16.5

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

### Notes :

Bed and bank present throughout most of the reach. Near the top of reach b&b is all but absent. Pools of water sporadic throughout the reach and dry in upper 30% of the reach. Leaf litter present within the top 25% of the channel. Wrack lines in lower portion of the feature. OHMW obvious throughout most of the channel.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: EPH-10		Date/Time: 4/15/21 1155
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.363952, -89.81509 End: 35.363759, -89.815252
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 16.75**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 8.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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>B. Hydrology</b> (Subtotal = 3 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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	

<b>C. Biology</b> (Subtotal = 5.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 16.75

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

### Notes :

Small portion of the feature within the property boundaries. Bed and bank evident in most segments of the feature.

Water present in pools throughout the reach, but no flow. Very little leaf litter, but present in a few small pockets. Very small headcut near the bottom of the reach. No aquatic life identified within the feature.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-1		Date/Time: 4/14/21 0921
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: North and West of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.350849, -89.840372 End: 35.350216, -89.840338
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.09 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 6.25**

#### Justification / Notes :

Agricultural drainage. Modified historically.

## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 1.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2. Sinuous channel		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3. In-channel structure: riffle-pool sequences		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4. Sorting of soil textures or other substrate		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5. Active/relic floodplain		0 <input type="checkbox"/>	0.5 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
6. Depositional bars or benches		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7. Braided channel		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8. Recent alluvial deposits		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
9. Natural levees		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10. Headcuts		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
11. Grade controls		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
12. Natural valley or drainageway		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
15. Water in channel and >48 hours since sig. rain		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
16. Leaf litter in channel (January – September)		1.5 <input type="checkbox"/>	1 <input type="checkbox"/>	0.5 <input type="checkbox"/>	0 <input type="checkbox"/>
17. Sediment on plants or on debris		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
18. Organic debris lines or piles (wrack lines)		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
19. Hydric soils in channel bed or sides of channel		No = 0 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3 <input type="checkbox"/>	2 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	0 <input type="checkbox"/>
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
24. Amphibians		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 6.25

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

### Notes :

Agricultural drainage that had a very weak bed and bank, clay bottom with no soft sediment and abundant fibrous roots.

No sinuosity. Few small pools of water, but no flow. No aquatic veg or life.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-2		Date/Time: 4/14/21 1021
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: North and West of Center College Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.359446, -89.843995 End: 35.359362, -89.843261
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Slight <input checked="" type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 8.75**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.25 )	Absent	Weak	Moderate	Strong	
1. Continuous bed and bank	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
2. Sinuous channel	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
3. In-channel structure: riffle-pool sequences	0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
4. Sorting of soil textures or other substrate	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
5. Active/relic floodplain	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
6. Depositional bars or benches	0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
7. Braided channel	0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
8. Recent alluvial deposits	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
9. Natural levees	0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
10. Headcuts	0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	
11. Grade controls	0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>	
12. Natural valley or drainageway	0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
13. At least second order channel on existing USGS or NRCS map	No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>		

<b>B. Hydrology</b> (Subtotal = 4 )	<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel	<div><div>0</div><div><input checked="" type="checkbox"/></div></div>	<div><div>1</div><div><input type="checkbox"/></div></div>	<div><div>2</div><div><input type="checkbox"/></div></div>	<div><div>3</div><div><input type="checkbox"/></div></div>
15. Water in channel and >48 hours since sig. rain	<div><div>0</div><div><input checked="" type="checkbox"/></div></div>	<div><div>1</div><div><input type="checkbox"/></div></div>	<div><div>2</div><div><input type="checkbox"/></div></div>	<div><div>3</div><div><input type="checkbox"/></div></div>
16. Leaf litter in channel (January – September)	<div><div>1.5</div><div><input type="checkbox"/></div></div>	<div><div>1</div><div><input type="checkbox"/></div></div>	<div><div>0.5</div><div><input type="checkbox"/></div></div>	<div><div>0</div><div><input type="checkbox"/></div></div>
17. Sediment on plants or on debris	<div><div>0</div><div><input checked="" type="checkbox"/></div></div>	<div><div>0.5</div><div><input type="checkbox"/></div></div>	<div><div>1</div><div><input type="checkbox"/></div></div>	<div><div>1.5</div><div><input type="checkbox"/></div></div>
18. Organic debris lines or piles (wrack lines)	<div><div>0</div><div><input checked="" type="checkbox"/></div></div>	<div><div>0.5</div><div><input type="checkbox"/></div></div>	<div><div>1</div><div><input type="checkbox"/></div></div>	<div><div>1.5</div><div><input type="checkbox"/></div></div>
19. Hydric soils in channel bed or sides of channel	No = 0 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

C. Biology (Subtotal = 2.5 )	Absent		Weak		Moderate		Strong	
20. Fibrous roots in channel bed <sup>1</sup>	3		2		1	✓	0	
21. Rooted plants in the thalweg <sup>1</sup>	3		2✓		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. Macroinvertebrates (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 <sup>2</sup>	✓		0.5		1		1.5	

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 8.75

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

### Notes :

Drainage scour below WTL-3. Quickly loses bed and bank to become essentially overland flow. Roots abundant in channel. Small pools of water in upper reach immediately below WTL-3. Wrack lines are present but very minimal behind minimal upland veg in main drainage.



# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-3		Date/Time: 4/14/21 1220
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and North of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.356648, -89.831817 End: 35.356125, -89.83206
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.13 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 10**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 3.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0	<input checked="" type="checkbox"/>	2	3
2. Sinuous channel		0	<input checked="" type="checkbox"/>	1	2
3. In-channel structure: riffle-pool sequences		0	<input checked="" type="checkbox"/>	1	2
4. Sorting of soil textures or other substrate		0	<input checked="" type="checkbox"/>	1	2
5. Active/relic floodplain		0	<input checked="" type="checkbox"/>	0.5	1
6. Depositional bars or benches		<input checked="" type="checkbox"/>	1	2	3
7. Braided channel		<input checked="" type="checkbox"/>	1	2	3
8. Recent alluvial deposits		<input checked="" type="checkbox"/>	0.5	1	1.5
9. Natural levees		<input checked="" type="checkbox"/>	1	2	3
10. Headcuts		0	<input checked="" type="checkbox"/>	1	2
11. Grade controls		<input checked="" type="checkbox"/>	0.5	1	1.5
12. Natural valley or drainageway		0	<input checked="" type="checkbox"/>	0.5	1
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 4 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		<input checked="" type="checkbox"/>	1	2	3
15. Water in channel and >48 hours since sig. rain		0	<input checked="" type="checkbox"/>	1	2
16. Leaf litter in channel (January – September)		1.5	1	0.5	0
17. Sediment on plants or on debris		0	<input checked="" type="checkbox"/>	0.5	1
18. Organic debris lines or piles (wrack lines)		0	<input checked="" type="checkbox"/>	0.5	1
19. Hydric soils in channel bed or sides of channel		No = 0 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	<input checked="" type="checkbox"/>
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	1	0
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1	2	3
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1	2	3
24. Amphibians		<input checked="" type="checkbox"/>	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1	2	3
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1	2	3
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 10

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

### Notes :

Immediately upstream from STR-4 north of Aycock Road. Bed and bank mod near bottom of reach, poor at top.

Riprap near culvert. No signs of flow. No aquatic life. Small pools of water in channel. One medium headcut near culvert under Aycock road.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-4		Date/Time: 4/14/21 1416
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and South of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.353383, -89.830522 End: 35.352018, -89.82908
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 8**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

A. Geomorphology (Subtotal = 2.25)	Absent		Weak		Moderate		Strong
1. Continuous bed and bank	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
2. Sinuous channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
3. In-channel structure: riffle-pool sequences	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
4. Sorting of soil textures or other substrate	0	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
5. Active/relic floodplain	0	<input checked="" type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
6. Depositional bars or benches	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
7. Braided channel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
8. Recent alluvial deposits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
9. Natural levees	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
10. Headcuts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	2	<input type="checkbox"/>	3
11. Grade controls	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
12. Natural valley or drainageway	0	<input type="checkbox"/>	0.5	<input type="checkbox"/>	1	<input type="checkbox"/>	1.5
13. At least second order channel on existing USGS or NRCS map	No = 0 <input checked="" type="checkbox"/>				Yes = 3 <input type="checkbox"/>		

<b>B. Hydrology</b> (Subtotal = 3.75 )	<b>Absent</b>		<b>Weak</b>		<b>Moderate</b>		<b>Strong</b>
14. Subsurface flow/discharge into channel	<div><div>0</div><div>✓</div></div>	<div><div></div><div></div></div>	<div><div>1</div><div></div></div>	<div><div></div><div></div></div>	<div><div>2</div><div></div></div>	<div><div></div><div></div></div>	<div><div>3</div><div></div></div>
15. Water in channel and >48 hours since sig. rain	<div><div>0</div><div></div></div>	<div><div>✓</div><div></div></div>	<div><div>1</div><div></div></div>	<div><div></div><div></div></div>	<div><div>2</div><div></div></div>	<div><div></div><div></div></div>	<div><div>3</div><div></div></div>
16. Leaf litter in channel (January – September)	<div><div>1.5</div><div></div></div>	<div><div></div><div></div></div>	<div><div>1</div><div></div></div>	<div><div></div><div></div></div>	<div><div>0.5</div><div></div></div>	<div><div></div><div></div></div>	<div><div>0</div><div></div></div>
17. Sediment on plants or on debris	<div><div>0</div><div>✓</div></div>	<div><div></div><div></div></div>	<div><div>0.5</div><div></div></div>	<div><div></div><div></div></div>	<div><div>1</div><div></div></div>	<div><div></div><div></div></div>	<div><div>1.5</div><div></div></div>
18. Organic debris lines or piles (wrack lines)	<div><div>0</div><div></div></div>	<div><div>✓</div><div></div></div>	<div><div>0.5</div><div></div></div>	<div><div></div><div></div></div>	<div><div>1</div><div></div></div>	<div><div></div><div></div></div>	<div><div>1.5</div><div></div></div>
19. Hydric soils in channel bed or sides of channel	No = 0		<div><div></div><div></div></div>	Yes = 1.5		<div><div>✓</div><div></div></div>	

C. Biology (Subtotal = 2 )	Absent	Weak	Moderate	Strong
20. Fibrous roots in channel bed <sup>1</sup>	3	2	1	✓ 0
21. Rooted plants in the thalweg <sup>1</sup>	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. Macroinvertebrates (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 <sup>2</sup>	✓ 0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 8

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

### Notes :

Drainage from agricultural field. Primarily full of poison ivy within the weak channel. Some small pools in the feature.

Hydric soils present. Mod to strong fibrous roots. No sinuosity. absent bed and bank until lower 1/8 of reach where it is weak. Wrack line present sporadically.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-5		Date/Time: 4/14/21 1424
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and South of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.351611, -89.828857 End: 35.35159, -89.829119
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 8**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 3.5 )					<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank					0	<input checked="" type="checkbox"/>	2	3
2. Sinuous channel					<input checked="" type="checkbox"/>	1	2	3
3. In-channel structure: riffle-pool sequences		<input checked="" type="checkbox"/>			0	1	2	3
4. Sorting of soil textures or other substrate					0	<input checked="" type="checkbox"/>	2	3
5. Active/relic floodplain		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5
6. Depositional bars or benches		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
7. Braided channel		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
8. Recent alluvial deposits		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5
9. Natural levees		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
10. Headcuts		0	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	1	2	3
11. Grade controls		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5
12. Natural valley or drainageway		0		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map					No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

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

<b>C. Biology</b> (Subtotal = 3 )					<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3			<input checked="" type="checkbox"/>	2	1	<input checked="" type="checkbox"/>
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	2	1	0
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
23. Bivalves/mussels		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
24. Amphibians		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	1	2	3
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 8

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

### Notes :

Short drainage from ag field surface flow. Starts at small headcut. No water in the channel. Slight surface saturation.

Leaf litter present sporadically. Weak bed and bank. Roots throughout channel. No hydric soil and no aquatic life.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-6		Date/Time: 4/14/21 1451
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and South of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.346658, -89.832267 End: 35.346266, -89.830821
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 7.25**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 1.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 3 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 7.25

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

### Notes :

Linear drainage likely rerouted historically. No sinuosity. Roots in channel abundant. Wrack lines present but not abundant. Given incision, bed and bank are present throughout, but not strong. No water in channel and entire reach is a run throughout.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-7		Date/Time: 4/14/21 1456
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and South of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.346605, -89.83117 End: 35.346365, -89.831404
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :   abnormally wet   elevated   average   low   abnormally dry   unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 7.5**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0	<input checked="" type="checkbox"/>	2	3
2. Sinuous channel		0	<input checked="" type="checkbox"/>	2	3
3. In-channel structure: riffle-pool sequences		<input checked="" type="checkbox"/>	1	2	3
4. Sorting of soil textures or other substrate		0	<input checked="" type="checkbox"/>	2	3
5. Active/relic floodplain		<input checked="" type="checkbox"/>	0.5	1	1.5
6. Depositional bars or benches		<input checked="" type="checkbox"/>	1	2	3
7. Braided channel		<input checked="" type="checkbox"/>	1	2	3
8. Recent alluvial deposits		<input checked="" type="checkbox"/>	0.5	1	1.5
9. Natural levees		<input checked="" type="checkbox"/>	1	2	3
10. Headcuts		<input checked="" type="checkbox"/>	1	2	3
11. Grade controls		<input checked="" type="checkbox"/>	0.5	1	1.5
12. Natural valley or drainageway		0	<input checked="" type="checkbox"/>	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

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

<b>C. Biology</b> (Subtotal = 3.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	2	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	2	1
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1	2	3
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1	2	3
24. Amphibians		<input checked="" type="checkbox"/>	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1	2	3
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1	2	3
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 7.5

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

### Notes :

Short drainage starting in ag field. Bed and bank begins near tree line, but weak throughout. No water within channel.

No aquatic life and no sinuosity.



# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-8		Date/Time: 4/14/21 1519
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: East of Center College Road and South of Aycock Road		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.354004, -89.834033 End: 35.353738, -89.834312
Previous Rainfall (7-days) : 0.81 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 9**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0	<input checked="" type="checkbox"/>	2	3
2. Sinuous channel		<input checked="" type="checkbox"/>	1	2	3
3. In-channel structure: riffle-pool sequences		0	<input checked="" type="checkbox"/>	2	3
4. Sorting of soil textures or other substrate		0	<input checked="" type="checkbox"/>	2	3
5. Active/relic floodplain		<input checked="" type="checkbox"/>	0.5	1	1.5
6. Depositional bars or benches		<input checked="" type="checkbox"/>	1	2	3
7. Braided channel		<input checked="" type="checkbox"/>	1	2	3
8. Recent alluvial deposits		<input checked="" type="checkbox"/>	0.5	1	1.5
9. Natural levees		<input checked="" type="checkbox"/>	1	2	3
10. Headcuts		<input checked="" type="checkbox"/>	1	2	3
11. Grade controls		<input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		<input checked="" type="checkbox"/>	1	2	3
15. Water in channel and >48 hours since sig. rain		0	<input checked="" type="checkbox"/>	2	3
16. Leaf litter in channel (January – September)		1.5	<input checked="" type="checkbox"/>	0.5	0
17. Sediment on plants or on debris		0	<input checked="" type="checkbox"/>	0.5	1
18. Organic debris lines or piles (wrack lines)		0	<input checked="" type="checkbox"/>	0.5	1
19. Hydric soils in channel bed or sides of channel		No = 0 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 4 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	2	1
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	2	1
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1	2	3
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1	2	3
24. Amphibians		<input checked="" type="checkbox"/>	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1	2	3
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1	2	3
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 9

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

### Notes :

Upstream side of STR-5. Bed and bank nearly absent at top of reach and poor near bottom of reach. Water in channel near Center College Road, but none above that. No aquatic life. No aquatic veg. Leaf litter near top of channel, but absent near the bottom of reach. No sinuosity.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-9		Date/Time: 4/15/21 0925
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.362963, -89.804738 End: 35.362896, -89.804029
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal :    abnormally wet    elevated    average    low    abnormally dry    unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 10.25</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

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

<b>B. Hydrology</b> (Subtotal = 3.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
15. Water in channel and >48 hours since sig. rain		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
16. Leaf litter in channel (January – September)		1.5 <input type="checkbox"/>	<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	0 <input type="checkbox"/>
17. Sediment on plants or on debris		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
18. Organic debris lines or piles (wrack lines)		0 <input type="checkbox"/>	0.5 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
19. Hydric soils in channel bed or sides of channel		No = 0 <input type="checkbox"/>		Yes = 1.5 <input checked="" type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 4.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3 <input type="checkbox"/>	<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
24. Amphibians		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 10.25

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

### Notes :

Over widened drainage feature with little to no bed and bank, primarily a wide U-shaped feature. FAC veg within the channel, but primarily unvegetated. Some surface saturation in areas. Roots present ~30% throughout the feature.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-10		Date/Time: 4/15/21 1108
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.355578, -89.819839 End: 35.355561, -89.820053
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal : abnormally wet <input type="checkbox"/> elevated <input type="checkbox"/> average <input checked="" type="checkbox"/> low <input type="checkbox"/> abnormally dry <input type="checkbox"/> unknown <input type="checkbox"/>		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Ca - Calloway silt loam, 0 to 2 percent slopes		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 13.75**

#### Justification / Notes :

Ag work caused concentrated flow.



## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 5.75)		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 2)		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
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 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 6)		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		0	2	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		0	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. Macroinvertebrates (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 <b>channel bed</b> <sup>2</sup>		0	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.<sup>2</sup> 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 :

No true floodplain given that this feature is a drainage from an ag field to an adjacent ag field. No vegetation within the channel. Sinuosity evident even though the reach is very short. No vegetation in the channel and no water as well. 1 small/medium headcut.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-11		Date/Time: 4/15/21 1154
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.36385, -89.81501 End: 35.363853, -89.815112
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal :   abnormally wet   elevated   average   low   abnormally dry   unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi	County: Shelby	
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

**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*

<b>Overall Hydrologic Determination = WWC</b>  <b>Secondary Indicator Score (if applicable) = 11</b>
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**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 4.25 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0	<input checked="" type="checkbox"/>	2	3
2. Sinuous channel		0	<input checked="" type="checkbox"/>	2	3
3. In-channel structure: riffle-pool sequences		0	<input checked="" type="checkbox"/>	2	3
4. Sorting of soil textures or other substrate		0	<input checked="" type="checkbox"/>	2	3
5. Active/relic floodplain		0	<input checked="" type="checkbox"/>	1	1.5
6. Depositional bars or benches		<input checked="" type="checkbox"/>	1	2	3
7. Braided channel		<input checked="" type="checkbox"/>	1	2	3
8. Recent alluvial deposits		0	<input checked="" type="checkbox"/>	1	1.5
9. Natural levees		<input checked="" type="checkbox"/>	1	2	3
10. Headcuts		0	<input checked="" type="checkbox"/>	2	3
11. Grade controls		<input checked="" type="checkbox"/>	0.5	1	1.5
12. Natural valley or drainageway		0	<input checked="" type="checkbox"/>	1	1.5
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

<b>B. Hydrology</b> (Subtotal = 1.75 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
14. Subsurface flow/discharge into channel		<input checked="" type="checkbox"/>	1	2	3
15. Water in channel and >48 hours since sig. rain		<input checked="" type="checkbox"/>	1	2	3
16. Leaf litter in channel (January – September)		1.5	1	0.5	0
17. Sediment on plants or on debris		<input checked="" type="checkbox"/>	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)		0	<input checked="" type="checkbox"/>	1	1.5
19. Hydric soils in channel bed or sides of channel		No = 0 <input checked="" type="checkbox"/>		Yes = 1.5 <input type="checkbox"/>	

<b>C. Biology</b> (Subtotal = 5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3	<input checked="" type="checkbox"/>	1	0
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		<input checked="" type="checkbox"/>	2	1	0
22. Crayfish in stream (exclude in floodplain)		<input checked="" type="checkbox"/>	1	2	3
23. Bivalves/mussels		<input checked="" type="checkbox"/>	1	2	3
24. Amphibians		<input checked="" type="checkbox"/>	0.5	1	1.5
25. Macroinvertebrates (record type & abundance)		<input checked="" type="checkbox"/>	1	2	3
26. Filamentous algae; periphyton		<input checked="" type="checkbox"/>	1	2	3
27. Iron oxidizing bacteria/fungus		<input checked="" type="checkbox"/>	0.5	1	1.5
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		<input checked="" type="checkbox"/>	0.5	1	1.5

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 11

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

### Notes :

Short reach that originates at the ag field edge. weak bed and bank, primarily U-shaped. No water within the reach.

Small portion of riffle/pool sequence. Fibrous roots ~25%. No veg in the channel. Alluvial deposits in the channel in small pockets but infrequent. small wrack lines sporadic as well.

# Hydrologic Determination Field Data Sheet

## Tennessee Division of Water Pollution Control, Version 1.5

Named Waterbody: WWC-12		Date/Time: 4/15/21 1243
Assessors/Affiliation: N. Carmean/Barge Design Solutions		Project ID :
Site Name/Description: Millington II		Barge ID: 3609515
Site Location: South of E Kerrville Rosemark Road and east of Armour Road.		
HUC (12 digit): Big Creek Middle - 080102090302		Lat/Long: Start: 35.360361, -89.805728 End: 35.360008, -89.805695
Previous Rainfall (7-days) : 0.39 inches		
Precipitation this Season vs. Normal :   abnormally wet   elevated   average   low   abnormally dry   unknown		
Source of recent & seasonal precip data : <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Watershed Size : 0.01 sq mi		County: Shelby
Soil Type(s) / Geology : Fm - Falaya silt loam		Source: WSS
Surrounding Land Use : Agricultural, solar farm and residential		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : Severe <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Slight <input type="checkbox"/> Absent <input type="checkbox"/>		

### Primary Field Indicators Observed

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

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

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

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

**Overall Hydrologic Determination = WWC**

**Secondary Indicator Score (if applicable) = 9**

**Justification / Notes :**

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## Secondary Field Indicator Evaluation

<b>A. Geomorphology</b> (Subtotal = 2.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
1. Continuous bed and bank		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2. Sinuous channel		0 <input type="checkbox"/>	1 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3. In-channel structure: riffle-pool sequences		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4. Sorting of soil textures or other substrate		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5. Active/relic floodplain		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
6. Depositional bars or benches		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7. Braided channel		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8. Recent alluvial deposits		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
9. Natural levees		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10. Headcuts		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
11. Grade controls		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
12. Natural valley or drainageway		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
13. At least second order channel on existing USGS or NRCS map		No = 0 <input checked="" type="checkbox"/>		Yes = 3 <input type="checkbox"/>	

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

<b>C. Biology</b> (Subtotal = 4.5 )		<b>Absent</b>	<b>Weak</b>	<b>Moderate</b>	<b>Strong</b>
20. Fibrous roots in <b>channel bed</b> <sup>1</sup>		3 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
21. Rooted plants in <b>the thalweg</b> <sup>1</sup>		3 <input checked="" type="checkbox"/>	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
22. Crayfish in stream (exclude in floodplain)		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
23. Bivalves/mussels		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
24. Amphibians		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
25. Macroinvertebrates (record type & abundance)		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
26. Filamentous algae; periphyton		0 <input checked="" type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
27. Iron oxidizing bacteria/fungus		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>
28. Wetland plants in <b>channel bed</b> <sup>2</sup>		0 <input checked="" type="checkbox"/>	0.5 <input type="checkbox"/>	1 <input type="checkbox"/>	1.5 <input type="checkbox"/>

<sup>1</sup> Focus is on the presence of **terrestrial** plants.

<sup>2</sup> Focus is on the presence of aquatic or wetland plants.

Total Points = 9

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

### Notes :

Very weak channel that nearly disappears at confluence with STR-11. Canadian goldenrod in adjacent area over grown and covers channel nearly throughout. No water in channel. Fibrous roots are evident throughout. Wrack lines obvious behind the goldenrod. No water and no aquatic life.



# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-1  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Ditch Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.349946 Long: -89.837820 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:  The feature is located in a drainage channel within an active agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> 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: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>25</u></td> <td>x 1 = <u>25</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>35</u> (A)</td> <td><u>45</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.29</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>25</u>	x 1 = <u>25</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>35</u> (A)	<u>45</u> (B)	Prevalence Index = B/A = <u>1.29</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>25</u>	x 1 = <u>25</u>																			
FACW species <u>10</u>	x 2 = <u>20</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>35</u> (A)	<u>45</u> (B)																			
Prevalence Index = B/A = <u>1.29</u>																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Juncus effusus</u>	<u>25</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Carex vulpinoidea</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>18</u> 20% of total cover: <u>7</u>																				
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> 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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	65	10YR 4/2	35	D	M	Mucky Loam/Clay	
4-18	10YR 4/3	75	10YR 4/1	20	D	M	Loamy/Clayey	
			10YR 5/6	5	C	M		Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> (MLRA 153B, 153D)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> (outside MLRA 150A)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Organic Bodies (A6) (LRR, P, T, U)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (outside MLRA 150A, 150B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, T)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input checked="" type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	<input type="checkbox"/> (outside MLRA 138, 152A in FL, 154)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	<input type="checkbox"/> Barrier Islands Low Chroma Matrix (TS7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	<input type="checkbox"/> (MLRA 153B, 153D)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)	
<input type="checkbox"/> Polyvalue Below Surface (S8)	<input type="checkbox"/> (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> (LRR S, T, U)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
	<input type="checkbox"/> (MLRA 138, 152A in FL, 154)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-2  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Ditch Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.350751 Long: -89.847186 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:  The feature is located in a drainage channel for a roadside ditch	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u>X</u> Surface Water (A1) <u>X</u> Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) <u>X</u> Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  Tadpole larvae observed		

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

 Sampling Point: WTL-2

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>90</u></td> <td>x 1 = <u>90</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>90</u> (A)</td> <td><u>90</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>90</u>	x 1 = <u>90</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>90</u> (A)	<u>90</u> (B)	Prevalence Index = B/A = <u>1.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>90</u>	x 1 = <u>90</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>90</u> (A)	<u>90</u> (B)																			
Prevalence Index = B/A = <u>1.00</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5 Feet</u> )																				
1. <u>Scirpus atrovirens</u>	<u>45</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Typha latifolia</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Juncus effusus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ 90 = Total Cover																				
50% of total cover: <u>45</u> 20% of total cover: <u>18</u>																				
Woody Vine Stratum (Plot size: <u>30 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				

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

<sup>1</sup>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 \_\_\_\_\_

## SOIL

Sampling Point: WTL-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/1	100					Mucky Loam/Clay	
4-18	10YR 4/2	80	10YR 6/6	20	D	M	Loamy/Clayey	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☒ No ☐

Remarks:

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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: UPL-1/2  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Flat Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.350704 Long: -89.843122 Datum: NAD83  
 Soil Map Unit Name: Ca: Calloway silt loam, 0 to 2 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:  The data point was taken in an active agricultural field which is adjacent to WTLs-1 and 2	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ 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) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  No positive wetland hydrology indicators in the adjacent agricultural fields		

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

 Sampling Point: UPL-1/2

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>45</u></td> <td>x 4 = <u>180</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>85</u> (A)</td> <td><u>300</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.53</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>45</u>	x 4 = <u>180</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>85</u> (A)	<u>300</u> (B)	Prevalence Index = B/A = <u>3.53</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>40</u>	x 3 = <u>120</u>																			
FACU species <u>45</u>	x 4 = <u>180</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>85</u> (A)	<u>300</u> (B)																			
Prevalence Index = B/A = <u>3.53</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5 Feet</u> )																				
1. <u>Sorghum halepense</u>	<u>45</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Andropogon virginicus</u>	<u>15</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Rubus argutus</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>43</u> 20% of total cover: <u>17</u>																				
Woody Vine Stratum (Plot size: <u>30 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (If observed, list morphological adaptations below.)																				

