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ECONOMIC DEVELOPMENT GRANT PROPOSAL FOR CLARKSVILLE-MONTGOMERY COUNTY CORPORATE BUSINESS PARK SOUTH

ENVIRONMENTAL ASSESSMENT

Montgomery County, Tennessee (Clarksville)

Prepared by:

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1.0 PROPOSED ACTION AND NEED

An integral part of Tennessee Valley Authority's (TVA's) mission is to promote economic development within the TVA service area. TVA provides financial assistance to help bring to market new/improved sites and facilities in the TVA service area and position communities to compete successfully for new jobs and capital investment. TVA proposes to provide an economic development grant through InvestPrep funds to the Clarksville-Montgomery County Industrial Development Board (CMCIDB) to assist with the development of the Clarksville-Montgomery County Corporate Business Park (CMCCBP) South Lots 19B and B4 (Proposed Action or Project). The area of TVA's Proposed Action (herein referred to as the Project Area) comprises approximately 81.6 acres and is located just east of Clarksville, Tennessee (TN), at the southwest corner of the Dunlop Lane and Rollow Lane intersection in Montgomery County, TN (Figure 1; Attachment 1, Figures 1-A and 1-B). TVA funds would be used to assist with tree clearing, grading of a 200,396-square-foot (SF) (at minimum) compacted dirt building pad, and construction of a gravel access road.

The primary purpose of the Proposed Action is to enable the CMCIDB to continue to develop the CMCCBP South Lots. The proposed grant to the CMCIDB would assist with improvements to put the site in a more marketable position and allow prospects to better envision the development potential. Proposed improvements would lead to an increased probability of achieving TVA's core mission of job creation and capital investment. Target industries for the CMCCBP include electric vehicle battery manufacturers and automotive suppliers. Pursuant to the National Environmental Policy Action (NEPA) and its implementing regulations 40 Code of Federal Regulations (CFR) 1500–1508 and TVA's implementing regulations 18 CFR 1318, this Environmental Assessment (EA) evaluates the environmental impacts that would potentially result from TVA's Proposed Action. TVA's decision is whether to provide the requested funding to the CMCIDB.

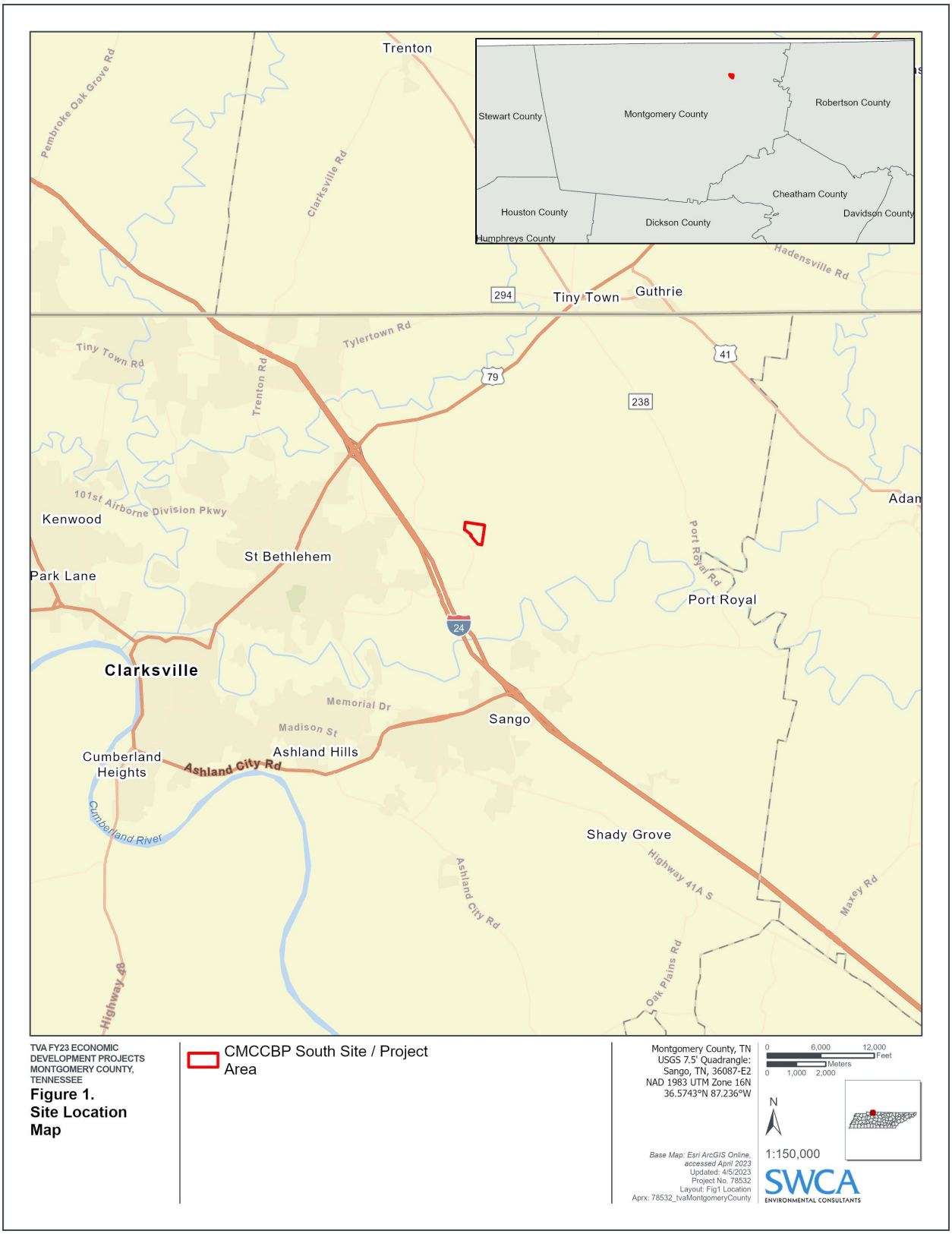


Figure 1. Project location map.

2.0 OTHER ENVIRONMENTAL REVIEWS AND DOCUMENTATION

Other studies have been performed by CMCIDB within the Project Area. In April 2002, Greenhouse Consultants Incorporated conducted archaeological surveys over a study area that included the entire Project Area (Greenhouse Consultants, Inc. 2002). The purpose of the surveys was to identify potential archaeological resources in the study area.

In October 2012, DBS & Associates Engineering, Inc., performed a Phase I environmental site assessment over a study area that included the entire Project Area. The assessment consisted of a general property reconnaissance, a review of available aerial photographs, ownership chronological search and examination, and review of regulatory databases (DBS & Associates Engineering, Inc. 2012).

In March 2013, The Austin Company reviewed the Geotechnical Exploration Reports which had been completed by Professional Service Industries, Inc. in November 2000 and Earth Science Engineering, LLC, in January 1998, August 2001, November 2001, and January 2002. The review evaluated subsurface conditions at the site to evaluate for site development and construction planning purposes (Price 2013).

In October 2012 and December 2022, TTL, Inc. (TTL), conducted wetland delineations of the Project Area (TTL 2012 and TTL, Inc. 2022). The purpose of the surveys was to identify potentially jurisdictional wetlands and waterbodies in the study area.

The archaeological survey report, review of the geotechnical exploration reports, and wetland delineation reports were used in the preparation of this EA.

3.0 ALTERNATIVES

Based on internal scoping, TVA has determined that there are two reasonable alternatives to assess under NEPA: the No Action Alternative and the Action Alternative.

The No Action Alternative

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. TVA would not be furthering its mission of promoting economic development by assisting the local community to compete successfully for new jobs and capital investment through the Proposed Action. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the Project is postponed, any environmental effects would be delayed for the duration of the postponement. If the Project were cancelled, no direct environmental effects are anticipated, as environmental conditions on the site would remain essentially unchanged from the current conditions for the foreseeable future.

The Action Alternative

Under the Action Alternative, TVA would provide TVA InvestPrep funds to the CMCIDB to assist with tree clearing, grading of a 200,396-SF (at minimum) compacted dirt building pad, and construction of a gravel access road. Depending on the final design, the compacted dirt building pad could be up to 747,596 SF. The Action Alternative would require disturbance of approximately 81.6 acres and would result in clearing of approximately 9.0 acres of trees (see Attachment 1, Figures 1-A and 1-B).

Site activities required for the Action Alternative would occur over approximately 9 months and would require a small workforce that would likely be drawn from a local contractor. Trees would be cut and burned on-site, and stumps would be removed and burned on-site as well.

The CMCIDB, or its contractors, would obtain all required permits and authorizations, and in compliance with those permits take appropriate feasible measures, such as mitigation and implementing best management practices (BMPs) and best construction practices, to minimize or reduce the potential environmental effects of the proposed Project to insignificant levels. These practices would include but are not limited to installation of sediment and erosion controls (silt fences, sediment traps, etc.), management of fugitive dust, daytime work hours, and other appropriate measures.

The Action Alternative does not include assessment of activities that may be directly or indirectly associated with adjacent lots already developed or under construction or the eventual build-out, occupation, and future use of the Project Area. The future use of the site has not been fully defined. Given this uncertainty, an analysis of the potential impacts for development of the adjacent lots or future use of the site is beyond the scope of this EA.

4.0 AFFECTED ENVIRONMENT AND ANTICIPATED IMPACTS

4.1 Site Description

The 81.6-acre Project Area is located within the CMCCBP South Lots 19B and B4, just east of Clarksville, TN, at the southwest corner of the Dunlop Lane and Rollow Lane intersection in Montgomery County, TN. The Project Area can be accessed from International Boulevard that occurs to the southwest of the Project Area (see Attachment 1, Figure 1-A). The Project Area is a mostly cleared, undeveloped area, located adjacent to a distribution center and residential neighborhood. There is an existing stormwater detention pond (an existing and permitted Class V injection well and regional detention area) and a few forested areas on site, but no permanent structures present within the Project Area.

The Project Area is situated within a mixed agricultural, residential, and commercial or industrial area. Agricultural lands lie to the north of the Project Area, residential to the east, and lands to the south and west are primarily commercial or industrial. Historically, the site was used for agricultural purposes, but has since been rezoned to M-2 (Heavy Industrial) upon purchase by the CMCIDB in 2015. The Montgomery County Assessor of Property (2023) lists the primary land use within the Project Area as Industrial Development Board Exempt. Utilities located adjacent to the Project Area include 8- and 12-inch water lines, a 12-inch sewer line, overhead electric distribution lines, and a steel, 6-inch natural gas line.

The Project Area ranges from approximately ±500 feet (152.4 meters) above mean sea-level (MSL) to ±509 feet (155.1 meters) above MSL (see Attachment 1, Figure 1-B). There are small, wooded areas along Dunlop and Rollow Lanes, as well as a small patch in the center of the southwestern boundary. A paved cul-de-sac connects to International Boulevard via a small paved access road. A majority of the Project Area is currently being utilized for the production of soybeans (*Glycine max*), but the site is zoned for heavy industrial use.

4.2 Impacts Evaluated

TVA has determined that the Proposed Action, subsequent to TVA's selection of the Action Alternative, would have no impact on floodplains, land use, and prime farmland. The Proposed

Action would also not result in impacts from the creation of solid and hazardous wastes. Therefore, potential impacts to these resources are not described in further detail in this EA.

Based on Montgomery County, TN, Federal Emergency Management Agency flood insurance rate map panel number 47125C0255D, effective March 18, 2008 (FEMA 2022), the Proposed Action would be located outside of identified and unmapped 100-year floodplains (Attachment 1, Figure 1-C), which would be consistent with Executive Order 11988. Therefore, the Project would have no impact on floodplains and their natural and beneficial values.

The Project would not cause alteration in land use or have negative impacts on prime farmland as the Project Area is located within a property zoned as heavy industrial, and the Proposed Action would not result in a change to the zoned land use.

No demolition or waste disposal activities are associated with the Action Alternative. Therefore, the Action Alternative would not result in the creation or disposal of solid and hazardous wastes.

Resources that could potentially be impacted (negatively or positively) by implementing the Action Alternative include soils, groundwater, surface water and soil erosion, wetlands, aquatic ecology, botany, terrestrial zoology, managed and natural areas, cultural resources, air quality and climate change, and public recreational opportunities. Implementation of the Action Alternative could create potential impacts to the human environment, including visual effects, noise, socioeconomics, environmental justice, and transportation issues. Potential impacts to resources and impacts to the human environment resulting from implementation of the Action Alternative are discussed in detail below.

4.2.1 Soils

Soil types and descriptions were obtained from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for the Project Area (USDA NRCS 2023). The Project Area is within the East and Central Farming and Forest Region and encompasses seven distinct soil map units and one miscellaneous (water) soil map unit (Table 4-1) (USDA NRCS 2023). Of those, one soil map unit is listed as a hydric soil or includes hydric components (see Table 4-1) (USDA NRCS 2023). See Attachment 1, Figure 1-D, for the location of each USDA NRCS soil map unit within the Project Area.

Pembroke silt loam, 6 to 12 percent slopes (PeC), and Pembroke silt loam, 2 to 6 percent slopes (PeB), are the dominant soil map units in the Project Area and account for approximately 52.3% of the area; neither of these soils are classified as hydric soil and have a drainage class of well drained (USDA NRCS 2023). Newark silt loam (Ne) is the only hydric soil within the Project Area and accounts for approximately 2.26% of the area, which mainly consists of a stormwater detention pond located near the southwest boundary of the Project Area (see Attachment 1, Figure 1-A) (USDA NRCS 2023).

Implementation of the Action Alternative would result in near-surface soil compaction due to heavy construction vehicles and soil erosion caused by ground-disturbing activities such as tree clearing and site grading. Subsequent impacts to groundwater and surface water impacts are discussed further in Sections 4.2.2 and 4.2.3 below, but impacts are expected to be minor and temporary. BMPs, as described in the *Tennessee Erosion and Sediment Control Handbook* (TDEC 2012), would be used during site development to avoid contamination of surface water from soil erosion in the Project Area.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to soils as environmental conditions on the site would remain essentially unchanged from the current conditions.

