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MOORE COUNTY SOLAR
FINAL ENVIRONMENTAL IMPACT STATEMENT
Moore County, Tennessee

Prepared by:
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

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Direct comments to:
Ashley Pilakowski, NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902
Phone: (865) 632–2256
E-Mail: aapilakowski@tva.gov

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COVER SHEET

Moore County Solar

Proposed action: Tennessee Valley Authority (TVA) proposes to execute a power purchase agreement, subject to satisfactory completion of all applicable environmental reviews, with SR Tullahoma, LLC (SR Tullahoma) for the power generated by the proposed 200-megawatt (MW) alternating current (AC) solar photovoltaic (PV) facility, known as Moore County Solar, in Moore County, Tennessee. The proposed solar facility would be connected to the TVA electrical transmission system by TVA and constructed, operated, and eventually decommissioned by SR Tullahoma.

Type of document: Final Environmental Impact Statement

Lead agency: Tennessee Valley Authority

Estimated Total Cost: $281,000 (TVA and NEPA contractor costs)

To request information, contact:
Ashley Pilakowski, NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902
Phone: (865) 632–2256
E-Mail: aapilakowski@tva.gov

Abstract:
In order to meet customer demand for increased renewable generation, TVA proposes to execute a power purchase agreement with SR Tullahoma to purchase 200 MWs AC of power generated by a proposed solar PV facility called Moore County Solar, located two miles west of the city of Tullahoma, within the metropolitan government limits of Lynchburg in Moore County, Tennessee. The solar facility would occupy approximately 1,873 acres of a 3,463-acre Project Site that is predominantly forested. Associated actions include the construction of an electrical substation and switchyard on the Project Site and the interconnection of the facility to an existing TVA transmission line that extends north-south through the site. SR Tullahoma would construct, operate, and maintain the facility for a 20-year period. This Environmental Impact Statement evaluates the environmental impacts of the Proposed Action, i.e., the construction, operation, maintenance, and decommissioning of Moore County Solar, and the No Action Alternative, under which SR Tullahoma would not develop a solar facility in this location, and TVA would meet customer renewable energy demand through other actions.

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SUMMARY

Purpose and Need for Action

In June 2019, the Tennessee Valley Authority (TVA) completed an Integrated Resource Plan (IRP) and associated Environmental Impact Statement (EIS) to determine how TVA will meet the demand for electricity in its service territory over the next 20 years, while achieving TVA's objectives to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts (TVA 2019a). The 2019 IRP recommends the expansion of solar generating capacity of up to 14 gigawatts by 2038, depending on the level of load growth and other factors. TVA proposes to execute a power purchase agreement (PPA) with SR Tullahoma, LLC (SR Tullahoma) to purchase 200-megawatt (MW) alternating current (AC) of power generated by a proposed solar photovoltaic (PV) facility called Moore County Solar, to help fulfill the renewable energy goals established in the 2019 IRP.

Alternatives

In this EIS, TVA assesses a No Action Alternative and a Proposed Action Alternative. Under the Proposed Action Alternative, TVA would purchase 200 MWs AC of power generated by Moore County Solar, a proposed solar PV facility located within the metropolitan limits of Lynchburg in Moore County, Tennessee, through a 20-year PPA with SR Tullahoma. The solar facility would occupy approximately 1,873 acres of a 3,463-acre Project Site that is predominantly forested, with some open agricultural areas. The facility would connect to TVA's existing adjacent Franklin–Wartrace No. 2 161-kilovolt (kV) transmission line (TL) that extends north-south through the Project Site. To interconnect to TVA's existing electrical grid, SR Tullahoma and TVA would build an on-site 161-kV substation and switchyard, respectively, and TVA would replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of the TL. SR Tullahoma would own, maintain, and operate the facility for up to a 20-year period, at which point decommissioning efforts would proceed or additional operating options would be considered. During the operation of the solar facility, SR Tullahoma would maintain a herd of sheep within temporarily fenced paddocks within the Project's fenced perimeter to help control the growth of tall vegetation, reduce mowing needs and risk of erosion, and help maximize plant and animal diversity.

Under the No Action Alternative, SR Tullahoma would not develop a solar facility in this location, and TVA would meet its renewable energy demand through other actions.

Affected Environment

The proposed solar PV facility would be located along Lynchburg Highway approximately two miles west of the city of Tullahoma, within the metropolitan government limits of Lynchburg in Moore County, Tennessee. The Project Site consists of flat to gently sloping forested land, much of which has been recently harvested, along with some wetland areas, croplands, and early successional fields. Rural single-family homes and small rural-residential concentrations surround the Project Site, while some commercial, industrial, and institutional developments are adjacent to highways that bisect or bound the Project Site. Several local roads, along with larger state roads and U.S. highways, provide access to the Project Site.

Current land uses include forest management, including timbering operations, and limited row cropping. The Project Site is underlain by both the surficial aquifer system and the Mississippian Carbonate Aquifer. Ponds, wetlands, three named streams (North Fork Blue

Creek, West Fork Rock Creek, and Hurricane Creek), and numerous unnamed streams associated with two watersheds are present on the Project Site. These habitats support a variety of terrestrial and aquatic species. Approximately 69.3 percent of the Project Site is composed of soils designated as prime farmland or farmland of statewide importance.

A total of 26 archaeological resources, consisting of eight archaeological sites and 18 isolated finds, were identified on the Project Site, and all of these were recommended as not eligible for listing on the National Register of Historic Places (NRHP) due to lack of integrity, significance, or both. One of these sites is a historical cemetery. The Project Site is situated on the World War II-era Motlow Range, an auxiliary training area for Camp Forrest. Motlow Range contained a series of firing ranges for light artillery, mortars, and machine guns and was decommissioned in 1946. The portion of Motlow Range within the Project Site does not contain mid-twentieth century deposits and is not considered eligible for the NRHP. A total of 12 architectural resources were identified on the Project Site or in the immediate vicinity. These consist of a former military training range (Motlow Range, also recorded as an archaeological site), the ruins of a mineral springs resort, two cemeteries (one of which is on site, the Old Jabel Ray Homeplace Cemetery, and was also recorded as an archaeological site), and two road corridors.

The Project is located in the Interior Plateau Level III ecoregion, and the Project Site is more specifically within the Eastern Highland Rim Level IV ecoregion. In the Project Site, the Eastern Highland Rim typically exhibits deep soils that support intensive row crop agriculture. Many of the flat areas on the Project Site that support wet deciduous forest fit the concept of the globally rare plant community Willow Oak - White Oak / Black Highbush Blueberry - (Possumhaw) / Barratt's Sedge Wet Forest community. This rare forest type is only found in the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma. Eight plant species listed as endangered, threatened, or of conservation concern in Tennessee occur on the Project Site: Barratt’s sedge, button sedge, dwarf sundew, slender blue flag, black footed quillwort, Virginia chain fern, iris leaved yellow-eyed grass, and Tennessee feather bells. Four of these species, button sedge, dwarf sundew, slender blue flag, and Tennessee feather bells, were also observed in the TL upgrade locations. Tennessee feather bells only occur in the state of Tennessee and are considered globally imperiled and at high risk for extinction. An undescribed species of borrowing crayfish of very limited distribution and the state-listed flame chub were also observed in streams on the Project Site.

A total of 32 U.S. Army Corps of Engineers (USACE)-jurisdictional perennial or intermittent streams, 18 USACE-jurisdictional ephemeral streams, 19 USACE-jurisdictional wetlands, and four USACE-jurisdictional open waters (ponds) were documented on the Project Site. The Project Site also includes the following non-USACE-jurisdictional waters: 18 ditches (also called wet weather conveyances), five open waters, and 11 wetlands. These waters are regulated by Tennessee Department of Environment and Conservation (TDEC). Five USACE-jurisdictional streams, two USACE-jurisdictional wetlands, and six non-USACE-jurisdictional ephemeral streams that are regulated by TDEC occur in the TL upgrade locations.

Environmental Consequences

Overall, with the implementation of minimization and mitigation efforts, environmental consequences associated with the Proposed Action Alternative would be minor to moderate.

During construction, minor, temporary increases to noise, traffic, and health and safety risks, as well as minor, temporary effects to air quality, greenhouse gas emissions, visual aesthetics, and utilities would occur. Construction and operations would have minor, localized effects on soil erosion and sedimentation and minor, beneficial, and indirect effects to surface waters and wetlands, floodplains, and aquatic life. Adverse effects would be minimized or mitigated by implementation of best management practices (BMPs) and specific mitigation measures. Following construction, the Project Site would be revegetated and maintained as a meadow with a mix of perennial and annual grasses and forbs to attract pollinators and serve as fodder for grazing sheep in the fenced areas of the Project. Beneficial effects to socioeconomics would also occur with construction and operation of the Project.

Impacts to USACE-jurisdictional waters would occur to approximately 396 linear feet of jurisdictional ephemeral streams for driving of pilings to support the solar array and approximately 0.54 acre of jurisdictional wetlands for road crossings and supports for the solar array. These impacts, and others identified in the course of Project planning, would be subject to Clean Water Act (CWA) Section 404 permitting by USACE. Based on the current layout, permanent fill for a road crossing and driving of solar array pilings would impact 7,366 LF of TDEC-jurisdictional ephemeral streams, 1.0 acre of TDEC-jurisdictional wetlands, and 1.5 acres of non-USACE-jurisdictional open waters on the Project Site. These impacts, and others identified in the course of Project planning, would be subject to CWA Section 401 permitting by TDEC. Compensatory mitigation may be required for these impacts to surface waters and wetlands, pending permit coordination with USACE and TDEC.

The Project would change land uses on the Project Site from primarily forest management, including timbering operations, and some agricultural activities to industrial uses. Regenerative agricultural practices planned in association with the Project (i.e., sheep operations) would allow for some agricultural uses to continue to occur on site. These would partially offset the primary change of land use to industrial uses.

Approximately 850 acres of trees and shrubby vegetation, representing 40 percent of the forested areas on the Project Site would be removed. Some buildings have the potential to be removed as a result of the Project. Limited trimming and limbing of trees along access roads may occur for the TL upgrades. Surface waters offer foraging habitat and sources of drinking water for federally protected bat species within and adjacent to the Project Site. These resources would mostly be avoided by the Project and protected with vegetated avoidance buffers. TVA consulted with the U.S. Fish and Wildlife Service regarding these findings and minimization and avoidance measures.

The Project has committed not to install Project components or conduct regenerative energy activities, including sheep operations or vegetation management, within areas known to support state-listed plant species or rare plant communities, in accordance with an Avoidance Agreement between SR Tullahoma and TVA. Also, per the Avoidance Agreement, the Project has committed not to install Project components within or immediately adjacent to habitat for the undescribed crayfish species, except for the installation of buried or overhead electrical lines within 50 feet of Raysville Road and Cumberland Springs Road.

Due to forested screening and its distance of 0.2 to 0.5 miles from the Project Site, the Project would not adversely affect the NRHP-eligible Motlow House, located adjacent to the Project Site. The Project would avoid the Old Jabel Ray Homeplace Cemetery by a

minimum 250-foot avoidance buffer and thus, not visually affect the cemetery. TVA consulted with the Tennessee Historical Commission and federally recognized Indian tribes under Section 106 of the National Historic Preservation Act regarding these findings and avoidance measures.

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Symbols, Acronyms, and Abbreviations

AADT	Annual average daily traffic
AC	Alternating current
ACS	American Community Survey
AEDC	Arnold Engineering Development Complex
AFB	Air Force Base
AMSL	Above mean seal level
APE	Area of Potential Effect
ARAP	Aquatic Resource Alteration Permit
BG	Block group
BMP	Best Management Practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO_2	Carbon dioxide
CO	Carbon monoxide
CT	Census Tract
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted decibels
DBH	Diameter at Breast Height
DC	Direct current
DREMC	Duck River Electric Membership Corporation
DWR	Division of Water Resources
EA	Environmental Assessment
EFO	Environmental Field Office
EIS	Environmental Impact Statement
EMF	Electromagnetic field
EO	Executive Order
ESA	Endangered Species Act
°F	Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
GHG	Greenhouse gas
HUC	Hydrologic unit code
IPaC	Information for Planning and Consultation
IRP	Integrated Resource Plan
kV	Kilovolt
L_{dn}	Day-night average sound level
LF	Linear feet
MBTA	Migratory Bird Treaty Act
MPT	Main power transformer
MVT	Medium voltage transformer
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLCD	National Land Cover Database

NRHP	National Register of Historic Places
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetland Inventory
NWP	Nationwide Permit
O_3	Ozone
OHGW	Overhead ground wire
OPGW	Fiber-optic overhead ground wire
OSHA	Occupational Safety and Health Administration
PGA	Peak ground acceleration
$PM_{2.5}$	Particulate matter whose particles are less than or equal to 2.5 micrometers
PM_{10}	Particulate matter whose particles are less than or equal to 10 micrometers
PPA	Power purchase agreement
PPE	Personal protective equipment
PRT	Potential roost trees
PV	Photovoltaic
RNHD	Regional Natural Heritage Database
RCRA	Resource Conservation and Recovery Act
RFFA	Reasonably Foreseeable Future Action
SHPO	State Historic Preservation Office
SO_2	Sulfur dioxide
SPCC	Spill Prevention, Countermeasure and Control
SR	State route
SRC	Silicon Ranch Corporation
SWPPP	Stormwater Pollution Prevention Plan
TAC	Tennessee Administrative Code
TCA	Tennessee Water Quality Control Act (Tennessee Code Annotated)
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
THC	Tennessee Historical Commission
TL	Transmission line
TRAM	Tennessee Rapid Assessment Method
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WMA	Wildlife Management Area
WQC	Water Quality Certification

CHAPTER 1 – PURPOSE AND NEED FOR ACTION

As part of its diversified energy strategy, the Tennessee Valley Authority (TVA) produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, fossil fuel, and nuclear. In June 2019, TVA completed an Integrated Resource Plan (IRP) and Environmental Impact Statement (EIS). The 2019 IRP, which updated the 2015 IRP, identified the various resources that TVA intends to use to meet the energy needs of the TVA region over a 20-year planning period, while achieving TVA's objectives to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts (TVA 2019a). The 2019 IRP recommends the expansion of solar generating capacity of up to 14,000 megawatts (MW) by 2038.

TVA proposes to execute a power purchase agreement (PPA), subject to satisfactory completion of all applicable environmental reviews, with SR Tullahoma, LLC (SR Tullahoma), a wholly owned subsidiary of Silicon Ranch Corporation (SRC), to purchase power from a solar photovoltaic (PV) facility known as Moore County Solar with a generating capacity of approximately 200 MWs alternating current (AC). Under the PPA, SR Tullahoma would construct, operate, and maintain Moore County Solar for up to a 20-year period. Together, these actions are referred to as the Project or Proposed Action. The Project would partially fulfill the renewable energy goals established in the 2019 IRP by providing cost-effective renewable energy. This EIS describes the potential environmental effects associated with constructing, interconnecting, operating, maintaining, and decommissioning Moore County Solar on a 3,463-acre Project Site in Moore County, Tennessee.

1.1 Background and Introduction

TVA is a self-financed, wholly owned corporate agency of the United States (U.S. or US) that serves a region comprising portions of Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia. As a public power entity, TVA has no shareholders and receives no appropriated funding. Under the TVA Act of 1933, as amended, Congress charged TVA with advancing the social and economic well-being of the residents of the Tennessee Valley region. The target power supply mix adopted by TVA in the 2019 IRP envisions solar generating capacity additions between 1,500 and 8,000 MW by 2028, and up to 14,000 MW by 2038, depending on load growth and other factors.

Components of the Proposed Action include SR Tullahoma's construction, operation, maintenance, and eventual decommissioning of the approximately 200-MW AC solar PV facility, known as Moore County Solar, on the Project Site. During the operation of the solar facility, SR Tullahoma would maintain a herd of sheep on the Project Site to help control the growth of tall vegetation and reduce mowing needs. The Project would connect to the existing adjacent TVA Franklin–Wartrace No. 2 161-kilovolt (kV) transmission line (TL) that extends north-south through the Project Site. To interconnect to the existing electrical grid, SR Tullahoma and TVA would build an on-site 161-kV substation and switchyard, respectively, and TVA would replace the existing overhead ground wire (OHGW) with new fiber-optic overhead ground wire (OPGW) along a 9.8-mile portion of the TL that extends into Coffee and Franklin counties (referred to herein as the TL upgrade locations). The Project Site is located along Lynchburg Highway approximately two miles west of the city of Tullahoma, within the metropolitan limits of Lynchburg in Moore County, Tennessee

(Figure 1-1). The Project Site is mostly forested land, much of which has been recently harvested, along with some wetland areas, croplands, and early successional fields.

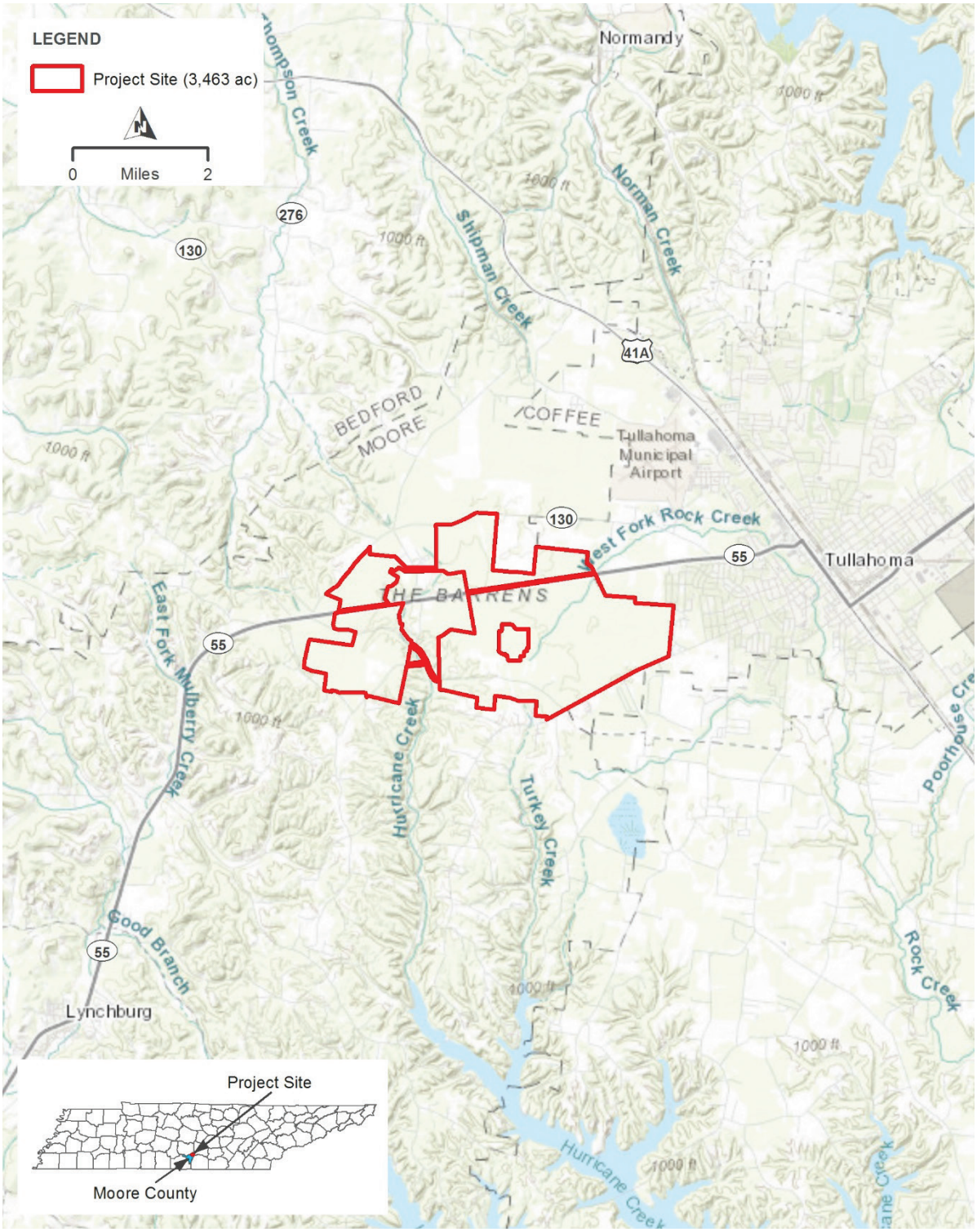

Figure 1-1. Moore County Solar Project Site

1.2 Decision to be Made

The decision before TVA is whether to purchase the power from the proposed Moore County Solar site, which would result in the construction, operation, maintenance, and eventual decommissioning of the proposed solar PV facility, as well as the construction, operation, and maintenance of a substation and associated facilities to interconnect the solar PV facility to TVA's existing electrical transmission network.

1.3 Scoping and Public Involvement

On May 3, 2021, in accordance with the National Environmental Policy Act (NEPA), TVA published a Notice of Intent (NOI) in the *Federal Register* announcing plans to prepare either an EIS or an environmental assessment (EA) to assess the potential environmental effects associated with constructing, operating, maintaining, and decommissioning the solar PV facility (Appendix B). The NOI initiated a 30-day public scoping period that concluded on June 4, 2021. The NOI solicited public input on the scope of the EIS and the environmental issues that should be considered in the EIS. The NOI also requested data, information, and analyses relevant to the Proposed Action. TVA sent notification of the NOI to local and state government entities and federal agencies, issued a Project news release in *Moore County News*, and posted the news release on the TVA website. TVA also sent the scoping notice via email to agencies and organizations.

During the scoping period, TVA received comments from the U.S. Geological Survey (USGS); U.S. Environmental Protection Agency (USEPA); Tennessee Natural Heritage Program, part of the Tennessee Department of Environment and Conservation (TDEC); Southeastern Grasslands Initiative; and two private individuals. Comments were related to purpose and need, agency coordination, alternatives, mitigation measures, land use, water resources, biological resources, air quality and greenhouse gas (GHG) emissions, socioeconomics, and environmental justice. Based on the comments received, as well as the results of field surveys and other considerations, TVA decided that the appropriate level of review for the Project is an EIS. The scoping report, along with comment summaries, full submissions, and TVA's responses, are included in Appendix B, and key information received is summarized in Chapter 4.

The U.S. Environmental Protection Agency (USEPA) published the notice of the availability of the draft EIS in the *Federal Register* on April 22, 2022. This initiated a 45-day public comment period that ended on June 6, 2022. TVA also notified the public of its availability via advertisements published in *Moore County News* and *Tullahoma News* (Appendix B), press releases and a notice on TVA's website. Notifications of its availability were also sent to interested individuals, groups, and federal, state and local agencies for their review and comment. A virtual public open house regarding the Project and the draft EIS was held on May 23, 2021 (Appendix B). Official public comments were encouraged to be sent in via email or TVA's website or by mailing to TVA.

TVA received comments from approximately 16 individuals or entities on the draft EIS. The topics addressed in the comments were air quality, greenhouse gas emissions, noise, waste management, alternatives, biological resources, decommissioning, environmental justice, operations, land use, public health and safety, utilities, visual resources, and water resources. TVA has carefully reviewed the comments and revised the text in this Final EIS as necessary in response to the comments. Appendix B of this Final EIS contains the comments on the draft EIS, as well as TVA's responses to those comments.

The scope of this EIS addresses the construction, operation, maintenance, and decommissioning of Moore County Solar and the associated modifications to the TVA electrical transmission network. This EIS (1) describes the existing environment in the project area (i.e., the potentially affected area within and beyond the Project Site and/or the TL upgrade locations and varies by each resource area), (2) analyzes potential environmental effects associated with the No Action and Proposed Action Alternatives, and (3) identifies and characterizes potential cumulative effects that could result from the Project in relation to other ongoing or reasonably foreseeable proposed activities within and surrounding the Project Site.

Based on internal and public scoping, identification of applicable laws, regulations, executive orders (EOs), and policies, TVA identified the resource areas listed below as requiring review within the EIS:

- Land Use
- Geology, Soils, and Prime Farmland
- Groundwater
- Surface Water and Wetlands
- Floodplains
- Vegetation
- Wildlife, including Migratory Birds
- Aquatic Life
- Threatened and Endangered Species
- Natural Areas, Parks, and Recreation
- Visual Resources
- Noise
- Air Quality and GHG Emissions
- Cultural Resources
- Utilities
- Waste Management
- Public Health and Safety
- Transportation
- Socioeconomics
- Environmental Justice

1.4 Regulatory Compliance, Permits, and Agency Coordination

This EIS was prepared by TVA in accordance with NEPA (42 U.S. Code [U.S.C.] §§ 4321 et seq.), the regulations implementing NEPA promulgated by the Council on Environmental Quality (CEQ; 40 Code of Federal Regulations [CFR] §§ 1500–1508, 1515-1518, as updated July 16, 2020), and TVA NEPA regulations and procedures, (18 CFR §§ 1318). Further, the EIS is consistent with the CEQ finalized rule amending certain provisions of its 2020 regulations (87 FR 23453, April 20, 2022).

Other federal laws or regulations, as well as some EOs and state laws or regulations are also relevant to the Proposed Action (Table 1-1). These laws and orders may affect the environmental consequences of the solar PV facility or represent measures to implement during Project construction, operation, maintenance, and/or decommissioning. Each resource area discussion in Chapter 3 briefly describes the regulatory setting for the particular resource.

Table 1-1. Laws, Regulations, and EOs Relevant to the Proposed Action

Environmental Resource Area	Law / Regulation / Executive Order
Geology, Soils, and Prime Farmland	Farmland Protection Policy Act (FPPA)
Water Resources	Clean Water Act (CWA)
	EO 11988 – Floodplain Management
	EO 11990 – Protection of Wetlands
	EO 14008 – Tackling the Climate Crisis at Home and Abroad
	Safe Drinking Water Act
Biological Resources	Rare Plant Protection and Conservation Regulations, Tennessee Administrative Code (TAC) Chapter 0400-06-02
	Rules of the Tennessee Wildlife Resources Agency (TWRA), TAC Chapter 1660-01-32
	Bald and Golden Eagle Protection Act
	Endangered Species Act (ESA)
	EO 13112 – Invasive Species
	EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds
	Migratory Bird Treaty Act
	EO 14008 – Tackling the Climate Crisis at Home and Abroad
Air Quality and GHG Emissions	Clean Air Act
	EO 14008 – Tackling the Climate Crisis at Home and Abroad
Cultural Resources	National Historic Preservation Act (NHPA)
	Native American Graves Protection and Repatriation Act
Waste Management	Comprehensive Environmental Response, Compensation, and Liability Act
	Emergency Planning and Community Right-to-Know Act
	RCRA
	Solid Waste Disposal Act
Public Health and Safety	Rules and Regulations for Accommodating Utilities within Highway Rights-of-Way, TAC Chapter 1680-6-1
	Occupational Safety and Health Act
	Safe, Efficient Use, and Preservation of the Navigable Airspace (14 CFR § 77)
Environmental Justice	EO 12898 – Federal Actions to Address Environmental Justice in Minority and Low-Income Populations
	EO 14008 – Tackling the Climate Crisis at Home and Abroad

The Proposed Action would also require a variety of federal and state permits, as well as certification for the proper installation of some project components, as presented in Table 1-2.

Table 1-2. Permits Relevant to the Proposed Action

Description/ Submittal	Agency	Authorization	Applicability	Timing	Notes/ Assumptions
404 Nationwide Permit Application	U.S. Army Corps of Engineers (USACE) Nashville District	CWA Section 404	Impacts to Wetlands & Waters (<0.5-acre wetland and/or <300 linear feet of stream)	45 days; typically, contingent on 401 Water Quality Certification	Pre-Construction Notification may be required; Compensatory mitigation may be required.
404 Individual Permit Application	USACE Nashville District	CWA Section 404	Impacts to Wetlands & Waters (≥0.5-acre wetland and/or ≥300 linear feet of stream)	6 to 12 months	Compensatory mitigation required.
401 Water Quality Certification Aquatic Resource Alteration Permit (ARAP) Application	TDEC Division of Water Resources (DWR) – Columbia Office	CWA Section 401; Tennessee Water Quality Control Act (Tennessee Code Annotated [TCA] § 69-3-108, 0400-40-07); TCA § 0400-40-03	Impacts to Tennessee State Waters	45 days	Compensatory mitigation may be required for impacts; Requires pre-filing notice 30 days prior to submission
402 National Pollutant Discharge Elimination System (NPDES) Permit Application	TDEC DWR – NPDES Stormwater Permitting Program	CWA Section 402 General Permit for Stormwater Discharges Associated with Construction Activities	Stormwater discharges from activities ≥1 acre of disturbance during construction	Notice of intent and stormwater pollution prevention plan to be filed 30 days prior to construction	Early coordination recommended; NOI and Stormwater Pollution Prevention Plan (SWPPP) for Construction Activity – Stormwater Discharges (Form CN-0940; If granted, Permit TNR100000 would authorize discharges associated with construction activities that result in a total land disturbance of one acre or greater, as governed by Section 402 of the CWA
Septic Permit Application	TDEC Environmental Field Office (EFO)	TCA §§ 68-221-401.414; TDEC Rule 0400-48-01	Installation of septic system or pump-out septic holding tank on Project Site	The review process generally takes 10 days and must be completed within 45 days of the date the application was submitted	Submit Application for Ground Water Protection Services (Form CN-0971) (TDEC 2019)

Description/ Submittal	Agency	Authorization	Applicability	Timing	Notes/ Assumptions
Well Installation Notification	TDEC Environmental Field Office (EFO)	Tennessee Water Well Act of 1963; TDEC Rule 0400-45-9	Installation of well on Project Site	The review process generally takes 10 days and must be completed within 45 days of the date the application was submitted	NOI (CN-1240) would be filed with TDEC
Obstruction Evaluation/Airport Airspace Analysis	Federal Aviation Administration (FAA)	14 CFR § 77	Structures exceed an instrument approach area of an airport	Notice of proposed construction to be submitted at least 45 days prior to construction	The Project filed Form 7460-1 with FAA in July 2022; FAA sent Determinations of No Hazard to air navigation for each relevant Project component in September 2022 with the condition that the Project must file Form 7460-2, Notice of Actual Construction or Alteration, any time the Project is abandoned or within five days after the construction reaches its greatest height.
Encroachment and Crossing Permit Applications	Tennessee Department of Transportation (TDOT)	T.A.C. Chapter 1680-6-1	Aboveground or below ground installation within state, federal-aid metro-urban, or state-aid highway system road ROWs	30-day review	N/A
	U.S. Department of Transportation (USDOT)	USDOT Highway/Utility Guide (USDOT 1993)	Aboveground or below-ground installation within U.S. highway ROWs	30-day review	N/A
Burn Permit Application	Tennessee Division of Forestry	TCA § 39-14-306	N/A	N/A	Only trees and brush from the Project Site would be burned; Weather conditions would be monitored and considered to ensure safety and minimize degradation to air quality during the open burning of any vegetation cleared from the site
Threatened and Endangered Species Consultation	U.S. Fish and Wildlife Service (USFWS)	ESA Section 7	Federally listed species / migratory birds	45-day review (informal); 135-day review (formal)	TVA initiated USFWS consultation on June 1, 2022, and reconsulted on October 13, 2022; USFWS concurred with TVA's findings of may affect, but not likely to adversely affect federally listed bats and TVA's determinations on other resources protected by ESA on December 5, 2022 (Appendix A).

Description/ Submittal	Agency	Authorization	Applicability	Timing	Notes/ Assumptions
Threatened and Endangered Species Consultation (cont.)	TDEC Natural Heritage Program (NHP)	None	State protected species	Varies	Informal consultation with TDEC recommended if project triggers an ARAP and state protected species may be impacted
State Historic Preservation Office (SHPO) Consultation	Tennessee Historical Commission (THC)	NHPA Section 106	Cultural resources	30-day review	TVA initiated consultation with THC on April 29, 2021 (Appendix A); TVA sent a notification of change in methodology in September 2021; TVA sent a final correspondence, with the draft Phase I cultural resources survey report, on April 28, 2022; THC concurred with TVA's findings on May 3, 2022 (Appendix A).

Description/ Submittal	Agency	Authorization	Applicability	Timing	Notes/ Assumptions
Tribal Consultation	Federally Recognized Tribes with interest in project area, consisting of Absentee Shawnee Tribe of Indians of Oklahoma; Alabama-Coushatta Tribe of Texas; Alabama-Quassarte Tribal Town; Cherokee Nation; The Chickasaw Nation; Coushatta Tribe of Louisiana; Eastern Band of Cherokee Indians; Eastern Shawnee Tribe of Oklahoma; Jena Band of Choctaw Indians; Kialegee Tribal Town; The Muscogee (Creek) Nation; Poarch Band of Creek Indians; The Seminole Nation of Oklahoma; Shawnee Tribe; Thlopthlocco Tribal Town; and United Keetoowah Band of Cherokee Indians in Oklahoma	NHPA Section 106	Cultural resources	30-day review	TVA initiated tribal consultation on April 30, 2021 (Appendix A); TVA sent a final correspondence, with the draft Phase I cultural resources survey report, on April 28, 2022. TVA received one response from Eastern Shawnee Tribe on June 3, 2022, indicating no concerns with the Project.

1.5 Environmental Impact Statement Overview

Per 40 CFR 1502.1, the primary purpose of an EIS is to ensure federal agencies consider the environmental impacts of their actions in decision making. An EIS shall provide full and fair discussion of significant environmental impacts and shall inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

This EIS tiers from the TVA IRP EIS (TVA 2019a), which explains TVA's need for additional generating capacity and TVA's decision to meet much of this need with solar generation. The IRP EIS also compares the environmental impacts of solar generation with other types of generation and describes system-wide, non-site-specific impacts of solar generation.

TVA has prepared this EIS to assess the environmental impacts of the Proposed Action. TVA has used the input from the public scoping period, summarized above in Section 1.3 and below in Chapter 4 and as provided in Appendix B, in developing this EIS.

TVA will issue a Record of Decision no sooner than 30 days after the USEPA publishes the notice of availability of this Final EIS. The Record of Decision will (1) state the decision; (2) identify the alternatives considered and the environmentally preferable alternative(s); and (3) state whether TVA has adopted all practicable means to avoid or minimize environmental harm from the alternative selected and, if not, why not, and summarize, where applicable, a monitoring and enforcement program for any enforceable associated mitigation requirements or commitments.

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CHAPTER 2 – ALTERNATIVES

This chapter explains the rationale for identifying the alternatives to be evaluated, describes each alternative, provides a comparison of alternatives with respect to their potential environmental impacts, and identifies the Preferred Alternative.

Through scoping, TVA has determined that, from the standpoint of NEPA, there are two feasible alternatives available: the No Action Alternative and the Proposed Action Alternative.

2.1 No Action Alternative

The No Action Alternative provides a baseline of conditions against which the impacts of the Proposed Action Alternative are measured. Under the No Action Alternative, TVA would not implement the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location. Existing conditions (e.g., land use, natural resources, visual resources, physical resources, and socioeconomics) in the project area would not change as a result of the Proposed Action; however, the Project site could be affected if the current land use practices continue. TVA would continue to rely on other sources of generation as described in the 2019 IRP (TVA 2019a) to ensure an adequate energy supply and to meet its goals for increased renewable energy and low GHG-emitting generation.

2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA to purchase the power generated by a proposed solar PV facility called Moore County Solar, located on an approximately 3,463-acre Project Site. SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar within a 1,873-acre footprint that avoids cultural, biological, and physical resources to the maximum extent possible. The Project would connect to TVA's existing adjacent Franklin–Wartrace No. 2 161-kV transmission line (TL) that extends north-south through the Project Site. To interconnect to TVA's existing electrical grid, SR Tullahoma and TVA would build an on-site 161-kV substation and switchyard, respectively, and TVA would replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of the TL extending eastward from the Project Site. Together, the solar PV facility and the associated interconnection and TL upgrades are referred to herein as the Project or Proposed Action.

2.2.1 Project Description

Moore County Solar and associated transmission interconnection components would occupy approximately 1,873 acres of the 3,463-acre Project Site (Figure 2-1). The Project Site is located along Lynchburg Highway approximately two miles west of the city of Tullahoma, within the metropolitan limits of Lynchburg in Moore County, Tennessee (Figure 1-1). The Project Site is mostly forested land, much of which has been recently harvested, along with some wetland areas, croplands, and early successional fields. Several residential subdivisions and the campus of Motlow State Community College are adjacent to the Project Site. TVA's Franklin–Wartrace No. 2 161-kV TL extends north-south through the Project Site (Figure 2-2). The Project Site is bisected by State Route (SR) 55 (Lynchburg Highway), and its eastern boundary is adjacent to the western city limits of Tullahoma, Tennessee. The perimeter of the 1,873-acre developed solar PV facility, including the Project substation, switchyard, and operations and maintenance building,

would be enclosed by security fencing. The remaining 1,590 acres (46 percent) of the Project Site would be undeveloped. Within these undeveloped areas, the Project would avoid identified sensitive plant and animal resource areas in accordance with an Avoidance Agreement between TVA and SR Tullahoma (Appendix A).

The solar facility would connect to TVA's existing Franklin–Wartrace No. 2 161-kV TL via a proposed substation, switchyard, and five new pole structures on the Project Site. A 9.8-mile portion of the Franklin–Wartrace No. 2 161-kV TL would be modified through the replacement of the existing OHGW with new OPGW.

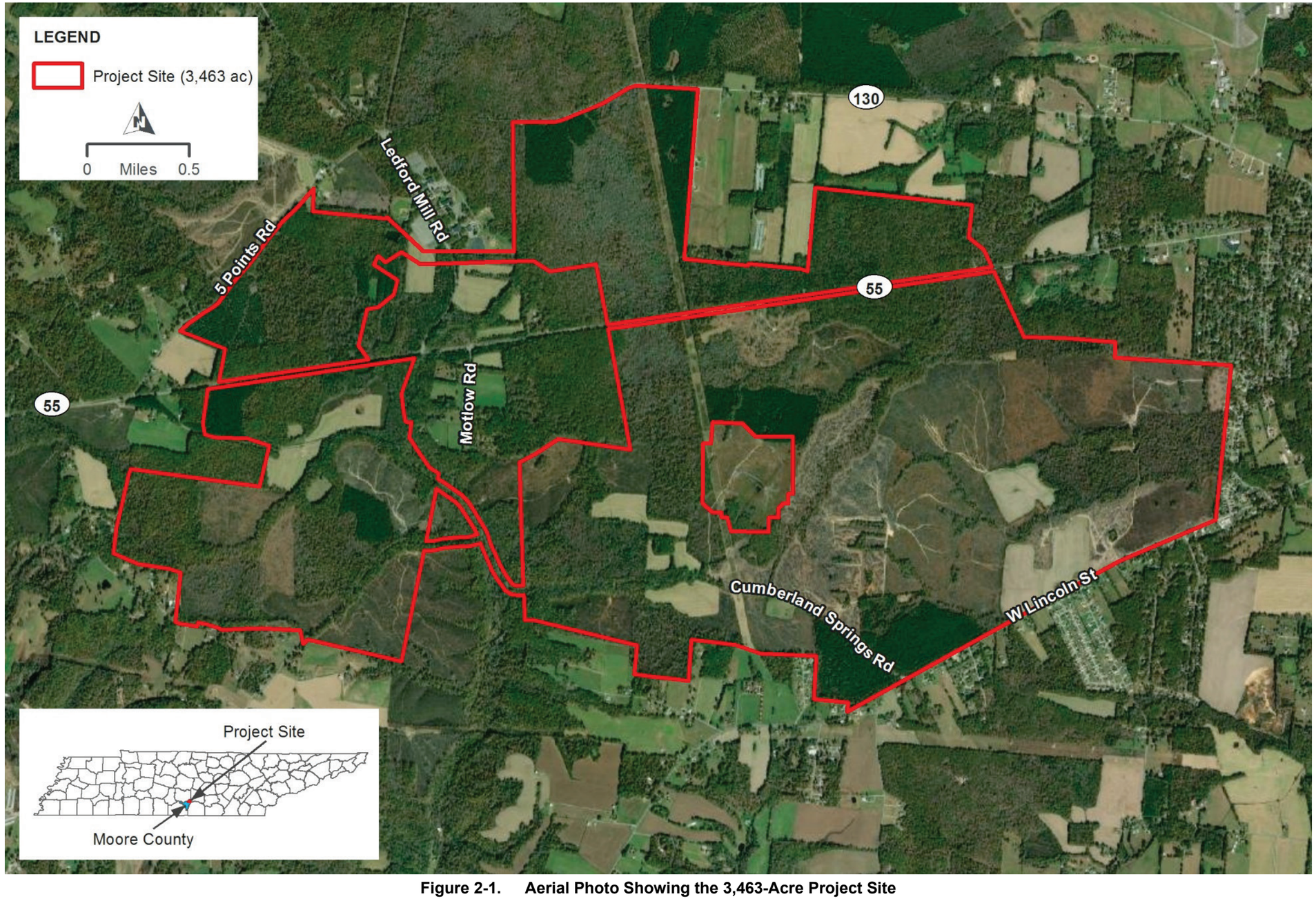

Figure 2-1. Aerial Photo Showing the 3,463-Acre Project Site

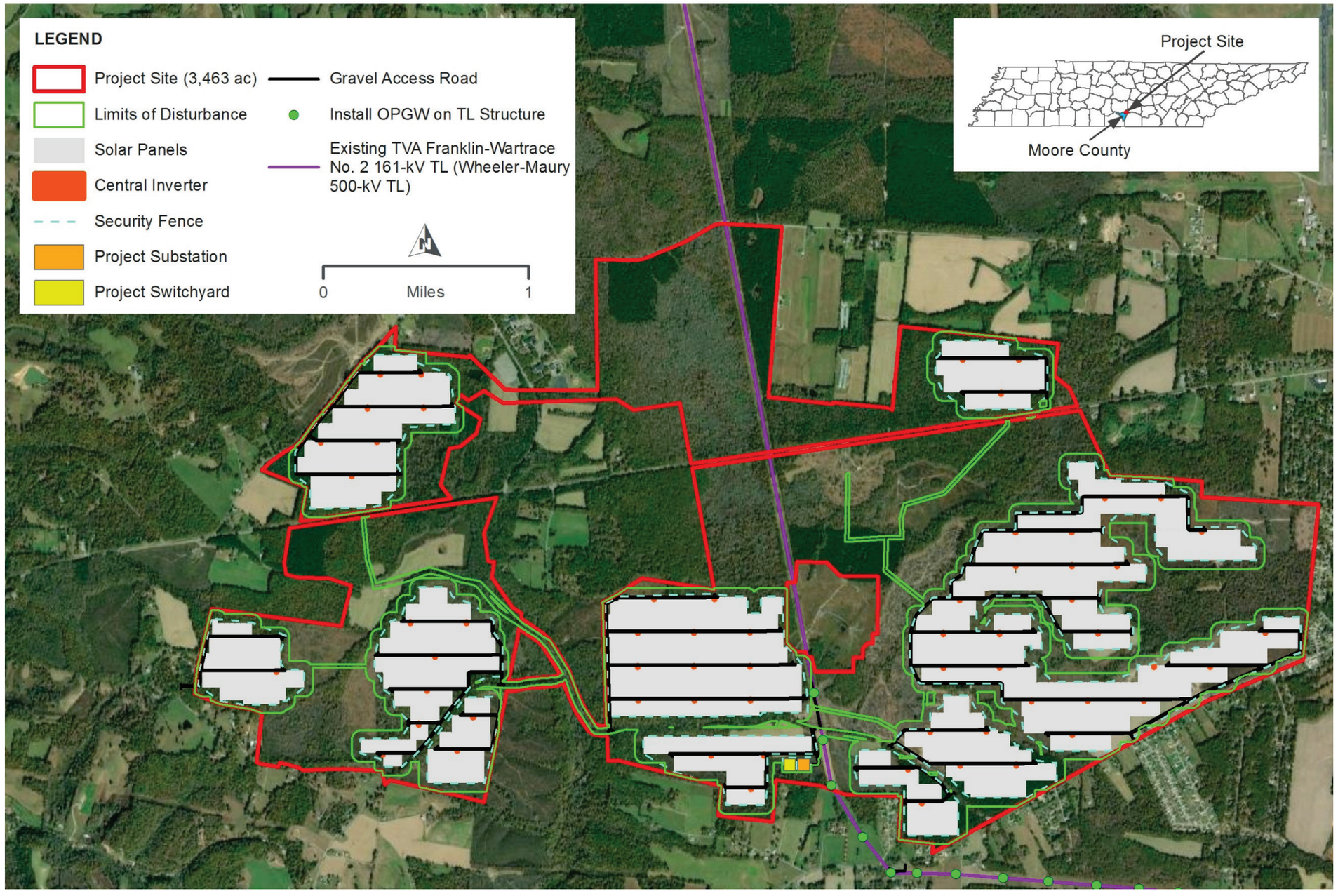

Figure 2-2. Aerial Photo Showing the Preliminary Layout of Moore County Solar Components

The Project would convert sunlight into direct current (DC) electrical energy within PV panels (i.e., modules) (Figure 2-3). PV power generation is the direct conversion of light into electricity at the atomic level. Some materials exhibit a property known as the photoelectric effect that causes them to absorb photons of light and release electrons. When these free electrons are captured, an electric current is produced, which can be used as electricity (TVA 2014).

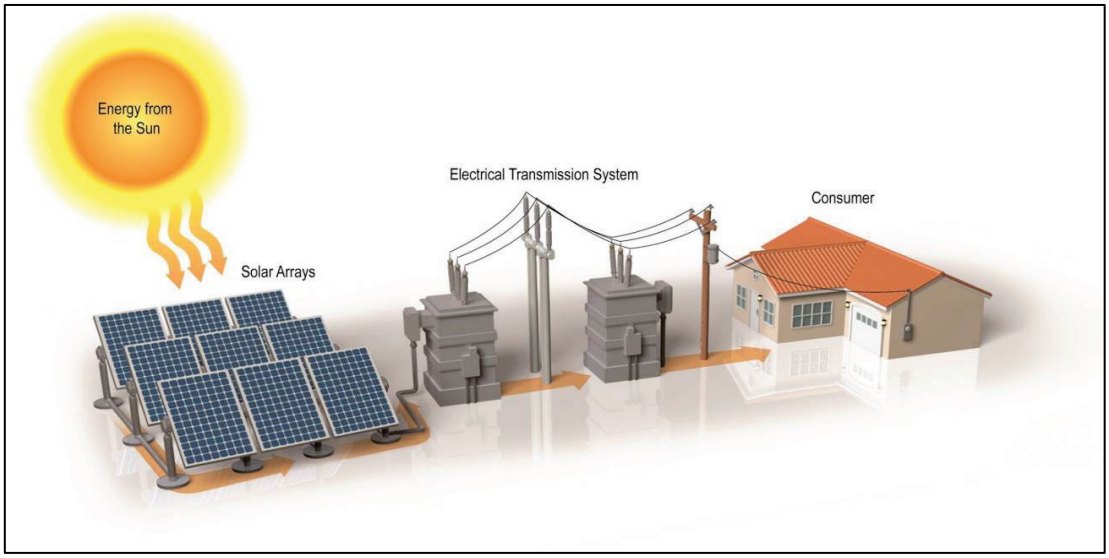

Figure 2-3. General Energy Flow Diagram of PV Solar System (not to scale)

The Project would be composed of PV modules mounted together in arrays. Groups of modules would be connected electrically in series to form "strings" of modules, with the maximum string size chosen to ensure that the maximum inverter input voltage is not exceeded by the string voltage at the Project Site's high design temperature. The approximately 609,000 modules, each about 6.6 feet by 4 feet in size, would be located in individual blocks consisting of the PV arrays and an inverter station on a concrete pad or steel piles, to convert the DC electricity generated by the solar panels into AC electricity. The solar facility would be enclosed by chain-link security fencing. The portions of the Project Site outside the fenced-in area would not be developed, and within these undeveloped areas, the Project would avoid identified sensitive plant and animal resource areas in accordance with an Avoidance Agreement between TVA and SR Tullahoma (Appendix A).

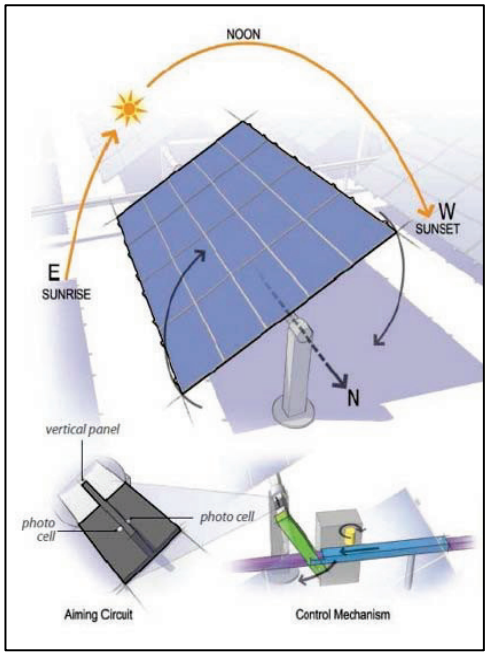

Figure 2-4. Diagram of Single-Axis Tracking System (not to scale)

The modules would be attached to single-axis trackers that follow the path of the sun from the east to the west across the sky (Figure 2-4). The inverter specification would fully comply with the applicable requirements of the National Electrical Code and Institute of Electrical and Electronics Engineers

standards. Each inverter would be collocated with a medium voltage transformer (MVT) that would step-up the AC voltage to minimize the AC cabling electrical losses between the central inverters and the proposed on-site Project substation. Underground AC power cables would connect all of the MVTs to the main power transformer(s) (MPT) located within the substation. Compacted gravel or dirt access roads would provide access to each inverter block and the proposed substation and switchyard.

Figure 2-2 shows the Project site with the locations of major Project components. Other temporary or permanent Project components include construction laydown areas, security and communications equipment, and an operations and maintenance building. Also, if determined necessary, the Project would include Project water wells and a septic system or pump-out septic holding tank.

2.2.2 Solar Facility Construction

As part of NPDES permit authorization (Section 2.5), the site-specific SWPPP would be finalized with the final grading and civil design and would address all construction-related activities prior to construction commencement. The solar facility site would be prepared by surveying, staking, and installing six-foot-tall chain-link security fencing topped with three strands of barbed wire around the Project Site. Entrances to the solar facility would be protected by locked, double-swing gates. The Project Site would be accessible only to TVA, SR Tullahoma, and their agents and contractors.

A Special Exception for the Development Standards for Ground Mounted Solar Energy Systems application was approved on October 19, 2022, allowing the solar facility to be developed under the existing zoning (Appendix A). A 60-foot vegetative buffer would be maintained around the perimeter of the Project Site per *A Resolution to Amend the Text of the Metropolitan Lynchburg and Moore County Zoning Ordinance Establishing Regulations for Solar Energy Systems as Permitted Use in the A-1-Agriculture-Forestry District and Establishing Regulations Governing the Development of Solar Energy Systems*, as approved or amended by the Board of Zoning Appeals prior to the start of other construction activities (Appendix A). The vegetative buffer is required around the perimeter of the site between the Project site boundaries and Project fence, where existing natural buffers are not present along public rights-of-way and where receptors or known future receptors would view the facility. The security fence would be installed between the vegetative buffer and the solar arrays.

Construction assembly areas (laydown areas) would be established for worker assembly, safety briefings, vehicle parking, and material storage during construction. The laydown areas would likely be graveled and would be placed to avoid cultural, biological, and water resources to the greatest extent practicable. Temporary construction trailers for material storage and office space would be parked on site. In accordance with TVA requirements, minimum 50-foot buffers surrounding wetlands and intermittent and perennial streams would be established as avoidance measures prior to any clearing, grubbing, grading, or utility line installation activities conducted by the construction contractor. Apart from removal of tall vegetation through non-mechanical means and leaving the roots in place, these buffered areas would be avoided during construction to the greatest extent practicable. The buffered areas would be marked and protected by silt fences and sediment traps in strategic drainage areas, and other erosion prevention and sediment control BMPs would be implemented, as detailed in the site-specific SWPPP.

Construction activities would be sequenced to minimize the time that bare soil in disturbed areas is exposed. Construction areas would be cleared of debris and tall vegetation, mowed, and lightly graded, as needed, for construction and placement of the solar modules, gravel access roads, substation, switchyard, accompanying electrical components, and other Project components. Several on-site buildings would be demolished, and some other buildings and structures would remain to support the sheep grazing operation established as part of the Project, described in Section 2.2.3. Clearing of trees and other tall vegetation would be accomplished with chain saws, skidders, bulldozers, tractors, and/or low-ground pressure feller-bunchers. A setback of 200 feet should be assumed for typical shading and tree-clearing. Because the area to be cleared is primarily forested land, vegetative debris would accumulate during site preparation. This debris would be disposed of by either open burning, chipping and grinding, burying, or thermochemically converting. If chipping is selected, the chips would be ground to minimize construction wastes and stockpiled in locations outside of the developed solar facility and environmentally sensitive areas to be hauled to a nearby disposal site. If burying is selected, woody biomass would be buried underground in wood vaults in locations outside of the developed solar facility and environmentally sensitive areas. If thermochemically converting is selected, the debris would be chipped and stockpiled in locations outside of the developed solar facility and environmentally sensitive areas to be hauled offsite to be converted into biochar. If burning is selected, only vegetation and untreated wood would be burned in accordance with any local ordinances or burn permits, as presented in Section 1.4, and would be avoided on days air quality alerts have been issued, as much as feasible. No burning of other construction debris is anticipated. Construction debris would be hauled to a nearby disposal site, as discussed in Section 3.12, in accordance with federal, state, and local laws and regulations. Mowing would continue as needed to contain growth during construction.

SR Tullahoma would work with the existing landscape (e.g., slope, drainage, utilization of existing roads) where feasible and minimize or eliminate grading work to the greatest extent possible. Grading activities would be performed with earthmoving equipment and would result in a consistent slope. Prior to any major grading, efforts would be made to preserve native topsoil, which would be removed from the area to be graded and stockpiled on site, avoiding sensitive resources and in accordance with the SWPPP, for redistribution over the disturbed area after the grading is completed. Off-site sediment migration would be minimized by the placement of silt fences around each area of ground disturbance within the Project Site. Other appropriate controls, such as temporary cover, would be used as needed to minimize exposure of soil and to prevent eroded soil from leaving the work area. To manage stormwater during construction, on-site temporary sedimentation basins, sediment traps, or diversion berms would be constructed within the disturbed area of the Project Site. Any sedimentation basins and traps necessary during construction would comply with TDEC requirements and would be constructed either by impoundment of natural depressions or by excavating the existing soil.

The floor and embankments of the sedimentation basins would be allowed to naturally revegetate after construction or replanted as necessary to provide natural stabilization and minimize subsequent erosion. Other disturbed areas would be seeded after construction using a mixture of certified weed-free, low-growing perennial and annual non-invasive grass and herb seeds containing species that would tend to attract pollinators and would be used as sheep fodder during operations. If conditions require, soil may be further stabilized by mulch or sprayable fiber mat. Hydroseeding may be employed as an alternative measure for areas with steep slopes. Where required, hay mulch would be applied at three tons per

acre and well distributed over the area. Erosion control measures would be inspected and maintained until vegetation in the disturbed areas is stable.

During construction, water would be used as needed for soil compaction and dust control and for sewer treatment, if determined necessary. Water in sufficient quantity and quality would be provided by new on-site wells or by delivery via water trucks. If selected, wells would be located to provide access for construction water and to reduce the potential for any significant water level drawdown. If water quality is unsuitable for potable use without disinfection at a minimum, a potable water treatment system would be installed. If needed, SR Tullahoma would perform initial groundwater drilling and testing to gather information on aquifer characteristics and develop a plan for the production well design. Wells would be constructed using conventional well drilling techniques. A truck-mounted drilling rig would set up at the identified location(s). If necessary, gravel would be used to temporarily stabilize the surface at these location(s). Water-based drilling muds would be collected and dewatered, with runoff occurring locally into nearby field areas. Dewatered muds would be non-toxic and may be spread as subsoil during site grading. If determined necessary, sewer treatment would be accomplished through use of a pump-out septic holding tank.

The design of the tracker support structures could vary depending on the final PV technology and vendor selected. The trackers would likely be attached to driven galvanized steel pile foundations, depending on results of the upcoming geotechnical survey. The piles are driven with a hydraulic ram to a depth typically less than 10 feet. Surface disturbance is typically limited to area in which the small tractor-sized hydraulic ram machinery operates, including the pile insertion location. Screw piles are another option for PV foundations; these are drilled into the ground with a truck-mounted auger. Screw piles create a similar soil disturbance footprint as driven piles.

The PV modules would be manufactured off-site and shipped to the Project Site ready for installation. The AC collection cables would be installed underground throughout the solar facility in trenches three- to four-feet deep and one- to four-feet wide. The trenches would be backfilled with the excavated soil and then compacted. AC collection cables would be installed by boring beneath jurisdictional streams and wetlands and paved roads and/or as overhead lines mounted on poles. These methods would avoid impacts to jurisdictional waters.

The MPT(s) would be supported by a concrete foundation. An underground or aboveground transmission cable would be constructed to connect the MPT to the MVTs through a circuit breaker. As the solar arrays are installed, the balance of the facility would continue to be constructed and installed, and the instrumentation would be installed.

Subject to weather, construction activities would take approximately 18 months to complete using a crew of up to 450 workers sourced locally to the greatest extent possible. Work would generally occur during daylight hours, Monday through Saturday. Night-time construction could be necessary to make up schedule deficiencies or to complete critical construction activities and would require temporary lighting. Any permanent night-time lighting installed during the construction phase, which would likely be necessary at the operations and maintenance building, would be use timer- and/or motion-activated, downward facing lighting to minimize impacts to surrounding areas.

2.2.2.1 Electrical Interconnection

To interconnect to TVA's existing electrical grid, SR Tullahoma and TVA would build an on-site 161-kV substation and switchyard, respectively, and TVA would replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of the adjacent TL extending eastward from between Pole Structures 272 and 273 and the Franklin substation, east of the Project Site. TVA would also install five new pole structures adjacent to the Project substation, on the Project Site. The switchyard would provide the electrical connection between the Project substation and the existing TVA Franklin–Wartrace No. 2 161-kV TL. This TL is co-located with TVA's Wheeler–Maury 500-kV TL on tall, laced-steel structures. TVA would also install OPGW along a portion of this TL extending 9.8 miles from the Project site eastward into Franklin County (Figure 2-5). This would involve improvements to existing structure access roads. The OPGW would be installed via helicopter, and ground crews would use the access roads to run the OPGW. The 9.8-mile portion of the TL and the access roads that require modifications are together referred to as the TL upgrade locations.

TVA utilizes standard practices for transmission and interconnection-related construction activities. These guidance and specification documents are considered when assessing the effects of the Proposed Action and include:

- *A Guide for Environmental Protection and Best Management Practices for TVA Construction and Maintenance Activities – Revision 3* (TVA's BMP manual; TVA 2017a)
- *TVA Environmental Quality Protection Specifications for Transmission Line Construction* (TVA 2017b),
- *TVA Transmission Construction Guidelines Near Streams* (TVA 2017c),
- *TVA Environmental Quality Protection Specifications for Transmission Substation or Communications Construction* (TVA 2017d),
- *TVA Substation Lighting Guidelines* (TVA 2017e), and
- *TVA Site Clearing and Grading Specifications* (TVA 2017f).

All of these documents are available on TVA's electrical transmission network projects web page (TVA 2022).

Figure 2-5. The Proposed Project Substation, Switchyard, and Work Areas Along the Existing TVA Franklin–Wartrace No. 2 161-kV TL

2.2.2.1.1 TVA Switchyard Construction

The switchyard location, shown on Figure 2-2 and Figure 2-3, would be fenced and graveled. As described in TVA's *Substation Lighting Guidelines* (TVA 2017e), lights at the proposed switchyard would be timer- and/or motion-activated and downward-facing and either fully shielded or would have internal low-glare optics, such that no light is emitted from the fixtures at angles above the horizontal plane.

The switchyard location would be cleared of vegetation and topsoil, and the construction area would be graded in accordance with TVA's *Site Clearing and Grading Specifications* (TVA 2017f). To clear trees and other tall vegetation, equipment used could include chain saws, skidders, bulldozers, tractors, and/or low ground-pressure feller-bunchers. As necessary, any woody debris and other vegetation would likely be piled and burned, chipped, buried, or taken offsite to a nearby disposal site or to be thermochemically converted into biochar. Prior to burning, TVA would obtain any necessary permits. In some instances, vegetation may be windrowed along the edge of the construction site to serve as sediment barriers. Further guidance for clearing and construction activities can be found on TVA's transmission network projects web page (TVA 2022).

The switchyard location would be leveled through a cut-and-fill process to achieve final design grade. The areas of the site that are too high (sloped) would be "cut" down to a level elevation, and other areas that are too low require "fill" to raise the elevation. Any additional fill required would be obtained from an approved/permitted borrow area. Once the switchyard site has been graded, excess soil (i.e., "spoil") would be removed in preparation for construction of concrete foundations for switchyard components. Temporary spoil storage is proposed to be located on site. Silt fences and site drainage structures would be installed during construction in accordance with the Project-specific SWPPP.

Following clearing, grading, and construction, disturbed areas on the properties (excluding the area within the fencing) would be restored to approximate pre-construction conditions, to the extent practicable, utilizing appropriate seed mixtures as described in TVA's BMP manual (TVA 2017a). Erosion controls would remain in place for each phase until that portion of the project is stabilized in accordance with the Project-specific SWPPP.

2.2.2.1.2 TVA TL Upgrades

Reels of conductor and ground wire would be delivered to the construction assembly area established for the TL upgrade activities. Access to the structures would be via existing roads. A small rope would be pulled from structure to structure. The rope would be connected to the conductor and ground wire and used to pull these down the line through pulleys suspended from the insulators. A bulldozer and specialized tensioning equipment would be used to pull conductors and ground wires to the proper tension. Crews would then clamp the wires to the insulators and remove the pulleys.

New poles would be augured into the ground to a depth equal to 10 percent of the pole's length plus an additional two feet, typically about 10 to 12 feet deep. Installation of the new poles would require blasting where bedrock is within the depth necessary to imbed the poles. Normally, the holes would be backfilled with the excavated material, but in some cases, gravel or a concrete-and-gravel mixture would be used, depending on local soil conditions. Equipment used during the construction phase would include trucks, truck-mounted augers, drills, and excavators, as well as tracked cranes and bulldozers. Low ground-pressure-type equipment would be used in specified locations, such as areas with soft ground, to reduce the potential for environmental impacts per TVA BMPs (TVA 2022).

Network upgrades would require improvements to existing access roads to allow vehicular access to each structure and other points along the existing TLs. Typically, new permanent or temporary access roads used for TLs are located on the TL right-of-way (ROW) wherever possible and are designed and located to avoid severe slope conditions and to minimize impacts to environmental resources such as streams. TL access roads are typically about 12- to 16-feet wide and are surfaced with dirt, mulch, or gravel.

With the appropriate permits as described in Table 1-2, culverts and other drainage devices, fences, and gates would be installed as necessary for the TL upgrades. Culverts installed in any perennial or intermittent streams would be removed following construction. However, in ephemeral streams, the culverts would be either left or removed, depending on the wishes of the landowner or any permit conditions that might apply. Additional applicable environmental quality protection specifications are provided on TVA's transmission website (TVA 2022).

After the solar facility is constructed and the TL upgrades are complete, electrical service would be tested, motors would be checked, and control logic would be verified. Once the individual systems have been tested, integrated testing of the Project would occur.

2.2.3 Solar Facility Operations

During operation of the solar facility, no major physical disturbance would occur. Moving parts of the solar facility would be restricted to the east-to-west facing tracking motion of the solar modules, which amounts to a movement of less than a one degree angle every few minutes. This movement maximizes the collection of solar energy by rotating with the sun and is barely perceptible. In the late afternoon, module rotation would start to move from west-to-east in a similar slow motion to minimize row-to-row shading. At sunset, the modules would track to a flat or angled stow position. With the exception of fence repair, vegetation control, and periodic array inspection, repairs, and maintenance, Moore County Solar would have relatively little human activity during operation. Permanent lighting would be required at the substation, switchyard, and operations and maintenance building. The lighting would be timer- and/or motion-activated downward-facing and either fully shielded or would have internal low-glare optics, such that no light is emitted from the fixtures at angles above the horizontal plane to minimize impacts to surrounding areas, as described in TVA's *Substation Lighting Guidelines* (TVA 2017e).

During operations, Moore County Solar would require small groups of workers to be on site occasionally to manage the facility and conduct regular inspections, maintenance, and repairs, as well as shepherds to manage the on-site sheep herd. Inspections would include identifying any physical damage of panels, wiring, central inverters, transformers, and interconnection equipment, and drawing transformer oil samples. Vegetation on developed portions of the Project Site would be maintained to control growth. Near the solar facility infrastructure, vegetation would be managed to prevent shading of the PV panels. As part of SRC's Regenerative Energy program (SRC 2021), grazing sheep would be used to help control the growth of tall vegetation and reduce mowing needs on most of the fenced areas. The sheep would graze the non-invasive grass and herbaceous vegetation and be rotated within three days between temporarily fenced paddocks within the permanent Project fencing. Sheep would not return to graze previous paddocks for approximately 40 to 60 days. Water needs would be provided from Project wells and/or municipal water taps. The Project would avoid grazing sheep in sensitive biological, cultural, and water resource areas. These practices would maintain appropriate vegetation height, while avoiding overgrazing, reducing risk of erosion, and helping maximize plant and animal diversity.

Creation of pollinator and grassland bird habitat would be encouraged by allowing seed heads to reach maturity wherever possible. The sheep would disperse seeds, both on their coats and through their manure, and their movement around the site would establish new plant growth and greater diversity in species composition. This would eliminate much of the need for mowing and selective herbicide application to manage vegetation growth, although these techniques would still be used as necessary. The presence of manure would also act as a natural fertilizer and protect against erosion. SR Tullahoma would monitor the ecological health of the sheep paddocks utilizing an ecological health index (Xu et al. 2019) to assess productivity and preservation of ecosystem services. Shepherds would be hired directly or under contract and would be sourced locally, if possible. Select sheep would be bred and sold to regional farmers as registered seedstock for breeding or as market lambs.

Precipitation in the region is typically adequate to remove dust and other debris from the PV modules while maintaining energy production; therefore, manual panel washing is not anticipated unless a site-specific issue is identified. If necessary, module washing would occur no more than twice a year and would comply with proper BMPs to prevent any soil erosion and/or stream and wetland sedimentation. The washing would not be expected to produce a discharge waste stream. Water during operation and maintenance would be made available through the use of on-site wells, as described in Section 2.2.2., or by delivery via water trucks.

The proposed solar facility would be monitored remotely to identify any security or operational issues. If a problem is discovered during non-working hours, a local repair crew or law enforcement personnel would be contacted if an immediate response were warranted.

2.2.4 Decommissioning and Reclamation

SR Tullahoma would operate the Project and sell power to TVA under the terms of a 20-year PPA. At the end of the 20-year PPA, SR Tullahoma would assess whether to cease operations at the solar facility or to replace equipment, if needed, and attempt to enter into a new PPA with TVA or make some other arrangement to sell the power. If the solar facility has not surpassed its useful life, operations and maintenance beyond the 20-year period, additional operations under a new PPA with TVA would be evaluated.

When operations cease, the facility would be decommissioned and dismantled, and the Project site would be restored per Project decommissioning requirements. The decommissioning process would be coordinated with Moore County. Decommissioning actions would include the removal of aboveground and below-ground components to a depth of at least three feet. Decommissioning actions could take several months; therefore, access roads, security fencing, and electrical power would temporarily remain in place for use by the decommissioning and restoration workers until no longer needed. The majority of decommissioned equipment and materials would be recycled. Materials that cannot be recycled would be disposed of at an approved facility in accordance with federal, state, and local law and regulations. Other wastes, including batteries, would be disposed of off-site and/or recycled in accordance with manufacturer recommendations and appropriate regulations and industry BMPs. Dump trucks, flatbed and rear-loader garbage trucks, and other large vehicles would visit the Project Site each day during the decommissioning period to transport decommissioned equipment and materials off-site. Following component removal and if requested by the landowner, holes would be filled with local soils, and roads and large excavated rocks would be removed. Overall, the Project site would be returned to a tillable state and revegetated.

2.3 Alternative Development

SRC's site screening process involves several iterations beginning with the general solar resource (the amount of insolation) and the availability of nearby appropriately sized electric infrastructure for interconnection with sufficient available transmission capacity for the proposed solar facility. This is followed by screening for suitable large-scale landscape features that would allow for utility-scale solar development including:

- Generally flat landscape with minimal slope, with preference given to disturbed contiguous land with no on-site infrastructure or existing tall infrastructure in the immediate vicinity;
- Land having sound geology for construction suitability, with minimal and/or avoidable floodplains or large forested or wetland areas;
- Large contiguous parcels of land with compatible local zoning and located away from densely populated areas; and
- Ability to avoid and/or minimize impacts to known sensitive biological, visual, and cultural resources.

As a result of this screening process, the current Project in Moore County was selected for potential solar development.

2.4 Comparison of Alternatives

This EIS evaluates the potential environmental effects that could result from implementing the No Action Alternative and the Proposed Action Alternative. The analysis of impacts in this EIS is based on the current and potential future conditions on the properties and the surrounding project area.

A comparison of the impacts of the alternatives is provided in Table 2-1.

Table 2-1. Comparison of Impacts by Alternative

Resource Area	No Action Alternative	Proposed Action Alternative
Land Use	Existing land uses would likely remain a mix of forested, herbaceous, woody wetlands, and agricultural for the foreseeable future.	Minor direct impacts on land use due to change from forest management, including timbering operations, and some agricultural uses to industrial uses. Regenerative agricultural practices planned in association with the Project (i.e., sheep operations) would allow for some agricultural uses to continue to occur on site and help offset the primary change of land use to industrial uses.
Geology, Soils, and Prime Farmland	Geology/Soils: Minor impacts if the current land use practices continued. Prime Farmland: Minor impacts if current land use practices continued.	Geology: Minor direct impacts to potential subsurface geological resources. Soils: Minor direct impacts resulting from minor to minimal increases in erosion and sedimentation during construction and operation. While in operation, adverse impacts to soils would be minimized with implementation of vegetation management. Prime Farmland: Minor direct impacts from removal of 1,475 acres of prime farmland from most potential agricultural use for the duration of the Project. Adverse impacts to soil productivity may be offset by the beneficial effects to soil health of maintaining a permanent vegetative cover during facility operation.
Water Resources	Groundwater: Indirect impacts to groundwater resources could occur if current land use practices continued. Surface Water and Wetlands: Minor indirect impacts if current land use practices continued. Floodplains: Impacts associated with current land uses would continue.	Groundwater: No direct adverse impacts anticipated; minor beneficial indirect impacts to groundwater due to reduction in erosion and planting of perennial and annual, non-invasive vegetation. Surface Water and Wetlands: Minor beneficial indirect impacts to surface water due to reduction in erosion compared with current conditions. The Project is anticipated to result in minor permanent impacts to some streams, open waters and wetlands due to the fill of 396 linear feet (LF) of USACE-jurisdictional ephemeral streams for solar panel blocks, the fill of 0.5 acre of USACE-jurisdictional wetland for road crossings and solar panel blocks, the fill of 7,366 LF of non-USACE-jurisdictional/TDEC-jurisdictional ditches, the fill of 1.0 acre of non-USACE-jurisdictional/TDEC-jurisdictional wetlands, and the fill of 1.5 acres of non-USACE-jurisdictional open waters for road crossings and solar panel blocks. There would be no direct impacts to USACE-jurisdictional perennial streams, intermittent streams, and open waters. Floodplains: Minor direct and indirect impacts due to construction activities.

Resource Area	No Action Alternative	Proposed Action Alternative
Biological Resources	Vegetation: Minor impacts to vegetation if current land use practices continue. Wildlife and Migratory Birds: Minor impacts to wildlife and migratory birds if current land use practices continue. Aquatic Life: Minor impacts to aquatic life if the current land use practices continue. Threatened and Endangered Species: Minor impacts to threatened and endangered species if current land use practices continue.	Vegetation: Moderate direct impacts to vegetation by clearing of up to approximately 850 acres of trees and other tall vegetation. This acreage has very limited areas of mature forest with well-developed canopy and an understory populated with mostly native species. Wildlife: Minor direct and indirect adverse impacts to migratory birds and other wildlife due to elimination of habitat, particularly forest clearing. Direct effects to some individuals may occur if those individuals are immobile during the time of habitat removal if activities took place during breeding, nesting, and hibernation seasons. Aquatic Life: Minor impacts due to temporary increases in erosion and siltation. The Project would avoid the newly identified undescribed crayfish, except for the installation of buried or overhead electrical lines within 50 feet of Raysville Road and Cumberland Springs Road and per an Avoidance Agreement between TVA and SR Tullahoma. Threatened and Endangered Species: With implementation of avoidance and minimization measures and use of BMPs, the Project is not likely to significantly affect federal or state-listed species.
Natural Areas, Parks, and Recreation	No impacts.	Minor adverse impacts due to elimination of dispersed outdoor recreational activities on site.
Visual Resources	Minor impacts to visual resources if current land use practices continue.	Temporary, minor impacts on visual resources during the construction phase due to increased activity and altering the visual character. During operations, minimal to minor impacts in the immediate vicinity due to existing tree buffers and the installation and maintenance of a vegetative buffer around the perimeter of the site between the Project site boundaries and Project fence, where existing natural buffers are not present along public rights-of-way and where receptors or known future receptors would view the facility.
Noise	Minor impacts to the ambient sound environment if current land use practices continue.	Minor, temporary adverse impacts would occur during construction. Minimal to negligible impacts during operations and maintenance.

Resource Area	No Action Alternative	Proposed Action Alternative
Air Quality and GHGs	Minor impacts to air quality if current land use practices continue.	Air Quality: Minor direct impacts during construction of the Project. Long-term, minor beneficial impacts due to increasing the capacity of non-emitting generating facilities providing power to the TVA system. Regional Climate: No noticeable direct or indirect impacts. GHGs: Temporary, negligible impacts to GHG emissions during construction and maintenance, as well as reduced carbon storage from forest clearing. Offsetting beneficial effects would also occur, due to the nearly emissions-free power generated by the solar facility, reducing the need for power that would otherwise be generated by the combustion of fossil fuels.
Cultural Resources	Minor impacts if current land use practices continue.	With avoidance of an on-site cemetery and due to forested screening of the Motlow House, the Project would not adversely affect historic properties and other sensitive cultural resources.
Utilities	Negligible to minor impacts if current land use practices continue.	Potential short-term, minor impacts to local utilities (electricity and telecommunication connections) when bringing the solar facility on-line or during routine maintenance of the facility. Long-term, minor beneficial impacts to electrical services across the region due to additional renewable energy resources.
Waste Management	Negligible to minor impacts if current land use practices continue.	No adverse impacts to waste management are anticipated with the use of BMPs.
Public Health and Safety	Minor impacts if current land use practices continue.	Minor, temporary impacts during construction that would be minimized with adherence to Occupational Safety and Health Administration (OSHA) regulations and health and safety plans.
Transportation	Minor impacts if current land use practices continue.	Minor direct impacts to transportation during construction. Project effects to normal traffic patterns would be minimized by implementation of specific measures designed to address the effects.
Socioeconomics	Minor beneficial effects if current land use practices continue.	Short-term, minor beneficial economic impacts would result from construction, including the purchase of materials, equipment, and services and a temporary increase in employment, income, and population. Long-term, minor beneficial impacts to economics and population from Project operation. The local tax base may increase with operation of the solar facility and would be most beneficial to Moore County and the vicinity.
Environmental Justice	Negligible to minor impacts if current land use practices continue.	No disproportionately high or adverse direct or indirect impacts on identified minority or low-income populations.

2.5 Identification of Mitigation Measures

The Project would implement minimization and mitigation measures in relation to resources potentially affected by the Project. These would be developed with consideration to BMPs, permit requirements, and adherence to the SWPPP. In association with the proposed electrical interconnection, TVA would employ standard practices and specific routine measures to avoid and minimize impacts to resources. These practices and measures are summarized in this section.

2.5.1 Standard Practices and Routine Measures

SR Tullahoma would implement the following minimization and mitigation measures in relation to potentially affected resources:

- Visual Resources
    - Use timer- and/or motion-activated downward-facing, fully shielded and/or low-glare lighting to limit visual effects at night;
- Soils
    - Install silt fence along the perimeter of vegetation-cleared areas,
    - Implement other soil stabilization and vegetation management measures to reduce the potential for soil erosion during site operations, and
    - Make an effort to balance cut-and-fill quantities to alleviate the transportation of soils offsite during construction;
- Water Resources
    - Comply with the terms of the SWPPP prepared as part of the NPDES permitting process,
    - Use BMPs for controlling soil erosion and runoff, such as the use of 50- to 60-foot buffer zones surrounding intermittent and perennial streams and wetlands and the installation of erosion control silt fences and sediment traps,
    - Implement other routine BMPs as necessary, such as non-mechanical tree removal within surface water buffers, placement of silt fence and sediment traps along buffer edges, selective herbicide treatment to restrict application near receiving water features, and proper vehicle maintenance to reduce the potential for adverse impacts to groundwater,
    - Impacts to water resources deemed jurisdictional to TDEC and USACE would be permitted in compliance with the Clean Water Act Sections 401 and 404, and
    - Implement mitigation measures as defined in TVA's 1981 *Class Review of Repetitive Actions in the 100-Year Floodplain*, as applicable to Project effects.
- Biological Resources
    - Revegetate with perennial and annual, non-invasive vegetation, including plants attractive to pollinators, to reintroduce habitat, reduce erosion, and limit the spread of invasive species (per EO 13112, Invasive Species),
    - Follow USFWS recommendations regarding biological resources,
    - Use downward facing and timer- and/or motion-activated lighting to limit attracting wildlife, particularly migratory birds and bats,
    - Instruct personnel on wildlife resource protection measures, including (1) applicable federal and state laws such as those that prohibit animal disturbance, collection, or removal, (2) the importance of protecting wildlife resources, and (3) avoiding plant disturbance in undisturbed and buffer areas,

    - Use only USEPA-registered herbicides in accordance with label directions designed, in part, to restrict applications near receiving waters and to prevent unacceptable aquatic impacts, and
    - Coordinate with U.S. Department of Agriculture (USDA) and/or USFWS if active osprey and eagle nests are identified during aerial nest surveys of the TL upgrade locations to develop avoidance and minimization measures and ensure compliance under federal law prior to commencement of the TL upgrade activities.
- Solid and Hazardous Waste Management
    - Develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials;
- Public Health and Safety
    - Implement BMPs for site safety management to minimize potential risks to workers;
- Transportation
    - Post a flag person during heavy commute periods, prioritize access for local residents, and implement staggered work shifts during daylight hours to manage construction traffic flow near the Project Site, and
    - Flight paths would be determined prior to the installation of OPGW by helicopter and filed with the appropriate authorities as required;
- Noise
    - Limit construction activities primarily to daytime hours and ensure that heavy equipment, machinery, and vehicles utilized at the Project Site meet all federal, state, and local noise requirements; and
- Air Quality and GHG Emissions
    - Comply with local ordinances or burn permits and avoid burning on days air quality alerts have been issued, as much as feasible, if burning of vegetative debris is required and use BMPs such as periodic watering, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust.