**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

## SOIL

Sampling Point: UPL-1/2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 3/3	100					Loamy/Clayey	
3-18	7.5YR 4/4	80	7.5YR 6/6	20	C	M	Loamy/Clayey	Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-3  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Relic Farm Pond Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.359421 Long: -89.844365 Datum: NAD83  
 Soil Map Unit Name: GgD3: Grenada complex, 5 to 12 percent slopes, severely eroded NWI classification: N/A  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:  The feature appears to be within a historic farm pond which has become established with hydric vegetation	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> <u>X</u> Surface Water (A1) <u>X</u> Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) <u>X</u> Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>6</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  Tadpole larvae observed		

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

 Sampling Point: WTL-3

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Celtis laevigata</u>	<u>35</u>	<u>Yes</u>	<u>FACW</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Salix nigra</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Ulmus rubra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>70</u> =Total Cover																				
50% of total cover: <u>35</u>		20% of total cover: <u>14</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. <u>Salix nigra</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>90</u></td> <td>x 1 = <u>90</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>205</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.46</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>90</u>	x 1 = <u>90</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>140</u> (A)	<u>205</u> (B)	Prevalence Index = B/A = <u>1.46</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>90</u>	x 1 = <u>90</u>																			
FACW species <u>35</u>	x 2 = <u>70</u>																			
FAC species <u>15</u>	x 3 = <u>45</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>140</u> (A)	<u>205</u> (B)																			
Prevalence Index = B/A = <u>1.46</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>15</u> =Total Cover																				
50% of total cover: <u>8</u>		20% of total cover: <u>3</u>																		
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Ludwigia palustris</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Juncus effusus</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Scirpus atrovirens</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>55</u> =Total Cover																				
50% of total cover: <u>28</u>		20% of total cover: <u>11</u>																		
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ =Total Cover																				
50% of total cover: _____		20% of total cover: _____																		

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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/1	100					Muck	
6-18	10YR 5/1	75	10YR 6/6	25	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☒ No ☐

Remarks:

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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: UPL-3  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2-3%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.359345 Long: -89.844412 Datum: NAD83  
 Soil Map Unit Name: GgD3: Grenada complex, 5 to 12 percent slopes, severely eroded NWI classification: N/A  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ 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) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		
No positive wetland hydrology indicators in the upland forest		

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

 Sampling Point: UPL-3

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Juglans nigra</u>	<u>35</u>	<u>Yes</u>	<u>UPL</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A)  Total Number of Dominant Species Across All Strata: <u>9</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. <u>Ulmus rubra</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Magnolia grandiflora</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>75</u> =Total Cover																				
50% of total cover: <u>38</u>		20% of total cover: <u>15</u>																		
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. <u>Lonicera maackii</u>	<u>25</u>	<u>Yes</u>	<u>UPL</u>	<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>95</u></td> <td>x 3 = <u>285</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>60</u></td> <td>x 5 = <u>300</u></td> </tr> <tr> <td>Column Totals: <u>195</u> (A)</td> <td><u>700</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.59</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>95</u>	x 3 = <u>285</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>60</u>	x 5 = <u>300</u>	Column Totals: <u>195</u> (A)	<u>700</u> (B)	Prevalence Index = B/A = <u>3.59</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>15</u>	x 1 = <u>15</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>95</u>	x 3 = <u>285</u>																			
FACU species <u>25</u>	x 4 = <u>100</u>																			
UPL species <u>60</u>	x 5 = <u>300</u>																			
Column Totals: <u>195</u> (A)	<u>700</u> (B)																			
Prevalence Index = B/A = <u>3.59</u>																				
2. <u>Ligustrum sinense</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Ulmus rubra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>55</u> =Total Cover																				
50% of total cover: <u>28</u>		20% of total cover: <u>11</u>																		
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Galium trifidum</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>_____</u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Toxicodendron radicans</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Parthenocissus quinquefolia</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>65</u> =Total Cover																				
50% of total cover: <u>33</u>		20% of total cover: <u>13</u>																		
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ =Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																				

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 (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 3/2	100					Loamy/Clayey	
2-18	10YR 4/3	85	10YR 5/6	15	C	M	Loamy/Clayey	Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-4  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Ditch Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.359309 Long: -89.832742 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks:  The feature is located in a drainage channel within an active agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   Remarks:	

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

 Sampling Point: WTL-4

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)  <b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>5</u></td> <td>x 4 = <u>20</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>40</u> (A)</td> <td><u>115</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.88</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>5</u>	x 4 = <u>20</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>40</u> (A)	<u>115</u> (B)	Prevalence Index = B/A = <u>2.88</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>10</u>	x 2 = <u>20</u>																			
FAC species <u>25</u>	x 3 = <u>75</u>																			
FACU species <u>5</u>	x 4 = <u>20</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>40</u> (A)	<u>115</u> (B)																			
Prevalence Index = B/A = <u>2.88</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
50% of total cover: _____		20% of total cover: _____																		
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Microstegium vimineum</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u>Carex vulpinoidea</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Lolium perenne</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>20</u>		20% of total cover: <u>8</u>																		
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> 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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	65	10YR 4/2	10	D	M	Mucky Loam/Clay	
4-18	10YR 4/3	75	10YR 4/1	20	D	M	Loamy/Clayey	
			10YR 5/6	5	C	M		Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)	<input type="checkbox"/> 1 cm Muck (A9) (LRR O)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)	<input type="checkbox"/> 2 cm Muck (A10) (LRR S)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> (MLRA 153B, 153D)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)	<input type="checkbox"/> (outside MLRA 150A)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Organic Bodies (A6) (LRR, P, T, U)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> (outside MLRA 150A, 150B)
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, T)
<input type="checkbox"/> Muck Presence (A8) (LRR U)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)	<input checked="" type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> (MLRA 153B)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Marl (F10) (LRR U)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)	<input type="checkbox"/> (outside MLRA 138, 152A in FL, 154)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)	<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)	<input type="checkbox"/> Barrier Islands Low Chroma Matrix (TS7)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)	<input type="checkbox"/> (MLRA 153B, 153D)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)	
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)	<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)	
<input type="checkbox"/> Polyvalue Below Surface (S8)	<input type="checkbox"/> (MLRA 149A, 153C, 153D)	
<input type="checkbox"/> (LRR S, T, U)	<input type="checkbox"/> Very Shallow Dark Surface (F22)	
	<input type="checkbox"/> (MLRA 138, 152A in FL, 154)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-5  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.357451 Long: -89.829670 Datum: NAD83  
 Soil Map Unit Name: GaB: Grenada 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 X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks:  The feature is located in a depression within an active agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

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

 Sampling Point: WTL-5

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)  <b>Prevalence Index worksheet:</b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>10</u> (A)</td> <td><u>40</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>10</u> (A)	<u>40</u> (B)	Prevalence Index = B/A = <u>4.00</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>10</u>	x 4 = <u>40</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>10</u> (A)	<u>40</u> (B)																			
Prevalence Index = B/A = <u>4.00</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <u>  </u> 1 - Rapid Test for Hydrophytic Vegetation <u>  </u> 2 - Dominance Test is >50% <u>  </u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <u>  </u> X Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Lolium perenne</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  <b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>5</u>		20% of total cover: <u>2</u>																		
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____		20% of total cover: _____																		

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

area is nearly void of vegetation. Algal mattig observed

## 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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	95	10YR 4/2	5	D	M	Mucky Loam/Clay	
4-18	10YR 4/3	70	10YR 4/1	20	D	M	Loamy/Clayey	
			10YR 5/6	10	C	M		Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☒ No ☐

Remarks:

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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/14/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: UPL-4/5  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Flat Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.358492 Long: -89.831789 Datum: NAD83  
 Soil Map Unit Name: GaB: Grenada 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 X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> <b>Is the Sampled Area within a Wetland?</b> </td> <td style="width: 40%; padding: 5px;">           Yes _____ No <u>X</u> </td> </tr> </table>	<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>X</u>
<b>Is the Sampled Area within a Wetland?</b>	Yes _____ No <u>X</u>		
Remarks:  Data point taken in adjacent agricultural field between WTLs-4 and 5			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) <b>(LRR U)</b> _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) <b>(LRR T,U)</b>		
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"> <b>Wetland Hydrology Present?</b> </td> <td style="width: 40%; padding: 5px;">           Yes _____ No <u>X</u> </td> </tr> </table>	<b>Wetland Hydrology Present?</b>	Yes _____ No <u>X</u>
<b>Wetland Hydrology Present?</b>	Yes _____ No <u>X</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:  No positive wetland hydrology indicators in the agricultural field			

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

 Sampling Point: UPL-4/5

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>60</u></td> <td>x 4 = <u>240</u></td> </tr> <tr> <td>UPL species <u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>385</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.05</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>60</u>	x 4 = <u>240</u>	UPL species <u>20</u>	x 5 = <u>100</u>	Column Totals: <u>95</u> (A)	<u>385</u> (B)	Prevalence Index = B/A = <u>4.05</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>15</u>	x 3 = <u>45</u>																			
FACU species <u>60</u>	x 4 = <u>240</u>																			
UPL species <u>20</u>	x 5 = <u>100</u>																			
Column Totals: <u>95</u> (A)	<u>385</u> (B)																			
Prevalence Index = B/A = <u>4.05</u>																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Digitaria sanguinalis</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>_____</u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Setaria viridis</u>	<u>20</u>	<u>Yes</u>	<u>UPL</u>																	
3. <u>Andropogon virginicus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Plantago major</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. <u>Lolium perenne</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>48</u> 20% of total cover: <u>19</u>																				
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Hydrophytic Vegetation Present?</b> Yes <u>_____</u> No <u>X</u>																				

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

## SOIL

Sampling Point: UPL-4/5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	7.5YR 3/3	100					Loamy/Clayey	
3-18	7.5YR 4/4	95	10YR 5/6	5	C	M	Loamy/Clayey	Distinct redox concentrations
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.								
<sup>2</sup> Location: PL=Pore Lining, M=Matrix.								
<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>					<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>			
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR S, T, U</b> )					
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)					
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> ( <b>MLRA 153B, 153D</b> )					
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR O</b> )					
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)					
<input type="checkbox"/> Organic Bodies (A6) ( <b>LRR, P, T, U</b> )			<input type="checkbox"/> Depleted Matrix (F3)					
<input type="checkbox"/> 5 cm Mucky Mineral (A7) ( <b>LRR P, T, U</b> )			<input type="checkbox"/> Redox Dark Surface (F6)					
<input type="checkbox"/> Muck Presence (A8) ( <b>LRR U</b> )			<input type="checkbox"/> Depleted Dark Surface (F7)					
<input type="checkbox"/> 1 cm Muck (A9) ( <b>LRR P, T</b> )			<input type="checkbox"/> Redox Depressions (F8)					
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Marl (F10) ( <b>LRR U</b> )					
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Ochric (F11) ( <b>MLRA 151</b> )					
<input type="checkbox"/> Coast Prairie Redox (A16) ( <b>MLRA 150A</b> )			<input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR O, P, T</b> )					
<input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR O, S</b> )			<input type="checkbox"/> Umbric Surface (F13) ( <b>LRR P, T, U</b> )					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Delta Ochric (F17) ( <b>MLRA 151</b> )					
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Reduced Vertic (F18) ( <b>MLRA 150A, 150B</b> )					
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149A</b> )					
<input type="checkbox"/> Dark Surface (S7) ( <b>LRR P, S, T, U</b> )			<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)					
<input type="checkbox"/> Polyvalue Below Surface (S8)			<input type="checkbox"/> ( <b>MLRA 149A, 153C, 153D</b> )					
<input type="checkbox"/> ( <b>LRR S, T, U</b> )			<input type="checkbox"/> Very Shallow Dark Surface (F22)					
			<input type="checkbox"/> ( <b>MLRA 138, 152A in FL, 154</b> )					
<b>Restrictive Layer (if observed):</b>								
Type: _____								
Depth (inches): _____								
			<b>Hydric Soil Present?</b> Yes ____ No <u>X</u>					
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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/15/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-6  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Drainage Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.363081 Long: -89.805513 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks:  The feature is located in a drainage depression within an active agricultural field			

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators</u> (minimum of one is required; check all that apply) _____ Surface Water (A1) _____ Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) <u>X</u> Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)		<u>Secondary Indicators</u> (minimum of two required) _____ Surface Soil Cracks (B6) <u>X</u> Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )	
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> 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-6

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>90</u></td> <td>x 1 = <u>90</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>130</u> (A)</td> <td><u>195</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>1.50</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>90</u>	x 1 = <u>90</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>130</u> (A)	<u>195</u> (B)	Prevalence Index = B/A = <u>1.50</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>90</u>	x 1 = <u>90</u>																			
FACW species <u>15</u>	x 2 = <u>30</u>																			
FAC species <u>25</u>	x 3 = <u>75</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>130</u> (A)	<u>195</u> (B)																			
Prevalence Index = B/A = <u>1.50</u>																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. <u>Salix nigra</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Toxicodendron radicans</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>25</u> 20% of total cover: <u>10</u>																				
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Toxicodendron radicans</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
2. <u>Scirpus atrovirens</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Carex vulpinoidea</u>	<u>15</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Pontederia cordata</u>	<u>20</u>	<u>Yes</u>	<u>OBL</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>																				
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																				

**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 <u>90</u>	x 1 = <u>90</u>
FACW species <u>15</u>	x 2 = <u>30</u>
FAC species <u>25</u>	x 3 = <u>75</u>
FACU species <u>0</u>	x 4 = <u>0</u>
UPL species <u>0</u>	x 5 = <u>0</u>
Column Totals: <u>130</u> (A)	<u>195</u> (B)
Prevalence Index = B/A = <u>1.50</u>	

**Hydrophytic Vegetation Indicators:**

1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0<sup>1</sup>

\_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1	10YR 3/1	100					Mucky Loam/Clay	
1-18	10YR 5/1	70	10YR 6/6	30	C	M	Loamy/Clayey	Prominent redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes \_\_\_\_\_ No \_\_\_\_\_

Remarks:

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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/15/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: UPL-6  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Flat Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.363970 Long: -89.804729 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u>
Remarks:  Data point taken in adjacent agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)	<u>Secondary Indicators (minimum of two required)</u> _____ 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) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   Remarks:  No positive wetland hydrology indicators in the agricultural field	

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

 Sampling Point: UPL-6

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>12</u></td> <td>x 3 = <u>36</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>30</u></td> <td>x 5 = <u>150</u></td> </tr> <tr> <td>Column Totals: <u>92</u> (A)</td> <td><u>386</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>4.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>12</u>	x 3 = <u>36</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>30</u>	x 5 = <u>150</u>	Column Totals: <u>92</u> (A)	<u>386</u> (B)	Prevalence Index = B/A = <u>4.20</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>12</u>	x 3 = <u>36</u>																			
FACU species <u>50</u>	x 4 = <u>200</u>																			
UPL species <u>30</u>	x 5 = <u>150</u>																			
Column Totals: <u>92</u> (A)	<u>386</u> (B)																			
Prevalence Index = B/A = <u>4.20</u>																				
50% of total cover: _____ 20% of total cover: _____																				
Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5 Feet</u> )																				
1. <u>Digitaria sanguinalis</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>_____</u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Setaria viridis</u>	<u>30</u>	<u>Yes</u>	<u>UPL</u>																	
3. <u>Andropogon virginicus</u>	<u>2</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Plantago major</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. <u>Lolium perenne</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>46</u> 20% of total cover: <u>19</u>																				
Woody Vine Stratum (Plot size: <u>30 Feet</u> )																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (If observed, list morphological adaptations below.)   																				