Table 4-1. NRCS-mapped Soils Within the Project Area, TVA FY2023, Montgomery County, Tennessee

Map Unit Symbol	Map Unit Name	Hydric Criteria	Drainage Class	Farmland Classification	Acreage Within Project Area[1]	Percentage of Project Area[1]
PeC	Pembroke silt loam, 6 to 12 percent slopes	No	Well drained	Not prime farmland	23.2	28.4
PeB	Pembroke silt loam, 2 to 6 percent slopes	No	Well drained	All areas are prime farmland	19.5	23.9
Ar	Arrington silt loam, 0 to 2 percent slopes, occasionally flooded	No	Well drained	All areas are prime farmland	13.5	16.5
CuD2	Cumberland soils, cherty variant, 10 to 25 percent slopes, eroded (Baxter)	No	Well drained	Not prime farmland	13.1	16.1
Ld	Lindell silt loam, 0 to 2 percent slopes, occasionally flooded	No	Moderately well drained	All areas are prime farmland	7.1	8.7
CsC2	Cumberland silty clay loam, 5 to 12 percent slopes, eroded	No	Well drained	Not prime farmland	2.8	3.4
Ne	Newark silt loam	Yes	Poorly drained	All areas are prime farmland	1.8	2.2
W	Water	No	N/A	Not prime farmland	0.6	0.7
Total[2]					**81.6**	**99.9**

Source: USDA NRCS 2023.

[1] Acreages and percentages are rounded to 0.1.

[2] Total values may differ slightly from total expected values due to rounding.

4.2.2 Groundwater

The Project Area is located within the Interior Low Plateaus (United States National Park Service 2017). The Interior Low Plateaus occupies portions of six states in the Midwest and Southeast regions of the United States, Illinois, Indiana, Ohio, Kentucky, Tennessee, and Alabama (United States Geological Survey [USGS] 1995).

The Interior Low Plateaus consists of unconsolidated sand and gravel deposits of Quaternary age that compose the surficial aquifer system and consolidated limestone, dolomite, and sandstone of Paleozoic age (USGS 1995). Within the Interior Lowland Plateau, the Project Area is within the Mississippian Carbonate Aquifer (USGS 1995). The Mississippian aquifer system in Tennessee is referred to as the Highland Rim aquifer system and in most places, is composed of regolith, which mostly consists of weathered material, or residuum. This material consists of

clay, silt, sand, and pebble-sized particles of limestone or chert, which are derived mostly from weathering of the underlying bedrock (USGS 1995).

The Highland Rim aquifer system is an important source of drinking water. Where there is a dynamic flow system, dissolved-solids concentrations are less than 500 milligrams per liter. However, isolated cells may exist where the groundwater has dissolved-solids concentrations of more than 1,000 milligrams per liter. Groundwater in the Highland Rim aquifer system occurs primarily in secondary openings including solution openings, joints, and faults. In some areas of the southeastern Highland Rim, gravel zones in the regolith yield as much as 400 gal/min to wells and were used in the past to supply water in the Manchester area (USGS 1995). The Highland Rim aquifer system is one of the more spatially extensive aquifers in the state. It is used for municipal or public drinking-water supplies throughout most of the Highland Rim. All counties in the Highland Rim use water from this aquifer system for domestic supplies. The Highland Rim aquifer system is capable of yielding water for both public and domestic use, and as such represents a valuable resource (USGS 1986).

Topography ranges from approximately ±500 feet (152.4 meters) above MSL to ±509 feet (155.1 meters) above MSL (see Attachment 1, Figure 1-B). An existing and permitted Class V injection well and regional detention area is located along the southwest boundary of the Project Area. Injection wells are used to place fluid underground into porous geologic formations. These underground formations may range from deep sandstone or limestone to a shallow soil layer. Injected fluids may include water, wastewater, brine (salt water), or water mixed with chemicals (United States Environmental Protection Agency [USEPA] 2020). The injection well located within the Project Area is currently permitted through the TDEC for the disposal of stormwater to the subsurface via gravity.

The geotechnical borings conducted onsite by Earth Science Engineering, LLC, and Professional Service Industries, Inc., between 1998 and 2002 indicate the underlying bedrock consists of carbonate rock (i.e., limestone) which is susceptible to irregular weathering and sinkhole development (The Austin Company 2013). The borings were drilled 15 to 30 feet deep, and no ground water was observed within the borings. The geotechnical report revealed that silty, lean, and fat clays compose the soils within the Project Area and are encountered at various depths. The fat clays are susceptible to volume changes with significant changes in moisture content.

Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road. No off-site borrow would be needed. Instead, the on-site stormwater detention pond would be excavated deeper, and that borrowed soil would be used to balance the dirt required for the compacted dirt building pad. All excavation activities will comply with the current underground injection well permit rules. Ground disturbances are not anticipated to be at depths that would intersect public groundwater supplies (typically 142 to 202 feet beneath the land surface [USGS 2021a]) or result in significant impacts to groundwater resources. Shallow aquifers could sustain minor impacts from changes in overland water flow and recharge caused by clearing and grading. Water infiltration, which is normally enhanced by vegetation, would be reduced until vegetation is re-established. In addition, near-surface soil compaction caused by heavy construction vehicles could reduce the ability of soil to absorb water. These minor impacts would be temporary and would not significantly affect groundwater resources.

Additionally, DBS & Associates Engineering, Inc., performed a Phase I environmental site assessment in October 2012 which concluded there is no potential contamination in the Project Area. Furthermore, it is expected that the CMCIDB, or its contractors, would conduct operations involving chemical or fuel storage or resupply and equipment and vehicle servicing with care to avoid leakage, spillage, and potential subsequent ground water contamination.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to groundwater resources as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.3 Surface Water and Soil Erosion

The Project Area is located in Montgomery County, TN, in the Western Pennyroyal Karst Plain ecoregion. Precipitation in the vicinity of the Project Area averages about 53 inches per year. The average annual air temperature ranges from a monthly average of 28 degrees Fahrenheit to 88 degrees Fahrenheit (BestPlaces 2022). The Project Area drains to streams within the Elk Fork-Red River watershed (Hydrologic Unit Code [HUC]-10 0513020607). The surface waters in the vicinity of the Project include the Red River, two ephemeral streams, and two stormwater detention ponds. The Red River is a perennial waterbody that lies approximately 1.45 miles southeast of the Project Area (see Attachment 1, Figure 1-C). Of these five features, only two are located within the Project Area: one ephemeral stream and one stormwater detention pond (Attachment 1, Figure 1-E and Figure 1-F).

A hydrologic determination conducted in November 2022 identified one wet weather conveyance (WWC) within the Project Area extending approximately 410 feet and one stormwater detention pond totaling 1.44 acres (TTL 2022). The WWC is a man-made ditch and does not appear as a feature on the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), or the National Hydrography Dataset (NHD), and is considered to be potentially non-jurisdictional as it does not appear to have a significant nexus to downstream waters. The stormwater detention pond was identified on both the NWI and NHD databases (USGS 2021b, USFWS 2022a).

The federal Clean Water Act (CWA) requires all states to identify 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 the USEPA. The term “303(d) list” refers to the list of impaired and threatened streams and water bodies identified by the state. The 2022 field study did not identify any waterbodies that are on Tennessee 303(d) listed waters (Tennessee Department of Environment and Conservation [TDEC] 2022). However, the Red River, which is located approximately 1.45 miles southeast of the Project Area, is listed as impaired due to nitrate inputs from livestock grazing in riparian or shoreline zones (TDEC 2022). The primary designations for the Red River are domestic water supply, fish and aquatic life, recreation, irrigation, and livestock watering and wildlife (TDEC 2019). One segment of the Red River is also listed as an Exceptional Tennessee Water (TDEC 2023). Due to the distance of the Exceptional Tennessee Water from the Project Area, the

Project would not need additional requirements for coverage under a general construction stormwater permit (TDEC 2021).

Topsoil depths within the Project Area range from 6 to 24 inches thick. The geotechnical report recommends that proper considerations should be given to the presence of sink holes on the Project site, including the potential for settlement due to fat clays and silty clays and the removal and replacement of moisture sensitive soils, as required. Performing earthwork and foundation construction activities during dry weather is also recommended (The Austin Company 2013).

Implementation of the Action Alternative would result in construction activities that have the potential to temporarily affect surface water via stormwater runoff. Impervious surfaces prevent rain from percolating through the soil and result in additional runoff of water and pollutants into storm drains, ditches, and streams. The Action Alternative would increase impervious flows in the Project Area. Soil erosion and sedimentation can clog small streams, threaten aquatic life, and contribute to degraded water quality. It is expected that the CMCIDB, or its contractors, would comply with all appropriate federal, state, and local permit requirement. Appropriate BMPs would be followed, and all proposed Project activities would be conducted in a manner to ensure that waste materials are contained, and the introduction of pollution materials to the receiving waters would be minimized. A general construction stormwater permit would be required since more than 1 acre would be disturbed as part of the Action Alternative. The permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would identify specific BMPs to address construction-related activities that would be adopted to minimize stormwater impacts. BMPs, as described in the *Tennessee Erosion and Sediment Control Handbook* (TDEC 2012), would be used during site development to avoid contamination of surface water in the Project Area. Under the required permits, all flows would need to be properly treated with either implementation of the proper BMPs or to engineer a discharge drainage system that could handle any increased flows prior to discharge through the outfall(s).

Impacts to the WWC and the stormwater detention pond identified in the Project Area are proposed under the Action Alternative. These impacts would include the filling of the WWC due to clearing and grading activities. Alterations to WWCs are permitted in accordance with Tennessee State Code Section 69-3-108(q) without notice or application to the State. The stormwater detention pond would be excavated deeper to provide borrow needed for the Action Alternative. This detention pond would allow for more stormwater runoff storage and reduction of offsite flow. Proper implementation of BMPs and other controls for the Action Alternative would be expected to result in only minor temporary impacts to surface waters.

It is expected that portable toilets would be provided for the construction workforce as needed. These toilets would be pumped out regularly, and the sewage would be transported by tanker truck to a publicly-owned wastewater treatment plant. Equipment washing and dust control discharges would be handled in accordance with BMPs described in the SWPPP for water-only cleaning.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to soil or

surface water resources as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.4 Wetlands

Wetlands are areas inundated by surface or groundwater often enough and long enough to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, mud flats, vernal pools, and natural ponds.

Activities in wetlands are regulated by state and federal agencies to ensure no more than minimal impacts to the aquatic environment and no net loss of wetland resources. Under CWA Section 404, activities resulting in the discharge of dredge or fill material in jurisdictional waters of the U.S. (including wetlands) must be authorized by the USACE through a Nationwide, Regional, or Individual Permit. CWA Section 401 mandates state water quality certification for projects requiring USACE approval and permitting. In Tennessee, an aquatic resource alteration permit (ARAP) authorized by TDEC provides water quality certification under CWA Section 401. An ARAP is required for any alteration to the physical, chemical, or biological properties of any waters of the state, including wetlands, pursuant to the Tennessee Water Quality Control Act (§69-3-108, 0400-40-07) and in alignment with Tennessee's anti-degradation policy (§69-3-108, 0400-40-04). Compliance with USACE and TDEC permitting is required for regulated activities within jurisdictional waters and wetlands, which could require mitigation based on their review of the proposed impacts. Lastly, Executive Order 11990 requires federal agencies such as TVA to minimize wetland destruction, loss, or degradation, and preserve and enhance natural and beneficial wetland values, while carrying out agency responsibilities.

As noted in Section 2, a field survey was conducted In November 2022 to delineate waters and wetlands within the proposed Project Area (TTL 2022). Surveys were performed according to USACE standards (*Corps of Engineers Wetlands Delineation Manual* (Manual) (USACE 1987) and the subsequent *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0) (Regional Supplement) (USACE 2012), which require documentation of hydrophytic vegetation (Reed 1997), hydric soil, and wetland hydrology. Broader definitions of wetlands, such as the one used by the USFWS (Cowardin et al. 1979), and as defined under 18 CFR Part 1318.40, were also considered in this review.

Two depressional wetlands (Wetlands B and C) were identified within the Project Area. Wetland B is a 0.9-acre Palustrine Forested Wetland (PFO) located along the eastern boundary of the Project Area just west of Rollow Lane (see Appendix A, Figure 1-F). PFO wetlands are comprised of woody vegetation that is at least 20 feet tall. The wetland was noted as a previously existing pond, however at the time of the field survey, no standing water was observed. Wetland species observed included silver maple (*Acer saccharinum*), black willow (*Salix nigra*), and broadleaf cattail (*Typha latifolia*).

Wetland C is a 1.0-acre Palustrine Emergent Wetland (PEM) located in the northeast portion of the Project Area and approximately 100-feet south of Dunlop Lane. PEM wetlands are comprised of herbaceous/low-growing species of plants. To the east, west, and south of Wetland C, the land use is associated with row-crop agriculture (soybeans) and the land historically been used for agriculture. A WWC directs surface flow northward through the soybean field for approximately 410 feet prior to discharging into Wetland C. Wetland species

observed included switchgrass (*Panicum virgatum*) and Pennsylvania smartweed (*Persicaria pensylvanica*).

Under the Action Alternative, Wetland B and Wetland C would be impacted by the proposed activities. These impacts would include 1.9 acres of wetland fill, involving clearing and grubbing activities. Wetland impact activities would require permits from the USACE and TDEC as noted above. Mitigation of the 1.9 acres of impacted wetlands would be offset through the purchase of wetland credits. Standard construction BMPs would minimize these impacts to the extent practicable.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to wetland resources as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.5 Aquatic Ecology

4.2.5.1 Aquatic Resources

As described in Section 4.2.3, surface waters in the vicinity of the Project Area are the Red River, two ephemeral streams, and two stormwater detention ponds. Of these, only one ephemeral stream and one stormwater detention pond are located within the Project Area (Attachment 1, Figure 1-F). The Red River is a perennial waterbody that lies approximately 1.45 miles southeast of the Project Area. Temporary effects to surface waters in the vicinity of the Project Area due to stormwater runoff during construction activities are described in Section 4.2.3.