2.5.2 Non-Routine Mitigation Measures

- Land Use and Soils
    - Utilize SRC's regenerative energy program, including perennial and annual, non-invasive pollinator-attractive plantings, biological vegetation management (e.g., grazing sheep), and other measures that improve the land within the project area;
- Biological Resources
    - Avoid siting Project components and managing SRC's regenerative energy program in identified sensitive plant and animal resource areas (except for buried or overhead electrical lines within 50 feet of Raysville and Cumberland Springs roads) in accordance with an Avoidance Agreement between TVA and SR Tullahoma (Appendix A), and
    - Install signage and/or temporary construction fencing around avoidance areas and identify avoidance areas on site plans and constraints maps;
- Visual Resources
    - Install and maintain 60-foot-wide vegetative buffer along the Project fence perimeter where the facility would otherwise be visible from public ROWs and residences in accordance with *A Resolution to Amend the Text of the Metropolitan Lynchburg and Moore County Zoning Ordinance Establishing Regulations for Solar Energy Systems as Permitted Use in the A-1-*

Agriculture-Forestry District and Establishing Regulations Governing the Development of Solar Energy Systems, as approved or amended by the Board of Zoning Appeals prior to construction start; and

- Public Health and Safety and Transportation
    - In accordance with FAA recommendations, file Form 7460-2, Notice of Actual Construction or Alteration, any time the Project is abandoned or within five days after the construction reaches its greatest height.

2.6 The Preferred Alternative

TVA's preferred alternative for fulfilling its purpose and need is the Proposed Action Alternative. This alternative would generate renewable energy for TVA and its customers with only minor environmental impacts due to the implementation of BMPs and minimization and mitigation efforts, as described in Section 2.5. Implementation of the Project would help meet TVA's renewable energy goals and would help TVA meet customer-driven energy demands on the TVA system.

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter describes the existing environmental, social, and economic conditions of the project area, as defined for each resource area, and the potential environmental effects that could result from implementing the No Action or Proposed Action Alternative.

3.1.1 Identification of Other Actions

Depending on the geographic area of analysis for each resource area, past, present, and reasonably foreseeable future actions (RFFAs) that are considered in this cumulative analysis are listed in Table 3-1. These actions were identified within the overall 10-mile geographic area of analysis as having the potential to, in aggregate, result in larger and potentially adverse impacts to the resources of concern.

Table 3-1. Summary of Other Past, Present, or Reasonably Foreseeable Future Actions within a 10-Mile Radius of the Proposed Action

Action	Description	Action Type
SR 16 (US 41-A) Improvements	The SR 16 (US 41-A) project encompasses approximately 12 miles between SR 64 in Shelbyville and the Tullahoma city limits, approximately 2.5 miles north of the Project Site. Improvements include increasing the number of lanes; increasing lane, structure, and shoulder widths; and improving route deficiencies (TDOT 2021a).	Present
Tullahoma Airport Business Park Expansion	A 102-acre business/industrial park on the northwestern portion of the Tullahoma Regional Airport, approximately 1.5 miles north of the Project Site. One industry, XP Services, exists on site. The remainder of the business park is available for future expansion (Tullahoma Area Economic Development Corporation 2021).	Past/Present/RFFA
SR 55 Turn Lane Project at Moore County High School	Proposed installation of turn lanes at both the entrance to Moore County High School, Goodbranch Road directly across from the Lynchburg Nursing Center, and the entrance to the baseball fields, approximately 4.5 miles southwest of the Project Site. Also, the bridge nearest the Moore County Water Treatment Plant would be widened to three lanes (The Lynchburg Times 2020).	RFFA
SR 55 Widening	Proposed widening of SR 55 from two lanes to four lanes from First Avenue to SR 16, approximately two miles east of the Project Site. Also includes the replacement of the existing bridge over North Fork Rock Creek and the Rock Creek Greenway. The existing bridge is a four-span, 156-foot-long structure and the proposed bridge would be a 2-span, 170-foot-long structure (TDOT 2022).	RFFA

Action	Description	Action Type
Cedar Lane Sidewalks Project	Proposed installation of sidewalks along William Northern Boulevard and Cedar Lane, tying them into Tullahoma's existing greenway, approximately two miles north of the Project Site (The Tullahoma News 2021).	RFFA
Ledford Mill Road Project	Proposed widening of the Ledford Mill Road from SR 16 to Taxiway Lane, approximately 1.5 miles north of the Project Site. Also, the box culvert over the North Fork of Rock Creek would be widened (The Tullahoma News 2021).	RFFA
Coffee County Joint Industrial Park	A proposed 49-acre industrial site approximately nine miles northeast of the Project Site (Tennessee Department of Economic and Community Development 2021).	RFFA

3.2 Land Use

3.2.1 Affected Environment

Land use is defined as the way people use and develop land, including leaving land undeveloped or using land for agricultural, residential, commercial, and industrial purposes. The area surrounding the Project Site consists of agricultural, forested, institutional, and rural residential land that is not subject to zoning. Consistent with the surrounding area, imagery data collected from the National Land Cover Database (NLCD) show the Project Site as primarily deciduous forest with scattered areas of herbaceous land and woody wetlands (MRLC 2016; Table 3-2; Figure 3-1).

A portion of the Project Site is zoned A-1 for agricultural use. Upon obtaining approval of Special Exception from the Metropolitan Lynchburg/Moore County Board of Zoning Appeals, the solar facility may be developed under the existing zoning. The Special Exception application was approved on October 19, 2022 (Appendix A).

The 3,463-acre Project Site generally consists of flat to gently sloping land that ranges in elevation from approximately 1,010 feet above mean sea level (AMSL) where Hurricane Creek crosses the southern boundary of the Project Site to 1,150 feet AMSL in the western portion of the Project Site. The Project Site is bisected by SR 55, and its eastern boundary borders the western city limits of Tullahoma. Several residential subdivisions are adjacent to the Project Site, and the Moore County campus of Motlow State Community College adjoins and is partially surrounded by the northwest portion of the Project Site. Agricultural, forested, and rural-residential land uses dominate the landscape north, south, and west of the Project Site, while residential land uses dominate the landscape east of the Project Site.

The Project Site is situated on the World War II-era Motlow Range, an auxiliary training area for Camp Forrest. Motlow Range contained a series of firing ranges for light artillery, mortars, and machine guns and was decommissioned in 1946. According to historical aerial imagery and topographic quadrangle maps obtained from a Phase I Environmental Site Assessment (Phase I ESA; HDR 2021), land use in the project area has, with the exception of the former Motlow Range operations and construction of several residences and the community college, remained relatively unchanged since at least 1936. Throughout this time, land uses on the Project Site and in the project area have been primarily forest management, including timbering operations, and rural-residential, and major elements such as SR 55, SR 130, Cumberland Springs Road, and some TLs have been present for some time.

Table 3-2. Land Cover Types within the Project Site

NLCD Land Cover Type	Approximate Area (acres)	% of Project Site
Deciduous Forest	2,149	62
Herbaceous	294	9
Woody Wetlands	268	8
Evergreen Forest	218	6
Mixed Forest	174	5
Cultivated Crops	119	3
Hay/Pasture	96	3
Developed, Open Space	85	3
Shrub/Scrub	31	<1
Emergent Herbaceous Wetlands	23	<1
Developed, Low Intensity	2	<1
Developed, Medium Intensity	2	<1
Open Water	1	<1
Developed, High Intensity	1	<1
Total	**3,463**	**100**

3.2.2 Environmental Consequences

3.2.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, existing land uses would likely remain a mix of forested, herbaceous, woody wetlands, and agricultural for the foreseeable future.

3.2.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would implement the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Land uses within the 1,873-acre area of the Project Site that would be converted to the solar PV facility and associated infrastructure would change from forest management, including timber harvests, and agricultural uses to industrial use (Developed, Medium Intensity) with construction and operation of the solar PV facility. Regenerative agricultural practices planned in association with the Project (i.e., sheep operations) would allow for some agricultural uses to continue to occur on site and help offset the primary change of land use to industrial uses. The Project-related TL upgrades along TVA's existing Franklin–Wartrace No. 2 161-kV TL would not change current land uses. Therefore, minor, direct impacts to land use during construction are anticipated.

The activities associated with the Project would not have indirect effects on land use, as further changes to the rural area would not be expected to be stimulated by the solar facility.

Upon decommissioning of the solar facility, the land could return to forest management, including timbering operations, and agricultural uses or be converted to a different land use.

3.2.2.2.1 Cumulative Impacts

The Proposed Action would change land uses from primarily forest management, including timbering operations, and agricultural uses to a mixed industrial and agricultural use. The RFFA Coffee County Joint Industrial Park, listed in Table 3-1 could change land uses where it is proposed; therefore, together with the Proposed Action, would contribute to minor cumulative impacts on land use.

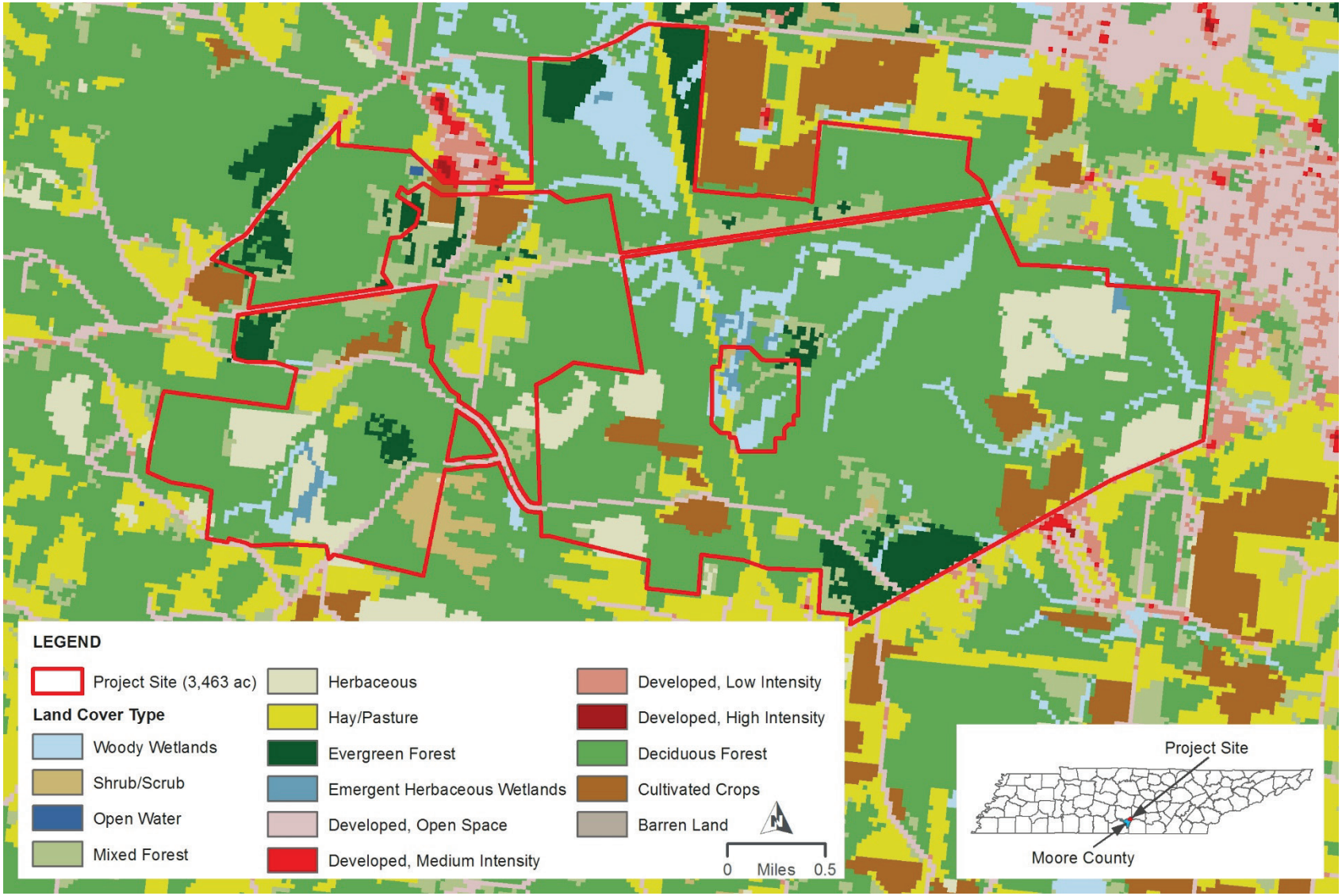

Figure 3-1. Land Cover in the Project Site Vicinity

3.3 Geology, Soils, and Prime Farmland

3.3.1 Affected Environment

The Project Site lies within the Interior Low Plateaus Province of Tennessee that consists of the Highland Rim section and the Nashville Basin. The Highland Rim section is a plateau characterized by rolling hills to flat areas in the northwest and southeast. Bedrock in the area is Mississippian limestones, chert, shale and sandstone. The Nashville Basin has an elevation of approximately 200 feet lower than the surrounding Highland Rim. Bedrock in the area is flat-lying limestone. Karst is well developed in parts of both the Highland Rim and the Nashville Basin (Greene and Wolfe 2000; Hardeman et al 1966).

3.3.1.1 Geology and Paleontology

The Project Site is primarily underlain unconsolidated sediments that extend approximately 50 to 100 feet below ground surface, based on water well records viewed on the Tennessee Water Well Desktop Application (TDEC 2022). Unconsolidated sediments are underlain by St. Louis Limestone, Warsaw Limestone, Fort Payne Formation and Chattanooga Shale. St. Louis Limestone is a fine-grained, brownish-gray limestone with a thickness of 100 to 280 feet. Warsaw Limestone is a coarse-grained, gray, cross-bedded limestone with a thickness 40 to 150 feet. Fort Payne Formation is characterized by bedded chert, calcareous and dolomitic silicastone, minor limestone, and shale with scattered lenses of crinoidal limestone. The average thickness is about 250 feet. Chattanooga Shale is characterized by carbonaceous shale with a thickness of zero to 70 feet.

During the Precambrian period, the area that is now current-day Tennessee was located in the southern hemisphere and was covered by a shallow, tropical sea that was home to diverse species of sea life. By the Paleozoic period, Tennessee was located along the southern border of present-day North America and was still covered by sea water. During the Late Carboniferous period, mountain building in the east caused soil erosion and deposition resulting in swampy deltas to form in central Tennessee. Western Tennessee continued to be underwater while the central and eastern portion of Tennessee was above sea level continued through the Mesozoic and Cenozoic periods (The Paleontology Portal 2021).

3.3.1.2 Geological Hazards

Geological hazards can include landslides, volcanoes, earthquakes/seismic activity, and subsidence/sinkholes. The Project Site generally consists of flat to gently sloping land that ranges in elevation from approximately 1,010 feet AMSL where Hurricane creek crosses the southern boundary of the Project Site to 1,150 feet AMSL in the western portion of the Project Site. No significant slopes are present within several miles; therefore, landslides are not a potential risk. No volcanoes are present within several hundred miles of the Project Site.

Sinkholes are common where the rock below the land surface is limestone, carbonate rock, salt beds, or rocks that can naturally be dissolved by groundwater circulating through them. As the rock dissolves, spaces and caverns develop underground. Land over sinkholes may stay intact until there is not enough support for the land above the spaces. Then a sudden collapse of the land surface can occur. These collapses can vary greatly in size and shape (Kaufmann 2007). No mapped sinkholes exist on the Project Site or within the project area.

Seismic activity at the site could cause surface faulting, ground motion, ground deformation, and conditions including liquefaction and subsidence. The Modified Mercalli Scale is used within the United States to measure the intensity of an earthquake. The scale arbitrarily

quantifies the effects of an earthquake based on the observed effects on people and the natural and built environment. Mercalli intensities are measured on a scale of I through XII, with I denoting the weakest intensity and XII denoting the strongest intensity. The lower degrees of the scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. This value is translated into a peak ground acceleration (PGA) value to measure the maximum force experienced. The PGA is the maximum acceleration experienced by a building or object at ground level during an earthquake on uniform, firm-rock site conditions. The PGA is measured in terms of percent of “g,” the acceleration due to gravity. The U.S. Geological Survey (USGS) Earthquake Hazards Program publishes seismic hazard map data layers that display the PGA with 10 percent probability of exceedance in 50 years (one in 475-year event). The potential ground motion for the project area is 0.1312 g, for a PGA with a two percent probability of exceedance within 50 years (Figure 3-2; USGS 2014). A 0.1312 g earthquake would have a strong perceived shaking with light potential for damage. Based on the USGS 2014 seismic hazard map, the Project Site has low risk for earthquakes that would cause structural damage.

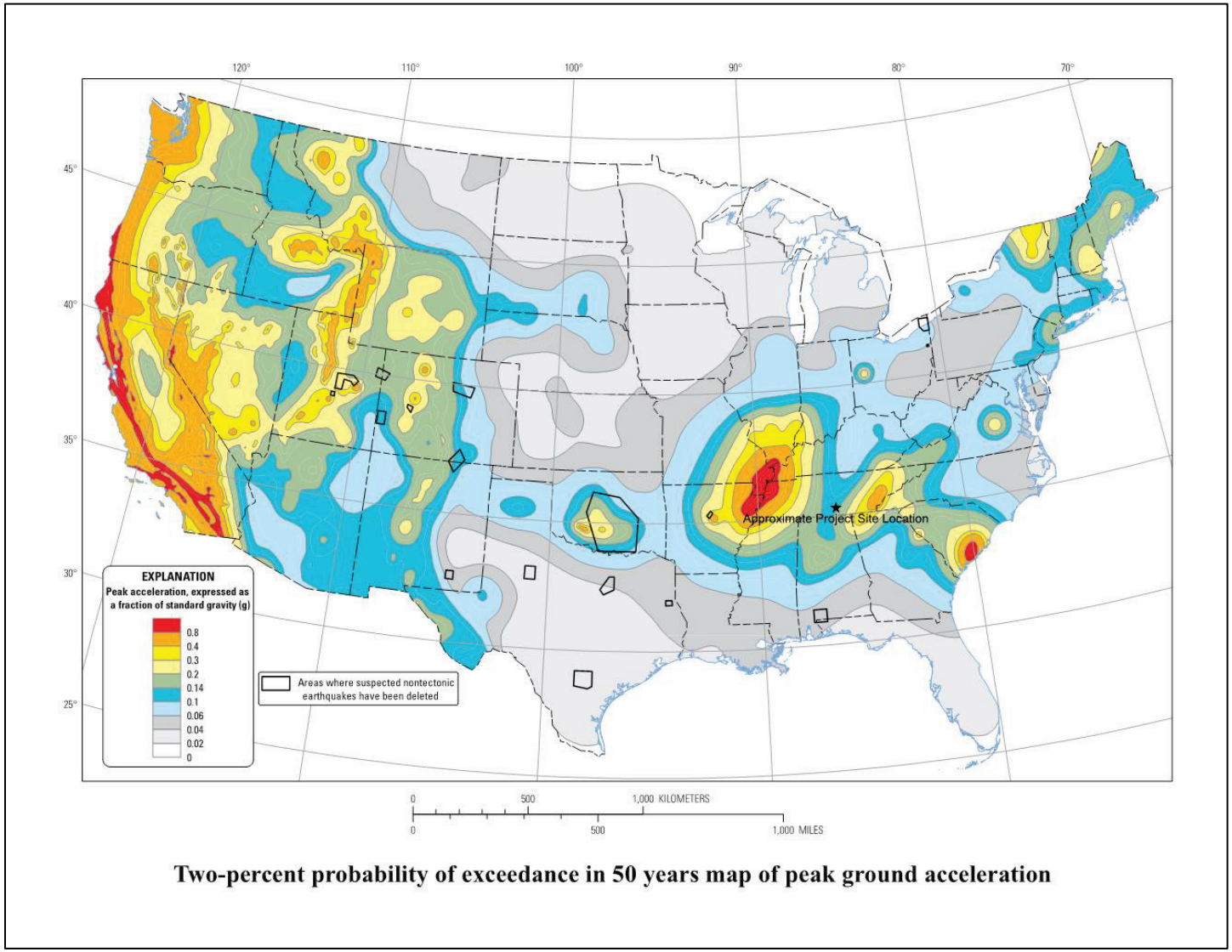

Figure 3-2. Closest Seismic Hazard Areas to the Project Site (USGS 2014)

3.3.1.3 Soils

Twenty soil types have been mapped on the Project Site and the majority are composed of Mountview silt loam, two to five percent slopes (33 percent); Dickson silt loam, zero to two percent slopes (18.9 percent); Taft silt loam, zero to two percent slopes (13.4 percent); Dickson silt loam, two to five percent slopes (12.4 percent); and Guthrie silt loam, zero to two percent slopes, frequently ponded (10.7 percent) (USDA 2019; Figure 3-3; Table 3-3). The other 15 soil types each make up less than five percent of the site.

The Mountview series soils consist of very deep, well drained and moderately well drained, soils that formed in silty mantle of presumably loess and underlying residuum of limestone or old alluvium. These soils are on undulating to rolling ridgetops and broad plateau-like areas with slopes ranging from zero to 20 percent. Primary uses are for growing hay, pasture, small grains, cotton, corn, and tobacco. The Dickson series soils consist of very deep, moderately well drained soils that formed in a silty mantle and the underlying residuum of limestone. These soils are on nearly level to sloping uplands. Slopes range from zero to 12 percent. Primary uses are for growing hay, pasture, small grains, corn, soybeans, and tobacco. The Taft series soils consist of very deep, somewhat poorly drained soils that formed in a silty mantle of loess or alluvium and the underlying residuum of limestone or shale. These soils are nearly level and are on upland flats, stream terraces, and in depressions. Primary uses are for growing pasture, hay, soybeans, and some corn. The Guthrie series soils consist of very deep, poorly drained soils that formed in silty material on upland flats and depressions. Slopes range from zero to two percent. Primary uses are for pasture and soybeans (USDA 2021).

3.3.1.4 Prime Farmland

Prime farmland is land that is the most suitable for economically producing sustained high yields of food, feed, fiber, forage, and oilseed crops. Prime farmlands have the best combination of soil type, growing season, and moisture supply and are available for agricultural use (i.e., not water or urban built-up land). The Farmland Protection Policy Act (FPPA; 7 U.S.C. § 4201 *et seq.*), requires federal agencies to consider the adverse effects of their actions on prime or unique farmlands. The purpose of the FPPA is “to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.”

Based on soils data obtained from the U.S. Department of Agriculture (USDA) Web Soil Survey, approximately 2,400 acres (69.3 percent) of the Project Site are designated as prime farmland, as illustrated in Figure 3-4. The soil types classified as prime farmland are indicated in Table 3-3.

Table 3-3. Soils on the Project Site

Soil Type	Farmland Classification	Area (acres)	% of Project Site
Agee silty clay loam, rarely flooded	Not prime farmland	1.2	<0.1
Dellrose gravelly silt loam, 12 to 20 percent slopes, eroded	Not prime farmland	11.2	0.3
Dickson silt loam, 0 to 2 percent slopes	All areas are prime farmland	655.7	18.9
Dickson silt loam, 2 to 5 percent slopes	All areas are prime farmland	429.5	12.4
Ennis gravelly silt loam, occasionally flooded	All areas are prime farmland	34.3	1.0
Guthrie silt loam, 0 to 2 percent slopes, frequently ponded	Not prime farmland	369.6	10.7
Hawthorne-Bodine complex, 20 to 60 percent slopes	Not prime farmland	39.2	1.1
Hawthorne-Sugargrove complex, 5 to 20 percent slopes	Not prime farmland	126.2	3.6
Humphreys gravelly silt loam, 5 to 12 percent slopes	Not prime farmland	8.6	0.2
Lawrence silt loam	All areas are prime farmland	3.0	0.1
Lee silt loam	Prime farmland if drained	1.5	<0.1
Lobelville silt loam, local alluvium phase	All areas are prime farmland	0.2	<0.1
Mountview silt loam, 0 to 2 percent slopes	All areas are prime farmland	132.0	3.8
Mountview silt loam, 2 to 5 percent slopes	All areas are prime farmland	1,141.5	33.0
Mountview silt loam, 5 to 12 percent slopes	Not prime farmland	43.7	1.3
Mountview silt loam, gently sloping phase	All areas are prime farmland	1.4	<0.1
Mountview silt loam, eroded, gently sloping phase	All areas are prime farmland	1.3	<0.1
Mountview silt loam, eroded, sloping phase	Not prime farmland	<0.1	<0.1
Mountview silt loam, sloping shallow phase	Not prime farmland	0.8	<0.1
Taft silt loam, 0 to 2 percent slopes	Not prime farmland	462.6	13.4
Total Prime Farmland		**2,400.4**	**69.3**

Source: USDA 2019

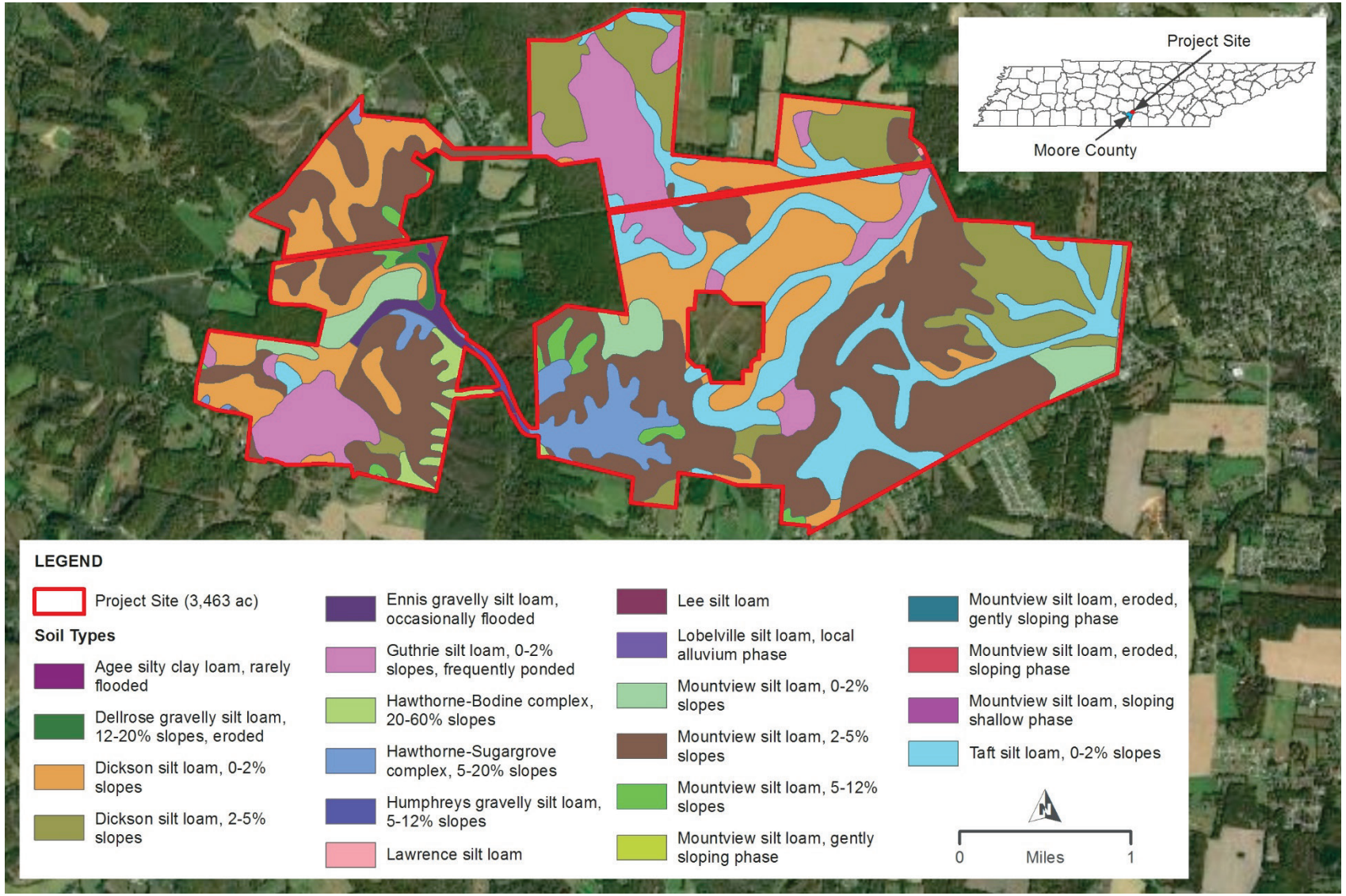

Figure 3-3. Soils on the Project Site

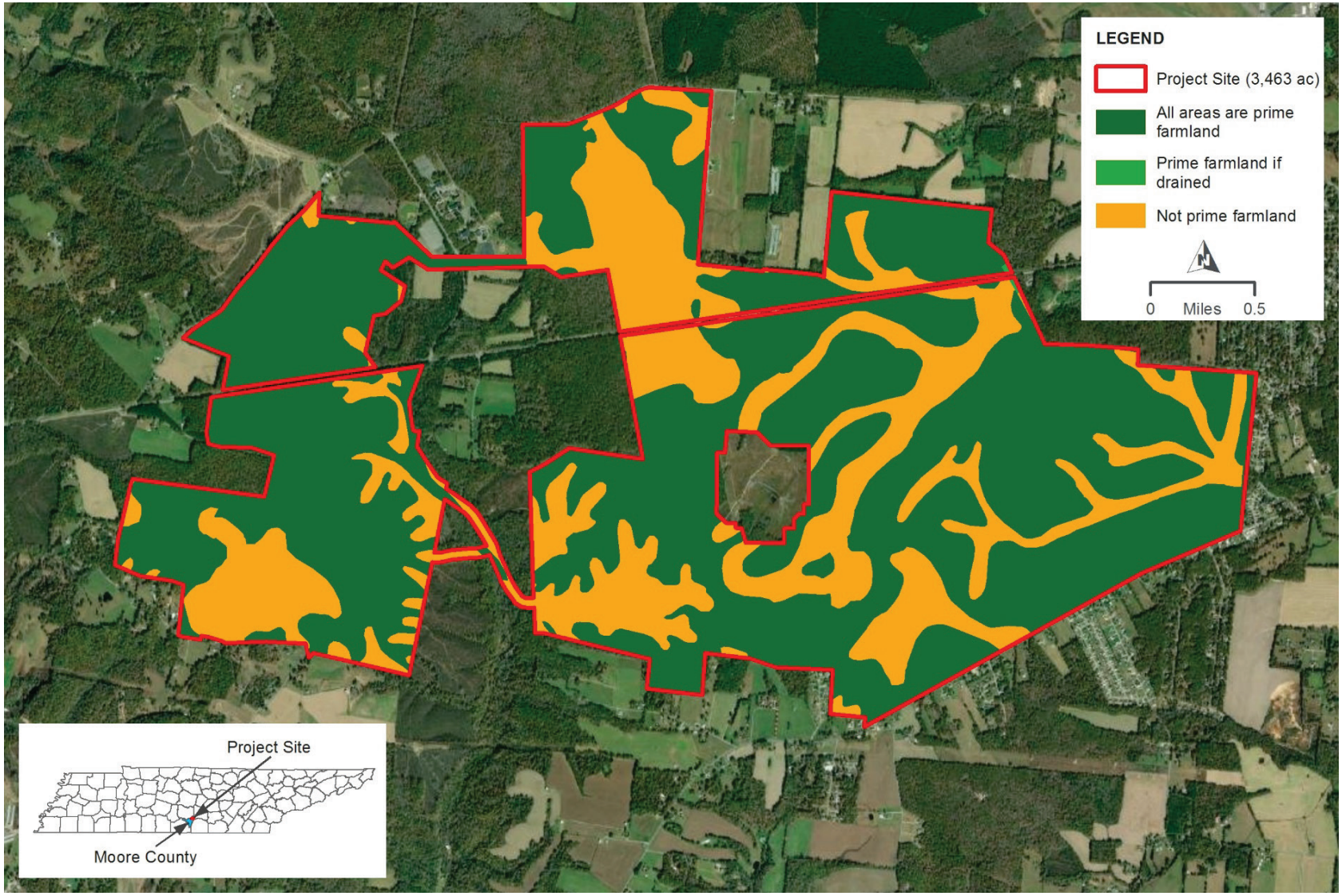

Figure 3-4. Soils Classified as Prime Farmland on the Project Site

3.3.2 Environmental Consequences

3.3.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on geological, paleontological, soil resources, or prime farmlands would result if current land use practices continue.

3.3.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL. Direct impacts to geology, soil, and prime farmland resources would occur as a result of construction and operation of the Project.

Approximately 54 percent (1,873 acres) of the 3,463-acre Project Site would be cleared and/or graded for the solar facility, Project substation, switchyard, and associated on-site interconnection facilities. Grading and clearing for the solar facility would cause minor, localized increases in erosion and sedimentation, resulting in minor impacts to geology and soils. Array pilings and the five new TL pole structures would be driven into the ground to a depth of up to 20 feet and approximately 10 to 12 feet, respectively.

3.3.2.2.1 Geology and Paleontology

Under the Proposed Action, minor impacts to geology could occur. The solar arrays would be supported by steel piles that would either be driven or screwed into the ground to a depth of up to 20 feet. The five new TL pole structures would be directly imbedded in holes where existing structures would be removed or newly augured into the ground to a depth equal to 10 percent of the pole's length plus an additional two feet, typically about 10 to 12 feet deep. Given that depth to bedrock generally ranges from 50 to 100 feet below ground surface, driven or screwed piles should not impact underlying geology.

Any on-site sedimentation basins would be shallow and, to the extent feasible, utilize the existing terrain without requiring extensive excavation. The PV panels would be connected with underground wiring placed in trenches three- to four-feet deep. Minor excavations would also be required for construction of the Project substation and to conduct other activities associated with the interconnection of the solar PV facility to TVA's existing electrical transmission network. Due to the small sizes of the subsurface disturbances, only minor direct impacts to potential subsurface geological resources are anticipated.

Should paleontological resources be exposed during site construction or operation activities, ground-disturbing work would be halted, and a paleontological expert would be consulted to determine the nature of the paleontological resources, recover these resources, analyze the potential for additional impacts, and develop and implement a recovery plan/mitigation strategy.

3.3.2.2.2 Geologic Hazards

Hazards resulting from geological conditions may be encountered in the case of sinkholes. While there are no known sinkholes on site, the Project Site is located over limestone bedrock that is susceptible to erosion and the creation of sinkholes. The Project Site has a low risk for earthquakes that will cause structural damage. The Project would be designed to comply with applicable standards to minimize issues pertaining with sinkholes and seismic activity. Geological hazard impacts on the site would be unlikely to impact off-site resources.

3.3.2.2.3 Soils

The facility construction would affect soils on 1,873 acres of the Project Site. None of the soils on the Project Site have characteristics that would require special construction techniques or other non-routine measures. TL upgrades would require improvements to existing access roads and five new TL pole structures. Minimal ground disturbance is expected in these areas, but, if the ground is disturbed, the access road area would be revegetated using native, low-growing plant species after required TL upgrade work is completed to minimize the potential for increased soil erosion and runoff. Soils would be temporarily affected due to construction activities and tree-trimming and other maintenance activities during operation. Any stockpiled soils from the area where vegetation clearing and grading occurs, including topsoils, would be replaced following cut-and-fill activities to the extent practical and, therefore, likely not require off-site hauling of soils. However, some minimal off-site hauling may be necessary. Although not anticipated, should borrow material such as sand, gravel, rip rap, or other aggregate, such as large rocks, be required for Project Site activities, these resources may be obtained either from on-site sources, if available from on-site excavations, or from nearby permitted off-site sources.

The creation of small areas of new impervious surface (individual surface areas ranging from 0.01 to two acres, together amounting to approximately eight acres), in the form of the foundations for the central inverters and the Project substation, operations and maintenance building, and associated components, would result in a minor increase in stormwater runoff and potential increase in soil erosion. Planting of perennial and annual, non-invasive vegetation, including plants attractive to pollinators, within the limits of disturbance along with use of BMPs described in the SWPPP (see Section 1.4), such as soil erosion and sediment control measures, would minimize the potential for increased soil erosion and runoff. Following construction, implementation of soil stabilization and vegetation management measures would reduce the potential for erosion impacts during facility operations.

During operation and maintenance of the solar facility and associated interconnection facilities, minor disturbance could occur to soils. Routine maintenance would include periodic motor replacement; inverter air filter replacement; fence repair; vegetation control; and periodic PV array inspection, repairs, and maintenance. Most of the fenced-in, developed solar facility areas would be grazed by sheep to manage vegetation. Selective spot applications of herbicides may be employed around facilities and structures to control weeds. Herbicides would be applied by a professional contractor or a qualified Project technician. These maintenance activities would not result in any adverse impacts to soils on the Project Site during operations.

3.3.2.2.4 Prime Farmland

Approximately 54 percent (1,873 acres) of the 3,463-acre Project Site would be developed into the solar facility, and the 5.8 percent (202 acres) that is currently farmed would no longer be suitable for row crops. This would affect approximately 1,475 acres of prime farmland, amounting to approximately 61.4 percent of the total prime farmland area on the Project Site, most of which is not currently farmed. Because the construction and operation of the solar facility would have little effect on the productivity of soils on the site and most of the site would be utilized for grazing sheep, which would have benefits to the local farming community, impacts to prime farmland would be minor. Following decommissioning of the solar facilities, the site could be utilized for a variety of types of agricultural production, including row cropping.

3.3.2.2.5 Cumulative Impacts
The Proposed Action would remove approximately 202 acres of agricultural land from row cropping uses. The RFFA Coffee County Joint Industrial Park, listed in Table 3-1 could remove current prime farmland in the area; therefore, together with the Proposed Action, would contribute to minor cumulative impacts on prime farmland.

3.4 Water Resources

3.4.1 Groundwater

3.4.1.1 Affected Environment
Groundwater is water located beneath the ground surface within soils and subsurface formations known as hydrogeological units or aquifers (USGS 2020). Aquifers conduct groundwater and significant quantities of water to be produced by man-made water wells and natural springs.

According to the USGS, the project area is underlain by the Mississippian Carbonate Aquifer system. Bedrock consists of flat-lying Mississippian carbonates, principally the Fort Payne Chert and Tuscumbia Limestone that constitute the most aerially extensive aquifer in the Tennessee Region. These formations weather to form a deep regolith aquifer. In many places, the carbonate bedrock contains karst features that can transmit water rapidly (Zurawski 1978). The aquifer is recharged by water that infiltrates and percolates through the overlaying unconsolidated material until it enters the bedrock and aquifer. The base of the aquifer consists of contact with the underlying Chattanooga Shale. The Mississippian Carbonate Aquifer is located in the south-central area of Tennessee. This aquifer is overlain by silt loams with cherty silt loams and clay silt loams.

Groundwater recharge and discharge corresponds to topographic high and lows, respectively. Groundwater in the area can be affected by agricultural pumping and local surface water bodies with flow following local topography either toward West Fork Rock Creek and North Fork Blue Creek or Cumberland Springs Lake, Hurricane Creek, and Turkey Creek. Drinking water in the area is supplied from a surface water intake located on the Duck River or a freshwater spring located at the headwaters of Little Hurricane Creek.

The natural quality of groundwater in the Tennessee Region depends on many factors, but mainly upon the composition of rock in which the groundwater occurs. When water infiltrates the aquifer as precipitation, it is generally low in dissolved solids, soft, and slightly acidic. As it moves through the regolith, it generally remains slightly acidic and low in dissolved solids. This acidic groundwater can dissolve the carbonate rocks, resulting in water that is enriched in bicarbonate, calcium, and magnesium. As the dissolved solids increase, the water becomes harder and slightly alkaline.

3.4.1.2 Environmental Consequences

3.4.1.2.1 No Action Alternative
Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, no Project-related impacts to groundwater would be expected to occur. Existing land use would remain a mix of mostly forested and some agricultural land, and groundwater resources would remain much as they are at the present time. However, indirect impacts to groundwater resources due to continued erosion from timbering operations could occur if these the current land uses continue by other parties.

3.4.1.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL, including installation of five new TL pole structures for the TL upgrades, all of which would be located on the Project Site. New poles would be augured into the ground to a depth equal to 10 percent of the pole's length plus an additional two feet, typically about 10 to 12 feet deep.

Beneficial, indirect impacts to groundwater could result from the change in land use from timber harvesting and agricultural use to industrial use. This would include use of BMPs associated with hazardous materials, the reduced likelihood of erosion and sedimentation, and the improvement of water quality by filtering through permanent perennial and annual, non-invasive plant cover.

No direct adverse impacts to groundwater would result from the Proposed Action. The PV panels would not have an effect on groundwater infiltration and surface water runoff because the panels would not include a runoff collection system. Rainwater would drain off the panels to the adjacent vegetated ground. Array spacing and panel movement throughout the day would minimize rain shadow effects. Installation of the new TL pole structures may intersect with the groundwater; however, the poles would be constructed of materials deemed safe for contact with groundwater.

Hazardous materials that could contaminate groundwater would be stored on the Project Site during construction. The minimal use of petroleum fuels, lubricants, and hydraulic fluids during construction and by maintenance vehicles would result in a low potential for small on-site spills. However, the use of BMPs and a site-specific Spill Prevention, Countermeasure and Control (SPCC) plan to properly maintain vehicles, avoid leaks and spills, and define procedures to immediately address any spills that did occur, would minimize the potential for adverse impacts to groundwater.

Project activities that could cause erosion during construction resulting in the movement of sediment into groundwater infiltration zones. BMPs, such as those described in TVA's BMP manual (TVA 2017a), would be used to avoid contamination of groundwater due to Project activities. However, once construction was complete and disturbed areas were re-vegetated, future erosion and sediment control would be minimized.

3.4.1.2.2.1 Project Water Needs

Water and sewer services would be required during construction of the Project. Construction-related water use would support site preparation and grading activities. The primary use of water during construction would be for compaction and dust control during grading and earthwork. Smaller quantities of water would be required for other minor uses.

Water used during construction would be provided via delivery by water trucks or Project wells. If wells are selected, SR Tullahoma would conduct groundwater drilling and testing to gather information on aquifer characteristics and develop a plan for the production well design. If required, water-based drilling muds would be collected and dewatered, with runoff occurring locally into nearby field areas. Dewatered muds would be non-toxic and could be distributed as subsoil during site grading. If determined necessary, sewer treatment would be accomplished through use of a pump-out septic holding tank. If installed, groundwater

wells and the septic holding tank would be appropriately permitted and constructed to avoid impacts to groundwater.

The primary uses of water during operation and maintenance would be for dust control, equipment washing and potential building restroom facilities. Internal access roads would not be heavily traveled during normal operation, and consequently, water use for dust control is anticipated to be limited if at all necessary. The panels are slated to be cleaned on a regular basis depending on the frequency of rainfall, proximity of arrays to sources of airborne particulates, and other factors.

Equipment washing and any potential dust control discharges would be handled in accordance with BMPs for water-only cleaning. Water needs during operation and maintenance would be provided via water trucks and would not adversely affect groundwater resources.

Conditions may change by the time facility closure and decommission becomes necessary. A final Decommissioning and Closure Plan would be created based on site conditions at the time of facility closure.

The Project would comply with NPDES requirements by preparing and implementing a SWPPP and filing a NOI to comply with the General Construction Stormwater NPDES Permit. The plan would include procedures to be followed during decommissioning to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances.

Decommissioning and site reclamation would likely be staged in phases, allowing for a minimal amount of disturbance and requiring minimal dust control and water usage. It is anticipated that water usage during decommissioning and site reclamation would not exceed construction or operational water usage.

3.4.1.2.2.2 Overall Groundwater Impacts

Due to the small volume of groundwater anticipated to be needed for the Project, impacts to the local aquifers and groundwater in general are not anticipated. The use of BMPs and a SWPPP would reduce the possibility of any on-site hazardous materials reaching the groundwater during operation or maintenance. Overall, adverse impacts to groundwater would not be anticipated.

Currently, most of the on-site land use is forest management, including timbering operations, which provides for the possibility of eroding soils to runoff and percolate into the groundwater. The construction and operation of the Proposed Action would reduce erosion, resulting in a beneficial, though minor, indirect impact to groundwater.

3.4.1.2.2.3 Cumulative Impacts

Land use on the Project Site would change from forest management, including timbering operations, and agricultural uses to a mix of industrial and agricultural (sheep pasture) uses. The slight increase in impervious surface may inhibit groundwater infiltration and recharge to the local aquifer. The surficial aquifer system and the Mississippian Carbonate Aquifer underlies the Project Site and is recharged by topographic highs. Groundwater flow follows local topography either toward West Fork Rock Creek and North Fork Blue Creek or Cumberland Springs Lake, Hurricane Creek, and Turkey Creek. The RFFA Coffee County Joint Industrial Park, listed in Table 3-1, would likely include paving the land surface and

diverting surface water; due to this, groundwater recharge would be expected to be lowered in the vicinity of that project. Due to the small areas that would change as a result of the Project and the RFFAs, cumulative impacts of past, present, and RFFAs, together with the Proposed Action, on groundwater would be expected to be minor.

3.4.2 Surface Water and Wetlands

3.4.2.1 Affected Environment

3.4.2.1.1 Regional Setting

The project area is within two hydrologic unit code (HUC)-10 sub-basins of Upper Elk [HUC 0603000304]: Tims Ford Lake – Elk River [HUC 0603000304] and a small portion of Mulberry Creek [HUC 0603000305] (Figure 3-5; USGS 1987; USGS 2022). Both watersheds are located within Tennessee. The TL is contained within the Tims Ford Lake – Elk River watershed. The Upper Elk watershed drains approximately 1,270 square miles. On-site surface waters in the eastern portion of the Project Site drain into North Fork Blue Creek that drains into Blue Creek and West Fork Rock Creek. On-site surface waters in the northeast portion of the portion of the Project Site drain into West Fork Rock Creek that drains into Rock Creek. On-site surface waters in the western portion of the Project Site drain into Hurricane Creek that drains southeast to its confluence with Elk River. On-site surface waters within the TL drain into Spring Creek, Turkey Creek, and Poorhouse Creek. Poorhouse Creek also drains into Rock Creek. All streams ultimately drain into the Elk River, located approximately eight miles southeast of the project area.

Precipitation in the project area averages about 58.6 inches per year. The average annual air temperature ranges from a maximum of 69 degrees Fahrenheit (°F) to a minimum of 47°F, with a winter average of 40°F and a summer average of 75°F in the summer months (NOAA 2021a). Stream flow varies with rainfall and averages 29 inches of runoff per year (USGS 2008).

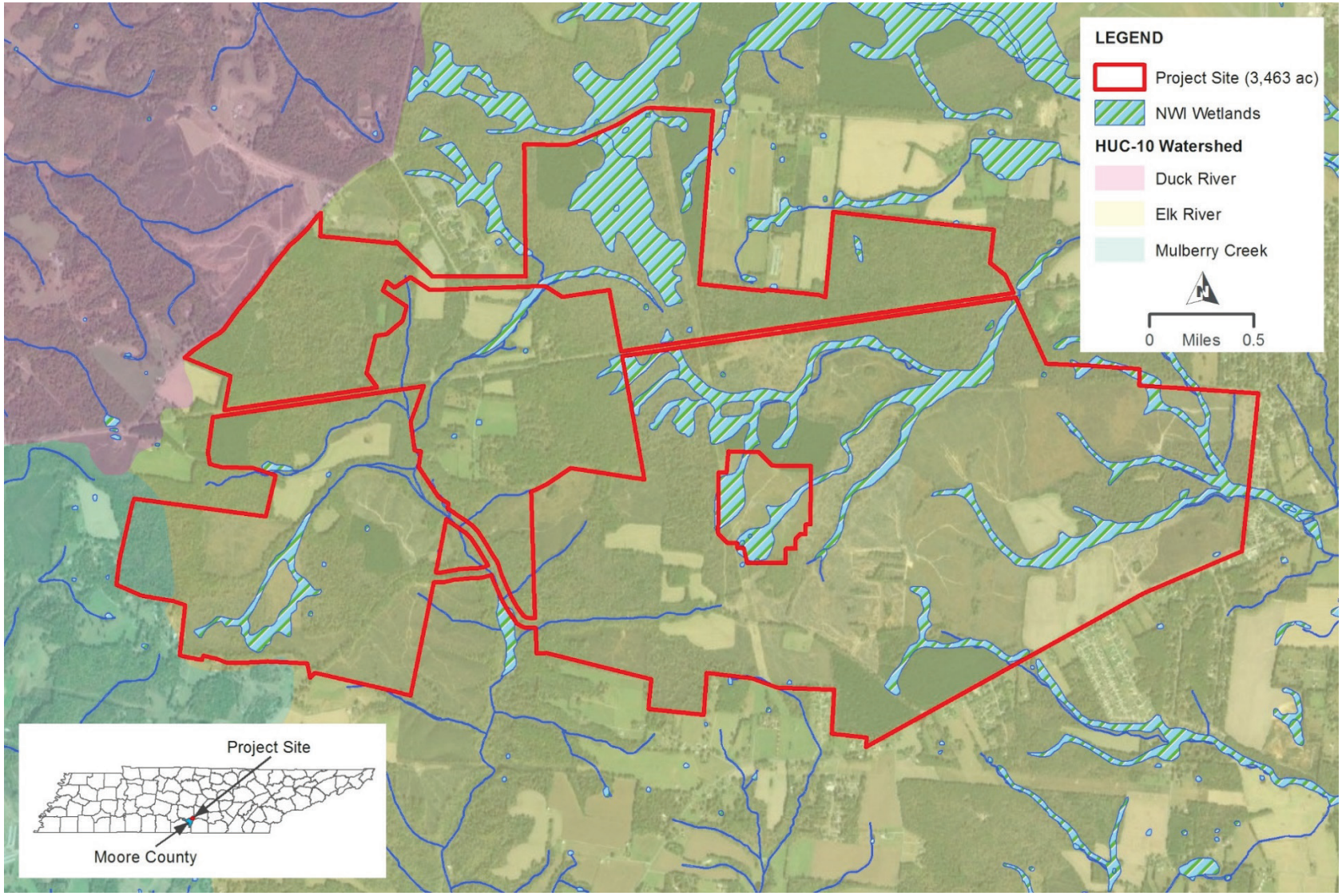

Figure 3-5. NWI Wetlands and HUC-10 Watersheds in the Project Site Vicinity

3.4.2.1.2 Surface Water and Wetlands

Surface water is any water that flows above ground and includes, but is not limited to, streams, ponds, lakes, and wetlands. Streams can be further classified as perennial, intermittent, or ephemeral based on the occurrence of surface flow. Surface waters with certain physical and hydrologic characteristics (defined bed and bank, ordinary high-water mark, or specific hydrologic, soil, and vegetation criteria) are considered Waters of the U.S. (or jurisdictional waters) and are under the regulatory jurisdiction of USACE. CWA is the primary federal statute that governs the discharge of pollutants and fill materials into Waters of the U.S. under Sections 401, 402, and 404. The limits of Waters of the U.S. are defined through a jurisdictional determination that is in review by USACE (Appendix A). The pending jurisdictional determination will confirm the jurisdictional status of the onsite waters. TDEC regulates state waters and has jurisdiction over water quality. For TDEC, a Hydrologic Determination (HD) form is required for both streams and wet weather conveyances (WWCs). An HD Request was submitted and concurred with by TDEC (Appendix A). The following information references the surface waters and wetlands by their federally jurisdictional classifications (USACE).

Field surveys of the Project Site conducted between April and June 2021, in November 2021, and in September 2022 documented a total of 32 jurisdictional perennial or intermittent streams (28,075 LF and 30,925 LF, respectively), 18 jurisdictional ephemeral streams (7,732 LF), 19 jurisdictional wetlands (556.23 acres), and four jurisdictional open waters (ponds; 1.97 acres). The Project Site also includes 18 non-jurisdictional ditches (11,580 LF), five non-jurisdictional open waters (ponds; 1.60 acres), and 11 non-jurisdictional wetlands (5.65 acres; Appendix A). Ditches did not have an ordinary high-water mark or bed and bank while ephemeral streams did have these characteristics. Field surveys of the TL upgrade locations conducted in January and February 2022 identified five jurisdictional streams (1,657 LF), two jurisdictional wetlands (6.88 acres), and six non-jurisdictional ephemeral streams (2,022 LF). Figures 3-6, 3-7, 3-8, 3-9, and 3-10 depict the delineated perennial and intermittent streams, ephemeral streams, and wetlands on the Project Site and in the TL upgrade locations. Named streams on the Project Site consist of North Fork Blue Creek, West Fork Rock Creek, and Hurricane Creek. One named stream was delineated in the TL locations, Spring Creek. Wetland determinations were performed according to USACE standards that require documentation of hydrophytic (wet-site) vegetation, hydric soil, and wetland hydrology (Environmental Laboratory 1987; Lichvar et al. 2016; USACE 2012).

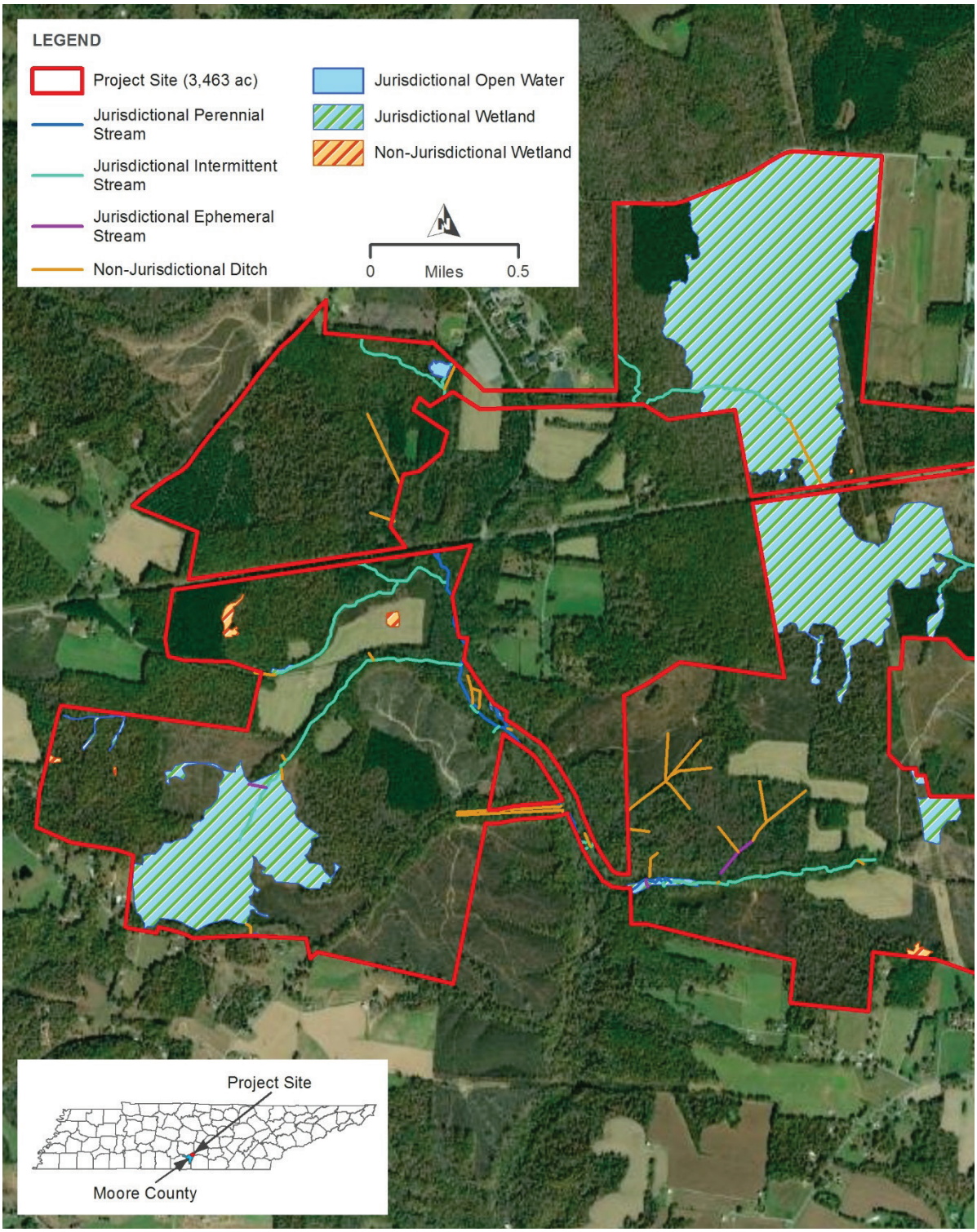

Figure 3-6. Aerial Photo Showing Delineated Wetlands and Streams on the Western Portion of the Project Site

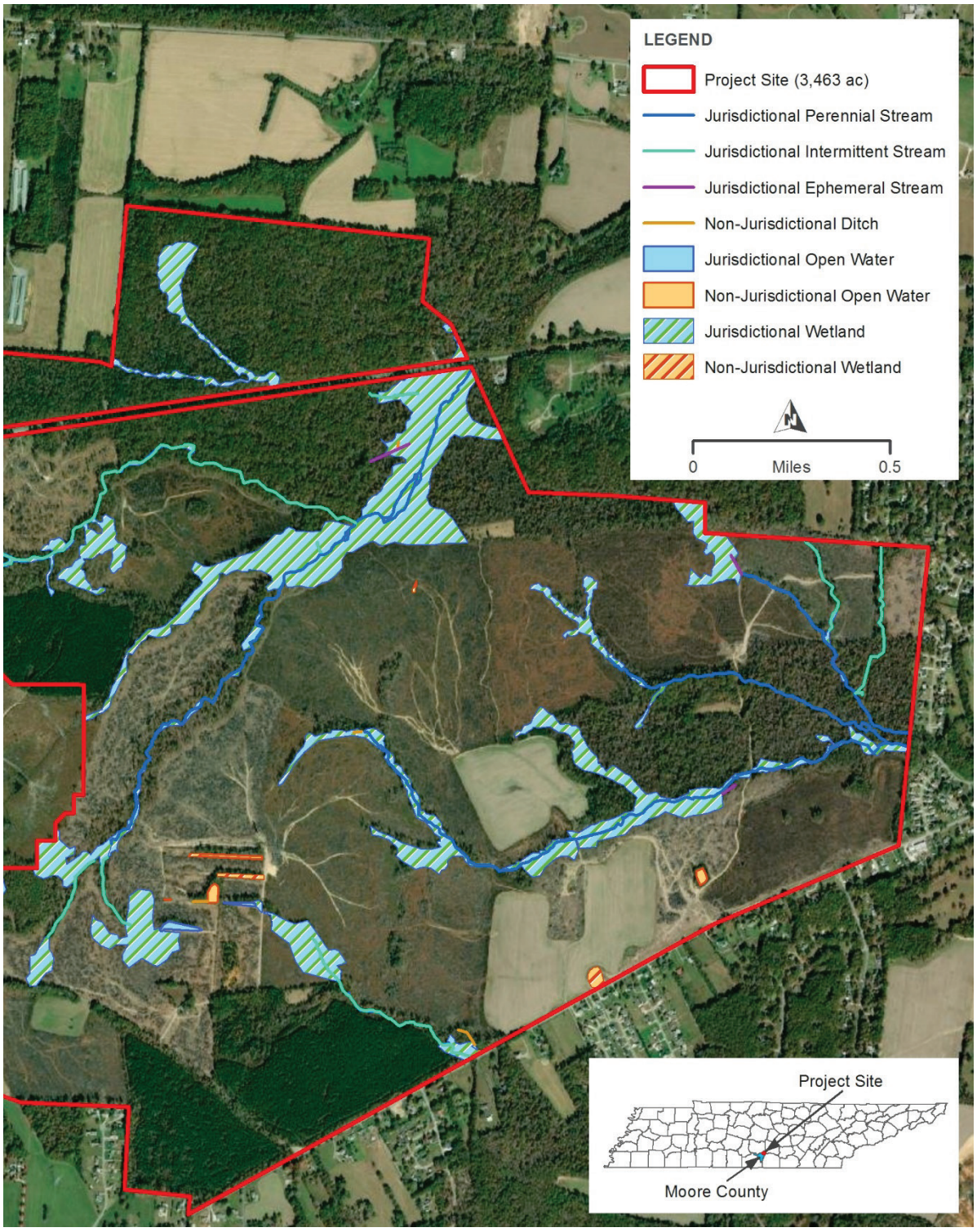

Figure 3-7. Aerial Photo Showing Delineated Wetlands and Streams on the Eastern Portion of the Project Site

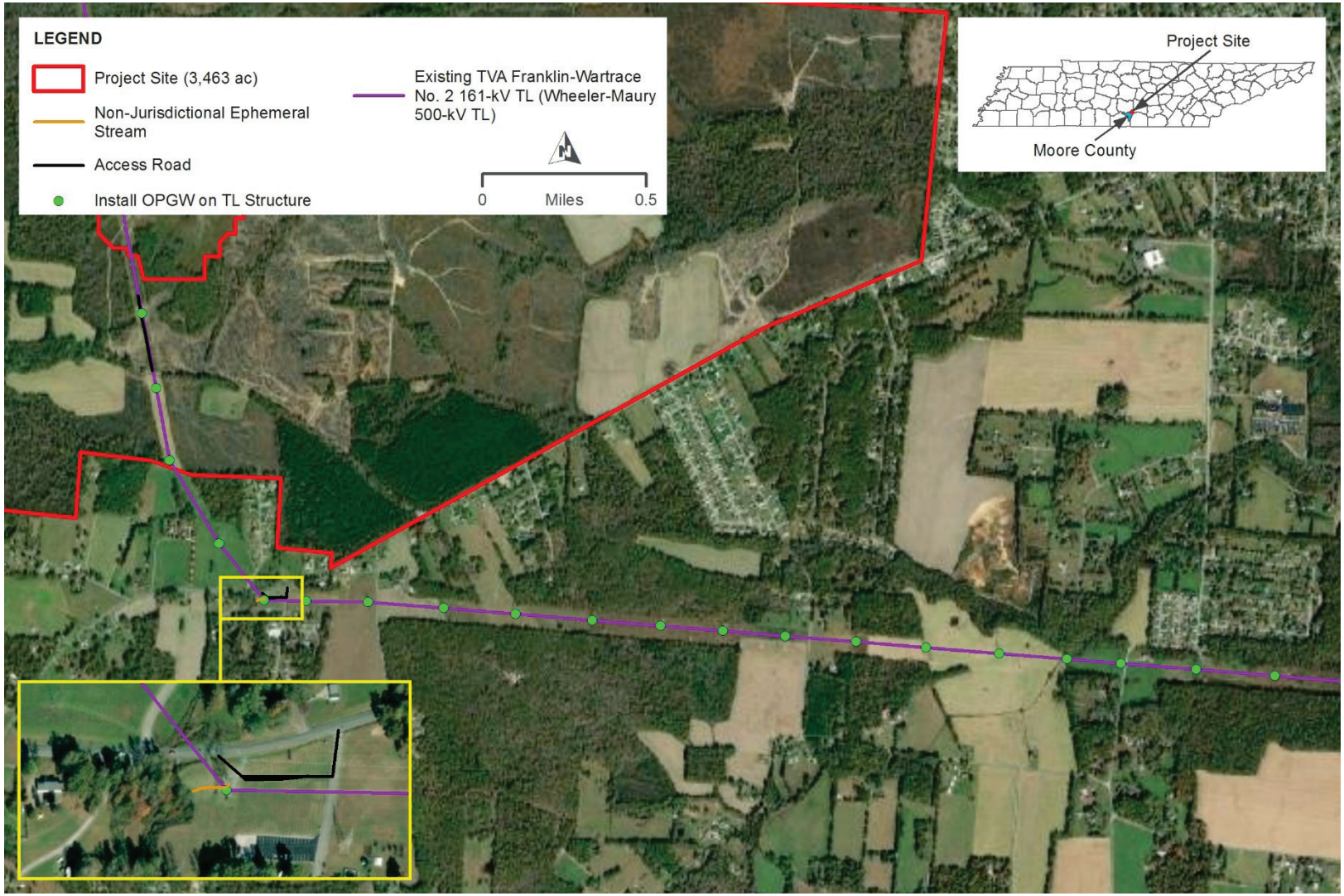

Figure 3-8. Aerial Photo Showing Streams and Wetlands Along the Transmission Line on the Western Portion of the Project

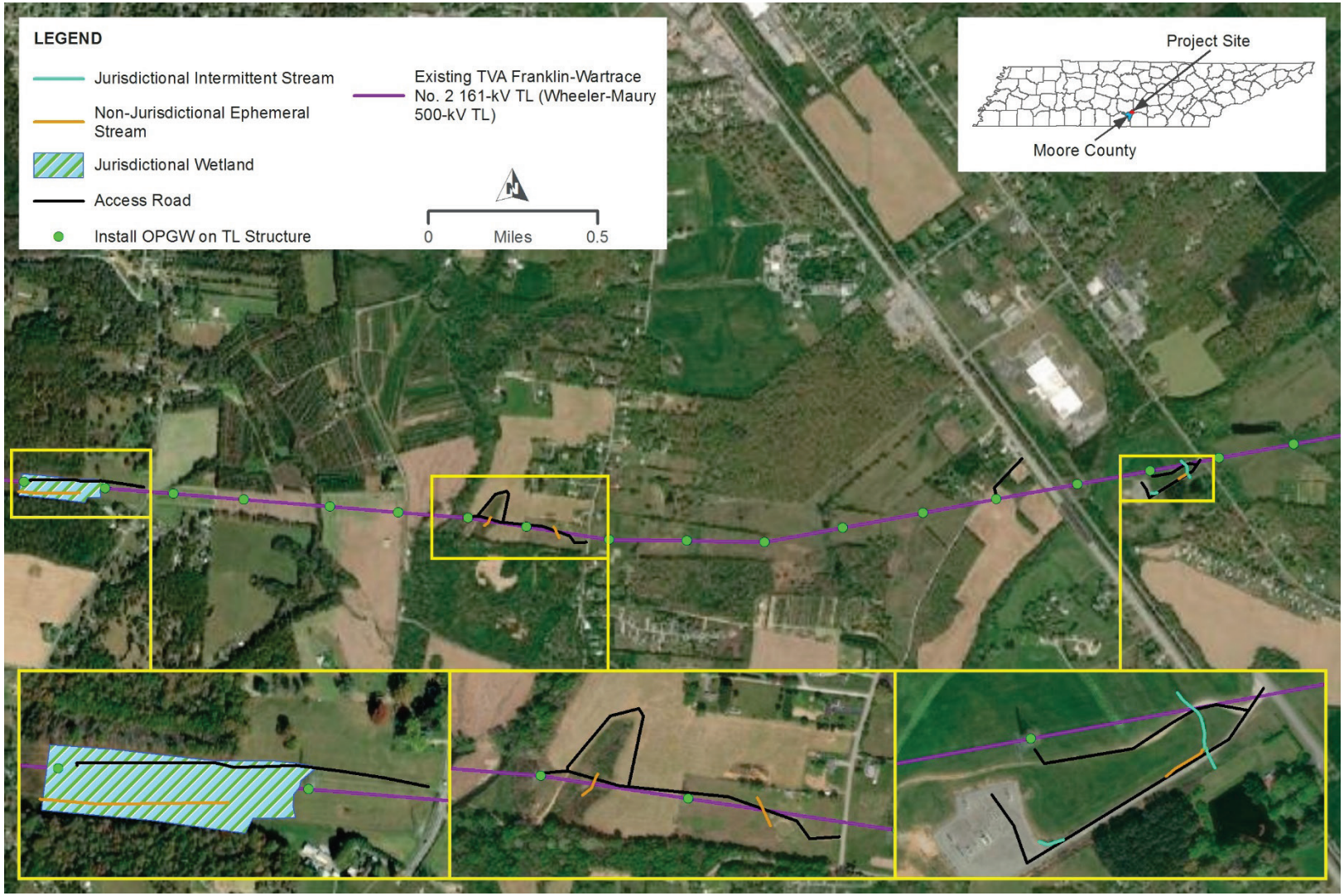

Figure 3-9. Aerial Photo Showing Streams and Wetlands Along the Transmission Line on the Central Portion of the Project

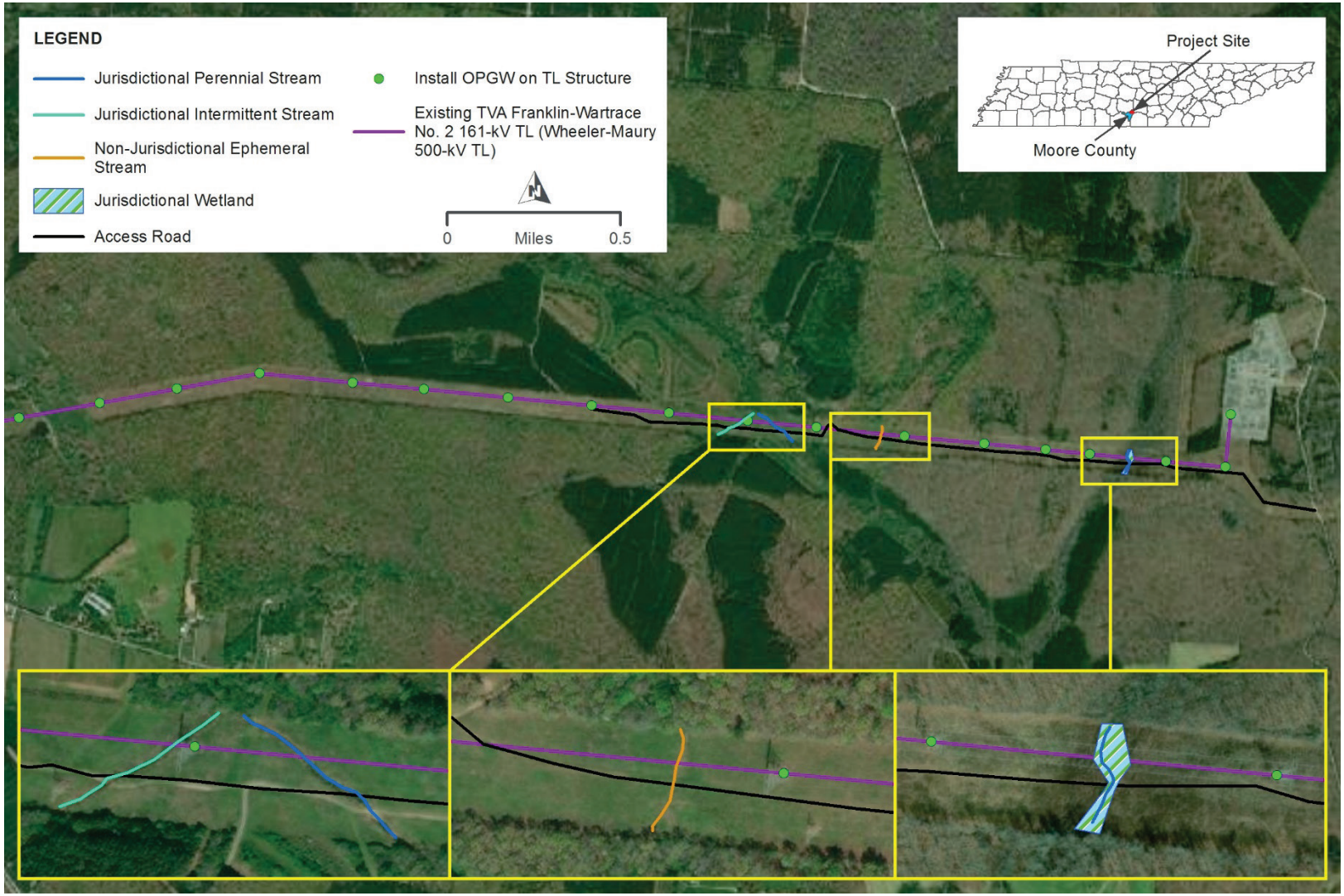

Figure 3-10. Aerial Photo Showing Streams and Wetlands Along the Transmission Line on the Eastern Portion of the Project

3.4.2.1.2.1 Water Quality

The CWA requires states to identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and to establish priorities for the development of limits based on the severity of the pollution and the sensitivity of the established uses of those waters. States are required to submit reports to USEPA with these data. The term "303(d) list" refers to the list of impaired and threatened streams and water bodies identified by the state. Two streams on the Project Site are currently listed as impaired: one unnamed tributary to South Fork Blue Creek (which is off site) and North Fork Blue Creek (USEPA 2019). Blue Creek within Moore County is listed as impaired due to livestock grazing within riparian zones and causing *Escherichia coli* contamination or changes in the riparian vegetation (TDEC 2020). No impaired waters are present in the TL upgrade locations. Table 3-4 provides a listing of local streams with their state designated uses.

Table 3-4. Streams in the Project Site Vicinity and Their Uses

Stream	Use classification[1]					
	IWS	FAL	REC	LWW	IRR	DOM
Rock Creek[2]	X	X	X	X	X	
Blue Creek[2]	X	X	X	X	X	X
Hurricane Creek	X	X	X	X	X	
Elk River[2]		X	X	X	X	

Source: USEPA 2017

[1]Codes: IWS = Industrial Water Supply; FAL = Fish and Aquatic Life; REC = Recreation; LWW = Livestock Watering and Wildlife; IRR = Irrigation; DOM = Domestic Water Supply

[2]Not in project area, shown for flow network.

3.4.2.1.2.2 Wetlands

Wetlands are areas saturated by surface or groundwater at a frequency and duration sufficient to support vegetation adapted to saturated conditions. Examples of wetlands are bottomland forests, swamps, wet meadows, isolated depressions, and shoreline fringe along watercourses or impoundments (33 CFR § 328.3). Wetland habitat provides valuable public benefits including flood storage, erosion control, water quality improvement, wildlife habitat, and recreation opportunities.

In the Interior Plateau Level III ecoregion (USEPA 2017), wetlands are composed of palustrine systems. Palustrine systems are non-tidal or freshwater complexes, dominated by trees, shrubs, or persistent emergent vegetation (Cowardin et al. 1979). Palustrine wetlands within this region can include bottomland or riparian hardwood forests, scrub-shrub wetlands, isolated ponds, or emergent wetlands typically composed of wet meadows and marshes. On the Project Site, wetlands are relatively abundant but primarily restricted to the bottomlands of perennial streams on the Project Site.

The National Wetland Inventory (NWI) was consulted for the Project Site prior to field surveys in April 2021. This nationwide dataset depicts potential wetland areas based on wetland signatures determined through aerial photography. These data are presented in Table 3-5. The portion of the Project Site within the Tims Ford Lake – Elk River watershed contains a large percentage of wetland cover relative to the broader watershed area (Table 3-5). Therefore, based on NWI data, the Project Site contains a relatively large percentage of wetland resources compared to the surrounding landscape within the broader watershed area. This was supported by the field survey findings, wherein it was determined that the Project Site is approximately 16 percent wetlands. The TL area is approximately 8.5 percent wetlands.

Table 3-5. NWI Wetland Cover by Watershed Relative to NWI Wetland Cover on the Project Site

Watershed Name (HUC-10) --Solar Site Tributary Name	Total NWI wetland cover in Watershed	NWI Wetland Cover on the Project Site
Tims Ford Lake – Elk River (0603000304)	5.7%	4.5%
Mulberry Creek (0603000305)	2.8%	0%

Source: USFWS 2017

Within the 3,463-acre survey area, approximately 562 wetland acres were identified on the Project Site during field surveys (Figure 3-6). Identified wetlands consist of bottomland habitat associated with two perennial streams: West Fork Rock Creek and North Fork Blue Creek. Wetland types consist of forested, scrub-shrub, and emergent (Table 3-6). Two emergent wetlands, totaling approximately 6.9 acres, were identified in the TL upgrade locations during field surveys.

Table 3-6. Delineated Wetland Acreage by Habitat and Drainage Basin on the Project Site and TL Upgrade Locations

Wetland Habitat Type	Tims Fork Lake - Elk River Drainage Basin	Mulberry Creek Drainage Basin	Total
Forested Wetland	83.9	0.1	84.0
Scrub-shrub Wetland	0.1	0	0.1
Forested/Scrub-Shrub Wetland	39.0	0	39.0
Forested/Emergent Wetland	420.4	0.3	420.7
Emergent/Scrub-shrub Wetland	5.9	0	5.9
Emergent Wetland	16.8	0	16.8
Grand Total	**566.1**	**0.4**	**566.5**

Using TDEC Tennessee Rapid Assessment Method (TRAM) quantitative rating form, wetlands on the Project Site were evaluated by their functions and classified into three categories: low quality, moderate quality, and exceptional quality. Low-quality wetlands are degraded aquatic resources that may exhibit low species diversity, minimal hydrologic input and connectivity, recent or on-going disturbance regimes, and/or predominance of non-native species. These wetlands provide low functionality and are considered of low value. Moderate-quality wetlands provide functions at a greater value due to less degradation and/or due to their habitat, landscape position, or hydrologic input. Moderate-quality wetlands are considered healthy water resources of value. Disturbance to hydrology, substrate and/or vegetation may be present to a degree at which valuable functional capacity is sustained and there is reasonable potential for restoration. Exceptional-quality wetlands offer superior functions and values within a watershed or are of regional/statewide concern. These wetlands may exhibit little to no recent disturbance, provide substantial large-scale stormwater storage, sediment retention, and toxin absorption, contain mature vegetation communities, or offer habitat to rare species. Conditions in exceptional-quality wetlands often represent restoration goals for wetlands functioning at a lower capacity.

Wetlands on the Project Site range from low to exceptional quality, per the TRAM rating results (Table 3-7). Low-quality wetlands are typically categorized as roadside, isolated, or previously logged and, during the field survey, were typically small and lacked influence on

downstream water quality. Wetlands in stream floodplains primarily represent exceptional quality habitat, exhibiting a healthy condition and desirable suite of wetland functions. Due to the geomorphic position and large size, these wetlands offer value in flood reduction, sediment retention, and toxin absorption. However, disturbance has resulted in some reduction of functional capacity due to narrow upland buffers or timber operations that have impacted natural wetland integrity. Although some disturbance may be present, the majority of the wetlands on site were considered moderate quality, providing healthy wetland functions to the surrounding landscape.

Table 3-7. Delineated Wetland Acreage by Wetland Condition within each Drainage Basin on the Project Site and TL Upgrade Locations

Wetland Condition TRAM Category[1]	Tims Ford - Elk River Drainage Basin	Mulberry Creek Drainage Basin	Total
Low Quality	27.3	0	27.3
Moderate Quality	533.1	0.7	533.8
Exceptional Quality	5.4	0	5.4
Grand Total	**565.8**	**0.7**	**566.5**

[1]TRAM = scores wetland quality by functional capacity

The Tims Ford - Elk River basin of the Project Site contains the majority of the on-site wetlands that are predominately a mosaic of forested and emergent wetlands. This portion of the Project Site includes timbered areas, as well as naturalized wetlands. The wetlands are found along the major stream channels, North Fork Blue Creek, West Fork Rock Creek, and Hurricane Creek. A large wetland system is located north of SR 55, in the northern portion of the Project Site. The forested wetlands are dominated by red maple, tulip poplar, sweet gum, and black gum. The scrub-shrub wetlands are dominated by bluestem broomsedge, goldenrod, sweetgum, and mixed grasses. The emergent wetlands are dominated by slender rush, shallow sedge, panic grass, spike rush, cattail, and other mixed grasses.

Many of the floodplain wetlands in the Elk River basin exhibited inundated or saturated soils. Upland vegetative buffers are lacking, and surrounding areas are disturbed due to recent logging operations. However, the floodplain system was considered intact, receiving and discharging significant hydrology, and providing high quality habitat. The wetlands within the Elk River basin are dominated by exceptional quality wetlands, and then followed by moderate wetlands.

The Mulberry Creek basin contains an isolated 0.09-acre wetland. This moderate-quality forested wetland is dominated by black gum, willow oak, buttonbush, and sweet gum. The surrounding area is relatively undisturbed upland.

3.4.2.2 Environmental Consequences

3.4.2.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor indirect impacts to surface waters or wetlands would occur if current land use practices continued.

3.4.2.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Soil disturbances associated with Project installation and construction activities could result in adverse water quality impacts. Soil erosion and sedimentation could impact surface water quality. Construction activities would be performed using BMPs to minimize these impacts. TVA would comply with all appropriate local, state and federal permit requirements. Additionally, SR Tullahoma would maintain a herd of sheep on the Project Site to help control the growth of tall vegetation and reduce the need for mowing and herbicide use during the operation of the solar facility. The sheep would be frequently rotated between temporarily fenced paddocks within the permanent Project fencing on a 40- to 60-day cycle. Water needs would be provided by troughs filled from a Project well and/or municipal water taps. The sheep would be excluded from sensitive water resource areas such as streams and wetlands.