<sup>1</sup>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

## SOIL

Sampling Point: UPL-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 3/2	100					Loamy/Clayey	
3-18	10YR 4/3	85	10YR 5/6	15	C	M	Loamy/Clayey	Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/15/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: WTL-7  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Drainage Local relief (concave, convex, none): Concave Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.357857 Long: -89.807384 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____ Hydric Soil Present? Yes <u>X</u> No _____ Wetland Hydrology Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____
Remarks:  The feature is located in a drainage depression within an active agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators</u> (minimum of one is required; check all that apply) <u>X</u> Surface Water (A1) _____ Aquatic Fauna (B13) <u>X</u> High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) <u>X</u> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) <u>X</u> Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <u>X</u> Water-Stained Leaves (B9)	<u>Secondary Indicators</u> (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) <u>X</u> Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <u>X</u> FAC-Neutral Test (D5) _____ Sphagnum Moss (D8) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes <u>X</u> No _____ Depth (inches): <u>2</u> Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>0</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <u>X</u> 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-7

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer negundo</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>8</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>87.5%</u> (A/B)																
2. <u>Salix nigra</u>	<u>35</u>	<u>Yes</u>	<u>OBL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>80</u> =Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>50</u></td> <td>x 1 = <u>50</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>140</u></td> <td>x 3 = <u>420</u></td> </tr> <tr> <td>FACU species <u>15</u></td> <td>x 4 = <u>60</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>205</u> (A)</td> <td><u>530</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.59</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>50</u>	x 1 = <u>50</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>140</u>	x 3 = <u>420</u>	FACU species <u>15</u>	x 4 = <u>60</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>205</u> (A)	<u>530</u> (B)	Prevalence Index = B/A = <u>2.59</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>50</u>	x 1 = <u>50</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>140</u>	x 3 = <u>420</u>																			
FACU species <u>15</u>	x 4 = <u>60</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>205</u> (A)	<u>530</u> (B)																			
Prevalence Index = B/A = <u>2.59</u>																				
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>																				
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. <u>Acer negundo</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>      </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Salix nigra</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>25</u> =Total Cover																				
50% of total cover: <u>13</u> 20% of total cover: <u>5</u>																				
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Galium triflorum</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
2. <u>Toxicodendron radicans</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Campsis radicans</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>75</u> =Total Cover																				
50% of total cover: <u>38</u> 20% of total cover: <u>15</u>																				
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>																				
1. <u>Vitis rotundifolia</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>25</u> =Total Cover																				
50% of total cover: <u>13</u> 20% of total cover: <u>5</u>																				

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

## SOIL

Sampling Point: WTL-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	10YR 3/2	100					Loamy/Clayey	
3-18	10YR 5/2	70	10YR 6/6	30	C	M	Loamy/Clayey	Prominent redox concentrations
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							<sup>2</sup> Location: PL=Pore Lining, M=Matrix.	
<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b>							<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>	
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Thin Dark Surface (S9) <b>(LRR S, T, U)</b>				<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR O)</b>	
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Barrier Islands 1 cm Muck (S12)				<input type="checkbox"/> 2 cm Muck (A10) <b>(LRR S)</b>	
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> <b>(MLRA 153B, 153D)</b>				<input type="checkbox"/> Coast Prairie Redox (A16)	
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Mucky Mineral (F1) <b>(LRR O)</b>				<input type="checkbox"/> <b>(outside MLRA 150A)</b>	
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)				<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Organic Bodies (A6) <b>(LRR, P, T, U)</b>			<input checked="" type="checkbox"/> Depleted Matrix (F3)				<input type="checkbox"/> <b>(outside MLRA 150A, 150B)</b>	
<input type="checkbox"/> 5 cm Mucky Mineral (A7) <b>(LRR P, T, U)</b>			<input type="checkbox"/> Redox Dark Surface (F6)				<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(LRR P, T)</b>	
<input type="checkbox"/> Muck Presence (A8) <b>(LRR U)</b>			<input type="checkbox"/> Depleted Dark Surface (F7)				<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)	
<input type="checkbox"/> 1 cm Muck (A9) <b>(LRR P, T)</b>			<input checked="" type="checkbox"/> Redox Depressions (F8)				<input type="checkbox"/> <b>(MLRA 153B)</b>	
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Marl (F10) <b>(LRR U)</b>				<input type="checkbox"/> Red Parent Material (F21)	
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Depleted Ochric (F11) <b>(MLRA 151)</b>				<input type="checkbox"/> Very Shallow Dark Surface (F22)	
<input type="checkbox"/> Coast Prairie Redox (A16) <b>(MLRA 150A)</b>			<input type="checkbox"/> Iron-Manganese Masses (F12) <b>(LRR O, P, T)</b>				<input type="checkbox"/> <b>(outside MLRA 138, 152A in FL, 154)</b>	
<input type="checkbox"/> Sandy Mucky Mineral (S1) <b>(LRR O, S)</b>			<input type="checkbox"/> Umbric Surface (F13) <b>(LRR P, T, U)</b>				<input type="checkbox"/> Barrier Islands Low Chroma Matrix (TS7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Delta Ochric (F17) <b>(MLRA 151)</b>				<input type="checkbox"/> <b>(MLRA 153B, 153D)</b>	
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Reduced Vertic (F18) <b>(MLRA 150A, 150B)</b>				<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) <b>(MLRA 149A)</b>				<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	
<input type="checkbox"/> Dark Surface (S7) <b>(LRR P, S, T, U)</b>			<input type="checkbox"/> Anomalous Bright Floodplain Soils (F20)					
<input type="checkbox"/> Polyvalue Below Surface (S8)			<input type="checkbox"/> <b>(MLRA 149A, 153C, 153D)</b>					
<input type="checkbox"/> <b>(LRR S, T, U)</b>			<input type="checkbox"/> Very Shallow Dark Surface (F22)					
<input type="checkbox"/> <b>(MLRA 138, 152A in FL, 154)</b>								
<b>Restrictive Layer (if observed):</b>								
Type: _____								
Depth (inches): _____							Hydric Soil Present? Yes _____ 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: Millington Solar Farm City/County: Millington / Shelby Co. Sampling Date: 04/15/21  
 Applicant/Owner: Barge Design Solutions, Inc. State: TN Sampling Point: UPL-7  
 Investigator(s): F. Amatucci, N. Carmean Section, Township, Range: \_\_\_\_\_  
 Landform (hillside, terrace, etc.): Agricultural Field Local relief (concave, convex, none): Flat Slope (%): 0-1%  
 Subregion (LRR or MLRA): LRR P, MLRA 134 Lat: 35.357817 Long: -89.807239 Datum: NAD83  
 Soil Map Unit Name: Fm: Falaya silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
 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 <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks:  Data point taken in adjacent agricultural field	

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Aquatic Fauna (B13) _____ High Water Table (A2) _____ Marl Deposits (B15) ( <b>LRR U</b> ) _____ Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ 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) ( <b>LRR T,U</b> )
<b>Field Observations:</b> Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:  No positive wetland hydrology indicators in the agricultural field		

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

 Sampling Point: UPL-7

Tree Stratum (Plot size: <u>30 Feet</u> )	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	<b>Dominance Test worksheet:</b>  Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>3</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover				<b>Prevalence Index worksheet:</b>  <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>55</u></td> <td>x 3 = <u>165</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>325</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.42</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>55</u>	x 3 = <u>165</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>95</u> (A)	<u>325</u> (B)	Prevalence Index = B/A = <u>3.42</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>55</u>	x 3 = <u>165</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>95</u> (A)	<u>325</u> (B)																			
Prevalence Index = B/A = <u>3.42</u>																				
50% of total cover: _____ 20% of total cover: _____																				
<b>Sapling/Shrub Stratum (Plot size: <u>15 Feet</u> )</b>																				
1. <u>Acer negundo</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>8</u> 20% of total cover: <u>3</u>																				
<b>Herb Stratum (Plot size: <u>5 Feet</u> )</b>																				
1. <u>Digitaria sanguinalis</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)																
2. <u>Setaria pumila</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Eleusine indica</u>	<u>15</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Plantago major</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: <u>40</u> 20% of total cover: <u>16</u>																				
<b>Woody Vine Stratum (Plot size: <u>30 Feet</u> )</b>				<b>Definitions of Four Vegetation Strata:</b>  <b>Tree</b> – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  <b>Sapling/Shrub</b> – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  <b>Herb</b> – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  <b>Woody Vine</b> – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
50% of total cover: _____ 20% of total cover: _____																				
Remarks: (If observed, list morphological adaptations below.)				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____																

## SOIL

Sampling Point: UPL-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 3/2	100					Loamy/Clayey	
4-18	10YR 4/3	90	10YR 5/6	10	C	M	Loamy/Clayey	Distinct redox concentrations

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

<sup>3</sup>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.



# ATTACHMENT D – PHOTO SUMMARY

## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 1 of 24

### Photo: 1

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-1

**Lat:** 35.350056,

**Long:** -89.836155

Representative conditions of STR-1, facing upstream below the confluence of STR-4.



### Photo: 2

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-2

**Lat:** 35.350191,

**Long:** -89.840335

View downstream of STR-2 prior to entering the culvert crossing under Center College Road.





## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 2 of 24



**Photo: 3**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-3

**Lat:** 35.359109,

**Long:** -89.842119

Representative conditions of STR-3, facing upstream within the project study area.



**Photo: 4**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-4

**Lat:** 35.353326,

**Long:** -89.834936

Representative conditions of STR-4 downstream of the confluence of STR-5.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 3 of 24



**Photo: 5**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-5

**Lat:** 35.352012,

**Long:** -89.835939

Representative conditions of STR-5, facing upstream for the confluence with STR-4.



**Photo: 6**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-6

**Lat:** 35.358093,

**Long:** -89.827118

Representative conditions of STR-6, facing downstream in the northcentral portion of the project study area.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 4 of 24



**Photo: 7**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** STR-7

**Lat:** 35.352330,

**Long:** -89.826726

Representative conditions of STR-7, facing upstream from the confluence with STR-6 (Casper Creek).



**Photo: 8**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** STR-8

**Lat:** 35.365245,

**Long:** -89.803897

View of Big Creek entering the project study area to the north, facing downstream.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 5 of 24



**Photo: 9**

**By: N. Carmean**

**Date: April 15, 2021**

**Feature: STR-9**

**Lat: 35.356085,**

**Long: -89.806748**

Representative conditions of STR-9, facing upstream from the confluence with EPH-9.



**Photo: 10**

**By: N. Carmean**

**Date: April 15, 2021**

**Feature: STR-10**

**Lat: 35.360698,**

**Long: -89.815198**

Representative conditions of STR-10, facing upstream from the confluence with STR-11.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 6 of 24



**Photo: 11**

**By: N. Carmean**

**Date: April 15, 2021**

**Feature: STR-11**

**Lat: 35.360698,**

**Long: -89.815198**

Representative conditions of STR-11 below the confluence with STR-10, facing downstream.



**Photo: 12**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: STR-12**

**Lat: 35.358999,**

**Long: -89.842429**

Representative conditions of STR-12 below the confluence with EPH-2 and before the confluence with STR-3, facing downstream.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 7 of 24



**Photo: 13**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: EPH-1**

**Lat: 35.359409,**

**Long: -89.844613**

Representative conditions of EPH-1 above the connection with WTL-3, facing downstream.



**Photo: 14**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: EPH-2**

**Lat: 35.359273,**

**Long: -89.842734**

Representative conditions of EPH-2 above the confluence with EPH-3, facing downstream.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

Page 8 of 24



**Photo: 15**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: EPH-3**

**Lat: 35.359208,**

**Long: -89.842782**

Representative conditions of EPH-3 above the confluence with EPH-2, facing downstream.



**Photo: 16**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: EPH-4**

**Lat: 35.358720,**

**Long: -89.842234**

Representative conditions of EPH-4 above the confluence with EPH-2, facing Upstream. Note the large headcut at the start of the feature.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 17**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** EPH-5

**Lat:** 35.352384,

**Long:** -89.826192

Representative conditions of EPH-5 above the confluence with STR-7, facing upstream.



**Photo: 18**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** EPH-6

**Lat:** 35.352384,

**Long:** -89.826192

Representative conditions of EPH-6 above the confluence with STR-6, facing downstream.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 19**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** EPH-7

**Lat:** 35.364817,

**Long:** -89.804308

Representative conditions of EPH-7 from the confluence with Big Creek (STR-8), facing upslope.



**Photo: 20**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** EPH-8

**Lat:** 35.358582,

**Long:** - 89.807577

Representative conditions of EPH-8 prior to dissipating into WTL-7, facing downslope.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 21**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** EPH-9

**Lat:** 35.355906,

**Long:** -89.807133

Representative conditions of EPH-9 prior to the confluence with STR-9, facing downstream.



**Photo: 22**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** EPH-10

**Lat:** 35.363790,

**Long:** -89.815164

Representative conditions of EPH-10 prior to the confluence with STR-11, facing upstream.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 23**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-1**

**Lat: 35.350422,**

**Long: -89.840348**

Representative conditions of WWC-1 prior to converting to a stream (STR-2) at a headcut, facing upslope.



**Photo: 24**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-2**

**Lat: 35.359392,**

**Long: -89.843744**

Representative conditions of WWC-2 prior to converting to overland sheet flow below WTL-3, facing downslope.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 25**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** WWC-3

**Lat:** 35.356218,

**Long:** -89.831985

Representative conditions of WWC-3 north of Aycock Road, facing upslope.



**Photo: 26**

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** WWC-4

**Lat:** 35.352384,

**Long:** -89.829322

Representative conditions of WWC-4 adjacent to the agricultural field, facing downslope towards EPH-6. Note the presence of upland vegetation growing in the channel.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 27**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-5**

**Lat: 35.351603,**

**Long: -89.828973**

Representative conditions of WWC-5 prior to the confluence with EPH-6, facing downslope.



**Photo: 28**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-6**

**Lat: 35.346402,**

**Long: -89.831648**

Representative conditions of WWC-6 at mid channel, facing upslope.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 29**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-7**

**Lat: 35.346455,**

**Long: -89.831333**

Representative conditions of WWC-7 prior to the confluence with WWC-6, facing upslope towards the agricultural field.