Impacts to the WWC and the stormwater detention pond (an existing and permitted Class V injection well and regional detention area) identified in the Project Area are proposed under the Action Alternative due to the grading and clearing construction activities. However, WWCs are man-made or natural watercourses, including natural watercourses that have been modified by channelization. There is not sufficient water to support fish or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months (TDEC 2011) and therefore, are not aquatic resources able to support aquatic species. Stormwater detention ponds have little chance of supporting aquatic plants and animals when poor water quality and shoreline conditions exist (USEPA 1998). Additionally, the stormwater detention pond is an existing, permitted aquatic feature, under jurisdiction of TDEC and does not include habitats that could support aquatic resources. The implementation of the Action Alternative would not result in direct impacts to aquatic species or their habitats. Additionally, with proper implementation of BMPs, no significant indirect impacts from erosion and sedimentation to aquatic species or their habitats would occur.

Construction activities would not involve moving aquatic species or water from different locations, and equipment and materials used during construction would be clean and free of debris that could introduce exotic species and adversely affect aquatic habitat. Thus, the Action Alternative would not contribute to the spread of exotic or invasive aquatic species.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to aquatic resources as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.5.2 Threatened and Endangered Aquatic Species

The Endangered Species Act (ESA) provides broad protection for species of fish, wildlife, and plants listed as threatened or endangered in the United States. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize federally listed species or their designated critical habitat. The policy directs federal agencies to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes. The State of Tennessee provides protection for species considered threatened, endangered, or deemed in need of management in the state in addition to those federally listed under the ESA.

A query of the TVA Regional Natural Heritage Database (accessed October 3, 2022) for records of listed aquatic animal species indicated that one occurrence of the federally-listed mussel, rabbitsfoot (*Quadrula cylindrica cylindrica*), has been documented within the Elk Fork-Red River watershed (HUC 0513020607) encompassing the Project Area (Table 4-2). Five state-listed fish species, the redlips darter (*Etheostoma maydeni*), smallscale darter (*Etheostoma microlepidum*), Tippecanoe darter (*Etheostoma tippecanoe*), slenderhead darter (*Percina phoxocephala*), southern cavefish (*Typhlichthys subterraneus*), and one state-listed mussel species, the Tennessee clubshell (*Pleurobema oviforme*), have also been documented. Additionally, a review of the USFWS Information for Planning and Consultation (IPaC) website identified one federally listed mussel, the slabside pearlymussel (*Pleuronaia dolabelloides*), as having potential to occur in the vicinity of the Project Area.

Table 4-2. Records of Federal and State-listed Aquatic Animal Species Within the Elk Fork-Red River (HUC 0513020607) Watershed (TVA Request ID 41634)[1,2]

Common Name	Scientific Name	Element Rank[3]	Federal Status[4]	State Status[4] (Rank[5])
Fish				
Redlips darter	*Etheostoma maydeni*	H?	–	– (S2)
Smallscale darter	*Etheostoma microlepidum*	H?	–	D (S2)
Tippecanoe darter	*Etheostoma tippecanoe*	H?	–	D (S1S2)
Slenderhead darter	*Percina phoxocephala*	H?	–	D (S3)
Southern cavefish	*Typhlichthys subterraneus*	E	–	– (S3)
Mussels				
Tennessee clubshell	*Pleurobema oviforme*	H?	–	– (S2S3)
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Not ranked	T	–
Slabside pearlymussel	*Pleuronaia dolabelloides*	Not ranked	E	–

[1] Source: TVA Regional Natural Heritage Database, queried on October 3, 2022; USFWS 2023a.

[2] State listed species data was requested with a 5-mile buffer which extends into Kentucky. Species included in the table are only Tennessee State Listed Species.

[3] Heritage Element Occurrence Rank; E = extant record ≤25 years old; H? =possibly historical

[4] Status Codes: E = Listed Endangered; T = Listed Threatened; D = Deemed in Need of Management

[5] State Ranks: S2 = Imperiled; S3 = Vulnerable; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2)

Brief habitat descriptions for each of the species listed in Table 4-2 are provided below. Habitat requirements are as described in NatureServe (2023) and USFWS (2018, 2023). No suitable habitat for any federally or state-listed species is present within the Project Area.

Redlips darter habitat includes clear pools or eddies of medium to large streams with sand or gravel substrate. Within preferred habitat, they typically occur within depths of 0.5–1.75 meters of water with slow moving current among large cobble, boulders, and woody debris. No suitable habitat for this species occurs within the Project Area.

Smallscale darter habitat includes shallow to deep, strong flowing riffles of small rivers; substrates consist of gravel or coarse rubble. The smallscale darter typically occurs at depths of 0.5 meter. No suitable habitat for this species occurs within the Project Area.

Tippecanoe darter habitat includes clear, shallow riffles and runs of small to medium-sized rivers with rocky bottom substrates. The Tippecanoe darter requires adequate water flow and space between and under rocks free of sediment. No suitable habitat for this species occurs within the Project Area.

Slenderhead darter habitat includes riffles and runs of creeks and small to medium-sized rivers with moderate to strong current; substrates consist of gravel, rubble, and bedrock. Slenderhead darters typically occur within deeper water in colder months and return upstream in spring. No suitable habitat for this species occurs within the Project Area.

Southern cavefish habitat includes cool, clear waters of cave streams, underground lakes, wells, and outlets of springs; substrates consist of mixed gravel, sand, clay, and mud. No suitable habitat for this species occurs within the Project Area.

Tennessee clubshell habitat includes riffles and shoals of creeks and small rivers with moderate currents. Substrates consist of sand/gravel mixtures and occasionally mud or in cracks between bedrock slabs. No suitable habitat for this species occurs within the Project Area.

Rabbitsfoot habitat includes streams and small to medium-sized rivers with moderate to swift currents. Substrates consist of sand, gravel, and cobble. They are typically found lying on their sides on top of the substrate. No suitable habitat for this species occurs within the Project Area.

The slabside pearlymussel primarily occupies shoal habitat in large creeks to large rivers. Areas with sand, fine gravel, and cobble substrates and moderately strong current appear to be the most suitable for the species. The slabside pearlymussel is not tolerant of lentic habitats or impounded conditions. No suitable habitat for this species occurs within the Project Area.

Implementation of the Action Alternative would not result in direct impacts to aquatic species or their habitats. There is designated critical habitat for the federally listed rabbitsfoot within the same watershed (Elk Fork-Red River [HUC 0513020607]) where the proposed work would occur (USFWS 2023b). The critical habitat is limited to the Red River and is approximately 5.3 miles southeast of the Project Area; therefore, implementation of the Proposed Action would not

adversely modify designated critical habitat for the federally threatened rabbitsfoot. Furthermore, ground disturbance would be minimized, and all work conducted in accordance with applicable BMPs to minimize erosion and subsequent sedimentation in streams. Therefore, with proper implementation of BMPs, there would be no effect to threatened and endangered aquatic species or unique or important aquatic habitats.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. Similar to the Proposed Action, if the CMCIDB were to obtain alternate funding and proceed with its current plans, no impacts to threatened and endangered aquatic species would occur. If the CMCIDB was unable to secure other funding or the Project was cancelled and the Proposed Action would not occur, there would also be no impacts to threatened and endangered aquatic species, and environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.6 Botany

4.2.6.1 Vegetation

A field survey was conducted in November 2022 and focused on documenting plant communities within the Project Area. According to National Land Cover Dataset (USGS 2019), the Project Area predominately consists of Cultivated Crop lands. No forested areas in the proposed Project Area had structural characteristics indicative of old growth forest stands. Additionally, existing studies and a desktop review of the current and past site conditions indicate that the Project Area has been utilized as agricultural land for the past 25 years.

Adoption of the Action Alternative would result in the removal of approximately 9.0 acres of trees. Common trees in the Project Area include black willow, Bradford pear (*Pyrus calleryana*), eastern cottonwood (*Populus deltoides*), silver maple, American elm (*Ulmus americana*), common hackberry (*Celtis occidentalis*), and honey locust (*Gleditsia triacanthos*). The herbaceous layer within these forested stands predominately consisted of switchgrass, white snakeroot (*Ageratina altissima*), American beautyberry (*Callicarpa americana*), pinkweed, Japanese stilt grass (*Microstegium vimineum*), and Drummond's American-aster (*Symphyotrichum drummondii*). Forested vegetation within the Project Area is highly fragmented by developed and cultivated crop lands. The site has been heavily disturbed in the past and does not support high quality plant communities with significant conservation value. Implementation of the Action Alternative could therefore result in the potential spread of invasive plant species to lands outside of the Project Area.

Implementation of the Action Alternative would not result in adverse impacts to vegetation on any appreciable scale. Adoption of the Action Alternative would result in the potential disturbance of the entire 81.6 acres. All vegetation within the proposed compacted dirt building pad and gravel access road locations would be removed, and the areas would be graded or graveled. Impacts to vegetation in these locations may be permanent, but the vegetation found within the Project Area is comprised of non-native weeds and early successional plants that have little conservation value. All other areas would be stabilized and seeded after construction activities are completed and the contractor would adhere to the Project specific SWPPP, which would reduce the potential for off-site migration of invasive plant species. Thus, the Action Alternative would not significantly contribute to the spread of invasive species.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to vegetation as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.6.2 Threatened and Endangered Plant Species

An October 2022 query of the TVA Regional Natural Heritage Database indicated that two state listed plant species, the purple milkweed (*Asclepias purpurascens*) and white water buttercup (*Ranunculus aquatilis* var. *diffuses*), have been reported from within a 5.0-mile vicinity of the Project Area (Table 4-3). The TVA Regional Natural Heritage Database did not identify federally threatened or endangered plant species within a 5.0-mile vicinity of the Project Area. However, the IPaC database identified two federally listed plant species, Price's potato-bean (*Apios priceana*) and Short's bladderpod (*Physaria golbosa*), as having a potential to occur within the Project Area.

Table 4-3. Plant Species of Conservation Concern known from within 5.0 Miles of the Project Area and Federally Listed Plants in Montgomery County, TN[1]

Common Name	*Scientific Name*	Element Rank[2]	Federal Status[3]	State Status[3] (Rank)[4]
Plants				
Purple milkweed	*Asclepias purpurascens*	H?	–	S (S1)
White water buttercup	*Ranunculus aquatilis* var. *diffuses*	H?	–	E (S1)
Price's potato-bean	*Apios priceana*	Not ranked	T	E (S3)
Short's bladderpod	*Physaria globosa*	E	E	E (S2)

[1] Sources: TVA Regional Natural Heritage Database, extracted on October 3, 2022; USFWS 2023a.
[2] Heritage Element Occurrence Rank: E = extant record ≤25 years old; H? =possibly historical
[3] Status Codes: E = Listed Endangered; T = Listed Threatened; S = Special Concern
[4] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable

Brief habitat descriptions of protected plant species potentially occurring in the Project Area are provided below. Habitat requirements are as described in NatureServe (2023), and USFWS (2023). No suitable habitat for the white water buttercup or Short's bladderpod and no Price's potato-bean individuals have been documented within the Project Area.

Purple milkweed are not restricted to habitat conditions. Purple milkweed are known to occur within a broad range of habitats including prairies, thickets, woodland edges, wetlands, and rocky ridgetops. Purple milkweed has not been documented within the Project Area.

White water buttercup is a perennial aquatic plant that occurs in lakes or slow-moving water up to 2 meters in depth. Suitable habitat for water buttercup habitat was not identified within the Project Area.

Price's potato-bean is a federally threatened plant species that thrives in open, wooded areas, often in forest gaps or along forest edges. The species apparently prefers mesic areas and is often found in open, low areas near a stream or along the banks of streams and rivers. The species often grows in well-drained loams or old alluvium over limestone on rocky, sloping terrains. Price's potato-bean has not been documented within the Project Area.

Short's bladderpod is a federally endangered species that is found on dry, open limestone ledges on river bluffs, talus of lower bluff slopes, and shale at cliff bases. These are usually south- to west-facing rocky slopes, and the tops, ledges, or bases of steep cliffs, often along major waterways. Suitable habitat for Short's bladder pod was not identified within the Project Area.

The majority of the Project Area is highly disturbed and populated primarily with non-native weedy species. No designated critical habitat for plants occurs in the Project Area.

Implementation of the Action Alternative would not impact protected plant species. Adoption of this alternative would result in wholesale disturbance across the entire Project Area. The Project Area would be cleared and graded, and all vegetation would be removed. However, the vegetation found on site is comprised of non-native weeds and early successional plants that have little conservation value and protected plant species do not occur within the Project Area.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. Similar to the Proposed Action, if the CMCIDB were to obtain alternate funding and proceed with its current plans, no impacts to threatened and endangered plant species would occur. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, there would also be no impacts to threatened and endangered plant species, and environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.7 Terrestrial Zoology

4.2.7.1 Terrestrial Wildlife

The Project Area is a parcel that is largely used for agriculture. Several wooded patches border the field on the north, east, and south boundaries of the Project Area. The wooded patches on the north and east boundaries consist largely of early successional growth with small maple, Bradford pear (*Pyrus calleryana*), tree of heaven (*Ailanthus altissima*), and cedar trees (*Cedrus* spp.). The two wooded patches on the southern boundary of the Project Area consists of large-boled mixed hardwood trees (>15 inches in diameter) and snags. The ground cover includes beauty berry (*Callicarpa sp.*), blackberry (*Rubus sp.*), privet (*Ligustrum sp.*), and small cedars. A field survey was conducted of the Project Area on November 14, 2022, by a TVA terrestrial zoologist.

Fields covered in herbaceous growth provide habitat for common birds such as field sparrow (*Spizella pusilla*), indigo bunting (*Passerina cyanea*), white-eyed vireo (*Vireo griseus*) and yellow-breasted chat (*Icteria virens*) (National Geographic 2002). Mammals such as bobcat (*Lynx rufus*), coyote (*Canis latrans*), eastern mole (*Scalopus aquaticus*), golden mouse (*Ochrotomys nuttalli*), groundhog (*Marmota monax*), and white-tailed deer (*Odocoileus virginianus*) also may utilize habitat like this in this region (Whitaker 1996). Reptiles that may use these habitats in this region include black racer (*Cluber constrictor*), eastern kingsnake (*Lampropeltis getula*), gray rat snake (*Pantherophis spiloides*), and red milk snake

(*Lampropeltis Triangulum*) (Gibbons and Dorcas 2005). Amphibians that may use this area are American toad (*Anaxyrus americanus*) and Fowler's toad (*Anaxyrus fowleri*) (Powell et al. 2016). During the field survey a red-tailed hawk (*Buteo jamaicensis*) was observed foraging over the fields.