As discussed in Section 1.4, an NPDES Construction Storm Water General permit would be needed since more than one acre would be disturbed for the Project. The permit also requires the development and implementation of a SWPPP. In addition, either Nationwide Permit(s) or an Individual Permit would be required from USACE for water feature disturbances affecting Waters of the U.S., including USACE-jurisdictional perennial and intermittent streams and wetlands. An Aquatic Resource Alteration Permit (ARAP) would be required from TDEC for alteration of TDEC-regulated streams and wetlands. TVA is also subject to EO 11990, Protection for Wetlands. EO 11990 requires federal agencies to avoid wetland impacts to the extent practicable; minimize wetland destruction, loss, or degradation; and preserve and enhance natural and beneficial wetland values while carrying out agency responsibilities. BMPs, as described in TVA's BMP manual (TVA 2017a) and the TDEC *Tennessee Erosion and Sediment Control Handbook* (TDEC 2002), would be used to avoid contamination of surface water on and downstream of the Project Site. The use of BMPs for controlling soil erosion and runoff would minimize these potential impacts to surface water. Construction of on-site stormwater detention basins would allow sediment to settle out prior to release. Managed sheep grazing on-site is expected to help the soil retain nutrients, allowing for a higher density of grasses that can help reduce erosion during the operation of the solar facility (American Solar Grazing Association 2021).

3.4.2.2.2.1 Streams on the Project Site

The proposed solar PV facility has been designed to avoid increasing the loading of any pollutant/contaminant to a stream currently listed on the CWA Section 303(d) list as a result of any discharges to surface waters. Additionally, impervious surfaces prevent rain from percolating through the soil and result in additional runoff of water and pollutants into storm drains, ditches, and streams. Clearing of vegetation and groundcover and the addition of impervious surfaces could alter the current stormwater flows. The Proposed Action Alternative could increase the impervious cover on the Project Site by approximately eight acres, thus altering and possibly increasing the concentrated stormwater flow off the Project Site. This flow would be properly treated by diverting the stormwater discharge to Project sedimentation basins during construction and with implementation of stormwater BMPs.

Impacts to USACE-jurisdictional waters are anticipated to be limited to approximately 396 LF of jurisdictional ephemeral streams for the installation of solar arrays. These impacts

would be subject to the conditions of the Section 404 permit(s) obtained for the Project, as described in Section 1.4. Effects to non-USACE-jurisdictional/TDEC-regulated waters are anticipated to total approximately 7,366 LF, with 271 LF of impact to non-USACE-jurisdictional ditches for the construction of road crossings and 7,095 LF of impact to non-USACE-jurisdictional ditches for the installation of solar arrays. While impacts to non-USACE-jurisdictional/TDEC-regulated streams are not anticipated to require a TDEC ARAP, the Project would follow the requirements of the Tennessee Water Quality Control Act (T.C.A. § 69-3-108(q)) to minimize effects to these water resources and would obtain an ARAP if necessary.

As a standard practice, the Project would employ BMPs to protect streams, as described in Section 2.2 and in the TVA BMP Manual (TVA 2017a). Impacts to jurisdictional perennial and intermittent streams that are regulated by USACE are not expected. However, unavoidable effects would be permitted as described in Section 1.4. In accordance with TVA requirements, 50-foot buffers surrounding wetlands and non-impaired perennial and intermittent streams in developed portions of the Project Site would be maintained as an avoidance measure, while 60-foot buffers would be maintained surrounding impaired perennial and intermittent streams on the Project Site.

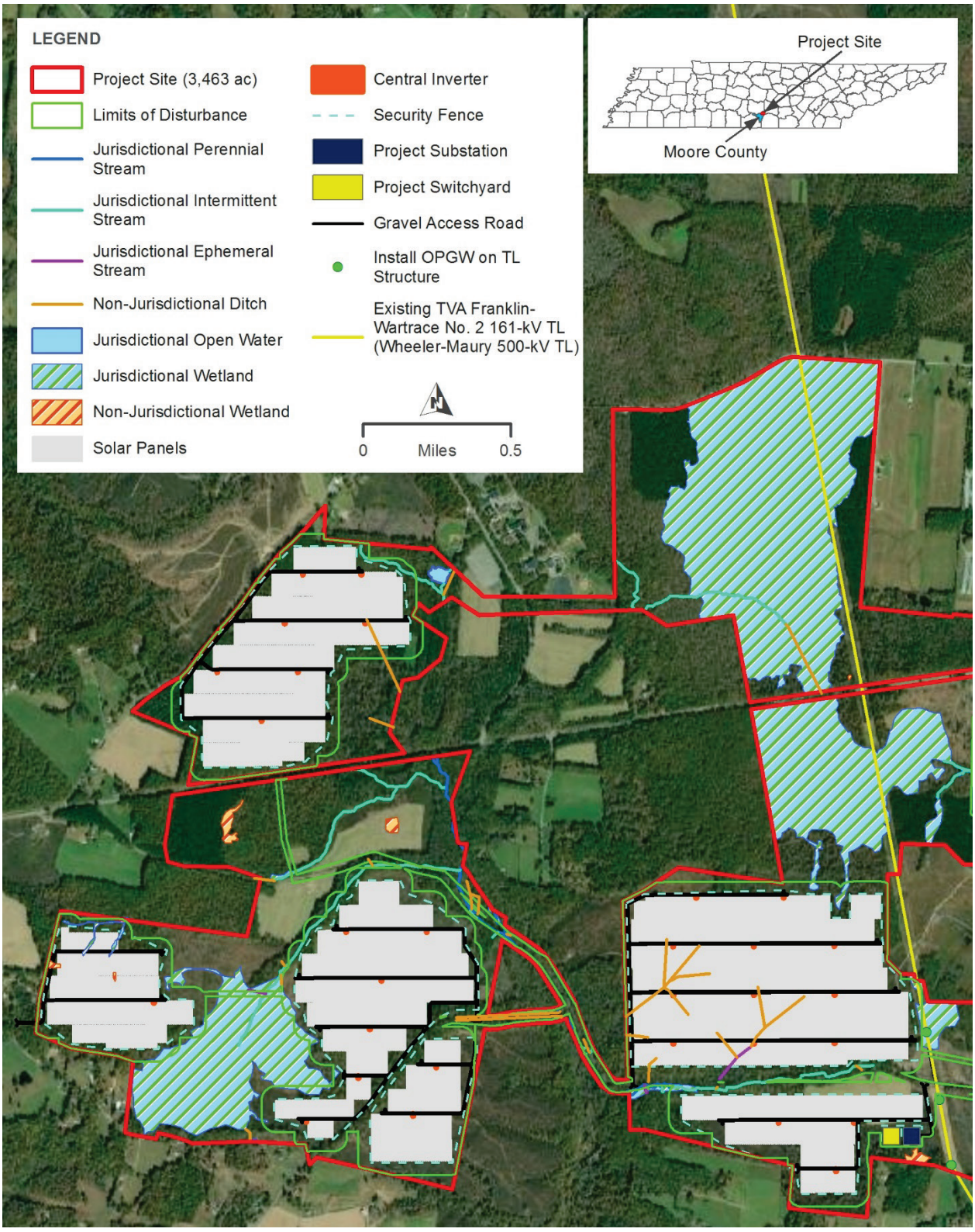

Figure 3-11. Proposed Project Components in Relation to Streams and Wetlands on the Western Portion of the Project Site

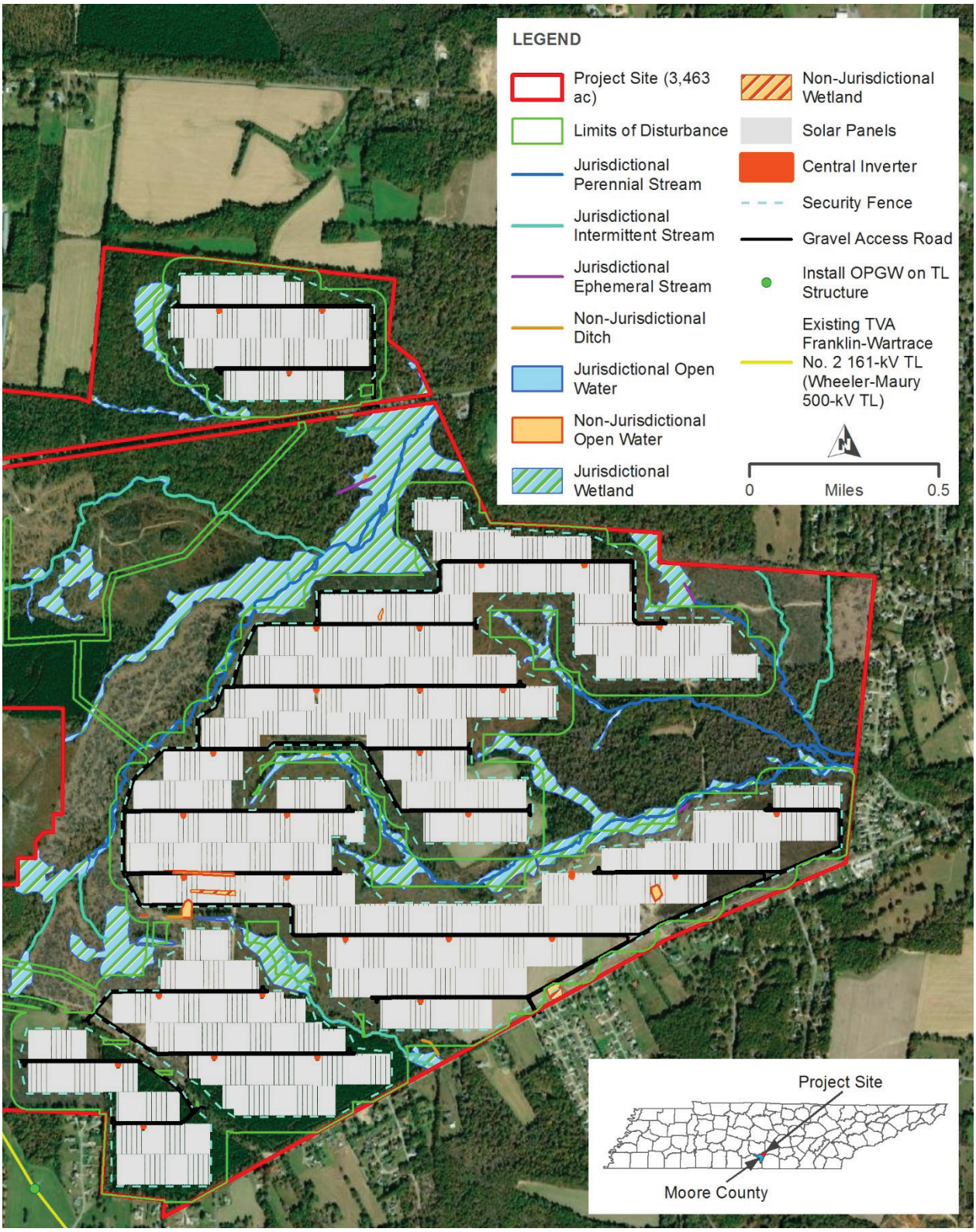

Figure 3-12. Proposed Project Components in Relation to Streams and Wetlands on the Eastern Portion of the Project Site

3.4.2.2.2.2 Wetlands on the Project Site

One USACE-jurisdictional wetland would have 0.04 acre of impact for road crossings and 0.5 acre of impact for solar panel blocks. A total of approximately 1.5 acres of non-USACE-jurisdictional open waters and approximately 1.0 acre of non-USACE-jurisdictional/TDEC-regulated wetlands are anticipated to be impacted (Figure 3-11). Non-USACE-jurisdictional open waters would have 0.4 acre of impact for road crossings and 1.1 acres of impact for solar panel blocks. Non-USACE-jurisdictional wetlands would have 0.2 acre of impact for road crossings and 0.8 acre of impact for solar panel blocks. As described in Section 1.4, impacts to USACE-jurisdictional wetlands would be subject to the conditions of the Section 404 permit(s) obtained for the Project, while non-USACE-jurisdictional impacts would be the subject of ARAP permits and associated permit conditions, as regulated by TDEC.

Conceptual and engineering design considered wetland presence and implemented avoidance strategies throughout the planning process, in compliance with the CWA and EO 11990. However, complete avoidance was not feasible. Most of the wetlands on the Project Site would be avoided. In addition, 50-foot buffers would surround on-site wetlands, regardless of regulatory jurisdiction, and these buffers would be maintained to provide an adequate upland vegetative buffer to further sustain wetland functions. Indirect impacts would be avoided through the implementation of an erosion control plan and measures, such as silt fencing, to prevent sedimentation in wetlands during construction. Likewise, implementation of the Project-specific stormwater management plan would ensure hydrologic patterns on site are maintained in a manner that does not alter wetlands. Managed sheep grazing would be employed to maintain low vegetation height and would reduce the negative impacts of herbicide use or other vegetation control measures.

3.4.2.2.2.3 Transmission Line Upgrades

TL upgrade activities that would be necessary to interconnect the solar PV facility to TVA's existing electrical transmission network could result in stream and wetland impacts. The installation of the OPGW within the TL upgrade locations would not require pole replacements along the existing ROW. TVA would install five new pole structures adjacent to the Project substation on the Project Site. No poles would be installed within the 50- to 60-foot avoidance buffers around wetlands and streams. Typically, fiber installation requires vehicular access along the ROW to each TL structure in order to perform aerial work. Access across wetlands located in the ROW would be conducted in accordance with wetland BMPs to minimize soil compaction and ensure only temporary impacts result (TVA 2017a). This includes use of low ground pressure equipment, wetland mats, and dry season work scheduling. Permanent stream crossings that cannot be avoided would be designed to not impede runoff patterns and the natural movement of aquatic fauna and would comply with appropriate USACE permit requirements. Temporary stream crossings and other construction and maintenance activities associated with the TL upgrades would comply with appropriate state permit requirements and TVA requirements as described in TVA's BMP manual (TVA 2017a). This includes use of low-ground pressure equipment, wetland mats, and/or dry season work scheduling.

3.4.2.2.2.4 Operations and Maintenance

Maintenance activities associated with operation of the solar PV facility would include, but would not be limited to, periodic inspections, repairs, possibly limited herbicide and/or pesticide use, battery replacement, mowing, and occasional panel cleanings. Managed sheep grazing would also be implemented to reduce the need for regular mowing and herbicide use, as well as to continue to utilize the land as an agricultural resource.

Heavy equipment would be inspected for leaks, and any underground wire installation and general heavy equipment activity would be conducted in a manner to minimize soil and vegetative cover disturbance. The Project would use grazing sheep to manage vegetation within most of the fenced-in, developed solar facility areas. Selective spot applications of herbicides may be employed around facilities and structures to control weeds. Herbicides would be applied by a professional contractor or a qualified Project technician and per the USEPA-approved label. These maintenance activities would not result in any adverse impacts to water resources on the Project Site during operations.

During operations, the Project Site would not require potable water or a water treatment system to clean the panels as it would be expected that modules would be cleaned by precipitation. However, if modules need to be manually cleaned, purified water, free of detergents and additives, would be trucked-in and would produce little to no discharge.

3.4.2.2.2.5 Cumulative Impacts

As depicted on Figure 3-11, the Project is anticipated to result in the fill of 396 LF of USACE-jurisdictional ephemeral streams for solar panel arrays, 0.5 acre of USACE-jurisdictional wetland for road crossings and solar panel blocks, 7,366 LF of non-USACE-jurisdictional ditches for road crossings and solar panel arrays, 1.5 acres of non-USACE-jurisdictional open waters for road crossings and solar panel arrays, and 1.0 acre of non-USACE-jurisdictional/TDEC-regulated wetlands for road crossings and solar panel arrays. There would be no direct impacts to USACE-jurisdictional perennial streams, intermittent streams, or open waters. Following construction of the Project, the existing functional capacity of the wetland areas where the fill would occur is anticipated to be sustained. These impacts would be permitted by CWA Section 404/401 permits through USACE and TDEC, as applicable to the jurisdiction of these waters. As discussed in Section 1.4, if any additional stream or wetland impacts could not be avoided by the Project, these would likewise be permitted through USACE and TDEC, and compensatory mitigation may be required.

Cumulative impact analysis of wetland and stream effects takes into account waterbody loss at a watershed scale currently and within the reasonable and foreseeable future. Present actions and RFFAs within the affected watersheds that are either underway or planned would affect approximately 4,517 acres of agricultural land and several hundred acres of forested land. These developments consist of road improvement projects, manufacturing complexes, industrial expansion, and associated railway access. Similar to the Project, these developments would also be subject to CWA jurisdiction, ensuring current and foreseeable wetland impacts are considered, permitted, and/or mitigated in accordance with wetland regulations. This regulatory oversight ensures maintenance of the chemical, biological, and physical integrity of the aquatic environment, including wetlands, within these watersheds for the long term. Reasonably foreseeable environmental trends and planned actions are considered in the CWA permitting process to ensure individual waterbody impacts do not collectively result in degradation to Waters of the U.S., including jurisdictional wetland and stream resources. Due to USACE and TDEC oversight as well as implementation of BMPs and wetland mandates, the Project is anticipated to contribute minimal impacts to cumulative stream and wetland impacts at the watershed scale.

3.4.3 Floodplains

3.4.3.1 Affected Environment

A floodplain is the relatively level land along a stream or river that is subject to periodic flooding. The land area subject to a one-percent chance of flooding in any given year is normally called the 100-year floodplain. The land area subject to a 0.2-percent chance of flooding in any given year is normally called the 500-year floodplain.

Based on Moore, Coffee, and Franklin County Flood Insurance Rate Map (FIRM) panels, no Federal Emergency Management Agency (FEMA) floodplains are mapped within the Project Site (Figure 3-13). Portions of the TL proposed to be upgraded occur within the 100-year floodplain (Figure 3-14).

As a federal agency, TVA adheres to the requirements of EO 11988, Floodplain Management. The objective of EO 11988 is "…to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative" (EO 11988, Floodplain Management). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances (U.S. Water Resources Council 1978). The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative.

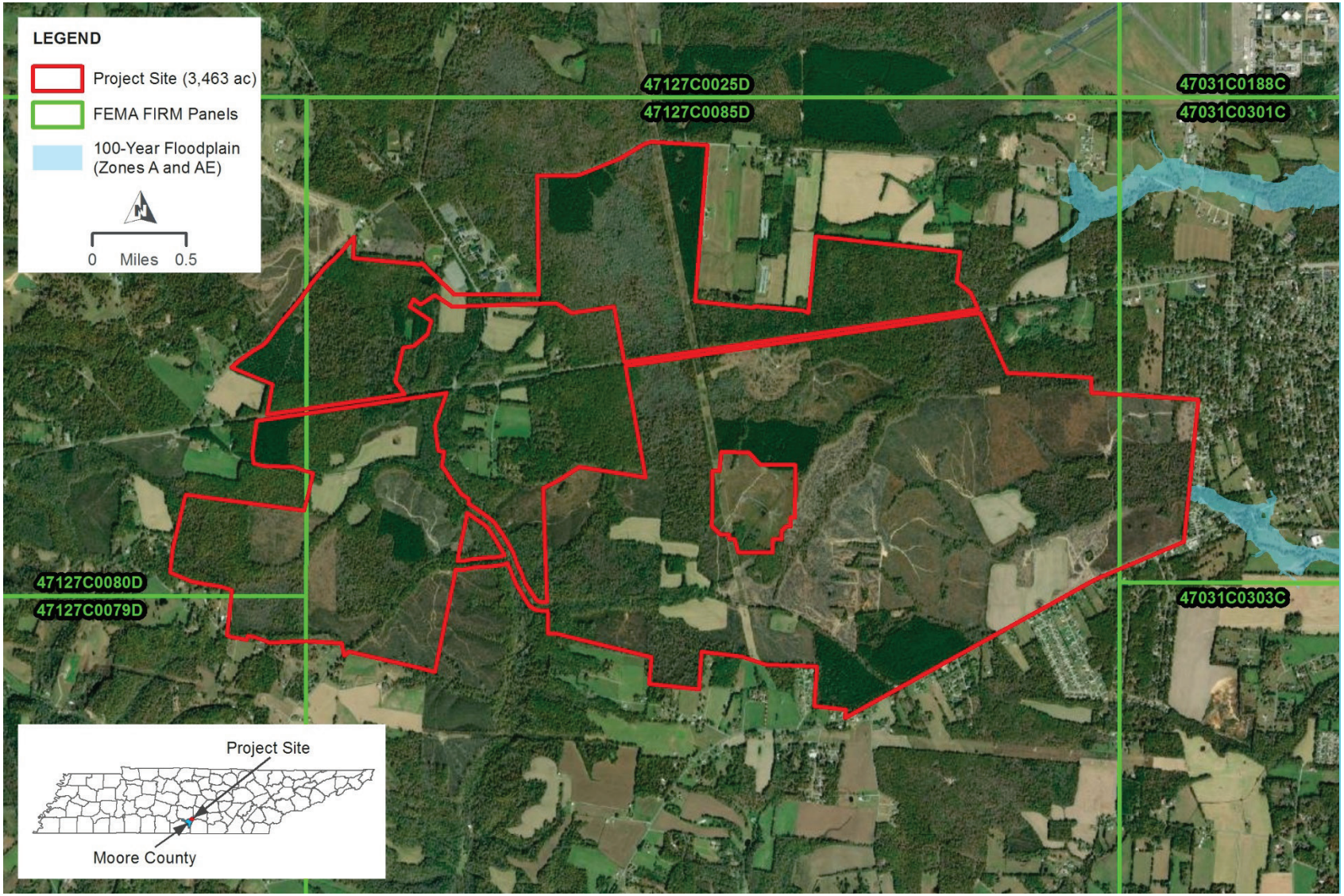

Figure 3-13. Floodplains in the Project Site vicinity

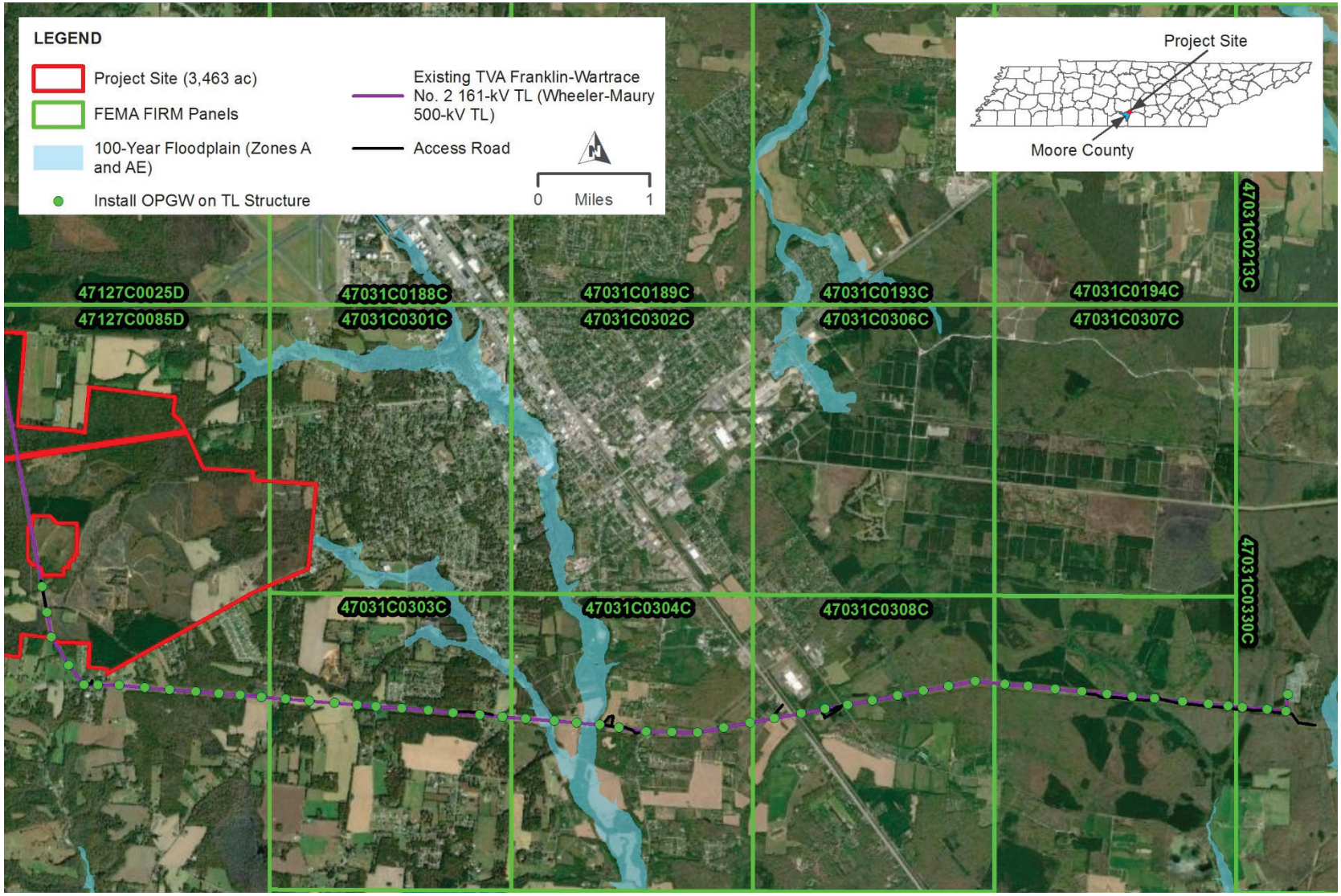

Figure 3-14. Floodplains in the TL upgrades vicinity

3.4.3.2 Environmental Consequences

3.4.3.2.1 No Action Alternative
Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, existing impacts to floodplains associated with the existing land uses of forest management, including timbering operations, and agricultural uses would continue.

3.4.3.2.2 Proposed Action Alternative
Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. There will be no effects from the Proposed solar facility. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

The solar facility would consist of solar panels, a substation, a switchyard, access roads, an operations and maintenance building, fencing, laydown areas, soil stockpiles, underground cables/wiring, AC collection cables, and one or more main power transformers. The OPGW would be installed on structures on an existing transmission line. Portions of the TL cross the floodplains of Turkey Creek, South Fork Blue Creek and its tributaries, North Fork Rock Creek, Poorhouse Creek and its tributaries, and Spring Creek and its tributaries. Gravel roads would be improved in order to access the structures. However, neither the access roads for the solar facility nor the OPGW work would occur in floodplains. The OPGW would be installed near the tops of the structures, which are well above the 100-year flood elevation.

Based on Figures 3-8 and 3-9, the water quality survey discussed in Section 3.4.3.1.2, and the FIRMs shown in Figures 3-10 and 3-11, none of the proposed solar facility components would be located within mapped and unmapped 100-year floodplains. Therefore, the Project would be consistent with EO 11988, and the Proposed Action would have no significant impacts on floodplains and their natural and beneficial values.

3.4.3.2.2.1 Cumulative Impacts
Considering the activities and facilities described in Table 3-1, along with the Project, cumulative impacts to floodplains and their natural and beneficial values would be minimal because there are no regulated floodplains within the Project Site; and the floodplains of the unmapped perennial streams within the Project Site would be avoided.

3.5 Biological Resources

The project area is located in the Interior Plateau Level III ecoregion, and the Project Site is more specifically within the Eastern Highland Rim Level IV ecoregion. In this region, Mississippian-age, calcareous geologies predominate, which results in karst features including springs, sinks, and caves (Griffith et al. 2001). The natural plant communities in this ecoregion are transitional between the oak-hickory forest that predominates to the west and the mixed mesophytic forest that predominates to the east. In the project area, the Eastern Highland Rim typically exhibits deep soils that support intensive row crop agriculture. The TL ROW consists mostly of grassland and herbaceous habitats with open pasturelands, forest edges, and early successional habitats.

Habitat assessments were conducted by HDR environmental scientists and presence/absence surveys were conducted by TVA biologists for threatened and

endangered plant and aquatic species between April and July 2021 on the Project Site (HDR 2022; Appendix A). A bat habitat assessment was also conducted by Copperhead Environmental Consulting to assess and map potential bat habitat on the Project Site. Rare, threatened, and endangered species with the potential to occur on the Project Site were inventoried using desktop review in April 2021, and the presence of suitable habitat on the Project Site was determined using field findings. Field survey of the TL upgrade locations, including presence/absence surveys for listed plant species, occurred in early 2022. Results of the background research and various field investigations are described in this section.

3.5.1 Vegetation

3.5.1.1 Affected Environment

Field surveys focused on documenting natural plant communities, invasive plants, and the presence of threatened and endangered plant species on portions of the Project Site that would be disturbed by the Project. Using the National Vegetation Classification System (Grossman et al. 1998), vegetation types observed during field surveys consist of deciduous forest, evergreen forest, mixed evergreen-deciduous forest, and herbaceous vegetation. Two forest types are present; one of these, the Southeastern and South-Central Oak-Pine Forest and Woodland (M016) is represented by seven large areas comprising about 40 percent of the Project Site. The other forest type, Southeastern North American Ruderal Forest, encompasses 21.8 percent of the Project Site. In total, forested areas comprise approximately 61.5 percent (2,135 acres) of the Project Site, with the majority of large contiguous stands located in the northern and western sections of the Project Site. Other small, forested areas are located along streams and along field margins. While not a Grossman et al. category, the category “clear cut” was used to define areas where the current landowner is logging or has recently been logged in the Project Site. These total approximately 11.5 percent (397 acres) on the Project Site. Grassland/meadow and shrubland comprise approximately 15.6 percent (542 acres), while row and close grain crop areas, planted in corn and soybeans during the field survey, are present on approximately 5.8 percent (202 acres) of the Project Site.

Many of the flat areas (approximately 130 acres) supporting wet deciduous forest fit the concept of the globally rare plant community Willow Oak - White Oak / Black Highbush Blueberry - (Possumhaw) / Barratt's Sedge Wet Forest community (NatureServe 2021). This rare forest type is only found in the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma. These areas possess regional conservation significance. The unique structure and composition of this forest type is directly related to the Taft clay loams soils that produce a perched water table due to being somewhat poorly drained soils (also see Section 3.3.1.3). This results in very wet conditions throughout the winter, spring, and early summer, often followed by significant drying in late summer and fall. One atypical aspect of this forest type is the co-occurrence of white oak, typically an upland species, with deep sphagnum moss that requires constant moisture. In the most pronounced examples of this community, areas dominated by willow oak and white oak often have a broken forest canopy resulting in a savanna-like appearance.

Natural ponds dominated by herbaceous vegetation occur within the northern portion of the Project Site. Water stands in these depressions during much of the year, but they may dry out in late summer or fall. Common herbaceous species include bushy bluestem, button sedge, coastal plain panicgrass, combleaf mermaidweed, horned beaksedge, lesser creeping rush, and wool grass. The endangered iris leaved yellow-eyed grass and

Tennessee feather bells occur in and adjacent to this habitat. The occurrence of endangered and threatened species in the project area is described in more detail in Section 3.5.4.

The TL upgrade locations consist of maintained TVA ROW and no forested areas directly within these locations. Dominant species within the ROW include grass species, foxtail, soft rush, bushy bluestem, field garlic, velvet panic grass, tall goldenrod, black raspberry, and sedge species. Tennessee feather bells were also identified during TL ROW vegetation surveys along the ROW edges in partial sun, where forested areas abut the ROW. The state-listed species, slender blue flag, was observed growing both in full shade on the Project Site and within a grassland along the TL ROW in full sun.

Invasive plants, which are a major threat to native plant communities, have affected much of the Project Site. EO 13112, Invasive Species, directs TVA and other federal agencies to prevent the introduction of invasive species (both plants and animals), control their populations, restore invaded ecosystems and take other related actions. The more recent EO 13751, Invasive Species, amended EO 13112 and directs federal agencies to continue coordinated federal prevention and control efforts related to invasive species. This order incorporates considerations of human and environmental health, climate change, technological innovation, and other emerging priorities into federal efforts to address invasive species and strengthens coordinated, cost-efficient federal action.

Within the Project Site, invasive species occur in nearly all habitats. This high level of invasive species infestation indicates that much of the Project Site has been repeatedly and heavily disturbed by human land uses, such as forest management, including timbering operations, and agricultural practices. All invasive plant species observed within the Project Site are common and widespread throughout Tennessee (Table 3-8).

Table 3-8. Invasive Plant Species, as Determined by the Tennessee Invasive Plant Council, Observed During Field Surveys of the Project Site

Common Name	Scientific Name
Japanese stiltgrass	*Microstegium vimineum*
Johnsongrass	*Sorghum halepense*
Japanese honeysuckle	*Lonicera japonica*
Chinese privet	*Ligustrum sinense*
Multifloral rose	*Rosa multiflora*

3.5.1.2 Environmental Consequences

3.5.1.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to local plant communities resulting from natural ecological processes and human-related disturbance would continue to occur.

3.5.1.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA

would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Adoption of this alternative would require clearing of approximately 850 acres of forest and the long-term maintenance of the area as grassland to prevent shading of the solar arrays. Vegetation would also be removed for the construction of the proposed Project substation, switching station, and associated access roads. TL upgrades are not anticipated to require tree clearing but may require limited limb trimming along existing access roads. Much of the forest on the Project Site has been heavily degraded by current and previous land use and supports populations of invasive plants. Approximately 2,135 acres (62 percent) of the 3,463-acre Project Site are forested, while approximately 542 acres (16 percent) consist of a mix of grassland and shrubs, approximately 397 acres (12 percent) are recently timbered, and approximately 202 acres (6 percent) are agricultural fields, pastures, or otherwise cleared, open land. Taking into consideration the large amount of similar vegetation types in the area regionally (156,000 acres across Moore, Coffee, and Franklin counties), clearing the existing vegetation, including 850 acres of existing forest on the Project Site, and light grading would be considered moderate impacts. The loss of 850 acres of forested land would amount to approximately 0.5 percent of overall forested land across the three counties.

The approximately 130-acre rare plant community, the Willow Oak - White Oak / Black Highbush Blueberry (Possumhaw) / Barratt's Sedge Wet Forest community, would be avoided by the Project, in accordance with an Avoidance Agreement executed between SR Tullahoma and TVA (Appendix A). This means that no solar PV facility Project components or regenerative energy activities, including sheep operations or vegetation management, would occur in these sensitive resource areas.

Apart from the rare plant community, most herbaceous and herbaceous/shrub plant communities found on the Project Site are heavily disturbed, early successional habitats. Project-related construction would negatively impact these herbaceous plant communities by removal of sprouts, seedlings, and tree stumps resulting in increased impacts. However, disturbed areas would be re-seeded following construction to prevent erosion. While low growing vegetation would be planted under the PV arrays, construction of access roads and other Project infrastructure would result in some minor loss of herbaceous habitat for the life of the Project.

Sheep grazing would be used to maintain low-growing vegetation on most of the fenced solar facility. The sheep would graze the perennial and annual grass and herbaceous vegetation and be moved between fenced paddocks to maintain appropriate vegetation height and maximize plant and animal diversity. Creation of pollinator and potentially grassland bird habitat would be encouraged by allowing seed heads to reach maturity wherever possible. Reseeding would remove invasives. The sheep would disperse perennial and annual, non-invasive seeds, both on their coats and through their manure, and their movement around the site would establish new plant growth and greater diversity in species composition. This would eliminate much of the need for mowing and selective herbicide application to manage vegetation growth, although these techniques would still be used as necessary. Routine management of vegetation within non-agricultural portions of the TL upgrade areas would be conducted under an integrated vegetation management approach designed to encourage the low-growing plant species and exclude tall-growing plants.

Many portions of the Project Site currently have a substantial component of invasive terrestrial plants, and adoption of the Proposed Action Alternative would not significantly affect the extent or abundance of these species at the county, regional, or state level. Construction of the Project would likely result in localized increases of invasive plants, but the plants most likely to colonize the area are distributed widely throughout the region. Effects would be reduced because revegetation of the site would be accomplished using perennial and annual, non-invasive species. The Project, including the proposed sheep operations, would not significantly contribute to the spread of exotic or invasive species. The use of the TVA standard operating procedure of vegetating with non-invasive species (TVA 2017a) would serve to minimize the potential introduction and spread of invasive species on the Project Site.

3.5.1.2.3 Cumulative Impacts

Past, present, and RFFAs within the affected watersheds are either underway or planned and would affect many acres of agricultural land and several hundred acres of forested land. These developments consist of road improvement projects, manufacturing complexes, and industrial expansion. Similar to the Project, these developments would also remove vegetation from large tracts. However, the impacts of the Project would not result in significant cumulative impacts to vegetation due to the relatively small area of forest to be removed (850 acres) relative to the amount of forested area within the county (156,000 acres). Maintenance of the Project Site as perennial meadow would encourage pollinator and grassland bird habitat and help offset the negative effects of the Project, as would other mitigation measures listed in Section 2.5.

3.5.2 Wildlife

3.5.2.1 Affected Environment

The Project Site is predominantly a mixture of forested areas, timber stands, and some agricultural fields. Rural-residential properties are present in scattered locations surrounding the Project Site. Forest types range from loblolly pine plantations to mixed-deciduous to deciduous. Forested wetlands and streams occur on the property. The TL ROW consists mostly of grassland and herbaceous habitats with open pasturelands, forest edges, and early successional habitats. Overall, wildlife habitats present on the Project Site and in the project area are common to the region and are not unique.

Forests and croplands comprise the vast majority of the Project Site. Actively cultivated fields provide habitat for a limited number of common wildlife species. Fields left fallow provide habitat for a wider range of species. Common inhabitants of croplands and grasslands include killdeer, brown-headed cowbird, eastern bluebird, eastern kingbird, eastern meadowlark, field sparrow, grasshopper sparrow, and red-tailed hawk. (National Geographic 2002). Bobcat, coyote, eastern cottontail, hispid cotton rat, and red fox are mammals typical of fields and cultivated land (Whitaker 1996). Amphibians such as eastern narrow-mouthed toad and reptiles including black racer, ring-necked snake, and eastern black kingsnake are also known to occur in this habitat type (Powell et al. 2016; Bailey et al. 2006; Gibbons and Dorcas 2005).

Existing ROWs requiring TL upgrades are comprised of a variety of herbaceous habitats ranging from croplands to pasturelands and early successional habitats. Birds that utilize these areas include chipping sparrow, field sparrow, house finch, killdeer, grasshopper sparrow, mourning dove, red-tailed hawk, red-winged blackbird, wild turkey, and white-throated sparrow (National Geographic 2002). Mammals that can be found in these areas

are common mole, coyote, least shrew, white-footed mouse, and white-tailed deer (Whitaker 1996). Reptiles that may use these habitats in this region include black racer, gray rat snake, eastern black kingsnake, and scarlet kingsnake (Gibbons and Dorcas 2005). Emergent wetlands and saturated ephemeral streams within field settings provide habitat for common amphibians. Amphibians likely present include American bullfrog, American toad, southern leopard frog, spring peeper, as well as upland chorus frog (Powell et al. 2016).

Developed and disturbed areas are home to a large number of common species, including American robin, American crow, European starling, house finch, house sparrow, mourning dove, Carolina wren, northern cardinal, northern mockingbird, black vulture, and turkey vulture (National Geographic 2002). Mammals found in this community type include eastern gray squirrel, striped skunk, and raccoon (Whitaker 1996). Road-side ditches provide potential habitat for amphibians including American toad and upland chorus frog. Reptiles potentially present include red-bellied snake, gray rat snake, and smooth earth snake (Powell et al. 2016; Gibbons and Dorcas 2005).

Young forest regrowth in recently harvested forested areas provide habitat for common birds, mammals, amphibians, and reptiles, as well as many insect pollinator species. Birds observed on the Project Site within these habitats consisted of black vulture, blue grosbeak, cliff swallow, eastern bluebird, indigo bunting, and northern mockingbird. Mammals that would use this area include bobcat, common raccoon, coyote, eastern chipmunk, eastern mole, groundhog, nine-banded armadillo, white-footed deer mouse, and white-tailed deer (Whitaker 1996). Eastern kingsnake and southern black racer are reptiles that may be found here (Gibbons and Dorcas 2005).

Review of the TVA Regional Natural Heritage Database (RNHD) in April 2021, June 2021, and March 2022, indicated that six records of caves exist within three miles of the Project Site or TL upgrade locations. The closest of these is approximately 0.3 mile away. In addition, a colonial wading bird colony was identified as occurring approximately two miles from the Project in Franklin and Maury counties.

3.5.2.1.1 Migratory Birds

EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to conserve migratory birds and implement the Migratory Bird Treaty Act (MBTA). The MBTA prohibits the “take” of migratory birds. The regulatory definition of “take” as defined by 50 CFR § 10.12, “means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue hunt, shoot, wound, kill, trap, capture, or collect.” The following prohibitions apply to migratory bird nests: “possession, sale, purchase, barter, transport, import and export, take, and collect.” The MBTA is executed and enforced by USFWS. SR Tullahoma and its contractors would act in compliance with the MBTA. Approximately 147 species of migratory birds have been identified in Moore County (eBird 2021), and additional species likely occur regularly. The USFWS maintains a list of migratory birds of conservation concern (USFWS 2021). These species are not listed under the ESA but are a high conservation priority of the USFWS. Twenty-three species of birds of conservation concern are listed for Bird Conservation Region 24, Central Hardwoods, which contains the Project Site. Of these 23 species, at least 11 likely occur with some regularity on or in the immediate vicinity of the Project Site (Table 3-9).

Both bald and golden eagles are protected by the MBTA and the Bald and Golden Eagle Protection Act of 1940 (BGEPA, 16 U.S.C. 668-668d). The suitability of the Project site as

habitat for the bald eagle is not likely due to the absence of large water bodies. The golden eagle may utilize the Project site during the winter; see the Wildlife and Vegetation Assessment in Appendix A.

Table 3-9. Migratory Bird Species of Conservation Concern Potentially Occurring within the Project Site and/or TL

Scientific Name	Common name	Season of Occurrence	Likelihood of Presence/Habitat
Antrostomus vociferus	Eastern Whip-poor-will	Spring through fall	**Likely**, deciduous and mixed forests with open understory and forest edges; reported from vicinity
Chaetura pelagica	Chimney Swift	Spring through fall	**Likely**, nests in chimneys and less frequently large, open-topped hollow trees; reported from vicinity and likely forages over Project Site
Tringa flavipes	Lesser Yellowlegs	Spring and fall	**Possible**, occurs in extensive emergent wetlands and seasonally flooded agricultural fields with sparse, low vegetation
Melanerpes erythrocephalus	Red-headed Woodpecker	Year-round	**Likely**; inhabits open forests and pine savannahs, reported from vicinity
Hylocichla mustelina	Wood Thrush	Spring through fall	**Likely**, deciduous and mixed forests with shrubs in understory; reported from vicinity
Spizella pusilla	Field Sparrow	Year-round	**Likely**, grasslands with scattered shrubs and saplings, recently clear-cut areas; reported from vicinity
Euphagus carolinus	Rusty Blackbird	Winter	**Likely**, forested wetlands
Protonotaria citrea	Prothonotary Warbler	Spring through fall	**Possible**, forested wetlands with areas of standing water
Geothlypis formosa	Kentucky Warbler	Spring through fall	**Likely**, moist deciduous forest with shrubby understory
Setophaga cerulea	Cerulean Warbler	Spring through fall	**Possible**, mature deciduous forest with scattered canopy gaps
Setophaga discolor	Prairie Warbler	Spring through fall	**Likely**, brushy fields and recently harvested, regenerating woodlands

3.5.2.2 Environmental Consequences

3.5.2.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to common wildlife would occur if current land use practices continued.

3.5.2.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Facility construction and maintenance would alter wildlife habitats and affect the wildlife occurring in these habitats. Approximately 850 acres of forest would be cleared. This would reduce the amount of suitable habitat for wildlife occurring in these areas, resulting in the likely decline of the local populations of many species. Some more mobile wildlife would disperse into surrounding areas, although their survival in these areas may be low due to competition with other members of their species. Other less mobile individuals would be directly eliminated by construction activities, particularly during breeding and hibernation seasons or periods of dormancy. Large sections of forested habitat would be removed across the site for construction and operation of the solar facility. The removal of large sections of forested habitat would directly impact wildlife species utilizing this habitat through temporary to long-term displacement. However, large amounts of forested habitat are available regionally (156,000 acres across in Moore, Coffee, and Franklin counties). At the local level, the loss of 0.5 percent of that overall acreage due to the Project would result in moderate adverse impacts to wildlife populations. At the regional level, these impacts to wildlife populations would be minor.

Migratory birds of conservation concern that would likely be adversely affected include the red-headed woodpecker, prairie warbler, blue-winged warbler, eastern whip-poor-will, Kentucky warbler, rusty blackbird, and wood thrush. Habitat for these species would be removed from the Project Site. The local populations of these species, as well as other wildlife occupying forest and shrub habitats but not considered of conservation concern, would be adversely affected. Areas of the TL ROWs that are not maintained as grassland or cropland provide habitat for the prairie warbler.

Although construction and operation of the Project may reduce the foraging potential on the Project site and in the TL upgrade areas, the Project is not anticipated to have an effect on populations of migratory birds that require open country with scattered trees and shrubs, such as the prairie warbler. Similar habitat is available adjacent to the Project site and would likely absorb displaced individuals.

Overall, while the implementation of the Project would have adverse effects on some migratory bird species, particularly those occupying woodlands, the effect would be localized and minor.

Bald eagles are unlikely to nest or forage on the Project site due its distance from large waterbodies. In addition, no bald eagle nests have been documented within three miles of the Project site. Therefore, the Project would have no impact on bald eagles. Due to the rarity of golden eagles in the region and the availability of suitable roosting and foraging in nearby similar habitat, the Project is not expected to impact golden eagles.

The establishment and maintenance of sheep pasture under and around the PV arrays would benefit many small mammals and other wildlife occupying grasslands. The degree to which this would benefit grassland birds, several of which are of conservation concern and/or have declining populations in the region, is not well understood as the presence of the PV arrays may reduce the suitability of the area.

Bees, moths, butterflies, and many other insects are critical components of ecosystems and crop production due to their roles as pollinators. Sheep grazing would be used to maintain low-growing vegetation within most of the fenced solar facility. The sheep would graze the perennial and annual, non-invasive grass and herbaceous vegetation and be moved between fenced paddocks to maintain appropriate vegetation height and maximize plant

and animal diversity. Creation of pollinator habitat would be encouraged by allowing seed heads to reach maturity wherever possible. Habitat for ground-nesting, grassland birds may also be provided given these conditions, though limited information is available on the degree to which such birds would utilize the site. The sheep would disperse seeds, both on their coats and through their manure, and their movement around the site would establish new plant growth and greater diversity in species composition. This would eliminate much of the need for mowing and selective herbicide application to manage vegetation growth, although these techniques would still be used as necessary.

3.5.2.2.3 Cumulative Impacts

Past, present, and RFFAs are either underway or planned and would affect many acres of agricultural land and several hundred acres of forested land. These developments consist of road improvement projects, manufacturing complexes, and industrial expansion. Similar to the Project, these developments would also be subject to wildlife resource protection measures, including applicable federal and state laws such as those that mitigate animal disturbance, collection, or removal, and avoid unnecessary disturbance to riparian buffer areas. With implementation of these measures, the Project is not anticipated to contribute to significant cumulative effects to wildlife in the project area.

3.5.3 Aquatic Life

3.5.3.1 Affected Environment

3.5.3.1.1 Aquatic Ecology

Field surveys were conducted in June and July 2021. A total of 30 perennial or intermittent streams, seven ponds, and 36 ephemeral streams were delineated on the Project Site. The streams encountered on the Project Site were typical of the Eastern Highland Rim Level IV ecoregion. An additional five perennial streams and five ephemeral streams were identified within the TL upgrade locations during field surveys in early 2022. Streams and other water bodies on the Project Site are described in more detail in Section 3.4.2.

Fish and crayfish sampling was conducted in Hurricane Creek, Rock Creek, and their associated tributaries located within the Project Site in 2021. Results for each sample location are presented in Table 3-10. Most of the collected species were common; however, one previously undescribed species of burrowing crayfish (*Cambarus* sp.) was collected in the Hurricane Creek drainage within the Project Site. This crayfish is only known from the Project Site and portions of the Hurricane Creek drainage immediately south of the Project Site. Preliminary genetic testing has confirmed that this is a novel species, though further analysis is required to determine whether this species falls into the *Cambarus striatus* species complex. The uncommon, state-listed flame chub was also detected. The flame chub is rare due to its spring-influenced habitat, and the populations discovered on the Project Site are important for the long-term conservation of the species in Tennessee.

Table 3-10. Aquatic Species Identified within the Project Site

Common Name	Scientific Name	Site Where Species Was Encountered[1]
Largescale stoneroller	*Campostoma oligolepis*	1, 9
Rosyside dace	*Clinostomus funduloides*	1
Creek chub	*Semotilus atromaculatus*	1, 5, 7, and 9
Green sunfish	*Lepomis cyanellus*	1, 7, and 9
Bluegill	*Lepomis macrochirus*	1 and 9

Common Name	Scientific Name	Site Where Species Was Encountered[1]
Western blacknose dace	*Rhinichthys obtusus*	1
Southern redbelly dace	*Chrosomus erythrogaster*	1, 7
Black darter	*Etheostoma duryi*	1, 5
Blackfin darter	*Etheostoma nigripinne*	1, 5
Western mosquitofish	*Gambusia affinis*	1, 5
Fantail darter	*Etheostoma flabellare*	2
Banded sculpin	*Cottus carolinae*	2
Flame chub	*Hemitremia flammea*	5 and 9 and in Stream 3 within the TL line area
Creek chubsucker	*Erimyzon oblongus*	5
Mimic shiner	*Notropis volucellus*	9
Golden shiner	*Notemigonus crysoleucas*	9
White sucker	*Catostomus commersoni*	9
Crayfish		
Two-spot crayfish	*Cambarus graysoni*	1, 5, and 7
Tanback crayfish	*Cambarus giardianus*	1 and 2
Cave spring crayfish	*Cambarus tenebrosus*	1
Undescribed species	*Cambarus* sp.	1
Wonderful crayfish	*Faxonius mirus*	1, 2, 5, and 7
Ambiguous crayfish	*Cambarus striatus*	5 and 9

[1] Site 1: Hurricane Creek, off of Cumberland Springs Rd., upstream of old impoundment
Site 2: Hurricane Creek, downstream of impoundment
Site 5: West Fork Rock Creek, alongside SR 55, just upstream of the Coffee County line
Site 7: Hurricane Creek, downstream of SR 55 crossing
Site 9: North Fork Blue Creek, private land adjacent to Cumberland Springs Road, just west of Tullahoma
Stream 3 on TL: Spring Creek within the Arnold Air Force Base (AFB)

3.5.3.2 Environmental Consequences

3.5.3.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to aquatic life would occur if current land use practices continued.

3.5.3.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL. This may result in direct or indirect impacts to aquatic species present on the Project Site and in the TL upgrade locations.

The locations of sensitive aquatic species within the Project Site were carefully considered when designing the solar facility. Except for the installation of buried or overhead electrical lines within 50 feet of Raysville Road and Cumberland Springs Road, no Project components would be placed within areas known to support rare aquatic species or their habitats and implementation of the Action Alternative would result in no direct impacts to those populations. The Project would also not conduct regenerative energy activities, including sheep operations or vegetation management, in these locations. To ensure these rare aquatic species are protected, SR Tullahoma and TVA executed an Avoidance Agreement detailing the specific locations to be avoided (Appendix A).

Potential impacts to aquatic species from the Project may result from herbicide runoff into streams. Indirect impacts to aquatic species may also occur due to minor increases in erosion and sedimentation during construction and operations. Siltation has a detrimental effect on many aquatic animals adapted to stream environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding success of fish and mussel species (Brim Box and Mossa 1999; Sutherland et al. 2002). Streamside management zones, or vegetative buffers, would be left intact on the Project Site. Thus, the changes would occur due to minor increases in erosion and sedimentation during construction and operations. These Project effects would be temporary and minimized by adherence to soil management BMPs. Sheep grazing as a means of vegetation control would reduce the need for herbicide, and therefore would reduce the negative effects of herbicide runoff.

Ephemeral streams documented on the Project Site only flow in response to precipitation events and do not support aquatic life. Ground disturbances surrounding ephemeral streams, in the form of installing small-diameter PV array pilings and trenching for installation of electrical cables, would be relatively minimal, and BMPs would be implemented to prevent or reduce surface water runoff from carrying suspend solids into adjacent waterbodies (TVA 2017a).

Streams present near the TL structures or intersected by access roads associated with the TL upgrades have the potential to be impacted from surface water runoff increasing siltation to those receiving waters. Ground disturbance would be minimized, and all work would be conducted in accordance with BMPs outlined in TVA's BMP manual (TVA 2017a). Therefore, impacts to the aquatic ecology of streams in association with the TL upgrades would be minor and insignificant. Furthermore, applicable CWA Section 404 and 401 permits would be obtained from USACE and TDEC for any stream alterations located in the TL upgrade locations, and application of the terms and conditions of these permits would minimize potential resource impacts. The permits may also require compensatory mitigation.

3.5.3.2.3 Cumulative Impacts

This project and its associated direct and indirect impacts would likely gradually degrade existing streams and threatened and endangered aquatic species within the project area over the next several decades. Negative Project impacts resulting from cumulative impacts may be lessened by the proposed mitigation measures

With implementation of these measures, the Project is not anticipated to contribute to significant cumulative effects to aquatic life in the project area.

3.5.4 Threatened and Endangered Species

3.5.4.1 Affected Environment

Rare, threatened, and endangered species are regulated by both the federal and state governments. Lists from TVA's RNHD and USFWS's Information for Planning and Consultation (IPaC) of federally and state-listed species potentially occurring in the project area were obtained in April 2021 for the Project Site and in January and February 2022 for the TL upgrade locations (USFWS 2020). The RNHD identified species potentially occurring in Moore County or Coffee County and/or within resources-defined distances from the Project Site or TL upgrade locations or generally listed for the county. These lists were obtained to identify the rare, threatened, and endangered animal and plant species

potentially occurring in the project area, and to focus field survey efforts on habitats potentially occupied by these species.

Table 3-11 provides a summary of the federally and state-listed species that were identified in reviews of the RNHD and IPaC. No designated critical habitat occurs within the Project Site. Each federally and state-listed species is discussed in this section in relation to potential habitat on the Project Site.

Table 3-11. Federally and State-Listed or Protected Species Potentially Occurring in the Project Area

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Bird							
Bachman's Sparrow	*Peucaea aestivalis*	-	E	S1B	Franklin	Inhabits mature pine forest with an understory.	Yes
Common Barn Owl	*Tyto alba*	-	E	S3	Coffee	Inhabits grasslands, scrublands, groves, farms, fields, or towns.	Yes
Bald Eagle	*Haliaeetus leucocephalus*	DM	D	S3	Coffee	Seacoasts, rivers, large lakes, oceans, and other large bodies of open water with an abundance of fish.	Yes (TL structures)
Osprey	*Pandion haliaetus*	-	-	S3	Maury	Seashore, coastal marshes, lakes and rivers	Yes (TL structures)
Fish							
Ashy Darter	*Etheostoma cinereum*	-	E	S2S3	Bedford, Marshall, and Coffee	Inhabits medium to large streams with relatively shallow pools with languid currents and boulders as cover.	No
Barrens Topminnow	*Fundulus julisia*	LE	E	S1	Coffee	Inhabits springhead pools and slow flowing areas of springs.	Yes
Boulder Darter	*Etheostoma wapiti*	LE	E	S1		Inhabits small to medium rivers with deep fast-moving water over boulder and slab rock bottoms.	No
Coppercheek Darter	*Etheostoa aquali*	-	T	S2S3	Marshall, Bedford, Maury, Coffee, and Hickman	Inhabits small and medium sized rivers where it occurs in rocky riffles with clear, fast-flowing water.	No
Flame Chub	*Hemitremia flammea*	-	E	S3	Coffee, Franklin, Moore, Bedford, and Maury	Inhabits springs, shallow seepage waters, and spring-fed streams usually over gravel in areas where aquatic vegetation is abundant.	Yes; Known
Golden Darter	*Etheostoma denoncourti*	-	D	S2	Marshall, Maury, and Bedford	Inhabits shallow gravel riffles in small to medium-sized rivers.	No
Longhead Darter	*Percina macrocephala*	-	T	S2	Coffee and Bedford	Inhabits moderate to large sized streams with swift deep currents and bottoms of cobble and boulders.	No
Pygmy Madtom	*Noturus stanauli*	LE	E	S1	Hickman	Inhabits clear medium sized rivers with pea sized gravel of fine sand substrates.	No

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Redband Darter	*Etheostoma luteovinctum*	-	D	S4	Marshall, Bedford, Maury, and Coffee	Inhabits shallow pools with rocky substrates and spring fed streams with limestone bedrock, rubble, gravel and silt substrates.	No
Saddled Madtom	*Noturus fasciatus*	-	T	S2	Marshall and Bedford,	Inhabits rocky riffles, runs and flowing pools of clear creeks and small rivers.	No
Slenderhead Darter	*Percina phoxocephala*	-	D	S3	Marshall, Maury, Bedford, and Hickman	Inhabits shallow waters with riffles and moderate currents in small to medium sized streams.	No
Southern Cavefish	*Typhlichthys subterraneus*	-	-	S3	Coffee	Inhabits caves near watertable and have low energy flows	No
Striated Darter	*Etheostoma striatulum*	-	T	S1	Maury, Bedford, Marshall, and Coffee	Inhabits rocky pools of headwaters and creeks.	No
Tennessee Logperch	*Percina apina*	-	D	S2	Coffee	Restricted to the Western Highland Rim within swift runs of depths about 1 meter or less with predominant gravel and cobble substrates	No
Insect							
Monarch Butterfly	*Danaus plexippus*	FC	-	-	Marshall, Bedford, Maury, Coffee, and Hickman	Prefers flowering plants such as milkweed	Yes
Mammal							
Common Shrew	*Sorex cinereus*	-	-	S4	Franklin	Prefers rich, moist woodlands with plenty of moss and leaf litter	Yes
Gray Bat	*Myotis grisescens*	LE	T	S2	Coffee, Franklin, Bedford, Maury, and Moore	Roosts in caves or karst features year-round. Various foraging habitats including wet meadows, damp woods, and uplands. No suitable roosting habitat present on-site; use of site for foraging confirmed by mist net survey.	Yes; Known

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Indiana Bat[2]	*Myotis sodalis*	LE	E	S2	Franklin, Bedford, and Maury	Spend winter hibernating in caves and mines, called hibernacula. Suitable summer migratory tree-roosting bat habitat consists of the presence of suitable (i.e., open enough for bats to access) drinking and foraging areas with potential roost trees (PRT). A PRT has exfoliating bark, cracks, crevices or cavities that are greater than or equal to 5-inch DBH. No Indiana bats were caught during the mist net survey.	Yes
Little Brown Bat	*Myotis lucifugus*	-	T	S3	Franklin and Coffee	Various habitats including wet meadows, damp woods, and uplands, including abandoned structures and sinkhole fissures/karst features; statewide. No little brown bats were caught during the mist net survey.	Yes
Northern Long-eared Bat[2]	*Myotis septentrionalis*	PE	T	S2	Maury, Coffee, Franklin, and Bedford	Spend winter hibernating in caves and mines, called hibernacula. Suitable summer migratory tree-roosting bat habitat consists of the presence of suitable (i.e., open enough for bats to access) drinking and foraging areas with PRT. A PRT has exfoliating bark, cracks, crevices or cavities that are greater than or equal to 3-inch diameter at breast height (DBH). No NLEB were caught during the mist net survey.	Yes
Pygmy Shrew	*Sorex hoyi*	-	-	S2	Franklin	Inhabits grasslands, wetlands, woodlands and farmlands.	Yes
Southeastern Shrew	*Sorex longirostris*	-	-	S4	Franklin	Various habitats including fields, forests, cultivated fields, and abandoned fields	Yes

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Tri-colored Bat	*Perimyotis subflavus*	PE	T	S2S3	Bedford	Various habitats including wet meadows, damp woods, and uplands, including abandoned structures and sinkhole fissures/karst features; statewide. No bats were caught during the mist net survey.	Yes
Mollusk							
Birdwing Pearlymussel	*Lemiox rimosus*	LE	E	S1	Maury, Marshall, and Bedford	Only known to inhabit the Duck, Elk, Clinch, and Powell rivers.	No
Cracking Pearlymussel	*Hemistena lata*	-	E	S1	Maury	Inhabits riffles of small to medium sized streams.	No
Cumberland Pigtoe	*Pleurobema gibberum*	-	E	S1	Coffee	Inhabits stream riffle areas of gravel or sand.	No
Cumberland Monkeyface	*Quadrula intermedia*	-	E	S1	Maury and Marshall	Inhabits shallow fast flowing streams with substrates.	No
Cumberlandian Combshell	*Epioblasma brevidens*	-	T	S1	Marshall and Maury	Inhabits medium-sized streams to large rivers with shoals and riffles in coarse sand, gravel, cobble, and boulders.	No
Fine-rayed Pigtoe	*Fusconaia cuneolus*	-	E	S1	Franklin	Inhabits sand and gravel shoals of streams and rivers	No
Fluted Kidneyshell	*Ptychobranchus subtentum*	LE	E	S2S3	Marshall, Franklin, and Bedford	Only known to inhabit the Tennessee River.	No
Littlewing Pearlymussel	*Pegias fabula*	LE	E	S1	Franklin	Inhabits small to medium sized rivers in areas with a swift current.	No
Orange-foot Pimpleback	*Plethobasus cooperianus*	-	E	S1	Maury and Marshall	Inhabits deep fast flowing rivers with sand or gravel substrate.	No
Ornate Rocksnail	*Lithasia geniculata*	-	-	S2	Bedford, Maury, and Marshall	Inhabits shallow fast flowing streams with substrates.	No
Painted Snake Coiled Forest Snail	*Anguispira picta*	-	T	S1	Franklin	Inhabits damp limestone outcrops.	No
Pale Lilliput (pearlymussel)	*Toxolasma cylindrellus*	LE	E	S1	Coffee, Marshall, Maury, and Franklin	Inhabits small to moderate sized streams in areas of slow to moderate current, usually in less than three feet of water.	No
Pink Mucket	*Lampsilis abrupta*	-	E	S2	Marshall	Inhabits shallow riffles and shoals of major rivers and tributaries.	No

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Rabbitsfoot	*Quadrula cylindrica*	LT	E	S2	Maury and Marshall	Typically inhabiting small to medium sized rivers with moderate to swift currents.	No
Rayed Bean	*Villosa fabalis*	-	E	S1	Marshall	Inhabits small shallow rivers in and near riffles. Often near aquatic vegetation.	No
Round Hickorynut	*Obovaria subrotunda*	LE	E	S2S3	Marshall, Bedford, and Marshall	Inhabits medium to large sized rivers with sand and gravel substrates.	No
Sheepnose	*Plethobasus cyphyus*	-	E	S2S3	Maury	Inhabits shallow areas with moderate to swift currents flowing over sand and gravel.	No
Shiny Pigtoe	*Fusconaia cor*	LE	E	S1	Franklin	Inhabits relatively silt-free substrates of sand, gravel, and cobble in good flows of smaller streams.	No
Slabside Pearlymussel	*Pleuronaia dolabelloides*	LE	E	S2	Maury, Marshall, Bedford, Moore and Franklin	Found primarily in large creek to moderately sized rivers. Generally observed in gravel substrates within interstitial sand, with moderate current.	No
Snuffbox	*Epioblasma triquetra*	-	E	S3	Marshall	Riffles or shoals of rocky rivers and the shores of lakes with wave activity	No
Tan Riffleshell	*Epioblasma florentina walker*	LE	E	S1	Marshall, Franklin, Maury, and Bedford	Inhabits relatively silt-free substrates of sand, gravel, and cobble in good flows of smaller streams.	No
Turgid Blossom (pearlymussel)	*Epioblasma turgidula*	LE	E	S1	Maury, Bedford, and Coffee	Inhabits medium rivers with clear, unpolluted water typically found buried in sand and gravel.	No
Winged Mapleleaf	*Quadrula fragosa*	-	E	S1		Inhabits riffles or shallow areas of freshwater rivers that have substrates composed of gravel, sand and mud.	No
Plants							
American Ginseng	*Panax quinquefolis*	-	C	S3S4	Moore	Inhabits rich, cool, moist, possibly older growth, deciduous forest.	Yes
Barratt's Sedge	*Carex barrattii*	-	E	S2	Coffee	Peaty swamps, pinelands, and wet woods.	Yes, Known
Beakrush	*Rhynchospa perplexa*	-	T	S2	Coffee and Franklin	Inhabits dried out swamps and oak barrens.	Yes

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Black Footed Quillwort	*Isoetes melanopoda*	-	E		Moore	Shallow, temporarily flooded, flat-bottomed pools formed by natural erosion on granite outcrops.	Yes; Known
Button Sedge	*Carex bullata*	-	C	S3	Moore	Bogs, fens, meadows and fields, ponds, shores of rivers and lakes.	Yes; Known
Dwarf Huckleberry	*Gaylussacia dumosa*	-	T	S3	Coffee and Franklin	Inhabits pine savannas, flatwoods, sandhills and scrub habitats.	Yes
Dwarf Sundew	*Drosera brevifolia*	-	E	S2	Coffee, Moore, and Franklin	Sandy, acidic soils and requires open ground to germinate. Found in disturbed areas devoid of vegetation.	Yes; Known
Eggert's Sunflower	*Helianthus eggertii*	-	C	S3	Franklin, Coffee, and Maury	Inhabits Rocky hills and barrens and roadside remnants of forested oak habitats.	Yes
Iris Leaved Yellow-eyed Grass	*Xyris laxifolia var. iridifolia*	-	E	S2	Moore	Areas that are inundated much of the year, but not within deeper pools.	Yes; Known
Low Frostweed	*Helianthem propinquum*	-	E	S1S2	Coffee	Inhabits dry sandy slopes.	Yes
Narrowleaf Bushclover	*Lespedeza angustifolia*	-	T	S2	Coffee	Inhabits sandhills, pine flatwoods, and old field pinelands, as well as dry pond margins and open flood plains on areas that are mesic to excessively well drained.	Yes
Ovate Catchfly	*Silene ovata*	-	E	S2	Coffee	Inhabits dry - mesic forest, mountain summits.	No
Panic-grass	*Dichanthelim ensifolium* ssp. *curtifolium*	-	E	S1	Moore, Coffee, and Franklin	Inhabits sandy loam of moist areas in oak barrens.	Yes
Rough Rattlesnakeroot	*Prenanthes aspera*	-	E	S1	Moore	Dry prairies and barrens, limestone glades, dry, open rocky woods.	No
Roughish Witchgrass	*Dichanthelim acuminatum* ssp. *leucothrix*	-	C	-		Inhabits moist pine barrens.	
Sand Cherry	*Prunus pumila*	-	E	S1	Franklin and Bedford	Sand cherry typically grows on sandy, gravelly, and rocky soils, dunes, beaches, and outwash plains. Sites are typically dry and excessively drained.	

Common Name	Scientific Name	Federal Status	State Status	State Rank	County Occurrence	Preferred Habitat	Potential Habitat on Project Site/ TL Upgrade Locations
Shortleaf Beardgrass	*Gymnopogn brevifolius*	-	C	S1S2	Coffee	In habits pine savannas, sandhills, dry woodlands; sandy or peaty ground, pine barrens on the coastal plain.	Yes
Slender Blue Flag	*Iris prismatica*	-	T	S2S3	Coffee	Disturbed habitats such as burned or scraped old fields, ditches, and roadside swales. Marshes, swamps, and damp meadows.	Yes; Known
Tennessee Feather Bells	*Stenanthium tennesseense*	-	T	S2	Moore	Grassland remnants of the Eastern Highland Rim and Cumberland Plateau in Tennessee.	Yes; Known
Virginia Chain Fern	*Woodwardia virginica*	-	C	-	Moore	Acidic wetlands, mostly in the eastern part of Tennessee.	Yes; Known
Wolf Spikerush	*Eleocharis wolfii*	-	E	S1	Coffee and Marshall	Inhabits margins of shallow pools on level bedrock outcrops or on the margins of creeks and wetlands.	Yes
Yellow Fringeless Orchid	*Platanthera integra*	-	E	S1	Moore	Inhabits bogs in the Mountains and Piedmont.	Yes
Yellow Crested Orchid	*Platanthera cristata*	-	C	-	Coffee	Inhabits acidic seeps and stream heads.	Yes
Reptiles							
Eastern Slender Glass Lizard	*Ophisaurus attenuatus longicaudus*	-	D	S3	Franklin	Inhabits dry grasslands and forests.	Yes
Northern Pine Snake	*Pituophis melanoleucus*	-	T	S3	Franklin	Inhabits well drained sandy soils in pine or mixed pine/hardwood forest.	Yes

[2] Species reported for county and not the immediate project area.
Federal status codes: FC: Federal Candidate for Listing; LE = Listed Endangered; LT = Listed Threatened; PE = Proposed Endangered; PS = Partial Status
State status codes: C = Species of concern; D = Deemed in Need of Management; E = Endangered; S1 = Critically imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S#B = Rank of breeding population; T = Threatened
State ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2)

3.5.4.1.1 Federally Listed Species

3.5.4.1.1.1 Terrestrial Animals

Review of the RNHD and IPaC indicated that the gray bat and northern long-eared bat have been reported within three miles of the Project Site or the TL upgrade locations. Two federally listed terrestrial animal species (gray bat and Indiana bat) and two federally proposed endangered species (northern long-eared bat and tricolored bat) have been reported within Moore, Franklin, Maury, Marshall, Coffee, and Bedford counties (Table 3-11). The gray bat was documented on site during mist net surveys.

Bald eagles are protected under the Bald and Golden Eagle Protection Act. This species is associated with larger mature trees capable of supporting its massive nests. These are usually found near larger waterways where the eagles forage (USFWS 2007). Bald eagles are known to nest in Tennessee, with 175 nesting pairs as of 2012 (TWRA 2021). While suitable nesting trees occur throughout the Project Site, there is no large water body close enough for this to be considered a likely nesting site. Bald eagles have the potential to nest on TL pole structures in the TL upgrade locations. No bald eagle nests were documented on the Project Site during the field reviews.

No known caves or suitable winter roosting structures for the gray bat, Indiana bat, northern long-eared bat, and tricolored bat exist on the Project Site or in the TL upgrade locations. Five caves occur within three miles of the Project Site and TL upgrade locations, with the closest within 1.5 miles. One of these caves was reported by Arnold AFB personnel to be a gray bat maternity site.

Field surveys were conducted on the Project Site in May 2021, following the Range-Wide Indiana Bat Survey Guidelines (USFWS 2020), to determine the suitability of forests as summer roosting habitat for the Indiana and northern long-eared bats. The habitat survey identified 1,983 acres of summer roosting habitat occurring on the Project Site in mature live hardwoods (including white oaks and shagbark hickories) and snags. Approximately 5.5 percent (109 acres) of the 1,983 acres was assessed as high-quality habitat, 65.6 percent (1,301 acres) as moderate-quality habitat, and 28.9 percent (573 acres) as low-quality habitat. Buildings on the Project Site were also evaluated for their potential as suitable habitat for these two federally listed bat species. One building, a small shed, and a culvert had low potential for bat habitat, as these did not provide large areas of cover from the surrounding environment, nor were signs of bat use noted. Based on an early 2022 survey of the TL upgrade locations, no suitable summer roosting habitat exists along access roads or in the TL ROW. Mist net surveys were conducted on the Project Site in May 2021 following USFWS guidance to determine the presence or absence of the Indiana and northern long-eared bats (Copperhead 2021). Neither of these species nor tricolored bat was captured during mist net surveys; however, three gray bats were captured, likely due to the presence of gray bat foraging habitat on site and a known hibernaculum greater than 1.5 miles away.

The painted snake coiled forest snail occurs in damp limestone outcrops, typically in crevices or under overhanging ledges. Slopes are very steep, often terminating in sheer cliffs that drop to the creek bed below. The habitat is thickly forested and has a profuse ground cover. No suitable habitat exists for the painted snake coiled forest snail on the Project Site or in the TL upgrade locations.

3.5.4.1.1.2 Aquatic Species

The Barrens topminnow occurs in waters of springs, spring runs, and first and second order headwaters and creeks with calm, shallow, unshaded and heavily vegetated spring pools. Marginal suitable habitat exists for the Barrens topminnow. During targeted field surveys, it was determined that the quality of potential habitat for the Barrens topminnow species on the Project Site was marginal, and after considerable effort, the fish was not observed.

Suitable habitat for the other federally listed aquatic species included on Table 3-11 was determined during field surveys to not occur on the Project Site.

3.5.4.1.1.3 Insects

Review of the IPaC indicated that one federally listed insect species may occur within the project area and TL upgrade locations. While none were observed during the field surveys, limited suitable habitat does exist on site.

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. Nectar producing plants, and milkweed, are both needed for monarch butterflies to complete their lifecycle. In the Southeast, including the project area, the majority of monarchs migrate through in the spring. The project area also lies along the fall migration route for butterflies returning to overwintering grounds from more northern latitudes. Suitable habitat was observed within the Project Site or in the TL upgrade locations.

3.5.4.1.1.4 Plants

Review of the RNHD and IPaC indicated that there are no federally listed plant species occurring within three miles of the Project Site or the TL upgrade locations. None were observed during the field surveys.

3.5.4.1.2 State-Listed Species

3.5.4.1.2.1 Terrestrial Animals

The RNHD and IPaC indicated ten state-listed terrestrial animal species potentially occurring within three miles of the Project Site or the TL upgrade locations: little brown bat, pygmy shrew, Backman's sparrow, common barn owl, osprey, southeastern shrew, common shrew, northern pine snake, and the eastern slender glass lizard (Table 3-11). The little brown bat inhabits wet meadows, damp woods, and uplands, including abandoned structures and sinkhole fissures/karst features. Suitable summer habitat was observed within the Project Site; however, this bat species was not caught during the mist net survey. The Bachman's sparrow inhabits mature pine forests with grassy understories and can also occur in brush fields, such as regenerating clearcut areas. Marginal suitable habitat exits for the Bachman's sparrow on the Project Site. The osprey inhabits coastal marshes, lakes, and rivers. No suitable habitat was observed within the TL upgrade locations; however, they have potential to nest on TL pole structures. The pygmy shrew, southeastern shrew, and common barn owl inhabit grasslands, scrublands, groves, farms, fields, or towns. Suitable habitat exits within the Project Site and in the TL upgrade locations. The northern pine snake inhabits well drained sandy soils in pine or mixed pine/hardwood forest. Suitable habitat was not observed within the Project Site or in the TL upgrade locations. The eastern slender glass lizard inhabits dry grasslands and forest. Suitable habitat exists within the Project Site.

3.5.4.1.2.2 Aquatic Species

Eleven state-listed or protected fish species potentially occur within the Project Site: flame chub, coppercheek darter, longhead darter, ashy darter, redband darter, striated darter, slenderhead darter, golden darter, Tennessee logperch, southern cavefish, and the saddled madtom (Table 3-11). Targeted surveys for these species were conducted in Hurricane Creek and its associated tributaries in May 2021. The flame chub was the only listed species collected. Flame chubs are dependent upon spring habitat with cool water temperatures provided by groundwater and tree canopy cover. The flame chub was collected at two separate sites within the Rock Creek drainage. The first site was within West Fork Rock Creek alongside SR 55 just upstream of the Coffee County line. The second site was within North Fork Blue creek just adjacent to Cumberland Springs Road.

Suitable habitat for the other state-listed aquatic species included on Table 3-11 was determined during field surveys to not occur on the Project Site.

3.5.4.1.2.3 Plants

Review of the RNHD and IPaC indicated that 23 Tennessee state-listed plant species have been previously reported within a five-mile vicinity of the project area (Table 3-11). All habitats on the Project Site were surveyed, and eight state-listed species were observed on the Project Site. These species included Barratt's sedge, button sedge, dwarf sundew, slender blue flag, black footed quillwort, Virginia chain fern, iris leaved yellow-eyed grass, and Tennessee feather bells. Four of these species, button sedge, dwarf sundew, slender blue flag, and Tennessee feather bells, were also observed in the TL upgrade locations.

- Barratt's sedge was observed in one location on the Project Site, primarily in a single dense patch several hundred square feet in size in a wet forest near SR 130 in the northern portion, as well as sporadically throughout this vicinity of the Project Site.

- Button sedge occurs in extensive colonies at multiple locations on the Project Site, including one area where the species dominated. The species was observed in flower and fruit at all locations.

- Dwarf sundew is often found in disturbed areas devoid of vegetation in Tennessee. On the Project Site, dwarf sundew was seen along an old logging road, growing in full-sun conditions most frequently in ruts made by logging equipment, as well as within TVA TL ROW.

- Slender blue flag was observed growing both in full shade on the Project Site and within a grassland in the TL upgrade locations in full sun. These plants were observed in a handful of locations on the Project Site, but the total population did not occupy more than 10 to 15 square feet. The TL ROW population of slender blue flag was more robust, with plants covering up to 100 square feet in total.

- The black footed quillwort, a fern-like plant, was observed in intermittent and perennial stream channels. A formal count of individuals was not made, but at least 100 individual plants were observed; more individuals are likely present.

- A single population of the Virginia chain fern was observed growing within a depressional pond in a closed canopy forest, where it covered several thousand square feet of the wetland complex.

- The iris leaved, yellow-eyed grass was observed growing in two different habitat types. About 20 individuals were found within a natural depression pond in full sun. In the second location, over 100 plants grew within the channel of the West Fork of Rock Creek. The species prefers areas that are inundated much of the year but not within deeper pools.

- Tennessee feather bells had been previously collected from the Project Site, and the Project-related survey recorded multiple new locations of the plant. Plants were observed growing in the full sun of open TL ROW, along forested edges in the partial sun, and in the dense shade of early successional forest on the Project Site. Tennessee feather bells in partial sun were taller and in flower more vigorously. The species also seems to prefer the edge of wetlands between wettest portions of a site and the adjacent uplands.

In addition to these rare plant species, an approximately 130-acre area of the globally rare Willow Oak - White Oak / Black Highbush Blueberry - (Possumhaw) / Barratt's Sedge Wet Forest community, as defined by NatureServe, is present on the Project Site. Five of the observed state-listed plant species were found within this habitat, including Tennessee feather bells, Barratt's Sedge, black footed quillwort, button sedge, and Virginia chain fern. This rare plant community is endemic to the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma.

Tennessee feather bells and Barratt's sedge are very rare, and the populations identified on the Project Site are important for the long-term conservation of the species in Tennessee. Occurrences of Tennessee feather bells are particularly important because the species only occurs in Tennessee and persists at approximately 10 to 15 locations in a region that is experiencing rapid development and population growth.

3.5.4.1.3 Environmental Consequences

3.5.4.1.3.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to rare, threatened, or endangered species would occur if current land use practices continued.

3.5.4.1.3.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

3.5.4.1.3.2.1 Terrestrial Animals

Two federally listed bats, two proposed endangered bats, and the state-listed common barn owl, Bachman's sparrow, pygmy shrew, little brown bat, eastern slender glass lizard, and northern pine snake have suitable habitat on the Project Site and/or in the TL upgrade locations. Prior to the TL upgrades, TVA would perform an aerial nest survey of each pole structure to identify active osprey or eagle nests, and if identified, TVA would engage USDA-Wildlife Services or USFWS as appropriate to provide guidance on avoidance and minimization measures and ensure compliance under federal law prior to commencement of work. With these measures, Project actions would not impact bald eagles and would, therefore, be in compliance with the National Bald Eagle Management Guidelines.