**Photo: 30**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WWC-8**

**Lat: 35.353964,**

**Long: -89.834043**

Representative conditions of WWC-8 prior the culvert crossing under Center College Road, facing downslope from the agricultural field.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 31**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WWC-9

**Lat:** 35.362917,

**Long:** -89.804222

Representative conditions of WWC-9 prior to dropping down into Big Creek (STR-8), facing upslope. Note the high presence of leaf litter in the channel.



**Photo: 32**

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WWC-10

**Lat:** 35.355512,

**Long:** -89.819944

Representative conditions of WWC-10 from the project study area limit, facing upslope.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 33

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WWC-11

**Lat:** 35.363854,

**Long:** -89.815057

Representative conditions of WWC-11 from upslope of the EPH-10 confluence, facing downslope.



**Photo:** 34

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WWC-12

**Lat:** 35.360193,

**Long:** -89.805691

Representative conditions of WWC-12 prior to entering an agricultural field culvert pipe, facing downslope.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 35

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** WTL-1

**Lat:** 35.349943,

**Long:** -89.837867

Representative conditions of agricultural ditch WTL-1, facing north from Center College Road.



**Photo:** 36

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** WTL-2

**Lat:** 35.350802,

**Long:** -89.847768

Representative conditions of roadside ditch WTL-2, facing east along Center College Road.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 37**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WTL-3**

**Lat: 35.359390,**

**Long: -89.844342**

Representative conditions of the relic man-made pond portion of WTL-3 prior to converting to overland sheet flow, facing north.



**Photo: 38**

**By: N. Carmean**

**Date: April 14, 2021**

**Feature: WTL-4**

**Lat: 35.359226,**

**Long: -89.832670**

Representative conditions of the isolated WTL-4 prior to converting to overland sheet flow in the agricultural field, facing northwest.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 39

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** WTL-5

**Lat:** 35.357357,

**Long:** -89.829657

Representative conditions of the isolated WTL-5 within the agricultural field, facing northwest.



**Photo:** 40

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WTL-6

**Lat:** 35.363071,

**Long:** -89.805551

Representative conditions of agricultural ditch WTL-6, facing east.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 41

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WTL-7

**Lat:** 35.357472,

**Long:** -89.807289

Representative conditions of agricultural ditch WTL-7, facing north. Note the presence of reduced iron in the surface water.



**Photo:** 42

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** WTL Soils

**Lat:** --,

**Long:** --

Typical hydric soils observed in the wetland and certain stream features within the project study area.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 43

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** Agricultural Fields

**Lat:** 35.357164,

**Long:** -89.830954

Representative conditions of the agricultural fields within the project study area.



**Photo:** 44

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** Fragmented Woodland

**Lat:** 35.359059,

**Long:** -89.807604

Representative conditions of the fragmented woodland between agricultural fields.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo:** 45

**By:** N. Carmean

**Date:** April 14, 2021

**Feature:** Eastern Woodland

**Lat:** 35.359338,

**Long:** -89.844202

Representative conditions of observed woodland at the northeastern corner of the project study area.



**Photo:** 46

**By:** N. Carmean

**Date:** April 15, 2021

**Feature:** Big Creek Buffer

**Lat:** 35.364184,

**Long:** -89.804144

Representative conditions of the vegetative buffer and levee for Big Creek.



## Photo Summary

Summary of Environmental Features Millington, Shelby County, Tennessee

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**Photo: 47**

**By: N. Carmean**

**Date: April 15, 2021**

**Feature: PRT-3**

**Lat: 35.353270,**

**Long: -89.833620**

Representative conditions of observed potential bat roost tree with a large crack and crevice.



**Photo: 48**

**By: N. Carmean**

**Date: April 15, 2021**

**Feature: PRT-3**

**Lat: 35.36070,**

**Long: -89.815409**

Representative conditions of observed potential bat roost tree with some exfoliating bark.

# ATTACHMENT E – USFWS IPAC REPORT



# IPaC resource list

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

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

## Location

Shelby County, Tennessee



## Local office

Tennessee Ecological Services Field Office

☎ (931) 528-6481

📠 (931) 528-7075

446 Neal Street

Cookeville, TN 38501-4027

# Endangered species

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

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

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

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

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

Listed species<sup>1</sup> 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<sup>2</sup>).

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

**Indiana Bat** *Myotis sodalis***Endangered**

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/5949>

**Northern Long-eared Bat** *Myotis septentrionalis***Threatened**

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9045>

## Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

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

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general

public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

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

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

**American Kestrel** *Falco sparverius paulus*

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9587>

Breeds Apr 1 to Aug 31

**Prothonotary Warbler** *Protonotaria citrea*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Apr 1 to Jul 31

**Red-headed Woodpecker** *Melanerpes erythrocephalus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

**Rusty Blackbird** *Euphagus carolinus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

**Wood Thrush** *Hylocichla mustelina*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Aug 31

## Probability of Presence Summary



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

### Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

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

### Breeding Season (■)

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

### Survey Effort (|)

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

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

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

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



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

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

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

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

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

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

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

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

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

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

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

### What are the levels of concern for migratory birds?

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

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

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

### Details about birds that are potentially affected by offshore projects

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

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

### What if I have eagles on my list?

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

### Proper Interpretation and Use of Your Migratory Bird Report

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

## Facilities

### National Wildlife Refuge lands

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



THERE ARE NO REFUGE LANDS AT THIS LOCATION.

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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 tubercid 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.

NOT FOR CONSULTATION

# ATTACHMENT F – USFWS BAT HABITAT DATA FORMS

# APPENDIX A: PHASE I HABITAT ASSESSMENTS

## INDIANA BAT HABITAT ASSESSMENT DATASHEET

Project Name: Silicon Ranch - Millington II Solar Farm Date: April 14, 21  
 Township/Range/Section: Millington, Shelby Co, TN  
 Lat Long/UTM/ Zone: 35.358465°, -89.825685° (NAD83) Surveyor: FCT, NJC

### Brief Project Description

Property is currently utilized for agriculture with production of corn, soy & wheat. The landuse will be proposed for conversion to solar farm

### Project Area

	Total Acres	Forest Acres		Open Acres
Project	968 combined	~ 51.18		~ 916.82
Proposed Tree Removal (ac)	Completely cleared	Partially cleared (will leave trees)	Preserve acres-no clearing	
	—	UNK	UNK	

### Vegetation Cover Types

Pre-Project	Post-Project
Agricultural Field	Solar Farm Arrays
Mature Riparian Corridor	For Lively to remain
Mixed Growth Forest	Partial conversion
Early Successional Forest	Partial Conversion
Fence Row/AG Field Hedge Row	Partial Conversion

### Landscape within 5 mile radius

#### Flight corridors to other forested areas?

Surrounding landscape is mostly Ag fields, Adjacent Military Base, Existing Solar Farm, & Fragmented Riparian Forests (Big Creek)

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

Agricultural, residential, commercial, Federal Base, Riparian Forest and associated Floodplain

### 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)?

> 1 mile to Naval Base

~ 10 miles from Meeman-~~State~~ Shelby State Park

Isolated Trees — Partial Conversion



# APPENDIX A: PHASE I HABITAT ASSESSMENTS

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

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area

A single sheet can be used for multiple sample sites if habitat is the same

Sample Site Description	
Sample Site No.(s)	Mature Riparian Forest (Marginal) 2135- acres

Water Resources at Sample Site				Describe existing condition of water sources: Big Creek Casper Creek
Stream Type (# and length)	Ephemeral	Intermittent (2)	Perennial (2) 10, 270 ft	
Pools/Ponds (# and size)		Open and accessible to bats? Yes		
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%
	5	2	1	
Dominant Species of Mature Trees	Sycamore, OAK, Box Elder, Willow, Ash, Cottonwood			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (2-8 in)	Med (9-15 in)	Large (>15 in)	
	15	25	60	
No. of Suitable Snags	2			

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 (Roosting)

Additional Comments:

The mature riparian forest was observed along the banks & floodplains of Big Creek & Casper Creek. Little to no Agricultural disturbance observed

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

Photographic Documentation: habitat shots at edge and interior from multiple locations.

understory/midstory/canopy, examples of potential suitable snags and live trees, water sources

## APPENDIX A: PHASE 1 HABITAT ASSESSMENTS

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 Forest (Marginal) 6.44-acres

### Water Resources at Sample Site

Stream Type (# and length)	Epithermal (2) 213ft	Intermittent (2) 316-816	Perennial (2) 151-800	Describe existing condition of water sources:  Small creeks + Intermittent stream
Pools/Ponds (# and size)	Open and accessible to bats?			
Wetlands (approx. ac.)	Permanent	Seasonal		
	X 0.07			

### Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	4	6	2	
Dominant Species of Mature Trees	Ash, Oak, Willow, Sycamore			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	10	55	35	
No. of Suitable Snags	2			

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 (Roosting)

### Additional Comments:

Mixed growth forest was observed between early successional + semi-mature growth stages  
Foraging + mist net surveys can be performed in select spots

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

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

# APPENDIX A: PHASE I HABITAT ASSESSMENTS

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):

Early Successional Forest (Poor) 9.87-acres

## Water Resources at Sample Site

Stream Type (# and length)	Ephemeral (2) 646	Intermittent (1) 1,274	Perennial (2) 400+	Describe existing condition of water sources:  Small creeks with overlapping vegetation
Pools/Ponds (# and size)	—	Open and accessible to bats?		
Wetlands (approx. ac.)	Permanent	Seasonal		
		(1) 0.06		

## Forest Resources at Sample Site

Closure/Density	Canopy (> 50')	Midstory (20-50')	Understory (<20')	1=1-10%, 2=11-20%, 3=21-40%, 4=41-60%, 5=61-80%, 6=81-100%
	1	24	5	
Dominant Species of Mature Trees	Willow, oak, Walnut, Ash, Box elder			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	4	5	1	
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? Unlikely

## Additional Comments:

The early successional forest is a young growth stage woodland, or an area that is frequently disturbed by the surrounding landscape.  
Mist net surveys & foraging ~~is~~ would be very difficult.

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

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



# APPENDIX A: PHASE I HABITAT ASSESSMENTS

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

Include a map depicting locations of sample sites if assessing discrete habitats at multiple sites in a project area

A single sheet can be used for multiple sample sites if habitat is the same

## Sample Site Description

Sample Site No. (s):

Fence Row / Ag Field Hedge Row (Poor) 10.76-acres

## Water Resources at Sample Site

Stream Type (# and length)	Ephemeral —	Intermittent (1) 867	Perennial (2) 2200	Describe existing condition of water sources:  small creeks + streams that are overlapped by vegetation
Pools/Ponds (# and size)		Open and accessible to bats? N/A		
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%
	1	3	6	
Dominant Species of Mature Trees	Oak, Box elder, willow, Sycamore, Privet honeysuckle			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 in)	Med (9-15 in)	Large (>15 in)	
	5	4	1	
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? unlikely

## Additional Comments:

This community was typically observed along edges of Ag fields or Road ways.

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

Photographic Documentation: habitat shots at edge and interior from multiple locations;

understory/midstory/canopy; examples of potential suitable snags and live trees; water sources



## APPENDIX A: PHASE I HABITAT ASSESSMENTS

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):

Isolated Trees (Marginal to Poor) (2.06 & 0.70 acres respectively)

### Water Resources at Sample Site

Stream Type (# and length)	Ephemeral —	Intermittent —	Perennial —	Describe existing condition of water sources:  Isolated large & small trees
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%
	N/A			
Dominant Species of Mature Trees	Oak			
% Trees w/ Exfoliating Bark	N/A			
Size Composition of Live Trees (%)	Small (3-8 m)	Med (9-15 m)	Large (>15 m)	
	N/A			
No. of Suitable Snags		1		

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

IS THE HABITAT SUITABLE FOR INDIANA BATS?

Likely (Roosting)

### Additional Comments:

Isolated stands of mature and young trees. One(1) of which was identified as a PRT.

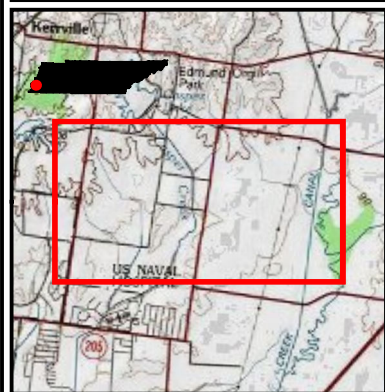
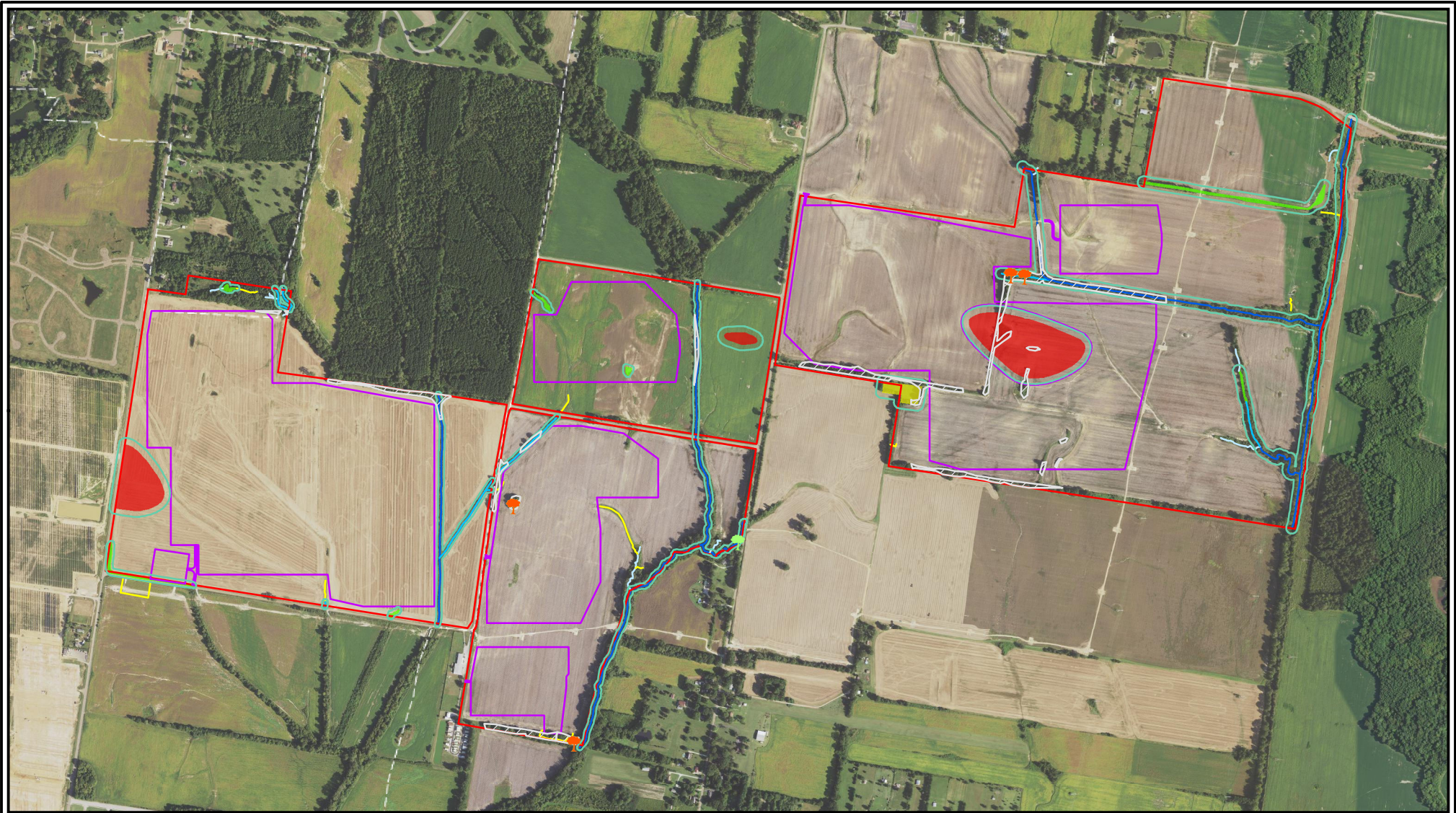
Attach aerial photo of project site with all forested areas labeled and a general description of the habitat