Two wetlands, one WWC, and one stormwater detention pond were delineated within the Project Area. During the field survey, water was not present in any of these features except for the small wetland on the eastern edge of the Project Area. Wetlands may provide suitable habitat for a multitude of amphibian and reptilian species. Amphibians likely to use the area include American bullfrog (*Lithobates catesbeianus*), Cope's gray tree frog (*Hyla chrysoscelis*), eastern newt (*Notophthalmus viridescens*), northern cricket frog (*Acris crepitans*), southern leopard frog (*Lithobates sphenocephalus*), and upland chorus frog (*Pseudacris feriarum*). Reptiles utilizing these wet areas and the surrounding habitat include garter (*Thamnophis spp.*), northern water (*Nerodia sipedon*), rat (family Colubridae) and ring-necked snakes (*Diadophis punctatus*) (Powell et al. 2016, Gibbons and Dorcas 2005).

The narrow tree lines along existing roads were comprised of deciduous hardwood species, shrubs, and cedars and provide habitat for common birds such as Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), cedar waxwings (*Bombycilla cedrorum*), chipping sparrow (*Spizella passerine*), eastern bluebird (*Sialia sialis*), eastern towhee (*Pipilo erythrophthalmus*), golden crowned kinglet (*Regulus satrapa*), northern cardinal (*Cardinalis cardinalis*), northern flicker (*Colaptes auratus*), northern mockingbird (*Mimus polyglottos*), prairie warbler (*Setophaga discolor*), pine warbler (*Setophaga pinus*), red-tailed hawk, song sparrow (*Melospiza melodia*), tufted titmouse (*Baeolophus bicolor*), and white-throated sparrow (*Zonotrichia albicollis*) (National Geographic 2002). During field surveys a large raptor nest was observed in the crown of a large red-oak tree in a wooded patch along the southern boundary of the Project Area (Attachment 1, Figure 1-G). The nest was not active, and biologists were not able to determine which species of raptor built the nest. Mammals found in these habitats include common raccoon (*Procyon lotor*), eastern gray squirrel (*Sciurus carolinensis*), and Virginia opossum (*Didelphis virginiana*) (Whitaker 1996). Common amphibian and reptile species also use similarly disturbed habitats including American toad, eastern box turtle (*Terrapene carolina carolina*), eastern garter snake (*Thamnophis sirtalis*), and Fowler's toad (Powell et al. 2016).

Two caves are known within 3 miles of the Project Area. Both caves are approximately 1.5 miles from the Project Area. No caves were observed within the Project Area during the field survey.

Review of the USFWS IpaC tool in October 2022 identified 13 migratory bird species of conservation concern, the bald eagle (*Haliaeetus leucocephalus*), black-billed cuckoo (*Coccyzus erythropthalmus*), bobolink (*Dolichonyx oryzivorus*), cerulean warbler (*Setophaga cerulea*), chimney swift (*Chaetura pelagica*), field sparrow, Kentucky warbler (*Geothlypis Formosa*), lesser yellowlegs (*Tringa flavipes*), prairie warbler, prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*), that have the potential to occur within the Project Area.

Bald eagles are federally protected under the Bald and Golden Eagle Protection Act (16 U.S. Code [U.S.C.] 668–668d). This species is associated with large mature trees capable of supporting their nests that can weigh several hundred pounds and are typically built near larger

waterways where they forage primarily for fish (USFWS 2007a). No suitable foraging or breeding habitat for bald eagle exists within the Project Area.

Black-billed cuckoos are rare summer residents in Tennessee typically found nesting along forest edges and are frequently associated with water throughout its range (Nicholson 1997). Suitable habitat is not present for black-billed cuckoos within the Project Area.

Bobolinks migrate through Tennessee in the spring and fall. Bobolinks migrate in large aggregations stopping along river, shores, and marshes to feed on wetland vegetation (Renfrew et al. 2020). Typical migratory stopover habitat for bobolinks is not present within the Project Area.

Cerulean warblers are summer residents in Tennessee and are associated with tracts of mature forest in either bottomland hardwood forests, upper mesic slopes, or dry ridge tops (Buehler et al. 2020). Summer habitat for cerulean warbler is not present within the Project Area.

Chimney swifts are summer residents in Tennessee and use chimneys in more urban areas as nesting sites and communal roosts (Palmer-Ball 1996). No chimney-like structures exist within the Project Area.

Field sparrows are common year-round residents in Tennessee that are associated with fields, brushy pastures, and second-growth scrub where they forage and build ground nests (Carey et al. 2020). Foraging and breeding habitat exists within the Project Area, however field sparrows are not thought to nest in developed or suburban areas (Peterjohn and Rice 1991).

Kentucky warbler are summer residents in Tennessee and nest in bottomland hardwood forests or other mesic forested areas (McDonald 2020). Breeding habitat for Kentucky warbler is not present within the Project Area.

Lesser yellowlegs are uncommon spring and fall migrants in Tennessee, typically using wetlands along rivers as stopover sites (Tibbitts and Moskoff 2020). Migratory stopover habitat is not present within the Project Area.

Prairie warblers are summer residents in Tennessee and are typically use pine forests to forage and nest in. Suitable breeding habitat for prairie warblers is not present within the Project Area.

Prothonotary warblers are a summer resident in Tennessee and are typically found near water where nests are built in cavities over or near slow moving water (Walkinshaw 1953). Suitable breeding habitat for prothonotary warbler is not present within the Project Area.

Red-headed woodpeckers use a variety of treed habitats but show preference for forested areas exhibiting more openness and a high number of tree snags available (Reller 1972). While it is not optimal habitat, red-headed woodpeckers may use forest patches on the southern boundary of the Project Area (snags present) for foraging and nesting.

Rusty blackbirds are winter residents in Tennessee and utilize forested wetland habitats (Greenberg and Matsuoka 2010). Suitable habitat for rusty blackbirds is not present within the Project Area.

Wood thrushes are summer residents in Tennessee that are associated with larger tracts of mature mixed-deciduous forests with open forest floors (Evans et al. 2020). All wooded patches within the Project Area are approximately 4 acres or less and do not offer suitable breeding habitat for wood thrushes.

Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road. Actions are proposed to begin in the Fall of 2023 and be completed in Spring 2024.

The Action Alternative would result in displacement of any wildlife (primarily common, habituated species) currently using the area. Direct effects to some individuals could occur if those individuals are immobile during the time of habitat removal (e.g., during breeding/nesting or hibernation seasons). Habitat removal likely would disperse mobile wildlife into surrounding areas in attempts to find new food resources, shelter, and to reestablish territories. Due to the amount of similarly suitable habitat in areas immediately adjacent to the Project Area, populations of common wildlife species likely would not be impacted by the proposed Project actions. An unknown raptor nest was observed within the Project Area in the crown of a large red-oak in an area proposed for tree removal (see Attachment 1, Figure 1-G). Tree removal is proposed for November 2023 when the nest should not be active and impacts to nesting raptor species would be avoided.

Habitat for bald eagle, black-billed cuckoo, bobolink, cerulean warblers, chimney swifts, Kentucky warbler, lesser yellowlegs, prairie warbler, prairie warbler, prothonotary warbler, rusty blackbird, and wood thrush is not present within the Project Area. Low quality potential nesting and foraging habitat for the field sparrow and red-headed woodpecker are present within the Project Area. Field sparrows are believed to not nest in suburban or developed areas and field sparrows may avoid the area within the Project Area given the surrounding areas are small housing developments or heavily industrialized. Proposed actions are planned to occur in the fall through early spring, outside of the breeding season for both the field sparrow and red-headed woodpecker. Non-nesting individuals present on the landscape are expected to flush to nearby suitable habitat if disturbed by Project actions. Due to the relatively small number of trees proposed for removal, availability of suitable habitat adjacent to the Project Area, and the winter timing of tree removal, proposed actions under the Action Alternative are not expected to impact populations of field sparrows, red-headed woodpeckers, or other migratory bird species.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, no ground disturbance would occur, and terrestrial wildlife and their habitats would not be impacted.

4.2.7.2 Threatened and Endangered Species

Review of the TVA Regional Natural Heritage Database on October 4, 2022, identified records of three species of state conservation concern (barking treefrog [*Hyla gratiosa*], osprey [*Pandion haliaetus*], and southern bog lemming [*Synaptomys cooperi*]), one state-listed species (little brown bat [*Myotis lucifugus*]), and one species proposed federally endangered (tricolored bat [*Perimyotis subflavus*]) within three miles of the Project Area. Three additional federally listed species are known from Montgomery County, TN: Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), and northern long-eared bat (*Myotis septentrionalis*). Based on review of the USFWS IPaC tool, the monarch butterfly (*Danaus plexippus*), a candidate for federal listing, and a non-essential experimental population of the federally endangered whooping crane (*Grus*

americana) have the potential to occur within the Project Area. See Table 4-4 for a full species list with conservation statuses. Species-specific information and habitat suitability within the Project Area are discussed below.

Table 4-4. Federally Listed Terrestrial Animal Species Reported From Montgomery County and Other Species Of Conservation Concern Documented Within 3 Miles of the Project Area[1]

Common Name	Scientific Name	Federal Status[2]	State Status (Rank)[3]
AMPHIBIANS			
Barking tree frog	*Hyla gratiosa*	–	– (S3)
BIRDS			
Osprey	*Pandion haliaetus*	–	– (S3)
Whooping crane	*Grus americana*	E (XPN)	--
INVERTEBRATES			
Monarch butterfly[4]	*Danaus plexippus*	C	– (S4)
MAMMALS			
Gray bat[5]	*Myotis grisescens*	E	E (S2)
Indiana bat[5]	*Myotis sodalis*	E	E (S1)
Little brown bat	*Myotis lucifugus*	UR	T (S3)
Northern long-eared bat[5]	*Myotis septentrionalis*	E	T (S1S2)
Southern bog lemming	*Synaptomys cooperi*	–	D (S4)
Tricolored bat	*Perimyotis subflavus*	PE	T (S2S3)

[1] Source: TVA Regional Natural Heritage Database, extracted October 4, 2022; USFWS 2023a.

[2] Status Codes: C = Candidate Species; D = Deemed In Need of Management; E = Listed Endangered; PE = Proposed Endangered; T = Listed Threatened; UR = Under Review; XPN = Experimental Population.

[3] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S#S# = Denotes a range of ranks because the exact rarity of the element is uncertain (e.g., S1S2).

[4] Historically this species has not been tracked by state or federal heritage programs; USFWS has determined that this species could occur within the Project Area.

[5] Species known from Montgomery County, Tennessee, but not from within 3 miles of the Project Area.

Barking treefrogs are large-bodied treefrogs typically associated with coastal plains and pine savannahs (Behler and King 1979). There are several disjunct populations in Tennessee and Kentucky. Barking treefrogs reside in trees during the non-breeding season but will move small distances to fishless semi-permanent ponds for reproduction during the spring and summer (Wright and Wright 1949). There is one emergent wetland and one stormwater detention pond within the Project Area that may provide suitable breeding habitat for the barking treefrog. The forested wetland did not contain water at the time of the field survey. It is unknown whether or not there are fish within the wetland or detention pond.

Ospreys are medium-sized raptors that are typically associated with water since this species forages exclusively for fish (Bierregaard et al. 2020). In Tennessee, ospreys arrive on the landscape in March to begin their breeding season, building nests and hatching young from

April through July. Ospreys build nests in trees or man-made structures (e.g., transmission structures) near or over water. In October, ospreys migrate south for the winter non-breeding period (Poole 1989). Two osprey nests are within 3 miles of the Project Area. Both nest records are approximately one mile from the Project Area on transmissions structures along a right of way. Foraging habitat is not present within the Project Area. No ospreys or osprey nests were observed during field reviews of the Project Area in November 2022.

Whooping cranes migrate through Tennessee twice per year in small flocks of three- five birds. During this migration they stop to feed and rest in wetland complexes, marshes, ponds, lakes, rivers, and agricultural fields (USFWS 2023a). Historically the Project Area has been agricultural row crops but has since been rezoned to Industrial. A detention pond and an emergent wetland may provide lower quality foraging habitat for whooping crane should they have surface water at the time of migration.

The monarch butterfly is a highly migratory species, with eastern United States (U.S.) populations overwintering in Mexico. Monarch populations typically return to the eastern U.S. in April (Davis and Howard 2005). Summer breeding habitat requires milkweed plant species, on which adults exclusively lay eggs for larvae to develop and feed on. Adults will drink nectar from other blooming wildflowers when milkweeds are not in bloom (NatureServe 2023). The field within the Project Area has been used for agriculture/crop growing and the plants present are not typically used for monarch foraging. Though some flowering plants may occur in the field, significant breeding or foraging habitat is not present within the Project Area. Though this species has not been historically tracked by state or federal heritage programs, the USFWS IPaC tool determined that this species could occur within the Project Area. Monarchs were not observed during the field survey of the Project Area in November 2022; however, it is expected that most individuals would be closer to their overwintering grounds at that time.

Southern bog lemmings are small mammals typically associated with bogs, meadows, and wet mixed and coniferous forests. Southern bog lemmings create burrows up to 12 inches below the surface and feed on herbaceous plants (NatureServe 2023). The TVA Regional Natural Heritage Database identified one historical record of a southern bog lemming exists from 1978 approximately 1.2 miles from the Project Area where a specimen was found as a prey item of a road-killed short-eared owl along the interstate. Habitat for the southern lemming is not present within the Project Area.

Little brown bats typically winter in caves and mines. In summer they are often found in buildings, though they have also been documented roosting under bridges. In the summer females form maternity colonies in buildings and males will roost in trees. Little brown bats forage over water and along tree edges (Josiah and Gillam 2017). The closest known record of little brown bat is from a cave approximately 1.5 miles from the Project Area.