No known hibernacula for the federally listed/protected gray bat, Indiana bat, northern long-eared bat, or tricolored bat exist on the Project Site or the TL upgrade locations. Suitable summer roosting habitat for Indiana bat, northern long-eared bat, and tricolored bat occurs throughout the Project Site in trees with suitable roosting characteristics, particularly those near water sources. Suitable foraging habitat for all four bats also occurs on the Project Site. A mist net survey for Indiana bat and northern long-eared bat was conducted in May 2021, and these bat species were not caught. Tricolored bat was not caught either. Gray bats were caught on site, likely due to the presence of gray bat foraging habitat on site and a known hibernaculum greater than 1.5 miles away.

Approximately 850 acres of potentially suitable summer roosting, low- to high-quality habitat would be removed on the Project Site. No tree removal is anticipated in the TL upgrade locations. Some buildings have the potential to be removed for the Project; however, these have low potential for providing suitable habitat for federally listed/protected bats. Streams and ponds offer foraging habitat and sources of drinking water for all four bat species within and adjacent to the Project Site. Other than limited effects to small areas of USACE-jurisdictional ephemeral streams and non-USACE-jurisdictional ditches, as well as some USACE- and non-USACE-jurisdictional wetland and non-jurisdictional open water impacts, the Project would avoid streams, wetlands, and ponds, and these would be protected by 50- to 60-foot avoidance buffers. Consultation with USFWS under Section 7 of ESA was completed on December 5, 2022. USFWS concurred with TVA's determinations that proposed actions may affect but are not likely to adversely affect gray bat, Indiana bat, or northern long-eared bat. Proposed actions would not jeopardize the continued existence of tricolored bat (Appendix A).

While no known hibernacula for the state-listed little brown bat exist on the Project Site or in the TL upgrade locations, suitable summer roosting habitat for this bat occurs on the Project Site in trees with suitable roosting characteristics, particularly near water sources. Suitable foraging habitat for these state-listed bats also occurs on the Project Site. However, based on the lack of captures of the state-listed little brown bat during the mist net survey, populations of this species are not expected to be significantly impacted by the proposed actions.

Although the implementation of the Project would reduce habitat for the two state-listed reptile species and the two state-listed bird species that potentially occur on the Project Site, particularly those occupying woodlands, the effect on these state-listed species would be localized and minor.

3.5.4.1.3.2.2 Aquatic Species

West Fork Rock Creek and North Fork Blue Creek on the Project Site, which provide marginal habitat for the federally listed Barrens topminnow and suitable habitat for the state-listed flame chub, would be largely avoided by the Project activities. Vegetation immediately adjacent to West Fork Rock Creek, North Fork Blue Creek, and Spring Creek would be cleared by hand to reduce disturbance to the streams.

Spring Creek within the TL ROW provides suitable habitat for the state-listed flame chub. Ground disturbance would be minimized, and all work would be conducted in accordance with the relevant BMPs outlined in TVA's BMP manual (TVA 2017a). With proper implementation of BMPs and adherence to CWA Section 404 and 401 permit requirements, no impacts to federal or state-listed aquatic species are anticipated from the TL upgrades.

Except for the installation of buried or overhead electrical lines within 50 feet of Raysville Road and Cumberland Springs Road, the Project has committed not to install Project components within or immediately adjacent to habitat for the undescribed crayfish species, *Cambarus* sp., discussed in Section 3.5.3, in accordance with an Avoidance Agreement between SR Tullahoma and TVA (Appendix A). Thus, implementation of the Proposed Action Alternative would result in no direct impacts to this species.

3.5.4.1.3.2.3 Insects

Due to the location of suitable habitat on the fringes, where the solar facility would generally not be developed, no adverse effects to the monarch butterfly are anticipated. Further, the Project would create pollinator habitat that would allow seed heads to mature, thus potentially increasing the suitable habitat on site. While consultation with USFWS is not required as the species is currently listed as a candidate for protection under the ESA, TVA included in their correspondence with USFWS that they determined the Proposed Action Alternative would not jeopardize the continued existence of the monarch butterfly (Appendix A).

3.5.4.1.3.2.4 Plants

The locations of sensitive plant species within the Project Site were carefully considered when designing the solar facility. The Project has committed not to install Project components or conduct regenerative energy activities, including sheep operations or vegetation management, within areas known to support state-listed plant species or rare plant communities, in accordance with an Avoidance Agreement between SR Tullahoma and TVA (Appendix A). Thus, implementation of the Proposed Action Alternative would result in no direct impacts to those populations.

3.5.4.1.3.2.5 Cumulative Impacts

The 1,873-acre area where the Project would impact vegetation is a mix of mostly forested areas and some scrub/shrub and open agricultural areas. Removal of approximately 850 acres of forest would occur, with some of the lost acreage being blocks of contiguous forest and other, along field edges or forest fragments. The Project Site would be revegetated and maintained as a meadow with a mix of perennial and annual, non-invasive grasses and forbs to attract pollinators and serve as sheep pasture.

RFFAs may occur at multiple locations near the Project Site, and these other projects would affect vegetation and wildlife habitat. Given that agriculture is the dominant land use in the areas suited for development, future development would likely not result in significant impacts to important terrestrial habitats. While RFFAs in the surrounding region could remove available habitats for wildlife in the foreseeable future, the impacts of the Project would not result in significant cumulative impacts to vegetation and wildlife due to the small area of vegetation to be removed and the type of forest and other vegetative communities to be removed.

Agricultural row crop fields do not provide suitable habitat for threatened and endangered terrestrial animal species assessed in relation to the Project Site. The 850 acres of forest proposed for removal may provide high- to low-quality suitable summer roosting habitat for Indiana bat and northern long-eared bat. Approximately 1,285 acres (60 percent of the existing forested area) of forested habitat would be retained, including most high-quality bat habitat identified on site, and most bodies of water on the Project Site would be avoided by the Project. These bodies of water offer foraging habitat for all three federally listed bat species. In addition, forested habitats would be removed in winter as much as feasible to

avoid the summer roosting season for Indiana bat and northern long-eared bat. Actions related to the Project would not impact bald eagles. While other industrial parks in the surrounding region could remove additional habitats for federally listed bats in the future, TVA consulted with USFWS regarding impacts to federally listed bats to ensure rangewide impacts to threatened and endangered species are minimized (Appendix A). The Project is not expected to result in significant cumulative impacts to threatened and endangered terrestrial animal species. Overall, because the impacts to federally listed animal species and state-listed plant and aquatic species would be avoided or minimized in consultation with the USFWS, reasonably foreseeable environmental trends and planned actions to threatened and endangered plants and animals would be minor.

Since the Project Site is in a relatively undeveloped, rural county, cumulative impact to general aquatic ecology and to aquatic threatened and endangered species may be more minimal given the presence of large areas of undeveloped, forested lands. However, there are several past, present, and foreseeable projects in the general area that include the use of undeveloped lands to support industrial or other intensive developments. These projects and their associated direct and indirect impacts are reasonably certain to gradually degrade existing streams and threatened and endangered aquatic species within the Proposed Action area over the next several decades. Negative Project impacts resulting from cumulative impacts may be lessened by the proposed mitigation measures outlined in Section 2.5. Cumulatively, Moore County Solar would contribute to the long-term conversion of disturbed land with some forest management, including timbering operations, and agricultural uses to other industrial uses. However, this cumulative impact would not be significant because of the marginal value of these lands for species and habitat protection.

3.6 Natural Areas, Parks, and Recreation

3.6.1 Affected Environment

There are no developed parks or outdoor recreation areas on or in the immediate vicinity of the Project Site or the related TL locations. There are several parks just east of the Project Site, Tims Ford State Park is located to the south of the project, and the Arnold Engineering Development Complex (AEDC) Wildlife Management Area (WMA) is located five miles east of the Project Site (Figure 3-15).

The Project Site has been used for a variety of dispersed recreation activities in recent years, including hunting, wildlife viewing, and off-road vehicle use on a network of roads and trails. Much of the area has been leased to hunting clubs and has been managed under quality deer management principals to enhance the experience for deer hunters. There is also a firing range on the Project Site.

3.6.2 Environmental Consequences

3.6.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, no Project-related impacts to recreational activities at parks and recreation areas would occur.

3.6.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and

upgrade portions of an existing TL. Because there are substantial distances between developed recreation area and the Project, no impacts on these recreation areas are anticipated.

Development of the Project would eliminate hunting and other dispersed recreational activities that have historically occurred on the Project Site. However, it is expected that these dispersed recreation activities could be accommodated at other similar rural lands in the surrounding area. Where solar development is not planned, hunting leases may remain. Therefore, Project impacts on dispersed outdoor recreational activities would be minor.

Portions of the TL upgrades are within the AEDC WMA Unit 2. Hunting would be temporarily impacted during the two-week installation of OPGW by helicopter if this method is determined the most feasible. Therefore, TL upgrades would have minor temporary impacts on recreation.

3.6.2.2.1 Cumulative Impacts

Future projects in the geographic area of analysis that include use of undeveloped lands to support industrial or other intensive developments would reduce the availability of lands suitable for recreation within Moore County. This would decrease the amount of potentially available land to support dispersed outdoor recreation activities such as, hunting, fishing, or nature observation. The combined effect of these future land development actions and the Project would likely result in a slight reduction in resources for dispersed recreation. However, in view of the relatively large amounts of rural and undeveloped lands within the county, cumulative impacts on dispersed recreation opportunities are expected to be minor. Because developed outdoor recreation areas are located sufficiently distant from the Project, no direct, indirect or cumulative impacts on these resources is expected.

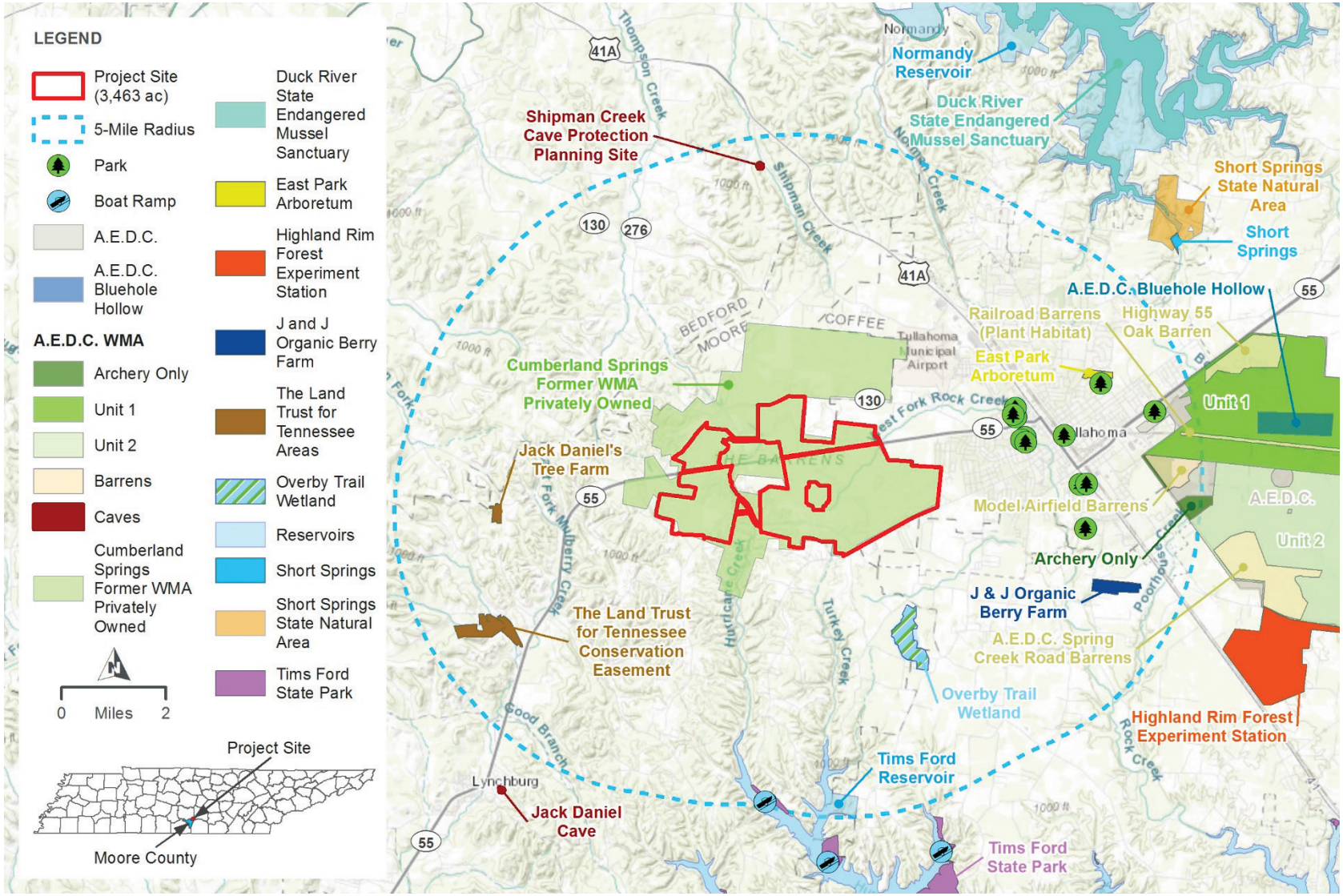

Figure 3-15. Developed Parks and Recreational Areas in the Vicinity of the Project Site

3.7 Visual Resources

3.7.1 Affected Environment

Visual resources compose the visible character of a place and include both natural and human-made attributes. Visual resources influence how an observer experiences a particular location and distinguishes it from other locations. Such resources are important to people living in or traveling through an area and can be an essential component of historically and culturally significant settings. For this analysis, the scenery management system and associated analytical assessment procedures developed by the U.S. Forest Service (USFS) are adapted for use within a natural and human-built environment and integrated with planning methods used by TVA (after TVA 2016; USDA 1995). The general project area viewshed is evaluated based on its scenic attractiveness and scenic integrity. Scenic attractiveness is a measure of the scenic beauty of a landscape based on perceptions of the visual appeal of landforms, waterways, vegetation, and the human-built environment. Scenic attractiveness is assessed as either distinctive, typical/common, or indistinctive. As adapted for this analysis, scenic integrity measures the degree of visual unity of the natural and cultural character of the landscape. Scenic integrity is evaluated as either low, moderate, or high. This analysis also considers the existing character of the Project Site as an important factor in understanding the affected environment.

The project area is a rural agricultural area with isolated single-family homes, small rural-residential concentrations, and some institutional, commercial, and industrial development adjacent to highways. The project area generally consists of flat to gently sloping land. Scenic attractiveness of the project area is rated as typical or common of a rural agricultural and rural residential area. Scenic integrity is assessed as moderate due to the relative unity of the surrounding natural and cultural character. Photo 3-1 through Photo 3-4 show general views of the Project Site. The TL upgrade locations extend through a mix of forested areas and agricultural fields with scattered residences and some small residential concentrations.

Photo 3-1. Forested Land on the Project Site

Photo 3-2. Herbaceous and Scrub-Shrub Land on the Project Site

Photo 3-3. Woody Wetlands on the Project Site

Photo 3-4. Agricultural Land on the Project Site

Prominent visual receptors (viewpoints) surrounding the Project Site, where more concentrated visual effects from the Project could occur, include five rural-residential concentrations, one along Five Points Road, adjacent to the northern boundary of the Project Site, one along Raysville Road, adjacent to the southern boundary of the Project Site, and multiple residences along the entirety of West Lincoln Street from Cobb Hollow Road to Blue Ridge Avenue. These are located adjacent to the southern boundary of the Project Site. A residential concentration is also present along Cumberland Oaks Drive located at the southern portion of the Project Site, and a residential concentration is present along Cobb Hollow Road located south of the Project Site. One residential concentration is present along Woosley Road to the west of the Project Site.

There are three isolated single-family homes and a business present along Five Points Road, adjacent the northern boundary of the Project Site; two businesses along West Lincoln Street; and a chicken farm along SR 130, adjacent to the northern boundary of the Project Site. Two businesses associated with Motlow State Community College are present on Ledford Mill Road, in the northern portion of the Project Site, and two isolated single-family homes and one business are located on Woosley Road, east of the Project Site. There are an additional three single-family homes present on Bennett Road (Figure 3-16; Photo 3-5 through Photo 3-14). The Project Site is bisected by SR 55 and Cumberland Springs Road, bounded to the north by SR 130 and Five Points Road, and bounded to the south by West Lincoln Street. The long-range views from SR 55, SR 130, and Five Points Road as they pass adjacent to the Project Site are generally obscured by mature trees. The long-range views from Cumberland Springs Road as it passes through the Project Site are also generally obscured by mature trees except for a small portion just northwest of its intersection with West Lincoln Street where the lack of trees results in unobstructed views to the north. The long-range views from West Lincoln Street as it passes adjacent to the Project Site are generally unobstructed to the north except for a portion with mature trees near its intersection with Cumberland Springs Road and partially obscured by mature trees to the south. TVA’s existing Franklin–Wartrace No. 2 161-kV TL extends north-south through the Project Site.

Table 3-12. Visual Receptors in the Vicinity of the Project Site

Visual Resource Location	Location Description	Visual Receptor Type	General Views of the Project Site from Visual Receptor
SR 55	Two-lane paved state road that extends northeast-southwest between the cities of Lynchburg and Tullahoma, bisecting the Project Site.	Traffic	Obscured by mature trees
SR 130	Two-lane paved state road that extends northwest-southeast along the northern boundary of the Project Site, between the cities of Shelbyville and Tullahoma.	Chicken Farm Traffic	Obscured by mature trees
Five Points Road	Two-lane paved public road that extends northeast-southwest along the northern boundary of the Project Site, between SR 55 and SR 130.	Rural residential concentration Isolated single-family homes Business Traffic	Obscured by mature trees
Ledford Mill Road	Two-lane paved public road that extends north-south in the northwestern portion of the Project Site.	Community College Businesses	Obscured by mature trees
Cumberland Oaks Drive	Two-lane paved cul-de-sac coming off of Cobbs Hollow Road. Extends north-south in the southern portion of the Project Site.	Suburban-residential	Partially obscured by mature trees
Cumberland Springs Road	Two-lane paved public road that extends northwest-southeast through the southern portion of the Project Site and provides access to the Project Site through its connections with SR 55 and West Lincoln Street.	Traffic	Partially obscured by mature trees
Cobb Hollow Road	Two-lane paved public road that extends west-southeast in the western portion of the Project Site. Between Lynchburg Highway and Raysville Road.	Residential Commercial	Obscured by mature trees
Woosley Road	Two-lane paved public road between Raysville Road and Coon Hunter's Road that extends east-west in the southern portion of the Project Site.	Residential Commercial	Obscured by mature trees
Bennett Road	Two-lane street coming off of Cobb Hollow Road running east-west in the southern portion of the Project Site.	Residential	Partially obscured by mature trees
West Lincoln Street	Two-lane paved public road that extends northeast-southwest along the southern boundary of the Project Site, from Cumberland Springs Road on the Project Site eastward into downtown Tullahoma.	Rural residential concentration Businesses Traffic	Unobstructed to the north; partially obscured by mature trees to the south.
Raysville Road	Two-lane paved public road that extends northeast-southwest through the southern portion of the Project Site and provides access to the Project Site through its connections with Cumberland Springs Road, Bobo Hollow Road, and Cobb Hollow Road.	Rural residential concentration Traffic	Partially obscured by mature trees

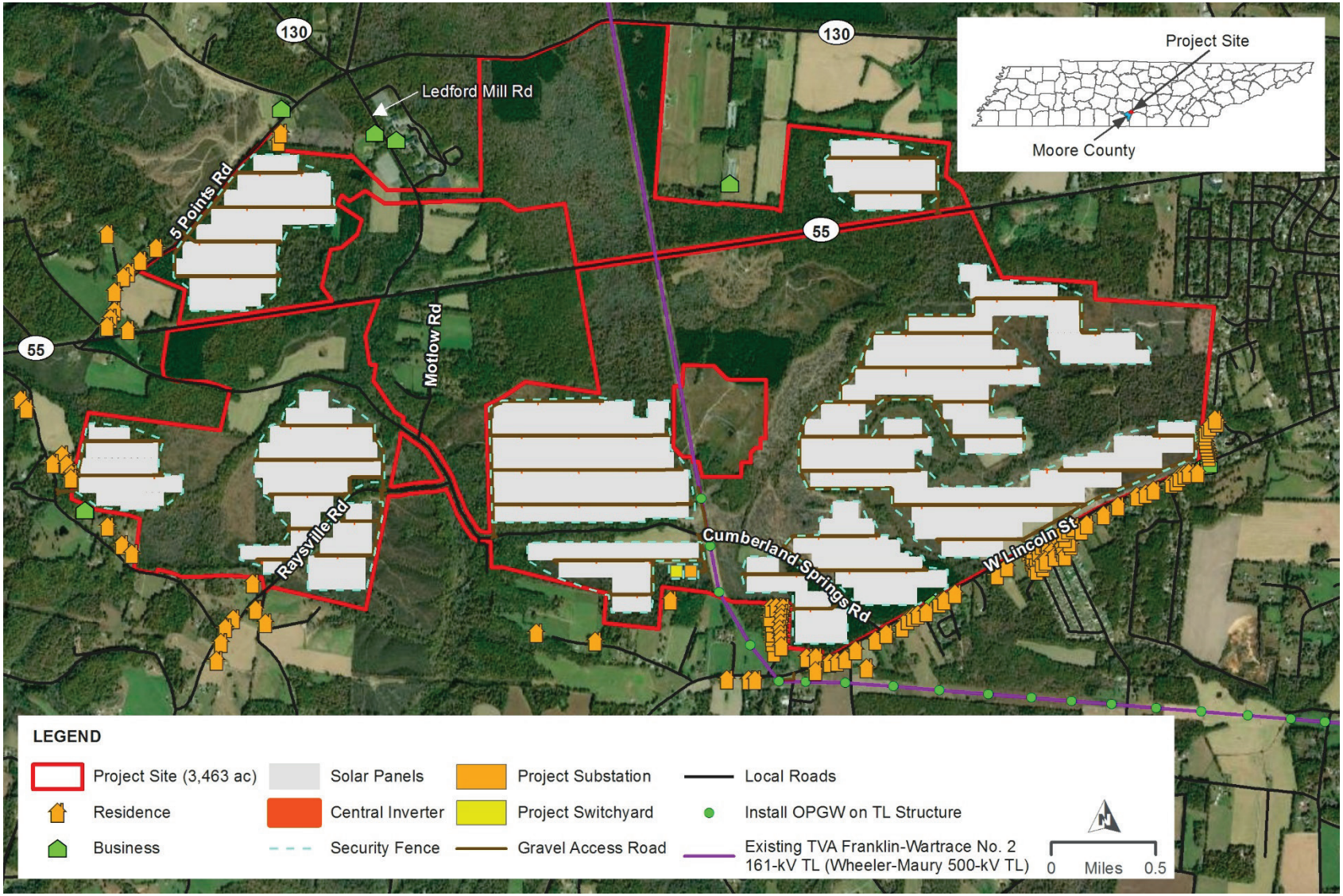

Figure 3-16. Prominent Visual Receptors in the Vicinity of the Project Site

Of the five rural-residential concentrations near the Project Site, the largest is adjacent to the southern boundary of the Project Site, along West Lincoln Street. Residences along West Lincoln Street are mix of one-story and two-story houses built in the early 1970s, mid-2000s, and mid-2010s (USGS 2019; Photo 3-5). Long-range views to the north from this portion of West Lincoln Street are unobstructed (Photo 3-6).

West Lincoln Street becomes Cobb Hollow Road at the intersection of Cumberland Springs Road. Several residences continue along this stretch of road in close proximity to the project area. A residential cluster on Cumberland Oaks Drive comes off Cobb Hollow Road and ends in a cul-de-sac. Residences along Cumberland Oaks Drive are a mix of one-story and two-story houses built in the late 1990s to early 2000s (USGS 2019; Photo 3-7). Long-range views to the northeast from this portion of Raysville Road are partially obscured by mature trees along most of Cobb Hollow Road and Cumberland Springs Road. Long-range views north of Cumberland Oaks Drive are unobstructed (Photo 3-7).

The residential concentration along Woosley Road is adjacent to the southwestern portion of the Site. The residences in this cluster are a mix of one-story and two-story houses built in the mid-1970s to early 2000s (USGS 2019; Photo 3-8). Long-range views to the west of Woosley Road are partially obscured by mature trees.

The two commercial properties located on Ledford Mill Road in conjunction to Motlow State Community College are the Motlow Baptist Student Center and the Ingram Administration Building. The properties are located to the north of the Project Site. The long-range views to the northeast from this portion of Raysville Road are obscured by mature trees (Photo 3-9).

The three single-family homes present on Bennett Road are adjacent to the southern portion of the Project Site. The residences are one-story houses built in the 1980s and 1990s and are generally on lots surrounded by agricultural fields and forests (USGS 2019; Photo 3-10). Two of these houses are located directly on Bennett Road. Long-range views north from this portion of Bennet Road are partially obstructed. One residence that sits on a long driveway connected to Bennett Road has unobstructed views to the north and west (Photo 3-10).

The residential concentration along Five Points Road is adjacent to the northwestern portion of the Project Site. This concentration consists of one-story ranch-style houses that were built in the early 1940s to early 1980s (USGS 2019). The residences are generally on lots surrounded by agricultural fields framed by mature trees (Photo 3-11). Long-range views to the east from this portion of Five Points Road are unobstructed (Photo 3-12).

The residential concentration along Raysville Road is adjacent to the southern portion of the Project Site. This concentration consists primarily of one-story ranch-style houses that were built in the early 1970s to late 1980s, but there are several residences that were built in the mid-2000s to mid-2010s (USGS 2019). The residences are generally on lots surrounded by agricultural fields (Photo 3-13). Long-range views to the northeast from this portion of Raysville Road are partially obscured by mature trees (Photo 3-14).

Photo 3-5. Small Residential Concentration Along West Lincoln Street, Adjacent to the Southeastern Portion of the Project Site (red boundary).

Photo 3-6. View of the Southeastern Portion of the Project Site, Looking North from West Lincoln Street (Google Street View, May 2019)

Photo 3-7. Small Residential Concentration Along Cumberland Oaks Drive, Adjacent to the Southern Portion of the Project Site (red boundary)

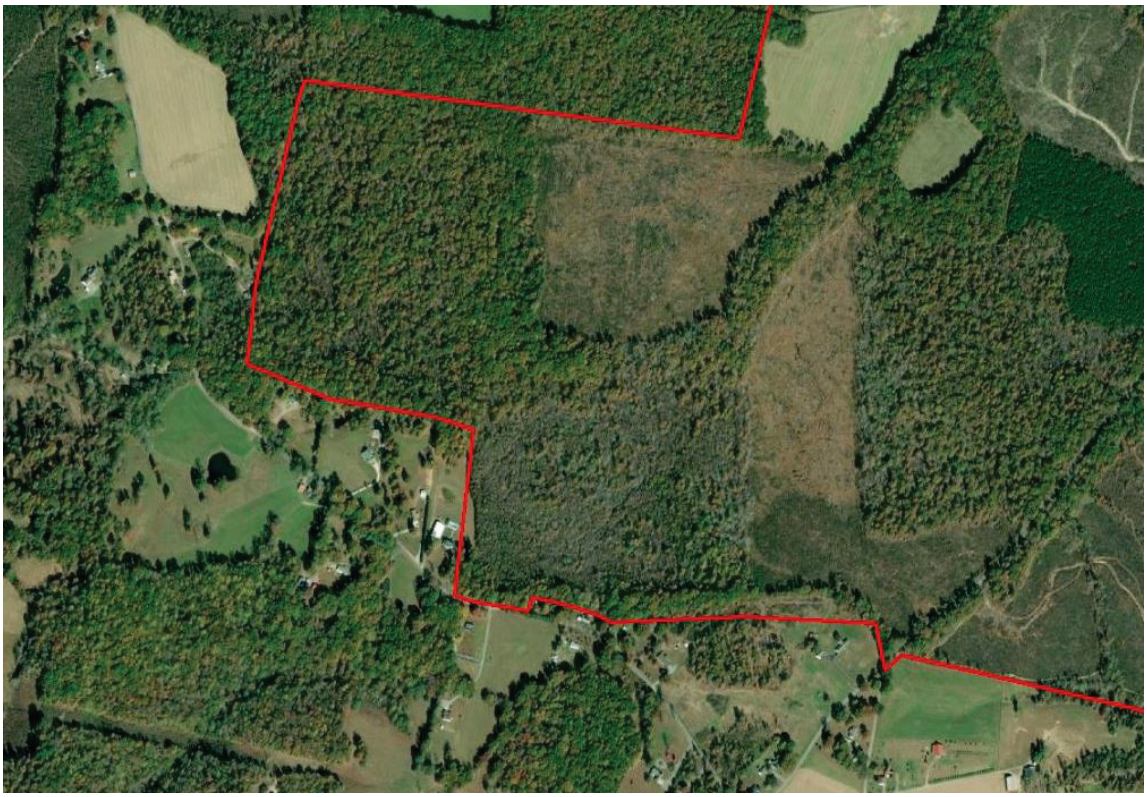

Photo 3-8. Small Residential Concentration Along Woosley Rd, Adjacent to the Southwestern Portion of the Project Site (red boundary)

Photo 3-9. Commercial properties located on Ledford Mill Road in conjunction to Motlow State Community College, North of the Project Site (red boundary)

Photo 3-10. Small Residential Concentration Along Bennett Road, Adjacent to the Southern Portion of the Project Site (red boundary)

Photo 3-11. Small Residential Concentration Along Five Points Road, Adjacent to the Northwestern Portion of the Project Site (red boundary)

Photo 3-12. View of the Northwestern Portion of the Project Site, Looking East from Five Points Road (Google Street View, May 2019)

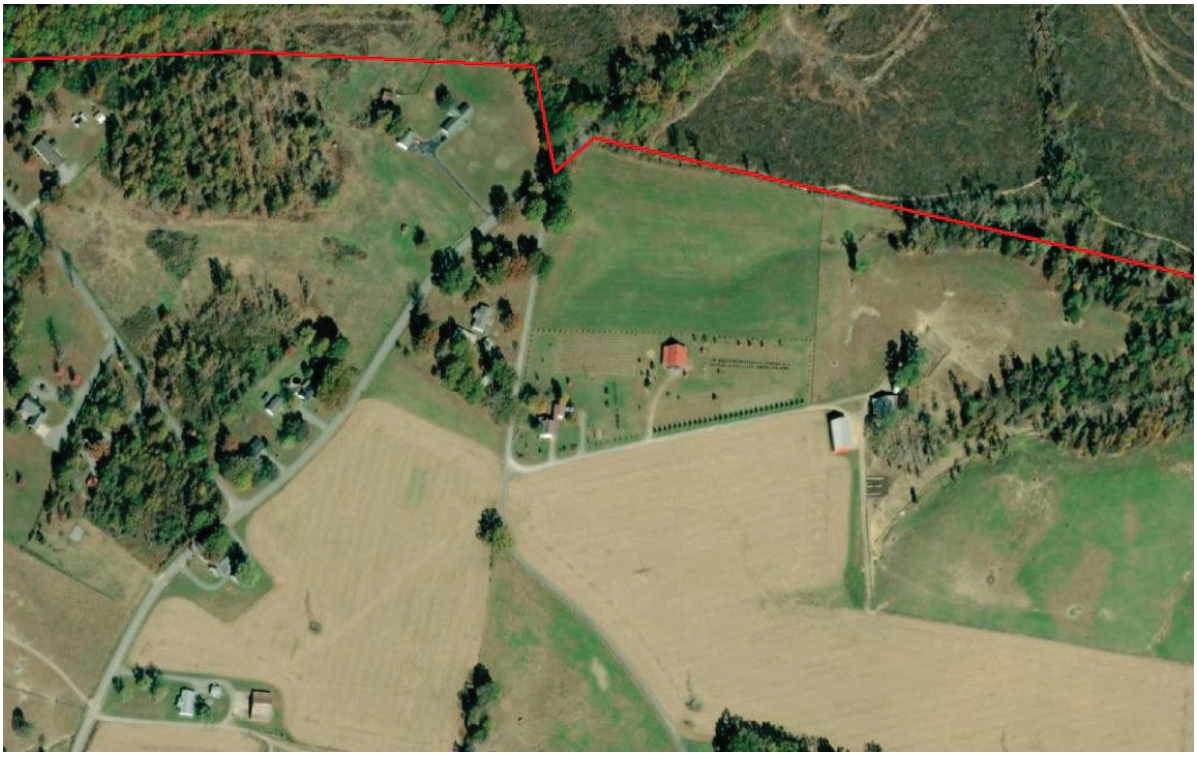

Photo 3-13. Small Residential Concentration along Raysville Road, Adjacent to the Southern Portion of the Project Site

Photo 3-14. View of the Southern Portion of the Project Site, looking Northeast from Raysville Road (Google Street View, May 2019)

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to visual resources would occur if current land use practices continued.

3.7.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Visual concerns are often associated with both large- and small-scale solar facilities and their electrical infrastructure. The Project generally consists of flat to gently sloping terrain, and the Project would convert what is largely now forested lands with some agricultural and rural-residential lands to an industrial use mostly consisting of low-profile PV arrays. Figure 2-2 shows the proposed Project elements. Photo 3-15 and Photo 3-16 show representative views of the type of solar panels proposed for the Project. From vantage points along Cumberland Springs Road, West Lincoln Street, Cobb Hollow Road, Bennett Road, and Raysville Road, the manufactured, structured appearance of the facility would be most apparent. The Project would likely be more visually intrusive in the morning and late afternoon, when the panels would be facing east or west, respectively, at their maximum tilt, with the upper edge of the panels about eight feet from the ground. This effect would be least at mid-day when the panel profile would be lying flat and about five feet tall.

Photo 3-15. Single-axis, Tracking PV System with Panels Showing Some Tilt as Viewed from the East or West

Photo 3-16. The Backside of the Solar Panels in Early Morning or Late Afternoon Configuration

Construction activities would temporarily alter the visual character of the project area. During construction, heavy machinery would be present, changing the visual aspects from project area vantage points. Within the 1,873-acre area to be developed for the Project, trees and other tall vegetation would be removed, and portions of the area would be graded, changing the contour, color, and texture of the scenery attributes. The Project Site would appear as a mixture of neutral colors such as browns and grays due to earthmoving, road construction, and concrete activities. Water would be used to keep soil from aerosolizing; thus, dust clouds are not anticipated. Visual impacts from construction would be minimal at night, as most construction is anticipated to occur during the day. Erosion control silt fences and sediment traps would be removed once construction is complete, and bare areas would be promptly vegetated.

Long-range views from the prominent viewing points near the Project Site along SR 55, SR 130, Woosley Road, and Five Points Road are generally obscured by mature trees. Long-range views from the prominent viewing points near the Project Site along Cumberland Springs Road, West Lincoln Street, Cobb Hollow Road, Bennett Road, and Raysville Road are only partially obscured by mature trees. If left unbuffered, Project elements would be visible to the north from residences, businesses, and travelers along the majority of West Lincoln Street. Project elements would also be visible to the east and northeast of Cobb Hollow Road, if left unbuffered, and would be partially visible from residences and travelers along portions of Cumberland Springs Road and Raysville Road. However, in following county requirements for solar facilities, the Project would include a 60-foot-wide planted vegetative buffer composed of evergreen or other suitable plantings around the perimeter of the site between the Project site boundaries and Project fence, where existing natural buffers are not present along public rights-of-way and where receptors or known future receptors would view the facility. Lighting associated with the Project, including the Project substation, switchyard, and operations and maintenance building would be timer- or motion-activated and downward-facing and/or low glare to minimize impacts to surrounding areas; thus, minimal to negligible impacts to visual resources from Project lighting are expected.

Indirect impacts to visual resources in the Project Site vicinity may occur due to increased traffic and movement of heavy machinery on the Project Site and along local roads. Overall, there would be minor direct and indirect impacts to visual resources during the construction phase of the Proposed Action. These impacts would be temporary and would last approximately 18 months, subject to weather.

The visual alteration from forested land and some agricultural land to an industrial appearance in an area where scenic integrity is rated as moderate to high due to the relative unity of the surrounding natural and cultural character is expected to result in minor adverse visual impacts. Due to the relatively substantial mature tree buffers in most areas and the addition of planted vegetative buffer where receptors or known future receptors would view the facility, visual impacts during the operations phase of the Project would be minimal to minor in the immediate vicinity and negligible on a larger scale, due to variation of the visual attributes of the project area and diminished views of the facility as distance from the Project increases. Because most of the existing mature tree buffers are comprised of deciduous trees, their effectiveness in blocking views of the Project would be reduced from late autumn through early spring, when visual impacts would be somewhat greater. Visual impacts would also be greater during the early years of operations before the planted vegetative buffer matures.

TVA would perform network upgrades to a 9.8-mile portion of the Franklin–Wartrace No. 2 161-kV TL. If used, a helicopter would be visible to residences near the TL during installation of OPGW in the vicinity, which would affect individual residences for no more than a few days. Other equipment associated with the TL upgrades may also be visible for a few days in the vicinity of individual residences. Modifications to the existing TL would likely be visible from travelers along Cumberland Springs Road during construction. Modifications of the existing TL is not expected to greatly change the visual effects to nearby residences. Overall, the TL upgrade work would likely result in temporary minor impacts to the visual resources in the vicinity of the TL upgrade locations.

3.7.2.2.1 Cumulative Impacts

The Proposed Action would alter the visual character of the Project Site by converting a large area of mostly forested land to numerous low-profile parallel rows of PV panels, an electrical substation, switchyard, and operations and maintenance building. Much of the developed Project Site would be screened from nearby public roads and residences. Visual impacts from other locations around the site perimeter would be low to moderate and mostly at middle ground distances. The potential industrial development of the RFFAs in the project area could result in greater visual impacts due to the size of the buildings and supporting infrastructure. Because the visual impacts of the Proposed Action would be comparatively low and localized, the Proposed Action has little potential to result in adverse cumulative visual impacts.

3.8 Noise

This section provides an overview of the existing ambient sound environment in the project area, and the potential impacts to the ambient sound environment that would be associated with the No Action and Proposed Action Alternatives. Existing conditions for noise are generally discussed in relation to the vicinity of the Project Site and TL upgrade locations and presented in detail for the Project Site vicinity, where concentrated, longer term Project effects to noise receptors could occur. Project effects are also assessed for the TL upgrade activities.

3.8.1 Affected Environment

Noise is generally described as unwanted sound that can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). The human ear does not perceive all sound frequencies equally well. Therefore, measured sound levels are adjusted or weighted to correspond more closely to noise perceived by human hearing. The adjusted noise metric that most closely duplicates human perception of noise is known as the A-weighted decibel (dBA). The threshold of human hearing is 0 decibels (dB), and the threshold of discomfort or pain is around 120 dB.

A day-night average sound (L_{dn}) is a 24-hour noise descriptor used to assess noise impacts for land uses where people sleep and there is a heightened sensitivity to nighttime noise. The L_{dn} noise metric is recommended by USEPA and has been adopted by most federal agencies (USEPA 1974a, 1974b). An L_{dn} of 65 dBA is the level most commonly used for noise planning purposes, representing compromise between community impact and the need for activities such as construction. The dBA is the adjusted noise metric that most closely duplicates the human perception of noise. Areas exposed to an L_{dn} above 65 dBA are generally not considered suitable for residential use. An L_{dn} of 55 dBA was identified by USEPA as a level below which there is no adverse impact (USEPA 1974a,b). For

reference, approximate noise levels (measured in dBA) of common activities/situations are provided in Table 3-13.

Table 3-13. Common Sounds and Their levels

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Rock band
Gas lawnmower at 3 feet	90	Food blender at 3 feet
Downtown (large city)	80	Garbage disposal
Heavy traffic at 150 feet	70	Vacuum cleaner at 10 feet
Normal conversation	60	Normal speech at 3 feet
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room

Source: USEPA 1974a,b

Noises occurring at night generally produce a greater annoyance than do noises of the same levels occurring during the day. People generally perceive intrusive noise at night as being 10 dBA louder than the same level of noise during the day. This perception is largely because background environmental sound levels at night in most areas are about 10 dBA lower than those during the day (USEPA 1974a, 1974b).

The 3,463-acre Project Site is within a residential and rural agricultural area approximately two miles west of the City of Tullahoma in Moore County. This area includes single-family homes, small residential concentrations, undeveloped lands and some institutional, commercial and industrial development adjacent to highways. Ambient noise at the Project Site consists mainly of agricultural sounds, such as noises from forest management, including timbering operations, and farm machinery, natural sounds from wind and wildlife, and moderate traffic sounds. Noise levels of these types generally range from 45 to 55 dBA (USDOT 2015).

The Project Site and a surrounding 0.5-mile radius were examined to identify potential noise-sensitive receptors. Noise-sensitive receptors are defined as those locations or areas where dwelling units or other fixed, developed sites of frequent human use occur. Approximately 9,433 noise-sensitive receptors are within the area examined (Figure 3-17). These primarily consist of residential farm complexes, associated outbuildings, and non-residential agricultural complexes, with each building generally counted as one receptor. Of these there are two churches (one off of Woosley Rd. and one off of Cobb Hollow Rd., Motlow State Community College, including 16 buildings, along of Leford Mill Rd., and three businesses (one off of Five Points Rd. and two off of West Lincoln Street). Other residential and rural-residential concentrations of noise-sensitive receptors occur around the perimeter of the Project Site, ranging from 167 feet to approximately 2,328 feet from proposed PV array locations. Residential concentrations are primarily located near the east, west and south portions of the Project Site.

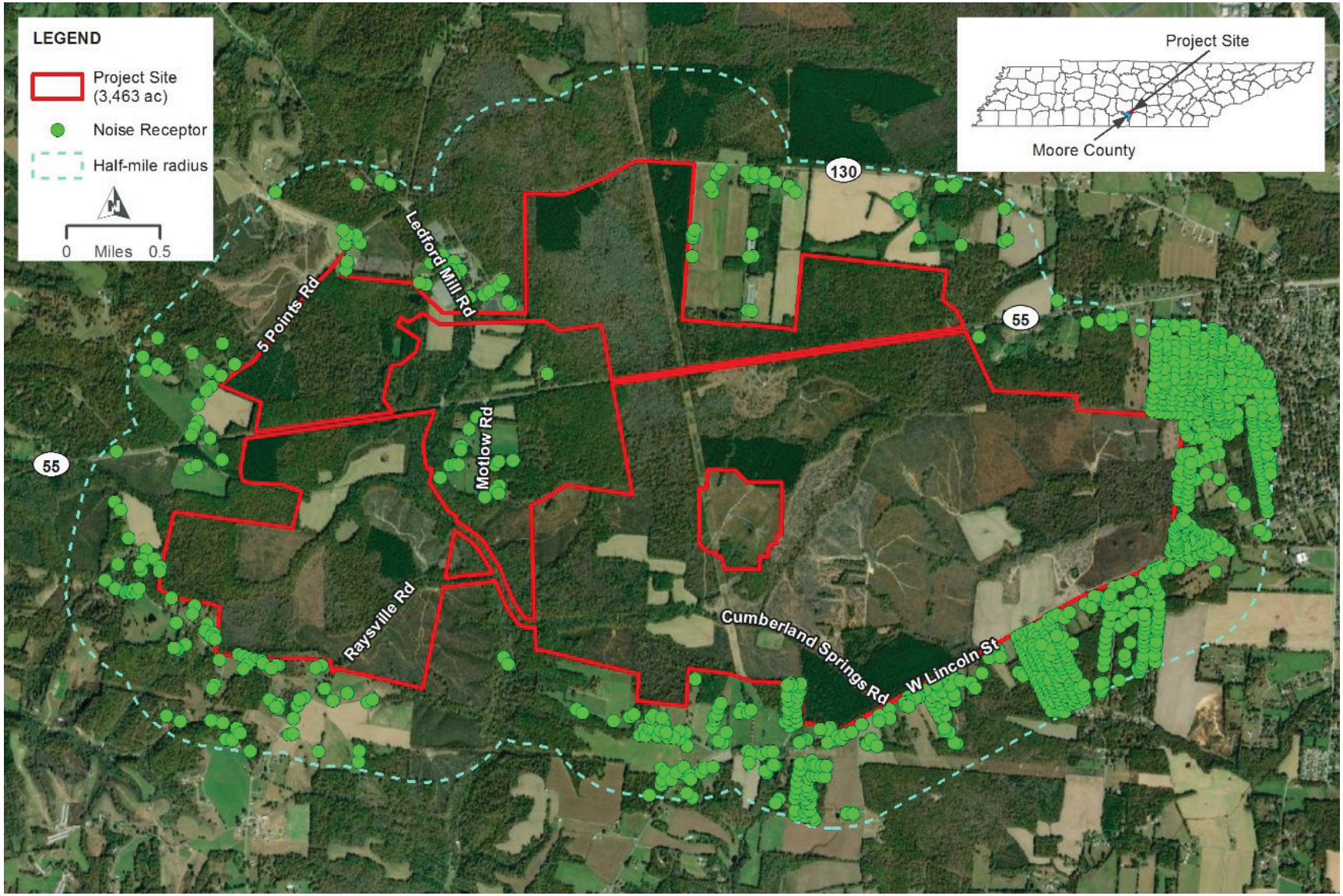

Figure 3-17. Noise-Sensitive Receptors in the Project Site Vicinity

3.8.2 Environmental Consequences

3.8.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on the ambient sound environment would occur if current land use practices continued.

3.8.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Direct and indirect noise impacts associated with implementation of the Proposed Action would primarily occur during construction. Construction equipment produces a range of sounds while operational. Noisy construction equipment such as delivery trucks, dump trucks, water trucks, service trucks, bulldozers, chain saws, bush hogs, or other large mowers for tree clearing, produce maximum noise levels at 50 feet of approximately 84 to 85 dBA. This type of equipment may be used for approximately 18 months at the Project Site. The activity likely to make the most noise for an extended time period would be pile driving during the construction of the array foundations, which would be completed in six to 12 months. Standard construction pile drivers are estimated to produce between 90 to 95 dBA at a distance of 50 feet (USDOT 2015). The piles supporting solar panels would be driven into on-site soils and potentially into limestone, depending on the depths of piles and on the underlying residuum of limestone in areas where piles would be installed; however, overburden soil thickness will not be confirmed until geotechnical studies occur prior to construction.

Construction noise would cause temporary and minor adverse impacts to the ambient sound environment around the Project Site vicinity. Numerous residences and other noise receptors are located within a 0.5-mile distance from the Project Site and would temporarily experience heightened noise during construction, primarily from pile-driving activities. However, the existing traffic and agricultural noises in the vicinity would help make effects from the Project more minimal. Additionally, construction would primarily occur during daylight hours, between sunrise and sunset; therefore, the Project would not affect ambient noise levels at night during most of the construction period. Most of the proposed equipment would not be operating on site for the entire construction period but would be phased in and out according to the progress of the Project.

Construction workers would wear appropriate hearing protection in accordance with OSHA regulations. Noise-sensitive receptors near the TL upgrade locations would temporarily experience heightened noise during daylight hours primarily during pole drilling for the installation of five TL pole structures. Blasting may be required to install the PV panel support piles and pole structures if bedrock is encountered, but these effects would be associated with a portion of the pilings and structures and would likely be short term. Noise receptors near the existing TL would also experience temporarily heightened noise during the approximately two-week installation of OPGW by helicopter, if this method is determined the most feasible.

Existing ambient noise in the project area generally ranges from 45 to 55 dBA and consists mainly of agricultural sounds, such as noises from farm machinery; natural sounds, such as

from wind and wildlife; and moderate traffic sounds. Within 50 feet of US 72 and SR 33 and other larger roads adjacent to the Project Site, traffic sounds may reach 70 to 80 dBA during high traffic periods (Corbisier 2003). Because construction would only occur during the day for most of the construction period, at the same time that more traffic noise and seasonal agricultural activities would occur, there would not be a significant difference in noise levels with implementation of the Project other than pile and pole driving activities during construction.

Following completion of construction activities, the ambient sound environment would be expected to return to existing levels or below, by eliminating the seasonal use of some agricultural equipment. The moving parts of the PV arrays would be electric-powered and produce little noise. The central inverters would produce noise levels of approximately 65 dBA at 33 feet, and the Project substation would each emit approximately 50 dBA at 300 feet. As no noise receptors are within 33 feet of the proposed inverter locations or within 300 feet of the Project substation, noise impacts from these Project components are anticipated to be minimal to negligible. Due to sheep operations on the Project Site during the operations and maintenance phase and lack of mowing or use of farm equipment, the Proposed Action would have lower noise levels than the noise levels of recent and current forest management activities on the Project Site.

Overall, implementation of the Proposed Action would result in minor, temporary adverse impacts to the ambient noise environment in the project area during construction, and minimal to negligible impacts during operation and maintenance of the solar facility.

3.8.2.2.1 Cumulative Impacts

Past, present, and RFFAs are expected to result in noise impacts in the project area. The projects are all located at minimum 1.5 miles from the Proposed Action. While the Proposed Action has the potential to contribute to cumulative impacts on noise, these impacts would be minor and short term.

3.9 Air Quality and Greenhouse Gas Emissions

3.9.1 Affected Environment

Ambient air quality is determined by the type and concentration of pollutants emitted into the atmosphere, the size and topography of the air shed in question, and the prevailing meteorological conditions in that air shed. Through its passage of the Clean Air Act of 1970 and its amendments, Congress mandated the protection and enhancement of our nation's air quality. USEPA established the National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants to protect the public health and welfare: sulfur dioxide (SO_2), ozone (O_3), nitrogen dioxide (NO_2), particulate matter whose particles are less than or equal to 10 micrometers (PM_{10}), particulate matter whose particles are less than or equal to 2.5 micrometers ($PM_{2.5}$), carbon monoxide (CO), and lead.

The primary NAAQS were promulgated to protect public health, and the secondary NAAQS were promulgated to protect public welfare (e.g., visibility, crops, forests, soils, and materials) from any known or anticipated adverse effects of air pollutants. Areas in compliance with the NAAQS are designated "attainment" areas. Areas in violation of the NAAQS are designated as "nonattainment" areas, and new sources proposed to be located in or near these areas may be subject to more stringent air permitting requirements. Nonattainment areas are usually defined by county. Areas that cannot be classified on the basis of available information for a particular pollutant are designated as "unclassifiable" and are treated as attainment areas unless proven otherwise. Finally, areas that were

formerly designated as nonattainment for a pollutant and later come into attainment, are then categorized as “maintenance” for that pollutant for the next 20 years, assuming they continue to meet the NAAQS for that pollutant. If an area remains in attainment for a 20-year maintenance period, the status reverts back to normal attainment.

3.9.1.1 Regional Air Quality

The Project Site is within a rural agricultural area of Moore County, just outside the western boundary of the city of Tullahoma. The Project Site is mostly forested land with recent logging operations and some wetland areas, croplands, and early successional fields. Several residential subdivisions are adjacent to the Project Site. Moore County has no active air quality monitoring sites listed in USEPA’s national database for NAAQS-regulated pollutants and is considered to be in attainment for all NAAQS. There are active monitoring sites for some pollutants (O_3, PM_{10}, and $PM_{2.5}$) in the city of Huntsville in Madison County, Alabama, approximately 45 miles southwest. Madison County is designated as in attainment for all NAAQS.

With respect to the newest NAAQS, issued in 2015 for 8-hour ozone concentration (70 parts per billion), the entire State of Tennessee and Alabama are considered to be in compliance with the 2015 ozone NAAQS, as of October 2021.

3.9.1.2 Regional Climate

Weather conditions determine the potential for the atmosphere to disperse emissions of air pollutants. Based on climate data for the city of Tullahoma, the coldest month is January, with average maximum and minimum temperatures of 47.6 degrees Fahrenheit (°F) and 27.8°F, respectively. The warmest month is July, with average maximum and minimum temperatures of 87.1°F and 67.0°F, respectively. Precipitation is highest from November through May and averages 58.6 inches per year (NOAA 2021a). On average, approximately 26 tornados occur in Tennessee each year (NOAA 2021b).

3.9.1.3 Greenhouse Gas Emissions

GHGs include natural and man-made compounds that disperse throughout the earth’s atmosphere. GHGs act as insulation and contribute to the maintenance of global temperatures. As the levels of GHGs in the atmosphere increase, the result is an increase in temperature on earth, commonly known as global warming.

Apart from water vapor, the primary GHG emitted by human activities in the US is carbon dioxide (CO_2), representing approximately 82 percent of total GHG emissions in the US (USEPA 2020 a). The largest source of CO_2 and of overall GHG emissions is fossil fuel combustion (USEPA 2021). GHG emissions from the TVA power system are described in TVA’s 2019 IRP Final EIS (2019a).

3.9.2 Environmental Consequences

3.9.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on climate or air quality would result if current land use practices continued.

3.9.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA

would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL. Minor direct impacts to air quality would result from construction and operation of the Project. Temporary impacts to GHG emissions expected during construction would be minimal. The Proposed Action would have longer term, minor beneficial impacts to air quality by increasing the capacity of non-emitting generating facilities providing power to the TVA system and reducing the need to generate power from emitting generating facilities.

3.9.2.2.1 Regional Air Quality

The majority of potential air quality impacts associated with the Proposed Action would occur during construction. Construction activities would create emissions from construction equipment and vehicles, contracted employees' personal vehicles, and fugitive dust suspension from clearing, grading, and other activities. Tree debris from clearing would be removed by either burning, chipping and grinding, burying, or thermochemically converting. If chipping is selected, the chips would be ground to minimize construction wastes and stockpiled in locations outside of the developed solar facility and environmentally sensitive areas to be hauled to a nearby disposal site. If burying is selected, woody biomass would be buried underground in wood vaults in locations outside of the developed solar facility and environmentally sensitive areas. If thermochemically converting is selected, the debris would be chipped and stockpiled in locations outside of the developed solar facility and environmentally sensitive areas to be hauled offsite to be converted into biochar. As burning may occur, this could generate temporary localized air quality impacts due to smoke particles and gases. Any such burning of vegetative debris would be done in accordance with any local ordinances or burn permits, would be avoided on days air quality alerts have been issued, as much as feasible, and is not expected to have health consequences for this relatively sparsely populated area.

The use of construction equipment would cause a minor temporary increase in GHG emissions during construction activities. Combustion of gasoline and diesel fuels by internal combustion engines (haul trucks and off-road vehicles) would generate local emissions of PM, nitrogen oxides (NO_x), CO, volatile organic compounds, and SO_2. The total amount of these emissions would be small and, overall, would result in negligible air quality impacts.

Approximately 95 percent (by weight) of fugitive emissions from vehicular traffic over paved and unpaved roads would be composed mainly of particles that would be deposited near the roadways, along the routes taken to reach the Project Site. As necessary, fugitive dust emissions from construction areas and paved and unpaved roads would be mitigated using BMPs including wet suppression. Wet suppression can reduce fugitive dust emissions from roadways and unpaved areas by as much as 95 percent. Therefore, direct impacts to air quality associated with construction activities would be expected to be minor with appropriate mitigation.

3.9.2.2.2 Regional Climate

No noticeable direct or indirect impacts to the local or regional climate would be associated with the construction and operation of the proposed Project. Local or regional climate effects can occur, for example, with major changes in land use that affect the hydrological cycle, or that create large impervious surfaces, thus changing the radiative heat balance over a large area. The Project would change the surface characteristics somewhat, but it would have little effect on soil permeability and hydrologic characteristics of the developed area. Vegetation would still grow under and around the solar panels, tending to maintain a landscape with significant evapotranspiration of precipitation and avoiding the creation of a

“heat island” effect. Therefore, average temperatures of the developed area are not expected to change significantly due to the proposed development.

3.9.2.2.3 Greenhouse Gas Emissions

The use of construction equipment would cause a minor temporary increase in GHG emissions during construction activities. Combustion of gasoline and diesel fuels by internal combustion engines (trucks and off-road vehicles) at the site and combustion of jet fuel if a helicopter is used for the installation of TL OPGW, would generate emissions of CO_2 and very small amounts of other GHGs such as methane and nitrous oxide. Additional GHG emissions would occur from transporting materials and workers to the Project location, and GHGs would be emitted in the US or globally during production and transportation of the materials used for construction. The production of construction materials is expected to represent the largest portion of the Project-related GHG emissions. The total GHG emissions from construction would eventually be offset by Project operation, assuming that the electricity generated by the Project would reduce the need for some fossil-fuel-based electricity generation and associated GHG emissions.

Tree and other tall vegetation removal (amounting to 850 acres) during construction of the Project would represent a minor loss of potential carbon sequestration. Trees and other tall vegetation currently remove CO_2 from the air and sequester it as biomass. The loss of this carbon sink would constitute a minor adverse direct and indirect impact as sequestration would have continued for the life of the vegetation and long into the future, assuming that other changes on the Project Site did not result in any deforestation. The loss of the carbon sink from tree removal would be at least partially offset by the increased sequestration of CO_2 by the permanent grass- and forb-dominated vegetation, relative to CO_2 sequestration by row crops, that would be maintained on the solar facility site.

The operation of the Project is not anticipated to have any negative impacts to air quality or GHG emissions. No emissions would be produced by the operation of the solar facility or electrical lines. However, sheep grazing would be integrated with the solar PV facility, thus adding some GHG emissions in the form of methane from enteric fermentation.

Minor emissions would occur during maintenance activities, including facility inspections and periodic mowing of parts of the site. Conversely, overall emissions of air pollutants from the TVA power system would decrease during operation of the solar facility as the nearly emissions-free power generated by the solar facility would reduce the need to generate power from the combustion of fossil fuels. The reduction in GHG emissions resulting from the operation of the solar facility would have little noticeable effect on regional or larger scales. It would, however, be a component of the larger ongoing system-wide reduction in GHG emissions from the TVA power system through reducing the need for some fossil-fuel-based electricity generation. The adverse impacts of GHG emissions and the beneficial impacts of TVA’s reduction in GHG emissions are described in more detail in the TVA 2019 IRP (2019a).

3.9.2.2.4 Cumulative Impacts

Past, present, and RFFAs are expected to contribute a significantly higher percentage of non-GHG and GHG emissions to the region than the Proposed Action. This includes both temporary construction and long-term operational emissions. Additionally, the operational emissions from these other actions would be expected to have at least minor negative impacts on air quality in the region. However, the Proposed Action would provide at least a minor beneficial impact on air quality in the region due to producing renewable energy that

reduces the need for certain fossil-fueled utility power generation. In addition, all other actions are expected to comply with applicable air quality requirements and permitting and would implement emissions reduction actions as part of construction activities (e.g., wetting of disturbed soils and other fugitive dust control measures). Therefore, no significant cumulative impacts from the Proposed Action and other actions are expected.

3.10 Cultural Resources

3.10.1 Affected Environment

Cultural resources are properties and places that illustrate aspects of prehistory or history or have long-standing cultural associations with established communities and/or social groups. Cultural resources may include archaeological sites, unmodified landscapes and discrete natural features, modified landscapes, human-made objects, structures such as bridges or buildings, and groups of any of these resources, sometimes referred to as districts.

Section 106 of the NHPA, as amended (54 U.S.C. § 300101 *et seq.*), addresses the effects of federal and/or federally funded projects on tangible cultural resources—that is, physically concrete properties—of historic value. The NHPA provides for a national program to support both public and private efforts to identify, evaluate, and protect the nation's important cultural resources. Once identified, these resources are evaluated for inclusion in the National Register of Historic Places (NRHP) maintained by the National Park Service. Tangible cultural resources may qualify for inclusion in the NRHP if they are 50 years of age or older (unless in exceptional cases) and if found to embody one or more of four different types of values, or criteria, in accordance with 36 CFR § 60.4.

Cultural resources that are listed or considered eligible for listing in the NRHP are called "historic properties." Federal agencies are required by the NHPA to consider the possible effects of their undertakings on historic properties and take measures to avoid, minimize, or mitigate any adverse effects. NEPA requires federal agencies to consider how their undertakings may affect the quality of the human environment, including both cultural resources and those defined as historic properties, so that the nation may "preserve important historic, cultural, and natural aspects of our national heritage." "Undertaking" includes any project, activity, or program that has the potential to affect a historic property and that is under the direct or indirect jurisdiction of a federal agency or is licensed or assisted by a federal agency.

Considering an undertaking's possible effects on historic properties is accomplished through a four-step review process outlined in Section 106 of the NHPA (36 CFR § 800). These steps are initiation, identification, assessment of adverse effects, and resolution of any adverse effects. A project may have effects on a historic property that are not adverse. However, if the agency determines that the undertaking's effect on a historic property within the APE would diminish any of the qualities that make the property eligible for the National Register (based on the criteria for evaluation at 36 CFR § 60.4), the effect is said to be adverse. Examples of adverse effects would be ground disturbing activity in an archaeological site and erecting tall buildings or structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting and its ability to convey its historic and/or architectural significance. Adverse effects must be resolved. Resolution may consist of avoidance (such as redesigning a project to avoid impacts or choosing a project alternative that does not result in adverse effects), minimization (such as redesigning a project to lessen the effects or installing visual screenings), or mitigation. Adverse effects to archaeological sites are typically mitigated by

means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic buildings and structures sometimes involves thorough documentation of the resource by compiling historic records, studies, and photographs.

Agencies are required to consult with the appropriate SHPOs, federally recognized Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking. Through various regulations and guidelines, federal agencies are encouraged to coordinate Section 106 and NEPA review to improve efficiency and allow for more informed decisions. Under NEPA, impacts to cultural resources that are part of the affected human environment but not necessarily eligible for the NRHP must also be considered. Generally, these considerations as well as those of NRHP-eligible traditional cultural resources (also called traditional cultural properties; see Parker and King 1998) are accomplished through consultation with parties having a vested interest in the undertaking, as described above.

3.10.1.1 Identification Survey and Field Findings Summary

As part of the evaluation process, a Phase I cultural resources survey was conducted by New South Associates (New South) on the Project Site and vicinity from July to September 2021 and by HDR in January 2022 to determine the presence of archaeological and architectural cultural resources that are listed or eligible for listing in the NRHP (Gregory et al. 2022). The Area of Potential Effects (APE) for New South's archaeological survey included the entire 3,463-acre Project Site. HDR's archaeological survey of the TL upgrade locations included the 33.4 acres of the TL upgrade locations that had not been previously surveyed. The portions of the TL upgrade locations that had been previously surveyed consist of 77.13 acres within the boundaries of Arnold AFB. The results of this previous survey are considered in this evaluation.

A variety of field methods were used during the surveys. New South and HDR investigated areas with poor ground visibility (less than 50 percent ground surface visibility) by excavating 30-centimeter diameter shovel tests at 30-meter intervals. New South and HDR investigated areas with good ground visibility (50 percent or greater ground surface visibility) through pedestrian survey. The Project Site contains several large wetland areas that were subjected to pedestrian survey. Additionally, several areas within the Project Site had been recently logged and were heavily eroded and disturbed. New South excavated 15,564 pre-plotted shovel tests on the Project Site, and HDR excavated 35 shovel tests in the TL upgrade locations. In addition, New South excavated 207 delineation shovel tests, for a grand total of 15,806 investigated locations. Where artifacts were encountered, radial shovel tests were excavated at 10-meter intervals to delineate the archaeological site boundaries.

The area examined for architectural resources, referred to herein as the Viewshed, included the 3,463-acre Project Site and the portions of a 0.5-mile radius surrounding the Project Site that are visually connected by direct line-of-sight. Areas within the survey radius that were determined not to be within view of the Project due to terrain, vegetation, and/or modern built environments, are not considered part of the Viewshed. In coordination with TVA, a survey for aboveground architectural resources in the areas of the TL upgrade locations was determined not necessary given the lack of proposed new visual features.

The associated cultural resources reports provide preliminary NRHP evaluations and results summaries (Appendix A; Gregory et al. 2022; HDR 2022). The report for the Project

Site provides historic contexts for the two pertinent cultural resources nearby, the Jabel Ray Homeplace Cemetery (HS-4) and the Motlow House (HS-7).

The Jabel Ray Homeplace Cemetery (HS-4) is a small family cemetery located in a thickly wooded area approximately 300 feet south of Cumberland Springs Road. Headstones are located on the east and west sides approximately 30 feet apart. There are also many fieldstone markers without inscriptions. Jabel Ray (1810-1858) was a farmer born in South Carolina. In 1850 he was a farmer living in Franklin County with his wife Elizabeth and nine children. New South was unable to discern the gravesites of Jabel and Elizabeth Ray. New South recommends the Jabel Ray Homeplace Cemetery not eligible for listing in the NRHP under Criterion C, though the cemetery should be avoided (Gregory et al. 2022:111-113).

The Motlow House (HS-7) is situated on 6.5 acres of open yards with mature trees and a semicircular driveway, located on the north side of SR 55. The Motlow family was one of the largest holders of land in Moore County. They owned much of the acreage leased for the Motlow Range (HS-1). The World War II-era Motlow Range was an auxiliary training area for Camp Forrest. Motlow Range contained a series of firing ranges for light artillery, mortars, and machine guns. It was decommissioned in 1946. Lem Motlow (1869–1947) was a nephew of Jack Daniel. The 1958 Colonial Revival-style Motlow House was the home of Conner and Elizabeth Motlow. The Motlow family donated 187 acres for the Motlow Community College along the northwest corner of the project site. New South recommends that the Motlow House is eligible for listing in the NRHP under Criterion C for architectural significance at the local level, with a period of significance of circa 1958 to 1971 (Gregory et al. 2022: 119-122).

3.10.1.2 Known Cultural Resources

Background research of the archaeological and architectural records maintained by the Tennessee Division of Archaeology (TDOA) and THC was conducted to determine the presence of recorded cultural resources within a one- to two-mile radius of the Project Site and TL upgrade locations.

A search of TDOA records revealed three previously recorded archaeological sites (40ME18, 40ME35, and 40ME42) within the APE and two additional archaeological sites (40CF225 and 40ME41) located within two miles of the APE. Background research for architectural resources identified no previously recorded architectural properties as potentially occurring within the Viewshed. TDOA records review for the TL upgrade locations identified 11 archaeological sites and 11 known historic properties and cemeteries within a one-mile radius. One of the archaeological sites, 40FR234, a prehistoric lithic scatter, overlaps the TL upgrade locations. However, this resource was in the portion of the TL upgrade locations that had been previously surveyed (on Arnold AFB), was previously determined ineligible for the NRHP, and was not included in the current survey due to an agreement with Arnold AFB to avoid the site.

HDR's field investigations of the TL upgrade locations identified no archaeological resources. New South's field investigations of the Project Site identified eight archaeological sites and 18 isolated finds. Of the eight sites, three (40ME18, 40ME35, and 40ME42) were previously recorded (Table 3-14). By definition, all 18 isolated finds lack integrity and significance and are recommended as not eligible to the NRHP. No further work is recommended for these resources. TVA recommends that all eight archaeological sites within the APE are not eligible to the NRHP due to a lack of integrity, significance, or both. One of these sites, 40ME35, is the Jabel Ray cemetery described above and should

be avoided. No further work is recommended for the other seven sites being recommended as not eligible to the NRHP.

Site 40ME42 contains the World War II-era Cumberland Springs Bivouac. Its boundary is approximate and covers a large area. The portions of the site within the APE were surveyed, and no mid-twentieth century deposits were identified. Given the lack of associated resources within the APE and the limited information from the original recording of the site, its potential for listing on the NRHP remains unclear. TVA believes that the portions of 40ME42 within the APE do not contain historic deposits that could contribute to the NRHP eligibility of the site. Therefore, no further work is recommended for this site within the APE. TVA consulted with THC and federally recognized Indian tribes with an interest in the project area on these determinations (Appendix A).

Table 3-14. Newly Recorded and Revisited Archaeological Sites Within the APE

Site Number	Cultural Affiliation	Site Type	NRHP Recommendation
40ME18	Late Paleoindian-Early Archaic	Lithic scatter	Not Eligible
40ME35	Late nineteenth century	Old Jabel Ray Homeplace Cemetery	Not Eligible
40ME42	Late nineteenth to mid-twentieth century, World War II	Cumberland Springs resort; Cumberland Springs Bivouac	Unknown; portion of the site within APE does not contribute to the site's eligibility
40ME46	Undetermined precontact	Lithic scatter	Not Eligible
40ME47	Twentieth century	Remains of the Mt. Ethel church and schoolhouse	Not Eligible
40ME48	Early twentieth century	Home site	Not Eligible
40ME49	Early twentieth century	House site	Not Eligible
40ME50	Early twentieth century	Home site	Not Eligible

The historic architecture survey of the Viewshed surrounding the Project Site resulted in fieldwork documentation of 12 resources; none of these resources had been previously surveyed by THC or previously listed in or determined eligible for the NRHP. The 12 surveyed resources consist of a former military training range (portions of which overlap the Project Site), individual dwellings, a residential subdivision, the ruins of a mineral springs resort, two cemeteries (one of these is the on-site cemetery, 40ME35, also discussed above), and two road corridors.

Table 3-15. Historic-Age Architectural Resources within the Viewshed.

Survey #	Property Location	Description	NRHP Recommendation
HS-1*	Flanks north and south sides of Lynchburg Highway (SR 55) and Cumberland Springs Road	Motlow Range	Not Eligible
HS-2	Linear resource	Old Shelbyville Highway	Not Eligible
HS-3	Linear resource	Lynchburg Highway	Not Eligible
HS-4	Cumberland Springs Road	Jabel Ray Homeplace Cemetery	Not Eligible
HS-5	Bennett Road	Williams Family Cemetery	Not Eligible
HS-6	South side of Cumberland Springs Road	Former mineral springs resort	Not Eligible
HS-7	7871 Lynchburg Highway	Motlow House	Eligible
HS-8	2601 Old Shelbyville Highway	Hartley House	Not Eligible
HS-9	2485 Old Shelbyville Highway	Edens House	Not Eligible
HS-10	2445 Old Shelbyville Highway	Blair House	Not Eligible
HS-11	2405 Old Shelbyville Highway	Glascoe House	Not Eligible
HS-12	Sharondale Drive & Marbeth Lane	Sharondale Subdivision	Not Eligible

*The full extent of this resource, which encompasses a large portion of the Project Site, is not depicted on the figure.

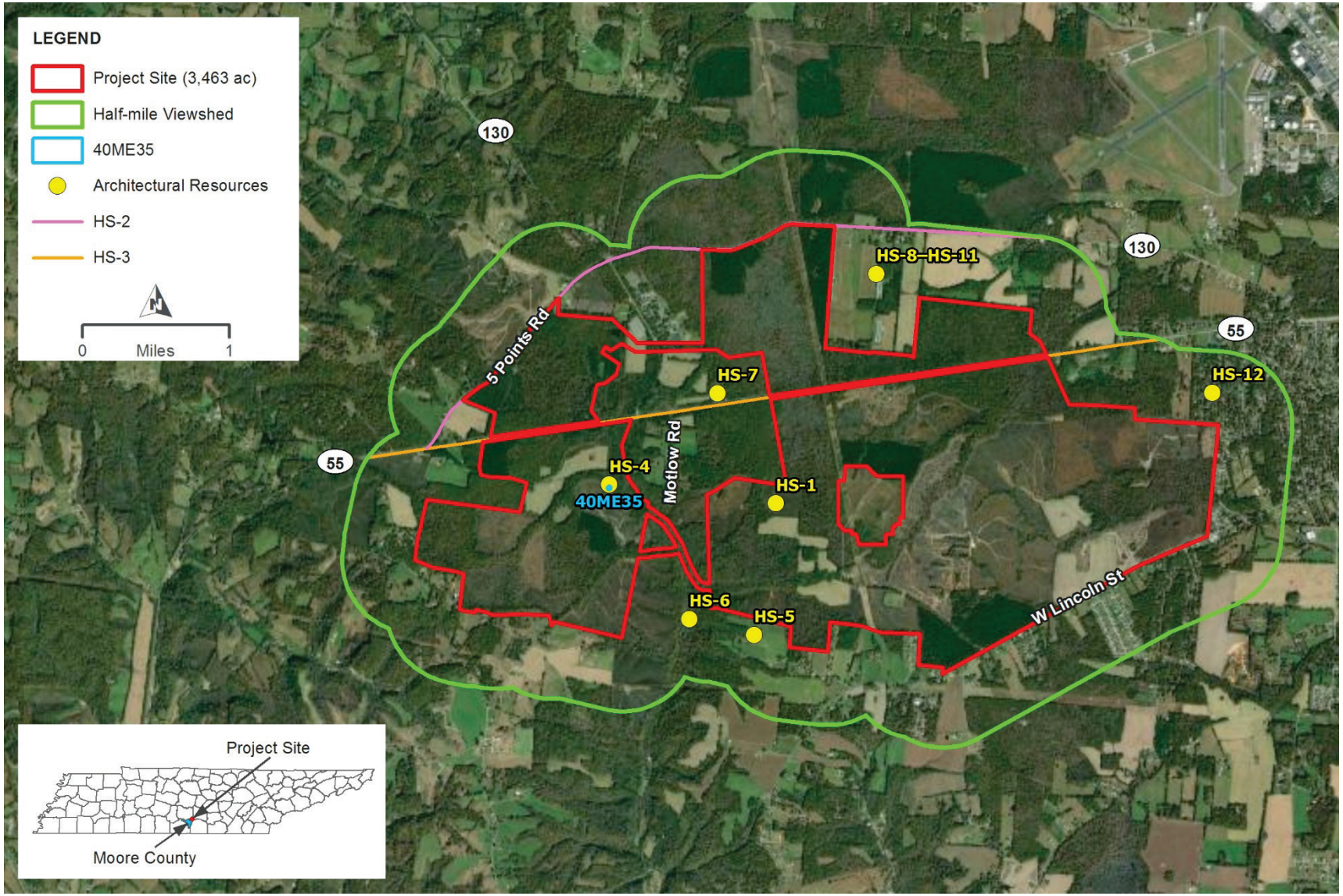

Figure 3-18. Architectural Resources in the Project Site Viewshed

3.10.2 Environmental Consequences

This section describes the potential impacts to cultural resources should the Proposed Action or No Action Alternative be implemented.

3.10.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on cultural resources would occur if current land use practices continued.

3.10.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Site 40ME35, located in a thickly wooded area in the western portion of the Project Site, contains the Old Jabel Ray Homeplace Cemetery. While this resource is not eligible for the NRHP, visual effects from the Project Site should be considered. The Project has been designed to allow a minimum 250-foot wooded avoidance buffer between the nearest solar panels and the cemetery. TVA finds that the Project would have no visual effect on the Old Jabel Ray Homeplace Cemetery.

Resource HS-7, the Motlow House, is located in a privately-owned outparcel in the central portion of the Project Site. The proposed NRHP boundary follows the 6.5-acre property boundary. The Project will include the installation of solar panels within a site located approximately 0.2 miles north and east and 0.5 miles west of the recommended NRHP boundary for the Motlow House. The Project will contain photovoltaic panels that will reach eight feet high at full tilt, a substation, internal access roads, and transformers. The current use of the Motlow House would not be impacted, nor would any of the resource's physical features within the recommended NRHP boundary. Due to forested screening and its distance of 0.2 to 0.5 miles from the Project Site, TVA recommends that the proposed undertaking will have no adverse effect on the Motlow House.

No cultural resources or historic properties would be affected by TL upgrade activities. Site 40FR234, located on Arnold AFB within the TL upgrade locations, was previously recommended for no further work due to a low density of cultural material and a lack of diagnostic artifacts (Matternes 1997:138). In keeping with Arnold AFB practices of archaeological site avoidance, TVA would avoid this site during the TL upgrade activities.

TVA consulted with THC and federally recognized Indian tribes regarding its determinations (Appendix A). TVA also consulted with federally recognized Indian tribes regarding properties of religious or cultural importance.

3.10.2.2.1 Cumulative Impacts

The Project would avoid the NRHP-eligible Motlow House, located within an outparcel within the Project Site, as well as the Old Jabel Ray Homeplace Cemetery. The project would not visually affect the cemetery and would have no adverse effect on the Motlow House. While the past, present, and RFFAs may have adverse effects on cultural resources, the Project would not contribute to reasonably foreseeable environmental trends

and planned actions due to the Project effects being avoided, not considered adverse, or minimized through use of buffers.

3.11 Utilities

3.11.1 Affected Environment

The Project Site is within a rural agricultural area of Moore County, approximately two miles west of the city of Tullahoma. The TL upgrade locations extend south-southeast from the Project Site, crossing rural, unincorporated portions of Franklin, Coffee, and Moore counties, in the vicinity of the city of Tullahoma. Available power sources to the county residents within the project area are electricity and natural gas. No significant renewable energy sources are currently located in the project area.

3.11.1.1 Telecommunications

In addition to various mobile providers, telecommunication services in the project area are provided by AT&T, Ben Lomand Connect, Earthlink, HughesNet, Mediacom, Monster Broadband, Spectrum, Tullahoma Utilities Authority (TUA) LightTube, United Communications, Viasat, and Xfinity (HighSpeedInternet.com 2021).

3.11.1.2 Electricity

In the project area, electrical service is provided by Duck River Electric Membership Corporation (DREMC) and TUA, which purchase and distribute power generated by TVA (DREMC 2021; TUA 2021a). TVA's existing Franklin–Wartrace No. 2 161-kV TL crosses the central portion of the Project Site in a north-south orientation.

3.11.1.3 Natural Gas

In the project area, natural gas service is provided by the Elk River Public Utility District (ERPUD 2020). There are no known natural gas transmission pipelines in the Project Site.

3.11.1.4 Water and Sewer

Water and sewer services in the project area are provided either by Metro Moore County Utility Department, TUA, or through private wells and private septic systems (MUD 2021; TUA 2021b).

3.11.2 Environmental Consequences

3.11.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts to utilities would occur if current land use practices continued.

3.11.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system and upgrade portions of an existing TL.

Modifications to existing utilities would occur with implementation of the Proposed Action Alternative. This would include installation of approximately 9.8 miles of OPGW on the Franklin–Wartrace No. 2 161-kV TL between Structures 272 and 273 and the Franklin

substation, east of the Project Site. Electrical service for the Project would be provided by either DREMC or TUA. If utilized, DREMC or TUA would coordinate with customers if outages were necessary. If the TVA TL is utilized, TVA would negotiate an agreement with DREMC or TUA to supply the power to the solar facility. During construction, water would be needed for soil compaction and dust control. During operations, water would be needed to clean solar panels and to provide drinking water for the on-site sheep herd. The Project would obtain water from new on-site wells, by delivery via water trucks, or by TUA, the municipal water source for the city of Tullahoma and the surrounding area.

Due to the Project-related TL upgrades, there may be short-term adverse impacts to local utilities such as electricity connections when conducting the TL upgrades, bringing the solar facility on-line, or during routine maintenance of the facility. No long-term adverse impacts are expected to be associated with the Project. Implementation of the Proposed Action would result in additional renewable energy resources in the region and would, thus, constitute a beneficial impact to electrical services across the region.

3.11.2.2.1 Cumulative Impacts

The Project could cause occasional, short-term adverse impacts to local utilities such as electricity connections when conducting the TL upgrades or bringing the solar facility on-line or during routine maintenance of the facility. Thus, the Project, along with the past, present, and RFFAs, may contribute to some minor short-term outages in the project area as these facilities are constructed or maintained. Given the nature of the Proposed Action, long-term cumulative adverse impacts to utilities are not anticipated.

3.12 Waste Management

3.12.1 Affected Environment

RCRA states that "solid waste" means any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, resulting from industrial, commercial, mining, and agricultural operations, and from community activities. “Hazardous materials” and “hazardous wastes” are substances that, because of their quantity, concentration, or characteristics (physical, chemical, or infectious), may present a significant danger to public health and/or the environment if released. These substances are defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; 42 U.S.C. §§ 9601 et seq.) and the Solid Waste Disposal Act, as amended by the RCRA (42 U.S.C. §§ 6901 et seq.). Regulated hazardous wastes under RCRA include any solid, liquid, contained gaseous, or semisolid waste or combination of wastes that exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or is listed as a hazardous waste under 40 CFR § 261. Storage and use of hazardous materials and wastes are regulated by local, state, and federal statutes including the Emergency Planning and Community Right-to-Know Act (42 U.S.C. §§ 116 et seq.) and RCRA.