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

## **Appendix D**

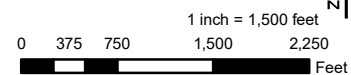
### **Tree Clearing Map and Bat Habitat Map**





- |  |  |
|--|--|
| Potential Bat Roost Tree to Remain     | Saint James Cemetery                         |
| Potential Bat Roost Tree to be Removed | NRHP Underdetermined Archaeological Resource |
| Delineated Wetland                     | Sensitive Resource Buffer                    |
| Wet Weather Conveyance                 | Solar Array Tree Clearing Area               |
| Ephemeral Stream                       | Millington II Project Boundary               |
| Intermittent Stream                    | Millington II Property Boundary              |
| Perennial Stream                       | POI Easment                                  |

Basemap: USA NAIP Imagery  
Source Data:



PROJECT: Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

TITLE: **AREA OF POTENTIAL  
TREE CLEARING MAP**

PROJ NO: 3609515

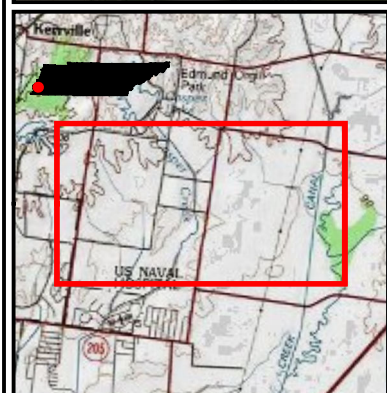
DATE: January 2022

**FIGURE 1**

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







#### Potential Bat Roost Tree

##### Habitat Value

- Exceptional
- Good
- Marginal
- Poor

#### Bat Habitat Woodlands

##### Quality

- Good
- Marginal
- Poor

- Solar Array Tree Clearing Area
- Millington II Project Boundary
- Millington II Property Boundary
- POI Easment

Basemap: USA NAIP Imagery  
Source Data: TN Streets

1 inch = 1,500 feet  
0 375 750 1,500 2,250 Feet

PROJECT:  
Silicon Ranch Corporation  
Millington II Solar Project  
Millington, Shelby County, Tennessee

#### TITLE: AREA OF POTENTIAL BAT HABITAT TREE CLEARING MAP

PROJ NO: 3609515

DATE: January 2022

FIGURE 2

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

**SILICON RANCH**



## **Appendix E**

### **U.S. Fish and Wildlife Service Consultation Information**



## Tennessee Ecological Services Field Office

FWS Log No: 2022-0035491

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.

**DANIEL ELBERT**

Digitally signed by DANIEL ELBERT  
Date: 2022.05.26 13:43:17 -05'00'

Field Supervisor

Date



400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 25, 2022

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) – SR MILLINGTON II, LLC (SR  
MILLINGTON II) SOLAR PROJECT – REQUEST FOR CONCURRENCE**

Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) SR Millington II, a wholly owned subsidiary of Silicon Ranch Corporation (SRC), to purchase the electric power generated by a proposed solar photovoltaic (PV) facility in Shelby County, Tennessee. The proposed solar facility would be owned by SRC, operated by SR Millington II, and would have an installed capacity of 74.9 megawatts. The solar facility would consist of arrays of monofacial PV modules attached to ground-mounted single-axis trackers, inverters, generators, transformers, and a substation. The solar facility would require an overhead transmission line (TL) connecting the proposed 161-kiloVolt (kV) TL to the TVA system. TVA proposes to tap the existing Millington Solar, Tennessee 161-kV substation tap line on the Shelby-Drummonds 161-kV TL. Three new poles would be installed in the existing tap line right-of-way (ROW) so that no additional ROW would be acquired. The solar facility and associated Electrical Interconnection are herein referred to as the "Project Site". Under the terms of the PPA, TVA would purchase the electric output from the solar facility for an initial term of 20 years, subject to satisfactory completion of all applicable environmental reviews.

The proposed solar PV facility would occupy approximately 472 acres of a 957-acre project site. Approximately 94.6% (905) acres of the project site are agricultural fields, pastures, or otherwise cleared, open land, while approximately 5.4% (52 acres) of the project site are forested. Approximately 14 acres of forest of the existing acres is proposed for removal. More details about the scope and potential impacts of this project can be found in the draft Environmental Assessment (EA) available online <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/sr-millington-ii-solar-facility>. See Appendix B in the EA link above for habitat assessment, figures, photos, and wildlife survey results.

A review of the TVA Regional Natural Heritage database and the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) website identified six species listed as federally endangered, threatened, candidate for listing, or delisted and monitored under the Endangered Species Act that have the potential to occur within the

project site in Shelby County, Tennessee. These species include one insect (monarch butterfly), three birds (bald eagle, interior least tern, and piping plover) and two mammals (Indiana bat and northern long-eared bat (NLEB) that have the potential to occur within Shelby County 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 site; therefore, no adverse modification of critical habitats would occur.

Field surveys were conducted by biologists from Barge Design Solutions in April 2021 to determine whether suitable habitat for federally listed species occurs within the project site. On site surveys identified 52.16 acres of forest, seven wetlands, five perennial streams, seven intermittent streams, ten ephemeral streams, and 12 wet weather conveyances. Approximately 0.13 acres of wetland would be impacted to accommodate fill for the proposed substation on-site. Thirty-foot buffers would be established around avoided wetlands within the Casper Creek watershed and 60-foot buffers would be established around the avoided wetlands in the Big Creek watershed. No tree clearing in wetlands or wetland buffers is proposed. One potential stream impact to an unnamed perennial stream would be required to accommodate an interior access road. There is currently a culvert and dirt road crossing of the stream which may require modifications to accommodate the access roadway. Four temporary stream impacts would be required to install proposed feeder lines which would provide an electrical connection generated from the solar panels to the TVA TL. The feeder lines would be buried underground, potentially through jack and bore, or open cut trench. If trenching is determined the best method, the disturbed area would be returned to preexisting contours following construction. Stream crossings, to the extent practicable, would occur perpendicular to the stream. All work impacting streams would be conducted in compliance with Clean Water Act Section 401 and 404 permits and best management practices (BMPs) for stream crossings would be implemented to minimize impacts.

Under the Proposed Action Alternative, SR Millington II would clear approximately 14 acres of trees within the 957-acre project footprint to accommodate the proposed solar facility and reduce shading on the panels. Field surveys conducted in April 2021 used the 2020 Range-Wide Indiana Bat Summer Survey Guidelines to evaluate the habitat suitability of this forest for summer roosting by Indiana bat and NLEB. Approximately six acres of the forest proposed for clearing was identified as marginal quality habitat, consisting of mature riparian forest impacted by historic agricultural practices and channelization of perennial streams. The remaining approximate eight acres was identified as poor-quality habitat that consisted of early successional forest with a high presence of shrubs, saplings, and vines. This habitat was also influenced by heavy ongoing agricultural land uses. Due to the high density of clutter, travel by bats through these areas would be extremely difficult. No caves or other winter roosting structures were identified on the project site. Of the forested habitat identified, only the habitat characterized as marginal quality would be considered suitable for summer roosting and



foraging. The wetlands, streams, and remaining poor quality forested areas offer suitable foraging habitat for listed bat species.

The closest known Indiana bat record is a summer record over 50 miles away in Holly Springs National Forest, in Mississippi. The closest known NLEB record is a Summer 1 record approximately 8.2 miles away in Tipton County, Tennessee. No known hibernacula or maternity sites for Indiana bat occur within ten miles of the project site. No known hibernacula or maternity roosts for NLEB occur within five miles of the project site.

Approximately six acres of suitable summer roosting habitat and foraging habitat for Indiana bat and NLEBs would be removed. Tree removal is proposed to occur in winter (October 15 - March 31) when federally listed tree roosting bats are not expected to be out on the landscape. BMPs would be used around bodies of water, minimizing sedimentation and changes to hydrology. Due to the lack of impacts to potential hibernacula, distance from known records, and winter tree removal, TVA has determined that proposed actions may affect but are not likely to adversely affect (NLAA) Indiana bat and NLEB.

While there are no Section 7 requirements for monarch butterfly as a candidate species, it is identified in IPaC as a species that could occur within the Project Site. Monarch butterflies were not noted during field surveys completed by Barge biologists in April 2021. Approximately 94.6% of the project site consists of agricultural fields used for or soy or corn. Milkweed were not a dominant species observed or recorded within the project site. Due to the small amount of potentially suitable habitat that currently occurs on site, proposed actions would not jeopardize the continued existence of monarch butterfly. Following construction flowering seed mix would be placed in designated disturbed areas, which may provide more flowering plants than previously occurred on site. Proposed actions may ultimately benefit this species by providing suitable host plants and foraging habitat.

The interior least tern and piping plover were listed as potentially occurring the project area. Both species are typically located along the coastal areas of the Mississippi River. The closest known records are approximately 15 miles away on the banks of the Mississippi River. Approximately 0.13 acres of a roadside ditch PEM wetland would be impacted by the proposed project. This wetland is filled with vegetation, has steep banks covered in vegetation, and lacks any sandy or mud shoreline. Suitable habitat for these species does not occur on the project site. TVA has determined that proposed actions would not impact interior least tern or piping plover.

No bald eagle nests were identified on site. Only one extant bald eagle nest is known from Shelby County, approximately 26 miles southwest of the project site. Suitable foraging habitat for this species does not exist on the project site. TVA has determined that proposed actions would not impact bald eagle.

Mr. Daniel Elbert  
Page 4  
April 25, 2022

We respectfully request concurrence with our determination. Should you have any questions or wish to discuss the project in more detail, please contact Elizabeth Hamrick by email, [ecburton@tva.gov](mailto:ecburton@tva.gov).

Sincerely,

A handwritten signature in dark ink, appearing to read "W. Douglas White", is written over a light gray rectangular background.

W. Douglas White  
Manager  
Biological Compliance

EBH:ABM  
Enclosures



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Tennessee Ecological Services Field Office  
446 Neal Street  
Cookeville, TN 38501-4027  
Phone: (931) 528-6481 Fax: (931) 528-7075



In Reply Refer To:  
Project Code: 2022-0035491  
Project Name: TVA SR Millington II Solar Project

April 25, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

### To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

**Migratory Birds:** In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see <https://www.fws.gov/birds/policies-and-regulations.php>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see <https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

---



Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Migratory Birds
  - Wetlands
-

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Tennessee Ecological Services Field Office**

446 Neal Street

Cookeville, TN 38501-4027

(931) 528-6481

---

## Project Summary

Project Code: 2022-0035491

Event Code: None

Project Name: TVA SR Millington II Solar Project

Project Type: Power Gen - Solar

Project Description: Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA) SR Millington II, LLC (SR Millington II), a wholly owned subsidiary of Silicon Ranch Corporation (SRC), to purchase the electric power generated by a proposed solar photovoltaic (PV) facility in Shelby County, Tennessee. The proposed solar PV facility would occupy approximately 472 acres of a 957-acre Project Site. Approximately 94.6% (905) acres of the Project Site are agricultural fields, pastures, or otherwise cleared, open land, while approximately 5.4% (52 acres) of the Project Site are forested. Approximately 14 acres of forest of the existing acres is proposed for removal. Approximately six acres of suitable summer roosting habitat and foraging habitat for Indiana bat and NLEBs would be removed. Tree removal is proposed to occur in winter (October 15 - March 31) when federally listed tree roosting bats are not expected to be out on the landscape. Best management practices would be used around bodies of water, minimizing sedimentation and changes to hydrology. See consultation letter emailed to TennesseeES@fws.gov for more detailed scope information and impact analyses. Also see <https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/sr-millington-ii-solar-facility> for Environmental Assessment.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@35.35879205,-89.81442235751932,14z>



Counties: Shelby County, Tennessee

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## Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

- 
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is <b>final</b> critical habitat for this species. The location of the critical habitat is not available. Species profile: <a href="https://ecos.fws.gov/ecp/species/5949">https://ecos.fws.gov/ecp/species/5949</a>	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a>	Threatened

## Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Critical habitats

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

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# USFWS National Wildlife Refuge Lands And Fish Hatcheries

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 OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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# Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

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.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

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

NAME	BREEDING SEASON
American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA <a href="https://ecos.fws.gov/ecp/species/9587">https://ecos.fws.gov/ecp/species/9587</a>	Breeds Apr 1 to Aug 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

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NAME	BREEDING SEASON
<b>Rusty Blackbird</b> <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
<b>Wood Thrush</b> <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