Gray bats roost in caves year-round and migrate between summer and winter roosts during spring and fall (Brady et al. 1982, Tuttle 1976a, 1976b). Bats disperse over bodies of water at dusk where they forage for insects emerging from the surface of the water (Harvey 2011). Several gray bat records are known from Montgomery County, TN. The closest gray bat record is known from a summer mist-net capture record approximately 4 miles from the Project Area.

Indiana bats hibernate in caves in winter and use areas around them in fall and spring for swarming and staging, prior to migration back to summer habitat. During the summer, Indiana bats roost under the exfoliating bark of dead and living trees in mature forests with an open

understory, often near sources of water. Indiana bats are known to change roost trees frequently throughout the season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years. This species forages over forest canopies, along forest edges and tree lines, and occasionally over bodies of water (Kurta et al. 2002, USFWS 2007b, USFWS 2022b). The nearest known Indiana bat is from a winter hibernaculum in Montgomery County, TN, approximately 10.5 miles from the Project Area.

The northern long-eared bat predominantly overwinters in large hibernacula such as caves, abandoned mines, and cave-like structures. During the fall and spring, they utilize entrances of caves and the surrounding forested areas for swarming and staging. In the summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to that of Indiana bat, however northern long-eared bats are thought to be more opportunistic in roost site selection. This species also roosts in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads, and occasionally over forest clearings and along riparian areas (USFWS 2014). The nearest northern long-eared bat is known from a cave record approximately 4.1 miles from the Project Area.

Tricolored bats hibernate in caves or man-made structures such as culverts or bridges (Fujita and Kunz 1984, Newman 2021). During the summer, tricolored bats roost in clumps of tree foliage, often in oak and hickory trees (Veilleux et al. 2003, O'Keefe et al. 2009, Schaefer 2017, Thames 2020). Foraging studies of tricolored bats are lacking, but it is believed they typically forage near their roost trees in forested areas and riparian corridors. The closest known record of a tricolored bat is from the same cave as the little brown bat record, approximately 1.5 miles from the Project Area.

Two caves are known within 3 miles of the Project, both of which occur approximately 1.5 miles from the Project Area. Both little brown bats and tricolored bats were observed in one of the caves. No caves were observed within the Project Area during field reviews in November 2022. The wooded sections proposed for removal as part of the Project actions were assessed for potential summer roosting and foraging sites for state and federally listed bat species following the Range Wide Indiana Bat and Northern Long-eared Bat Survey Guidelines (USFWS 2022b). Approximately 3.2 acres of suitable summer roosting habitat was identified for tricolored, northern long-eared, and Indiana bats. It exists among the denser forested areas of the Project Area. Habitat quality ranged from low to moderate based on the presence of trees with exfoliating bark, crevices, holes, or open forest understory. Suitable summer roosting areas were comprised of mixed-deciduous hardwood patches dominated by a mixture of oaks, elms, and snags. Foraging habitat for the little brown, tricolored, Indiana, and northern long-eared bat exists along the wooded edges within the Project Area. One small wetland along the eastern boundary of the Project Area and a stormwater detention pond along the southern boundary may provide some aquatic foraging habitat for all five bat species when water is present. Gray bat roosting habitat is not present within the Project Area.

Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road. Actions are proposed to begin in the Fall of 2023 and be complete in Spring 2024. Of the nine species reviewed, seven have the potential to occur within the Project

Area. Suitable habitat for the osprey and southern bog lemming does not exist within the Project Area; therefore, these species would not be impacted by the Proposed Action.

Low quality, suitable non-breeding and breeding habitat may be present for the barking treefrog around one wetland and one stormwater detention pond along the eastern and southern boundaries of the Project Area. The other wetland was dry during field surveys in November 2022. Wetlands impacted as part of the wetland mitigation activities would reduce available potential breeding habitat for the barking treefrog. The roads surrounding the Project Area are likely impassable barriers for barking treefrogs to migrate to nearby suitable breeding habitat. However, given the level of development surrounding the Project Area and the previous agricultural use of the Montgomery County InvestPrep site, it is not expected for barking treefrogs to be present in significant numbers. Populations of barking treefrogs would not be impacted by the proposed Project actions.

Potential low-quality foraging stopover habitat for whooping crane exists in a 1.0 acre emergent wetland and a stormwater detention pond. Historically the Project Area also contained soybean fields. A large wetland and actively maintained row crop fields occur immediately north of the Project Area that are likely to be more attractive to migrating whooping cranes. Loss of this potential foraging habitat would not impact whooping crane given the amount of more desirable habitat in the immediate vicinity. Proposed actions would not jeopardize the continued existence of whooping crane.

Some suitable monarch butterfly foraging habitat occurs within the Project Area, largely along forest edges and open areas. Foraging habitat also exists adjacent to the Project Area. No host plants required for reproduction are known from the Project Area. Impacts to populations of monarch butterflies are not anticipated as a result of the Proposed Action. This species is currently listed under the ESA as a candidate species and is not subject to Section 7 consultation under the ESA.

Three federally listed (gray bat, Indiana bat, and northern long-eared bat), one proposed federally endangered (tricolored bat), and one state-listed bat species (little brown bat) were addressed based on the potential for the species to occur in the Project Area. All of these species have the potential to occur within and utilize the Project Area.

No caves or other hibernacula for gray bat, little brown bat, tricolored bat, Indiana bat, or northern long-eared bat exist in the Project Area or would be impacted by the Proposed Action. Approximately 3.2 acres of suitable summer roosting habitat for Indiana bat, northern long-eared bat, and tricolored bat does occur in the Project Area. As part of the actions under the Action Alternative, the 3.2 acres of suitable summer roost habitat is proposed for removal as part of the clearing and grading actions. Tree lines also offer foraging habitat for Indiana and northern long-eared bat. Additional foraging habitats for little brown bats, tricolored bats, gray bats, Indiana bats, and northern long-eared bats may be present over the small wetlands present within the Project Area when water is present. Wetland mitigation activities would impact the availability of foraging habitat, but there are ponds adjacent to the Project Area that offer similarly suitable aquatic foraging habitat. Tree removal is proposed to occur in November 2023, when trees would be cut and burned on site. During this time, tricolored bats, northern long-eared bats, and Indiana bats are not expected to be on the landscape. Removal of suitable habitat in winter (November 15–March 31) would avoid direct impacts to these species as they are roosting underground at that time.

A number of activities associated with the proposed Project, including tree removal and burning, were addressed in TVA's programmatic consultation with the USFWS on routine actions and federally listed bats in accordance with ESA Section 7(a)(2) which was originally completed in April 2018 and updated in April 2023. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on page 5 of the TVA Bat Strategy Project Screening Form and need to be reviewed/implemented as part of the proposed project (Attachment 2). Reinitiation of TVA's bat programmatic is underway to address the uplisting of the northern long-eared bat from threatened to endangered. In the interim, additional Section 7 consultation was performed using the IPaC determination key for northern long-eared bat. Proposed actions may affect but are not likely to adversely affect the northern long-eared bat (Attachment 3). In addition, TVA has determined that the proposed actions are not likely to jeopardize the continued existence of the tricolored bat and proposed actions are not likely to affect populations of little brown bat. Considering the scope of the Proposed Action, distance to known bat records, and implementation of BMPs and conservation measures including winter tree removal, significant impacts to gray bat, Indiana bat, tricolored bat, little brown bat, and northern long-eared bat are not anticipated as a result of the Action Alternative.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, no ground disturbance or tree clearing would occur, and threatened and endangered terrestrial wildlife species and their habitats would not be impacted.

4.2.8 Managed and Natural Areas

Managed areas include lands held in public ownership that are managed by an entity (e.g., TVA, USDA, U.S. Forest Service, State of Tennessee) to protect and maintain certain ecological and/or recreational features. Natural areas include ecologically significant sites; federal, state, or local park lands; national or state forests; wilderness areas; scenic areas; wildlife management areas; recreational areas; greenways; trails; Nationwide Rivers Inventory; and wild and scenic rivers. Ecologically significant sites are either tracts of privately owned land that are recognized by resource biologists as having significant environmental resources or identified tracts on TVA lands that are ecologically significant but not specifically managed by TVA's Natural Areas program.

A review of the TVA Regional Natural Heritage Database identified two managed and natural areas within 3 miles of the Project Area (Table 4-5).

Table 4-5. Managed/Natural Areas within 3.0 Miles of the Project Area[1]

Managed/Natural Area	Acres	County	State
Barkley Reservoir Reservation	81,082.86	Multiple	Multiple
Red River	232.01	Multiple	Multiple

[1] Source: TVA Regional Natural Heritage Database, extracted October 4, 2022.

The Barkley Reservoir Reservation, managed by the U.S. Army Corps of Engineers, is located approximately 2.0 miles south of the Project Area. Barkley Reservoir lies on the Cumberland River and connects to the Tennessee River by a navigation canal. Red River, a Nationwide Rivers Inventory stream, is located approximately 1.5 miles south of the Project Area.

Given their distance from the Project Area, no direct impacts to either of these natural areas are expected as a result of the Action Alternative.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. Similar to the Proposed Action, if the CMCIDB were to obtain alternate funding and proceed with its current plans, no impacts to managed or natural areas would occur. If the CMCIDB was unable to secure other funding or the Project was cancelled and the Proposed Action would not occur, there would also be no impacts to managed or natural areas, and environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.9 Cultural Resources

Cultural resources, including archaeological and architectural resources, are protected under various federal laws, including: the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires federal agencies to consult with the respective State Historic Preservation Officer (SHPO) when proposed federal actions could affect these resources.

The Project includes 81.6 acres located near Clarksville, Tennessee, and includes all or portions of Montgomery County parcel identification numbers: 039 02100 000 and 040 01202 00006039. The location appears on the Sango 2022, 7.5-minute USGS topographic maps. Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road.

Pursuant to Section 106 of the NHPA and implementing regulations 36 CFR 800, a historic architectural survey and archaeological survey was completed by SWCA Environmental Consultants (SWCA) to identify National Register of Historic Places (NRHP) listed, eligible, or potentially eligible historic structures and archaeological sites within the Project Area (SWCA 2023). In preparation for the survey, a search of the site survey files and other resources available at the Tennessee Historical Commission (THC) was completed. Background research conducted via the Tennessee Historic Property Viewer, historic cartographic resources, and modern aerial photographs revealed five properties that are 50 years of age or older within the Area of Potential Effect (APE) for the Project Area, which included the 81.6-acre Project Area and a 0.5-mile unobstructed viewshed. Three of these were previously identified resources for which no determinations were made regarding NRHP eligibility. SWCA identified three additional historic architectural resources within the APE, one of which was inaccessible from the public right-of-way due to distance and intervening mature vegetation . All other survey targets were documented and evaluated for eligibility for listing in the NRHP.

During the archaeological survey, a pedestrian inspection coupled with the excavation of shovel tests were completed. The walkover survey was conducted along transects aligned north-south and east-west and spaced approximately 30-meter intervals. All areas of exposed ground surface were examined for artifacts over 50 years old. In addition, 470 shovel tests were

excavated that measured 30 centimeters (cm) in diameter and were dug to 80 cm below surface whenever possible; shovel tests were often terminated at shallow depths due to encountering clay. As a result of the survey, one prehistoric chert flake was encountered in one shovel test. The isolated artifact does not qualify as an archaeological site, therefore, was not designated a Tennessee Department of Archaeology site number. This isolated find is not eligible for listing in the NRHP, and no further work is recommended.

During the historic architectural survey, SWCA documented and assessed five architectural resources (MT-123, MT-126, MT-1148, MT-IP-001, and MT-IP-002 which were over 50 years in age within the APE (Table 4-6). The APE included the immediate 81.6-acre direct Project Area, including approximately 9.0 acres of tree clearing and an unobstructed 0.5-mile viewshed surrounding the Project Area. None of the five surveyed properties were recommended eligible to be listed in the NRHP. Based on the background research and the Phase I architectural survey, TVA found that the Action Alternative would have no effect on historic properties.

Table 4-6. Cultural Resources Identified during the Phase I Cultural Historic Survey

Cultural Resource Number	Description	Eligibility Recommendation
MT-123	2485 Rollow Lane, Clarksville, TN 37043	Not Extant
MT-126	Ross Road, Clarksville, TN 37043	Not Accessible
MT-1148	1429 Dunlop Lane, Clarksville, TN 37043	Not Eligible
MT-IP-001	1490 Dunlop Lane, Clarksville, TN 37043	Not Eligible
MT-IP-002	1782 Dunlop Lane, Clarksville, TN 37043	Not Eligible

TVA consulted with the Tennessee SHPO in a letter dated March 13, 2023, regarding TVA's findings and recommendations. In a letter dated March 13, 2023, the Tennessee SHPO concurred with TVA's findings and recommendations (Attachment 4). Pursuant to 36 CFR Part 800.3(f) (2), TVA also consulted with federally recognized Indian tribes regarding properties that may have religious and cultural significance to their tribe and eligible for the NRHP. TVA received no responses from the federally recognized Indian tribes regarding the Action Alternative.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. Similar to the Proposed Action, if the CMCIDB were to obtain alternate funding and proceed with its current plans, no impacts to cultural resources would occur. If the CMCIDB was unable to secure other funding or the Project was cancelled and the Proposed Action would not occur, there would also be no impacts to cultural resources as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.10 Air Quality and Climate Change

Federal and state regulations protect ambient air quality. With authority granted by the Clean Air Act (CAA) 42 U.S.C. 7401 et seq. as amended in 1977 and 1990, the United States Environmental Protection Agency (USEPA) established National Ambient Air Quality Standards (NAAQS) to protect human health and public welfare. The USEPA codified NAAQS in 40 CFR 50 for the following "criteria pollutants": nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, sulfur dioxide (SO_2), lead, particulate matter (PM) with an aerodynamic diameter equal to or less

than 10 microns (PM_{10}), and PM with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$). The NAAQS reflects the relationship between pollutant concentrations and health and welfare effects. Primary standards protect human health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are designed to protect public welfare, including visibility, animals, crops, vegetation, and buildings. These standards reflect the latest scientific knowledge and have an adequate margin of safety intended to address uncertainties and provide a reasonable degree of protection. The air quality in Montgomery County, TN, meets the ambient air quality standards and is in attainment with respect to the criteria pollutants (USEPA 2023a, USEPA 2023b, USEPA 2023c).