Available historical topographic maps document that the Project Site has consisted of agricultural land and wooded areas with limited residential development since at least 1936 but likely earlier, based on historical trends. The surrounding area has consisted of undeveloped land, agricultural fields, and residential properties with limited commercial and institutional development since at least 1936.

Collection and disposal of solid waste outside of incorporated municipalities in Moore County is conducted by private trash collecting companies. Solid waste is then transported

to local public and privately owned non-hazardous landfills. Various vendors offer hazardous waste removal.

3.12.2 Environmental Consequences

3.12.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore negligible to minor impacts to waste management resources would occur if current land use practices continued.

3.12.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL. Storage and use of liquid materials in the form of petroleum-based oils and fuels, and generation of liquid and solid wastes in the form of used oil, construction debris, packing materials, and general construction waste would occur. As described below, TVA and the facility operator would implement appropriate measures throughout the construction and operation of the Project to properly manage wastes. Consequently, the Proposed Action would not result in adverse effects from waste management.

3.12.2.2.1 Materials Management

During construction of the proposed solar facility, substation, and switchyard, materials would be stored on site in storage tanks, vessels, or other appropriate containers specifically designed for the characteristics of these materials. The storage facilities would include secondary containment in case of tank or vessel failure. Construction-related materials stored on site would primarily be liquids such as used oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants associated with construction equipment. Safety Data Sheets for all applicable materials present on site would be made readily available to on-site personnel.

Fueling of some construction vehicles would occur in the construction area. Other mobile equipment would return to the on-site laydown areas for refueling. Special procedures would be identified to minimize the potential for fuel spills, and spill control kits would be carried on all refueling vehicles for activities such as refueling, vehicle or equipment maintenance procedures, waste removal, and tank clean-out. Fuel tanks and equipment may be stored on-site for approximately 18 months during construction of the Project. The total aggregate aboveground oil storage capacity would exceed 1,320 gallons, the threshold above which a SPCC plan is required (40 CFR part 112). Since no individual aboveground oil storage container has a capacity greater than 5,000 gallons, this facility meets the criteria for a Tier I qualified facility under USEPA's SPCC regulation; however, all bulk oil storage containers with a capacity of 55 gallons and/or more will be provided with secondary containment.

During operations, any bulk chemicals or petroleum products would be stored in storage tanks or designated chemical storage area. Chemical storage areas would be designed to contain leaks and spills. The transport, storage, handling, and use of chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards. Various transformers would contain oil, the quantities of these materials stored on site

would be evaluated to identify the required usage and to maintain sufficient inventories to meet use rates without stockpiling excess chemicals.

In addition to the chemicals listed above, small quantities (less than 55 gallons, 500 pounds or 200 cubic feet) of janitorial supplies, office supplies, laboratory supplies, paint, degreasers, pesticides, air conditioning fluids (chlorofluorocarbons), gasoline, hydraulic fluid, propane, and welding rods typical of those purchased from retail outlets may also be stored and used at the facility. Flammable materials (e.g., paints, solvents) would be stored in flammable material storage cabinet(s) with built-in containment sumps. Due to the small quantities involved and the controlled environment, a spill could be cleaned up without significant environmental consequences.

SR Tullahoma would develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials (e.g., Hazardous Material Business Plan). Facility personnel would be supplied with appropriate personal protective equipment (PPE) and would be properly trained in the use of PPE as well as the handling, use, and cleanup of hazardous materials used at the facility and the procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate cleanup materials would be stored on site.

3.12.2.2.2 Waste Management

Construction of the solar facility is estimated to result in the generation of approximately 36,500 to 73,000 cubic yards of solid waste (an estimated 912 to 1,824 truckloads at 40 cubic yards each), consisting of construction debris and general trash, including pallets and flattened cardboard module boxes. TVA estimates that approximately 2,600 to 5,000 flatbed truck loads would be required for hauling equipment and removing waste during construction.

Information on wastes anticipated to be generated during Project construction is provided in Table 3-16.

Table 3-16. Summary of Construction Waste Streams and Management Methods

Waste stream	Origin and composition	Estimated frequency of generation	On-site treatment	Waste management method/offsite treatment
Construction waste – hazardous	Empty hazardous material containers	Intermittent	None	Return to vendor
Construction waste – hazardous	Used oil, hydraulic fluid, oily rags	Intermittent	None	Recycle, remove to offsite disposal location
Construction waste – non-hazardous	Steel, glass, plastic, wood/pallets, cardboard, paper	Intermittent	None	Recycle wherever possible, otherwise dispose to Class I landfill
Sanitary waste – non-hazardous	Portable chemical toilets – sanitary waste	Periodically pumped to tanker truck by licensed contractors	None	Ship to sanitary wastewater treatment plant

The anticipated quantities of waste produced during Project operation are summarized in Table 3-17. Universal wastes and unusable materials produced as a result of

implementation of the Proposed Action would be handled, stored, and managed in accordance with state requirements.

Table 3-17. Summary of operation waste streams and management methods

Waste stream and classification	Origin and composition	Estimated amount	Estimated frequency of generation	Waste management method	
				On-site	Off-site
Used hydraulic fluid, oils and grease-petroleum-related wastes	Tracker drives, hydraulic equipment	1,000 gallons/year	Intermittent	Accumulate for <90 days	Recycle
Oily rags, oil absorbent, and oil filters- petroleum-related wastes	Various	One 55-gallon drum/month	Intermittent	Accumulate for <90 days	Sent off site for recovery or disposed at Class I landfill
Spent batteries	Lead acid/lithium ion	1,000	Every 10 to 15 years	Accumulate for <90 days	Recycle

Waste collection and disposal would be conducted in accordance with applicable regulatory requirements to minimize health and safety effects. To the extent possible, waste will be recycled. Materials that cannot be recycled would be disposed of at an approved facility to be determined by the designated contractor(s). No waste oil would be disposed of on the Project Site.

If necessary, SR Tullahoma or the construction contractor would obtain a hazardous waste generator identification number from the State of Tennessee prior to generating any hazardous waste. Tennessee has not established state-specific spill prevention plans in addition to the federal SPCC plan requirements. However, the state requires many types of facilities to maintain a current contingency plan, including hazardous waste treatment, storage, and disposal facilities (TSDFs), underground storage tanks that contain oil or hazardous substances, sites seeking National Pollutant Discharge Elimination System (NPDES) permits for discharges, sites storing hazardous substances in aboveground tanks, and sites storing used oil. Standards for hazardous waste TSDFs fall under Rule 0400-12-01-.05. Copies of any spill and cleanup reports would be kept on site.

SR Tullahoma, through designated contractor and subcontractor personnel, would be responsible for daily inspection, cleanup, and proper labeling, storage, and disposal of all refuse and debris produced. Disposal containers such as dumpsters or roll-off containers would be obtained from a proper waste disposal contractor. Records of the amounts generated would be provided to the designated Moore County Solar environmental specialist.

3.12.2.2.3 Wastewater

If utilized, permanent toilets would be connected to a Project septic system. The septic system and toilets would not be located within 100 feet of any stream or wetland and would

be designed based on other local requirements. No adverse effects are anticipated from wastewater treatment or disposal associated with the permanent toilets and septic system.

Wastewater potentially generated during construction or operations may include domestic sewage and wastewater from non-detergent equipment washing and dust control. Portable toilets or other temporary facilities would be used for the construction workforce. Water used for equipment washing and dust control would be handled in accordance with BMPs described in the Project stormwater/BMP plan. If an additive is required to help facilitate the cleaning process, then the wastewater stream or the waste product would need to be evaluated to ensure it is properly disposed of according to applicable federal, state and local regulations. With application of these BMPs, no adverse effects would be anticipated from wastewater generated during the Project.

3.12.2.2.4 Cumulative Impacts

Past, present, and RFFAs, together with the Proposed Action, would create new waste streams within the area. Storage and use of liquid materials in the form of petroleum-based oils and fuels, and generation of liquid and solid wastes in the form of used oil, construction debris, packing materials, and general construction waste would also occur. Overall, the Project effects, likely similar to the past, present, and RFFAs, would be mitigated through implementation of BMPs for waste and wastewater, SPCC plans, and hazardous material business plans. With proper planning and implementation of BMPs, adverse reasonably foreseeable environmental trends and planned actions from the Project in relation to waste management would not occur.

3.13 Public Health and Safety

3.13.1 Affected Environment

The Project Site is currently private property, made up of a combination of forested, herbaceous, woody wetland, and agricultural land uses. Public emergency services in the area include urgent care clinics, hospitals, law enforcement services, and fire protection services.

The Fast Pace Health Urgent Care – Tullahoma Clinic, located on Jackson Street, approximately two miles (five minutes) east of the Project Site, is the closest urgent care center to the Project Site. The Vanderbilt Tullahoma-Harton Hospital is the closest hospital, also located in Tullahoma, approximately three miles (seven minutes) northeast of the Project Site.

Law enforcement services in the city of Tullahoma are provided by the Tullahoma Police Department, approximately three miles (six minutes) east of the Project Site. Law enforcement services in Moore County are provided by the Moore County Sheriff's Department in Lynchburg, approximately seven miles (10 minutes) from the Project Site. Fire protection services are provided by the Tullahoma Fire Department, North Franklin County Volunteer Fire Department, and Metro Moore County Fire Department, located approximately three miles (seven minutes), five miles (eight minutes), and seven miles (10 minutes), respectively, from the Project Site.

The Tennessee Emergency Management Agency has the responsibility and authority to coordinate with state and local agencies in the event of a release of hazardous materials.

3.13.2 Environmental Consequences

3.13.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on public health and safety would result if current land use practices continued.

3.13.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Due to the proximity of the Tullahoma Regional Airport, the Project filed Form 7460-1 with FAA via the Obstruction Evaluation/Airport Airspace Analysis filing tool (FAA 2022) in July 2022 to evaluate the effect of construction on air safety (14 CFR § 77). Effects from solar facilities are generally known for air traffic control towers (FAA 2021), and the Tullahoma Regional Airport does not have a tower. FAA sent Determinations of No Hazard to air navigation for each relevant Project component in September 2022 with the condition that the Project must file Form 7460-2, Notice of Actual Construction or Alteration, any time the Project is abandoned or within five days after the construction reaches its greatest height. Thus, no effects on air safety are anticipated, and the Project would adhere to any recommendations from FAA in further design of the facility.

During construction, workers on the Project Site and TL upgrade locations would have an increased safety risk. However, because construction work has known hazards, the standard practice is for contractors to establish and maintain health and safety plans in compliance with OSHA regulations. Health and safety plans emphasize BMPs for site safety management to minimize potential risks to workers. Examples of BMPs include employee safety orientations; establishment of work procedures and programs for site activities; use of equipment guards, emergency shutdown procedures, lockout procedures, site housekeeping, and PPE; regular safety inspections; and plans and procedures to identify and resolve hazards.

Potential public health and safety hazards could result from increased traffic on roadways due to construction of the Project. Residential and other human use areas along roadways used by construction traffic to access the Project Site or TL upgrade locations would experience increased employee, commercial, and industrial traffic. Awareness of these residences and establishment of traffic procedures to minimize potential safety concerns would be addressed in the health and safety plans followed by construction contractor(s). The TL upgrade activities would primarily occur along the existing TL ROW that is regularly maintained and experiences operations and maintenance traffic, therefore; public health and safety impacts from these activities are anticipated to be minimal to negligible.

Approximately 2,500 gallons of fuel for vehicles would be kept on the Project Site in storage tanks during construction of the proposed solar facility. An SPCC plan would be implemented to minimize the potential of a spill and to instruct on-site workers on how to contain and clean up any potential spills. The perimeter of each grouping of Project elements would be securely fenced during construction and for the duration of operation, and access gates would normally remain locked. General public health and safety would not

be at risk in the event of an accidental spill on site. Emergency response would be provided by the local, regional, and state law enforcement, fire, and emergency responders.

During operation, solar PV systems generate electromagnetic fields (EMF). However, according to a study published by North Carolina State University (2017), solar PV technologies and solar inverters do not pose significant human health risks. EMF produced by electricity has enough energy to produce heat but not enough to remove electrons from a molecule or damage DNA. Distance from the EMF source, such as provided by the solar panel setbacks and security fencing proposed to surround separate portions of the Project, renders the exposure to EMF insignificant and, therefore, not harmful to human health. The strength of the EMF present at the perimeter of a solar facility within a building is substantially lower than the typical exposures to EMF from household sources such as refrigerators and microwave ovens (NIOSH 2014).

During operations, the Project would require a few permanent staff on site on a regular basis to manage the land, which would help deter squatters from occupying the Project Site.

Overall, impacts to public health and safety in association with implementation of the Proposed Action would be considered temporary and minor.

3.13.2.2.1 Cumulative Impacts

As with the past, present, and RFFAs, the Project would comply with OSHA regulations and health and safety plans to prevent or minimize the negative effects of worker-related accidents. The Project would also comply with SPCC plans, hazardous material plans, and other waste management BMPs to avoid or minimize related health and safety issues. With proper planning and implementation of BMPs, cumulative impacts from the Project in relation to public health and safety would not occur.

3.14 Transportation

3.14.1 Affected Environment

3.14.1.1 Roads

The Project Site is bisected by SR 55 and Cumberland Springs Road, bounded to the north by SR 130 and Five Points Road, and bounded to the south by West Lincoln Street. SR 55 in the project area is a two-lane paved state road that extends northeast-southwest between the cities of Lynchburg and Tullahoma. Cumberland Springs Road is a two-lane paved public road that extends northwest-southeast through the southern portion of the Project Site and provides access to the Project Site through its connections with SR 55 and West Lincoln Street. SR 130 is a two-lane paved state road that extends northwest-southeast along the northern boundary of the Project Site, between the cities of Shelbyville and Tullahoma. Five Points Road is a two-lane paved public road that extends northeast-southwest along the northern boundary of the Project Site, between SR 55 and SR 130.

West Lincoln Street is a two-lane paved public road that extends northeast-southwest along the southern boundary of the Project Site, between Cumberland Springs Road at the Project Site and SR 16 (US 41-A) in downtown Tullahoma. Ledford Mill Road is a two-lane paved public road that extends north-south through the northwestern portion of the Project Site and provides access to the Project Site through its connections with Five Points Road, SR 130, and SR 55. Motlow Road is a two-lane paved public road that extends north-south through the southwestern portion of the Project Site and provides access to the Project Site

through its connections with SR 55 and Cumberland Springs Road. Raysville Road is a two-lane paved public road that extends northeast-southwest through the southern portion of the Project Site and provides access to the Project Site through its connections with Cumberland Springs Road, Bobo Hollow Road, and Cobb Hollow Road. US 41-A in the project vicinity is a three-lane federal highway consisting of two through lanes and a center two-way left-turn lane that extends northwest-southeast, approximately two miles east of the Project Site in Tullahoma. There are also a few unnamed private dirt roads that extend through the Project Site.

3.14.1.2 Road Traffic

Existing traffic volumes on some of the roads in the project area were determined using 2021 Average Annual Daily Traffic (AADT) counts measured at existing Tennessee Department of Transportation (TDOT) stations (TDOT 2021b). Five TDOT stations (Stations 3, 4, 5, 7, and 183) are located within one mile of the Project Site. The 2021 AADT count for Station 3, located on SR 130 adjacent to the northern boundary of the Project Site, was 724 vehicles. The 2021 AADT count for Station 4, located on Five Points Road adjacent to the northwestern boundary of the Project Site, was 459 vehicles. The 2021 AADT count for Station 5, located on SR 55 approximately 0.3 mile from the Project Site, was 5,728 vehicles. The 2021 AADT count for Station 7, located on Cobb Hollow Road approximately 0.4 mile west of the Project Site, was 2,346 vehicles. The 2021 AADT count for Station 183, located on West Lincoln Street adjacent to the southern boundary of the Project Site, was 4,278 vehicles. Traffic volume information is not available for Ledford Mill Road, where Motlow State Community College, adjacent to the Project Site, is a major traffic generator.

3.14.1.3 Rail and Air Traffic

The closest rail line is operated by CSX Transportation and is located approximately two miles east of the Project Site. The closest general aviation airport is the Tullahoma Regional Airport in Tullahoma, located approximately one mile northeast of the Project Site. The airport has two asphalt/concrete runways with lengths of 5,501 and 5,002 feet and one turf runway 2,693 feet long. The closest major airport, and the only one in the vicinity with regular commercial passenger service, is the Nashville International Airport in Nashville, approximately 55 miles northwest of the Project Site. The airport has four runways, all with lengths of 7,700 feet or more. Additionally, Arnold AFB in Tullahoma has one runway 6,001 feet long, located approximately nine miles northeast of the Project Site. Although the airfield was decommissioned in 2009 and no aircraft are stationed at the base, military aircraft occasionally use this runway for training purposes.

3.14.2 Environmental Consequences

3.14.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor impacts on transportation resources would result if current land use practices continued.

3.14.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Given the distance from major airports, construction and operation of the proposed solar facility is not expected to affect operation of major airports in the region. However, per the FAA guidelines regarding solar facilities near airports (FAA 2021), the Project filed Form 7460-1 with FAA via the Obstruction Evaluation/Airport Airspace Analysis filing tool (FAA 2022) in July 2022. This form is required due to the proximity of the Tullahoma Regional Airport and in order to develop avoidance, minimization, and/or mitigation measures pertaining to potential effects to the airport in coordination with FAA. Effects from solar facilities are generally known for air traffic control towers (FAA 2021), and the Tullahoma Regional Airport does not have a tower. FAA sent Determinations of No Hazard to air navigation for each relevant Project component in September 2022 with the condition that the Project must file Form 7460-2, Notice of Actual Construction or Alteration, any time the Project is abandoned or within five days after the construction reaches its greatest height. Thus, no effects are anticipated, and the Project would adhere to any recommendations from FAA in further design of the facility. The operation of the Project would not adversely affect aerial crop dusters operating in the vicinity of the Project Site.

Subject to weather, construction activities would take approximately 18 months to complete using a crew of up to 450 workers sourced locally to the greatest extent possible. Work would generally occur during daylight hours, Monday through Saturday. A majority of these workers would likely come from the local area or region. Other workers could come from outside the region, and if so, many would likely stay in local hotels in the vicinity. It is anticipated that workers would drive personal vehicles to the Project Site. Some of the individual workers and work teams would likely visit local restaurants and other businesses during the construction phase of the Project. Additional traffic due to deliveries and waste removal would consist of an average of three to seven vehicles per day during construction, as discussed in more detail below.

Due to the proximity of the Project Site to the city of Tullahoma and the Motlow State Community College Moore County/Tullahoma Campus, possible minor to moderate traffic impacts along SR 55, SR 130, Five Points Road, West Lincoln Street, Cumberland Springs Road, and Raysville Road could occur, as a large portion of the construction workers would likely commute to the Project Site from and through Tullahoma. Traffic flow around the Project Site would be heaviest at the beginning of the workday, at lunch, and at the end of the workday. SR 55 and Five Points Road would likely be used to directly access the northern portion of the Project Site. West Lincoln Street, Cumberland Springs Road, and Raysville Road would likely be used to directly access the southern portion of the Project Site. Several businesses and residences are present along SR 55, Five Points Road, and West Lincoln Street. Because Project access would be available from multiple directions and a variety of roads, traffic to the Project Site would be more dispersed. Use of mitigation measures, such as posting a flag person during heavy commute periods to manage traffic flow, prioritizing access for local residents, and implementing staggered work shifts during daylight hours, would minimize potential adverse impacts to traffic and transportation to minor or negligible levels.

Construction equipment and material delivery and waste removal would require an average of three to seven flatbed semi-trailer trucks or other large vehicles visiting the Project Site each day during the construction period. The Project Site would be accessed via routes that do not have load restrictions. These vehicles should be easily accommodated by existing roadways; therefore, only minor impacts to transportation resources in the project area would result from construction vehicle activity.

Several Project access roads would be maintained on the Project Site. Following construction, the compacted gravel roads would be maintained to allow access for inspection and maintenance activities. However, these roads would be closed to the public. Permanent access to the Project substation and switchyard would be off of Cumberland Springs Road.

Air traffic in the vicinity of the TL upgrade locations could be temporarily impacted during the two-week installation of OPGW by helicopter if this method is determined the most feasible. Flight paths would be determined prior to the installation of OPGW and filed with the appropriate authorities as required; therefore, impacts to air traffic would be temporary and minimized through appropriate mitigation.

During operations, the Project may require small groups of employees and contractors to be on site occasionally to manage the facility and conduct regular inspections, maintenance, and repairs, as well as to manage the on-site sheep herd. The addition of vehicles for these workers on local roadways would be accommodated by existing infrastructure; therefore, the operation of the Project would not have a noticeable impact on the local roadways.

When operations cease, the facility would be decommissioned and dismantled, and the Project Site would be restored per Project decommissioning requirements. Decommissioned equipment and materials would be transported to an offsite recycling center or disposed of at an approved facility, which would require dump trucks, flatbed and rear-loader garbage trucks, and other large vehicles visiting the Project Site each day during the decommissioning period. The Project Site would be accessed via routes that do not have load restrictions. These vehicles should be easily accommodated by existing roadways; therefore, only minor impacts to transportation resources in the project area would result from decommissioning vehicle activity.

Overall, direct impacts to transportation resources associated with implementation of the Proposed Action would be anticipated to be minor. These impacts would be temporary and minimized through appropriate mitigation. The Proposed Action would not result in any indirect impacts to transportation.

3.14.2.2.1 Cumulative Impacts

The Project would implement minimization and mitigation measures if Project construction is expected to disrupt normal traffic patterns; thus, Project effects to road traffic would be temporary, minor, and minimized or mitigated. Effects to local, regional, and major airports is not anticipated and the Project would file Form 7460-2, Notice of Actual Construction or Alteration, any time the Project is abandoned or within five days after the construction reaches its greatest height and would adhere to any recommendations from FAA in further design of the facility regarding potential effects to the Tullahoma Regional Airport given its proximity. Past, present, and RFFAs are also expected to result in minor impacts to transportation. The proposed widening of SR 55 could contribute to cumulative impacts to traffic depending on the timing of that project. However, impacts would be short term and coordination could occur to minimize impacts to local commuters. Overall, with implementation of minimization and mitigation measures, the Project is not expected to contribute to reasonably foreseeable environmental trends and planned actions to area transportation.

3.15 Socioeconomics

3.15.1 Affected Environment

The proposed solar facility would be located within the metropolitan limits of Lynchburg in Moore County, Tennessee. The Project Site overlaps U.S. Census Bureau (USCB) 2019 Census Tract (CT) 9301, Block Group (BG) 1 and CT 9302, BG 1 (Figure 3-19). Generally, CT 9301 encompasses the eastern and southern portions of Moore County, and CT 9302 encompasses the northern and eastern portions of Moore County and includes the entire City of Lynchburg. The portion of CT 9301 that overlaps the Project Site is approximately 2,415 acres, or 73 percent of the total project area, and the portion of CT 9302 that overlaps the Project Site is approximately 894 acres, or 27 percent of the project area.

3.15.1.1 Population and Demographics

The population of Moore County is 6,461, and adjacent Coffee County has a population of 57,889 (USCB 2020a). Given Coffee County's proximity to the job site, it is likely that a portion of the construction and operations staff would live or stay there. The Tennessee State Data Center (2020) projects that the population of Moore County will increase by approximately 3.9 percent by 2040. Population trends for each associated CT as compared with Moore County and the state are presented in Table 3-18. According to the 2015-2019 American Community Survey (ACS) 5-year estimates, the population of Moore County, CT 9301 BG 1, and CT 9302 BG 1 all had higher median ages (45.0, 45.9, and 45.1, respectively) than the state as a whole (38.7). Moore County had a higher percentage of people who were at least high school graduates (94.4 percent) than across CT 9301 BG 1 (86.6 percent), CT 9302 BG 1 (89.7 percent), and the state (88.7 percent) (USCB 2020a, 2020b).

Table 3-18. Population trends in the project area, county, and state

Geography	2010 Census	2020 ACS	Percent Change 2010-2020	Projection 2040	Percent Change 2020-2040
CT 9301 BG 1	1,820	1,633	-10.3	--	--
CT 9302 BG 1	1,787	1,945	8.8	--	--
Moore County	6,362	6,461	0.3	6,629	3.9
Coffee County	52,796	57,889	9.6	64,644	11.7
Tennessee	6,346,105	6,709,356	5.7	7,840,212	16.9

Sources: Tennessee State Data Center 2020; USCB 2020a, 2020b
"--" indicates that no data is available

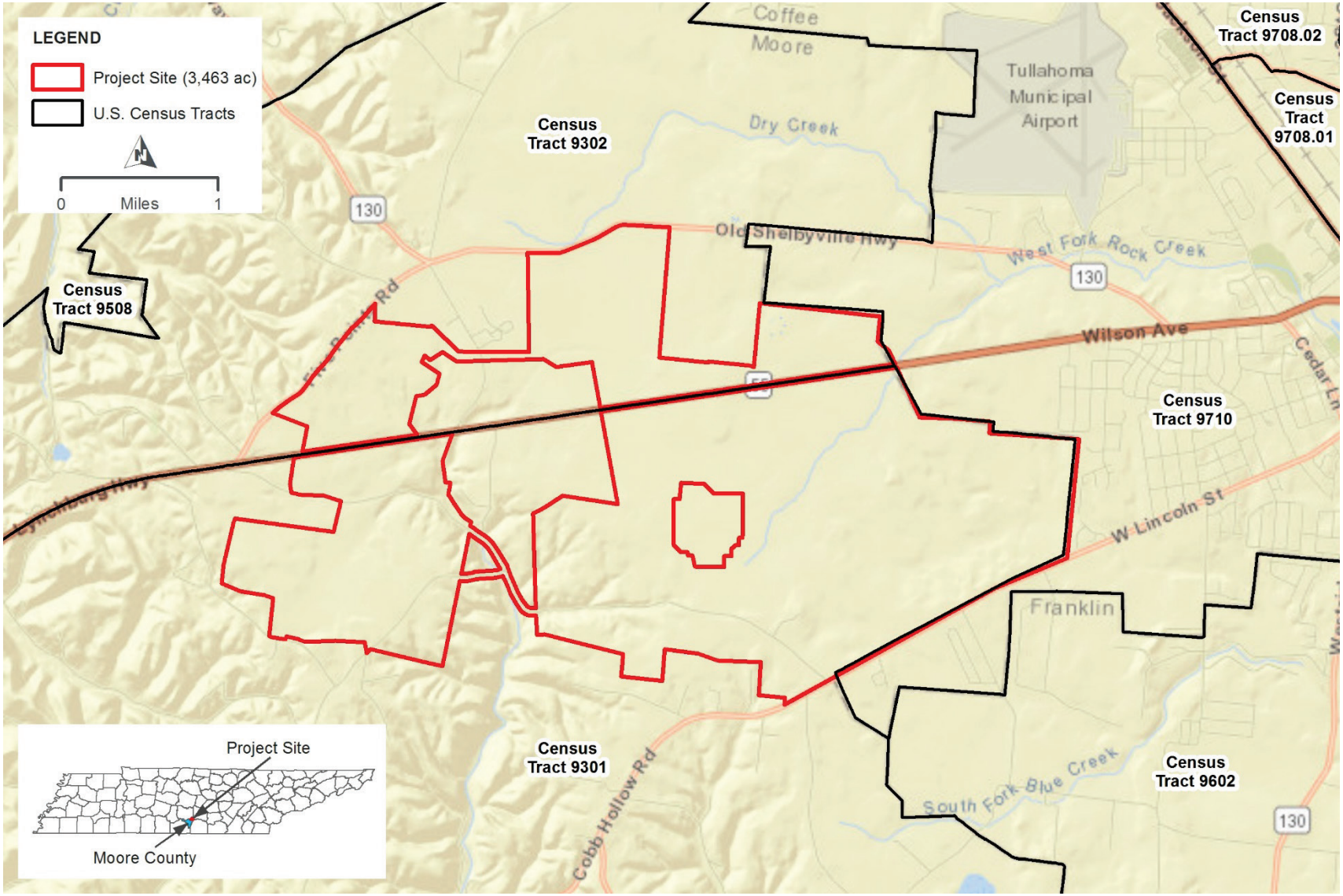

Figure 3-19. USCB CTs in the Project Site Vicinity

3.15.1.2 Employment and Income

According to the 2019 ACS, the unemployment rates for CT 9301 BG 1 (3.3 percent) and CT 9302 BG 1 (2.3 percent) were similar to the Moore County rate (2.3 percent) (TN Department of Labor and Workforce Development 2021) and the state (3.5 percent) (Table 3-19). The median household income for CT 9302 BG 1 ($46,816) was lower than the county ($57,708) and state ($53,320), while CT 9302 BG 1 ($60,114) was higher (USCB 2020d).

Table 3-19. Employment and income in the project area, county, and state

Geography	2019 Employment	2019/2021 Unemployment Rate	Median Household Income, 2019 ACS
CT 9301 BG 1	783	3.3	$60,114
CT 9302 BG 1	921	2.3	$46,816
Moore County	2,955	2.3	$57,708
Coffee County	19,426	4.9	$50,531
Tennessee	3,301,501	5.3	$53,320

Sources: USCB 2020c and 2020d; TN Department of Labor and Workforce Development 2021.

3.15.2 Environmental Consequences

3.15.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, minor beneficial socioeconomic effects from the Project would occur if current land use practices continued.

3.15.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Under the Proposed Action, a new solar facility and associated substation would be built in the project area. Subject to weather, construction activities would take approximately 18 months to complete using a crew of up to 450 workers sourced locally to the greatest extent possible. Work would generally occur during daylight hours, Monday through Saturday. Night-time construction could be necessary to make up schedule deficiencies or to complete critical construction activities.

Short-term beneficial economic impacts would result from construction activities associated with the Project, including the purchase of materials, equipment, and services and a temporary increase in employment and income. This increase would be local or regional, depending on where the goods, services, and workers were obtained. It is likely some construction materials and services would be purchased locally in Moore County and/or in adjacent counties. Most of the other components of the solar and transmission facilities would be acquired from outside the local area. Also, most of the construction workforce would be sought locally or within the region, while a small portion of the construction workforce may come from out of the region. A large proportion of the non-local construction workforce would likely find lodging in the Tullahoma area, given its proximity and presence of several hotels and restaurants. Coffee County, and in particular the adjacent Tullahoma,

is much closer to the project site and has more support (hotels, restaurants) than does the more distant developed part of Moore County (the immediate Lynchburg area). The direct impact to the economy associated with construction of the Project would be short term and beneficial.

The majority of the indirect employment and income impacts would be from expenditure of the wages earned by the workforce involved in construction activities, as well as the local workforce used to provide materials and services. Construction of the Project could have minor beneficial indirect impacts to population and short-term employment and income levels in Moore County, as well as Coffee County.

During operation of the solar facility, the Project may require small groups of staff to be on site occasionally to manage the facility and conduct regular inspections, as well as some shepherds to manage the on-site sheep herd on a regular basis. Therefore, operation of the solar facility would have a minor beneficial impact on employment and the population in Moore County and the city of Tullahoma.

Overall, socioeconomic impacts for the operation of the proposed solar facility would be beneficial and long-term, but minor relative to the total economy of the region. The Project would increase the overall property tax base of Moore County, which would be most beneficial within the county and the vicinity.

3.15.2.2.1 Cumulative Impacts

Economic benefits of the Proposed Action and the past, present, and RFFAs (Table 3-1) considered for this analysis include the purchase of materials, equipment, and services, and moderate short- to long-term increases in employment and income. These increases would be local or regional, depending on where the goods, services, and workers have been or are obtained. Overall, short- to long-term, moderate beneficial cumulative impacts to socioeconomics would result from implementation of the Proposed Action in combination with the other actions considered in the area. Indirect, cumulative impacts to socioeconomics would also occur from the expenditure of wages earned by the workforce involved in construction activities and facility operations.

3.16 Environmental Justice

3.16.1 Affected Environment

Environmental justice-related impacts are analyzed in accordance with EO 12898 to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations. While not subject to this EO, TVA routinely considers environmental justice in its NEPA review processes.

CEQ guidance directs identification of minority populations when either the minority population of the affected area exceeds 50 percent, or the minority population percentage of the study area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). CEQ defines minority populations as people who identify themselves as Asian or Pacific Islander, American Indian or Alaskan Native, Black (not of Hispanic origin), or Hispanic. Due to including one of these minorities, those indicating two or more races are also considered minorities.

CEQ guidance specifies that low-income populations are to be identified using the annual statistical poverty threshold from the USCB Current Population Reports Series P-60 on Income and Poverty. The USCB-provided 2019 (the most current) poverty threshold for individuals under age 65 was $13,465, and the official poverty rate for the U.S. as a whole in 2019 was 10.5 percent (CEQ 1997).

Based on CEQ guidance, USCB data reported in the 2019 ACS were used to identify minority and low-income populations in the project area. As discussed in more detail in Section 3.15.1, the Project Site overlaps CT 9301 BG 1 and CT 9302 BG 1.

3.16.1.1 Minority Population

According to the 2019 ACS, the percentage of minority population in Moore County, Coffee County, Franklin County, CT 9301 BG 1, and CT 9302 BG 1 (7.2, 9.6, 9.6, 1.1, and 6.7 percent, respectively) are lower than the state's minority percentage of 22.4 (Table 3-20, USCB 2020g). According to the USEPA EJSCREEN, an environmental justice screening and mapping tool, the project site and the surrounding 1-mile area have an estimated minority population proportion of 7 percent (USEPA 2020 b). This area includes part of Tullahoma in Coffee County. While the USCB and USEPA findings differ, both datasets indicate a minority population in the project area that is lower than the 50 percent threshold noted as significant in CEQ guidance.

Table 3-20. Minority Population in the Project Area, County, and State

Geography	Minority Population	% Minority Population
CT 9301 BG 1	18	1.1
CT 9302 BG 1	130	6.7
Moore County	459	7.2
Coffee County	5,285	9.6
Franklin County	3,990	9.6
Tennessee	1,504,224	22.4

Source: USCB 2020g

3.16.1.2 Low-Income Population

Based on the 2019 ACS, the poverty rate in Moore County, Coffee County, Franklin County, CT 9301 BG 1, and CT 9302 BG 1 (7.7, 14.0, 14.4, 9.0, and 5.0 percent, respectively) are lower than the state's poverty rate of 15.2 percent (Table 3-21, USCB 2020e, 2020f, 2020h). The poverty rate in Moore County, CT 9301 BG 1, and CT 9302 BG 1 are also lower than the U.S. poverty rate of 10.5 percent. According to the USEPA EJSCREEN, the low-income population in the project area constitutes 34 percent of the total population of this area, which includes part of Tullahoma in Coffee County.

Table 3-21. Poverty in the project area, county, and state

Geography	Per Capita Income, All People	Poverty Rate, All People
CT 9301 BG 1	$29,708	9.0
CT 9302 BG 1	$26,739	5.0
Moore County	$30,658	7.7
Coffee County	$26,557	14.0
Franklin County	$28,317	14.4
Tennessee	$29,859	15.2

Sources: USCB 2020e, 2020f, 2020h

3.16.2 Environmental Consequences

This section describes the potential impacts on minority and low-income populations should the Proposed Action or No Action Alternative be implemented. According to CEQ, adverse health effects to be evaluated within the context of environmental justice impacts may include bodily impairment, infirmity, illness, or death. Environmental effects may include ecological, cultural, human health, economic, or social impacts. Disproportionately high and adverse human health or environmental effects occur when the risk or rate of exposure to an environmental hazard or an impact or risk of an impact on the natural or physical environment for a minority or low-income population is high and appreciably exceeds the impact level for the general population or for another appropriate comparison group (CEQ 1997).

3.16.2.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location; therefore, negligible to minor impacts on minority or low-income populations would occur if current land use practices continued.

3.16.2.2 Proposed Action Alternative

Under the Proposed Action Alternative, TVA would execute the PPA, and SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. TVA would also construct a switchyard, interconnect the facility to its transmission system, and upgrade portions of an existing TL.

Minority and low-income populations are present in the project area, including the area of the proposed TL upgrades, at generally lower rates than the county and state. The proportion of the population in the project area that is low-income is also lower than the official U.S. poverty rate of 10.5 percent.

The overall impacts of the proposed Moore Solar Facility, as described in other sections in this chapter, most of which would occur during the approximately 18-month construction period, would be minor, and off-site impacts would be negligible. As such, no disproportionately high or adverse direct or indirect impacts are expected to result from the Proposed Action on minority or low-income populations due to human health or environmental effects. Rather, the Project is expected to have positive effects to the local economy that would benefit low-income populations.

3.16.2.2.1 Cumulative Impacts

Demographic characteristics of the project area are expected to change temporarily in response to an increased construction workforce, but this change would not be significant. There is a potential that these communities would be indirectly impacted due to an increase in noise during construction activities of the Proposed Action and RFFAs (Table 3-1). Because these short-term actions may coincide, potential, indirect cumulative impacts may occur on a local basis. Such physical impacts associated with construction activities would be temporary and mitigated through BMPs identified in Section 2.5.

3.17 Unavoidable Adverse Environmental Impacts

Unavoidable adverse impacts are the effects of a proposed action on natural and human resources that would remain after mitigation measures or BMPs have been applied. Mitigation measures and BMPs are typically implemented to reduce a potential impact to a level that would be below the threshold of significance as defined by CEQ and case law.

The Proposed Action could cause some unavoidable adverse environmental effects (Table 2-1). Specifically, construction activities would temporarily increase noise, traffic, and health and safety risks and temporarily affect air quality, GHG emissions, and visual aesthetics of the Project Site vicinity. Mitigation measures are listed in Section 2.5. Construction activities would primarily be limited to daytime hours, which would minimize noise impacts. Temporary increases in traffic would be minimized or mitigated by specific measures designed to address traffic flow issues. Temporary increases in health and safety risks would be minimized by implementation of the Project health and safety plan. Construction and operations would have minor, localized effects on soil erosion and sedimentation that would be minimized by establishment and maintenance of stream and wetland buffers, soil stabilization and vegetation management measures. The buffers would minimize effects to these and other visual resources, during both construction and operation. The Project is anticipated to result in the fill of 396 LF of USACE-jurisdictional ephemeral streams for solar panel blocks, the fill of 0.54 acre of USACE-jurisdictional wetlands for road crossings and solar panel blocks, the fill of 7,366 LF of non-USACE-jurisdictional ditches for road crossings and solar panel blocks, the fill of 1.0 acre of non-USACE-jurisdictional wetlands for road crossings and solar panel blocks, and the fill of 1.5 acres of non-USACE-jurisdictional open waters for road crossings and solar panel blocks. The Project would change land uses on the Project Site from primarily forest management, including timbering operations, and agricultural to industrial solar uses.

With the application of appropriate BMPs, no unavoidable adverse effects to groundwater are expected. Moderate, direct impacts to vegetation would occur by clearing up to approximately 850 acres of trees and other tall vegetation. The Project would affect some state-listed plants and animals, while the majority of state-listed plants on site would be avoided. Two federally listed terrestrial animal species (gray bat and Indiana bat) and one federally proposed endangered species (northern long-eared bat) have been reported within Moore County. No known caves or suitable winter roosting structures for all three bats exist on the Project Site or in the TL upgrade locations. Streams and ponds offer foraging habitat and sources of drinking water for all three bat species within and adjacent to the Project Site. Consultation with USFWS under Section 7 of ESA was completed on December 5, 2022, regarding potential impacts to federally listed bat species. The USFWS concurred with TVA determinations that proposed actions may affect but are not likely to adversely affect gray bat, Indiana bat, or northern long-eared bat. Proposed actions would not jeopardize the continued existence of tricolored bat (Appendix A).

3.18 Relationship of Short-Term Uses and Long-Term Productivity

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, timber management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and non-market, for future generations. In this context, long-term impacts to site productivity would be those that last beyond the life of the Project. The Proposed Action would affect short-term uses of the Project Site by converting it from forest management, including timbering operations, and agricultural uses to solar power generation. The effects on long-term productivity would be minimal, as existing land uses could be readily restored on the Project Site following the decommissioning and removal of the solar facility. See Section 2.2.4 for additional information on the decommissioning process.

3.19 Irreversible and Irretrievable Commitments of Resources

Irreversible or irretrievable commitments of resources occur when resources would be consumed, committed, or lost because of a project. The commitment of a resource would

be considered irretrievable when a project would directly eliminate the resource, its productivity, or its utility for the life of a project and possibly beyond. Project-related construction and operation activities would result in an irretrievable and irreversible commitment of natural and physical resources. The implementation of the Proposed Action would involve irreversible commitment of fuel and resource labor required for the construction, maintenance, and operation of the solar PV facility. Because the solar arrays and associated on-site infrastructure could be removed and the facility would not irreversibly alter the site, the Project Site could be returned to its original condition or used for other productive purposes once the solar facility is decommissioned. Most of the solar facility components could also be recycled after the facility is decommissioned. See Section 2.2.4 for additional information on the decommissioning process.

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4 CHAPTER 4 – SUBMITTED ALTERNATIVES, INFORMATION AND ANALYSES

CHAPTER 4 - SUBMITTED ALTERNATIVES, INFORMATION AND ANALYSES

During the scoping period, comments were received from the USGS, USEPA, TDEC's Tennessee Natural Heritage Program, Southeastern Grasslands Initiative, and two private individuals. Comments were related to alternatives, purpose and need, agency coordination, mitigation measures, land use, water resources, biological resources, air quality and GHG emissions, socioeconomics, and environmental justice.

As a result of preliminary internal scoping by TVA and comments received during public scoping, TVA determined that, from the standpoint of NEPA, there is one reasonable alternative, the Action Alternative, that meets the purpose and need. As required by NEPA, the EIS also addresses the No Action Alternative. Variations of the Action Alternative that TVA considered are described in Section 2.3. USEPA appreciated TVA's efforts toward developing and analyzing an appropriate amount of alternative project proposals and recommended including details of considered alternatives within the EIS, including dual land use. As presently designed, the solar facility site will be revegetated with a mix of grasses and herbaceous plants and most of the site will be grazed by sheep, accomplishing the dual land use recommendation.

A private individual expressed concern about the Action Alternative being able to meet the purpose and need due to the intermittent availability of solar generation. The purpose and need of the Proposed Action is to increase TVA's solar generating capacity. As discussed in the 2019 IRP, TVA is compensating for the intermittent availability of this solar generation by operating a diverse portfolio of types of generation, an adequate reserve margin to compensate for the loss of individual generating facilities, and a well-maintained interconnected transmission grid (TVA 2019a).

TDEC's Tennessee Natural Heritage Program and Southern Grasslands Initiative recommended that a thorough field inventory of rare species be conducted for the project area in order to develop avoidance and mitigation measures. TVA compiled lists of rare plants and animals from TDEC, as well as from the USFWS and TVA's RNHD, for the project area. TVA evaluated potential impacts to biological resources in Section 3.5. This evaluation includes the results of field surveys of biological resources, including the presence of rare plants and animals, suitable habitat for the rare species, and rare natural communities. The Project has been designed to avoid impacts to rare species.

During the public comment period for the draft EIS, a total of 16 correspondences were received from Arnold Air Force Base, Southeastern Grasslands Initiative, TDEC, USEPA, and 14 individuals (with some combining comment submittals; Appendix B). The topics addressed in the comments related to air quality, greenhouse gas emissions, noise, waste management, alternatives, biological resources, decommissioning, environmental justice, operations, land use, public health and safety, utilities, visual resources, and water resources.

In relation to alternatives, staff at Arnold Air Force Base requested information on why TVA limited their evaluation to two alternatives. Because NEPA requires the analysis of reasonable alternatives, which are those that are technically and economically feasible and meet the proposal's purpose and need, TVA determined through scoping that, from the

standpoint of NEPA, there were two feasible alternatives available: the No Action Alternative and the Proposed Action Alternative.

Three individuals requested that TVA consider other technologies, such as rooftop solar or nuclear, or installation of panels in TL ROWs. In general, the cost for distributed generation, such as rooftop solar, is higher than utility-scale solar generation, and the cost and timeframe associated with nuclear technology is incompatible with the needs of this Project. Encroachment of any type of structures within TVA TL ROWs potentially violates North American Electric Reliability Corporation clearance standards and interferes with the vegetative maintenance requirements for proper operation of the transmission system. In most cases, TVA does not own the property and only possesses easement rights to operate and maintain the TL and no other facilities. TVA concluded that none of these suggested alternatives are viable alternatives to this Project.

5 Chapter 5 – List of Preparers

CHAPTER 5 – LIST OF PREPARERS

5.1 NEPA Project Management

Table 5-1 presents the members of the NEPA project management team and summarizes the expertise of each member and their contributions to this EIS.

Table 5-1. NEPA Project Team

Name/Education	Experience	Project role
TVA		
Ashley Pilakowski B.S., Environmental Management	11 years in environmental planning and policy and NEPA compliance	NEPA Project Manager and Coordinator
HDR		
Harriet L. Richardson Seacat M.A., Anthropology (Cultural); B.A., Anthropology (Native American Studies minor)	20 years in anthropology, archaeology, history, NHPA and NEPA documentation, and project management	NEPA and EIS contractor lead, General oversight and review of analyses per project description/internal finalization, coordination with SMEs, Noise, draft EIS comment response review, SRC/TVA coordination
Charles P. Nicholson B.S., Wildlife and Fisheries Science M.S., Wildlife Management PhD, Ecology and Evolutionary Biology	17 years in wildlife and endangered species research and management, 27 years in NEPA compliance	Overall NEPA advisor/QC, TVA coordination
Miles Spenrath B.S., Environment and Natural Resources	10 years in NEPA compliance and documentation	GIS mapping; Past, Present, and RFFAs write-up; Land Use; Soils, Prime Farmland; Visual Resources; Utilities; Public H&S; Transportation; draft EIS comment management
Erica Wadl M.S., Forestry; B.S., Biology	15 years in environmental permitting, land management, and NEPA compliance	Former NEPA contractor lead; Development of the NOI and scoping report

Table 5-2. Other Contributors

Name/Education	Experience	Project Role
TVA		
Todd Amacker M.S., Wildlife and Fisheries Science; B.S., Environmental Science	10 years working with threatened and endangered aquatic fauna in the Southeast; 5 years in environmental reviews	Aquatic Life, Threatened and Endangered Species
Adam Dattilo M.S. Forestry B.S. Natural Resource Conservation Management	22 years of experience in ecological restoration and plant ecology and 17 years in botany	Vegetation, Threatened and Endangered Species (Plants)
Elizabeth B. Hamrick M.S., Wildlife; B.S., Biology	21 years conducting field biology, 10 years in biological compliance, NEPA compliance, and ESA consultation for T&E terrestrial animals	Wildlife, Threatened and Endangered Species (Terrestrial Animals)
Michaelyn Harle Ph.D., Anthropology; M.A. Anthropology; B.A. Anthropology	17 years in cultural resource management	Cultural Resources, NHPA Section 106 compliance
Joseph Melton B.S., Environmental Health and Science	20 years in TVA environmental support for transmission power systems	Program Manager, Transmission Projects Environmental Support
Carrie Williamson, P.E., CFM M.S. Civil Engineering B.S. Civil Engineering	9 years in floodplains and flood risk, 3 years in river forecasting, 11 years in compliance monitoring	Floodplains and Flood Risk
HDR		
G. Noemi Castillo, P.E., PMP B.S., Environmental Engineering M.S., Environmental Engineering	18 years in NEPA documentation, NEPA compliance, noise analyses and air quality analyses	AQ/GHG Emissions, Chapter 4
Andrew Clay MURP, Urban and Regional Planning B.A., Political Science, International Relations	14 years in environmental planning	Noise
Mark P. Filardi, P.G. M.S. and B.S., Geology	19 years in hydrogeology and contaminated site assessment and remediation	Geology, Groundwater, Waste
Josh Fletcher, RPA M.A., Anthropology (Archaeology); B.S., Architectural Design	24 years in cultural resources management, regulatory compliance, NEPA documentation, and project management	Cultural resource studies, document preparation
Diana Gu *B.S. Natural Resource Conservation and Political Scientist*	3 years in field biology and 4 years in environmental consulting.	Wetland/stream delineations and protected species habitat assessments

Name/Education	Experience	Project Role
Gracelyn Jones B.A., Environmental Sociology	3 years in regulatory compliance, NEPA compliance, and document preparation	Coordination with EIS project manager/SMEs, Chapters 1 and 2, EIS compilation/language consistency/acronyms, Socioeconomics, Environmental Justice, Appendices, Admin record, draft EIS comment management
Amanda B. Mills M.S. in Marine Sciences B.S. in Biology	15 years in geology, biology, geology	Geology, Groundwater, Waste
Al Myers Completed credits toward B.S. Business Administration	24 years in administration	Overall formatting, appendices compilation, ADA Section 508 compliance, and PDF creation
Lyranda Thiem M.S. Biology B.S. Biology	4 years in ecology and biology and 2 years in stream and wetland delineations, permitting, and habitat evaluation	Biology, Water, Natural Areas, Parks, and Recreation; References; Admin record
Karsen Williams B.S., Environmental Science M.S., Coastal, Marine, and Wetland Studies	4 years in environmental consulting	Field survey lead; Wetland/stream delineations and protected species habitat assessments

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CHAPTER 6 – LITERATURE CITED

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Appendix A – Correspondence and Supporting Information

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RESOLUTION NO. _____

A RESOLUTION TO AMEND THE TEXT OF THE METROPOLITAN LYNCHBURG AND MOORE COUNTY ZONING ORDINANCE ESTABLISHING REGULATIONS FOR SOLAR ENERGY SYSTEMS AS PERMITTED USE IN THE A-1 – AGRICULTURE-FORESTRY DISTRICT AND ESTABLISHING REGULATIONS GOVERNING THE DEVELOPMENT OF SOLAR ENERGY SYSTEMS

WHEREAS, pursuant to Tennessee Code Annotated § 13-7-101 and § 13-7-102, a zoning ordinance and map have been adopted by The Metropolitan Government of Lynchburg, Moore County, Tennessee; and

WHEREAS, the Planning Commission of the Metropolitan Government of Lynchburg, Moore County, Tennessee has recommended that the following described amendments be made in the text of the adopted zoning ordinance; and

WHEREAS, pursuant to Tennessee Code annotated § 13-3-403(c), a public notice was published at least fifteen (15) days prior to the meeting.

NOW, THEREFORE, BE IT RESOLVED by the Council of the Metropolitan Government of Lynchburg, Moore County, Tennessee as follows:

1. **Definitions.** Section 2.020 shall be amended to include the following definitions.

   Solar Energy System ("SES") means a device or structural design feature that provides for the collection of solar energy for electricity generation, consumption, or transmission or for thermal application. For purposes of this section, SES refers only to (1) photovoltaic SESs that convert solar energy directly into electricity through a semiconductor device, or (2) solar thermal systems that use collectors to convert the sun's rays into useful forms of energy for water heating, space heating, or space cooling. SES includes all components of the electricity generating facility (inverters, transformers, switchgear, substations, communications infrastructure, and other ancillary or related equipment), but does not include transmission lines or generation tie lines connecting the SES to a utility-owned substation.

   Ground Mounted Solar Energy System ("GSES") means an SES that is structurally mounted to the ground and does not qualify as an Integrated Solar Energy System (ISES). For purpose of this section, any solar canopy that does not qualify as an ISES shall be considered a GSES, regardless of where it is mounted.

2. **SES Standards.** The following shall be inserted as Section 4.140:

Section 4.140. Development Standards for Ground Mounted Solar Energy Systems ("GSES")

A GSES must conform to the following development standards:

A. Fence. A GSES shall be enclosed by perimeter fencing of at least six (6) feet in height.

B. Setback. A GSES shall be set back from all property lines at least eighty (80) feet, unless a lesser setback is approved by the Board of Zoning Appeals as a variance, and at least two hundred fifty (250) feet from all residential dwelling units occupied at the time of site plan review.

C. Landscape Buffering. A sixty (60) foot vegetative buffer is required to the extent necessary to screen the GSES from the view of adjacent residential structures, future residential structures for which a building permit has been obtained as of the date the building permit application for the GSES is submitted pursuant to Section 7.030(A), and public rights of way. Such buffer shall be planted with evergreen or other suitable plantings to include existing growth and vegetation and used for no other purpose.

D. Signage. A GSES shall have signs (a) stating the risks that may result from contact with a GSES, (b) identifying the owner or operator of the GSES, (c) providing a 24-hour emergency contact phone number, and (d) at the option of the developer of a GSES, containing educational information about the GSES. All signs displayed with respect to a GSES shall comply with the requirements of the applicable zoning district for displaying advertisements.

E. Decommissioning. Unless otherwise approved by the Board of Zoning Appeals, decommissioning of a GSES shall begin no later than twelve (12) months after a GSES has permanently ceased to generate electricity, and the owner or operator of the GSES shall return the property to its condition prior to the installation of the GSES or to some other condition reasonably appropriate for the designated land use within twenty-four (24) months after a GSES has permanently ceased to generate electricity. Notwithstanding anything to the contrary, a GSES will not be considered to have permanently ceased to generate electricity unless it has failed to diligently pursue the production of, or restoration of the GSES's ability to produce, electricity for at least six (6) consecutive months. A decommissioning plan shall be required to ensure that facilities are properly removed after their useful life. The plan shall include provisions for removal of all structures, foundations, electrical equipment and internal or perimeter access roads, restoration of soil and vegetation, and a plan ensuring financial resources will be available to fully decommission the site.

3. **A-1 Agriculture-Forestry District**. "Solar energy systems" shall be inserted as Section 5.041(C)(13).

4. BE IT FURTHER RESOLVED that this Resolution shall become effective immediately upon adoption, the public health, safety and welfare requiring it.

Approved and adopted by the Council of the Metropolitan Government of Lynchburg, Moore County, Tennessee on:

11-15-21

Date

Penny Hatfield

Recording Secretary

Bonnie Lewis

Metro Mayor

Metropolitan Government of Lynchburg/Moore County, Tennessee

Metropolitan Lynchburg / Moore County

Planning, Zoning, and Building Department
PO Box 206
Lynchburg, TN 37352

931-759-7068 metromoore.codes@gmail.com

October 19, 2022

Silicon Ranch Corporation
Rob Riley, Senior Manager
222 Second Avenue South Suite 1900
Nashville, TN 37201

Cumberland Springs Land Company (Land Owners)
Alexandra Richman (Representative)
P. O. Box 8160
Lynchburg, TN 37352

RE: Request to the Metropolitan Lynchburg/Moore County Board of Appeals for a Special Exception for the Development Standards for Ground Mounted Solar Energy Systems (GSES) located in Metro Lynchburg Moore County, TN, Map 007 Parcel 006.00.

"Article IV, Section 4.170, Development Standards for Ground Mounted Solar Energy System (GSES).

"Article V, Section 5.041 A-1, Agricultura-Forestry District (C) Uses Permitted as Special Exceptions (13) Solar Energy Systems.

To Whom It May Concern:

This letter is to serve as an official notice of the Metropolitan Lynchburg/Moore County Board of Zoning Appeals decision in the above referenced matter. The findings of the committee were as follows:

The request for the above referenced matter is **APPROVED.**
If you have any questions or concerns, please contact the office at the above phone number or email.

Sincerely,

Christine Pyrdom

Christine Pyrdom, Director
Metro Moore County Codes Enforcer

cc

January 26, 2022

To Whom it May Concern
U.S. Army Corps of Engineers
Nashville Regulatory District
3701 Bell Road
Nashville, Tennessee 37214

Subject: SR Tullahoma Solar Project
Jurisdictional Determination Request
Moore County, Tennessee

To Whom it May Concern,

A subsidiary of Silicon Ranch Corporation (SRC), SR Tullahoma, LLC (SR Tullahoma), intends to develop a site in Moore County, Tennessee, as a solar photovoltaic (PV) facility. The study area assessed for development of the facility ("Project Area") encompasses 3,463 acres north of Cobb Hollow Road, south of Old Shelbyville Highway, east of Wooley Road, and west of Cumberland Avenue (Appendix A, Figures 1 and 2). The Project Area partially overlaps the former Motlow Range (WWII Training Area), on which the U.S. Army Corps of Engineers (USACE) periodically conducts remediation of unexploded ordnances (UXOs). On behalf of SR Tullahoma, SRC has authorized HDR, Inc. (HDR) as its agent to submit to USACE the enclosed Jurisdictional Determination requests regarding the extent of jurisdictional and non-jurisdictional features within the Project Area (Appendix B).

Applicant Name: SR Tullahoma; POC: Mr. Dylan Hall
Mailing Address: 222 Second Ave S. Suite 1900, Nashville, TN 37201
Phone Number of Owner/Applicant: 615-943-7207
Project Location: North and South of Lynchburg Hwy, west of Tullahoma, TN in Moore County, TN
Basin: Elk River Watershed [Hydrologic Unit Code (HUC) 060300030405], Elk River Watershed [HUC 060300030402], and Mulberry Creek [HUC 060300030502]
Nearest City/Township: City of Tullahoma
County: Moore County
Center Decimal Degree Coordinates of Project Area: 35.350738°, -86.273682°
USGS Quadrangle Name: Tullahoma, TN and Lynchburg East, TN

Project Description

Prior to undertaking fieldwork, HDR scientists conducted a desktop review of the Project Area utilizing a number of resources. The assessed data are presented on several figures in Appendix A, as follows:

- **Figure 2**, U.S. Geological Survey (USGS) topographic maps;
- **Figure 3**, aerial imagery;
- **Figure 4**, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey;

- **Figure 5**, the on-site streams, wetlands, and floodplains as depicted in the USGS National Hydrography Dataset (NHD), the U.S. Fish and Wildlife Service (UWFWS) National Wetland Inventory (NWI), and the Federal Emergency Management Act (FEMA) National Flood Hazard Layer Viewer; and
- **Figure 6**, the 12-digit HUC watersheds as shown in the USGS NHD.

According to the USDA NRCS Soil Survey of Moore County (Figure 4), on-site soils consist of 14 separate soil units. Of these, Lee silt loam (Lb) and Guthrie silt loam (Gu) were listed as having hydric components. The USFWS NWI and USGS NHD depict several stream channels, including Hurricane Creek, West Fork Rock Creek, and North Fork Blue Creek, within the Project Area (Figure 5). No FEMA floodplains were mapped within the Project Area. The Project Area is within the Elk River, Elk River, and Mulberry Creek HUC-12 watersheds (Figure 6).

Jurisdictional Delineation

On April 26-30, May 17-21, June 14-18, 2021, HDR environmental scientists Ben Burdette, Wetland Professional In Training (WPIT), Tennessee Qualified Hydrologic Professional In Training (TN-QHP-IT); Karsen Williams; Diana Gu; Jessica Tisdale; James Young, Professional Wetland Scientist (PWS); and Lyranda Thiem, TN-QHP-IT, conducted field delineations of the Project Area for waters of the U.S. under Section 404 of the Clean Water Act (CWA). At the request of USACE and per revised guidance, Lyranda Thiem and Caroline Rycuik returned to the Project Area on November 16, 2021, to assess ephemeral aquatic resources as potential waters of the U.S.

Jurisdictional waters of the U.S. were delineated according to the methodology and guidance described in the USACE 1987 Wetland Delineation Manual, USACE 2008 Rapanos Guidance, and the 2012 USACE Eastern Mountains and Piedmont Regional Supplement (Version 2.0).Streams were classified utilizing the methodology and guidance provided in Regulatory Guidance Letter (RGL) 05-05 and the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control Guidance for Making Hydrologic Determinations (Version 1.4) (TDEC 2011). Jurisdictional waters of the U.S were mapped using a Trimble® Geo7X GPS unit capable of sub-meter accuracy. GPS points were post-processed utilizing Trimble® GPS Pathfinder Office Software.

Results

The results of the on-site field investigation conducted by HDR indicate that there are 30 jurisdictional stream channels, 16 jurisdictional ephemeral conveyances, 18 jurisdictional wetlands, and three (3) jurisdictional ponds located within the Project Area (Appendix A, Figure 7). On-site waters of the U.S total 557.26 acres, including 64,684 linear feet of stream channel (Table 1). Hurricane Creek drains southeast through the western portion of the site and North Fork Blue Creek and West Fork Rock Creek drain northeast to east through the central portion of the site. All on-site surface waters eventually drain to the Elk River (HUC 06030003).

In accordance with the USACE Rapanos Guidance 2008, there are 20 ditches, four (4) non-jurisdictional ponds and 11 non-jurisdictional wetlands within the Project Area (Appendix B, Figure 8). On-site non-jurisdictional waters total 4.4 acres, including 12,721 linear feet of ephemeral conveyances or ditches (Table 1).

A summary of on-site jurisdictional waters can be found in Appendix D. A summary of on-site non-jurisdictional waters can be found in Appendix E. Data Forms can be found in Appendix F. Associated photographs are in Appendix G.

Table 1. Summary of On-Site Aquatic Resources

Type of Water	Flow Regime	Length (linear feet)	Area (acres)
Jurisdictional Features			

	Intermittent	27,011	---
	Ephemeral	6,591	--
Open Waters (a)(3)	---	---	1.91
Wetlands (a)(4)	---	---	555.35
	Total:	**64,684**	**557.26**
Non-Jurisdictional Features			

Open Waters (b)(1)	---	---	1.27
Wetlands (b)(1)	---	---	3.13

On behalf of Silicon Ranch Corporation, HDR is hereby requesting a Preliminary Jurisdictionl Determination for the jurisdictional waters and an Approved Jurisdictional Determination for the non-jurisdictional waters identified within the Project Area. Should you have any questions or require additional information following your review of the enclosed materials, or if you would like to schedule a site visit, please contact Karsen Williams at (404) 601-8681 (karsen.williams@hdrinc.com).

Sincerely,

Karsen Williams
Environmental Scientist

Lyranda Thiem, TN-QHP-IT
Environmental Scientist

Appendices: Appendix A: Jurisdictional Figures
- Figure 1. Project Vicinity
- Figure 2. USGS Topographic Quadrangles
- Figure 3. Aerial Imagery
- Figure 4. NRCS Soil Survey of Moore County, TN
- Figure 5. NHD, NWI, and FEMA Datasets
- Figure 6. 12-Digit Hydrologic Unit Code (HUC) Watershed
- Figure 7. On-Site Jurisdictional Waters
- Figure 8. Non-Aquatic Delineated Waters

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: U.S. Army Corps of Engineers, Nashville District, Regulatory Division

- I am requesting a JD on property located at: 222 Second Ave S. Suite 1900 Nashville, TN 37201
  (Street Address)
  City/Township/Parish: Tullahoma County: Moore State: TN
  Acreage of Parcel/Review Area for JD: 3,463
  Section: _____ Township: _____ Range: _____
  Latitude (decimal degrees): 35.350738° Longitude (decimal degrees): -86.273682°
  (For linear projects, please include the center point of the proposed alignment.)

- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
  ☐ I currently own this property. ☐ I plan to purchase this property.
  ☑ I am an agent/consultant acting on behalf of the requestor.
  ☐ Other (please explain): _____

- Reason for request: (check as many as applicable)
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ☑ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ☐ A Corps JD is required in order to obtain my local/state authorization.
  ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ☐ I believe that the site may be comprised entirely of dry land.
  ☐ Other:): _____

- Type of determination being requested:
  ☐ I am requesting an approved JD.
  I am requesting a preliminary JD.
  I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

*Signature: Karsen Williams Date: 1/26/2022

- Typed or printed name: Karsen Williams

Company name: HDR Engineering Inc, HDR

Address: 1100 Peachtree Street NE, Suite 400

Atlanta, GA 30309

Daytime phone no.: 469.964.4898

Email address: Karsen.Williams@hdrinc.com

***Authorities**: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: December 13, 2021

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:

Karsen Williams
HDR, Inc.
1100 Peachtree Street NE, Suite 400
Atlanta, Georgia 30309
Karsen.williams@hdrinc.com
470.558.4589

on behalf of

Emma Tillitski
SR Greenville I, LLC
222 Second Ave S. Suite 1900
Nashville, TN 37201
emma.tillitski@siliconranch.com
561-809-7848

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Nashville Regulatory District

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
North and South of Lynchburg Hwy, west of Tullahoma, TN in Moore County, TN

(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: TN County/parish/borough: Moore County City: Tullahoma

Center coordinates of site (lat/long in degree decimal format): Lat.: 35.350738° Long.: -86.273682°

Universal Transverse Mercator:
NAD83

Name of nearest waterbody: Hurricane Creek
(Elk River Basin, HUC #060030003)

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): April 26-30, May 17-21, and June 14-18 , 2021

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resources in review area (acreage and linear feet, if applicable	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Stream 1 (Intermittent)	35.356331	-86.248529	Length: 1,172ft. Width: 6 ft. Acres: 0.16 ac.	non-wetland waters	Section 404, non-section 10
Stream 2 (Perennial)	35.355294	-86.250805	Length: 2837ft. Width: 5 ft. Acres: 0.33 ac.	non-wetland waters	Section 404, non-section 10
Stream 3 (Perennial)	35.352778	-86.255686	Length: 3720ft. Width: 5 ft. Acres: 0.42 ac.	non-wetland waters	Section 404, non-section 10
Stream 4 (Intermittent)	35.350063	-86.247601	Length: 112 ft. Width: 3 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resources in review area (acreage and linear feet, if applicable	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Stream 5 (Perennial)	35.350163	-86.350594	Length: 7536 ft. Width: 10 ft. Acres: 1.35 ac.	non-wetland waters	Section 404, non-section 10
Stream 6 (Perennial)	35.340926	-86.260967	Length: 2,496 ft. Width: 6 ft. Acres: 0.32 ac.	non-wetland waters	Section 404, non-section 10
Stream 7 (Intermittent)	35.360692	-86.264472	Length: 564 ft. Width: 4 ft. Acres: 0.05 ac.	non-wetland waters	Section 404, non-section 10
Stream 8 (Perennial)	35.356819	-86.264968	Length: 5,310 ft. Width: 8 ft. Acres: 0.61 ac.	non-wetland waters	Section 404, non-section 10
Stream 9 (Intermittent)	35.354651	-86.27890	Length: 633 ft. Width: 3 ft. Acres: 0.06 ac.	non-wetland waters	Section 404, non-section 10
Stream 10 (Perennial)	35.361379	-86.260856	Length: 8,724 ft. Width: 7 ft. Acres: 1.50 ac.	non-wetland waters	Section 404, non-section 10
Stream 11 (Intermittent)	35.356215	-86.266391	Length: 154 ft. Width: 4 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Stream 12 (Intermittent)	35.346922	-86.273977	Length: 899 ft. Width: 4 ft. Acres: 0.06 ac.	non-wetland waters	Section 404, non-section 10
Stream 13 (Intermittent)	35.346721	-86.274591	Length: 1006 ft. Width: 4 ft. Acres: 0.07 ac.	non-wetland waters	Section 404, non-section 10
Stream 14 (Intermittent)	35.361531	-86.286329	Length: 2354 ft. Width: 7 ft. Acres: 0.38 ac.	non-wetland waters	Section 404, non-section 10
Stream 15 (Intermittent)	35.364100	-86.294717	Length: 1006 ft. Width: 5 ft. Acres: 0.16 ac.	non-wetland waters	Section 404, non-section 10
Stream 16 (Intermittent)	35.343962	-86.282060	Length: 3,127 ft. Width: 4 ft. Acres: 0.36 ac.	non-wetland waters	Section 404, non-section 10
Stream 17 (Intermittent)	35.343097	-86.291975	Length: 772 ft. Width: 8 ft. Acres: 0.14 ac.	non-wetland waters	Section 404, non-section 10
Stream 18 (Intermittent)	35.344683	-86.295781	Length: 171 ft. Width: 11 ft. Acres: 0.04 ac.	non-wetland waters	Section 404, non-section 10
Stream 19 (Intermittent)	35.344654	-86.296134	Length: 66 ft. Width: 4 ft. Acres: <0.01 ac.	non-wetland waters	Section 404, non-section 10
Stream 20 (Perennial)	35.356320	-86.303309	Length: 2,403 ft. Width: 10 ft. Acres: 0.85 ac.	non-wetland waters	Section 404, non-section 10
Stream 21 (Perennial)	35.350237	-86.300638	Length: 459 ft. Width: 10 ft. Acres: 0.11 ac.	non-wetland waters	Section 404, non-section 10
Stream 22 (Intermittent)	35.340820	-86.300634	Length: 110 ft. Width: 6 ft. Acres: 0.02 ac.	non-wetland waters	Section 404, non-section 10
Stream 23 (Intermittent)	35.350126	-86.302746	Length: 142 ft. Width: 4 ft. Acres: 0.02 ac.	non-wetland waters	Section 404, non-section 10
Stream 24 (Intermittent)	35.344863	-86.313037	Length: 4,674 ft. Width: 15 ft. Acres: 1.6 ac.	non-wetland waters	Section 404, non-section 10
Stream 25 (Intermittent)	35.356364	-86.303554	Length: 1539 ft. Width: 15 ft. Acres: 0.32 ac.	non-wetland waters	Section 404, non-section 10

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resources in review area (acreage and linear feet, if applicable	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Stream 26 (Intermittent)	35.351364	-86.311217	Length: 3387 ft. Width: 15 ft. Acres: 0.98 ac.	non-wetland waters	Section 404, non-section 10
Stream 27 (Intermittent)	35.355811	-86.307554	Length: 756 ft. Width: 6 ft. Acres: 0.10 ac.	non-wetland waters	Section 404, non-section 10
Stream 28 (Intermittent)	35.364814	-86.307074	Length: 1696 ft. Width: 5 ft. Acres: 0.19 ac.	non-wetland waters	Section 404, non-section 10
Stream 29 (Intermittent)	35.363165	-86.303020	Length: 104 ft. Width: 4 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Stream 30 (Intermittent)	35.363834	-86.302563	Length: 75 ft. Width: 5 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 1	35.344412	86.29344	Length: 659 ft. Width: 3 ft. Acres: 0.03 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 2	35.356254	-86.245695	Length: 1849 ft. Width: 5 ft. Acres: 0.21 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 3	35.355886	-86.251204	Length: 235 ft. Width: 2 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 4	35.348989	-86.251053	Length: 163 ft. Width: 2 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 5	35.350576	-86.265044	Length: 89 ft. Width: 2 ft. Acres:< 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 6	35.341661	-86.261227	Length: 284 ft. Width: 2 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 7	35.359191	-86.263108	Length: 460 ft. Width: 2 ft. Acres: 0.02 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 8	35.361552	-86.286310	Length: 1133 ft. Width: 4 ft. Acres: 0.10 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 9	35.343825	-86.282561	Length: 102 ft. Width: 4 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 10	35.344500	-86.295922	Length: 210 ft. Width: 3 ft. Acres: 0.02 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 11	35.350794	-86.301725	Length: 387 ft. Width: 8 ft. Acres: 0.07 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 12	35.351333	-86.301917	Length: 416 ft. Width: 8 ft. Acres: 0.08 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 13	35.352317	-86.306786	Length: 120 ft. Width: 4 ft. Acres: 0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 14	35.348131	-86.310976	Length: 82 ft. Width: 4 ft. Acres: <0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 15	35.347231	-86.310952	Length: 140 ft. Width: 4 ft. Acres: <0.01 ac.	non-wetland waters	Section 404, non-section 10
Ephemeral 16	35.346996	-86.312603	Length: 262 ft. Width: 4 ft. Acres: 0.02 ac.	non-wetland waters	Section 404, non-section 10

Site Number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resources in review area (acreage and linear feet, if applicable	Type of aquatic resources (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Wetland 1 (PEM1/PSS)	35.356108	-86.251962	5.93	Wetland	Section 404, non-section 10
Wetland 2 (PFO1)	35.35479	-86.249278	0.41	Wetland	Section 404, non-section 10
Wetland 3 (PFO/PSS)	35.35209	-86.254602	3.72	Wetland	Section 404, non-section 10
Wetland 4 (PFO1/PSS1)	35.350072	-86.245533	28.64	Wetland	Section 404, non-section 10
Wetland 5 (PFO1)	35.341213	-86.261515	0.57	Wetland	Section 404, non-section 10
Wetland 6 (PSS1/PFO1)	35.344076	-86.266689	6.6	Wetland	Section 404, non-section 10
Wetland 7 (PEM1)	35.344533	-86.27291	8.6	Wetland	Section 404, non-section 10
Wetland 8 (PFO1)	35.343637	-86.27653	2.02	Wetland	Section 404, non-section 10
Wetland 9 (PFO1)	35.358382	-86.262876	68.40	Wetland	Section 404, non-section 10
Wetland 10 (PFO1)	35.362125	-86.261301	0.63	Wetland	Section 404, non-section 10
Wetland 11 (PFO1)	35.363163	-86.27108	7.85	Wetland	Section 404, non-section 10
Wetland 12 (PFO1/PEM1)	35.355669	-86.283479	327.22	Wetland	Section 404, non-section 10
Wetland 13 (PFO1/PEM1)	35.355894	-86.274517	5.36	Wetland	Section 404, non-section 10
Wetland 14 (PFO1)	35.353605	-86.279061	1.79	Wetland	Section 404, non-section 10
Wetland 15 (PFO1)	35.350119	-86.300775	0.20	Wetland	Section 404, non-section 10
Wetland 16 (PFO1)	35.349358	-86.299744	0.02	Wetland	Section 404, non-section 10
Wetland 17 (PFO1)	35.351528	-86.31102	0.17	Wetland	Section 404, non-section 10
Wetland 18 (PFO1/PEM1)	35.347506	-86.315926	87	Wetland	Section 404, non-section 10
Open Water 1	35.345414	-86.26911	0.16	Non- Wetland	Section 404, non-section 10
Open Water 2	35.344723	-86.271489	0.55	Non-Wetland	Section 404, non-section 10
Open Water 3	35.363525	-86.303241	1.2	Non-Wetland	Section 404, non-section 10

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre- construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: Figures 1, 2, 3, 4, 5, 6

☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☐ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report. Rationale:_____

☐ Data sheets prepared by the Corps:_____

☐ Corps navigable waters' study:_____

☐ U.S. Geological Survey Hydrologic Atlas:_____

☒ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1":24,000' Jeroldstown, TN

☒ Natural Resources Conservation Service Soil Survey. Citation: NRCS Soils Survey of Greene Co. (2019)

☒ National wetlands inventory map(s). Cite name: USFWS NWI (2018)

☐ State/local wetland inventory map(s):_____

☒ FEMA/FIRM maps: 47059C0150D

☐ 100-year Floodplain Elevation is:_____ (National Geodetic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date): National Geographic Society, i-cubed (Bing.com) (2013)

or ☒ Other (Name & Date): Site photographs, dated September 2021

☐ Previous determination(s). File no. and date of response letter:_____

☐ Other information (please specify):_____

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Karen Williams 1/26/2022

Signature and date of Regulatory staff member completing PJD

Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 1/26/022
ORM Number:
Associated JDs: N/A
Review Area Location[1]: State/Territory: Tennessee City: Tullahoma County/Parish/Borough: Moore
Center Coordinates of Review Area: Latitude 35.350738° Longitude -86.273682°

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- ☒ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters):[3]				
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
Stream 1	1,172	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 2	2,837	linear feet	(a)(2) Perennial tributary contributes	The subject water has perennial flow, and eventually flows into North Fork Blue Creek (a)(2).

[1] Map(s)/figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
Stream 3	3,720	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has perennial flow. This feature is named stream North Fork Blue Creek.
Stream 4	112	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 5	7,536	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has perennial flow.
Stream 6	2,496	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has perennial flow.
Stream 7	564	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 8	5,310	linear feet	(a)(2) Perennial tributary contributes	The subject water has perennial flow. This feature flows into West Fork Rock Creek (a)(2).

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
Stream 9	633	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 10	8,724	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has perennial flow. This feature is West Fork Rock Creek.
Stream 11	154.84	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This feature flows into West Fork Rock Creek (a)(2).
Stream 12	899	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 13	1,006	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 14	2,354	linear feet	(a)(2) Intermittent tributary contributes	The subject water has intermittent flow.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
Stream 15	1,006	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 16	3,127	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This feature flows into a perennial stream (Stream 17) and then into Hurricane Creek.
Stream 17	772	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream flows into Hurricane Creek.
Stream 18	171	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream flows into Hurricane Creek.
Stream 19	66	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream flows into Hurricane Creek.
Stream 20	2,403	linear feet	(a)(2) Perennial tributary contributes	The subject water has perennial flow. This feature is Hurricane Creek.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
Stream 21	459	linear feet	(a)(2) Perennial tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has perennial flow. This stream flows into Hurricane Creek via a culvert under Cumberland Springs Road.
Stream 22	110	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream begins at a spring head and flows into Hurricane Creek.
Stream 23	142	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. The stream begins at a spring head and flows into Hurricane Creek.
Stream 24	4,674	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream flows into Hurricane Creek.
Stream 25	1,539	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow. This stream flows into Hurricane Creek.
Stream 26	3,387	linear feet	(a)(2) Intermittent tributary contributes	The subject water has intermittent flow. This stream flows into Stream 25 (a)(2), which flows into Hurricane Creek.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
			surface water flow directly or indirectly to an (a)(1) water in a typical year.	
Stream 27	756	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 28	1,696	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 29	104	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Stream 30	75	linear feet	(a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year.	The subject water has intermittent flow.
Ephemeral 1	659	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.

Ephemeral 2	1,849	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 3	235	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 4	163	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 5	89	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 6	284	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 7	460	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.

Ephemeral 8	1,133	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 9	102	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 10	210	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 11	387	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 12	416	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 13	120	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.

Ephemeral 14	82	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 15	140	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.
Ephemeral 16	262	linear feet	(b)(3) Ephemeral feature, includingan ephemeral stream, swale, gully, rill, or pool	This feature is an ephemeral stream.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
Open Water 1	0.16	acre(s)	(a)(3) Lake/pond or impoundment of a jurisdictional water inundated by flooding from an (a)(1)-(a)(3)	This feature connects to (a)(4) wetland that connects to an (a)(2) stream that flows off-site.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
			water in a typical year.	
Open Water 2	0.55	acre(s)	(a)(3) Lake/pond or impoundment of a jurisdictional water inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	The feature is directly connected to a (a)(4) wetland that connects to an (a)(2) stream that flows off-site.
Open Water 3	1.20	acre(s)	(a)(3) Lake/pond or impoundment of a jurisdictional water inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	The feature is directly connected to a (a)(2) stream that connects to another (a)(2) stream that flows off-site.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
Wetland 1	5.93	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(1) and (a)(3) water.
Wetland 2	0.41	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(1) and (a)(3) water.
Wetland 3	3.72	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(3) water.
Wetland 4	28.64	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 5	0.57	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 6	6.60	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water and an (a)(3) open water.
Wetland 7	8.60	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water and an (a)(3) open water.
Wetland 8	2.02	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
Wetland 9	68.40	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 10	0.63	acre(s)	(a)(4) Wetland separated from an (a)(1)-(a)(3) water only by an artificial structure allowing a direct hydrologic surface connection between the wetland and the (a)(1)-(a)(3) water, in a typical year.	This feature is connected to an (a)(2) feature (Stream 10) via a culvert under Lynchburg Highway.
Wetland 11	7.85	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 12	327.22	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 13	5.36	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 14	1.79	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 15	0.20	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 16	0.02	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water, which is located offsite
Wetland 17	0.38	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.
Wetland 18	87.02	acre(s)	(a)(4) Wetland abuts an (a)(1)-(a)(3) water.	This feature abuts at least one point or side of an (a)(2) water.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Non-Jurisdictional Open Water 1	0.48	acre(s)	(b)(1) Lake/pond or impoundment that does not contribute surface water flow directly or indirectly to an (a)(1) water and is not inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	This feature is an isolated open water with no connection to an (a)(1)-(a)(4) water. It's connected to a (b)(1) non-jurisdictional wetland. Otherwise, it is completely isolated.
Non-Jurisdictional Open Water 2	0.48	acre(s)	(b)(1) Lake/pond or impoundment that does not contribute surface water flow directly or indirectly to an (a)(1) water and is not inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	This feature is an isolated open water with no connection to an (a)(1)-(a)(4) water. This feature is connected to a (b)(3) ephemeral conveyance. Both features are isolated.
Non-Jurisdictional Open Water 3	0.48	acre(s)	(b)(1) Lake/pond or impoundment that does not contribute surface water flow directly or indirectly to an (a)(1) water and is not inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	This feature is an isolated open water with no connection to an (a)(1)-(a)(4) water. This feature is completely isolated.
Non-Jurisdictional Open Water 4	0.48	acre(s)	(b)(1) Lake/pond or impoundment that does not contribute surface water flow directly or indirectly to an (a)(1) water and	This feature is an isolated wetland to with no connection to an (a)(1)-(a)(4) water. This feature is completely isolated.