## Probability Of Presence Summary

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

### Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

### Breeding Season (■)

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

### Survey Effort (|)

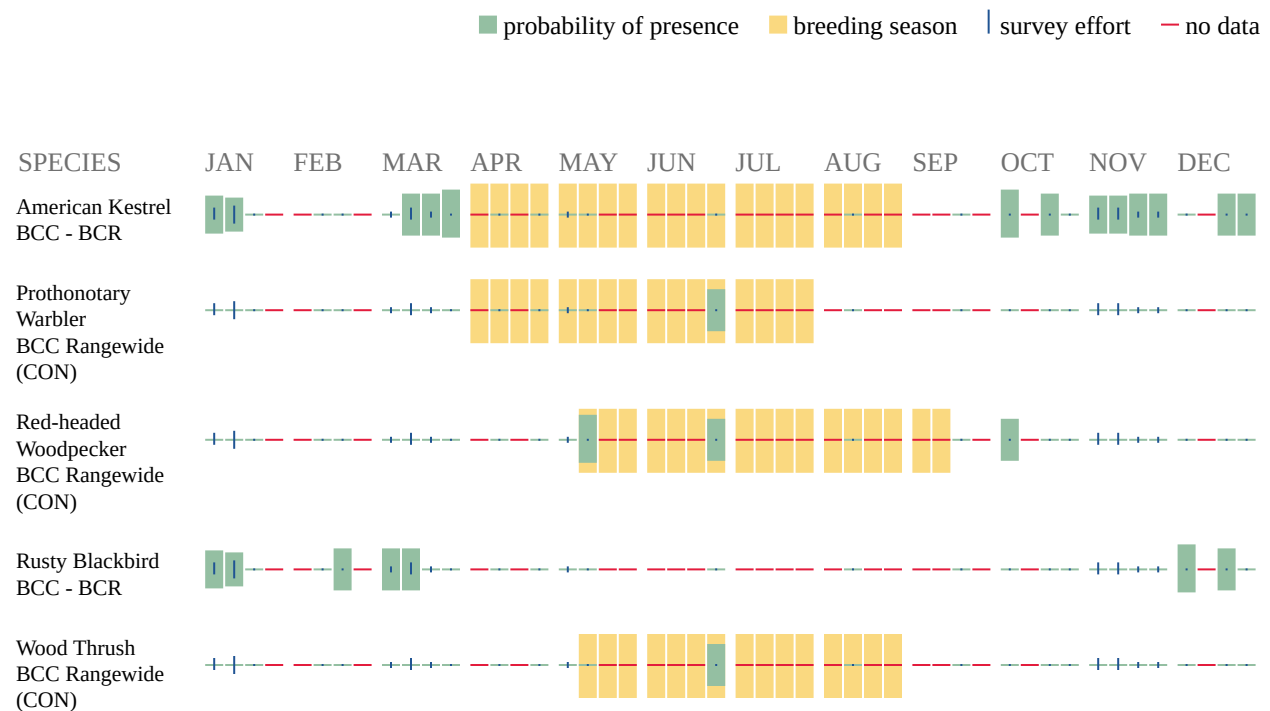
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

**No Data (—)**

A week is marked as having no data if there were no survey events for that week.

## Survey Timeframe

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



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-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

## Migratory Birds FAQ

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



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

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

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

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

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

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

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

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

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

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

### **What are the levels of concern for migratory birds?**

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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

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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.

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## Wetlands

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.  
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

---



## **IPaC User Contact Information**

Agency: Tennessee Valley Authority

Name: Elizabeth Hamrick

Address: 400 W Summit Hill Dr

City: Knoxville

State: TN

Zip: 37902

Email: [ecburton@tva.gov](mailto:ecburton@tva.gov)

Phone: 5034492373

---

**[EXTERNAL] RE: Request for Concurrence - TVA SR Millington II Solar Project, Shelby County**

Hamrick, Elizabeth Burton &lt;ecburton@tva.gov&gt;

Mon 4/25/2022 2:08 PM

To: Tennessee ES, FWS &lt;tennesseeES@fws.gov&gt;

Cc: Pelren, David &lt;david\_pelren@fws.gov&gt;; White, William Douglas &lt;wdwhite0@tva.gov&gt;; McCampbell, Amy Boardman &lt;aboardma@tva.gov&gt;; Davis, Brooke Alison &lt;badavis13@tva.gov&gt;

 2 attachments (609 KB)

Millington2Solar\_USFWS\_ConsultationLetter\_Final\_25April2022.pdf; TVA SR Millington II Species List\_ Tennessee Ecological Services Field Office\_ 04.25.2022.pdf;

**This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.**

Dear Mr. Elbert:

I received an automated reply from this Tennessee ES email address informing me of your new process for project submission. In response to these changes, I have created a project and submitted it in IPaC. The project code is 2022-0035491. Please see attached updated consultation letter with project name and code. Also attached is the project species list generated from defining the project in IPaC. If there is anything else required for proper Section 7 concurrence reviews please let me know.

Thank you!

**Liz Hamrick**

Terrestrial Zoologist

Biological Compliance



**W.** 865-632-4011 **M.** 503-449-2373 **E.** ecburton@tva.gov  
400 West Summit Hill Drive, Knoxville, TN 37902

**NOTICE:** This electronic message transmission contains information that may be TVA SENSITIVE, TVA RESTRICTED, or TVA CONFIDENTIAL. Any misuse or unauthorized disclosure can result in both civil and criminal penalties. If you are not the intended recipient, be aware that any disclosure, copying, distribution, or use of the content of this information is prohibited. If you have received this communication in error, please notify me immediately by email and delete the original message.

---

**From:** Hamrick, Elizabeth Burton**Sent:** Monday, April 25, 2022 1:46 PM

**To:** TennesseeES@fws.gov

**Cc:** David Pelren <david\_pelren@fws.gov>; White, William Douglas <wdwhite0@tva.gov>; McCampbell, Amy Boardman <aboardma@tva.gov>; Davis, Brooke Alison <badavis13@tva.gov>

**Subject:** Request for Concurrence - TVA SR Millington II Solar Project, Shelby County

Dear Mr. Elbert:

We respectfully request the review of and concurrence with our determinations regarding impacts to Indiana bat and northern long-eared bat for the proposed SR Millington II Solar project in Shelby County, Tennessee. Please see the attachment in this email for complete informal consultation package. Please don't hesitate to reach out for additional information.

Thank you!

**Liz Hamrick**

Terrestrial Zoologist

Biological Compliance



**W.** 865-632-4011 **M.** 503-449-2373 **E.** [ecburton@tva.gov](mailto:ecburton@tva.gov)

400 West Summit Hill Drive, Knoxville, TN 37902

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## **Appendix F**

### **SR Millington II Solar Glint and Glare Analysis**



# SR Millington II Solar Project

Barge Design Solutions, LLC

*Shelby County, Tennessee*

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*Glint & Glare Analysis*

October 29, 2021



Capitol Airspace Group

*capitolairspace.com*

*(703) 256 - 2485*

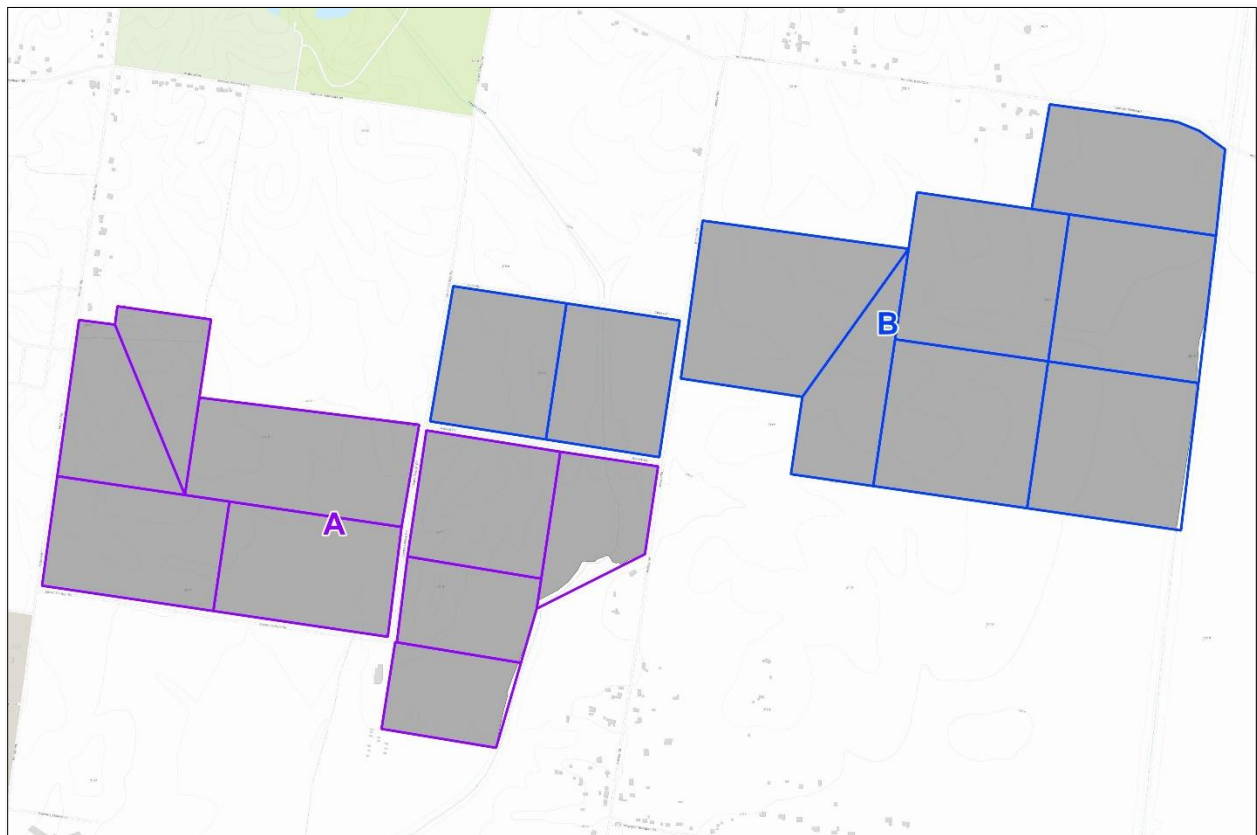


## Summary

Barge Design Solutions, LLC is proposing to construct solar arrays near the city of Millington in Shelby County, Tennessee (**Figure 1**). On behalf of Barge Design Solution, LLC, Capitol Airspace performed a glint and glare analysis utilizing the Solar Glare Hazard Analysis Tool (SGHAT) to identify the potential for glare impacts. Specifically, this analysis considered the potential for glare impacts on Millington-Memphis Airport (NQA) approach paths. Since Millington-Memphis Airport (NQA) has an air traffic control tower (ATCT), this analysis also considered the potential for impact on ATCT personnel. Additionally, this analysis considered the potential for glare impacts on nearby residences and roadways.

The results of the analysis indicate that there are no predicted glare occurrences for Millington-Memphis Airport (NQA) approaches or ATCT personnel as a result of the proposed single-axis tracking solar arrays. These results conform to, and are in accordance with, the Federal Aviation Administration's (FAA) policy for *Review of Solar Energy System Projects on Federally-Obligated Airports*.

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



**Figure 1: Location and identification of SR Millington II Solar project arrays**



## Methodology

In cooperation with the Department of Energy (DOE), the FAA developed and validated the Sandia National Laboratories SGHAT, now licensed through ForgeSolar. ForgeSolar has enhanced the SGHAT for glare hazard analysis beyond the aviation environment. These enhancements include a route module for analyzing roadways as well as an observation point module for analyzing residences. However, it should be noted that the SGHAT does not account for physical obstructions between reflectors and receptors.

The SGHAT analyzes the potential for glare over the entire calendar year in one-minute intervals from when the sun rises above the horizon until the sun sets below the horizon. The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. This analysis utilized the FAA approved default SGHAT setting which simulates the pilot's view from the cockpit. When the SGHAT identifies glare, the associated ocular impact is classified into three categories:

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

The FAA policy for *Review of Solar Energy System Projects on Federally-Obligated Airports* requires that the proposed solar project will not result in ocular impacts (no glare of any category) on the airport's ATCT cab. Although not required, the FAA encourages that off-airport solar energy systems in proximity to airports with ATCTs are assessed for potential ocular impact. Currently, there are no defined standards for acceptable ocular impact on residences or roadways.

## Data

Solar array specifications ([Table 1](#)) as well as location and height information were provided by Barge Design Solutions, LLC. Runway end coordinates, elevations, threshold crossing heights (TCH), and visual glidepath angles (VGPA) were obtained from the FAA National Flight Data Center (NFDC) National Airspace System Resource (NASR) dataset. When the NASR dataset did not contain this data, aerial imagery, the United States Geological Survey (USGS) 1/3 arc-second Digital Elevation Model (DEM), and the FAA approved defaults settings (TCH: 50, VGPA: 3.00 degrees) were used.