Other pollutants, such as hazardous air pollutants (HAPs) and greenhouse gases (GHGs) are also a consideration in air quality impacts analyses. Section 112(b) of the CAA lists HAPs, also known as toxic air pollutants or air toxics, because they present a threat of adverse human health effects or adverse environmental effects. Although there are no applicable ambient air quality standards for HAPs, their emissions are limited through permit thresholds and technology standards as required by the CAA.

GHGs are gases that trap heat in the atmosphere. They are non-toxic and non-hazardous at normal ambient concentrations. Currently, there are no applicable ambient air quality standards or emission limits for GHGs under the CAA. GHGs occur in the atmosphere both naturally and resulting from human activities, such as the burning of fossil fuels. GHG emissions due to human activity are the main cause of increased atmospheric concentration of GHGs since the industrial age and are the primary contributor to climate change. The principal GHGs are carbon dioxide (CO_2), methane, and nitrous oxide.

Air quality impacts associated with activities under the Action Alternative include emissions from fossil fuel-fired equipment, fugitive dust from ground disturbances, and emissions from the burning of wood debris. Fossil fuel-fired equipment are a source of combustion emissions, including nitrogen oxides (NO_X), CO, volatile organic compounds (VOCs), SO_2, PM_{10}, $PM_{2.5}$, GHGs, and small amounts of HAPs. Gasoline and diesel engines used because of the Action Alternative would comply with the USEPA mobile source regulations in 40 CFR Part 85 for on-road engines and 40 CFR Part 89 for non-road engines. These regulations are designed to minimize emissions and require a maximum sulfur content in diesel fuel of 15 parts per million.

Fugitive dust is a source of respirable airborne PM, including PM_{10} and $PM_{2.5}$, which could result from ground disturbances such as land clearing, grading, excavation, and travel on unpaved roads. The amount of dust generated is a function of the activity, silt and moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. The CMCIDB, or its contractors, would comply with TDEC Air Pollution Control Rule 1200-3-8, which requires reasonable precautions to prevent PM from becoming airborne. Such reasonable precautions include, but are not limited to, the use of water or chemicals for control of dust in construction operations, grading of roads, or the clearing of land. In addition, the application of asphalt, water, or suitable chemicals on dirt roads, material stockpiles, and other surfaces which can create airborne dusts, are also considered reasonable precautions.

Many variables affect emissions from ground-level open burning, including wind, ambient temperature, composition, and moisture content of the debris burned, and compactness of the pile. In general, the relatively low temperatures associated with open burning increase emissions of NO_X, CO, VOCs, PM_{10}, $PM_{2.5}$, GHGs, and HAPs. The CMCIDB, or its contractors,

would be subject to local burn permits and the requirements in TDEC Air Pollution Control Rule 1200-3-4, which provides open burning prohibitions, exceptions, and certification requirements.

With the use of BMPs and other permit-required measures described above to reduce emissions associated with the Action Alternative, air quality impacts would be minimal, temporary, and localized; and would not be anticipated to result in any violation of applicable ambient air quality standards or impact regional air quality.

Concerning climate change, trees, like other green plants, are carbon sinks that use photosynthesis to convert CO_2 into sugar, cellulose, and other carbon-containing carbohydrates that they use for food and growth. Carbon sequestration is the process by which carbon sinks remove CO_2 from the atmosphere. Although forests do release some CO_2 from natural processes such as decay and respiration, a healthy forest typically stores carbon at a greater rate than it releases carbon. The Project Area of approximately 81.6 acres comprises mostly of a large, open field used for crops during the summer months, with sparse patches of seasonal deciduous trees within and along the Project Area. Due to the lack of dense tree cover within the majority of the Project Area, coupled with the abundance of deciduous forest across the county and state, any loss in carbon sequestration would be minimal within the immediate area and have minor impacts on large-scale reduction of natural carbon sinks.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, similar emissions from equipment, ground disturbances, and burning would occur, resulting in similar air quality and climate change impacts as those described above for the Action Alternative. If the CMCIDB was unable to secure other funding or the Project was cancelled and the Proposed Action would not occur, emissions from equipment, ground disturbances, and burning would not occur, and there would be no impacts to air quality and climate change.

4.2.11 Recreation

The Project Area is located in an undeveloped area, with no permanent structures present. Historically, the land has been used for agriculture, and a majority of the Project Area is currently being utilized for the production of soybeans. However, the land has been zoned for general industrial use (zoning code M-2) since the CMCCBP purchased it in 2015 (Clarksville-Montgomery County Regional Planning Commission 2023).

There are no developed parks or outdoor recreation areas in the immediate vicinity of the Project Area. The closest is the Civitan Park and Port Royal State Historic Park which are 2.25 miles and 5.44 miles from the Project Area, respectively. There are numerous businesses and residential homes adjacent to the Project Area which include two storage facilities, the Addison at Rossview, the Bell Parc Duplexes, the Reserve at Kirkwood and Beech Grove. These areas are equidistant to the Project Area as these are all along Dunlop Lane and Rollow Lane (Google Maps 2023).

Because the Project Area is zoned for general industrial use and is located in a primarily industrial area, implementation of the Action Alternative is not anticipated to result in significant impacts on recreational opportunities near the Project Area. Because of the distances between the Project Area and developed recreation areas, no impacts on public use of existing recreation areas are anticipated.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. Similar to the Proposed Action, if the CMCIDB were to obtain alternate funding and proceed with its current plans, impacts to recreational opportunities would also not be anticipated. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, impacts to recreational opportunities would not be anticipated as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.12 *Visual*

The Project Area is situated within 81.6 acres consisting of primarily open land with tall grasses and some scattered dense tree growth. The Project Area is surrounded by agricultural land or open and undeveloped fields, some residential development which is primarily focused to the east and southeast, and commercial and industrial development to the south and southwest.

Residential development immediately surrounding the Project Area consists of one residence to the north of Dunlop Lane and adjacent to northern border of the Project, and a residential subdivision and Select Storage immediately east of Rollow Lane and adjacent to the eastern border of the Project. Neighboring commercial and industrial developments include the Red Knight Distribution Center along the southern border of the Project Area and Hankook & Company to the southwest of the Project Area.

Impacts to the visual resources in this area were determined by analyzing the existing conditions of the Project Area, the proposed Project components, and the contrast created from the change experienced in the landscape. The degree of contrast was evaluated as none, low, moderate and high using the criteria in Table 4-7 below.

Table 4-7. Criteria for Degree of Contrast

Degree of Contrast	Criteria
None	The landscape when viewed appears unaltered and project elements would not attract attention or project elements would repeat the form, line, color, texture or scale common in the landscape.
Low	The landscape when viewed appears slightly altered and project elements would begin to introduce form, line, color, texture or scale in the landscape that would be visually subordinate.
Moderate	The landscape when viewed appears moderately altered and project elements would introduce form, line, color, texture or scale not common in the landscape and would be visually prominent in the landscape.
High	The landscape when viewed appears heavily altered and project elements would be out of scale or contain detail that is out of character with the existing landscape as viewed.

The Project Area is approximately 579 feet north of International Boulevard and approximately 100 feet from the residences located east of the Project Area. The proposed tree clearing areas would remove a majority of the existing vegetation along the eastern border of the Project Area. Only a small section of trees are proposed for clearing in the northern portion of the Project Area, leaving most of the existing vegetation along Dunlop Lane intact.

Construction vehicles and equipment visible during construction activities (e.g. an excavator, bulldozer, dump truck, or similar vehicles and heavy machinery) would have a low visual impact

over the temporary construction period as well as a low permanent impact due to tree removal and construction of the compacted dirt building pad. Drivers along Industrial Boulevard would have direct and indirect views of the construction activities as the roadway curves over 90-degrees just south of the Project Area. Viewers along Dunlop Lane would have direct and indirect views of the Project Area, mostly screened by existing topography and vegetation (earthen berms, grasses and existing trees between approximately 4 and 10 feet in height). Drivers along Rollow Lane would have direct and indirect views of construction activities, with some increased visibility south of the Verisa Drive intersection due to the removal of trees along the roadside. Views from the residence to the north are anticipated to be completely screened by topography and existing vegetation (earthen berms, grasses and existing trees between approximately 6 and 14 feet in height). The residential subdivision to the east is anticipated to have occasional views of the Project, screened by topography and existing vegetation. There are several other commercial and industrial businesses in the surrounding area (Red Knight Distribution Center and Hankook & Company). Visual contrast experienced at these businesses is anticipated to be similar to the residential areas.

Current views of the Project Area would illustrate a visual change from an open field to land ready to support industrial development. There are several other small to moderate sized businesses and developed industrial areas in close proximity to the Project Area. Therefore, implementation of the Action Alternative would result in a low impact to visual resources. The Project would introduce forms, lines, and scale consistent with the surrounding industrial and commercial development, and the existing topography and vegetation is anticipated to partially obscure views from residential areas, vehicular travel routes and the surrounding industrial development.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, similar visual quality impacts would occur as those described above for the Action Alternative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, impacts to visual resources would not be anticipated as environmental conditions on the site would remain essentially unchanged from the current conditions.

4.2.13 *Noise*

Existing ambient noise levels, or background noise levels, are the current sounds from natural and artificial sources at receptors. The magnitude and frequency of background noise at any given location may vary considerably over the course of a day or night and throughout the year. The variations are caused in part by weather conditions, seasonal vegetative cover, and human activity. Existing sources of noise in the vicinity of the Project Area are primarily associated with traffic along the surrounding roads and the surrounding businesses and residences. This includes traffic immediately along the roads of Rollow Lane, Dunlop Lane, and International Boulevard, found along the perimeter of the Project Area. In addition, sources of noise can originate from the businesses and residences situated along the roads that the Project Area shares. Located further away, but still a potential source for existing noise is traffic from the Interstate 24 and U.S. 79 highways about 1 mile west of the Project Area. The levels of these existing noise sources are minimal due to light traffic through the immediate area and the small number of residences and businesses nearby. While higher noise levels can be found further away, their proximity to the Project Area makes overall noise pollution low.

Noise impacts associated with construction activities under the Action Alternative would be primarily from construction equipment. Construction activities would involve operation of an excavator, bulldozer, dump truck, or similar vehicles and heavy machinery over the temporary duration of construction. Construction equipment noise levels are temporary and rarely steady; they fluctuate depending on the number and type of vehicles and equipment in use at any given time. In addition, construction-related sound levels experienced by a noise sensitive receptor in the vicinity of construction activity would be a function of distance, other noise sources, and the presence and extent of vegetation, structures, and intervening topography between the noise source and receptor.

Primary sensitive noise receptors in the area include the residences directly across Rollow Lane (about 100 feet east of the Project Area) and the distribution center located on International Boulevard just south of the Project Area. Additional residential zones are located roughly half a mile north and northeast of the Project Area. The noise would be localized and temporary, and no receptor would be exposed to significant noise levels for an extended period of time. Further, construction activities would be conducted during daylight hours only, when ambient noise levels are often higher and most individuals are less sensitive to noise. Thus, noise-related impacts resulting from implementation of the Action Alternative are anticipated to be temporary and minor.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, similar direct and indirect noise-related impact would occur as described above for the Action Alternative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur, and existing site conditions would likely be maintained resulting in no noise-related impacts.

4.2.14 Socioeconomics

This analysis evaluates the effects of the Proposed Action on socioeconomic indicators in Montgomery County, TN. These indicators include population level and demographics, employment, housing, tourism, and demand for public services.

The first step in the assessment is to characterize existing conditions in the county using information compiled by the U.S. Census Bureau (USCB) as part of their American Community Survey and other publicly available information. The information characterizing existing conditions is integrated with project-specific data to characterize expected socioeconomic impacts.

Table 4-8 characterizes the population, labor force, income levels, housing, and public service statistics for Montgomery County, TN. Similar information is provided at the state level for comparison purposes.

Table 4-8. Population, Labor Force, Income, Housing, and Public Services

	Tennessee	Montgomery County
Population (Five-Year Estimates Ending in Designated Year)[a]		
Total Population (2011)	6,297,991	168,315
Total Population (2021)	6,859,497	216,172

	Tennessee	Montgomery County
Population Change (2011 to 2021)	8.9%	28.4%
Persons per Square Mile (2021)	166.4	400.9
Labor Force (December 2022)[b]		
Civilian Labor Force	3,286,597	86,186
Employed	3,189,973	83,385
Unemployed	96,624	2,801
Unemployment Rate	2.9%	3.2%
Income (2017-2021 Five-Year Estimates)[c]		
Per Capita Income	$32,908	$29,379
Median Household Income	$58,516	$63,768
Percent of Persons Below Poverty Level	14.3%	12.1%
Housing (2017-2021 Five-Year Estimates)[d]		
Total Housing Units	3,011,124	84,669
Total Occupied Housing Units	2,664,791	77,460
Total Vacant Units	346,333	7,209
Homeowner Vacancy Rate	1.2%	1.3%
Rental Vacancy Rate	6.7%	6.4%
Number of Hotels/Motels[e]	NR	32
Number of RV Parks/Campgrounds[e]	NR	2
Public Services and Facilities[f]		
Police Departments	NR	6
Fire Departments	NR	19
Hospitals	NR	3
Public Schools	NR	43

NR: Not Reported
[a] USCB 2011 and 2021a
[b] U.S. Bureau of Labor Statistics 2022a, 2022b
[c] USCB 2021b
[d] USCB 2021c
[e] Visit Clarksville 2023
[f] County Office.org 2023

With a population density more than double the state average, Montgomery County is a mix of developed areas and rural and agricultural land. The county has a lower per capita income than the state average, but a higher median household income. Employment is centered in three sectors: 1) education, health care, and social assistance; 2) manufacturing, and 3) retail trade (USCB 2021b). The rental vacancy rate is below the state average which is consistent with an expanding population.

The Project would involve construction activities such as tree clearing and grading that could likely be supported by the local construction industry and would therefore not require a transient

workforce. There would be little to no impact on population level, demographics, employment, or housing in Montgomery County. Further, demand for public services such as education, emergency medical, and law enforcement would not be affected.