[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
			is not inundated by flooding from an (a)(1)-(a)(3) water in a typical year.	
Non-Jurisdictional Wetland 1	0.68	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 2	0.08	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 3	0.50	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 4	0.09	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water. This feature is only connected to an (b)(1) non-jurisdictional open water.
Non-Jurisdictional Wetland 5	0.14	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 6	0.38	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 7	0.05	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 8	0.82	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 9	0.09	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 10	0.09	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Non-Jurisdictional Wetland 11	0.34	acre(s)	(b)(1) Non-adjacent wetland.	This feature is an isolated wetland with no connection to an (a)(1)-(a)(4) water.
Ditch 1	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 2	0.90	acre(s)	(b)(3) Ephemeral feature, including an ephemeral	This feature is an ephemeral stream.

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
			stream, swale, gully, rill, or pool.	
Ditch 3	0.87	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 4	<0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 5	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 6	0.02	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 7	0.02	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 8	0.04	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 9	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 10	0.02	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 11	0.03	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Ditch 12	0.07	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 13	0.03	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 14	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 15	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 16	<0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 17	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 18	0.03	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 19	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.
Ditch 20	0.01	acre(s)	(b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool.	This feature is an ephemeral stream.

July 22, 2021

Mr. Eddie Gordon
TDEC Division of Water Resources
Columbia Environmental Field Office
1421 Hampshire Pike
Columbia, TN 38401

Subject: **SR Tullahoma Solar Project**
Hydrologic Determination Request
Tullahoma, Moore County, Tennessee

To Whom it May Concern:

A subsidiary of Silicon Ranch Corporation (SRC), SR Tullahoma, LLC (SR Tullahoma), intends to develop a site in Moore County, Tennessee, as a solar photovoltaic (PV) facility. The study area assessed for development of the facility ("Project Area") encompasses 3,463 acres north of Cobb Hollow Road, south of Old Shelbyville Highway, east of Wooley Road, and west of Cumberland Avenue (Appendix A, Figures 1 and 2). The Project Area partially overlaps the former Motlow Range, a World War II training area, on which the U.S. Army Corps of Engineers (USACE) periodically conducts remediation of unexploded ordnances (UXOs). On behalf of SR Tullahoma, SRC has authorized HDR, Inc. (HDR) as its agent to submit the enclosed Hydrologic Determination (HD) request for written approval from the Tennessee Department of Environmental Conservation (TDEC) regarding the extent of wet weather conveyance (WWC) features within the Project Area.

	Requester	Consultant/Requester	Current Property Owners
Name	Conor Goodson	Kelly Thames, PWS, TN-QHP 1192-TN29	See Figure 3 (Appendix A)
Affiliation	Silicon Ranch Corporation	HDR	
Mailing Address	222 Second Avenue Suite 1900 Nashville, TN 37201	440 S. Church Street Suite 1000 Charlotte, NC 28202	
Phone Number	404-759-8626	704-338-6710	

Project Location: North and South of Lynchburg Hwy, West of Tullahoma, TN in Moore County, TN
Basin: Elk River Watershed [Hydrologic Unit Code (HUC) 060300030405], Elk River Watershed [HUC 060300030402], and Mulberry Creek [HUC 060300030502]
City: City of Tullahoma
County: Moore County
Center Decimal Degree Coordinates of Project Area: 35.350738°, -86.273682°
USGS Quadrangle Name: Tullahoma, TN and Lynchburg East, TN

Project Area Description and Recent Weather Conditions

Land use within the Project Area consists of primarily of agricultural land with forested field margins, planted forested areas, maintained transmission rights-of-way, and drainageways (Appendix A, Figure 3). Dominant woody species consist of red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipfera*), sweet gum (*Liquidambar styraciflua*), red oak (*Quercus falcata*), white oak (*Quercus alba*), and willow oak (*Quercus phellos*). The understory is composed primarily of red maple, sweet gum, black raspberry (*Rubus sp.*), and highbush blueberry (*Vaccinium corymbosum*). Herbaceous and vine species include greenbriar (*Smilax rotundifoloa*), greater bladder sedge (*Carex intumescens*), limestone meadow sedge (*Carex granularis*), broom sedge (*Andropogon virginicus*), and bushy blue stem (*Andropogon glomeratus*). Heavy logging is currently occurring throughout the largest parcel of the Project Area. Further, as mentioned above, the Project Area is partially within the former Motlow Range, a World War II-era training facility, on which the USACE periodically conducts remediation of UXOs.

According to the Natural Resources Conservation Services (NRCS) Soil Survey of Moore County (Appendix A, Figure 4), on-site soils consist of 14 soils map units; these are summarized in Appendix C, Table1. The NRCS National Hydric Soils List classifies Lee silt loam (Lb) and Gutherie silt loam (Gu) as hydric for Moore County (Appendix B).

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) depicts the potential presence of wetlands within the Project Area (Appendix A, Figures 5A and 5B). The U.S Geological Survey (USGS) National Hydrography Dataset (NHD) maps a network of surface waters and catchments of the U.S. The USGS NHD also depicts the potential presence of a number of stream channels within the Project Area (Appendix A, Figure 5A and 5B).

The Project Area is located in the Elk River Watershed (HUC 060300030405), Elk River Watershed (HUC 060300030402), and Mulberry Creek (HUC 060300030502) (Appendix A, Figure 6). Hurricane Creek drains south from the Project Area to its confluence with the Elk River approximately four miles south of the Project Area. North Fork Blue Creek and West Fork Rock Creek drain southwest into its confluence with the Elk River approximately eight miles south of the Project Area.

Precipitation data were reviewed in accordance with TDEC Division of Water Pollution Control Guidance for Making Hydrologic Determinations (Version 1.4) prior to field mobilizations to determine the baseline hydrologic conditions at the time of the field survey. Based on TDEC guidance, weather conditions for the Project Area were identified as Average at the time of the April, May, and June field surveys. Tables 1, 2, and 3 (below) summarize the recent weather conditions for the Project Area for the three-month period prior to each field mobilization.

Table 1. Precipitation Data Evaluation for the Month of April

April 2021 Mobilization			
Criteria values are in inches	**1st Month Prior** March 2021	**2nd Month Prior** February 2021	**3rd Month Prior** January 2021
Standard Deviation	2.92	2.49	3.14
Minus 1 Std. Deviation	3.17	2.35	2.20
Normal Precipitation	6.09	4.84	5.34
Plus 1 Std. Deviation	9.01	7.33	8.48
Actual Estimated Rainfall	10.0	6.0	2.0
Condition (elevated, low, average)	Elevated	Average	Low
Condition Value	3	2	1
Month Weight Value	3	2	1
Product of Previous Two Rows	9	4	1
		Sum*:	**14**
		Condition Value:	**Average**

* 6 to 9 (Abnormally Dry), 10 to 14 (Average), and 15 to 18 (Abnormally Wet)

Table 2. Precipitation Data Evaluation for the Month of May

May 2021 Mobilization			
Criteria values are in inches	**1st Month Prior** March 2021	**2nd Month Prior** February 2021	**3rd Month Prior** January 2021
Standard Deviation	2.54	2.92	2.49
Minus 1 Std. Deviation	2.20	3.17	2.34
Normal Precipitation	4.76	6.09	4.83
Plus 1 Std. Deviation	7.30	9.01	7.32
Actual Estimated Rainfall	4.0	10.0	6.0
Condition (elevated, low, average)	Normal	Elevated	Normal
Condition Value	2	3	2
Month Weight Value	3	2	1
Product of Previous Two Rows	6	6	2
		Sum*:	**14**
		Condition Value:	**Average**

* 6 to 9 (Abnormally Dry), 10 to 14 (Average), and 15 to 18 (Abnormally Wet)

Table 3. Precipitation Data Evaluation for the Month of June

June 2021 Mobilization			
Criteria values are in inches	**1st Month Prior** March 2021	**2nd Month Prior** February 2021	**3rd Month Prior** January 2021
Standard Deviation	2.15	2.54	2.92
Minus 1 Std. Deviation	2.37	2.20	3.17
Normal Precipitation	4.52	4.76	6.09
Plus 1 Std. Deviation	6.67	7.30	9.01
Actual Estimated Rainfall	6.0	4.0	10.0
Condition (elevated, low, average)	Normal	Normal	Elevated
Condition Value	2	2	3
Month Weight Value	3	2	1
Product of Previous Two Rows	6	4	3
		Sum*:	**13**
		Condition Value:	**Average**

* 6 to 9 (Abnormally Dry), 10 to 14 (Average), and 15 to 18 (Abnormally Wet)

Delineation of Wetlands and Waters

On April 26 to 30, May 17 to 21, and June 14 to 18, 2021, HDR environmental scientists Ben Burdette, Wetland Professional In Training (WPIT) and Tennessee Qualified Hydrologic Professional In Training (TN-QHP-IT); Diana Gu; Lyranda Thiem, TN-QHP-IT; Jessica Tisdale, Certified Ecologist; Karsen Williams; and James Young, Professional Wetland Scientist (PWS), conducted field delineations of the Project Area for waters of the U.S., as defined under Section 404 of the Clean Water Act. Waters of the U.S. were delineated according to the methodology and guidance described in the USACE 1987 Wetland Delineation Manual, the 2020 Navigable Waters Protection Rule, and the 2012 USACE Eastern Mountains and Piedmont Regional Supplement (Version 2.0). Streams were classified utilizing the methodology and guidance provided in Regulatory Guidance Letter (RGL) 05-05 and the TDEC Division of Water Pollution Control Guidance for Making Hydrologic Determinations (Version 1.4) (TDEC 2011). Waters of the U.S were mapped using a Trimble® Geo7X GPS unit capable of sub-meter accuracy. GPS points were post-processed utilizing Trimble® GPS Pathfinder Office Software.

In addition, on-site WWCs, which are not considered jurisdictional by the USACE, were delineated and classified using the TDEC Division of Water Pollution Control Guidance for Making Hydrologic Determinations (Version 1.4). These features were also mapped using a Trimble® Geo 7X GPS unit. Data Forms for jurisdictional and non-jurisdictional features can be found in Appendix G.

Results

The results of the on-site field investigation conducted by HDR indicate that there are 29 wetlands (558.48 acres), 30 streams (58,093 linear feet), three open waters (1.91 acres), and 35 WWCs (18,645 linear feet) located within the Project Area (Figure 7). A summary of waters within the Project Area is provided in Table 4 (below).

Table 4. Summary of On-Site Aquatic Resources

Type of Water	Flow Regime	Length (linear feet)	Area (acres)
USACE Jurisdictional Features			
Streams			---
	Intermittent	27,011	---
Open Waters	---	---	1.91
Wetlands	---	---	555.35
	Total:	**58,093**	**557.26**
Non-Jurisdictional Features			
Wet Weather Conveyances			--
Open Waters	---	---	1.27
Wetlands	---	---	3.13
	Total:	**18,645**	**4.4**

Jurisdictional Features

On-site jurisdictional streams total approximately 58,093 linear feet and consist of 30 streams (Table 1, Appendix C). On-site jurisdictional open waters total approximately 1.91 acres and consist of three open waters (Table 2, Appendix C). On-site jurisdictional wetlands total 555.35 acres and consist of 18 wetlands (Table 3, Appendix C).

Figures are provided in Appendix A, Hydrologic Determination Field Data Sheets are provided in Appendix E, and representative photographs are provided in Appendix F.

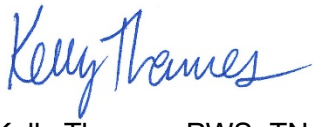
Non-Jurisdictional Features

There are four on-site non-jurisdictional open waters, totaling 1.27 acres (Table 1, Appendix D). There are 11 non-jurisdictional wetlands, totaling 3.13 acres (Table 2, Appendix D). On-site non-jurisdictional WWCs total approximately 18,645 linear feet and consist of 35 WWCs (Table 3, Appendix D).

Figures for jurisdictional and non-jurisdictional features are provided in Appendix A, Hydrologic Determination Field Data Sheets are provided in Appendix E, and representative photographs are provided in Appendix F

On behalf of Silicon Ranch Corporation, HDR is hereby requesting an HD for WWCs identified within the Project Area. Should you have any questions or require additional information following your review of the enclosed materials, please contact Karsen Williams at (404) 601-8681 (karsen.williams@hdrinc.com) or Kelly Thames at (704) 338-6710 (kelly.thames@hdrinc.com).

Sincerely,



Kelly Thames, PWS, TN-QHP
Environmental Project Manager

Karsen Williams
Environmental Scientist

Attachments:
Appendix A – Figures
Appendix B – Project Area Soils
Appendix C – Jurisdictional Features
Appendix D – Non-Jurisdictional Features
Appendix E – Hydrologic Determination Field Data Sheets
Appendix F – Photographs

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
COLUMBIA ENVIRONMENTAL FIELD OFFICE
1421 HAMPSHIRE PIKE
COLUMBIA, TENNESSEE 38401
PHONE (931) 380-3371 STATEWIDE 1-888-891-8332 FAX (931) 380-3397

September 1, 2021

Kelly Thames, PWS, TN-QHP# 1192-TN20
HDR. Inc.
1100 Peachtree Street, NE, Suite 400
Atlanta, GA 30309

Re: Hydrologic Determination Report
SR Tullahoma Solar Project
north of Cobb Hollow Road, south of Old Shelbyville Highway, east of Wooley Road, and west of Cumberland Avenue
Tullahoma, Tennessee

Dear Kelly Thames,

The Division of Water Resources (division) received a jurisdictional waters report submitted by you for a proposed SR Tullahoma Solar Project located at north of Cobb Hollow Road, south of Old Shelbyville Highway, east of Wooley Road, and west of Cumberland Avenue in Tullahoma, Tennessee. This project is within the Upper Duck Watershed.

Based on the information and documentation submitted, and the division's rules and guidance regarding hydrologic determinations, the division accepts the jurisdictional determinations of the drainage features as portrayed in the report.

Please be advised that hydrologic determinations are advised and governed by Tennessee Department of Environment and Conservation (TDEC) rules and regulations, and therefore only apply to the State's permitting process. Because these and other various water features on-site may potentially also be considered jurisdictional Waters of the United States, any alterations to them should only be performed after consultation with the U.S. Army Corps of Engineers.

Thank you for your interest in water quality in Tennessee. If you have any questions or need additional information, please contact me at 931-248-6073.

Sincerely,

Eddie Gordon

Environmental Scientist
Division of Water Resources

SR Tullahoma Transmission Line Upgrade WOUS Memo

Date:	Wednesday, March 16, 2022
Project:	Moore County Solar / SR Tullahoma
To:	Tennessee Valley Authority and Silicon Ranch Corporation (SRC)
From:	Karsen Williams and Lyranda Thiem, HDR, Inc.
Subject:	Summary of WOUS features for the transmission line upgrades associated with SR Tullahoma's Moore County Solar, Moore County, Tennessee

A subsidiary of Silicon Ranch Corporation (SRC), SR Tullahoma, LLC (SR Tullahoma), proposes to construct a photovoltaic solar facility known as Moore County Solar (Project) on approximately 3,463 acres in Moore County, Tennessee. The Project Area partially overlaps the former Motlow Range (World War II Training Area), on which the U.S. Army Corps of Engineers (USACE) periodically conducts remediation of unexploded ordnances. The Project would connect to the existing adjacent Franklin-Wartrace No. 2 161-kilovolt (kV) transmission line (TL) and require upgrades on this TL. HDR conducted a jurisdictional waters delineation survey for wetlands and streams in the TL upgrade areas, including TL right-of-way (ROW) and associated access routes necessary for crew and equipment access (Appendix A, Figure 1 and Figure 2). The TL upgrade areas are herein referred to as the "TL Study Area."

HDR reviewed the U.S. Fish and Wildlife Service National Wetland Inventory, U.S. Geological Survey (USGS) National Hydrography Dataset, USGS National Land Cover Database, USGS topographic quadrangles, U.S. Department of Agriculture (USDA) Digital Elevation Models, USDA-Natural Resources Conservation Service Web Soil Survey, Federal Emergency Management Agency National Flood Hazard Layer, and publicly available recent aerial images.

On January 24 and February 11, 2022, HDR environmental scientists Lyranda Thiem, Tennessee Qualified Hydrologic Professional In-Training (TN-QHP-IT), Caroline Ryciuk, and Sarah Weyler conducted field delineations of the Project Area for waters of the U.S., as defined under Section 404 of the Clean Water Act. Waters of the U.S. were delineated according to the methodology and guidance described in the USACE 1987 Wetland Delineation Manual, the 2008 Rapanos Rule, and the 2012 USACE Eastern Mountains and Piedmont Regional Supplement (Version 2.0). Streams were classified utilizing the methodology and guidance provided in Regulatory Guidance Letter 05-05 and the 2011 Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control *Guidance for Making Hydrologic Determinations* (Version 1.4). Waters of the U.S were mapped using a Trimble® Geo7X GPS unit capable of sub-meter accuracy. GPS points were post-processed utilizing Trimble® GPS Pathfinder Office Software.

The results of the desktop review and field survey are provided in this technical memorandum.

1.0 Project Area Description and Recent Weather Conditions

The TL Study Area consists of maintained TVA ROW. Dominant species within the ROW include grass species (*Poaceae spp.*), foxtail (*Setaria viridis*), soft rush (*Juncus effusus*), bushy bluestem (*Andropogon glomeratus*), field garlic (*Allium oleraceum*), velvet panic grass (*Dichanthelium scoparium*), tall goldenrod (*Solidago altissima*), black raspberry (*Rubus spp.*), and carex species (*Carex spp.*).

The TL Study Area is situated within Tims Ford Lake - Elk River watershed (Hydrologic Unit Code [HUC]-10 0603000304; Appendix A, Figure 3) and across three HUC-12 subbasins, consisting of Elk River watershed (HUC-12 060300030405), Rock Creek watershed (HUC-12 060300030402), and Spring Creek watershed (HUC-12 060300030401). On-site surface waters in the western portion drain to Turkey Creek, in the central portion drain to South Fork Blue Creek, and in the eastern portion drain to Spring Creek. These creeks generally flow to Tims Ford Lake/Elk River.

The USACE Antecedent Precipitation Tool (Appendix C) indicates the field delineation was conducted during normal weather conditions (Appendix C).

2.0 Soils Summary

The transmission line study area contains 17 soil types, according to the USDA-Natural Resources Conservation Service Web Soil Survey (Appendix E). The majority of the mapped soils are composed of Dickson silt loam (33.8 percent of the study area), Lawrence silt loam (22.6 percent of the study area), Baxter cherty silty clay loam (20.4 percent of the study area) and Mountview silt loam (5.1 percent of the study area), with other types of soil composing less than five percent of the study area each. Dickson silt loam is classified as being a hydric soil. Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper portion.

Baxter cherty silt loam (undulating phase), Dickson silt loam, Greendale cherty silt loam, Greendale silt loam, and Lawrence silt loam are classified as prime farmland soils.

3.0 Jurisdictional Delineation

During the January and February 2022 survey, HDR delineated potentially jurisdictional wetlands according to the methodology and guidance described in the 1987 Corps of Engineers Wetlands Delineation Manual and the 2012 USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0). Based on the TVA-developed modification of the 2001 U.S. Environmental Protection Agency Ohio Rapid Assessment Method for Wetlands specific to the TVA region, called the TVA Rapid Assessment Method or TVARAM, wetlands within the transmission line study area were evaluated by their functions and classified into three categories based on their TVARAM score: low quality (Score 0 to 29), moderate quality (Score 30 to 59), and high quality (Score 60 to 100). Streams were classified utilizing the methodology and guidance provided in Regulatory Guidance Letter 05-05 and the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control Guidance for Making Hydrologic Determinations

(Version 1.4) (TDEC 2011). Potential jurisdictional wetlands and streams were flagged in the field and mapped using a Trimble® Geo7x GPS unit capable of sub-meter accuracy. GPS points were post-processed utilizing Trimble® GPS Pathfinder Office software. Representative photographs can be found in Appendix D.

4.0 Results

JURISDICTIONAL WATERS OF THE U.S.

The results of the on-site field investigation conducted by HDR indicate there are five jurisdictional streams, all perennial totaling 189 linear feet, and two jurisdictional wetlands, totaling 2.57 acres, within the TL Study Area (Appendix A, Figure 7). The on-site surface waters drain Tims Ford Lake - Elk River HUC-10 0603000304. A summary of on-site jurisdictional waters is provided in Table 1.

NON-JURISDICTIONAL FEATURES

The on-site investigation also delineated three non-jurisdictional ephemeral streams (wet weather conveyances), totaling 444 linear feet within the TL Study Area (Appendix A, Figure 7).

Table 1. Summary of on-site jurisdictional waters of the U.S.

Feature Name	Latitude/Longitude (decimal degrees)	Type of Aquatic Resource	Cowardin Classification[1]	Figure No.	Photo No.	Data Point (DP) No.		Estimated Amount of Aquatic Resource in Review Area
						Wet	Up	
Jurisdictional Streams								
Stream 2			R5UB3	5-5	12,13	N/A		Length: 38 ft. Width: 4-6 ft. Area: 0.005 ac.
Stream 3			R5UB1	5-6	17,18	N/A		Length: 58 ft. Width: 3-4 ft. Area: 0.005 ac.
Stream 4			R5UB1	5-6	19,20	N/A		Length: 29 ft. Width: 8-10 ft. Area: 0.007 ac.
Stream 5			R5UB3	5-8	22,23	N/A		Length: 18 ft. Width: 4-6 ft. Area: 0.002 ac.
						Jurisdictional Streams Total:		**Length: 189 ft.**
Jurisdictional Wetlands								
Wetland 2			PEM	5-8	10	DP11 -W2	DP10 -UP9	

Feature Name	Latitude/Longitude (decimal degrees)	Type of Aquatic Resource	Cowardin Classification[1]	Figure No.	Photo No.	Data Point (DP) No.		Estimated Amount of Aquatic Resource in Review Area
						Wet	Up	
							Wetland Waters Total:	**Area: 2.57**
							Jurisdictional Waters of the U.S. Total:	**Length: 189 ft. Area: 2.57 ac.**

Table 2. Summary of on-site non-jurisdictional features.

Feature Name	Latitude/ Longitude (decimal degrees)	Type of Aquatic Resource	Cowardin Classification[1]	Figure No.	Photo No.	Estimated Amount of Aquatic Resource in Review Area
Ephemeral 1	35.334986/ -86.274215	Ephemeral	NA	5-1	24, 25	Length: 82 ft. Width: 1 ft. Area: 0.002 ac.
Ephemeral 2	35.330264/ -86.203532	Ephemeral	NA	5-3	26	Length: 118 ft. Width: 2-4 ft. Area: 0.01 ac.
Ephemeral 3	35.333121/ -86.132904	Ephemeral	NA	5-3	27,28	Length: 91 ft. Width: 2-4 ft. Area: 0.008 ac.
Ephemeral 4	35.332199/ -86.176810	Ephemeral	NA	5-5	16	Length: 136 ft. Width: 4 ft. Area: 0.005 ac.
Ephemeral 5	35.333132/ -86.132907	Ephemeral	NA	5-7	21	Length: 17 ft. Width: 2-4 ft. Area: 0.002 ac.
					Non-Jurisdictional Features Area Total:	

5.0 Impact Assessment

TL upgrade activities that would be necessary to interconnect the solar PV facility to TVA's existing electrical transmission network could result in stream and wetland impacts. The installation of the OPGW within the TL upgrade locations would not require pole replacements along the existing ROW. TVA would install five new pole structures adjacent to the Project substation, on the Project Site. These pole installations would avoid delineated wetlands and streams. Typically, fiber installation requires vehicular access along the ROW to each TL structure in order to support aerial work. Access across wetlands located in the ROW would be conducted in accordance with wetland BMPs to minimize soil compaction and ensure only temporary impacts result. This includes use of low ground pressure equipment, wetland mats, and dry season work scheduling. Permanent stream crossings that cannot be avoided would be designed to not impede runoff patterns and the natural movement of aquatic fauna and would comply with appropriate USACE permit requirements. Temporary stream crossings and other construction and maintenance activities associated with the TL upgrades would comply with

appropriate state permit requirements and TVA requirements as described in TVA's BMP manual.

TVA would adhere to all wetland mandates. Applicable Clean Water Act Section 404 and 401 permits would be obtained for impacts that cannot be avoided, and application of the terms and conditions of these permits would minimize these impacts. The permits may also require compensatory mitigation.

Attachments:

Appendix A: Figures
Appendix B: Wetland and Stream Data Forms
Appendix C: Normal Weather Conditions
Appendix D: Photographs
Appendix E: Soils Report

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

June 1, 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) – MOORE COUNTY SOLAR PROJECT – REQUEST FOR CONCURRENCE – PROJECT CODE: 2022-0036799

TVA has entered into a Power Purchase Agreement (PPA) with SR Tullahoma Solar, LLC (referred to herein as "SR Tullahoma"), a wholly-owned subsidiary of Silicon Ranch Corporation (SRC) to purchase the electric power generated by the solar photovoltaic (PV) facility in Moore County, Tennessee, contingent upon the completion of all necessary environmental reviews. To fulfill the PPA, SR Tullahoma is proposing to develop a 200 megawatt (MW) alternating current (AC) solar PV facility. The PV panel surface material would be a smooth glass with an anti-reflective (AR) coating. The project would consist of multiple parallel rows of PV panels on single-axis tracking structures, and direct current (DC) to air-cooled AC inverters. Associated actions include the construction of an electrical substation and switchyard on the project site, and the interconnection of the facility to TVA's existing Franklin–Wartrace No. 2 161-kilovolt (kV) transmission line (TL) that extends north-south through the site. TVA would also replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of an existing TL that extends outside of the project site and into Coffee and Franklin Counties. The proposed facility would occupy approximately 1,430 acres of the 3,463-acre project site. The long-term PPA would provide for TVA's purchase of electric power generated by the solar PV facility for 20 years. Specific details about the scope of this project can be found in the draft Environmental Impact Statement (EIS) available online at: https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/moore-county-solar-project. Additional information about field surveys performed including the bat presence/absence study and rare plant and aquatic animal surveys can be found in the attached SR Tullahoma_Moore County Solar_Wildlife and Vegetation Report_20220320.pdf.

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 22 species listed as federally endangered, threatened, candidate for listing, or delisted and monitored under the Endangered Species Act (ESA) that have the potential to occur within the project area in Moore, Coffee, and Franklin Counties, Tennessee or within the ten-digit Hydrologic Unit Code (HUC) of the proposed actions. These species include two plants (Price's potato-bean and white fringeless orchid), 11 mussels (birdwing pearlymussel, Cumberland pigtoe, fluted kidneyshell,

littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom), three fish (barrens topminnow, boulder darter, and pygmy madtom), one snail (painted snake coiled forest snail), one bird (bald eagle), three mammals (gray bat, Indiana bat, and northern long-eared bat (NLEB)) and one insect (monarch butterfly) that have the potential to occur within Moore, Coffee, and Franklin Counties, or ten-digit HUC based on historic range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No federally designated critical habitat for these species is present within or adjacent to the project action area; therefore, no adverse modification of critical habitats would occur.

Habitat assessments, including assessing and mapping potential bat habitat, were conducted by HDR environmental scientists and presence/absence surveys were conducted by TVA biologists for listed plant and aquatic species between April and July 2021 on the project site. Presence/absence mist net surveys were conducted by Copperhead Environmental Consulting to determine probable presence/absence of federally listed bats on the Project Site in May 2021. Field survey of the TL upgrade locations, including presence/absence surveys for listed plant species by TVA biologists, occurred in early 2022.

Approximately 559 wetland acres were identified on the project site during field surveys. No U.S. Army Corps of Engineers (USACE)-jurisdictional wetlands are anticipated to be affected by the Project. A total of 1.9 acres of non-USACE-jurisdictional open waters and 1.4 acre of non-USACE-jurisdictional/ Tennessee Department of Conservation (TDEC)-regulated wetlands would be impacted on the project site. Non-USACE-jurisdictional impacts would be the subject of ARAP permits and associated permit conditions, as regulated by TDEC. In addition, 50-foot buffers would surround on-site wetlands, regardless of regulatory jurisdiction, and these buffers would be maintained to provide an adequate upland vegetative buffer to further sustain wetland functions.

A total of 30 perennial or intermittent streams, seven ponds, and 36 ephemeral streams were delineated on the project site. Impacts to USACE-jurisdictional waters on the project site would be limited to 490 linear feet (LF) of jurisdictional ephemeral streams for the installation of solar arrays. These impacts would be subject to the conditions of the Section 404 permit(s) obtained for the project. Effects to non-USACE-jurisdictional/TDEC-regulated waters would total 7,856 LF. Impacts to jurisdictional perennial and intermittent streams, which are regulated by USACE, are not expected. In accordance with TVA requirements, 50-foot buffers surrounding wetlands and non-impaired perennial and intermittent streams in developed portions of the project site would be maintained as an avoidance measure, while 60-foot buffers would be maintained surrounding impaired perennial and intermittent streams on the project site. Managed sheep grazing would be employed to maintain low vegetation height and would reduce the negative impacts of herbicide use or other vegetation control measures.

An additional five perennial streams and five ephemeral streams were identified within the TL upgrade locations during field surveys in early 2022. Access across wetlands located in the right-of-way (ROW) with proposed TL upgrades would be conducted in accordance with wetland best management practices (BMPs) to minimize soil compaction and ensure only temporary

impacts result. Permanent stream crossings that cannot be avoided within the ROW would be designed to not impede runoff patterns and the natural movement of aquatic fauna and would comply with appropriate USACE permit requirements. Temporary stream crossings and other construction and maintenance activities associated with the TL upgrades would comply with appropriate state permit requirements and TVA requirements. BMPs include use of low ground pressure equipment, wetland mats, and dry season work scheduling.

Approximately 2,135 acres (62 percent) of the 3,463-acre project site are forested, approximately 542 acres (16 percent) consist of a mix of grassland and shrubs, approximately 397 acres (12 percent) are recently timbered, and approximately 202 acres (6 percent) are agricultural fields, pastures, or otherwise cleared, open land. For the proposed project, approximately 780 acres of forest would be removed and maintained as grassland to prevent shading of the solar arrays. Vegetation would also be removed for the construction of the proposed project substation, switching station, and associated access roads. TL upgrades are not anticipated to require tree clearing but may require limited limb trimming along existing access roads. Much of the forest on the project site has been heavily degraded by current and previous land use and supports populations of invasive plants.

Botanical field surveys determined that many of the flat areas (approximately 130 acres) supporting wet deciduous forest fit the concept of the globally rare plant community Willow Oak - White Oak / Black Highbush Blueberry - (Possumhaw) / Barratt's Sedge Wet Forest community. This rare forest type is only found in the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma. These areas possess regional conservation significance. The area supporting this rare plant community (approximately 130 acres) would be avoided by the project. Several state-listed plants were observed during surveys. No arrays would be placed in areas known to support these rare species. No Price's potato-bean or white fringeless orchid were observed during multiple field survey efforts by TVA botanists. See Appendix G in the attached Report for the Botanist Report. ***TVA has determined that the proposed actions would not impact Price's potato-bean and white fringeless orchid.***

Aquatic surveys for potential threatened and endangered species habitat occurred across the project site and ROW areas of impact. Aquatic species sampling was conducted in Hurricane Creek, Rock Creek, and their associated tributaries located within the project site in 2021. Most of the collected species were common; however, one previously undescribed species of burrowing crayfish (Cambarus sp.) was collected in the Hurricane Creek drainage within the project site. Potential habitat observed for barrens topminnow was determined to be marginal due to warm waters, encroaching non-desirable vegetation, and muddy bottoms. Spring-fed areas were surveyed for barrens topminnow and no fish of any species were observed after considerable survey effort. Field surveys determined that no suitable habitat exists in the project site or TL upgrade areas for the boulder darter, pygmy madtom, and the eleven identified federally listed mussels. Nonetheless, no arrays would be placed within areas known to support rare aquatic species or their habitats. See Appendix F in the attached Report for the Aquatic Biologist Report. ***TVA has determined that the proposed actions would not impact boulder darter, barrens topminnow, pygmy madtom, birdwing pearlymussel, Cumberland***

pigtoe, fluted kidneyshell, littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom.

Field surveys determined that no suitable habitat exists for the painted snake coiled forest snail on the project site or in the TL upgrade locations. ***TVA has determined that the proposed actions would not impact painted snake coiled forest snail.***

The closest known bald eagle record is 0.99 miles away next to Woods Reservoir in Franklin County. While suitable nesting trees occur throughout the project site, there is no large water body close enough for this to be considered a likely nesting site. Proposed actions are in compliance with the National Bald Eagle Management Guidelines. ***TVA has determined that the proposed actions would not impact bald eagle.***

The closest known gray bat roost to any component of the project is Woods Reservoir Dam, a maternity roost approximately 2.65 miles away from the TL upgrades. The closest known winter hibernaculum is Shipman Creek Cave approximately 3.66 miles away. However, no bats were reported there during the most recent survey event in 2002. The closest known Indiana bat hibernacula record is a historical record from Ward Cave approximately 5.34 miles away. One female Indiana bat was also tracked to a stop-over roost tree within two miles of the project site during a migration study by Copperhead Consulting. The closest known northern long-eared bat records are mist net captures approximately 1.5 miles away from the proposed TL upgrades on Arnold Air Force Base.

No known hibernacula for the federally listed gray bat, Indiana bat, or northern long-eared bat exist on the project site or the TL upgrade locations. Five caves occur within three miles of the project site and TL upgrade locations, with the closest approximately 0.99 miles away. Phase 1 Habitat Assessments for Indiana bat and northern long-eared bats were conducted on the project site in May 2021 following the 2020/2021 Range-Wide Indiana Bat Survey Guidelines. The habitat survey identified 1,983 acres of potential summer roosting habitat occurring on the project site in mature live hardwoods (including white oaks and shagbark hickories) and snags. Approximately 5.5 percent (109 acres) of the 1,983 acres was assessed as high-quality habitat, 65.6 percent (1,301 acres) as moderate-quality habitat, and 28.9 percent (573 acres) as low-quality habitat. Habitat suitability was determined by age of forest, forest structures, presence of suitable roosting trees, density of mid-story, and proximity to water. Buildings on the project site were also evaluated for their potential as suitable habitat for federally listed bat species. One building, a small shed, and a culvert had low potential for bat habitat, as these did not provide large areas of cover from the surrounding environment, nor were there signs of bat use. Based on an early 2022 survey of the TL upgrade locations, no suitable summer roosting habitat exists along access roads or in the TL ROW. Suitable foraging habitat for all three bats occurs on the project site.

Approximately 780 acres of potentially suitable summer roosting, low- to moderate-quality habitat, would be removed on the Project Site. High-quality bat habitat would be avoided. No tree removal is anticipated in the TL upgrade locations. Phase 2 Presence/Absence Surveys were conducted from May 17-19, 2021 and 171 net nights were completed. A total of 81 bats of

five species were captured including two pregnant female gray bats. No Indiana bats or northern long-eared bats were captured. Tree removal would be conducted between October 15-March 31, to the greatest extent feasible (while adhering to standard sediment control measures during the rainy season) or, at a minimum, to conduct these activities as late in summer as feasible.

See Appendix E in the attached Report for the Bat Survey Report. Due to the lack of impacts to potential hibernacula and probable absence determined via Phase 2 mist net surveys, ***TVA has determined that proposed actions may affect, but are not likely to adversely affect (NLAA) Indiana bat and northern long-eared bat.*** Although gray bats were documented foraging on the project site, no hibernacula or summer roosts would be impacted by the proposed actions. Site design has minimized impacts to bodies of water and BMPs will be used to further minimize impacts. ***TVA has determined that proposed actions may affect, but are not likely to adversely affect (NLAA) gray bat.***

There are no Section 7 requirements for the monarch butterfly as a candidate species and individuals of this species were not observed flying through the project during field surveys. Apart from the rare plant areas, most herbaceous and herbaceous/shrub plant communities found on the project site are heavily disturbed, early successional habitats. Milkweed was not reported as a dominant component of the vegetative composition on the project site. However, foraging habitat for the monarch butterfly does exist in herbaceous areas of the Project Site and TL ROW with proposed upgrades. The project site would be revegetated and maintained as a meadow with a mix of perennial and annual, non-invasive grasses and forbs to attract pollinators and serve as sheep pasture. ***Proposed actions would not jeopardize the continued existence of the monarch butterfly.***

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.

Sincerely,

W. Douglas White
Manager
Biological Compliance

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: 2022-0036799
Project Name: Moore County Solar

April 28, 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: 2022-0036799
Event Code: None
Project Name: Moore County Solar
Project Type: Power Gen - Solar
Project Description: The Tennessee Valley Authority (TVA) has entered into a Power Purchase Agreement (PPA) with SR Tullahoma Solar, LLC (referred to herein as "SR Tullahoma"), a wholly-owned subsidiary of Silicon Ranch Corporation (SRC) to purchase the electric power generated by the solar photovoltaic (PV) facility in Moore County, Tennessee. To fulfill the PPA, SR Tullahoma is proposing to develop a 200 megawatt (MW) alternating current (AC) solar PV facility. The project would consist of multiple parallel rows of PV panels on single-axis tracking structures, and direct current (DC) to alternating current (AC) inverters. Associated actions include the construction of an electrical substation and switchyard on the Project Site and the interconnection of the facility to TVA's existing Franklin–Wartrace No. 2 161-kilovolt (kV) transmission line (TL) that extends north-south through the site. The proposed facility would occupy approximately 1,430 acres of the 3,463-acre project site. TVA would also replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of the TL that extends outside of Project Site and into Coffee and Franklin Counties. More details about the scope and potential impacts will follow in a Section 7 consultation package submitted via email.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@35.3445787,-86.27327434077073,14z

Counties: Coffee , Franklin , and Moore counties, Tennessee

Endangered Species Act Species

There is a total of 16 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[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Boulder Darter *Etheostoma wapiti* Population: Shoal Creek No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5398	Experimental Population, Non-Essential

Clams

NAME	STATUS
Cumberland Pigtoe *Pleurobema gibberum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1981	Endangered
Fluted Kidneyshell *Ptychobranchus subtentus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1397	Endangered
Littlewing Pearlymussel *Pegias fabula* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2572	Endangered
Pale Lilliput (pearlymussel) *Toxolasma cylindrellus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3118	Endangered
Rabbitsfoot *Quadrula cylindrica cylindrica* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5165	Threatened
Shiny Pigtoe *Fusconaia cor* Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2573	Endangered
Slabside Pearlymussel *Pleuronaia dolabelloides* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1518	Endangered
Turgid Blossom (pearlymussel) *Epioblasma turgidula* Population: Wherever found; Except where listed as Experimental Populations No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7659	Endangered

Snails

NAME	STATUS
Painted Snake Coiled Forest Snail *Anguispira picta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7835	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME STATUS

Prices Potato-bean *Apios priceana* Threatened

Population:

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/7422

White Fringeless Orchid *Platanthera integrilabia* Threatened

Population:

No critical habitat has been designated for this species.

Species profile: https://ecos.fws.gov/ecp/species/1889

Critical habitats

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

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.

Migratory Birds

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

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

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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
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 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

NAME	BREEDING SEASON
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.

Breeding Season (■)

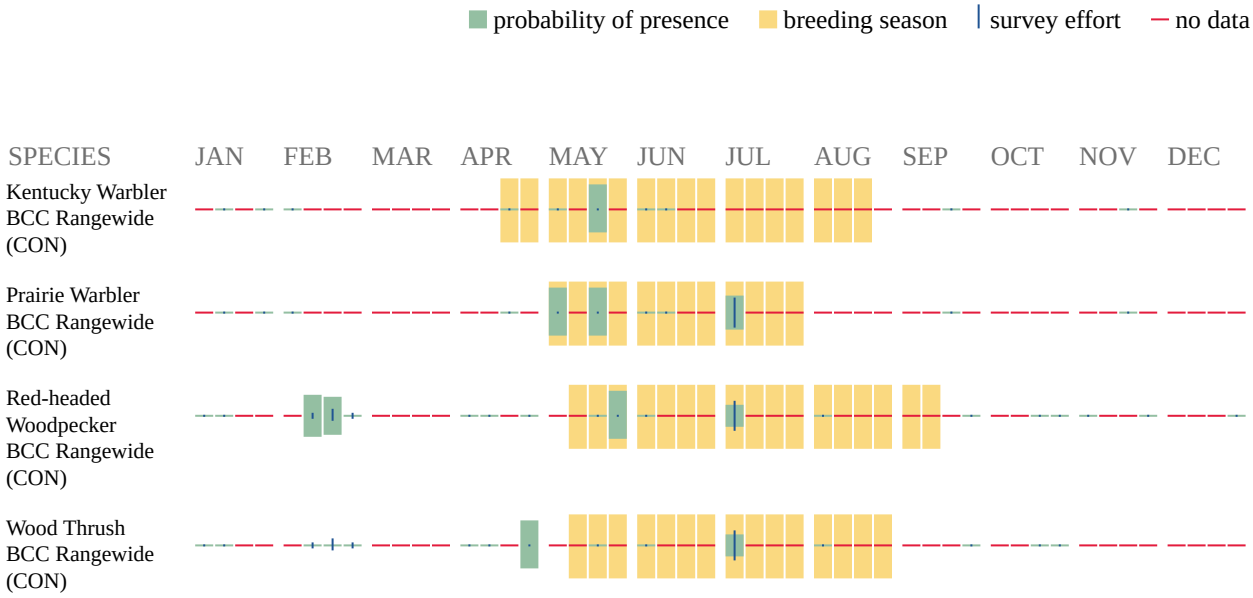
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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-incidental-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?
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.

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 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
Phone: 5034492373

Tennessee Ecological Services Field Office

FWS Log No: 2022-0036799

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: 2022.06.29 14:57:13 -05 00'

Field Supervisor Date

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

June 1, 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) – MOORE COUNTY SOLAR PROJECT – REQUEST FOR CONCURRENCE – PROJECT CODE: 2022-0036799

TVA has entered into a Power Purchase Agreement (PPA) with SR Tullahoma Solar, LLC (referred to herein as "SR Tullahoma"), a wholly-owned subsidiary of Silicon Ranch Corporation (SRC) to purchase the electric power generated by the solar photovoltaic (PV) facility in Moore County, Tennessee, contingent upon the completion of all necessary environmental reviews. To fulfill the PPA, SR Tullahoma is proposing to develop a 200 megawatt (MW) alternating current (AC) solar PV facility. The PV panel surface material would be a smooth glass with an anti-reflective (AR) coating. The project would consist of multiple parallel rows of PV panels on single-axis tracking structures, and direct current (DC) to air-cooled AC inverters. Associated actions include the construction of an electrical substation and switchyard on the project site, and the interconnection of the facility to TVA's existing Franklin–Wartrace No. 2 161-kilovolt (kV) transmission line (TL) that extends north-south through the site. TVA would also replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.8-mile portion of an existing TL that extends outside of the project site and into Coffee and Franklin Counties. The proposed facility would occupy approximately 1,430 acres of the 3,463-acre project site. The long-term PPA would provide for TVA's purchase of electric power generated by the solar PV facility for 20 years. Specific details about the scope of this project can be found in the draft Environmental Impact Statement (EIS) available online at: https://www.tva.com/environment/environmental-stewardship/environmental-reviews/nepa-detail/moore-county-solar-project. Additional information about field surveys performed including the bat presence/absence study and rare plant and aquatic animal surveys can be found in the attached SR Tullahoma_Moore County Solar_Wildlife and Vegetation Report_20220320.pdf.

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 22 species listed as federally endangered, threatened, candidate for listing, or delisted and monitored under the Endangered Species Act (ESA) that have the potential to occur within the project area in Moore, Coffee, and Franklin Counties, Tennessee or within the ten-digit Hydrologic Unit Code (HUC) of the proposed actions. These species include two plants (Price's potato-bean and white fringeless orchid), 11 mussels (birdwing pearlymussel, Cumberland pigtoe, fluted kidneyshell,

littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom), three fish (barrens topminnow, boulder darter, and pygmy madtom), one snail (painted snake coiled forest snail), one bird (bald eagle), three mammals (gray bat, Indiana bat, and northern long-eared bat (NLEB)) and one insect (monarch butterfly) that have the potential to occur within Moore, Coffee, and Franklin Counties, or ten-digit HUC based on historic range, proximity to known occurrence records, biological characteristics, and/or physiographic characteristics. No federally designated critical habitat for these species is present within or adjacent to the project action area; therefore, no adverse modification of critical habitats would occur.

Habitat assessments, including assessing and mapping potential bat habitat, were conducted by HDR environmental scientists and presence/absence surveys were conducted by TVA biologists for listed plant and aquatic species between April and July 2021 on the project site. Presence/absence mist net surveys were conducted by Copperhead Environmental Consulting to determine probable presence/absence of federally listed bats on the Project Site in May 2021. Field survey of the TL upgrade locations, including presence/absence surveys for listed plant species by TVA biologists, occurred in early 2022.

Approximately 559 wetland acres were identified on the project site during field surveys. No U.S. Army Corps of Engineers (USACE)-jurisdictional wetlands are anticipated to be affected by the Project. A total of 1.9 acres of non-USACE-jurisdictional open waters and 1.4 acre of non-USACE-jurisdictional/ Tennessee Department of Conservation (TDEC)-regulated wetlands would be impacted on the project site. Non-USACE-jurisdictional impacts would be the subject of ARAP permits and associated permit conditions, as regulated by TDEC. In addition, 50-foot buffers would surround on-site wetlands, regardless of regulatory jurisdiction, and these buffers would be maintained to provide an adequate upland vegetative buffer to further sustain wetland functions.

A total of 30 perennial or intermittent streams, seven ponds, and 36 ephemeral streams were delineated on the project site. Impacts to USACE-jurisdictional waters on the project site would be limited to 490 linear feet (LF) of jurisdictional ephemeral streams for the installation of solar arrays. These impacts would be subject to the conditions of the Section 404 permit(s) obtained for the project. Effects to non-USACE-jurisdictional/TDEC-regulated waters would total 7,856 LF. Impacts to jurisdictional perennial and intermittent streams, which are regulated by USACE, are not expected. In accordance with TVA requirements, 50-foot buffers surrounding wetlands and non-impaired perennial and intermittent streams in developed portions of the project site would be maintained as an avoidance measure, while 60-foot buffers would be maintained surrounding impaired perennial and intermittent streams on the project site. Managed sheep grazing would be employed to maintain low vegetation height and would reduce the negative impacts of herbicide use or other vegetation control measures.

An additional five perennial streams and five ephemeral streams were identified within the TL upgrade locations during field surveys in early 2022. Access across wetlands located in the right-of-way (ROW) with proposed TL upgrades would be conducted in accordance with wetland best management practices (BMPs) to minimize soil compaction and ensure only temporary

impacts result. Permanent stream crossings that cannot be avoided within the ROW would be designed to not impede runoff patterns and the natural movement of aquatic fauna and would comply with appropriate USACE permit requirements. Temporary stream crossings and other construction and maintenance activities associated with the TL upgrades would comply with appropriate state permit requirements and TVA requirements. BMPs include use of low ground pressure equipment, wetland mats, and dry season work scheduling.

Approximately 2,135 acres (62 percent) of the 3,463-acre project site are forested, approximately 542 acres (16 percent) consist of a mix of grassland and shrubs, approximately 397 acres (12 percent) are recently timbered, and approximately 202 acres (6 percent) are agricultural fields, pastures, or otherwise cleared, open land. For the proposed project, approximately 780 acres of forest would be removed and maintained as grassland to prevent shading of the solar arrays. Vegetation would also be removed for the construction of the proposed project substation, switching station, and associated access roads. TL upgrades are not anticipated to require tree clearing but may require limited limb trimming along existing access roads. Much of the forest on the project site has been heavily degraded by current and previous land use and supports populations of invasive plants.

Botanical field surveys determined that many of the flat areas (approximately 130 acres) supporting wet deciduous forest fit the concept of the globally rare plant community Willow Oak - White Oak / Black Highbush Blueberry - (Possumhaw) / Barratt's Sedge Wet Forest community. This rare forest type is only found in the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma. These areas possess regional conservation significance. The area supporting this rare plant community (approximately 130 acres) would be avoided by the project. Several state-listed plants were observed during surveys. No arrays would be placed in areas known to support these rare species. No Price's potato-bean or white fringeless orchid were observed during multiple field survey efforts by TVA botanists. See Appendix G in the attached Report for the Botanist Report. ***TVA has determined that the proposed actions would not impact Price's potato-bean and white fringeless orchid.***

Aquatic surveys for potential threatened and endangered species habitat occurred across the project site and ROW areas of impact. Aquatic species sampling was conducted in Hurricane Creek, Rock Creek, and their associated tributaries located within the project site in 2021. Most of the collected species were common; however, one previously undescribed species of burrowing crayfish (Cambarus sp.) was collected in the Hurricane Creek drainage within the project site. Potential habitat observed for barrens topminnow was determined to be marginal due to warm waters, encroaching non-desirable vegetation, and muddy bottoms. Spring-fed areas were surveyed for barrens topminnow and no fish of any species were observed after considerable survey effort. Field surveys determined that no suitable habitat exists in the project site or TL upgrade areas for the boulder darter, pygmy madtom, and the eleven identified federally listed mussels. Nonetheless, no arrays would be placed within areas known to support rare aquatic species or their habitats. See Appendix F in the attached Report for the Aquatic Biologist Report. ***TVA has determined that the proposed actions would not impact boulder darter, barrens topminnow, pygmy madtom, birdwing pearlymussel, Cumberland***

pigtoe, fluted kidneyshell, littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom.

Field surveys determined that no suitable habitat exists for the painted snake coiled forest snail on the project site or in the TL upgrade locations. ***TVA has determined that the proposed actions would not impact painted snake coiled forest snail.***

The closest known bald eagle record is 0.99 miles away next to Woods Reservoir in Franklin County. While suitable nesting trees occur throughout the project site, there is no large water body close enough for this to be considered a likely nesting site. Proposed actions are in compliance with the National Bald Eagle Management Guidelines. ***TVA has determined that the proposed actions would not impact bald eagle.***

The closest known gray bat roost to any component of the project is Woods Reservoir Dam, a maternity roost approximately 2.65 miles away from the TL upgrades. The closest known winter hibernaculum is Shipman Creek Cave approximately 3.66 miles away. However, no bats were reported there during the most recent survey event in 2002. The closest known Indiana bat hibernacula record is a historical record from Ward Cave approximately 5.34 miles away. One female Indiana bat was also tracked to a stop-over roost tree within two miles of the project site during a migration study by Copperhead Consulting. The closest known northern long-eared bat records are mist net captures approximately 1.5 miles away from the proposed TL upgrades on Arnold Air Force Base.

No known hibernacula for the federally listed gray bat, Indiana bat, or northern long-eared bat exist on the project site or the TL upgrade locations. Five caves occur within three miles of the project site and TL upgrade locations, with the closest approximately 0.99 miles away. Phase 1 Habitat Assessments for Indiana bat and northern long-eared bats were conducted on the project site in May 2021 following the 2020/2021 Range-Wide Indiana Bat Survey Guidelines. The habitat survey identified 1,983 acres of potential summer roosting habitat occurring on the project site in mature live hardwoods (including white oaks and shagbark hickories) and snags. Approximately 5.5 percent (109 acres) of the 1,983 acres was assessed as high-quality habitat, 65.6 percent (1,301 acres) as moderate-quality habitat, and 28.9 percent (573 acres) as low-quality habitat. Habitat suitability was determined by age of forest, forest structures, presence of suitable roosting trees, density of mid-story, and proximity to water. Buildings on the project site were also evaluated for their potential as suitable habitat for federally listed bat species. One building, a small shed, and a culvert had low potential for bat habitat, as these did not provide large areas of cover from the surrounding environment, nor were there signs of bat use. Based on an early 2022 survey of the TL upgrade locations, no suitable summer roosting habitat exists along access roads or in the TL ROW. Suitable foraging habitat for all three bats occurs on the project site.

Approximately 780 acres of potentially suitable summer roosting, low- to moderate-quality habitat, would be removed on the Project Site. High-quality bat habitat would be avoided. No tree removal is anticipated in the TL upgrade locations. Phase 2 Presence/Absence Surveys were conducted from May 17-19, 2021 and 171 net nights were completed. A total of 81 bats of

five species were captured including two pregnant female gray bats. No Indiana bats or northern long-eared bats were captured. Tree removal would be conducted between October 15-March 31, to the greatest extent feasible (while adhering to standard sediment control measures during the rainy season) or, at a minimum, to conduct these activities as late in summer as feasible.

See Appendix E in the attached Report for the Bat Survey Report. Due to the lack of impacts to potential hibernacula and probable absence determined via Phase 2 mist net surveys, ***TVA has determined that proposed actions may affect, but are not likely to adversely affect (NLAA) Indiana bat and northern long-eared bat.*** Although gray bats were documented foraging on the project site, no hibernacula or summer roosts would be impacted by the proposed actions. Site design has minimized impacts to bodies of water and BMPs will be used to further minimize impacts. ***TVA has determined that proposed actions may affect, but are not likely to adversely affect (NLAA) gray bat.***

There are no Section 7 requirements for the monarch butterfly as a candidate species and individuals of this species were not observed flying through the project during field surveys. Apart from the rare plant areas, most herbaceous and herbaceous/shrub plant communities found on the project site are heavily disturbed, early successional habitats. Milkweed was not reported as a dominant component of the vegetative composition on the project site. However, foraging habitat for the monarch butterfly does exist in herbaceous areas of the Project Site and TL ROW with proposed upgrades. The project site would be revegetated and maintained as a meadow with a mix of perennial and annual, non-invasive grasses and forbs to attract pollinators and serve as sheep pasture. ***Proposed actions would not jeopardize the continued existence of the monarch butterfly.***

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.

Sincerely,

W. Douglas White
Manager
Biological Compliance

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

October 13, 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) – MOORE COUNTY SOLAR PROJECT – REQUEST FOR RE-REVIEW AND CONCURRENCE – PROJECT CODE: 2022-0036799

On June 2, 2022, TVA consulted with your office regarding the potential effects of the proposed Moore County Solar project on federally listed species. On June 29, 2022, TVA received concurrence from your office regarding our determinations. Since that time, the project has identified additional tree clearing needs in order to accommodate electrical lines (buried or overhead) and refined panel designs and fence locations.

The original scope determined that approximately 780 acres of potentially suitable summer roosting habitat for Indiana bat and northern long-eared bat would be removed on the project site. Originally, we estimated that all habitat to be removed was of low- to moderate-quality. Re-assessment revealed that five additional acres of high-quality habitat would have been removed under the original scope. No tree removal was anticipated in the transmission line upgrade locations under the original scope. Phase 2 Presence/Absence Surveys were conducted across the entire project site and five species of bat were captured including two pregnant female gray bats. No Indiana bats or northern long-eared bats were captured. Tree removal was to be conducted between October 15-March 31, to the greatest extent feasible (while adhering to standard sediment control measures during the rainy season) or, at a minimum, to conduct these activities as late in summer as feasible. Based on the original project scope, TVA determined that proposed actions may affect but were not likely to adversely affect gray bat, Indiana bat, and northern long-eared bat.

Based on the original scope, TVA determined that proposed actions would not affect Price's potato-bean and white fringeless orchid, birdwing pearlymussel, Cumberland pigtoe, fluted kidneyshell, littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom, barrens topminnow, boulder darter, and pygmy madtom, bald eagle, and painted snake coiled forest snail. TVA also determined that proposed actions would not jeopardize the continued existence of the monarch butterfly.

The scope changes required for the electrical lines and updated panel and fence designs would all occur within the existing project site originally assessed. No new impacts associated with transmission line upgrade areas are proposed. The proposed scope changes would require an

additional 70 acres of tree clearing within the Project Site. Of these additional acres, 25 are high quality, 21 are moderate quality, and 19 are low quality summer roosting habitat for Indiana bat and northern long-eared bat. Therefore, total habitat removal would now be 30 acres of high-quality habitat, 550 acres of moderate-quality habitat, and 270 acres of low-quality habitat. (See attached maps).

Phase 2 presence/absence mist net surveys for bats conducted in 2021 included the entire project site, therefore survey results meet the level of effort required to cover this additional acreage of tree removal as dictated by the 2021 Indiana Bat Survey Guidelines. Based on these survey results, lack of impacts to potential hibernacula, and best management practices (BMPs) used near water bodies, TVA maintains our determinations that gray bats, Indiana bats, and northern long-eared bats may be affected but would not be adversely affected by the proposed actions.

Scope changes would not impact any habitat for other federally listed species originally assessed. Therefore, TVA maintains our previous determinations that proposed actions would not impact federally listed plants, fishes, muscles, snails, or federally protected bald eagles. Proposed actions also would not jeopardize the continued existence of the monarch butterfly.

Since our original consultation occurred, the tricolored bat was deemed “proposed endangered” under the Endangered Species Act. Therefore, this species is now included in this re-consultation. Similar to Indiana bat and northern long-eared bat, potentially suitable summer roosting and foraging habitat exists across the project site for tricolored bat. No hibernacula for this species occur on the project site and structures surveyed onsite (one building, a small shed, and a culvert) had low potential for bat habitat, as these did not provide large areas of cover from the surrounding environment, nor were there signs of bat use. No tricolored bats were captured during Phase 2 presence/absence mist net surveys for bats conducted in 2021. The closest known hibernaculum for this species is approximately 5.33 miles away on Normandy Reservoir. The closest known summer capture record is from 2019 approximately 5.29 miles away along a tributary of Normandy Reservoir. Based on negative survey results, lack of impacts to hibernacula, and use of BMPs along waterways, TVA has determined that the proposed actions would not jeopardize the continued existence of the tricolored bat.

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.

Sincerely,

W. Douglas White
Manager
Biological Compliance

LEGEND

- Study Area (3,463 acres)
- High Quality Bat Habitat
- Moderate Quality Bat Habitat
- Low Quality Bat Habitat

Potential Habitat Impact

- High Quality
- Moderate Quality
- Low Quality
- Solar Panels
- 200-ft Panel Buffer

DATA SOURCE: Bing Hybrid Aerial Imagery

0 Feet 1,500

Habitat Quality	Area (acres)
High Quality	5
Moderate Quality	529
Low Quality	251

bing

HDR SILICON RANCH

MOORE COUNTY SOLAR

POTENTIAL BAT HABITAT - ORIGINAL IMPACTS

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LEGEND

- Study Area (3,463 acres)
- High Quality Bat Habitat
- Moderate Quality Bat Habitat
- Low Quality Bat Habitat

Revised Potential Bat Habitat Impact

- High Quality
- Moderate Quality
- Low Quality
- MV Route
- Solar Panels
- Total Impact

DATA SOURCE: Bing Hybrid Aerial Imagery

0 Feet 1,500

Habitat Quality	Area (acres)
High Quality	30
Moderate Quality	550
Low Quality	270

bing

HDR SILICON RANCH

MOORE COUNTY SOLAR

POTENTIAL BAT HABITAT - REVISED IMPACTS

PATH: \\CLTSMAIN\GIS_DATA\GIS\PROJECTS\10532_SILICONRANCHCORPORATION\10296014_TO213_MOORE\7.2_WORK_IN_PROGRESS\MAP_DOCS\MXD\BAT_HABITAT_FIGURES\02_MOORE_BAT_REVISEDIMPACTS.MXD - USER: GMARCHICA - DATE: 9/26/2022

Tennessee Ecological Services Field Office

FWS Log No: 2022-0036799

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: 2022.12.05 09:09:37 -06'00'

Field Supervisor Date

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

October 13, 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) – MOORE COUNTY SOLAR PROJECT – REQUEST FOR RE-REVIEW AND CONCURRENCE – PROJECT CODE: 2022-0036799

On June 2, 2022, TVA consulted with your office regarding the potential effects of the proposed Moore County Solar project on federally listed species. On June 29, 2022, TVA received concurrence from your office regarding our determinations. Since that time, the project has identified additional tree clearing needs in order to accommodate electrical lines (buried or overhead) and refined panel designs and fence locations.

The original scope determined that approximately 780 acres of potentially suitable summer roosting habitat for Indiana bat and northern long-eared bat would be removed on the project site. Originally, we estimated that all habitat to be removed was of low- to moderate-quality. Re-assessment revealed that five additional acres of high-quality habitat would have been removed under the original scope. No tree removal was anticipated in the transmission line upgrade locations under the original scope. Phase 2 Presence/Absence Surveys were conducted across the entire project site and five species of bat were captured including two pregnant female gray bats. No Indiana bats or northern long-eared bats were captured. Tree removal was to be conducted between October 15-March 31, to the greatest extent feasible (while adhering to standard sediment control measures during the rainy season) or, at a minimum, to conduct these activities as late in summer as feasible. Based on the original project scope, TVA determined that proposed actions may affect but were not likely to adversely affect gray bat, Indiana bat, and northern long-eared bat.

Based on the original scope, TVA determined that proposed actions would not affect Price's potato-bean and white fringeless orchid, birdwing pearlymussel, Cumberland pigtoe, fluted kidneyshell, littlewing pearlymussel, pale lilliput, rabbitsfoot, round hickorynut, shiny pigtoe, slabside pearlymussel, tan riffleshell, and turgid blossom, barrens topminnow, boulder darter, and pygmy madtom, bald eagle, and painted snake coiled forest snail. TVA also determined that proposed actions would not jeopardize the continued existence of the monarch butterfly.

The scope changes required for the electrical lines and updated panel and fence designs would all occur within the existing project site originally assessed. No new impacts associated with transmission line upgrade areas are proposed. The proposed scope changes would require an

additional 70 acres of tree clearing within the Project Site. Of these additional acres, 25 are high quality, 21 are moderate quality, and 19 are low quality summer roosting habitat for Indiana bat and northern long-eared bat. Therefore, total habitat removal would now be 30 acres of high-quality habitat, 550 acres of moderate-quality habitat, and 270 acres of low-quality habitat. (See attached maps).

Phase 2 presence/absence mist net surveys for bats conducted in 2021 included the entire project site, therefore survey results meet the level of effort required to cover this additional acreage of tree removal as dictated by the 2021 Indiana Bat Survey Guidelines. Based on these survey results, lack of impacts to potential hibernacula, and best management practices (BMPs) used near water bodies, TVA maintains our determinations that gray bats, Indiana bats, and northern long-eared bats may be affected but would not be adversely affected by the proposed actions.

Scope changes would not impact any habitat for other federally listed species originally assessed. Therefore, TVA maintains our previous determinations that proposed actions would not impact federally listed plants, fishes, muscles, snails, or federally protected bald eagles. Proposed actions also would not jeopardize the continued existence of the monarch butterfly.

Since our original consultation occurred, the tricolored bat was deemed “proposed endangered” under the Endangered Species Act. Therefore, this species is now included in this re-consultation. Similar to Indiana bat and northern long-eared bat, potentially suitable summer roosting and foraging habitat exists across the project site for tricolored bat. No hibernacula for this species occur on the project site and structures surveyed onsite (one building, a small shed, and a culvert) had low potential for bat habitat, as these did not provide large areas of cover from the surrounding environment, nor were there signs of bat use. No tricolored bats were captured during Phase 2 presence/absence mist net surveys for bats conducted in 2021. The closest known hibernaculum for this species is approximately 5.33 miles away on Normandy Reservoir. The closest known summer capture record is from 2019 approximately 5.29 miles away along a tributary of Normandy Reservoir. Based on negative survey results, lack of impacts to hibernacula, and use of BMPs along waterways, TVA has determined that the proposed actions would not jeopardize the continued existence of the tricolored bat.

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.

Sincerely,

W. Douglas White
Manager
Biological Compliance

SILICON RANCH

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

Re: Moore County Solar Agreement to Avoid Sensitive Plant and Animal Habitats

Tennessee Valley Authority (TVA) entered into a power purchase agreement (PPA), subject to satisfactory completion of all applicable environmental reviews, with SR Tullahoma, LLC, a wholly owned subsidiary of Silicon Ranch Corporation (SRC), on December 16, 2020, to purchase the electric power generated by a proposed approximately 200-megawatt solar photovoltaic (PV) facility in Moore County, Tennessee, for a term of 20 years. The associated construction, operation, and maintenance of the solar PV facility are herein referred to as the Project.

To help fulfill TVA's responsibilities under the National Environmental Policy Act (NEPA), and Section 7 of the Endangered Species Act, biological field surveys were conducted across the entire 3,463 acre Study Area. Field surveys indicated that while large portions of the Study Area have been heavily disturbed by previous and current land use, significant portions of the property continue to support sensitive plant and animal species. Twenty-nine occurrences of eight state listed plant species were located within the Study Area. These species include Barratt's Sedge, Button Sedge, Dwarf Sundew, Slender Blue Flag, Black Footed Quillwort, Virginia Chain Fern, Iris Leaved Yellow-Eyed Grass, and Tennessee Feather Bells. Tennessee Feather Bells are globally imperiled and only occur at approximately 10 locations in Tennessee that are experiencing rapid development. The conservation of Tennessee Feather Bells found within the Study Area is important for preventing extinction of the species. In addition to individual species, the Study Area also supports a globally rare forest type that is only found in the Eastern Highland Rim of Tennessee in the vicinity of Tullahoma and nowhere else on Earth.

Biologists also discovered an undescribed species of crayfish immediately adjacent to Hurricane Creek within and just outside of the Study Area. This species is new to science and is likely restricted to a narrow area within and adjacent to the Study Area. The sensitive resource areas where these plant and animal sensitive species and habitats are located within the Study Area are identified on Attachment A.

To ensure that the sensitive resource areas identified on Attachment A as sensitive plant habitat and crayfish habitat are adequately protected, SRC and SR Tullahoma, LLC commit to avoid all sensitive resource areas identified on Attachment A, meaning that no solar PV facility Project components or regenerative energy activities, including sheep operations or vegetation management, will occur in the sensitive resource areas identified on Attachment A for the entire 20-year term of the PPA and any extensions of the PPA. SRC may choose to enhance the sensitive resource areas identified on Attachment A if a conservation easement can be arranged with a SRC partner of choice or if a

conservation plan can be negotiated in coordination with TVA. Development of a detailed conservation plan that SRC implements would, if needed, be based on an understood monitoring plan and engage a stakeholder group to help direct next steps within reasonable, agreed-upon limits of cost and effort.

TVA agrees that the avoidance of the sensitive resource areas identified in Attachment A by any solar PV facility Project components or regenerative energy activities, including sheep operations or vegetation management, would prevent significant impacts to sensitive plant or animal species by the Project, support the conclusions in the Environmental Impact Statement prepared under NEPA, and adequately protect these species and sites from the Project. In addition, enhancement of sensitive areas through a conservation plan negotiated with TVA and following the conditions set forth above has the potential to restore ecological function and improve habitats over the life of the Project.

Sincerely,

B Schubert

Boris Schubert
SR Tullahoma, LLC

ACCEPTED AND AGREED

THIS 24 DAY OF August 2022

Ying P. Ayliffe

Ying P. Ayliffe
Director, Origination & Utility Scale Solar
Tennessee Valley Authority

BY: _____

ITS: _____

Signature: Boris Schubert

Email: boris.schubert@siliconranch.com

Tullahoma - TVA Avoidance Letter (Environmental Species and Habitats) For Execution

Final Audit Report 2022-08-23

Created:	2022-08-18
By:	Rob Riley (rob.riley@siliconranch.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAtu8zxxojTojhGGwSz4Q9XuQ-_TBJlHNH

"Tullahoma - TVA Avoidance Letter (Environmental Species and Habitats) For Execution" History

Document created by Rob Riley (rob.riley@siliconranch.com)
2022-08-18 - 8:06:24 PM GMT- IP address: 136.58.88.138

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2022-08-18 - 8:06:42 PM GMT

Email viewed by Boris Schubert (boris.schubert@siliconranch.com)
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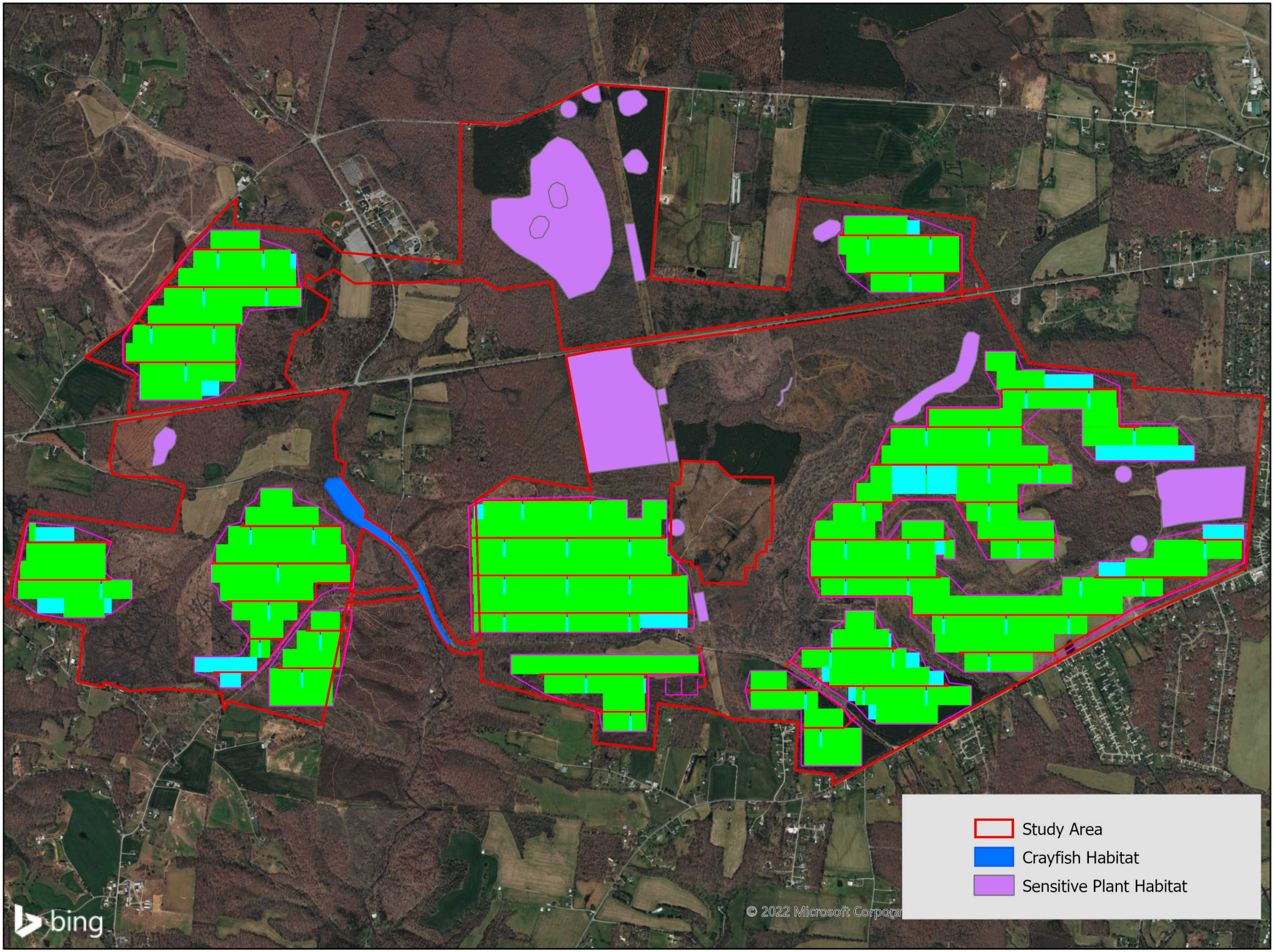
Document e-signed by Boris Schubert (boris.schubert@siliconranch.com)
Signature Date: 2022-08-23 - 6:35:22 PM GMT - Time Source: server- IP address: 38.32.72.10

Agreement completed.
2022-08-23 - 6:35:22 PM GMT


Study Area
Crayfish Habitat
Sensitive Plant Habitat
bing
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COPPERHEAD
ENVIRONMENTAL CONSULTING

Final Report

Listed Bat Presence/Probable Absence Survey for SRC/TO 213/Moore Site – Moore County, Tennessee

Submitted to:

Harriet L. Richardson Seacat, M.A.

Environmental Project Manager

HDR

440 S. Church Street, Suite 1000

Charlotte, NC 28202

14 June 2021

COPPERHEAD ENVIRONMENTAL CONSULTING, INC.
P.O. BOX 73 ■ 471 MAIN STREET ■ PAINT LICK, KENTUCKY 40461
(859) 925-9012 OFFICE (859) 925-9816 FAX

www.copperheadconsulting.com

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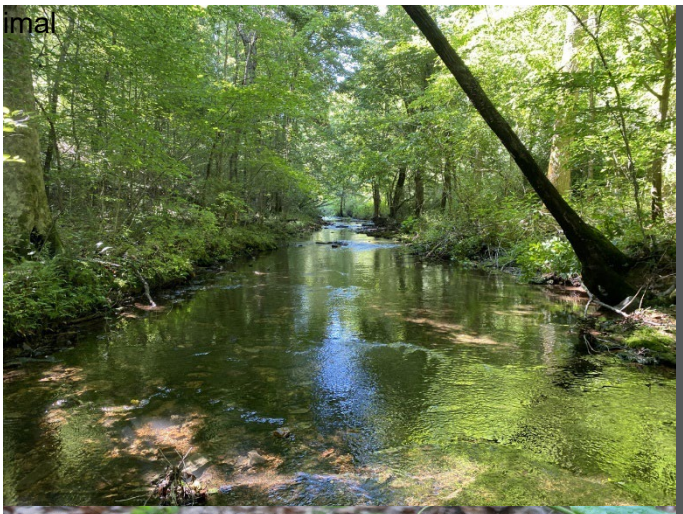

Wildlife and Vegetation Assessment - *FINAL*

Moore County Solar

SR Tullahoma, LLC

Moore County, Tennessee

March 2022

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 29, 2021

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA) POWER PURCHASE AGREEMENT (PPA) MOORE COUNTY SOLAR ARRAY MOORE COUNTY, TENNESSEE (TVA TRACKING NUMBER – CID 80060) (35.350211 -86.269295)

TVA is proposing to enter into a PPA with Silicon Ranch Tullahoma, LLC (SR Tullahoma) for a 200 megawatts solar photovoltaic (PV) generating facility located near Tullahoma, in Moore County, Tennessee (Figure 1)The facility would be located on an assemblage of parcels making up approximately3,312-acres. A portion of the study area is a pine plantation and actively logged. In addition, much of the property is the former Motlow Artillery Range, which was used by the Army during World War II (Figure 2). TVA proposes that the area of potential effects (APE) should be considered to be the footprint where ground disturbance could occur as a result of the undertaking including the proposed solar arrays and any supporting infrastructure as well as the 0.5 mile radius of the project area and within the visual line of site that may have a visual effect to historic properties.

SR Tullahoma contracted with New South Associates, Inc. (New South) to conduct a Phase I Cultural Resources survey. For your review, please find the proposed research design for the Phase I Cultural Resources survey, prepared by New South enclosed. Pursuant to 36 CFR § 800.4(b)(1), TVA finds that the survey design presented here is a reasonable and good faith effort to carry out identification efforts.

By this letter, TVA is initiating consultation regarding the proposed undertaking. TVA is proposing to conduct Phase I Cultural Resources survey of the APE as described in the enclosed scope of work.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the National Register of Historic Places.

If you have any questions or comments, please contact Michaelyn Harle by email at mharle@tva.gov.

Sincerely,

Clinton E. Jones
Manager
Cultural Compliance

MSH:ABM
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

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

April 29, 2021

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

RE: TVA / Tennessee Valley Authority, Purchase Power Agreement, Silicon Ranch Tullahooma, Moore County Solar Array, Tullahoma Moore County, TN

Dear Mr. Jones:

At your request, our office has reviewed the above-referenced cultural resources survey cope of work. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we find that the proposed survey methods are adequate for the identification of historic properties within the area of potential effect.

Your continued cooperation is appreciated.

Sincerely,

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

EPM/jmb

From: Shuler, Marianne M <mmshuler@tva.gov>
Sent: Friday, April 30, 2021 3:01 PM
Subject: TVA-Moore County Solar Project-Initiation of Consultation-MooreCoTN-CID80060-30Apr2021

Good Afternoon
By this email I am sending the attached initiation of consultation letter regarding TVA's proposal to enter into a power purchase agreement with Silicon Ranch Tullahoma, LLC for a 200 megawatts solar photovoltaic generating facility located near Tullahoma, in Moore County, Tennessee.

Please let me know by May 30 if you have any questions or comments on the proposed undertaking or proposed Phase I survey.
Thanks
Marianne

Due to COVID-19 safety precautions enacted by TVA, I am currently teleworking.

Marianne Shuler
Senior Specialist, Archaeologist & Tribal Liaison
Cultural Compliance

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

(865)253-1265 (w)
mmshuler@tva.gov

May 14, 2021

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

Dear Ms. Shuler:

Thank you for the research design and a letter initiating consultation on a proposed power purchase agreement with Silicon Ranch Tullahoma, LLC for a solar photovoltaic generating facility in Moore County, Tennessee (CID 80060). We accept the invitation to consult under Section 106 of the National Historic Preservation Act.

The Chickasaw Nation concurs that the procedures outlined in the research design should adequately test the area to locate any potential cultural resources in the project area of potential effects. We wish to review the cultural resource report once it is available. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

Your efforts to preserve and protect significant historic properties are appreciated. If you have any questions, please contact Ms. Karen Brunso, tribal historic preservation [redacted]

Sincerely,

Lisa John, Secretary
Department of Culture and Humanities

Cc: mmshuler@tva.gov

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

September 8, 2021

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA) POWER PURCHASE AGREEMENT (PPA) MOORE COUNTY SOLAR ARRAY, MOORE COUNTY, TENNESSEE – REVISED PHASE I SURVEY SCOPE OF WORK (SOW) (TVA TRACKING NUMBER – CID 80060) (35.350211 - 86.269295)

In a letter dated April 29, TVA initiated consultation with your office regarding the proposed Moore County Solar Array. In the letter, we provided a SOW by New South and Associates (New South). The letter also stated that a portion of the study area is a pine plantation and was being actively logged. Currently, New South is conducting the Phase I survey of the survey area. During the ongoing survey, they identified several areas have been heavily modified due to past timbering operations on private property. New South recommends a change to the SOW based on the field results to date.

Many of the areas located on relatively flat ridgetops have been clear-cut and heavily modified, making them difficult and sometimes dangerous to access. Based on site conditions and results of portions of survey already completed that have identified heavily disturbed soil profiles, New South is proposing to modify the survey methodology within some of these upland locations shown in Figure 1. Shovel testing that has already occurred at these locations indicates the soils are eroded, with subsoil at or just below surface. When the subsoil is not exposed, shovel tests indicate a thin humic layer overlies subsoil. At these locations, there are areas with good ground visibility, but these areas are localized. There also are areas where the ground is inaccessible due to the piles of logging debris. These locations are away from water sources and typically do not have a high potential for archaeological deposits. The sites that have been identified as part of the current survey have been around the edges of these landforms closer to water sources. Based on this ongoing fieldwork, New South proposes to modify the SOW to expand the intervals within these to every third shovel test (90-meter grid) to confirm that the subsoil is at or near the surface. Pedestrian survey will be conducted in areas with good ground visibility. If any evidence of intact Holocene soils are identified New South will shift back to the 30-meter grid. In addition, if any cultural resources are identified the rest of the landform will be tested in a 30-meter grid.