**Table 1: SR Millington II Solar project array specifications**

Parameter	Value
Unit Height	10 feet
Axis Tracking	Single-axis rotation
Tracking Axis Orientation	180°
Tracking Axis Tilt	0°
Tracking Axis Panel Offset	0°
Max Tracking Angle	±60°
Resting Angle	+60°
Panel Material	Smooth glass with anti-reflection coating
Reflectivity	Varies with sun
Slope Error	Correlates with material



## Results

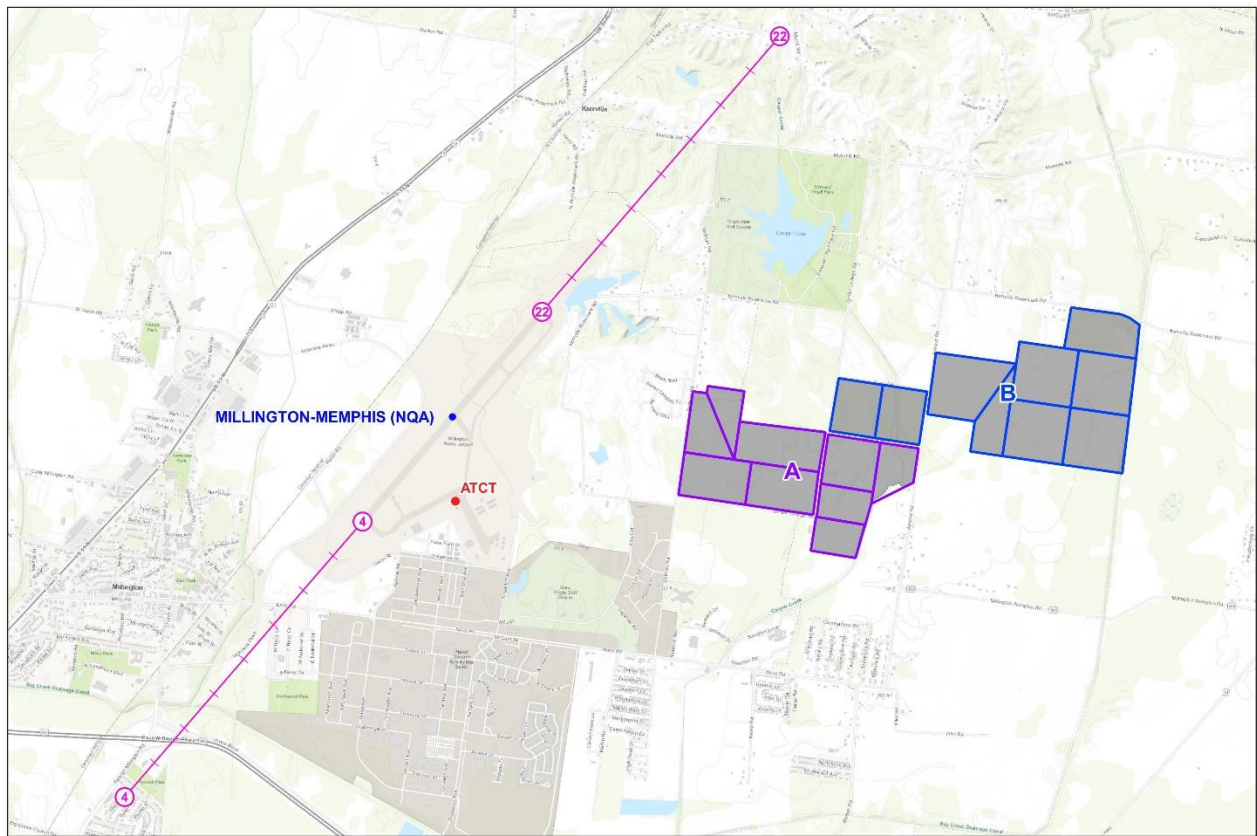
### Millington-Memphis Airport (NQA)

#### Runway 04/22

The SGHAT results do not predict glare occurrences along the Runway 07 or Runway 25 approach paths (hashed pink lines, [Figure 2](#)).

#### ATCT

The SGHAT results do not predict glare occurrences for ATCT (red point, [Figure 2](#)) personnel.



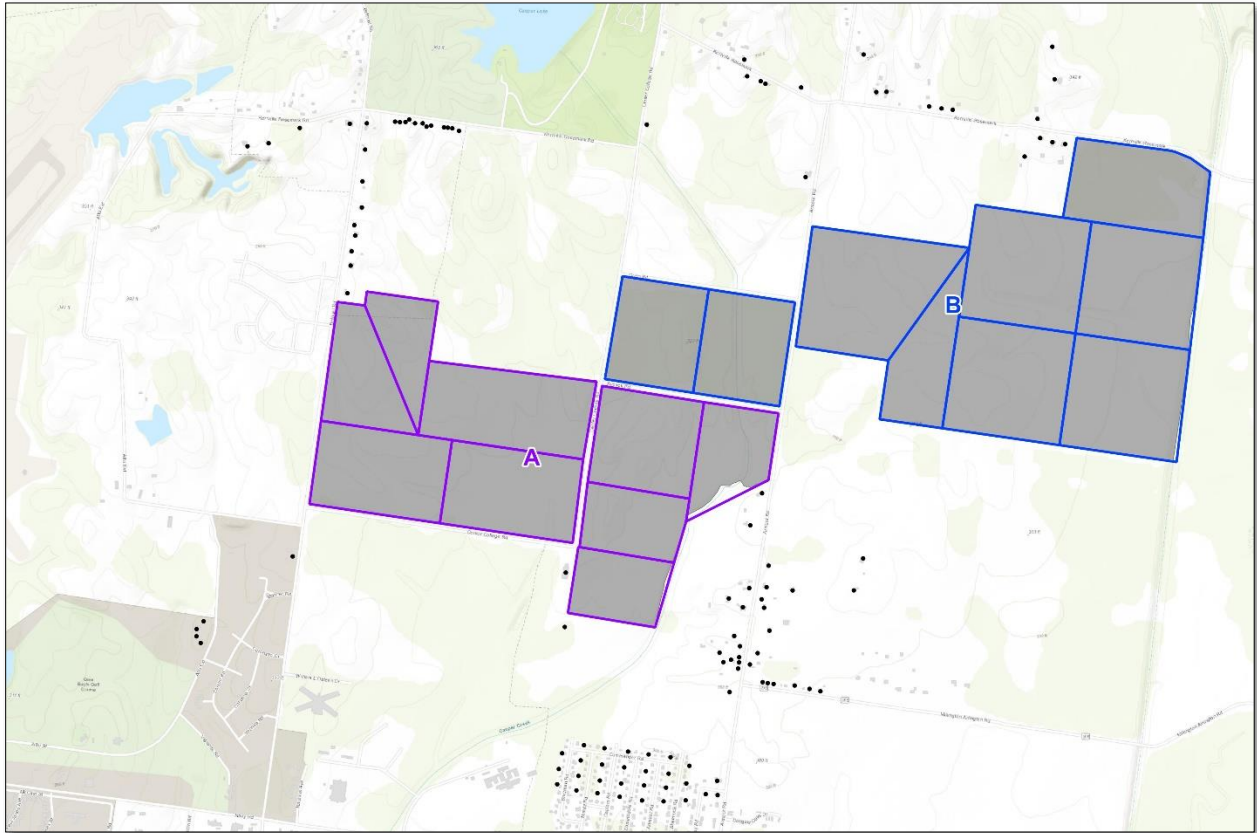
**Figure 2: Millington-Memphis Airport (NQA) approach paths (hashed pink lines) and ATCT (red point)**





## Residences

The SGHAT assessed the potential for glare occurrences at 111 discrete observation point receptors (black points, [Figure 3](#)). Each observation point was assessed at an eight-foot first story viewing height and a 16-foot second story viewing height. The SGHAT results do not predict glare occurrences for any of the 111 observation points at either viewing height as a result of single-axis tracking arrays.

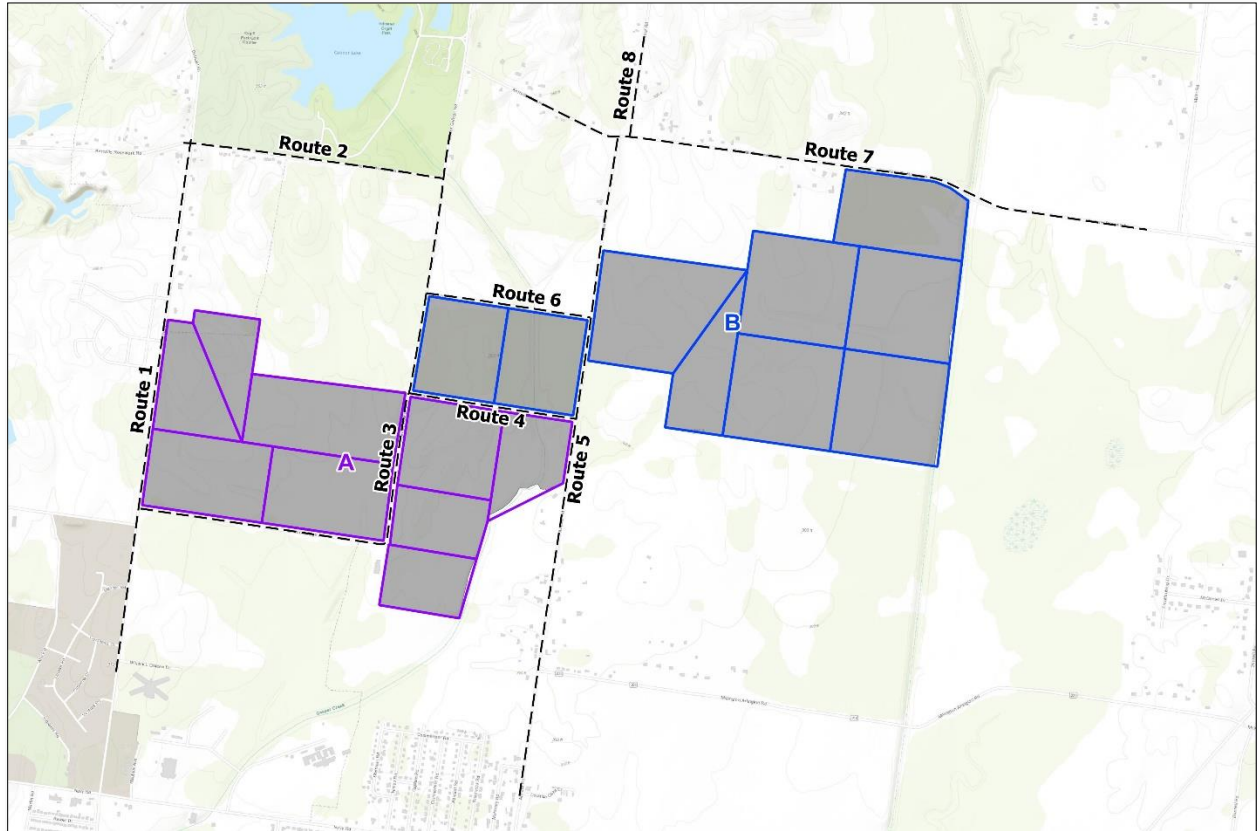


**Figure 3: Discrete observation point receptors (black points) in proximity to SR Millington II Solar project**



## Routes

The SGHAT assessed the potential for glare occurrences along eight route receptors (dashed black lines, [Figure 4](#)). Each roadway was assessed at a four-foot car viewing height and an eight-foot truck viewing height. The SGHAT results do not predict glare occurrences for any of the eight roadways at either viewing height as a result of single-axis tracking arrays.



**Figure 4: Roadway receptors (dashed black lines) in proximity to SR Millington II Solar project**



## Conclusion

The SGHAT does not predict any glare occurrences for Millington-Memphis Airport (NQA) approaches or ATCT personnel as a result of proposed single-axis tracking solar arrays ([Table 2](#)). These findings are compliant with the FAA policy for *Review of Solar Energy System Projects on Federally-Obligated Airports*.

Additionally, the SGHAT does not predict any glare occurrences for nearby residences or roadways as a result of single-axis tracking arrays. These results are based on the application of FAA glint and glare standards in the absence of non-aviation regulatory guidelines. As noted in the methodology, the glint and glare analysis does not consider vegetation, fencing, or other natural obstructions. This glint and glare analysis takes the most conservative approach in assessing the possibility of glare occurrences.

**Table 2: Annual glare occurrence summary**

Receptor	Green Glare (Hours:Minutes)	Yellow Glare (Hours:Minutes)	Red Glare (Hours:Minutes)
NQA – Runway 04	0:00	0:00	0:00
NQA – Runway 22	0:00	0:00	0:00
Residences (111)	0:00	0:00	0:00
Route 1	0:00	0:00	0:00
Route 2	0:00	0:00	0:00
Route 3	0:00	0:00	0:00
Route 4	0:00	0:00	0:00
Route 5	0:00	0:00	0:00
Route 6	0:00	0:00	0:00
Route 7	0:00	0:00	0:00
Route 8	0:00	0:00	0:00

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

## **Appendix G**

### **Cultural Resources Consultation Information**





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

March 21, 2022

Mr. James W. Osborne Jr.  
Tennessee Valley Authority  
400 West Summit Hill Drive  
Knoxville, TN 37902

RE: TVA / Tennessee Valley Authority, Architecture Review, Millington II Solar Project, CID 80351,  
Shelby County, TN

Dear Mr. Osborne:

In response to your request, we have reviewed the additional documentation submitted by you regarding the architecture review for 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).

Based on the information provided, we were unable to make a determination on the eligibility of the St. James CME Cemetery. African American cemeteries are very difficult to research due to the fact that they were historically ignored as important resources. It is often necessary to conduct extensive research in a variety of sources, including county cemetery records, newspapers, or oral histories with community or church members, in order to get enough information to definitively determine eligibility.

While African American cemeteries are difficult to research, there is a growing recognition among preservationists that they are an important resource representing the breadth of African American history, beyond the typical limited discussions of slavery, reconstruction, or Civil Rights. African American cemeteries are often the only resource that represent a community's history at a particular time, including people of the working class such as tenant farmers or sharecroppers, whose homes have largely been lost. Our office checked historic topographic maps and found that there were once numerous buildings in the vicinity of this cemetery, as well as other institutions associated with the African American community. These resources are mostly, if not completely, non-extant today. This documentation indicates that this cemetery may be the only resource left that could potentially represent the late 19<sup>th</sup> and early-to-mid-20<sup>th</sup> century history of the African American community in that area.

While the St. James CME Cemetery no longer retains a church on the lot and has few intact grave markers, these factors do not count against the cemetery when it comes to eligibility because both features are actually quite common for African American cemeteries in Tennessee. They are often a result of historic factors, including discrimination which often limited the ability of people to purchase or

make markers that would survive to the present day, or may be indicative of cultural practices that utilized other means of marking graves. The lack of a church does not inhibit the cemetery from potentially serving as a representation of a community's history.

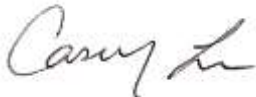
A cemetery may be found to be ineligible if there are enough non-historic graves that inhibit the site's ability to convey its history. While the new information provided indicated it was an active cemetery with new graves, there was no information on the number of newer graves or how this affects the integrity of the cemetery as a whole. Therefore, we could not conclude the cemetery is not eligible on the basis of new graves.

While the lack of information means that we cannot definitively say that the St. James CME Cemetery is eligible for listing under Criterion A, there are enough indications that it may be possible. Therefore, we recommend that the cemetery be treated as eligible for this project.

Your report indicates that a twenty (20) meter buffer will be enforced around the St. James Cemetery. Therefore, if that buffer is enforced and the existing vegetative screening is not disturbed, our office finds that the project will not adversely affect the St. James CME Cemetery.

This office has no objection to the implementation of this project as currently planned. If project plans are changed, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions and comments may be directed to Casey Lee (615) 253-3163. We appreciate your cooperation.

Sincerely,

A handwritten signature in dark ink, appearing to read "Casey Lee", is written over a faint, larger signature that appears to be "E. Patrick McIntyre, Jr.".

for: E. Patrick McIntyre, Jr.  
State Historic Preservation Officer

Casey Lee  
Historic Preservation Specialist/Coordinator  
Section 106 Review and Compliance Program  
Tennessee State Historic Preservation Office