No tourist attractions have been identified within 1 mile of the Project Area and so the Project is not likely to affect Montgomery County tourism.

The Project would increase the amount revenue paid to the state and county because construction wages, equipment purchases/rentals, and material purchases would be taxed. However, that increase would be negligible.

Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road. Based on the preceding analysis, the overall impact of the Project on socioeconomic conditions in Montgomery County, TN, would be negligible.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those anticipated from implementing the Action Alterative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would be no impacts to the socioeconomic conditions in Montgomery County, TN.

4.2.15 Environmental Justice

The purpose of an environmental justice analysis is to determine if the Project is likely to have disproportionate and adverse human health or environmental effects on minority and low-income populations. Environmental justice analyses are typically implemented in three steps. First, census data are used to identify environmental justice communities. Second, information characterizing the project's impact on environmental resources is used to determine if the Project is likely to affect environmental justice communities disproportionately and adversely. Finally, if disproportionate and adverse impacts to minority or low-income communities are anticipated, plans to mitigate those impacts are developed.

4.2.15.1 Identifying Environmental Justice Communities

This analysis is performed at the census block group level; this is the smallest geographic unit for which the necessary demographic data are reported.

The environmental justice analysis area includes the block group where Proposed Action would occur, Census Tract 1019.04, Block Group 2. No populated areas[1] in other block groups are within 1 mile of the Project Area. The distance of 1 mile was selected because potential impacts to humans arising from project-related changes in parameters such as air quality, groundwater quality, noise, and aesthetics are likely to be most acute near a project and then dissipate rapidly over a 1-mile distance.

[1] A small portion of Census Tract 1019.06, Block Group 1 is within 1 mile, however, the only portion of the block group within 1 mile contains Interstate 24 and the median of the interstate.

Table 4-9 summarizes race/ethnicity and poverty data for the block group in the environmental justice analysis area. Information for Tennessee and Montgomery County are provided as a basis of comparison. A block group is identified as a community of potential environmental justice concern if either of the following is true.

1. The percentage of the block group's population self-identifying as something other than "white-alone not Hispanic" (referred to as "minority") exceeds 50 percent OR if the percentage of the block group's population self-identifying as something other than "white-alone not Hispanic" is 10% greater than the same measure in the corresponding county.
2. The percentage of the block group living below the poverty level is greater than the same measure in the corresponding county.

Census tract 1019.04, Block Group 2 is not characterized as a community of potential environmental justice concern. The block group has a lower percentage of the population that is considered a racial or ethnic minority than Montgomery County and the poverty rate is lower than the poverty rate in Montgomery County. Furthermore, USEPA's EJScreen reports that this block group is not above the 51st percentile for any of their environmental justice indexes at either the state or national level. It is only when a parameter is above the 80th percentile that further analysis is suggested (USEPA 2023d).

Table 4-9. Race/Ethnicity and Poverty

	Tennessee	Montgomery County	Census Tract 1019.04, Block Group 2
Race/Ethnicity (2017–2021 Five-Year Estimates)[a]			
Total Population	6,859,497	216,172	4,523
White Alone Not Hispanic	72.9%	61.7%	66.2%
Black or African American	16.3%	19.1%	13.1%
American Indian and Alaska Native	0.2%	0.3%	0.0%
Asian	1.8%	2.2%	1.2%
Native Hawaiian and Other Pacific Islander	0.1%	0.2%	0.0%
Some other race	0.3%	0.6%	0.0%
Two or more races	2.7%	5.4%	2.8%
Hispanic or Latino	5.8%	10.5%	16.7%
Total Racial or Ethnic Minority	27.1%	38.3%	33.8%
Low-Income (2017–2021 Five-Year Estimates)[b]			
Percent of Households Below Poverty Level	14.1%	12.2%	4.5%

[a] USCB 2021a
[b] USCB 2021d

4.2.15.2 Evaluating the Potential for Disproportionate and Adverse Impacts

There were no communities of potential environmental justice concern identified within the potentially impacted area for the Project (Census Tract 1019.04, Block Group 2). In addition, the

USEPA EJScreen data showed that the block group did not have any limited English-speaking households which may hinder efforts to communicate project details to the community and seek public input.

Implementation of the Action Alternative would result in ground disturbance during construction activities: tree clearing and site grading for the development of a compacted dirt building pad and a gravel access road. The Project is not anticipated to create environmental justice-related issues. This is because (1) the impact area does not include environmental justice communities, (2) impacts would not disproportionately affect low-income or minority people in the greater community, and (3) communities in the area surrounding the Project are not characterized by a low rate of English proficiency.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, the overall environmental consequences would be similar to those expected from implementing the Action Alterative, with no impacts to environmental justice communities anticipated. Similar to the Proposed Action, if the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and there would also be no impacts to environmental justice communities.

4.2.16 *Transportation*

The Project Area would be accessed from International Boulevard. The site entrance would be located on the south-southwestern side of the Project Area where a paved access road and cul-de-sac exist adjacent to and within the Project Area. The construction of a gravel access road would connect the existing paved cul-de-sac to the compacted dirt building pad.

International Boulevard is located south of the Project Area and provides access to several industrial plants and warehouses, the local fire station, and a few local businesses as well as the Tennessee College of Applied Technology. International Boulevard is a paved, four-lane, divided road large enough for semi-tractor-trailers and construction vehicles and is defined as a Minor Arterial roadway by the Functional Classification System for Montgomery County (Tennessee Department of Transportation [TDOT] 2018). Based on preliminary review of Google Streetview images (recorded May 2022, as supplemented by review of Google Earth imagery obtained on June 20, 2022), the road is in good condition with paved shoulders and a vegetated divider between oncoming traffic. International Boulevard terminates approximately 1.15 miles to the south of the Project Area at the intersection with Rossview Road/State Route-237 and approximately 3.5 miles to the northwest of the Project Area at the intersection with Guthrie Highway/US 79. Each intersection with International Boulevard has stoplights and turning lanes and appears equipped to deal with large vehicle traffic. Each end of International Boulevard is less than 1.5 miles from an interchange with Interstate 24. Normal care would be expected to be taken by workers entering and exiting International Boulevard with regards to traffic safety.

The existing paved road intersects with International Boulevard in an area where there is a break in the vegetated divider between the northbound and southbound traffic, allowing access into, and out of, the site from either direction. From review of Google Streetview (recorded May 2002) and Google Earth (obtained June 2022), the existing paved roadway and cul-de-sac have two lanes with traffic markings, appear to be in good condition, and there is an existing stop sign on the paved road at the intersection with International Boulevard. Visibility at this intersection

appears adequate in both directions. Normal care would be expected to be taken by workers entering and exiting the paved road with regards to traffic safety.

There is one traffic count station located on International Boulevard approximately 0.13 mile from the paved road entrance to the Project Area and another at the northern end of International Boulevard approximately 3.4 miles from the Project Area (TDOT 2021). The 2021 annual average daily traffic counts (AADT) for the relevant stations are presented in Table 4-10.

Table 4-10. Tennessee Department of Transportation Traffic Count Data for the Project Area[1]

Route Description	Location ID	Distance from Project Area (Miles)	Year	AADT	PA	BC
International Boulevard (North of SR-237)	63000213	0.13	2021	5,921	5,523 (93%)	398 (7%)
International Boulevard (South of SR-13)	63000212	3.4	2021	4,816	4,493 (93%)	323 (7%)

[1] Source: Tennessee Department of Transportation (Annual Average Daily Traffic (AADT) (tn.gov)), extracted February 7, 2023.
AADT = annual average daily traffic count; PA = passenger vehicles; and BC = business/commercial vehicles

In the context of the existing AADT volumes of these roadways, the anticipated traffic generated by the proposed Project activities would be minor and temporary. It is anticipated that implementation of the Action Alternative would generate minor traffic associated with construction activities and have a temporary and negligible impact on overall traffic volumes and level of service of International Boulevard.

Under the No Action Alternative, TVA would not provide TVA InvestPrep funds to the CMCIDB. If the CMCIDB were to obtain alternate funding and proceed with its current plans, similar temporary and negligible impacts on overall traffic volumes and level of service would occur as described above for the Action Alternative. If the CMCIDB was unable to secure other funding or the Project was cancelled, the Proposed Action would not occur and existing site conditions would likely be maintained, resulting in no impacts on overall traffic volumes and level of service.

5.0 PERMITS, LICENSES, AND APPROVALS

The Action Alternative would result in greater than one acre of earth disturbing activities; therefore, it would be necessary to obtain coverage under the 2021 (or current version) NPDES General Permit for Discharges Associated with Construction Activity (TNR100000). Coverage would require submittal of a Notice of Intent (NOI) and development of a site-specific SWPPP. Additionally, the Action Alternative would result in permanent impacts to approximately 1.9 acres of wetlands and would require a standalone ARAP from TDEC and, if determined to be WOTUS, would also require a CWA Section 404 permit from the USACE. Onsite burning activities would be conducted in compliance with local burn permits and the requirements in TDEC Air Pollution Control Rule 1200-3-4. The CMCIBD, or its contractors, would be responsible for obtaining local, state, or federal permits, licenses, and approvals necessary for the Project.

6.0 BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES

To minimize or reduce the environmental effects of site activities associated with the Action Alternative, the CMCIBD, or its contractors, are expected to ensure all clearing and grading activities conducted are in compliance with stormwater permitting requirements and use applicable BMPs to minimize and control erosion and fugitive dust during these actions.

Operations involving chemical or fuel storage or resupply and vehicle servicing are expected to be handled outside of riparian areas and in such a manner as to prevent these items from reaching a watercourse. Earthen berms or other effective means are expected to be installed to protect nearby stream channels from direct surface runoff. Servicing of equipment and vehicles is expected to be done with care to avoid leakage, spillage, and subsequent surface or groundwater contamination. Oil waste, filters, and other litter are expected to be collected and disposed of properly.

Specific avoidance and conservation measures would be implemented as a part of the Action Alternative to reduce effects to Indiana bat and northern long-eared bat. These measures are identified in the TVA Bat Strategy Project Screening Form (see Attachment 2).

7.0 LIST OF PREPARERS

Table 7-1 summarizes the expertise and contributions made to the EA by the Project Team.

Table 7-1. Environmental Assessment Project Team

Name/Education	Experience	Project Role
TVA		
Brittany Kunkle *B.S. Environmental and Soil Science*	4 years of professional experience in NEPA and environmental compliance	NEPA Project Manager
Lori Whitehorse	19 years in environmental regulatory compliance and 7 years in NEPA and permitting.	Environmental Program Manager
Susan Housley	16 ½ years in river and reservoir monitoring, 1 ½ years in NEPA compliance	NEPA Compliance
Britta Lees *M.S. Botany* *B.S. Biology*	25 years in wetland assessment, field biology, NEPA contributions, and water permitting	Surface Water, Soil Erosion
Fallon Parker Hutcheon *M.S., Environmental Studies* *B.S., Biology*	4 years in wetland delineation, wetland impact analysis, and NEPA and CWA compliance	Wetlands
Carrie Williamson, P.E., CFM *B.S. and M.S., Civil Engineering*	10 years in Floodplain and Flood Risk; 11 years in Compliance Monitoring; 3 years in River Forecasting	Floodplains
Adam Dattilo *M.S., Forestry* *B.S., Natural Resource Conservation Management*	21 years in ecological restoration and plant ecology, 16 years in botany	Botany

Name/Education	Experience	Project Role
David Mitchell	18 years in ecological restoration, botany, and research management.	Botany
Derek Reaux *B.A., Anthropology, University of Kentucky* *M.A./Ph.D., Anthropology, University of Nevada*	11 years of experience in cultural resource management and archaeological research.	Cultural resources, NHPA, Section 106 compliance
Matt Reed, QHP *M.S., Wildlife and Fisheries Science*	13 years working with threatened and endangered aquatic species in the Southeastern United States; 7 years in ESA, NEPA, and CWA compliance and stream assessments	Aquatic Ecology
Chloe Sweda	5 years in natural resource management	Managed and Natural Areas
Sara Bayles *M.S., Sport and Recreation Management*	4 years of experience in recreation, 1 year experience in NEPA compliance	Recreation
Megan Wallrichs *M.S., Natural Resources, Delaware State University* *B.S., Biology, University of North Carolina at Greensboro*	13 years working with threatened and endangered terrestrial species in the Southeastern United States; 2 years of ESA and NEPA compliance	Terrestrial Zoology
Elizabeth Burton Hamrick *M.S., Wildlife and Fisheries Science,* *University of Tennessee* *B.A., Biology, B.A., Anthropology, Grinnell College*	22 years in biological field studies, 9 years in biological compliance, NEPA compliance, and ESA consultation for T&E terrestrial animals	Terrestrial Zoology
SWCA		
Rachel Bell, PMP *B.S., Environmental Science, Auburn University*	17 years in natural resources planning and NEPA compliance, including project management, preparation of EAs and Environmental Impact Statements (EISs), state and federal permitting, and biological and environmental studies and analysis.	EA Program Manager QA/QC
Susan Fischer, PMP *M.S., Wildlife Ecology, Texas State University* *B.A., Biology, Indiana University*	10 years in environmental resource surveys and permitting, including EIS and EA preparation, state and federal permitting, and environmental studies and analysis.	EA Project Manager QA/QC Purpose and Need, Other Environmental Documentation, Alternatives, Site Description, Permits, Licenses and Approvals, Best Management Practices and Mitigation Measures