By this letter, TVA is notifying you of the change in field methodology based on in-field site conditions. The proposed methodology is keeping within the *Tennessee SHPO Standards and Guidelines for Archaeological Resources Management Studies.*

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the National Register of Historic Places.

Pursuant to 36 CFR § 800.4(b)(1), TVA finds that based on discussion with New South the survey redesign presented here is a reasonable and good faith effort to carry out identification efforts.

If you have any questions or comments, please contact Michaelyn Harle by email, mharle@tva.gov.

Sincerely,

Clinton E. Jones
Manager
Cultural Compliance

MSH:ABM
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

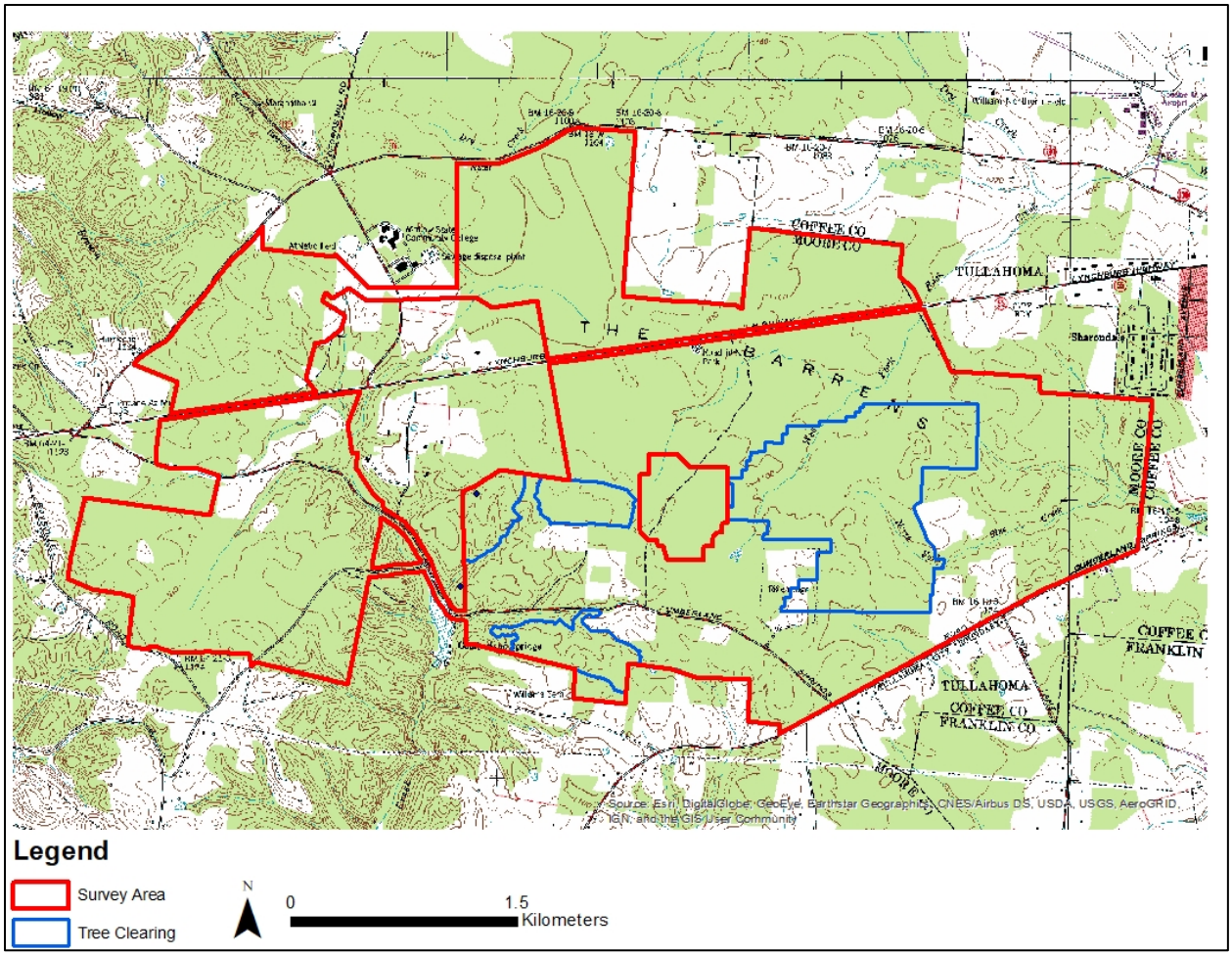

Figure 1: Location of the identified previous upland tree clearing.

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

September 9, 2021

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

RE: TVA / Tennessee Valley Authority, Purchase Power Agreement, Silicon Ranch Tullahooma, Moore County Solar Array (35.350211 -86.269295), CID 80060, Tullahoma Moore County, TN

Dear Mr. Jones:

At your request, our office has reviewed the revised survey scope of work for the above-referenced undertaking. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we find that the revised scope of work meets the Tennessee SHPO Standards and Guidelines for Archaeological Resource Management Studies.

Your continued cooperation is appreciated.

Sincerely,

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

EPM/jmb

From: Pilakowski, Ashley Anne
To: RichardsonSeacat, Harriet
Subject: FW: TVA-Moore County Solar Project-REVISED Phase I SOW-
Date: Wednesday, September 8, 2021 12:41:08 PM
Attachments: image009.png
image010.png
image011.png
image012.png
image013.png
image014.png
image015.png
image016.png
image017.png
TVA_Moore County Solar Project_REVISED SOW_MooreCoTN_SHPO_CID80060_8Sept2021.pdf

---

FYI-

From: McCampbell, Amy Boardman <aboardma@tva.gov>
Sent: Wednesday, September 08, 2021 12:23 PM
To: Jones, Clinton E <cjones5@tva.gov>
Cc: Booker, Dawn <sdbooker@tva.gov>; Easley, Michael C <mceasley@tva.gov>; Harle, Michaelyn S <mharle@tva.gov>; Hartline, Brandon Joseph <bjhartline@tva.gov>; Jacks, Susan R <srjacks@tva.gov>; Nelson, Dana Marie <dmball@tva.gov>; Pilakowski, Ashley Anne <aapilakowski@tva.gov>; Tolene, Rebecca Chunn <rctolene@tva.gov>; Wells, Bryan <wbwells@tva.gov>; White, William Douglas <wdwhite0@tva.gov>; Pickell, Teresa B <tbpickell@tva.gov>
Subject: RE: TVA-Moore County Solar Project-REVISED Phase I SOW-

Hello,

For your records, the attached letter has been sent to the TN SHPO. A tribal letter has also been sent as appropriate.

Thanks,

Amy McCampbell
Business Support Representative
Federally Mandated Environmental Compliance

TENNESSEE VALLEY AUTHORITY

W. 865-632-2931 **M.** 865-250-9640 **E.** aboardman@tva.gov
400 West Summit Hill Drive, Knoxville, TN 37902

From: Shuler, Marianne M <mmshuler@tva.gov>
Sent: Wednesday, September 8, 2021 10:06 AM
Subject: TVA-Moore County Solar Project-REVISED Phase I SOW-
Importance: High

Good Morning
By this email I am sending the enclosed letter regarding TVA's proposed Moore County Solar Project located in Moore County, Tennessee. TVA previously consulted with your office on the proposed Phase I scope of work in April of this year. The Phase I survey is currently being conducted.

TVA is now proposing to revise the Phase I scope of work based on field results. The proposed revised scope of work is enclosed for your review.

As field work is currently on going, TVA respectfully requests for any comments on the proposed revision **by September 15th**. If there are no concerns with this proposed change the revised field methodology will begin on Sept 16th.

Thank you
Marianne

Due to COVID-19 safety precautions enacted by TVA, I am currently teleworking.

-

Marianne Shuler
Senior Specialist, Archaeologist & Tribal Liaison
Cultural Compliance

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

(865)253-1265 (w)
mmshuler@tva.gov

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immediately by email and delete the original message.

TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 28, 2022

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA) POWER PURCHASE AGREEMENT (PPA), MOORE COUNTY SOLAR ARRAY, MOORE AND FRANKLIN COUNTIES, TENNESSEE –PHASE I SURVEY RESULTS (TVA TRACKING NUMBER – CID 80060) (35.350211 -86.269295)

In a letter dated April 29, 2021, TVA initiated consultation with your office regarding TVA's proposal to enter into a PPA with Silicon Ranch Tullahoma, LLC (SR Tullahoma) for a solar photovoltaic (PV) generating facility located near Tullahoma, in Moore County, Tennessee. In this consultation, TVA provided a description of the project, our recommendation for the area of potential effects (APE), and our proposal for historic properties identification efforts. TVA received agreement from your office and no concerns from consulting federally recognized Indian tribes (Tribes). Following this consultation, TVA modified the survey methodology slightly to account for onsite conditions (letter dated September 8, 2021). In a letter dated September 9, 2021, your office agreed with the revised survey methodology. Responses from consulting Tribes also expressed no concern about this change in survey methodology.

The PV facility would be located on an assemblage of parcels making up the approximately 3,463-acre footprint. The PV facility would connect to TVA's existing adjacent Franklin–Wartrace No. 2, a circa 1982, 161-kilovolt (kV) transmission line (TL) that extends north-south through the project site. To interconnect to TVA's existing electrical grid, SR Tullahoma and TVA would build an on-site 161-kV switching station (see attached preliminary layout). TVA, in consultation, determined the APE to be the footprint where ground disturbance could occur as a result of the undertaking including the proposed solar arrays and the supporting infrastructure as well as areas within a 0.5-mile radius of the project area that are within the visual line of site, where the PV array may have a visual effect to historic properties. To allow for flexibility of design the entire 3,463-acre footprint was subject to archaeological survey.

SR Tullahoma contracted with New South Associates (NSA) to conduct the Phase I cultural resources survey in accordance with the revised scope of work provided to your office in a letter dated September 8, 2021. The resulting report titled, Phase I Cultural Resources Survey of the Proposed Moore County Solar Farm Site can be downloaded.

Archaeological Results

Three previously recorded archaeological sites (40ME18, 40ME35, and 40ME42), located within the archaeological survey area, were revisited during the current survey. In addition, the archaeological survey identified 18 isolated finds, one newly identified precontact archaeological site (40ME46), and four newly identified early twentieth century archaeological sites (40ME47, 40ME48, 40ME49, 40ME50). NSA recommends the five newly identified archaeological sites (40ME46, 40ME47, 40ME48, 40ME49, and 40ME50) and two of the previously recorded sites (40ME18 and 40ME42) not eligible for the National Register of Historic Places (NRHP). Although NSA recommends site 40ME35 (Jabel Ray Homeplace Cemetery) ineligible, TVA will avoid the cemetery by placing a 20-meter avoidance buffer surrounding it and would follow Tennessee State cemetery laws. A portion of previously recorded site 40ME42, a short- term military encampment, is within the archaeological survey area in the southwest-central portion. NSA identified no cultural materials within the previously recorded boundaries of site 40ME42 in the survey area and proposed a reduction in the site boundaries within the surveyed area. Although there is a possibility that the site contains intact deposits outside the survey area and should remain unassessed for NRHP eligibility, the proposed undertaking would have no effect to the site outside the APE.

Architectural Resources

The historic architectural survey resulted in documentation of 12 architectural resources located within the APE. NSA recommends that 11 of the identified resources are not eligible for listing in the NRHP based on inability to associate the structures with important person(s) and event(s), lack of architectural distinction, and/or lack of integrity. NSA recommends one resource, the Motlow House (HS-7), eligible for listing in the NRHP under Criterion C for architectural significance at the local level. Due to forested screening and the project's distance from resource HS-7, NSA recommends that the proposed project will have no adverse effect on the Motlow House.

Addendum Report: Transmission Upgrades:

The previously mentioned Phase I cultural resources survey was conducted prior the identification of existing TVA TL upgrades that may be needed in support of the project. TVA proposes to replace the existing overhead ground wire with new optical ground wire (fiber) along an approximately 9.8-mile portion of the Franklin-Wartrace TL between Pole Structures 272 and 273 and the Franklin substation, east of the PV facility site. In order to access various work locations, TVA will use approximately 3.8 miles of associated access roads (AR), each with a 6 meter (20 feet) wide right-of-way (ROW). Work around structures for the new splice cases will be within an area measuring 30-meters wide (100 feet) by 60-meters long (200 feet).

TVA revised the APE to include all areas of ground disturbance including work locations at poles and access roads. ARs that do not follow TVA's TL ROW may be up to 6m wide. If these ARs are either a paved or gravel road or driveway, the APE would narrow to the width of the existing road. In order to give TVA greater flexibility, the APE for ARs along the ROW would increase to the width of the ROW. As stated in Appendix A, Section E.5 of TVA's Section 106 programmatic agreement, replacement of ground wire is considered an activity unlikely to affect historic properties. Furthermore, TVA considers the addition of dead ends and splice cases activities that would have no effect to above-ground historic properties, should they be present in the viewshed.

A portion of the of the TL ROW (43.73 acres) is on Arnold Air Force Base (AFB) property. Pursuant to 36 C.F.R. § 800.2(a)(2) the Department of Defense defers to TVA as the lead federal agency and TVA will consult with all consulting parties on their behalf for this portion of the undertaking. The APE within the boundaries of Arnold AFB has been previously surveyed (Matternes 1997). One site, 40FR234, a low density precontact lithic scatter, was previously identified within the APE. The site was recommended as ineligible for the NRHP based on lack of integrity and a low density of cultural material. Despite the ineligibility recommendation, at the request of Arnold AFB to maintain compliance with Air Force cultural resource management guidance, TVA agreed to avoid affecting site 40FR234. The only activity required for the undertaking within the boundaries of site 40FR234 is traversing the site. In order to avoid impacting site, TVA would use wetland matting at this location to prevent damage by vehicles. The requirement for matting would be included on design sheets that are used by TVA construction and maintenance groups. These drawings are consulted each time TVA considers any type of physical work on a TL.

Findings and Effects

TVA has read the enclosed reports and agrees with the recommendations of the authors. TVA finds that the proposed undertaking would have no effects on archaeological sites and no adverse effect to any historic properties.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP.

Pursuant to 36 CFR Part 800.5(b) we are notifying you of TVA's finding of no adverse effect; providing the documentation specified in § 800.11(e); and inviting you to review the finding. Also, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties.

If you have any questions or comments, please contact Michaelyn Harle by email, mharle@tva.gov.

Sincerely,

James W. Osborne, Jr.
Manager
Cultural Compliance

MSH: ERB
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

Ms. Shannon Allen
NEPA, Natural & Cultural Resources Planner
AEDC/TSDCI
100 Kindel Drive
Arnold Air Force Base, TN 37389-2322

Reference Cited

Matternes, Jennifer H.
1997 Phase I Survey for Archaeological Resources of 16,188 ha (40,000 acres) at Arnold Engineering Development Center, Arnold Air Force Base, Coffee and Franklin Counties, Tennessee.

TENNESSEE HISTORICAL COMMISSION
STATE HISTORIC PRESERVATION OFFICE
2941 LEBANON PIKE
NASHVILLE, TENNESSEE 37243-0442
OFFICE: (615) 532-1550
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May 3, 2022

Mr. James W. Osborne Jr.
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, TN 37902

RE: TVA / Tennessee Valley Authority, Power Purchase Agreement for Moore County Solar Array, CID 80060, Moore and Franklin Counties, TN

Dear Mr. Osborne:

Pursuant to your request, this office has reviewed documentation concerning 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 concur that no archaeological resources will be affected by this undertaking. We further concur that the Motlow House is eligible under Criterion C as a good example of a mid-twentieth century Colonial Revival residence with Classical influences, notably the portico. The period of significance would be limited to construction date of 1958. The proposed boundaries appear to be appropriate. Finally, we concur that your proposed undertaking will not adversely affect the Motlow House.

This office has no objection to the implementation of this project as currently planned. If project plans are changed or previously unevaluated archaeological resources are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions and comments may be directed to Casey Lee (615 253-3163). We appreciate your cooperation.

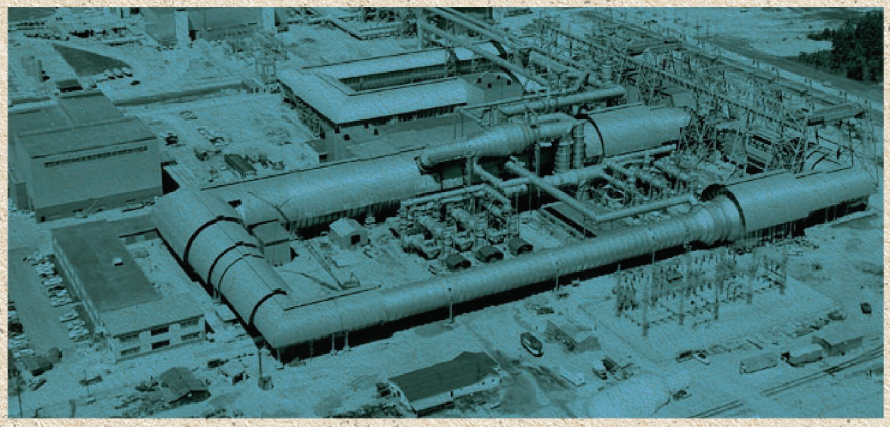
Sincerely,

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

PHASE I CULTURAL RESOURCES SURVEY OF THE PROPOSED MOORE COUNTY SOLAR FARM SITE

MOORE COUNTY, TENNESSEE



NEW SOUTH ASSOCIATES, INC.

Phase I Cultural Resources Survey of the Proposed Moore County Solar Farm Site

Moore County, Tennessee

Contract 30020907, Task Order 213, Purchase Order 2606

Report submitted to

HDR, Inc. • 440 South Church Street, Suite 1000 • Charlotte, North Carolina 28202

Report prepared by

New South Associates • 6150 East Ponce de Leon Avenue • Stone Mountain, Georgia 30083
and
New South Associates • 1629 Fatherland Street • Nashville, Tennessee 37206

Danny Gregory, RPA – Principal Investigator

Caleb Hutson, RPA – Archaeologist and Co-Author
Paul Hoffman – Historian and Co-Author
Ashley Cavanaugh – Archaeologist and Co-Author
Kelly Higgins – Archaeologist and Co-Author

February 4, 2022 • Final Report
New South Associates Technical Report 4249

Archaeological Survey for the Transmission Line Upgrades Associated with Moore County Solar

Moore and Franklin Counties, Tennessee

March 2022

By: Laura Short
Paloa Lopez-Magana
Mary Schmidt
Jessica Forbes

Principal Investigator: Laura Short, Ph.D., R.P.A.

Archaeological Survey for the Transmission Line Upgrades Associated with Moore County Solar

Moore and Franklin Counties, Tennessee

By:

Laura Short

Paola Lopez-Magana

Mary Schmidt

Jessica Forbes

Principal Investigator:

Laura Short, Ph.D., R.P.A.

Prepared for:

Silicon Ranch Corporation

222 Second Ave S, Suite 1900

Nashville, TN 37201

Prepared by:

17111 Preston Rd, Suite 300
Dallas, TX 75248

March 2022

Appendix B – Scoping Documentation and Public Comments

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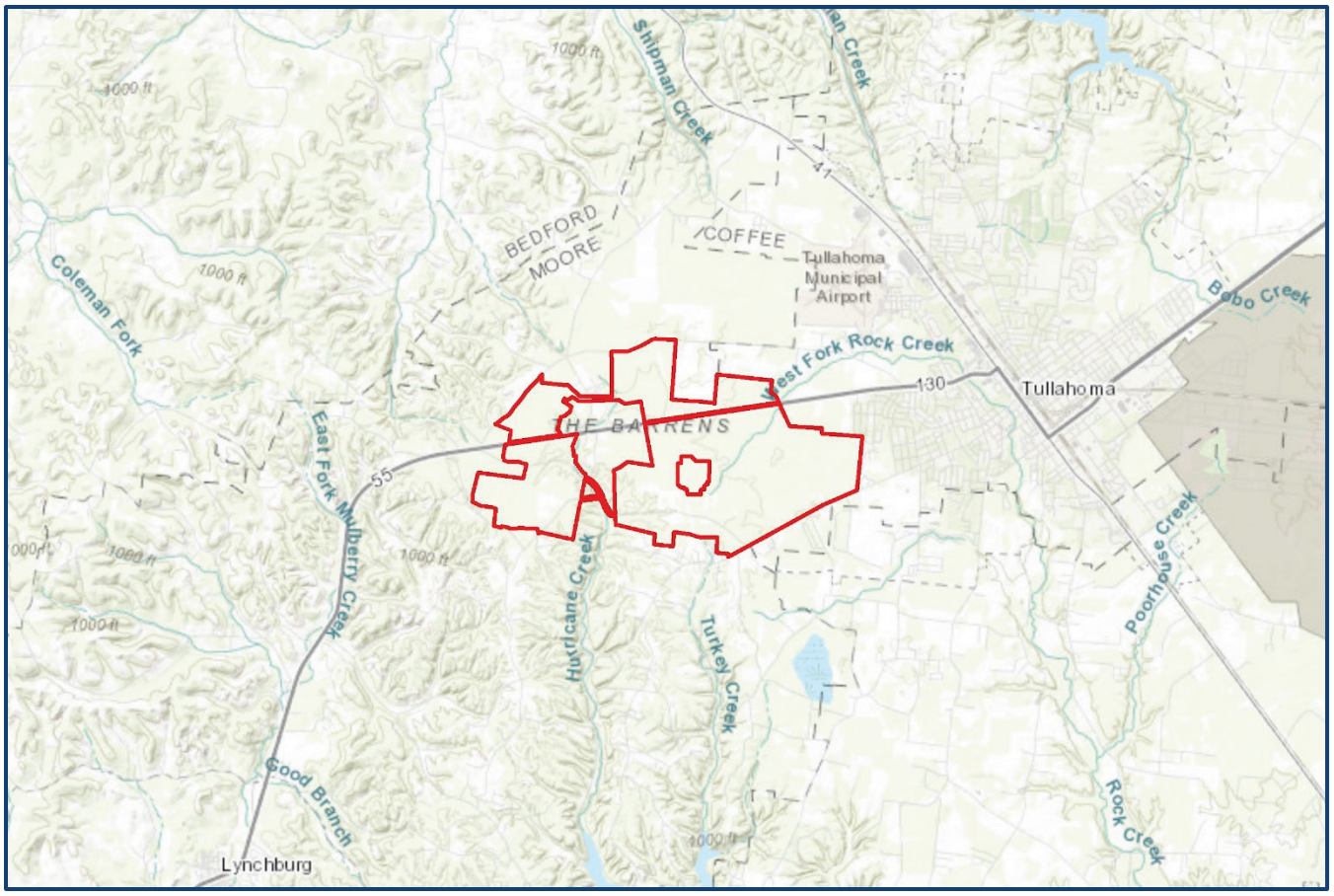
Document Type: EIS – Administrative Record
Index Field: Scoping Report
Project Name: Moore County Solar
Project Number: 2021-15

Moore County Solar

SCOPING REPORT

SEPTEMBER 3, 2021



TENNESSEE VALLEY AUTHORITY

Scoping Report Executive Summary

Tennessee Valley Authority (TVA) is preparing an environmental impact statement (EIS) to assess the potential environmental effects of a proposed solar photovoltaic (PV) facility in Moore County, Tennessee, known as Moore County Solar. The solar facility would be constructed within a project site measuring approximately 3,463 acres, of which approximately 2,000 acres are necessary to develop a 200-megawatt (MW) alternating current (AC) solar facility. The project site is bisected by State Route 55 and is within the metropolitan limits of Lynchburg, Tennessee (Figure 1). Moore County Solar would connect to the TVA Franklin-Wartrace No. 2 161-kilovolt (kV) transmission line (TL), which runs through the project site, and require upgrades on approximately 9.6 miles of this TL (Figure 2). Together, the solar facility and the TL upgrades are referred to herein as the Project.

In June 2019, TVA completed the final 2019 Integrated Resource Plan (IRP) and associated EIS. The IRP is a comprehensive study of how TVA will meet the demand for electricity in its service territory over the next 20 years. The 2019 IRP recommends solar expansion and anticipates growth in all scenarios analyzed. TVA has entered into a power purchase agreement (PPA) with SR Tullahoma LLC (SR Tullahoma), a subsidiary of Silicon Ranch Corporation, to purchase 200 MW AC of power generated by the Project. This PPA will help TVA meet immediate needs for additional renewable generating capacity in response to customer demands and help fulfill the renewable energy goals established in the 2019 IRP. The PPA is contingent upon the completion of an environmental review. The purpose of this is to address the potential environmental effects associated with constructing, operating, maintaining, and decommissioning the solar PV facility on the project site in Moore County.

The EIS will assess a No Action Alternative and an Action Alternative. The Action Alternative would execute the PPA to purchase 200 MW AC of power generated by the proposed facility. SR Tullahoma would construct, operate, maintain, and eventually decommission a 200-MW AC solar PV facility, as described above, within a footprint that avoids environmental resources to the maximum extent possible. Under the No Action Alternative, TVA would not execute the PPA, and SR Tullahoma would not develop, operate, maintain, or decommission a solar PV facility at this location.

The National Environmental Policy Act (NEPA) requires federal agencies to consider the potential environmental consequences of their proposed actions. An EIS should provide full and fair discussion of significant environmental impacts and should inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts. TVA initiated a 30-day public scoping period on May 3, 2021, when it published a Notice of Intent in the *Federal Register* announcing its plan to prepare an EIS or an environmental assessment (EA). During the scoping period, from May 3, 2021, to June 4, 2021, the public provided input to help TVA identify issues of concern and to help lay the foundation for development of the EIS or EA.

Based on the scoping comments that TVA received, as well as the results of ongoing field surveys and other considerations, TVA decided

that the appropriate level of review for the Project is an EIS. This scoping report presents the public comments received, as well as information on how the EIS is being developed.

During the scoping period, TVA received comments from two federal agencies, one state agency, one non-governmental organization, and two private individuals. Comments were related to purpose and need, agency coordination, alternatives, mitigation measures, land use, water resources, biological resources, air quality and greenhouse gas (GHG) emissions, socioeconomics, and environmental justice. This scoping report also includes information about NEPA, federal and local laws, and executive orders that are relevant to the proposed action.

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AC	Alternating current
BMP	Best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DC	Direct current
EA	Environmental assessment
EIS	Environmental impact statement
EO	Executive Order
GHG	Greenhouse gas
IRP	Integrated Resource Plan
kV	Kilovolt
MVT	Mid-voltage transformer
MW	Megawatt
NEPA	National Environmental Policy Act
NOI	Notice of Intent
PPA	Power purchase agreement
PV	Photovoltaic
RFP	Request for proposal
ROW	Right-of-way
SR	Silicon Ranch
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment & Conservation
THC	Tennessee Historical Commission
TL	Transmission line
TVA	Tennessee Valley Authority
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
U.S.	United States

1 Introduction

Tennessee Valley Authority (TVA) is a self-financed, wholly owned corporate agency of the United States that serves a region that consists of parts of seven Southeastern states. As a public power entity, TVA has no shareholders and receives no tax dollars. Under the TVA Act of 1933, as amended, Congress charged TVA with advancing the social and economic well-being of the residents of the Tennessee Valley region. TVA produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, fossil fuel, and nuclear. In June 2019, TVA completed the final 2019 Integrated Resource Plan (IRP) and associated Environmental Impact Statement (EIS). The IRP is a comprehensive study of how TVA will meet the demand for electricity in its service territory over the next 20 years. The target supply mix adopted by TVA in the 2019 IRP recommends solar expansion in all scenarios analyzed, with most scenarios anticipating 5,000-8,000 MW and one anticipating up to 14,000 MW by 2038.

Customer demand for cleaner energy prompted TVA to release a Request for Proposal (RFP) for renewable energy resources in 2020. As an outcome of this RFP process, TVA entered into a power purchase agreement (PPA) with SR Tullahoma LLC (SR Tullahoma), a subsidiary of Silicon Ranch Corporation, to purchase 200 megawatts (MW) alternating current (AC) of power generated by the proposed solar photovoltaic (PV) facility contingent upon the completion of an environmental review. The facility, known as Moore County Solar, would be located within an approximately 3,463-acre project site in Moore County, Tennessee. SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar. A substation and facilities to interconnect the solar PV facility to the TVA Franklin-Wartrace No. 2 161-kilovolt (kV) transmission line (TL), as well as upgrades on approximately 9.6 miles of this TL, would also be required to operate the solar facility. Together, the solar facility and the TL upgrades are referred to herein as the Project.

The project site consists of 3,463 acres, of which approximately 2,000 acres would be necessary to develop the solar facility. The project site is bisected by State Route 55 and is within the metropolitan limits of Lynchburg, Tennessee. The site is mostly forested, with areas of wetlands, croplands, and early successional fields. TVA's Franklin-Wartrace No. 2 161- kV TL extends north-south through the project site.

TVA initiated the public scoping process for the Project with the publication of a notice of intent (NOI) in the *Federal Register* on May 3, 2021. In the NOI, TVA stated that it was initiating the preparation of either an EIS or an environmental assessment (EA) to address the potential environmental impacts of the Project. Through the NOI and other public notices, TVA requested comments on the scope of the environmental review and environmental issues that should be addressed. TVA also requested data, information, and analyses relevant to the proposed action.

Based on the scoping comments that TVA received, as well as the site size, results of ongoing field surveys, and a preliminary determination of anticipated environmental impacts on natural resources, TVA determined that the appropriate level of review is an EIS.

TVA is preparing the subject EIS to assess the potential environmental effects associated with constructing, operating, maintaining, and decommissioning the Project.

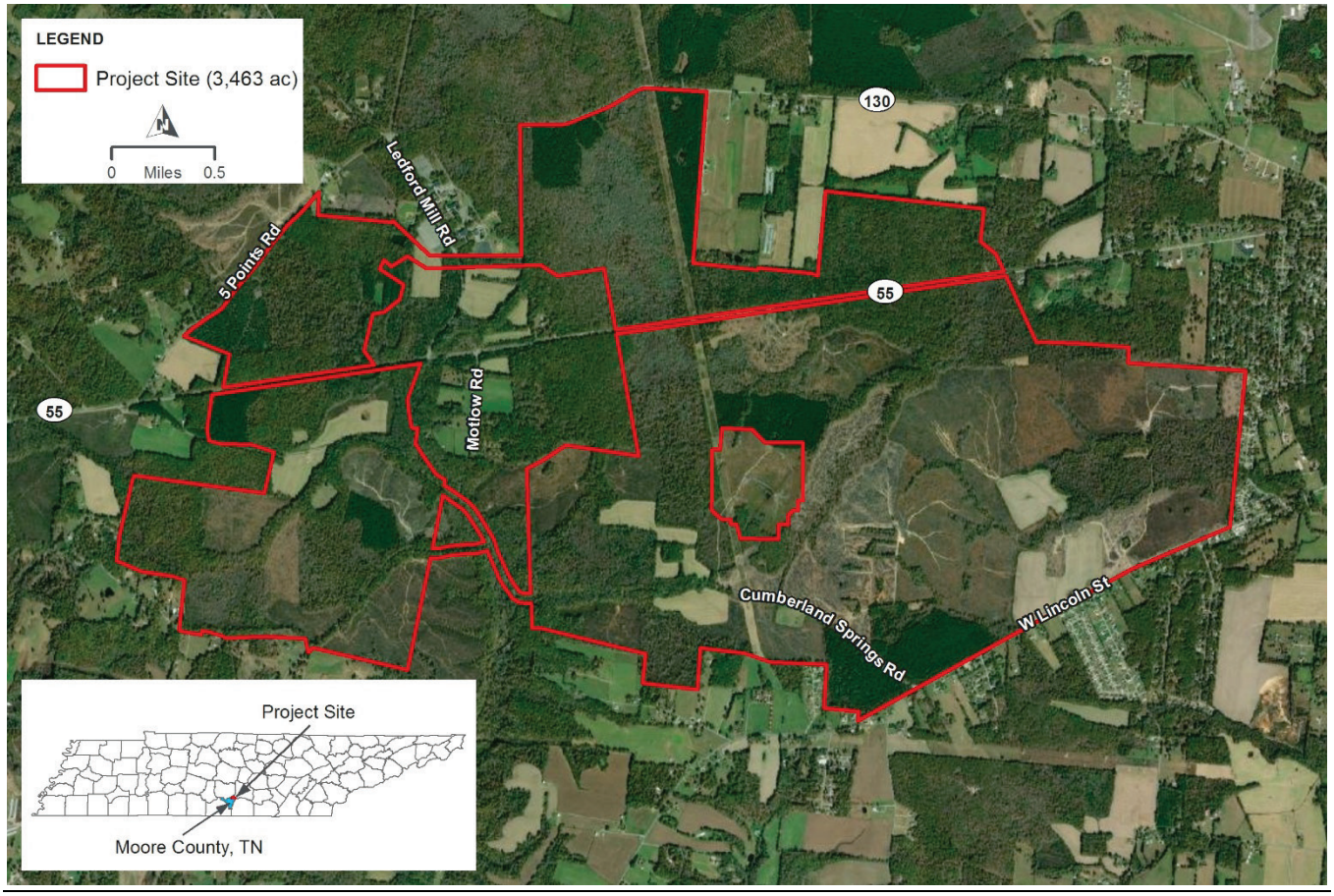

Figure 1. Project Site Location.

2 Purpose and Need

Customer demand for cleaner energy prompted TVA to release an RFP for renewable energy resources (2020 Renewable RFP). The PPA associated with the Project that resulted from this RFP will help TVA meet immediate needs for additional renewable generating capacity in response to customer demands and fulfill the renewable energy goals established in the 2019 IRP. The proposed action would provide cost-effective renewable energy consistent with the IRP and TVA goals.

3 Alternatives

As a result of preliminary internal scoping by TVA and comments received during public scoping, TVA has determined that, from the standpoint of the National Environmental Policy Act (NEPA), there is one reasonable alternative, the Action Alternative, which meets the purpose and need. As required by NEPA, the EIS will also address the No Action Alternative. Variations of the Action Alternative that TVA considered but eliminated from detailed study will be described in the EIS.

3.1 No Action Alternative

Under the No Action Alternative, TVA would not execute the PPA, and SR Tullahoma would not develop, operate, maintain, and decommission Moore County Solar. Existing conditions (land use, natural resources, visual resources, physical resources, and socioeconomics) on the project site and in the vicinity would remain unchanged. TVA would continue to rely on other sources of generation described in the 2019 IRP to ensure an adequate energy supply and to meet its goals for increased renewable energy and low greenhouse gas (GHG)-emitting generation.

3.2 Action Alternative

Under the Action Alternative, TVA would execute the PPA to purchase 200 MW AC of power generated by the proposed solar PV facility. The facility would be located within the approximately 3,463-acre project site (Figure 1). SR Tullahoma would construct, operate, maintain, and decommission the solar facility within a 2,000-acre footprint that avoids cultural, biological, and physical resources to the maximum extent possible. During the operation of the solar facility, SR Tullahoma would maintain a herd of sheep on the facility site to help control the growth of tall vegetation and reduce mowing needs. The Project would connect to TVA's existing adjacent Franklin-Wartrace No. 2 161-kV TL that extends north-south through the project site. To interconnect to TVA's existing electrical grid, TVA would build an on-site 161-kV substation, if necessary, and replace the existing overhead ground wire with new fiber-optic overhead ground wire along an approximately 9.6-mile portion of the Franklin-Wartrace No. 2 161-kV TL (Figure 2).

The Project would convert sunlight into direct current (DC) electrical energy within PV panels (modules). PV power generation is the direct conversion of light into electricity at the atomic level. Some materials exhibit a property known as the photoelectric effect that causes them to absorb photons of light and release electrons. When these free electrons are captured, an electric current is produced, which can be used as electricity.

The Project would be composed of PV modules mounted together in arrays. Groups of panels would be connected electrically in series to form "strings" of panels, with the maximum string size chosen to ensure that the maximum inverter input voltage is not exceeded by the string voltage at the Project's high design temperature. The panels would be arranged in individual blocks consisting of the PV arrays and an inverter station on a concrete pad or steel piles, to convert the DC electricity generated by the solar panels into AC electricity. Each inverter would be collocated with a mid-voltage transformer (MVT), which would step-up the AC voltage to minimize the AC cabling electrical losses between the central inverters and the proposed on-site 161-kV substation. Underground AC power cables would connect the MVTs to a single main power transformer, located within the substation. The arrays and inverter block areas would be enclosed by chain-link security fencing. The portions of the project site outside the fenced-in areas would not be developed.

The modules would be attached to single-axis trackers. The axis trackers would be attached to steel pile foundations and pivot the panels along their north-south axes to follow the path of the sun from the east to the west across the sky.

Other temporary or permanent Project components would include construction laydown areas, buildings, and security and communications equipment. Also, if determined necessary, the Project may include water wells and a septic system or a pump-out septic holding tank. Compacted gravel access roads would provide access to each inverter block, the substation, and to any buildings.

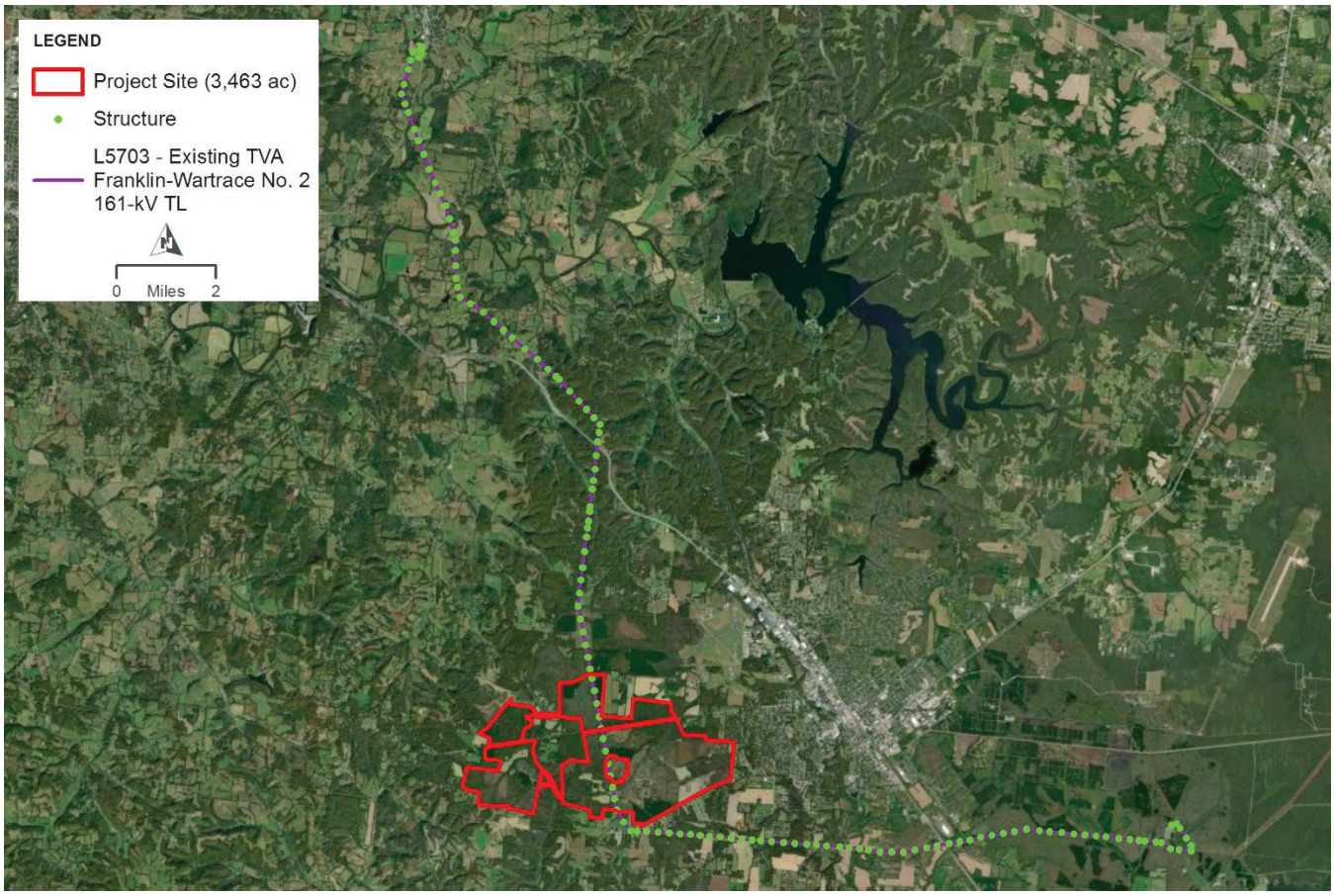

Figure 2. Entire Franklin-Wartrace No. 2 161-kV TL

4 Environmental Review Process

NEPA requires federal agencies to consider and study the potential environmental consequences of their proposed actions. Actions, in this context, can include new and continuing activities that are conducted, financed, assisted, regulated or approved by federal agencies, as well as new or revised plans, policies, or procedures. An EIS should provide full and fair discussion of significant environmental impacts and should inform decision makers and the public of reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment.

TVA is initiating the preparation of an EIS to assess the environmental impacts of the proposed action. TVA is using the input from the public scoping period in developing the Draft EIS. The Draft EIS will be posted on TVA's website and distributed to interested federal, state, and local agencies, individuals, and groups, including

scoping participants, for their review and comment. Following this public comment period, TVA will respond to the comments received and incorporate any necessary changes into the Final EIS. TVA will make a final decision regarding the proposed action no sooner than 30 days after the Final EIS is published.

The completed Final EIS will be posted on TVA's website, and notices of its availability will be sent to those who received the Draft EIS or submitted comments on the Draft EIS. TVA intends to publish the Draft EIS in early 2022 and publish the Final EIS by mid-2022.

4.1 Applicable Federal Laws and Executive Orders

4.1.1 National Environmental Policy Act

This EIS is being prepared by TVA in accordance with NEPA (42 United States Code §§ 4321 et seq.), regulations implementing NEPA promulgated by the Council on Environmental Quality (40 CFR Parts 1500 to 1508), and TVA NEPA regulations (18 CFR 1318) and procedures.

4.1.2 Other Laws and Executive Orders

Other laws and Executive Orders (EOs) are relevant to the proposed action (Table 1). These laws and orders may affect the environmental consequences of the solar PV facility or represent mitigation measures to implement during its construction, operation, or decommissioning. The Draft EIS will describe the regulatory setting for each environmental resource in more detail.

Table 1. Laws and Executive Orders relevant to the Proposed Action.

Environmental Resource Area	Law / Executive Order
Prime Farmland	Farmland Protection Policy Act
Water Resources	Clean Water Act EO 11988 – Floodplain Management EO 11990 – Protection of Wetlands Resource Conservation and Recovery Act Safe Drinking Water Act
Biological Resources	Bald and Golden Eagle Protection Act Endangered Species Act EO 13112 – Invasive Species EO 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds Migratory Bird Treaty Act
Air Quality and GHG Emissions	Clean Air Act

Environmental Resource Area	Law / Executive Order
Cultural Resources	National Historic Preservation Act Native American Graves Protection and Repatriation Act
Solid and Hazardous Waste	Comprehensive Environmental Response, Compensation, and Liability Act Emergency Planning and Community Right-to-Know Act Resource Conservation and Recovery Act Solid Waste Disposal Act Toxic Substances Control Act
Public and Occupational Health and Safety	Occupational Safety and Health Act
Environmental Justice	EO 12898 – Federal Actions to Address Environmental Justice in Minority and Low-Income Populations

4.2 Environmental Resources to Be Considered in EIS

Based on internal and public scoping, identification of applicable laws, regulations, executive orders, and policies, TVA identified the following resource areas as requiring review within the EIS:

- Land Use
- Geology, Soils, and Prime Farmland
- Water Resources
  - Groundwater
  - Surface Water and Wetlands
  - Floodplains
- Biological Resources
  - Vegetation
  - Wildlife
  - Aquatic Life
  - Threatened and Endangered Species
- Natural Areas, Parks, and Recreation
- Visual Resources
- Noise
- Air Quality and GHG Emissions
- Cultural Resources
- Utilities
- Solid and Hazardous Waste Management
- Public Health and Safety
- Transportation
- Socioeconomics
- Environmental Justice

5 Public and Agency Outreach

On May 3, 2021, TVA published a Notice of Intent (NOI) in the *Federal Register* announcing that it planned to prepare either an EIS or an EA to assess the potential environmental effects associated with constructing, operating, maintaining, and decommissioning the Project (Appendix A). The NOI initiated a 30-day public scoping period, which concluded on June 4, 2021. The NOI solicited public input on both the scope of the EIS or EA and the environmental

issues that should be considered in the EIS or EA. It also requested data, information, and analyses relevant to the proposed action.

In addition to the NOI in the *Federal Register*, TVA sent notification of the NOI to local and state government entities and federal agencies, issued a Project news release in *Moore County News*, and posted the news release on the TVA website. TVA sent the scoping notice via email to agencies and organizations.

As part of its National Historic Preservation Act compliance responsibilities, TVA initiated consultation with federally recognized tribes and the Tennessee Historical Commission (THC), which functions as the Tennessee State Historic Preservation Office, in April 2021 (Appendix B).

6 Response to Public Scoping

During the scoping period, comments were received from the U.S. Geological Survey; U.S. Environmental Protection Agency (USEPA); Tennessee Natural Heritage Program, part of the Tennessee Department of Environment and Conservation (TDEC); Southeastern Grasslands Initiative; and two private individuals. Comments were related to purpose and need, agency coordination, alternatives, mitigation measures, land use, water resources, biological resources, air quality and GHG emissions, socioeconomics, and environmental justice. Comment summaries and full submissions, along with TVA's responses, are included in Appendix C, and summarized in this section. Mitigation measures are presented in Section 7, including those related to the scoping comments.

6.1 Scope of the EIS

TVA will analyze the potential adverse and beneficial impacts related to the construction, operation, maintenance, and decommissioning of the Project. TVA will also analyze the potential impacts related to the associated modifications to the TVA transmission system. In addition to the environmental resources listed in Section 4.2, TVA will analyze the cumulative impacts of the Project with consideration of any reasonably foreseeable actions and other anticipated changes in the vicinity of the project site during the operation of the solar facility. TVA will also describe how the Project would provide cost-effective renewable energy consistent with the 2019 IRP and TVA goals.

6.2 Response to Scoping Comments

Comments were received regarding several topics. A brief summary of TVA's response or planned approach to these items in the EIS is presented by topic below.

Purpose and Need

In planning its energy portfolio in the 2019 IRP, TVA considered the intermittent availability of solar generation and is compensating for this by operating a diverse portfolio of types of generation, an adequate reserve margin to compensate for the loss of individual generating facilities, and a well-maintained interconnected transmission grid.

Agency Coordination

The Project is coordinating with TDEC and U.S. Army Corps of Engineers (USACE) on the surface water resources identified on the project site and will do so for the TL upgrade locations, as well.

TVA will provide notice to potentially interested state and federal agencies when the Draft EIS is available for review and comment.

Alternatives
In its 2019 IRP EIS, TVA considered land use efficiency of solar energy development in the TVA region and ultimately recommended the expansion of solar generating capacity. TVA will evaluate dual use of the project site as a solar facility and a commercial sheep operation in the EIS.

Silicon Ranch Corporation reviewed other sites prior to selecting the project site. Part of the screening process included a review of interconnection options, including key entry points to the TVA transmission system. The project site in Moore County stood out as a viable option for transmission system connectivity. The EIS will describe the site selection process completed during Project planning.

Mitigation Measures
If needed, the Project will consider environmental conservation and enhancement efforts, in coordination with state and federal agencies, as potential mitigation measures.

Water Resources
TVA will evaluate potential impacts to surface waters, as well as to floodplains, stormwater, and other water resources in the EIS.

Biological Resources
TVA compiled lists of rare plants and animals from TDEC, as well as from the U.S. Fish and Wildlife Service and TVA's Regional Natural Heritage Database, for the Project area. TVA will evaluate potential impacts to biological resources in the EIS. This evaluation will include detailed field surveys of biological resources, including the presence of rare plants and animals, suitable habitat for the rare species, and rare natural communities.

Air Quality and GHG Emissions
TVA will evaluate potential air quality and GHG emissions impacts in accordance with NEPA requirements as reflected in current regulations and recent Council on Environmental Quality guidance. This analysis will include the Project effects on carbon sequestration.

Socioeconomics
TVA will evaluate potential impacts to employment in the EIS. TVA will consider how reduced energy costs from solar may be relevant to the socioeconomic analysis presented in the EIS.

Environmental Justice
TVA will evaluate potential impacts to minority and low-income populations in the EIS in accordance with EO 12898 and associated CEQ and USEPA guidance. TVA will also comply with EO 13166, Improving Access to Services for Persons with Limited English Proficiency, if applicable in the Project area, in public notifications for the Project.

7 Potential Mitigation Measures

TVA and SR Tullahoma would implement minimization and mitigation measures in relation to resources potentially affected by the Project. These would be developed with consideration to best management practices (BMPs), permit requirements, and adherence to the Stormwater Pollution Prevention Plan (SWPPP).

In association with the proposed electrical interconnection, TVA would employ standard practices and specific routine measures to avoid and minimize impacts to resources. Some comments received during the scoping period offered specific mitigation measures for the proposed action. During development of the EIS, TVA will consider implementation of the following minimization and mitigation measures in relation to potentially affected resources.

Visual Resources
Use timer- and/or motion-activated downward facing lighting to limit visual effects at night.

Soils
Install silt fence along the perimeter of vegetation-cleared areas, implement other soil stabilization and vegetation management measures to reduce the potential for soil erosion during site operations, and make an effort to balance cut-and-fill quantities to alleviate the transportation of soils offsite during construction.

Water Resources
Comply with the terms of the SWPPP prepared as part of the National Pollutant Discharge Elimination System permitting process; use BMPs for controlling soil erosion and runoff, such as the use of buffer zones surrounding perennial and intermittent streams as well as wetlands and natural ponds and the installation of erosion control silt fences and sediment traps; and implement other routine BMPs as necessary, such as non-mechanical tree removal within surface water buffers, placement of silt fence and sediment traps along buffer edges, selective herbicide treatment to restrict application near receiving water features, and proper vehicle maintenance to reduce the potential for adverse impacts to surface water and groundwater. Impacts to water resources deemed jurisdictional to TDEC and USACE would be permitted in compliance with the Clean Water Act Sections 401 and 404. The Project would also implement mitigation measures as defined in TVA's 1981 *Class Review of Repetitive Actions in the 100-Year Floodplain*, if needed.

Biological Resources
Revegetate with native and/or noninvasive vegetation, including plants attractive to pollinators, to reintroduce habitat, reduce erosion, limit the spread of invasive species (per EO 13112 (Invasive Species)); follow U.S. Fish and Wildlife recommendations regarding biological resources, including pollinator species; avoid, to the extent practicable, siting generation equipment and associated infrastructure in areas that support state-listed plant species and rare plant habitats; use timer- and/or motion-activated downward facing lighting to limit attracting wildlife, particularly migratory birds and bats; instruct personnel on wildlife resource protection measures, including applicable federal and state laws such as those that prohibit animal disturbance, collection, or removal, the importance of protecting wildlife resources, and avoiding plant disturbance; and use only USEPA-registered and TVA-approved herbicides in accordance with label directions designed, in part, to restrict applications near receiving waters and to prevent unacceptable aquatic impacts.

Solid and Hazardous Waste Management
Develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials.

Public Health and Safety
Implement BMPs for site safety management to minimize potential risks to workers.

Transportation
Implement a traffic management plan to manage construction traffic flow near the project site.

Noise
Limit construction activities primarily to daytime hours and ensure that heavy equipment, machinery, and vehicles utilized at the project site meet all federal, state, and local noise requirements.

Air Quality and GHG Emissions
Comply with local ordinances or burn permits if burning of vegetative debris is required and use BMPs such as periodic watering, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust.

A

Appendix A – *Federal Register* Notice of Intent

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8120-08-P

TENNESSEE VALLEY AUTHORITY

Moore County Solar Project

AGENCY: Tennessee Valley Authority.

ACTION: Notice of Intent; request for comments.

SUMMARY: The Tennessee Valley Authority (TVA) intends to prepare an environmental impact statement (EIS) or environmental assessment (EA) for the purchase of electricity generated by the proposed Moore County Solar Project in Moore County, Tennessee. The EIS or EA will assess the potential environmental effects of constructing, operating, and maintaining the proposed 200-megawatt (MW) alternating current (AC) solar facility. The proposed 200 MW AC solar facility would occupy approximately 2,000 acres of the roughly 3,300-acre Project Study Area. Public comments are invited concerning both the scope of the environmental review and environmental issues that should be addressed in the EIS or EA. TVA is also requesting data, information, and analysis relevant to the proposed action from the public; affected federal, state, tribal, and local governments, agencies, and offices; the scientific community; industry; or any other interested party.

DATES: To ensure consideration, comments must be postmarked, emailed, or submitted online no later than June 4, 2021.

ADDRESSES: Written comments should be sent to Ashley Pilakowski, NEPA Specialist, Tennessee Valley Authority, 400 West Summit Hill Drive, WT 11B, Knoxville, Tennessee 37902. Comments may be submitted online at: www.tva.gov/nepa, or by email to nepa@tva.gov. Please note that, due to current TVA requirements for many employees to work remotely, comments submitted electronically are encouraged.

FOR FURTHER INFORMATION CONTACT: Ashley Pilakowski by email at aapilakowski@tva.gov, by phone at (865) 632-2256, or by mail at the address above.

SUPPLEMENTARY INFORMATION: This notice is provided in accordance with the Council on Environmental Quality's regulations 40 CFR Parts 1500 to 1508 (84 FR 43304, July 16, 2020) and TVA's procedures for implementing the National Environmental Policy Act (NEPA) at 18 CFR Part 1318, as well as Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800). Following site investigations and a preliminary determination of the anticipated environmental impacts, TVA will decide whether the proposed action will be the subject of an EIS or EA.

TVA is a federal agency and instrumentality of the United States, created in 1933 by an act of Congress to foster the social and economic well-being of the residents of the Tennessee Valley region. As part of its diversified energy strategy, TVA produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, fossil fuel, and nuclear.

Background

In June 2019, TVA completed the final 2019 Integrated Resource Plan (IRP) and associated EIS. The IRP is a comprehensive study of how TVA will meet the demand for electricity in its service territory over the next 20 years. The 2019 IRP recommends solar expansion and anticipates growth in all scenarios analyzed, with most scenarios anticipating 5,000-8,000 MW and one anticipating up to 14,000 MW by 2038. Customer demand for cleaner energy prompted TVA to release a Request for Proposal (RFP) for renewable energy resources (2020 Renewable RFP). The Moore County Solar Project power purchase agreement (PPA) that resulted from this RFP will help TVA meet immediate needs for additional renewable generating capacity in response to customer demands and fulfill the renewable energy goals established in the 2019 IRP.

TVA has entered into a PPA with Silicon Ranch Corporation to purchase 200 MW AC of power generated by the proposed Moore County Solar Project, hereafter referred to as the project. The proposed 200 MW AC solar facility would occupy approximately 2,000 acres of the roughly 3,300-acre Project Study Area which is located entirely in Moore County, Tennessee. The project site is bisected by State Route 55 and its eastern boundary borders the western city limits of Tullahoma, Tennessee. The project site is mostly forested with areas of wetlands, croplands, and early successional fields. A TVA 161-kilovolt transmission line runs north-south through the site. A map showing the project site is available at www.tva.gov/nepa.

Preliminary Proposed Action and Alternatives

In addition to a No Action Alternative, TVA will evaluate the action alternative of purchasing power from the proposed Moore County Solar Project. In evaluating alternatives, TVA considered other solar proposals, prior to selecting the Moore County site. Part of the screening process included a review of transmission options, including key connection points to TVA's transmission system. The Moore County site stood out as a viable option for connectivity. For the proposed site, the solar developer plans to consider the establishment of a reduced footprint so that impacts to cultural and/or biological resources could be avoided. The EIS or EA will also evaluate ways to mitigate impacts that cannot be avoided. The description and analysis of these alternatives in the EIS or EA will inform decision makers, other agencies, and the public about the potential for environmental impacts associated with the proposed solar facility. TVA solicits comments on whether there are other alternatives that should be assessed in the EIS or EA.

Brief Summary of Expected Impacts

Public scoping is integral to the process for implementing NEPA and ensures that (1) issues are identified early and properly studied, (2) issues of little significance do not

consume substantial time and effort, and (3) the analysis of identified issues is thorough and balanced. This EA or EIS will identify the purpose and need of the project and will contain descriptions of the existing environmental and socioeconomic resources within the area that could be affected by the proposed solar facility, including the documented historical, cultural, and environmental resources. Evaluation of potential environmental impacts to these resources will include, but not be limited to, air quality and greenhouse gas emissions, surface water, groundwater, wetlands, floodplains, vegetation, wildlife, threatened and endangered species, land use, natural areas and parks and recreation, geology, soils, prime farmland, visual resources, noise, cultural resources, socioeconomics and environmental justice, solid and hazardous waste, public and occupational health and safety, utilities, and transportation.

Based on a preliminary evaluation of these resources, TVA expects potential impacts to vegetation and wildlife due to the conversion of coniferous and hardwood forests of various ages to early maintained grass-dominated fields. Impacts to water resources would likely be minor with the use of best management practices and avoidance of siting project components in or near streams, wetlands, and riparian areas to the extent feasible. Land use would be impacted by the conversion of the undeveloped site to industrial use and the elimination of current farming and timber operations. This would also result in visual impacts. The current recreational uses of the site, primarily hunting, would also be eliminated. Historic properties could be impacted but would be avoided to the extent feasible or mitigated in compliance with applicable regulations. Nearly half of the site was once used as an auxiliary training area for the U.S. Army during World War II. The site was deactivated in 1946 and the U.S. Army Corps of Engineers has conducted numerous inspections and remediation efforts on the former Motlow Range to ensure public and occupational health and safety. Beneficial impacts are expected by facilitating the development of renewable energy and thereby increasing local job opportunities, as

well as improving regional air quality and reducing carbon emissions. The EIS or EA will analyze measures that would avoid, minimize, or mitigate environmental effects. The final range of issues to be addressed in the environmental review will be determined, in part, from scoping comments received.

Request for Identification of Potential Alternatives, Information, and Analyses Relevant to the Proposed Action

TVA requests assistance with identifying any new potential alternatives to the proposed action to be considered. TVA also requests assistance with identifying any new potential impacts of the proposed action, identifying the activity and the potential impact that should be analyzed. Information interested parties possess which would assist in the analysis of resources issues is also appreciated. TVA is particularly interested in public input on other reasonable alternatives that should be considered in the EIS or EA. The preliminary identification of reasonable alternatives, information, and analyses relevant to the proposed action in this notice is not meant to be exhaustive or final.

Public Participation

The public is invited to submit comments on the scope of this EA or EIS no later than the date identified in the **DATES** section of this notice. Federal, state, and local agencies and Native American Tribes are also invited to provide comments. Information about this project is available on the TVA web page at www.tva.gov/nepa, including a link to an online public comment page. Any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection. After consideration of comments received during the scoping period, TVA will develop and distribute a scoping document that will summarize public and agency comments that were received and identify the schedule for completing the EIS or EA process. Following analysis of the issues, TVA will prepare the draft EIS or EA for public review and comment; expected to be released late 2021 or early 2022. TVA anticipates the final EIS

or EA in summer of 2022. In finalizing the EIS or EA and in making its final decision, TVA will consider the comments that it receives on the draft.

Rebecca Tolene,

Vice President,

Environment.

[FR Doc. 2021-09223 Filed: 4/30/2021 8:45 am; Publication Date: 5/3/2021]

B

Appendix B – National Historic Preservation Act Initial Section 106 Coordination

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TENNESSEE VALLEY AUTHORITY

400 West Summit Hill Drive, Knoxville, Tennessee 37902

April 29, 2021

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Road
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA) POWER PURCHASE AGREEMENT (PPA) MOORE COUNTY SOLAR ARRAY MOORE COUNTY, TENNESSEE (TVA TRACKING NUMBER – CID 80060) (35.350211 -86.269295)

TVA is proposing to enter into a PPA with Silicon Ranch Tullahoma, LLC (SR Tullahoma) for a 200 megawatts solar photovoltaic (PV) generating facility located near Tullahoma, in Moore County, Tennessee (Figure 1)The facility would be located on an assemblage of parcels making up approximately3,312-acres. A portion of the study area is a pine plantation and actively logged. In addition, much of the property is the former Motlow Artillery Range, which was used by the Army during World War II (Figure 2). TVA proposes that the area of potential effects (APE) should be considered to be the footprint where ground disturbance could occur as a result of the undertaking including the proposed solar arrays and any supporting infrastructure as well as the 0.5 mile radius of the project area and within the visual line of site that may have a visual effect to historic properties.

SR Tullahoma contracted with New South Associates, Inc. (New South) to conduct a Phase I Cultural Resources survey. For your review, please find the proposed research design for the Phase I Cultural Resources survey, prepared by New South enclosed. Pursuant to 36 CFR § 800.4(b)(1), TVA finds that the survey design presented here is a reasonable and good faith effort to carry out identification efforts.

By this letter, TVA is initiating consultation regarding the proposed undertaking. TVA is proposing to conduct Phase I Cultural Resources survey of the APE as described in the enclosed scope of work.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the National Register of Historic Places.

If you have any questions or comments, please contact Michaelyn Harle by email at mharle@tva.gov.

Sincerely,

Clinton E. Jones
Manager
Cultural Compliance

MSH:ABM
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

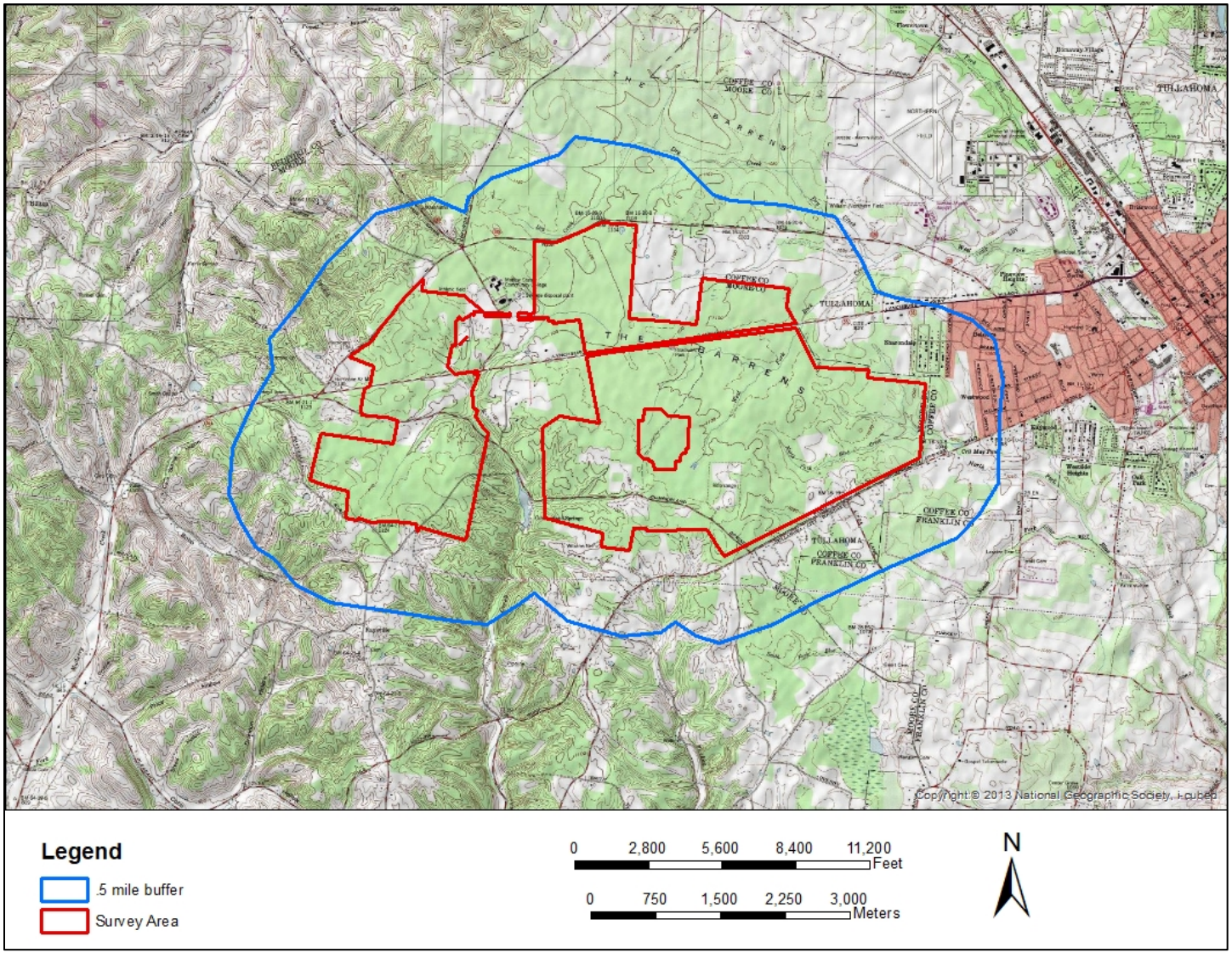

Figure 1. Location of the proposed solar array with 0.5-mile buffer.

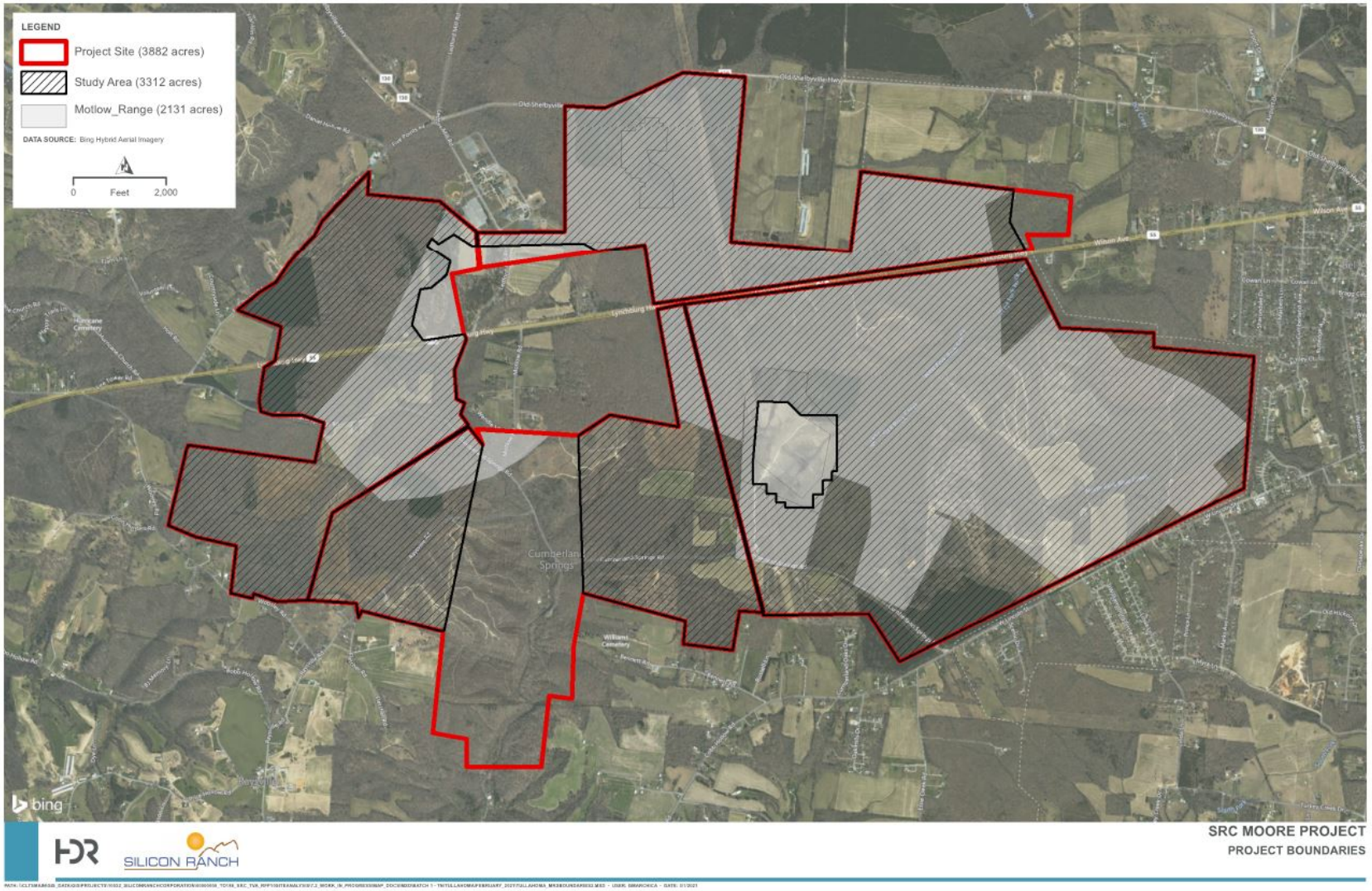

Figure 2: Aerial depicting the survey area and the location of the former Motlow Artillery Range

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

April 29, 2021

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

RE: TVA / Tennessee Valley Authority, Purchase Power Agreement, Silicon Ranch Tullahooma, Moore County Solar Array, Tullahoma Moore County, TN

Dear Mr. Jones:

At your request, our office has reviewed the above-referenced cultural resources survey cope of work. This review is a requirement of Section 106 of the National Historic Preservation Act for compliance by the participating federal agency or applicant for federal assistance. Procedures for implementing Section 106 of the Act are codified at 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we find that the proposed survey methods are adequate for the identification of historic properties within the area of potential effect.

Your continued cooperation is appreciated.

Sincerely,

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

EPM/jmb

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From: Shuler, Marianne M <mmshuler@tva.gov>
Sent: Friday, April 30, 2021 3:01 PM
Subject: TVA-Moore County Solar Project-Initiation of Consultation-MooreCoTN-CID80060-30Apr2021

Good Afternoon
By this email I am sending the attached initiation of consultation letter regarding TVA's proposal to enter into a power purchase agreement with Silicon Ranch Tullahoma, LLC for a 200 megawatts solar photovoltaic generating facility located near Tullahoma, in Moore County, Tennessee.

Please let me know by May 30 if you have any questions or comments on the proposed undertaking or proposed Phase I survey.
Thanks
Marianne

Due to COVID-19 safety precautions enacted by TVA, I am currently teleworking.

Marianne Shuler
Senior Specialist, Archaeologist & Tribal Liaison
Cultural Compliance

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

(865)253-1265 (w)
mmshuler@tva.gov

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May 14, 2021

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

Dear Ms. Shuler:

Thank you for the research design and a letter initiating consultation on a proposed power purchase agreement with Silicon Ranch Tullahoma, LLC for a solar photovoltaic generating facility in Moore County, Tennessee (CID 80060). We accept the invitation to consult under Section 106 of the National Historic Preservation Act.

The Chickasaw Nation concurs that the procedures outlined in the research design should adequately test the area to locate any potential cultural resources in the project area of potential effects. We wish to review the cultural resource report once it is available. In the event the agency becomes aware of the need to enforce other statutes we request to be notified under ARPA, AIRFA, NEPA, NAGPRA, NHPA and Professional Standards.

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

Sincerely,

Lisa John, Secretary
Department of Culture and Humanities

Cc: mmshuler@tva.gov

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C

Appendix C – Public and Agency Comments

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Comment No.	Document	Topic	Public / Agency Comment	Commenter(s)	TVA Response
1	NOI	Agency Coordination	The US Geological Survey (USGS) has no comment until the EIS is ready for review.	Brett Kopec, US Geological Survey	Comment noted.
2	NOI	General	General support for the project.	Lakshya Bharadwaj	Comment noted.
3	NOI	Purpose and Need	Comment asking whether solar energy is "possible," suggesting it could be devastating in some areas of our daily life and referencing the early February 2021 loss of power in Texas wherein renewable energy was blamed for lack of reliability. Suggestion that people should watch what we put into the atmosphere and that we "repair and reinforce" the current power infrastructure.	Brenda Russell	TVA produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, coal, natural gas, and nuclear. TVA's 2019 Integrated Resource Plan (IRP) identified the various resources that TVA intends to use to meet the energy needs of the TVA region over a 20-year planning period, while achieving TVA's objectives to deliver reliable, low-cost, and cleaner energy with fewer environmental impacts. The 2019 IRP recommends the expansion of solar generating capacity of up to 14,000 megawatts by 2038, as well as expansion or retirement of other existing power infrastructure. The Project would partially fulfill the renewable energy goals established in the 2019 IRP by providing cost-effective renewable energy. In planning its energy portfolio, TVA considered the intermittent availability of solar generation and is compensating for this by operating a diverse portfolio of types of generation, an adequate reserve margin to compensate for the loss of individual generating facilities, and a well-maintained interconnected transmission grid.
4	NOI	Alternatives; NEPA analyses	The US Environmental Protection Agency (EPA) appreciates TVA's efforts toward developing and analyzing an appropriate amount of alternative project proposals. The EPA recommends including details of considered alternatives within the NEPA documents. Please consider using the NEPAssist tool (https://www.epa.gov/nepa/nepassist), in addition to localized data sources and tools, when conducting the NEPA analysis.	Douglas White, US Environmental Protection Agency	Silicon Ranch Corporation reviewed other sites prior to selecting the project site. Part of the screening process included a review of interconnection options, including key entry points to the TVA transmission system. The project site in Moore County stood out as a viable option for connectivity. The EIS will describe the site selection process completed during Project planning.
5	NOI	Air Quality and GHGs; Water Resources	Statement that solar energy emits 95 percent fewer greenhouse gases than energy derived from fossil fuels and has no water requirements.	Lakshya Bharadwaj	Comment noted.

Comment No.	Document	Topic	Public / Agency Comment	Commenter(s)	TVA Response
6	NOI	Air Quality and GHGs	The US Environmental Protection Agency (EPA) recommends that net greenhouse gas (GHG) emissions related to this proposal and TVA's 2019 Integrated Resource Plan be considered in the NEPA analysis. Additionally, this project site is within an attainment area for air quality standards; however, localized impacts to air quality could occur during construction due to equipment exhaust emissions and fugitive dust. The EPA recommends implementing measures to reduce diesel emissions, such as switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older engines with newer cleaner engines, replacing older vehicles, and reducing idling through operator training and/or contracting policies. We also encourage controlling fugitive dust by watering or the application of other controlled materials.	Douglas White, US Environmental Protection Agency	TVA will evaluate potential air quality and GHG emissions impacts in accordance with NEPA requirements as reflected in current regulations and recent Council on Environmental Quality guidance. If warranted, this would include consideration of mitigation measures to reduce diesel emissions, such as switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, and reducing idling through operator training. The Project would ensure vehicles are properly maintained. TVA and SR Tullahoma would comply with local ordinances and the requirements of open-burning permits if open burning of vegetative debris is required and use best management practices such as periodic watering, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust.
7	NOI	Alternatives; Air Quality and GHGs	The proposed action provides TVA an opportunity to study land use efficiency of solar energy development in the Tennessee Valley region. Local climate, ecosystems, and agriculture affect the net benefit of photovoltaic solar infrastructure regarding carbon release and sequestration. The US Environmental Protection Agency (EPA) recommends consideration of dual land use where land use efficiency can be increased (https://www.energy.gov/eere/solar/farmers-guide-going-solar).	Douglas White, US Environmental Protection Agency	In its 2019 Integrated Resource Plan (IRP) EIS, TVA considered land use efficiency of solar energy development in the TVA region (see Sections 5.2.3.5, 5.2.3.6, and 5.5.5) and ultimately recommended the expansion of solar generating capacity. TVA will evaluate dual use of the project site as a solar facility and a commercial sheep operation in the EIS. TVA will evaluate the Project effects to carbon sequestration compared with the No Action Alternative in the EIS.
8	NOI	Surface Water; Floodplains	The proposed action is situated in a predominantly forested area home to interspersed creeks and wetlands. The US Environmental Protection Agency (EPA) recommends that design proposals and construction avoid impacting these Waters of the United States (WOTUS) to the maximum extent practicable by locating permanent proposed infrastructure and temporary construction measures away from WOTUS and respective buffers. WOTUS should be delineated and coordination with the US Army Corps of Engineers (USACE) should be made where proposed activities might enter or affect WOTUS. Flood water mapping should occur to ensure proposed activities do not take place in floodplains except where alternatives are not practicable.	Douglas White, US Environmental Protection Agency	TVA will evaluate potential impacts to wetlands, streams, floodplains, and other water resources in the EIS. The proposed solar facility would be designed to incorporate measures to avoid streams and wetlands, identified by field surveys, to the maximum extent possible. TVA and SR Tullahoma would implement best management practices such as avoidance buffers surrounding surface waters and comply with all terms and conditions of a USACE Nationwide or Individual permit, if needed. TVA and SR Tullahoma would also implement mitigation measures as defined in TVA's 1981 *Class Review of Repetitive Actions in the 100-Year Floodplain* , if needed.

Comment No.	Document	Topic	Public / Agency Comment	Commenter(s)	TVA Response
9	NOI	Stormwater	The proposed action has the potential to disturb a considerable amount of soil, and a state or county construction stormwater permit will likely be required before construction can begin. Construction stormwater runoff may impact surface water bodies and best management practices should be applied to protect these water bodies before and after construction.	Douglas White, US Environmental Protection Agency	TVA will evaluate potential impacts to stormwater in the EIS. TVA and SR Tullahoma would comply with the terms of the Stormwater Pollution Prevention Plan prepared as part of the National Pollutant Discharge Elimination System permitting process to control soil erosion and runoff, such as the installation of erosion control silt fences and sediment traps. TVA and SR Tullahoma would also implement other routine best management practices as necessary, such as selective herbicide treatment to restrict application near receiving water features and proper vehicle maintenance to reduce the potential for adverse impacts to surface water and groundwater.
10	NOI	Mitigation Measures; Biological Resources	Portions of the study area have exceptional potential for protection and management as a regionally important natural area, especially in support of the restoration of oak savanna grasslands and associated wetlands. The limited ecological and biological work that has been done in the study area has identified several wet grassland species on the Tennessee Rare Plant List, including short-leaved panic grass (*Dichanthelium ensifolium* subsp. *curtifolium*), button sedge (*Carex bullata*), dwarf sundew (*Drosera brevifolia*), yellow crested orchid (*Platanthera cristata*), and Tennessee featherbells (*Stenanthium tennessense*), the latter being globally imperiled. Powerline and roadside rights-of-way in the study area contain remnants of the grassland flora, including rare species, endemic to the region prior to fire suppression. These corridors, along with their nearby woodlands, are high priority sites for conservation. The ponds in the study area may harbor rare species and natural communities and would benefit from restoration. While solar production is likely suitable for some sections of the property, for those areas that are the most ecologically sensitive, we see the potential for coupling preservation of rare species, ecological restoration, and public education and outreach.	Dwyane Estes (Southeastern Grasslands Initiative)	TVA will evaluate potential impacts to biological resources in the EIS. TVA's analyses will include whether or not rare species and natural communities are known or potentially present in the study area or immediate vicinity via species habitat and/or presence/absence surveys, as also discussed in Comment No. 15. If needed, TVA and SR Tullahoma will consider conservation and environmental enhancement efforts, in coordination with state and federal agencies, as potential mitigation measures.
11	NOI	Socioeconomics	Statement that solar energy creates more jobs per Terawatt-hour (TWh), at 2,200/TWh, than the oil industry, at 1,000/TWh. The commenter further implies that this makes solar energy an economically viable source of renewable energy.	Lakshya Bharadwaj	TVA will evaluate potential impacts to employment in the EIS. TVA will consider how reduced energy costs from solar may be relevant to the socioeconomic analysis presented in the EIS.

Comment No.	Document	Topic	Public / Agency Comment	Commenter(s)	TVA Response
12	NOI	Socioeconomics	Statement that the decision to purchase solar energy can promote community awareness and community solar farms, the latter of which are known to reduce electricity bills by 10 to 15 percent.	Lakshya Bharadwaj	Comment noted.
13	NOI	Environmental Justice	Ensure protected populations are not disproportionately or adversely impacted by the project. The US Environmental Protection Agency (EPA) also promotes compliance with Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, if applicable. Please use the EJSCREEN tool (https://www.epa.gov/ejscreen) as part of the NEPA analysis process.	Douglas White, US Environmental Protection Agency	TVA will evaluate potential impacts to minority and low-income populations, also known as environmental justice populations or "protected populations," in the EIS in accordance with EO 12898 and associated CEQ and USEPA guidance using US Census Bureau data and other state and local socioeconomic data, as appropriate. TVA will also comply with EO 13166, Improving Access to Services for Persons with Limited English Proficiency, if applicable in the project area, in public notifications for the Project.
14	NOI	Surface Water	Soil maps indicate the presence of hydric soils at the site suggest that coordination with Tennessee Department of Environment and Conservation (TDEC) and possibly the US Army Corps of Engineers (USACE) will be required for stream and wetland protection.	Dillon Blankenship, Tennessee Department of Environment and Conservation, Tennessee Natural Heritage Program	TVA is coordinating with TDEC and USACE on the surface water resources identified on the project site and will evaluate potential impacts to these in the EIS. TVA and SR Tullahoma would establish and maintain minimization buffers around water resources, per TVA's standard BMPs for protection of water resources. Impacts to resources deemed jurisdictional to TDEC and USACE would be permitted in compliance with the Clean Water Act Sections 401 and 404.

Comment No.	Document	Topic	Public / Agency Comment	Commenter(s)	TVA Response
15	NOI	Agency Coordination; Biological Resources	Recommendations that a thorough field inventory of rare species be conducted for the study area in order to develop avoidance and minimization measures. Southeastern Grasslands Initiative recommended such a survey be conducted by trained botanists and ecologists knowledgeable about the many rare species and natural communities known from The Barrens of the Eastern Highland Rim. The Tennessee Natural Heritage Program reviewed the state's database with regard to the project boundaries and found six rare plant species and three rare wildlife species that have been observed previously within the project area or within one mile of the project area and eleven rare plant species and three rare wildlife species have been reported within four miles of the project area. Both entities offered to participate in the field inventory. Following the survey and the potential identification of rare species or associated habitat, the commenters offered to provide more specific recommendations such as the portions of the property that could be designated as natural areas. Both commenters recommended that the project coordinate with the Tennessee Wildlife Resources Agency (TWRA), Region 2, to ensure that rare species and natural communities are known for the project area or legal requirements for protection of state listed rare animals are addressed.	Dillon Blankenship, Tennessee Department of Environment and Conservation, Tennessee Natural Heritage Program, and Dwyane Estes, Southeastern Grasslands Initiative	TVA compiled lists of rare plants and animals from the Tennessee Department of Environment and Conservation (TDEC), as well as from the US Fish and Wildlife Service and TVA's Regional Natural Heritage Database, for the project area. TVA acknowledges the offer of assistance in the surveys and assures TDEC and the Southeastern Grasslands Initiative that the surveys are being conducted with the knowledge of potential protected species, per the compiled rare species lists. TVA is investigating the project site for suitability or presence of these species, and the field results and an analysis of impacts to the species and habitat will be provided in the EIS. TVA will provide notice to TDEC, TWRA, and other commenters and potentially interested state and federal agencies when the Draft EIS is issued for public review and comment.

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From: Wufoo
To: nepa
Subject: NEPA Comments - Moore County Solar [#1]
Date: Friday, May 07, 2021 8:21:54 AM

Name	Lakshya Bharadwaj
City	Orono
State	Maine
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

Hello,

I understand that the point of this section is to discuss suggestions and concerns regarding the scope and components of the environmental impact study, and I will try to concisely do the same. This particular purchase of solar energy is a direct action indicating demand and support for the expansion of solar energy in the USA. Consequently, this procurement of energy will have an influence on energy policy in some manner, major or minor. For this reason, I appreciate the idea of a thorough environmental assessment.

These components may already be part of the study, but if they are not, I would like to point out how crucial it can be to account for the role solar energy plays in generating renewable energy jobs. At about 2200 jobs per TWh, solar energy creates many more jobs per unit of electricity generation than, for example, the oil industry does at about 1000 jobs per TWh. Moving forward, we need economically viable sources of renewable energy, and this statistic helps the cause greatly.

When it comes to emissions, solar energy is responsible for an emissions amount that is 95% less than that associated with the use of fossil fuels. Another environmental factor to keep in mind is the zero water requirement solar energy (Photo Voltaic) production has. The decision to purchase solar energy can also pave the way for community awareness and the involvement of community solar farms that are known to reduce electricity bills by 10% – 15%.

Thank you for your time, and best wishes for this project!

Sincerely,
Lakshya Bharadwaj

From: Kopec, Brett A <bkopec@usgs.gov>
Sent: Tuesday, May 11, 2021 8:35 AM
To: nepa
Cc: Janowicz, Jon A
Subject: Fw: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER21/0166 - NOI TVA to Prepare an EIS for the purchase of electricity generated by the proposed Moore County Solar Project, Moore County, Tennessee

Brett Kopec
USGS
Administrative Operations Assistant

From: Gordon, Alison D <agordon@usgs.gov>
Sent: Monday, May 10, 2021 1:53 PM
To: Kopec, Brett A <bkopec@usgs.gov>
Cc: Janowicz, Jon A <jjanowicz@usgs.gov>
Subject: Fw: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER21/0166 - NOI TVA to Prepare an EIS for the purchase of electricity generated by the proposed Moore County Solar Project, Moore County, Tennessee
The USGS has no comment at this time. Thank you.

From: oepchq@ios.doi.gov <oepchq@ios.doi.gov>
Sent: Monday, May 3, 2021 7:39 AM
To: Reddick, Virginia <Virginia_Reddick@ios.doi.gov>; Treichel, Lisa C <Lisa_Treichel@ios.doi.gov>; Alam, Shawn K <Shawn_Alam@ios.doi.gov>; Braegelmann, Carol <carol_braegelmann@ios.doi.gov>; Kelly, Cheryl L <cheryl_kelly@ios.doi.gov>; ERs, FWS HQ <FWS_HQ_ERs@fws.gov>; Runkel, Roxanne <Roxanne_Runkel@nps.gov>; Stedeford, Melissa <Melissa_Stedeford@nps.gov>; Hamlett, Stephanie R <shamlett@osmre.gov>; Janowicz, Jon A <jjanowicz@usgs.gov>; Gordon, Alison D <agordon@usgs.gov>; oepchq@ios.doi.gov <oepchq@ios.doi.gov>; Stanley, Joyce A <Joyce_Stanley@ios.doi.gov>
Subject: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER21/0166 - NOI TVA to Prepare an EIS for the purchase of electricity generated by the proposed Moore County Solar Project, Moore County, Tennessee
This e-mail alerts you to a Environmental Review (ER) request from the Office of Environmental Policy and Compliance (OEPC). This ER can be accessed here.
To access electronic ERs visit the Environmental Assignments website: https://ecl.doi.gov/ERs.cfm. For assistance, please contact the Environmental Review Team at 202-208-5464.
Comments due to Agency by: 06/04/21

From: [redacted]
Sent: Tuesday, May 11, 2021 9:40 AM
To: nepa
Subject: Comment from Moore County, Tennessee concerning solar power.

My comment is solar energy is a possible. Plus in certain areas in our daily .Life, but it could be devastating in other areas of our daily life. I keep remembrng those people in Texas that almost froze to death this past winter.

I believe God has taken care of us all these years but we do need to watch what we allow to enter our atmosphere .

Think I we would be better to repair an reinforce the infrastructures we have. Now

Thank you
Brenda

From: White, Douglas
To: nepa
Cc: Kajumba, Ntale; Somerville, Amanetta
Subject: TVA NOI Moore County Solar NEPA EPA Comments
Date: Friday, May 28, 2021 12:47:43 PM

Good afternoon Ms. Pilakowski,

Re: Notice of Intent for the Tennessee Valley Authority Preparation of an Environmental Impact Statement or Environmental Assessment for the Purchase of Electricity Generated by the Proposed Moore County Solar Project in Moore County, Tennessee.

The U. S. Environmental Protection Agency (EPA) is in receipt of the referenced document and has reviewed the subject proposal in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The EPA understands that the Tennessee Valley Authority (TVA) is conducting a NEPA analysis for the proposed construction, operation, and maintenance of a 200-megawatt solar facility in Moore County, Tennessee. The proposed project will occupy 2,000 acres of a predominantly forested 3,300-acre study area bordering Tullahoma. The proposed actions will increase solar power generation as recommended by TVA's 2019 Integrated Resource Plan (IRP) and in response to customer demand for renewable energy.

The EPA recognizes that the proposed solar project has the potential to provide a net benefit to human health and the environment. Based on our review of the scoping document, the EPA has the following comments:

Alternatives: The EPA appreciates the TVA efforts towards developing and analyzing an appropriate amount of alternative project proposals. The EPA recommends including details of considered alternatives within the NEPA documents. Please consider using the NEPAssist tool (https://www.epa.gov/nepa/nepassist), in addition to localized data sources and tools, when conducting the NEPA analysis. NEPAssist combines multiple Geographic Information System (GIS) and internet databases to help screen for environmental concerns.

Wetlands and Streams: This proposed action is situated in a predominantly forested area home to interspersed creeks and wetlands. The EPA recommends that design proposals and construction avoid impacting these Waters of the United States (WOTUS) to the maximum extent practicable by locating permanent proposed infrastructure and temporary construction measures away from WOTUS and respective buffers. WOTUS should be delineated and coordination with the US Army Corps of Engineers (USACE) should be made where proposed activities might enter or affect WOTUS. Flood water mapping should occur to ensure proposed activities do not take place in floodplains except where alternatives are not practicable.

Stormwater - The proposed action has the potential to disturb a considerable amount of soil and a state or county construction stormwater permit will likely be required before construction can begin. Construction stormwater runoff may impact surface water bodies and best management practices should be applied to protect these water bodies before and after construction.

Air Quality and Climate Change: Solar energy has the potential to preserve regional air quality when used to meet growing energy needs and contributes to improved air quality when replacing existing fossil fuel energy sources. The EPA recommends that net greenhouse gas emissions related to this proposal and TVA's 2019 IRP be considered in the NEPA analysis;

While efforts to limit climate change may not lessen the significance of directly or indirectly unrelated impacts, their growing necessity has the potential to provide the substance of decision-making where comparisons of proposals and resulting impacts must be made. Additionally, this project site is within an attainment area for air quality standards, however localized impacts to air quality could occur during construction due to equipment exhaust emissions and fugitive dust. The EPA recommends implementing measures to reduce diesel emissions, such as switching to cleaner fuels, retrofitting current equipment with emission reduction technologies, repowering older engines with newer cleaner engines, replacing older vehicles, and reducing idling through operator training and/or contracting policies. We also encourage controlling fugitive dust by watering or the application of other controlled materials.

Environmental Justice: Consistent with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actionsaddress-environmental-justice), please ensure protected populations are not disproportionately or adversely impacted by the project. We also promote compliance with Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, if applicable. Please use the EJSCREEN tool (https://www.epa.gov/ejscreen) as part of the NEPA analysis process. EJSCREEN combines environmental and demographic data to help determine environmental justice concerns that are integral to the NEPA process.

Energy and Land Use: The EPA commends the TVA for pursuing solar energy sources to meet the electricity needs of the Tennessee Valley region. This proposed action provides the TVA an opportunity to study land use efficiency of solar energy development in the Tennessee Valley region. Local climate, ecosystems, and agriculture affect the net benefit of photovoltaic solar infrastructure regarding carbon release and sequestration. The EPA recommends consideration of dual land use where land use efficiency can be increased (https://www.energy.gov/eere/solar/farmers-guide-going-solar).

Thank you for the opportunity to provide comments on the TVA's proposed project in Moore County Tennessee. If you have any questions, feel free to contact me via the information provided below.

V/R Douglas White
U.S. Environmental Protection Agency / Region 4
Strategic Programs Office, NEPA Section
61 Forsyth Street, SW
Atlanta, GA 30303-8960
Office: 404-562-8586
white.douglas@epa.gov

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Natural Areas
Natural Heritage Program
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 2nd Floor
Nashville, Tennessee 37243
Phone 615/532-0431 Fax 615/532-0046

June 3, 2021

Ashley Pilakowski
TVA
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902

Subject: Moore County Solar Project
(35.35659, -86.27623)
Moore County, TN
Rare Species Database Review

Dear Ms. Pilakowski:

Thank you for allowing us to comment on the Moore County Solar Project proposed by TVA.

Per your description in the Notice of Intent:

> *TVA has entered into a PPA with Silicon Ranch Corporation to purchase 200 MW AC of power generated by the proposed Moore County Solar Project, hereafter referred to as the project. The proposed 200 MW AC solar facility would occupy approximately 2,000 acres of the roughly 3,300-acre Project Study Area which is located entirely in Moore County, Tennessee. The project site is bisected by State Route 55 and its eastern boundary borders the western city limits of Tullahoma, Tennessee. The project site is mostly forested with areas of wetlands, croplands, and early successional fields. A TVA 161-kilovolt transmission line runs north-south through the site*

We have reviewed the state's natural heritage database with regard to the project boundaries, and we find that the following rare species have been observed previously within the project area or within one mile of the project area:

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	*Dichanthelium acuminatum ssp. leucothrix*	Roughish Witchgrass	G4?Q	S1	--	S	Moist Pine Barrens
Vascular Plant	*Dichanthelium ensifolium ssp. curtifolium*	Short-leaved Panic Grass	G4T3?	S1	--	E	Boggy Areas

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	*Drosera brevifolia*	Dwarf Sundew	G5	S2	--	T	Wet Barrens and Ecotones
Vascular Plant	*Platanthera cristata*	Yellow Crested Orchid	G5	S2S3	--	S	Acidic Seeps and Stream Heads
Vascular Plant	*Stenanthium tennesseense*	Death-camas	G2	S2	--	T	Acidic Wetlands
International Vegetation Classification - Natural	*Quercus phellos - Quercus alba / Vaccinium fuscatum - (Viburnum nudum) / Carex barrattii Wet Forest*	Barrens Depression Willow Oak Forest	G2	SNR	--	Rare, Not State Listed	
Vertebrate Animal	*Fundulus julisia*	Barrens Topminnow	G1	S1	LE	E	Springs, spring runs, and first- and second-order headwaters and creeks in the Barrens of Cannon, Coffee, & Warren counties.
Vertebrate Animal	*Hemitremia flammea*	Flame Chub	G3	S3	--	D	Springs and spring-fed streams with lush aquatic vegetation; Tennessee & middle Cumberland river watersheds.
Vertebrate Animal	*Myotis grisescens*	Gray Myotis	G4	S2	LE	E	Cave obligate year-round; frequents forested areas; migratory.

Within four miles of the project area the following additional rare species have been reported:

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	Eleocharis wolfii	Wolf Spike-rush	G3G5	S1	--	E	Wet Woods on Floodplains

Type	Scientific Name	Common Name	Global Rank	St. Rank	Fed. Prot.	St. Prot.	Habitat
Vascular Plant	Gaylussacia dumosa	Dwarf Huckleberry	G5	S3	--	T	Barrens
Vascular Plant	Gymnopogon brevifolius	Broad-leaved Beardgrass	G5	S1S2	--	S	Barrens
Vascular Plant	Helianthemum propinquum	Low Frostweed	G4	S1S2	--	E	Barrens
Vascular Plant	Helianthus eggertii	Eggert's Sunflower	G3	S3	DM	S	Barrens and Roadsides
Vascular Plant	Iris prismatica	Slender Blue Flag	G4G5	S2S3	--	T	Wet Barrens
Vascular Plant	Lespedeza angustifolia	Narrowleaf Bushclover	G5	S2	--	T	Barrens
Vascular Plant	Prenanthes aspera	Rough Rattlesnake-root	G4?	S1	--	E	Barrens and Roadsides
Vascular Plant	Prunus pumila	Sand Cherry	G5	S1	--	E	Barrens
Vascular Plant	Rhynchospora perplexa	Obscure Beak-rush	G5	S2	--	T	Marshes, Wet Barrens
Vascular Plant	Silene ovata	Ovate Catchfly	G3	S2	--	E	Open Oak Woods
Invertebrate Animal	Hesperochernes mirabilis	Southeastern Cave Pseudoscorpion	G5	S3	--	Rare, Not State Listed	Terrestrial cave obligate; woodrat debris in caves; middle Tennessee.
Vertebrate Animal	Etheostoma luteovinctum	Redband Darter	G4	S4	--	D	Limestone streams; Nashville Basin & portions of Highland Rim.
Vertebrate Animal	Pituophis melanoleucus melanoleucus	Northern Pinesnake	G4T4	S3	--	T	Well-drained sandy soils in pine/pine-oak woods; dry mountain ridges; E portions of west TN, E to lower elev of the Appalachians.

The Division of Natural Areas - Natural Heritage Program has reviewed the location of the proposed project workspace with respect to rare plant species. Based on the habitat within the project area and the type of project, we anticipate potential impacts to occurrences of rare, threatened, or endangered plant species from this project.

This portion of Moore County is more similar to Coffee County and its suite of natural communities and species than to the rest of Moore County. The site could contain as many rare species as ecologically rich areas of the Eastern Highland Rim Barrens nearby in Coffee County. Extensive rare species surveys would be needed to ensure minimal impact; the known rare plants will likely be wet woodland or open wetland and barrens species. Following surveys, it may be possible for locations with rare species or significant natural communities to be avoided in development plans and possibly enhanced with suitable habitat management. As such, some portions of the property could be appropriate for non-binding natural area registry agreements or even designation, if appropriate.

Moreover, soil maps indicating the presence of hydric soils at the site suggest that coordination with TDEC and possibly USACE will be required for stream and wetland protection. The Division requests further correspondence from the requesting party as rare species surveys are undertaken and project plans are developed for the site. The Division may be available to provide technical assistance in conducting surveys for rare species and natural communities within the Eastern Highland Rim Barrens region. The Division of Natural Areas considers this property of high conservation value due to the multiple listed rare species and rare wetlands on the site. The Division will support long term conservation efforts for this valuable resource.

We ask that you also coordinate this project with the Tennessee Wildlife Resources Agency (Region 2, Mike Murdock, 615-781-6581, mike.murdock@tn.gov) to ensure that legal requirements for protection of state listed rare animals are addressed. Additionally, we ask that you contact the U.S. Fish and Wildlife Service Field Office, Cookeville, Tennessee (931-525-4970) for comments regarding federally listed species

Thank you for considering Tennessee's rare species throughout the planning of this project. Should you have any questions, please do not hesitate to contact me at 615-532-4799 or dillon.blankenship@tn.gov.

Sincerely,

Dillon

Dillon Blankenship | Environmental Review Coordinator
Tennessee Natural Heritage Program

SOUTHEASTERN GRASSLANDS INITIATIVE

Ashley Pilakowski
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902

June 4, 2021

Re: Moore County, TN Solar Project site

Ms. Pilakowski:

We're writing to express our interest in and concern regarding a tract of land under consideration for conversion to a solar energy production facility (the Moore County Solar Project). In short, we believe portions of the tract have exceptional potential for protection and management as a regionally-important natural area, especially for the restoration of oak savanna grasslands and associated wetlands. We envision win-win opportunities for solar production, rare species conservation, ecological restoration, and public education and outreach.

This particular area is known to support high-quality examples of globally rare flatwoods and wet grassland (in the powerline rights-of-way) natural communities that support several species of state and global conservation concern. As far as we are aware, only limited ecological and biological inventory work has been done on the site but several wet grassland species on the *Tennessee Rare Plant List* have been documented including Short-leaved Panic Grass (*Dichanthelium ensifolium* subsp. *curtifolium*), Button Sedge (*Carex bullata*), Dwarf Sundew (*Drosera brevifolia*), Yellow Crested Orchid (*Platanthera cristata*), and Tennessee Featherbells (*Stenanthium tennessense*). This latter species was described new-to-science in 2017, by one of SGI's team members (Dr. Alan Weakley), and is extremely rare globally, with a conservation status rank of G2S2 (Globally Imperiled). This savanna endemic wildflower is known to survive in just a handful of populations in four counties in central Tennessee and nowhere else in the world. Protecting and properly managing populations of Tennessee Featherbells is among the highest conservation priorities in the state and region. In addition, it is highly likely that other savanna and open wetland species of state and global concern occur on the property and will be found with additional inventory. We recommend that you check with the Tennessee Natural Heritage Program and Tennessee Wildlife Resources Agency to determine if other rare species and natural communities are known from the site or immediate area.

Prior to Euro-American settlement and the disruption of naturally occurring landscape-scale fires (which burned historically every 1-5 years based on recent tree-ring research), this area of the Eastern Highland Rim of Tennessee, known as "The Barrens," was a mosaic of grasslands (oak savannas, prairies, marshes), open grassy flatwoods, and forested wetlands. During the past century-and-a-half these savanna grasslands and other open communities have become unnaturally densely forested (as they are today) due to prolonged fire suppression. The more open of these communities – the grasslands and grassland-related woodlands – supported extraordinarily high concentrations of plant and animal species, many of which have declined dramatically and are today listed as species of conservation concern (rare species) by the State of Tennessee. Remaining intact examples (including open road and utility rights-of-way through otherwise "closed in" savannas and woodlands) are known to support many of these species of concern. Nearby examples include May Prairie State Natural Area, Powerline Barrens State Natural Area, and a number of other sites on Arnold Air Force Base. Many sites that have been degraded by becoming "closed in" may still contain enough

SOUTHEASTERN GRASSLANDS INITIATIVE

remnant grassland species to be considered restorable. Additionally, powerline and roadside rights-of-way on the tract contain remnants of the grassland flora, including these rare species. These corridors along with their nearby woodlands are also high priority sites for conservation.

These fire-suppressed flatwoods are seasonally wet and often contain embedded permanent wetlands. Analysis of aerial imagery shows the presence of numerous sinkhole depression ponds or other wetlands on the tract. Recent research by a graduate student at Austin Peay State University, who studied dozens of these ponds across the southern Eastern Highland Rim, found that ponds in this region are globally unique wetlands that support numerous rare plant species, including several that occur nowhere else in Tennessee or outside of the "Barrens" area. These ponds, like the nearby flatwoods, have become excessively dense with woody vegetation over the past century. The student found that these ponds have a high number of light-dependent rare wet grassland species and, like the adjacent flatwoods, they are in need of restoration to create more of an open savanna grassland mosaic. It is likely that the ponds on this tract in Moore County harbor some of these rare species and natural communities and would benefit from restoration.

The Southeastern Grasslands Initiative (SGI) works to conserve, restore, and promote native grasslands of all types throughout the southeastern United States. We work with a wide variety of partners (including the Tennessee Valley Authority) to identify, protect, restore, and manage sensitive ecological sites such as this one. We are presently working on a project with the TVA studying remnant grassland plant communities in transmission powerline rights-of-way in the adjacent Cumberland Plateau Ecoregion. We recommend a thorough inventory of the site by trained botanists and ecologists knowledgeable about the many rare species and natural communities known from The Barrens of the Eastern Highland Rim. This work is essential prior to development so that the most ecologically sensitive areas can be considered in the planning of the site. We would be happy to participate in such inventory and offer further, more specific recommendations regarding areas deserving protection, restoration, and management.

In summary, there are "win-win" opportunities for this project. While solar production is likely suitable for some sections of the property, for those areas that are the most ecologically sensitive, we see the potential for coupling preservation of rare species, ecological restoration, and public education and outreach. Restoration of the grassland components of The Barrens has been a high priority for our organization since its inception. For the past several months, we have been having conversations with leaders in education, business, and municipal government in Moore County about how to escalate grassland conservation efforts in The Barrens. We see opportunities here to accomplish something very special through collaboration.

Thank you for the opportunity to comment.

Dwayne Estes Ph.D., Executive Director

Theo Witsell, Chief Ecologist

Southeastern Grasslands Initiative | Center of Excellence for Field Biology | Austin Peay State University | Clarksville, TN 37044 | 931-221-7771 | www.segrasslands.org |

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INVITATION FOR PUBLIC COMMENT (Ad to post on or after 4/22/2022)

Moore County Solar Project

The Tennessee Valley Authority (TVA) is asking the public to provide input on a Draft Environmental Impact Statement (EIS) for the Moore County Solar project in Moore County, Tennessee. Details of the review are available at www.tva.com/nepa.

TVA has entered into a power purchase agreement (PPA) with SR Tullahoma, LLC, a wholly owned subsidiary of Silicon Ranch Corporation, to purchase the power generated by the proposed Moore County Solar Project in Moore County, TN, contingent on completion of environmental reviews. The Project is anticipated to generate up to 200 megawatts (MW) alternating current (AC) output. The proposed solar facility would be constructed and operated by SR Tullahoma, LLC.

The purpose of the Moore County Solar project Draft EIS is to address the potential environmental effects associated with constructing, operating, maintaining and decommissioning the solar photovoltaic (PV) facility versus taking no action. The Draft EIS includes two alternatives: a No Action Alternative and an Action Alternative.

Under the No Action Alternative, TVA would not implement the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar PV facility at this location. Under the Action Alternative, SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar on an approximately 3,463-acre Project Site. The Project would connect to TVA's existing adjacent Franklin–Wartrace No. 2 161-kV transmission line and would include the building of an on-site 161-kV substation and switchyard. The entire 200-MW output from the Solar Facility would be sold to TVA under the terms of the PPA.

The complete Draft EIS document is available online at https://www.tva.com/NEPA.

Virtual Public Open House

TVA plans to host a virtual public open house on May 23, 2022, from 6:00 p.m. – 7:30 p.m. CT. Please register to attend at https://adobe.ly/3uSYios and receive the link to join the event from your computer or device.

Submitting Comments

TVA invites you to comment on the draft EIS. Comments must be received or postmarked no later than **June 6, 2022**. Electronic comment submittals are preferred. Any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection.

Written comments should be sent to:
Tennessee Valley Authority
ATTN: Ashley Pilakowski, NEPA Specialist
400 West Summit Hill Drive, WT-11B, Knoxville, TN 37902

Email Comments Here: nepa@tva.gov

TVA MEDIA ADVISORY

TVA Seeks Public Input on Moore County Solar Project

TULLAHOMA, Tenn. – The Tennessee Valley Authority values public input and is launching a process to gather feedback on the Draft Environmental Impact Statement (EIS) for a proposed 200-megawatt solar farm in Moore County. This project underscores the agency's efforts to create a clean, carbon-free energy future.

The Moore County Solar Project EIS is available for a 45-day public review and comment period at https://www.tva.com/nepa. In addition, TVA will hold a virtual open house on Monday, May 23, 2022, beginning at 6 p.m. CST. TVA staff will be available virtually to answer questions and discuss a variety of topics related to project. Register here.

To promote job creation across the region and achieve its plans to add 10,000 megawatts of solar by 2035, TVA has entered into a power purchase agreement with SR Tullahoma, a wholly owned subsidiary of Silicon Ranch Corporation, to buy the power generated by the proposed solar farm, contingent on completion of environmental reviews. SR Tullahoma would construct and operate the proposed facility.

The EIS includes two alternatives: a No Action Alternative and an Action Alternative. Under the No Action Alternative, TVA would not implement the PPA to purchase the power generated by Moore County Solar, and SR Tullahoma would not develop a solar facility. Under the Action Alternative, SR Tullahoma would construct, operate, maintain, and eventually decommission Moore County Solar on an approximately 3,463-acre Project Site. TVA would use an existing powerline and build a new substation on the site to connect the facility to the electric grid.

The public comment period begins today and ends on June 6, 2022. Comments can be submitted online at www.tva.com/nepa, by email to nepa@tva.gov, and by mail in writing to Tennessee Valley Authority, ATTN: Ashley Pilakowski, NEPA Specialist, 400 W Summit Hill Dr., WT 11-B, Knoxville, TN 37902.

All comments received, including names and addresses, will become part of the administrative record and available for public inspection.

For more information about TVA and its 88-year mission of service to the Tennessee Valley, click here.

Media Contact: Scott Fiedler, Chattanooga, 901-414-6964
TVA Public Relations, Knoxville, 865-632-6000
www.tva.com/news

Follow TVA news on Facebook, Twitter and Instagram

(Anticipated Distribution Date: April 22, 2022)

You're Invited: Public Information Meeting

The Tennessee Valley Authority is asking the public to comment on a Draft Environmental Impact Statement for the purchase of electricity generated by the proposed Moore County Solar project in Moore County, Tennessee.

To learn about the proposed solar facility and its Draft Environmental Impact Statement and have your questions answered, you are invited to an online public information meeting to be held on **Monday, May 23, 2022, beginning at 6 p.m. CST.**

Click Here For Meeting Details

The draft environmental impact statement is available at **www.tva.com/nepa;** see Moore County Solar.
The presentation given during the meeting will be recorded and available for viewing on the project website.

Your Comments Are Welcomed

The 45-day public comment period is currently open. To be considered, mailed comments must be postmarked by June 6, 2022, emailed comments timestamped by 11:59 p.m. June 6, 2022.

Comments may be submitted by e-mail at nepa@tva.gov or mailed to:

Ashley Pilakowski
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902
aapilakowski@tva.gov

Please note that any comments received, including names and addresses, will become part of the project administrative record and will be available for public inspection.

TVA's Summary and Response to Public Comments Received on the Moore County Solar Draft EIS

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
1	2.2.2	Air Quality and Greenhouse Gas (GHG) Emissions	TDEC recommends the use of chippers as an alternative to open burning for disposal of tree waste as discussed in Section 2.2.2 of the Draft EIS and encourages alternatives to open burning for disposal of vegetation and untreated wood. In addition, TDEC recommends avoiding open burning on days air quality alerts have been issued.	Section 2.2.2 of the Final EIS has been revised to include the use of chippers as an alternative to open burning for disposal of tree waste. If burning is selected, only vegetation and untreated wood would be burned, and it would be done in accordance with applicable local ordinances or burn permit requirements and avoided on days air quality alerts have been issued, as much as feasible.	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC
2	3.9.2	Air Quality and GHG Emissions	How would the removal of trees impact air quality and GHG emissions?	As stated in Section 3.9.2 of the EIS, the removal of trees and other tall vegetation from 780 acres during construction of the Project would represent a minor loss of potential carbon sequestration. Trees and other tall vegetation currently remove carbon dioxide from the air and sequester it as biomass. The loss of this carbon sink would constitute a minor adverse impact as sequestration would have continued for the life of the vegetation and long into the future, assuming that the Project Site continued to be managed as forest. The loss of the carbon sink from tree removal would be at least partially offset by the increased sequestration of carbon in areas of cropland that would be converted to permanent grasslands. Trees also remove criteria pollutants such as sulfur dioxide, ozone, nitrogen dioxide, and small particulate matter from the atmosphere. The loss of this function would have a minimal effect on air quality in the local area. Over the longer term, the displacement of fossil-fuel generation by solar generation would reduce regional emissions of greenhouse gases and other air pollutants.	Mary Rogers

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
3	3.9.2	Air Quality and GHG Emissions	I have a livestock operation near the Project Site and the cattle are affected by heat stress during the summer. I believe the solar panels will cause additional stress due to the rise in heat near the panels.	Solar panels absorb solar radiation and generate heat. Recent studies have suggested that there is a minor "heat island" effect created by large-scale solar projects (Barron-Gafford et al. 2016). The heating effect at large-scale solar developments is similar to what occurs in urban or industrial areas that have many heat-absorbing structures and surfaces; but is much smaller and more localized. There is little evidence of negative offsite impacts from solar "heat islands." Research shows that any additional heating is minimal, dissipates quickly, and cannot be measured 100 feet away from solar developments (Binder 2016). The maintenance of grass and herbaceous vegetation under and around the solar panels and the resulting evapotranspiration would minimize any heat island effect. Therefore, average temperatures of the developed area are not expected to change significantly.	Chris Ray
4	3.9.2	Air Quality and GHG Emissions	How will dust be controlled during construction?	As stated in Section 3.9.2 of the EIS, fugitive dust emissions from construction areas and paved and unpaved roads would be mitigated using BMPs including wet suppression. Wet suppression can reduce fugitive dust emissions from roadways and unpaved areas by as much as 95 percent.	Mary Rogers
5	3.9.2	Air Quality and GHG Emissions	TDEC recommends that all construction equipment employed on site be well maintained and equipped with the latest emissions control equipment, and that any idling of heavy-duty non-road mobile sources be kept to a minimum.	Comment noted. The use of construction equipment, which would be well maintained and equipped with the latest emissions control equipment, would cause a minor temporary increase in GHG emissions during construction activities, as evaluated in the Section 3.9 of the EIS.	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC
6	3.9.2	Air Quality and GHG Emissions; Noise; Waste Management	TDEC recommends that electric-powered lawn equipment and electric portable earthmoving equipment be used to reduce air emissions, noise, and petroleum fuels on-site.	Comment noted. The use of mechanized equipment for post-construction vegetation management would be minimal as the area would be managed as sheep pasture. SR Tullahoma will evaluate the use of electric-powered equipment when mechanized equipment is needed for future site maintenance work.	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
7	2	Alternatives	Why were only two alternatives evaluated?	NEPA requires the analysis of reasonable alternatives, which are those that are technically and economically feasible and meet the proposal's purpose and need. As stated in Chapter 2 of the EIS, through scoping, TVA determined that from the standpoint of NEPA, there are two feasible alternatives available: the No Action Alternative and the Proposed Action Alternative.	Legal department, Arnold AFB
8	2.3	Alternatives	Chapter 2 describes the site selection process but does not mention what other sites were evaluated and why those alternate sites are insufficient. The screening factors are included without an accompanying analysis to the specific sites.	The site selection criteria are described in Section 2.3 of this EIS. The selected site meets these criteria as well as providing adequate contiguous acreage to support a utility scale solar site. In response to customer demand, TVA issues a yearly renewable Request for Proposal (RFP). As part of the proposal/project selection process, TVA considers multiple factors before selecting to pursue a proposed project such as cost, schedule, developers experience, environmental and cultural resources, transmission, and economic development.	Legal department, Arnold AFB
9	2.3	Alternatives	Would it be feasible to construct a solar facility within a transmission line (TL) right-of-way (ROW)?	Encroachment of any type of structures within TVA TL ROWs potentially violates North American Electric Reliability Corporation clearance standards and interferes with the vegetative maintenance requirements for proper operation of the transmission system. In most cases, TVA does not own the property and only possesses easement rights to operate and maintain the TL and no other facilities.	Mary Rogers

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
10	2.3	Alternatives	TVA should consider other technologies such as rooftop solar or nuclear instead of utility-scale solar.	As described in Chapter 1 of this EIS, TVA is committed to increasing its use of clean, non-carbon emitting generation, while maintaining a reliable, low-cost power system. To achieve this, and in response to customer demand, TVA has established goals for additional renewable generating capacity, including solar energy. Customer demand for cleaner energy prompted TVA to release an RFP for renewable energy resources. The power purchase agreement for Moore County Solar that resulted from this RFP will help TVA meet immediate needs for additional renewable generating capacity. In general, the cost for distributed generation, such as rooftop solar, is higher than utility-scale solar generation. Additionally, the cost and timeframe associated with nuclear technology is incompatible with the needs of this Project. The Proposed Action would help TVA achieve the purpose and need of this Project in a cost-effective manner.	Stuart Coulter; Richard Franks
11	3.5.4	Biological Resources (Threatened and Endangered Species)	The removal of trees could impact gray bats by increasing the risk of predation as they fly between the retained higher quality forested habitat, water sources, and nearby caves. The impacts to surface waters may impact mayflies, which are essential to the gray bat diet. The development of the site may also facilitate other nearby development with harmful effects on listed species.	As stated in Section 3.5.4 of the EIS, although gray bats were documented foraging on the Project Site, no hibernacula or summer roosts would be impacted by the proposed actions. Site design has minimized impacts to bodies of water and BMPs for controlling soil erosion and runoff and the use of 50- to 60-foot buffer zones surrounding intermittent and perennial streams and wetlands will be used to further minimize impacts. In addition to mayflies, diet analyses studies indicate gray bats eat a wide variety of species including moths, beetles, flies, and arachnids. The U.S. Fish and Wildlife Service concurred with TVA's determination that proposed actions may affect but are not likely to adversely affect gray bat.	Anonymous

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
12	3.5.1	Biological Resources (Vegetation)	The project area contains high-quality examples of globally rare flatwoods and wet grassland natural communities as well as several species of state and global conservation concern. We recommend that SR Tullahoma and TVA prepare a restoration and management plan for the grassland areas of the TL and roadway ROWs, as well as the savannah-like forests, with input from in-state conservation professionals. These areas need periodic management to keep the tree canopy sufficiently open and ongoing management activities such as prescribed fire, haying or flash grazing, and targeted control of non-native invasive species.	The Final EIS has been revised to include that the Project would avoid identified sensitive plant and animal resource areas in accordance with an Avoidance Agreement between TVA and SR Tullahoma.	Dwayne Estes and Theo Witsell, Southeastern Grasslands Initiative
13	3.5.2	Biological Resources (Wildlife)	The DEIS discusses impacts to endangered and threatened species in great detail, as well as associated mitigation measures. It lacks a similar discussion, as well as a conservation plan or mitigation measures, for migratory birds of conservation concern.	Impacts to migratory birds of conservation concern are described in Section 3.5.2 of the EIS. At least 11 species of migratory birds of conservation concern likely occur on the Project Site, as well numerous species of more common migratory and non-migratory birds. Overall, while the implementation of the Project would have adverse effects on some migratory bird species, particularly those occupying woodlands, the effect would be localized and minor. TVA has determined that a conservation plan or mitigation for migratory birds of conservation concern is not warranted.	Zach Marx

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
14	3.5.2	Biological Resources (Wildlife)	Concern that the DEIS lacks information on how wildlife in surrounding areas would be impacted by wildlife dispersing from the Project Site.	Section 3.5.2 of the EIS has been revised to better address this topic. Approximately 780 acres of forest would be cleared. This would reduce the amount of suitable habitat for wildlife occurring in these areas, resulting in the likely decline of the local populations of many species. Some more mobile wildlife would disperse into surrounding areas, although their survival in these areas may be low due to competition with other members of their species. This dispersal would likely have little long-term effect on wildlife populations in the surrounding areas.	Zach Marx
15	2.2.4	Decommissioning	What is the process for decommissioning?	Decommissioning is described in Section 2.2.4 of this EIS. In brief, once the decision is made to cease operating the solar facility, SR Tullahoma would remove the above-ground facility components as well as below-ground components to a depth of at least three feet. Removed materials would be recycled to the extent possible and remaining materials disposed of at approved facilities.	David Baldovin
16	2.2.4	Decommissioning	What happens if the solar panels wear out?	The performance of the solar panels will be monitored during the operation of the facility and failed panels will be replaced as necessary. The failed panels will be recycled to the extent feasible or otherwise disposed of at an approved facility in accordance with applicable federal, state, and local laws and regulations. Once the decision is made to stop operating the facility, the solar panels would be removed and recycled or otherwise disposed of as part of the overall decommissioning process.	David Baldovin
17	3.16	Environmental Justice	EPA recommends that TVA continue to coordinate with and seek mutually agreeable arrangements with nearby residents, businesses, and governments, as indicated during the scoping meeting on May 23, 2022.	Comment noted. The Project will be engaging with the public more as local zoning coordination and negotiations are undertaken.	Mark Fite, Director of Strategic Programs Office, USEPA

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
18	2.2.3	Facility Operations	I am concerned about sheep escaping the solar farm site and walking onto the busy highway.	Sheep will be kept within temporary fencing within the Project Site where additional six-foot-tall chain-link security fencing with gates that remain locked except when the site is being accessed by Project personnel. The fencing will be regularly inspected and any breaches promptly repaired. Given this, it is extremely unlikely that sheep would escape from the site.	Mary Rogers
19	2.2.3	Facility Operations	Dust and pollen are problems in the local area. How will their prevalence be affected?	Dust generated during construction will be managed in accordance with best management practices as described in Sections 2.2.2 and 2.5 of the EIS. Precipitation in the region is typically adequate to remove dust, pollen, and other debris from the PV modules while maintaining energy production. In the event this is not sufficient, the panels would be washed with water.	Mary Rogers
20	2.2.3	Facility Operations	What happens if the solar panels are damaged during a severe weather event?	The various components of the solar facility are designed to withstand severe weather events such as ice storms, hail storms, and tornadoes with minimal damage. The facility will be monitored both remotely and by regular on-site inspections and additional on-site inspections will be conducted following extreme weather events.	Mary Rogers
21	2.2.3	Facility Operations	In the event of an energy emergency, will the solar facility be able to provide emergency access to energy to the surrounding region?	No. The energy produced from the facility will be delivered to the TVA bulk electric system and not the distribution system, which provides electricity to nearby areas.	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC; Mary Rogers
22		General	We support the Project.	Comment noted.	Breaux Gargano; Linda Zanaty

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
23	3.2.2	Land Use	The solar farm will occupy a tremendous area of high-quality land and result in the loss of forest, wetland, cropland, and early successional field. This may be more detrimental to the ecosystem than the benefits of the renewable generation source.	Impacts to forest, wetland, cropland, and early successional fields are summarized in Section 2.4 of the EIS and described in detail in Sections 3.2, 3.3, 3.3, 3.4, and 3.5. Impacts to wetlands and early successional fields would be minimal. While impacts to forest and cropland would be greater, TVA has determined that the benefits of the Project outweigh any adverse impacts. The Project is not expected to affect nearby land uses.	Dustin Bingham; Stuart Coulter
24	2.2.2; 2.2.3; 3.13.2	Public Health and Safety	What security measures will be used at the solar facility?	As stated in Section 2.2.2 of the EIS, the solar facility site will be enclosed by six-foot-tall chain-link security fencing topped with three strands of barbed wire. Site access will be limited to TVA and SR Tullahoma staff and contractors and guests escorted by staff and contractors. As stated in Section 2.2.3 of the EIS, facility operations will be monitored remotely and by periodic site visits by staff and/or contractors conducting inspection and maintenance activities, including managing the sheep grazing the site. If a problem is discovered during non-working hours, a local repair crew or law enforcement personnel would be contacted if an immediate response were warranted.	Mary Rogers
25	3.13.2	Public Health and Safety	Who will respond in the event of an emergency?	As stated in Chapter 3.13 of the EIS, emergency response would be provided by the local, regional, and state law enforcement, fire, and emergency responders. All of these emergency responders are located within a few minutes of the Project Site.	Mary Rogers
26	3.13.2	Public Health and Safety	TDEC recommends that TVA consider addressing any potential Electro Magnetic Field impacts that may result from the proposed action in the final EIS.	This is described in Section 3.13.2 of the EIS. Distance from the EMF source, such as provided by the setback of solar panels and other equipment from the site perimeter and the security fencing, renders the exposure to EMF insignificant and, therefore, not harmful to human health. The strength of the EMF present at the perimeter of a solar facility within a building is substantially lower than	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
				the typical exposures to EMF from household sources such as refrigerators and microwave ovens.	
27	3.11	Utilities	Will Moore County have access to the energy produced by this solar facility?	No. The energy produced from the facility will be delivered to the TVA bulk electric system and not the distribution system, which provides electricity to nearby areas. Certain environmental attributes produced from the facility have been contracted to TVA customers participating in the Green Invest Program.	Mary Rogers
28	2.2.2.1	Utilities	Is solar energy reliable?	While solar generation is an intermittent form of generation, it is reliable in that its availability is generally predictable based on both long-term climate trends and shorter-term weather forecasts. The TVA electrical system is designed to provide adequate generation from other sources when solar and other intermittent sources of generation are not available.	Richard Franks
29	3.7.2	Visual Resources	The solar facility will be an eyesore.	As stated in Section 3.7.2., relatively little of the solar facility would be visible from nearby roads and residences due the existing trees around the Project perimeter and the establishment of a 60-foot-wide planted vegetative buffer in other areas. Overall visual impacts would be minimal to minor in the immediate vicinity and negligible on a larger scale, due to variation of the visual attributes of the project area and diminished views of the facility as distance from the Project increases.	David Baldovin; Mary Rogers

Comment No.	EIS Section No.	Topic	Public / Agency Comment	TVA Response	Commenter(s)
30	2.5	Water Resources	EPA recommends continuous monitoring of surface water discharges and maintenance of BMPs to ensure sediments do not enter WOTUS. Following completion of construction, efforts should be made to keep sedimentation basins to maintain existing stormwater runoff profiles where impervious surfaces would otherwise contribute to accelerated flows.	Section 2.5 of the EIS lists mitigation measures and BMPs that would be employed by TVA, the solar facility operator, and all associated contractors during all phases of the construction and operation of the solar facility, including compliance with the terms of the SWPPP. In accordance with TVA's Site Clearing and Grading Specifications, SR Tullahoma will monitor, document, and report turbidity levels in receiving waters or at stormwater discharge points if required by the applicable ARAP permit.	Mark Fite, Director of Strategic Programs Office, USEPA
31	3.4	Water Resources	EPA recommends continued coordination with USACE to acquire mitigation credits within the Elk River Basin.	Based on the results of stream and wetland surveys, as well as CWA Section 404 and 401 permitting actions conducted to date, TVA has not identified the need for acquiring mitigation credits. Should the need for such credits be identified, they will most likely be purchased from within the Elk River Basin.	Mark Fite, Director of Strategic Programs Office, USEPA
32	1.4	Water Resources	The proposed Project would require a stormwater construction permit, including a SWPPP. The size of the Project may necessitate an individual permit rather than a general stormwater construction permit. The proposed Project would also require an ARAP. TDEC notes that the possibility of pump and haul septic tank and wells mentioned in the Draft EIS would require permitting. 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.	As stated in Section 1.4 of the EIS, the proposed Project would require a NPDES Construction Storm Water General permit, SWPPP, ARAP, and possible septic system. Section 3.3.2 of the EIS states that selective spot applications of herbicides may be employed and would be applied by a professional contractor or a qualified Project technician per the USEPA-approved label.	Bryan Davidson, Policy Analyst, Office of Policy and Sustainable Practices, TDEC

From: [redacted]
To: nepa
Subject: NEPA Comments - Moore County Solar Project [#1]
Date: Monday, May 2, 2022 12:46:45 AM

Name	Dustin Bingham
City	Phoenix
State	Arizona
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	My concern for this project has to do will its location. Further detail is addressed in the attached file.
Upload File #1	nepamcsp.docx 12.97 KB · DOCX

To whom this may concern,

First and foremost, I would like to thank you for the opportunity to comment on this project. I am reaching out to talk about the proposed project of Moore County Solar. I have several concerns with where this development is planned to be implemented.

My number one concern will have to be the location of the proposed solar PV facility. There is a tremendous amount of quality land that this 3,463-acre project site would be occupying. The loss of the forest land, wetland, cropland, and early successional fields may be more detrimental to the ecosystem and environment then will be gained from the construction of the renewable energy source. Also, all the streams and watersheds in and surrounding the area can be greatly impacted. Altering this land will create opportunity for a plethora of cumulative impacts.

Thanks,

Dustin Bingham

From: [redacted]
To: nepa
Subject: NEPA Comments - Moore County Solar Project [#2]
Date: Monday, May 2, 2022 1:33:05 AM

Please provide your comments by uploading a file or by entering them below. *

As a dedicated conservationist and future ecologist I would like to express some concerns regarding the Moore County Solar Project and its potential environmental impacts. I found the section regarding the gray bat hibernaculum to be a bit lacking. I say this because gray bats depend on the cover of mature forests to safely travel to water sources and forage without high risks of predation. If a section of trees is cleared out in the project area that's close enough to the location of the hibernaculum, or between the hibernaculum and it's main water source, it could increase the risk of predation on these bats and leave them without a safe way to access resources necessary to their survival. This could lead to this specific population of bats no longer being able to use this location as a maternity cave and vacating the area completely. I'm aware that avoiding sections of the forest that have high potential for bat roosting is going to be implemented in this plan, particularly near water sources, but this doesn't rule out clearing parts of the forest that gray bats forage in or use to travel to nearby streams. I ask that more consideration is taken regarding this matter to ensure that their habitat is kept intact and they may continue to thrive at this hibernaculum without disturbance. This project is also concerning to me because if this land is developed, it may open up the adjacent land for development opportunities as well and would then increase the chances of human activity and interaction with the listed species on and/or around this area. Additionally, mayflies are essential to the gray bat diet and require unimpaired surface water to lay their eggs in. If the listed adverse impacts of sedimentation and erosion impair the quality of the surface water at a high level and for a long period of time this could also negatively impact the gray bats that are nearby. In order to mitigate this it would be worthwhile to keep an adequately sized vegetative buffer near streams they're known to frequently visit or implement a strategy such as tree revetment to keep these impacts to a minimum as long as the project is in commission. Thank you for your time and consideration and I hope you will carefully consider all of the public's concerns.

From: Pilakowski, Ashley Anne
To: RichardsonSeacat, Harriet
Subject: FW: Proposed Solar Project-Moore County TN-Comments/Questions
Date: Thursday, May 12, 2022 4:31:17 PM

FYI -

From: D. Baldovin [redacted]
Sent: Thursday, May 12, 2022 2:32 PM
To: nepa <nepa@tva.gov>
Subject: Proposed Solar Project-Moore County TN-Comments/Questions

The 4/28/22 edition of the Moore County News contained an Invitation for Public comment on this proposed solar project. I notice on your website(s) the heading of "Environmental Reviews," and requirements to consider the impact or effects of proposed projects on human and the natural environment.

Well, if the massive tree cutting and land clearing I see happening here in the last couple of years or so is related to this proposed project, which I think it is, then I would say that the natural environment has surely been "fundamentally transformed?" I can just imagine as to what those endless acres of solar panels would look like. But wait, I guess I don't have to speculate, I can just drive down highway 64 between Winchester TN & Fayetteville TN and there they are.

I have a question(s) also in regards to this invitation for comment-what is meant to "de-commission" the project site? What happens to the panels when they go bad or are "de-commissioned?" Are they like the windmill blades I see (many of which are hardly ever actually turning) that will just be buried because nothing else can be done with them? Buried in the once "natural" environment?

I think this is more of man's "green" folly, probably like so much else to the financial benefit of a few folks and corporations, no doubt with more government subsidies?

I vote for saving the environment by not building these eyesores that actually destroy the "natural" environment. I vote for the "No Action Alternative."

Thank you. Sincerely & respectfully, David J. Baldovin, Lynchburg, TN.

"It is easier to fool people than to convince them they have been fooled." Mark Twain.

The Oath Is Not Retired!

Common Comment and Response Worksheet

Moore County Solar Farm EIS

Date		Surveillance Activity Number N/A						
Item	**Source/ Reviewer**	**Section**	**Page**	**Para**	**Line**	**Class**	**Comment**	**Response**
1.	AEDC/JA	Summary: Alternatives	6				The only alternative considered is a no action alternative. There should be a complete analysis or explanation of other alternatives and why those alternatives are or are not sufficient.	
2.	AEDC/JA	Chapter 2: Alternatives	42				There is mention of alternative developments and eliminating other sites without a clear analysis of where the sites are and why those alternate sites are insufficient. The screening factors are included without an accompanying analysis to the specific sites.	
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Common Comment and Response Worksheet

Moore County Solar Farm EIS

Date		Surveillance Activity Number N/A						
Item	**Source/ Reviewer**	**Section**	**Page**	**Para**	**Line**	**Class**	**Comment**	**Response**
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Common Comment and Response Worksheet

Moore County Solar Farm EIS

Date		Surveillance Activity Number N/A						
Item	**Source/ Reviewer**	**Section**	**Page**	**Para**	**Line**	**Class**	**Comment**	**Response**

Column A: Comment Identifier Number
Column B: Source (Commenter/Authority)
Column C: Section Number of Comment
Column D: Page Number of Comment (first page associated with comment)
Column E: Paragraph number, on page, of Comment
Column F: Line Number (within Paragraph above) of Comment
Column G: Comment Classification
Column H: Comment
Column I: Response

Comment Classifications
(C) Critical: Critical comments will result in a critical issue. Provide convincing support.
(M) Major: Major comments are significant concerns that may result in a major issue. This category may be used with a general statement of concern followed by a detailed comment on the specific entries in the document that, considered in total, constitute the concern.
(S) Substantive: An entry in the document that appears to be or is potentially unnecessary, misleading, incorrect, or confusing.
(A) Administrative: Administrative comments correct inconsistencies between different sections, typographical and grammatical errors.

Notes: Comments must be actionable ("add the following text:…", "delete…", "change text to:")
Place only one comment per row.
Classify comment as C, M, S, or A.

From: nepa
To: RichardsonSeacat, Harriet
Subject: FW: NEPA Comments - Moore County Solar Project [#3]
Date: Tuesday, May 24, 2022 5:06:54 PM

FYI

From: Wufoo [redacted]
Sent: Monday, May 23, 2022 8:04 PM
To: nepa <nepa@tva.gov>
Subject: NEPA Comments - Moore County Solar Project [#3]

Name	Mary Rogers
City	Tullahoma
State	TN
Organization	[redacted]
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	My business is across the street from the property on West Lincoln St Tullahoma. What is my benefit from this massive solar farm right next door? Will I be able to get any power from this solar farm? What happens if the sheep get out onto the busy road? What about all the dust & pollen this area is known for? I see this as a massive eyesore and detrimental to the wildlife of the area.

From: nepa
To: RichardsonSeacat, Harriet
Subject: FW: NEPA Comments - Moore County Solar Project [#4]
Date: Tuesday, May 24, 2022 5:07:24 PM

FYI

From: Wufoo [redacted]
Sent: Monday, May 23, 2022 8:14 PM
To: nepa <nepa@tva.gov>
Subject: NEPA Comments - Moore County Solar Project [#4]

Name	Mary Rogers
City	Tullahoma
State	TN
Organization	[redacted]
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	How are they leaving the land better than they found it when it was a beautiful forest housing much wildlife & providing oxygen from all the trees. How does this not affect global warming? Sheep are not native to this area, it gets over 100 degrees in the summer, how will they survive? Why not put solar panels under the big power lines where currently nothing can be?

From: Mary Rogers on behalf of [redacted]
To: Pilakowski, Ashley Anne; "nepa@tva.gov."
Subject: Solar Farm
Date: Monday, May 23, 2022 1:45:08 PM

These questions have been raised by concerned citizens of Moore County who will be affected by the solar farm. Please will you address them?

The TVA site states that it will receive comments from the public via online.
When will there be a Q&A forum to address the following:
1. General Economic & Resource Considerations
2. General Land Maintenance Tax Implications
3. Comparison of Commercial vs Agricultural Land Environmental Concerns
4. Wildlife Impacts
5. Fire Safety
6. Drainage, Stormwater & Soil Quality Considerations
7. Vegetative Buffer Zones Weed, Shrub & Tree Maintenance
8. Evaluation of the Contract Farmland Preservation Programs
9. Future Consideration and involvement by the residents of the county.

I'm wondering if anyone else in the county was asked to lease land for solar farms. I have over 6 acres of open pasture directly on the big power line easement (on my property) and just received notification that the big lines will start to go underground on the same easement starting this year.
You would think that instead of deforestation, they could utilize the open area easements that are already existing where the power lines currently travel.

I have questions…
Security? Does the project plan to have a contracted security team? Or will they expect or assume a county deputy to patrol 3,500 acres?
Do they have a rapid response team?
Or do they expect or assume damage by falling trees during storms will be responded to by county deputies?
What benefits does the county receive to take on responsibility of 3,500 acres of paintball/22lr/bb pellet/rock targets placed all over the county?
During county EMA weather situations, is the solar power for Jack and Nashville prioritized above any county interests? Where does it rank? We only have so many emergency responders.

Mary Rogers
[redacted] *home*
[redacted]

From: nepa
To: RichardsonSeacat, Harriet
Subject: FW: Renewable Power
Date: Tuesday, May 24, 2022 5:07:41 PM

FYI --

From: Linda Zanaty [redacted]
Sent: Tuesday, May 24, 2022 11:05 AM
To: nepa <nepa@tva.gov>
Subject: Renewable Power

My vote goes for renewable power - Solar.

From: Davis, Brooke Alison
To: RichardsonSeacat, Harriet
Cc: Pilakowski, Ashley Anne
Subject: FW: NEPA Comments - Moore County Solar Project [#5]
Date: Wednesday, June 1, 2022 7:07:32 AM

Here is another one.

Thanks!

From: Wufoo [redacted]
Sent: Friday, May 27, 2022 12:23 PM
To: nepa <nepa@tva.gov>
Subject: NEPA Comments - Moore County Solar Project [#5]

Name	Breaux Gargano
City	Nashville
State	TN
Email	[redacted]
Phone Number	[redacted]
Please provide your comments by uploading a file or by entering them below. *	I love this proposal for a new solar farm! I think Tennessee and the TVA are poised to really make some changes to j crease our clean and sustainable power generation. This will be a good step towards catching up with some of the states that are already leading in this area. Tennessee has so much sunshine! Let's put it to use and be leaders in clean energy ourselves!

From: Davis, Brooke Alison
To: RichardsonSeacat, Harriet
Cc: Pilakowski, Ashley Anne
Subject: FW: Moore County Solar Comments
Date: Wednesday, June 1, 2022 7:03:56 AM

Hi Harriet,

Please find a Moore County Solar comment below. I will continue to send them as they come in.

Thanks!
Brooke

From: scoulter [redacted]
Sent: Tuesday, May 31, 2022 2:50 PM
To: nepa <nepa@tva.gov>
Subject: Moore County Solar Comments

I have some comments concerning the Moore County Solar Project.

I disapprove of large solar farms. I don't like the cutting of trees (which absorb CO2) required for such, although I understand that perhaps the trees on Cumberland Springs were already being cut. I live and travel through the proposed site and it is terrible what somebody has done to the landscape. No further cutting should occur. Instead of large solar farms, I think TVA and other electrical utilities should be pursuing adding solar to existing and new homes and/or factory rooftops such as at the Nissan engine plant in Dechard. The roofs are unused area, the electricity would be generated right at the load, and rooftop solar would reduce solar gain into the building. I suspect home- based solar is less efficient (watts per $ capital invested) but decisions should not be based on the dollar alone.

Stuart Coulter
[redacted]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 3, 2022

Ms. Ashley Pilakowski
NEPA Specialist
Tennessee Valley Authority
400 West Summit Hill Drive
Knoxville, Tennessee 37902

Re: EPA Comments on the Draft Environmental Impact Statement for the Moore County Solar Purchase Agreement, Moore County, Tennessee; CEQ No: 20220056

Dear Ms. Pilakowski:

The U.S. Environmental Protection Agency has reviewed the referenced document in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA). The Tennessee Valley Authority is the lead Federal agency that would purchase power over a 20-year period from the contractor, SR Tullahoma LLC. The contractor would construct, operate, and maintain a 200-megawatt solar photovoltaic (PV) facility (Moore County Solar) on 1,430-acres of a 3,463-acre site in Moore County, Tennessee. The proposed action will increase solar power generation as recommended by TVA's 2019 Integrated Resource Plan (IRP) and in response to customer demand for renewable energy.

The Proposed Action Alternative was developed by the TVA after evaluating potential sites for criteria suitable for a PV facility. Connection to the electrical grid would be provided by the existing TVA Franklin–Wartrace No. 2 161-kilovolt transmission line that runs through the Moore County Solar site. The site consists of geologically stable soils, provides contiguous parcels with limited existing development, and is adjacent to Lynchburg Highway. The No Action Alternative was analyzed and dismissed since it does not meet the IRP's goal of increasing solar generating capacity by up to 14,000 megawatts by 2038.

Overall, the EPA is supportive of the TVA's Proposed Action Alternative. Previously, the EPA provided scoping comments on the Notice of Intent for the Moore County Solar project on May 28, 2021. The EPA notes that our scoping comments were addressed by the DEIS, and we have enclosed some additional technical recommendations for your consideration (see enclosure). The EPA requests the TVA incorporate our comments in the Final Environmental Impact Statement (FEIS).

The EPA appreciates the opportunity to review the DEIS and looks forward to continued participation with the Moore County Solar project. If you wish to discuss our technical recommendations further, please contact Mr. Douglas White of my staff at [redacted] or [redacted]

Sincerely,

MARK FITE

Digitally signed by MARK FITE
Date: 2022.06.03 11:19:59 -04'00'

Mark J. Fite
Director
Strategic Programs Office

Enclosure

Enclosure

Detailed Technical Comments on the Draft Environmental Impact Statement (DEIS)
for the Moore County Solar Purchase Agreement
CEQ No: 20220056

Streams, Wetlands, and Floodplains: This proposed action is situated on a predominantly forested area home to interspersed creeks and wetlands. Delineations of the project site identified 46 jurisdictional streams and approximately 3-acres of non-jurisdictional wetlands. TVA has partitioned proposed construction onto parcels that occupy approximately 42% of the total project site, limiting jurisdictional impacts to the infill of 490-Linear Feet (LF) of ephemeral streams for solar panel arrays. Additional impacts are planned to 7,366-LF of non-jurisdictional ditches for road crossings and solar panel arrays, 1.9 acres of non-jurisdictional open waters for road crossings and solar panel arrays, and 1.4 acres of Tennessee Department of Environment and Conservation (TDEC) regulated wetlands for road crossings and solar panel arrays. The EPA understands that TVA is coordinating with the U.S. Army Corps of Engineers (USACE) regarding impacts to Waters of the United States (WOTUS). TVA regulations require a 50-foot buffer around streams, wetlands, and ponds. Section 3.4.3.2.2 of the DEIS indicates that solar power infrastructure will not be built within the 100-year floodplain, though portions of the existing transmission line are in the floodplain.

Recommendation: The EPA recommends continued coordination with USACE to acquire mitigation credits within the Elk River Basin.

Stormwater: Section 3.4.2.2.2 of the DEIS indicates TVA will acquire a National Pollutant Discharge Elimination System construction stormwater general permit and implement a stormwater pollution prevention plan to mitigate effects from the temporary disturbance of soils during construction. Best Management Practices (BMP), as described in TVA's BMP manual and the TDEC Tennessee Erosion and Sediment Control Handbook will be used to avoid contaminating surface water near and downstream of construction sites. The Proposed Action Alternative will create up to 8-acres of impervious surfaces that will be treated by diverting stormwater discharges to sedimentation basins during construction.

Recommendation: The EPA recommends continuous monitoring of surface water discharges and maintenance of BMPs to ensure sediments do not enter WOTUS. Following completion of construction, efforts should be made to keep sedimentation basins to maintain existing stormwater runoff profiles where impervious surfaces would otherwise contribute to accelerated flows.

Environmental Justice: TVA determined demographic data of the population within 1-mile of the Moore County Solar site and within the entirety of Moore County, using the EJSCREEN mapping tool. This data indicates that minority populations, low-income populations, and the population of children under age 5 are below statistically significant thresholds. The Proposed Action Alternative is not likely to produce ongoing impacts following completion of construction. Impacts from construction will be limited by primarily restricting noise generating work to daytime hours and establishing a 60-foot vegetative perimeter buffer.

Recommendation: The EPA recommends that TVA continue to coordinate with and seek mutually agreeable arrangements with nearby residents, businesses, and governments as indicated during the scoping meeting on May 23, 2022.

Air Quality and Climate Change: Impacts to air quality from the Proposed Action Alternative will primarily come from fugitive dust and construction equipment. Section 3.9.2.2.1 of the DEIS indicates fugitive dust will be maintained through application of water to disturbed surfaces, as needed. The total amount of emissions would be limited and result in negligible air quality impacts to Moore County, which is in attainment with the National Ambient Air Quality Standards. The EPA understands that net greenhouse gas emissions related to Moore County Solar and TVA's 2019 IRP will be a benefit to the region's air quality.

Energy and Land Use: The EPA commends the TVA for pursuing solar energy sources to meet the electricity needs of the Tennessee Valley region. TVA is developing the Moore County Solar site for dual land uses by maintaining vegetation through sheep grazing. Rotating grazing animals mitigates grounds maintenance requirements and provides an additional use for the 1,207-acres of prime farmland that would otherwise be sequestered for agricultural purposes.

From: Pilakowski, Ashley Anne
To: RichardsonSeacat, Harriet
Cc: Dattilo, Adam Joseph; Amacker, Todd Michael; Hamrick, Elizabeth Burton; Davis, Brooke Alison
Subject: FW: Moore County Solar Comment Letter
Date: Monday, June 6, 2022 10:31:20 AM

FYI – See below comment. I also copied other TVA Biologists for awareness.

Thank you,
Ashley

From: Zach Marx [redacted]
Sent: Friday, June 03, 2022 12:57 PM
To: Pilakowski, Ashley Anne [redacted]
Subject: Moore County Solar Comment Letter

This comment letter pertains to the proposed solar facility (Moore County Solar) in Moore County, Tennessee.

Dear Ms. Pilakowski,

I write to voice my support for a revision/consideration in addressing the impacts that wildlife and migratory birds of conservation concern will incur as a result of the proposed action.

Areas of concern:

-
-
- Lack of conservation plan or some form of mitigation for migratory birds of conservation concern
-
-
-
- Lack of information surrounding impacted wildlife such as: how dispersal of wildlife populations
- from the proposed area might affect or alter ecosystems they migrate to, population estimates of wildlife impacted, and possible mitigation measures
-

While I must note that it is commendable that a conservation plan is in place that would have the dual beneficial effect of protecting and restoring on-site globally rare aquatic species

populations, I question why the wildlife/migratory birds of conservation concern that are noted to be affected by the site are not taken into further consideration. It is noted that the impacts for migratory birds of conservation concern may be localized or minor, however offers no tool of mitigation (whereas aquatic species will be covered under a conservation plan). If these birds are of conservation concern and have been identified to be impacted, why is no mitigation/conservation plan given. Have mitigation efforts concerning these birds of conservation concern been analyzed or has there been no thought into such efforts regarding these migratory birds of conservation concern? I am concerned that birds of conservation concern will be impacted, and might there be a conservation plan in place to mitigate such impacts (such as a conservation plan similar to the one covering aquatic species).

Also, regarding the wildlife that will lose their habitat which is noted to result in a decline of local populations. A section from page 3-44 & 3-45 notes that **"Facility construction and maintenance would alter wildlife habitats and affect the wildlife occurring in these habitats. Approximately 780 acres of forest would be cleared. This would reduce the amount of suitable habitat for wildlife occurring in these areas, resulting in the likely decline of the local populations of many species. Some more mobile wildlife would disperse into surrounding areas, although their survival in these areas may be low due to competition with other members of their species"**. It seems that wildlife will incur moderate impacts due to the proposed action. How might wildlife that disperse into surrounding areas affect or alter those ecosystems? What are the wildlife that will be impacted, and does it matter/should it be a bigger area of concern, or are these animals of no concern/animals I shouldn't care about? How big are these populations of wildlife that will be affected by the proposed action. There is no mention of the number of wildlife which will be impacted, was this left out or is there not enough information surrounding wildlife in the proposed area. Might there be tools of mitigation to reduce such impacts to populations of wildlife in the proposed area?

Thank you for your time and consideration.

Best,
Zach Marx

From: Davis, Brooke Alison
To: RichardsonSeacat, Harriet
Cc: Pilakowski, Ashley Anne
Subject: FW: NEPA Comments - Moore County Solar Project [#6]
Date: Monday, June 6, 2022 5:44:30 AM

Hi Harriet,

Please find a comment for Moore Co.

Thanks
Brooke

From: Wufoo [redacted]
Sent: Friday, June 3, 2022 2:17 PM
To: nepa <nepa@tva.gov>
Subject: NEPA Comments - Moore County Solar Project [#6]

Name	Chris Ray
City	TULLAHOMA
State	Tennessee
Organization	Homeowner
Email	[redacted]
Phone Number	[redacted]

Please provide your comments by uploading a file or by entering them below. *

I live in the [redacted] area. I do oppose the project but I was wondering about livestock near these projects. I have a stocker operation that will join the land on [redacted] and [redacted] I keep about 200 head of calves at a time on this farm. The panels on this site looks to be very close to the property were my cattle stay. I have problems with cattle gains and sickness in the summer months due to stress from the heat. I have to believe these panels will cause additional stress due to the rise in heat from the panels. I have friends that live near the Elora site and they say temps are about 10 degrees warmer year round. Thank you for your time.

STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
NASHVILLE, TENNESSEE 37243-0435

DAVID W. SALYERS, P.E.
COMMISSIONER

BILL LEE
GOVERNOR

June 3, 2022

Via Electronic Mail to nepa@tva.gov
Ashley Pilakowski
Tennessee Valley Authority
400 W. Summit Hill Drive, WT11B-K
Knoxville, TN 37902.

Dear Ms. Pilakowski:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority's (TVA) *Moore County Solar Draft Environmental Impact Statement* (Draft EIS), which evaluates the potential environmental effects associated with TVA's proposed execution of a power purchase agreement with SR Tullahoma, LLC (SR Tullahoma) for the power generated by the proposed 200-megawatt (MW) alternating current (AC) solar photovoltaic (PV) facility, known as Moore County Solar, in Moore County, Tennessee. Located two miles west of the city of Tullahoma, within the metropolitan government limits of Lynchburg, the solar facility would occupy approximately 1,430 acres of a 3,463-acre Project Site that is predominantly forested. Associated actions include the construction of an electrical substation and switchyard on the Project Site and the interconnection of the facility to an existing TVA transmission line that extends north-south through the site. SR Tullahoma would construct, operate, and maintain the facility for a 20-year period. The Draft EIS evaluates the environmental impacts of the Proposed Action, i.e., the construction, operation, maintenance, and decommissioning of Moore County Solar, and the No Action Alternative, under which SR Tullahoma would not develop a solar facility in this location, and TVA would meet customer renewable energy demand through other actions.

TDEC is the environmental and natural resource regulatory agency in Tennessee with delegated responsibility from the U.S. Environmental Protection Agency (EPA) to regulate sources of air pollution; solid and hazardous waste; radiological health issues; underground storage tanks; and water resources. TDEC's comments are made in the context of the Proposed Action. TDEC has reviewed the Draft EIS and has the following comments regarding the proposed action:

Air Pollution Control

TDEC recommends the use of chippers as an alternative to open burning for disposal of tree waste as discussed in Section 2.2.2 of the Draft EIS and encourages alternatives to open burning for disposal of vegetation and untreated wood. TDEC also recommends that all construction equipment employed on site be well maintained and equipped with the latest emissions control equipment and commends the commitment to utilize water to minimize fugitive dust during the construction phase. In addition, TDEC recommends avoiding open burning on days air quality alerts have been issued. TDEC also recommends that all construction equipment employed on site be well maintained and equipped with the latest emissions control equipment, and that any idling of heavy-duty non-road mobile sources be kept to a minimum.

Energy

TDEC supports efforts to increase energy resiliency, including a more decentralized power supply in the state. In the event of an energy emergency the additional source from the solar PV site may provide emergency access to energy and serve as a temporary "energy" bridge to the surrounding region. TDEC would support additional power supply measures that utilize connections with the solar farm to provide an alternate supply of energy during or after a natural or made-made energy disruption.

TDEC recommends that TVA consider using electric-powered lawn equipment, which can be as much as fifty percent quieter than traditional gas-operated models. Electric-powered lawn equipment also has zero air emissions onsite, reduces petroleum-fuel purchases, and eliminates used oil waste. Similarly, if there is an opportunity to use all-electric portable earthmoving equipment, that use would result in reduced noise, air emissions, petroleum-fuel purchases, and used oil waste. TDEC recommends TVA consider these additional details in the Final EIS.

TDEC recommends that TVA consider addressing any potential Electro Magnetic Field impacts that may result from the proposed action in the final EIS.

Water Resources

The proposed project will require a stormwater construction permit, including a Storm Water Pollution Prevention Plan.[1] The size of the project, which calls for solar panel installation on 1,430 total acres, may necessitate an individual permit rather than a general stormwater construction permit. The proposed project will also require an Aquatic Resource Alteration Permit.[2] TDEC notes that the possibility of pump and haul septic tank and wells mentioned in the Draft EIS would require permitting. 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.

TDEC appreciates the opportunity to comment on this Draft EIS. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternative, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Please contact me should you have any questions regarding these comments.

Sincerely,

Bryan Davidson | Policy Analyst
Office of Policy and Sustainable Practices, TDEC
William R. Snodgrass Tennessee Tower
312 Rosa L Parks Ave, 2nd Floor
Nashville, TN 37243
Email: [redacted]
Phone: [redacted]

[1] https://www.tn.gov/environment/permit-permits/water-permits1/npdes-permits1/npdes-stormwater-permitting-program/npdes-stormwater-construction-permit html
[2] https://www.tn.gov/environment/permit-permits/water-permits1/aquatic-resource-alteration-permit--arap- html

From: Pilakowski, Ashley Anne
To: RichardsonSeacat, Harriet
Cc: Davis, Brooke Alison
Subject: FW: Solar Farm
Date: Monday, June 6, 2022 7:05:14 AM

FYI – looks like this one may have only been submitted to my inbox.

Thanks,
Ashley

From: Rick Franks [redacted]
Sent: Monday, June 06, 2022 6:30 AM
To: Pilakowski, Ashley Anne [redacted]
Subject: Solar Farm

What a terrible use of open land. The solar farm will not be generating power when we are told over and over electric cars are the wave of the future. I assume most of these cars will be charged at night when the solar farm contributes nothing to the grid. We need stable power and if it is not fossil fuels then the only rational alternative is nuclear power. Please expand your use of nuclear power and leave the solar to roof tops.
Richard Franks

SOUTHEASTERN GRASSLANDS INITIATIVE

Ashley Pilakowski
Tennessee Valley Authority
400 West Summit Hill Drive, WT 11B
Knoxville, TN 37902

June 6, 2022

Re: Moore County Solar Draft Environmental Impact Statement

Ms. Pilakowski:

We're writing to comment on certain aspects of the Draft Environmental Impact Statement for the Moore County Solar Project, which we have reviewed. Our specific interest is in the portions of the property that will remain outside the footprint of the solar panels, associated power generation infrastructure, or other impacts. These remaining areas of natural vegetation include sites with exceptional potential for protection and management as a regionally important natural area, especially for the restoration of oak savanna grasslands and associated wetlands. These areas are well-suited for rare species conservation, ecological restoration, and public education and outreach, especially given their immediate proximity to Motlow State Community College.

These portions of the site are known to support high-quality examples of globally rare flatwoods and wet grassland (in the powerline and roadside rights-of-way) natural communities that support several species of state and global conservation concern. As described in the Draft EIS, ecological and biological inventory work on the site has documented several grassland, open woodland, and wetland species on the *Tennessee Rare Plant List* including Black-footed Quillwort (*Isoetes melanopoda*), Barratt's Sedge (*Carex barrattii*), Button Sedge (*Carex bullata*), Dwarf Sundew (*Drosera brevifolia*), Slender Blue Flag (*Iris prismatica*), Tennessee Featherbells (*Stenanthium tennessense*), Virginia Chain Fern (*Woodwardia virginica*), and Iris Leaved Yellow-eyed Grass (*Xyris laxifolia* var. *iridifolia*). The property also contains suitable habitat for a number of other plant species of conservation concern that may be found with additional inventory, habitat restoration, and management. Two animal species of conservation concern are also known from the site including Flame Chub (*Hemitremia flammea*) and Gray Bat (*Myotis grisescens*), with appropriate habitat present for several other species.

Because these natural communities of concern at the site are grasslands, or, in the case of savannas and open woodlands, include a grassland component, they need periodic management to keep the tree canopy sufficiently open. Many areas of the site likely need initial restoration in the form of selective thinning of the tree canopy and reduction of woody plant density in the midstory and shrub layer, followed by ongoing management activities such as prescribed fire, haying or flash grazing, and targeted control of non-native invasive species. We recommend that SR Tullahoma and the Tennessee Valley Authority prepare a restoration and

management plan for the area with input from in-state conservation professionals with expertise in the ecology and biology of these natural communities. The specific details of restoration and management activities, such as the extent, location, and timing of forest thinning, prescribed fire, haying, grazing, etc. can make the difference between desired outcomes and damage to the biodiversity of the site.

Prior to Euro-American settlement and the disruption of naturally occurring landscape-scale fires (which burned historically every 1-5 years based on recent tree-ring research conducted at nearby Arnold Air Force Base), this area of the Eastern Highland Rim of Tennessee, known as "The Barrens," was a mosaic of grasslands (oak savannas, prairies, marshes), open grassy flatwoods, and forested wetlands. During the past century-and-a-half these savanna grasslands and other open communities have become unnaturally densely forested (as they are today) due to prolonged fire suppression. The more open of these communities – the grasslands and grassland-related flatwoods and woodlands – supported high concentrations of plant and animal species, many of which have declined dramatically and are today listed as species of conservation concern (rare species) by the State of Tennessee. Remaining intact examples (including open road and utility rights-of-way through otherwise "closed in" savannas and woodlands) are known to support many of these species of concern. Nearby examples include May Prairie State Natural Area, Powerline Barrens State Natural Area, and several other sites on Arnold Air Force Base. Many sites that have been degraded by becoming "closed in" may still contain enough remnant grassland species to be considered restorable. Additionally, powerline and roadside rights-of-way on the tract contain remnants of the grassland flora, including these rare species. These corridors along with their nearby woodlands are also high priority sites for conservation.

These fire-suppressed flatwoods are seasonally wet and often contain embedded permanent wetlands. Analysis of aerial imagery shows the presence of numerous sinkhole depression pond marshes or other wetlands on the tract. Recent research by a graduate student at Austin Peay State University's Southeastern Grasslands Initiative, who studied dozens of these ponds across the southern Eastern Highland Rim, found that ponds in this region are globally unique wetlands that support numerous rare plant species, including several that occur nowhere else in Tennessee or outside of the "Barrens" area. These ponds, especially their shores, like the nearby flatwoods, have become excessively dense with woody vegetation over the past century and numerous species (e.g. *Hypericum adpressum*, *Sagittaria graminifolia*, *Xyris fimbriata*) have been extirpated in the latter half of the 20th and early 21st century from the state or the region because of the lack of management of these ponds. The student found that these ponds have a high number of light-dependent rare wet grassland species, and like the adjacent flatwoods, they need restoration to create more of an open savanna grassland mosaic around them. Some of the ponds on this tract in Moore County harbor some of these rare species and natural communities and would benefit from restoration.

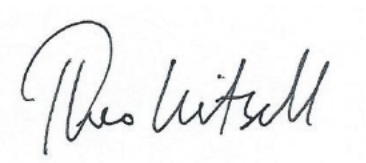
SOUTHEASTERN GRASSLANDS INITIATIVE

The Southeastern Grasslands Initiative (SGI) works to conserve, restore, and promote native grasslands of all types throughout the southeastern United States. We work with a wide variety of partners (including the Tennessee Valley Authority) to identify, protect, restore, and manage sensitive ecological sites such as this one. We are presently working on a project with the TVA studying remnant grassland plant communities in transmission powerline rights-of-way in the adjacent Cumberland Plateau Ecoregion. We would be happy to participate in further ecological and biological inventories and offer further, more specific recommendations regarding restoration and management of priority natural communities and sites on the property. Restoration of the grassland components of The Barrens has been a high priority for our organization since its inception.

Thank you for the opportunity to comment.

Dwayne Estes Ph.D., Executive Director

Theo Witsell, Chief Ecologist



Southeastern Grasslands Initiative | Center of Excellence for Field Biology | Austin Peay State University | Clarksville, TN 37044 | 931-221-7771 | www.segrasslands.org |

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