Name/Education	Experience	Project Role
Fiona Cook *B.S., Marine Biology, Texas A&M University at Galveston*	10 years of experience in the environmental consulting field. This experience includes wetland and waterbody delineations, wetland and waterbody assessments, wetland monitoring, threatened and endangered species surveys, vegetation surveys, as well as permitting.	Soils
Madison Cross *B.S., Environmental Science, University of West Florida*	4 years of experience in natural resource management and permitting. Her expertise includes environmental permitting, wetland delineation, listed species surveys, preliminary site assessments, and environmental policy/regulation.	Aquatic Ecology, Botany
Derek Duquette *M.A. Public History, Temple University* *B.A. History, West Chester University of Pennsylvania*	5 years of experience in cultural resources consultation including leading reconnaissance- and intensive-level historic architectural surveys, environmental consulting, historic preservation planning documentation, reporting, and Section 106 compliance.	Historic
Brent Handley *M.A. Anthropology, University of Connecticut* *B.A Geography/Anthropology, University of Southern Maine*	30 years of experience in academic research and cultural resource management projects. This experience includes supervising all phases of cultural resource assessment, including logistical organization, daily field operations, primary and background research, artifact analysis, and the writing of final reports. Mr. Handley is a Registered Professional Archaeologist (RPA) and exceeds the Secretary of the Interior's (SOI) standards for archaeology.	Archaeology
Allison McKenzie *M.S., Forestry, Mississippi State University* *B.A., Biological Sciences and Wildlife Conservation, University of Delaware*	11 years of experience in the natural sciences, including environmental assessments, permitting, and compliance for various public and private sector clients as well as extensive fisheries, watershed, and forestry research. She has performed considerable work implementing and interpreting surveys and survey results, preparing EAs and reports, and providing project management and coordination.	Transportation
Garet Openshaw *MLA, Landscape Architecture and Environmental Planning, Utah State University* *BLA, Landscape Architecture and Environmental Planning, Utah State University*	6 years of experience in landscape architecture and environmental planning including visual resources. His area of expertise includes the inventory of visual resources, technical writing and authorship and analysis of impacts to visual resources associated with large scale solar, wind, mine, transmission and other developments.	Visual

Name/Education	Experience	Project Role
Oliver Pahl *M.A., Applied Economics, University of North Carolina at Greensboro* *B.S., Environmental Economics, Policy and Management, Oregon State University*	13 years of environmental and economic consulting experience. He has worked on numerous NEPA documents and has served in roles including Project Manager, Deputy Project Manager, Task Lead, Lead Economist, Section Author, and Subject Matter Expert (SME), with specialized expertise in socioeconomic and environmental justice impact assessments. He has experience working on a range of Regional Economic Impact Assessments including the use of the economic modelling software IMPLAN to produce socioeconomic studies supporting NEPA documents.	Socioeconomics, Environmental Justice
Sean Peacock *B.S., Environmental Science, Georgia College & State University*	7 years of experience in the environmental consulting field. His primary responsibilities include preliminary site assessments, listed species surveys and permitting, biological monitoring, aquatic resource assessments, construction monitoring, wetland delineations and assessments, environmental permitting, and data management.	Groundwater, Surface Water and Soil Erosion, Wetlands
Hillary Skowronski *M.S., Environmental Biology, University of West Florida* *B.S., Marine Biology, Waynesburg University*	9 years of experience in the natural sciences, including environmental surveys, reporting, and compliance for various public and private sector clients as well as extensive watershed, and aquatic habitat research. She has performed considerable work designing, implementing, and coordinating surveys and survey results, preparing EAs and reports, and providing project management and coordination.	Land Use, Prime Farmland, Recreation
Brad Sohm *B.S. Chemical Engineering w/ Environmental Engineering Option*	19 years in air quality and environmental planning, including preparation of EAs and EISs, state and federal air quality permitting, and noise studies and analysis.	Air Quality and Climate Change, Noise

8.0 AGENCIES AND OTHERS CONSULTED

The following federal and state agencies and federally recognized Indian Tribes were consulted.

- Tennessee Historical Commission
- Federally Recognized Indian Tribes including Absentee Shawnee Tribe of Indians of Oklahoma, Alabama-Coushatta Tribe of Texas, Cherokee 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, The Seminole Nation of Oklahoma, Shawnee Tribe, Thlopthlocco Tribal Town, and United Keetoowah Band of Cherokee Indians in Oklahoma.

9.0 REFERENCES

Behler, J. L., and F. W. King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York.

BestPlaces. 2022. Vonore, Tennessee Climate Data. Available at: https://www.bestplaces.net/climate/city/tennessee/madisonville. Accessed January 17, 2023.

Buehler, D. A., Hamel, P.B., and T. Boves. 2020. Cerulean Warbler (*Setophaga cerulea*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

Bierregaard, R. O., A.F. Poole, M.A. Martell, P. Pyle, and M. A. Patten. 2020. Osprey (*Pandion haliaetus*), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

Brady, J., Kunz, T.H., Tuttle, M.D., and D. Wilson. 1982. Gray bat recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado 80205.

Carey, M., Burhans, D.E., and D. A. Nelson. 2020. Field Sparrow (*Spizella pusilla*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

Clarksville-Montgomery County Regional Planning Commission. 2023. Information Lookup Tool. Available at: https://cmcrpc.maps.arcgis.com/apps/webappviewer/index.html?id=6c3424afedaf421f81db1936a4b7b720. Accessed February 14, 2023.

County Office.org. 2023. Browse by Office: Police Departments, Sheriff Departments, Hospitals, and Fire Departments. Available at https://www.countyoffice.org/. Accessed February 28, 2023.

Davis, A.K., and E. Howard. 2005. Spring recolonization rate of monarch butterflies in eastern North America: New estimates from citizen-science data. Journal of the Lepidopterists' Society. 59(1): 1-5.

DBS & Associates Engineering, Inc. 2012. Phase I Environmental Site Assessment of Clarksville Montgomery County Corporate Business Park South & Clarksville Montgomery County Corporate Business Park CPB. Prepared for the Industrial Development Board.

Evans, M., E. Gow, R.R. Roth, M.S. Johnson, and T. J. Underwood. 2020. Wood Thrush (*Hylocichla mustelina*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

Federal Emergency Management Agency (FEMA). 2022. National Flood Hazard Layer Viewer. Available at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd. Accessed December 12, 2022.

Fujita, M. S., and T. H. Kunz. 1984. Pipistrellus subflavus. Mammalian Species 228:1–6.

Gibbons, W., and M. Dorcas. 2005. Snakes of the Southeast. University of Georgia Press.

Google Earth. 2022. Available at https://earth.google.com/web/. Accessed February 21, 2023.

Google Maps. 2023. Searches for “Public Park”, “Businesses”, and “Developments” in Montgomery County, Tennessee. Available at: https://www.google.com/maps/. Accessed on February 14, 2023.

Greenberg, R. S., and S.M. Matsuoka. 2010. "Rusty Blackbird: Mysteries of a Species in Decline." The Condor. 112 (4):770–777.

Greenhouse Consultants Incorporated. 2002. Cultural Resources Survey and Archaeological Testing, Corporate Business Park Expansion, Clarksville, Montogomery County, Tennessee. Prepared for the Clarksville, Montgomery County Economic Development Council, Industrial Development Board.

Harvey, M. J., J. S. Altenback, and T. L. Best. 2011. Bats of the United States and Canada. The Johns Hopkins University Press. Baltimore, Maryland.

Josiah, J.N., and E.H. Gillam. 2017. Selection of foraging habitat by female little brown bats (*Myotis lucifugus*). *Journal of Mammalogy*. 98(1), Issue 1: 222-231.

Kurta, A., Murray S.W., and D. H. Miller. 2002. Roost selection and movements across the summer landscape. In Kurta, A. and J. Kennedy, eds. The Indiana Bat: Biology and Management of an Endangered Species. Bat Conservation International, Austin, Texas.

McDonald, M. V. 2020. Kentucky Warbler (*Geothlypis formosa*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

Montgomery County Assessor of Property. 2023. Available at: Montgomery County, TN (mcgtn.org). Accessed February 28, 2023.

NatureServe. 2023. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available at: http://www.natureserve.org/explorer. Accessed February 20, 2023.

National Geographic. 2002. Field Guide to the Birds of North America (Fourth Edition). National Geographic Society, Washington D.C.

Newman B.A., S.C. Loeb, and D.S. Jachowski. 2021. Winter roosting ecology of tricolored bats (*Perimyotis subflavus*) in trees and bridges. Journal of Mammalogy102(5): 1331–1341.

Nicholson, C. P. 1997. Atlas of Breeding Birds of Tennessee. University of Tennessee Press, Knoxville.

O'Keefe, J.M., S.C. Loeb, J.D. Lanham, and H.S. Hill. 2009. Macrohabitat factors affect day roost selection by eastern red bats and eastern pipistrelles in the southern Appalachian Mountains, USA. Forest Ecology and Management 257:1757–1763.

Palmer-Ball Brainard L. 1996. The Kentucky Breeding Bird Atlas. The University Press of Kentucky.

Peterjohn, B. G., and D. L. Rice. 1991. The Ohio Breeding Bird Atlas. Ohio Department of Natural Resources, Columbus, Ohio, USA.

Poole, A. 1989. Ospreys: a natural and unnatural history. Cambridge University Press, Cambridge, U.K.

Powell, R., R. Conant, and J. T. Collins. 2016. Field Guide to Reptiles and Amphibians of Eastern and Central North America (Fourth Edition). Peterson Field Guide, Houghton Mifflin Harcourt, Boston, Massachusetts.

Price, Mark L. 2013. Select Tennessee Site Certification Program – Geotechnical Review. The Austin Company.

Reller, A. W. 1972. Aspects of behavioral ecology of Red-headed and Red-bellied Woodpeckers. American Midland Naturalist 88:270-290.

Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin, and T. A. Gavin. 2020. Bobolink (*Dolichonyx oryzivorus*), version 1.0. In Birds of the World (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA https://doi.org/10.2173/bow.boboli.01. Accessed November 2022.

Schaefer, K. 2017. Habitat Useage of tri-colored bats (*Perimyotis subflavus*) in western Kentucky and Tennessee post-white nose syndrome. Murray State Theses and Dissertations. 26.

SWCA Environmental Consultants (SWCA). 2023. A Phase I Cultural Resources Survey of the CMCCBP South Lots 19B and B4, Montgomery County, Tennessee. SWCA Project No. 78532. Prepared for the Tennessee Valley Authority.

Tennessee Department of Environment and Conservation (TDEC). 2011. Guidance For Making Hydrologic Determinations – Version 1.4. Available at: https://www.tn.gov/content/dam/tn/environment/water/natural-resources-unit/wr_wq-hydrologic-determination-guidance-v1.4.pdf. Accessed February 20, 2023.

TDEC. 2012. *Tennessee Erosion and Sediment Control Handbook* - Division of Water Resources. Nashville, Tennessee. 4th Edition 2012. Available at: https://tnepsc.org/handbook.asp. Accessed February 2023.

TDEC. 2019. Rules of the Tennessee Department of Environment and Conservation - Use Classifications for Surface Waters.

TDEC. 2021. Tennessee General NPDES Permit No. TNR100000 Stormwater Discharges for Construction Activities. Accessed March 6, 2023. Available at: https://www.tn.gov/environment/permit-permits/water-permits1/npdes-permits1/npdes-stormwater-permitting-program/npdes-stormwater-construction-permit.html

TDEC. 2022. List of Impaired and Threatened Waters. Available at: https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/water-quality-reports---publications.html. Accessed January 13, 2023.

TDEC. 2023. Exceptional Tennessee Waters. Data Viewer. Available at: https://dataviewers.tdec.tn.gov/dataviewers/f?p=2005:34304:29867990980138:. Accessed January 13, 2023.

Tennessee Department of Transportation (TDOT). 2018. Tennessee Functional Classification System for Montgomery County, 63a Clarksville. December 5, 2018. Available at: https://www.tn.gov/content/tn/tdot/driver-how-do-i/look-at-or-order-state-maps/maps/annual-average-daily-traffic-maps1.html (tn.gov). Accessed February 7, 2023.

TDOT. Transportation Data Management System. 2021. Available at: Transportation Data Management System (ms2soft.com). Accessed February 7, 2023.

Thames, D.B. 2020. Summer foraging range and diurnal roost selection of tricolored bats, Perimyotis subflavus. Master's Thesis, University of Tennessee, 2020.

Tibbitts, T. L., and W. Moskoff. 2020. Lesser Yellowlegs (*Tringa flavipes*), version 1.0. In Birds of the World (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, New York, USA.

TTL. 2012. Report of Wetland Delineation and Hydrologic Assessment, Clarksville Montgomery County Corporate Business Park Property (880±acres), Clarksville, Montgomery County, Tennessee. TTL Project No. 600812122.

TTL, Inc. 2022. Aquatic Resources Delineation and Hydrologic Determination Report, Tract 19B Part of Parcel ID#039 02100 (68.5±Acres), International Boulevard, Clarksville, Montgomery County, Tennessee. TTL, Inc. Project Number 000221202422.00. Prepared for Clarksville-Montgomery County Industrial Development Board.

Tuttle, M. D. 1976a. Population ecology of the gray bat (*Myotis grisescens*): philopatry, timing, and patterns of movement, weight loss during migration, and seasonal adaptive strategies. Occasional Papers of the Museum of Natural History, University of Kansas, 54:1-38.

Tuttle, M. D. 1976b. Population ecology of the gray bat (*Myotis grisescens*): factors influencing growth and survival of newly volant young. Ecology 57: 587-595.

U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station Environmental Laboratory.

USACE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0, ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C. V. Noble. ERDC/EL TR-12-9. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

U.S. Bureau of Labor Statistics. 2022a. Local Area Unemployment Statistics. Statewide Data: Employment status of the civilian noninstitutional population, not seasonally adjusted. Available at: https://www.bls.gov/lau/rdscnp16.htm. Accessed February 28, 2023.

U.S. Bureau of Labor Statistics. 2022b. Local Area Unemployment Statistics. Labor force data by county, not seasonally adjusted, latest 14 months. Available at: https://www.bls.gov/lau/tables.htm. Accessed February 28, 2023.

U.S. Census Bureau (USCB). 2011. American Community Survey, 5-year Estimates. Table B03002. Geography = Tennessee; Montgomery County, Tennessee; Block Group 2, Census Tract 1019.04, Montgomery County, Tennessee. Available at: https://data.census.gov/advanced. Accessed February 28, 2023.

USCB. 2021a. American Community Survey, 5-year Estimates. Table B03002. Geography = Tennessee; Montgomery County, Tennessee; Block Group 2, Census Tract 1019.04, Montgomery County, Tennessee. Available at: https://data.census.gov/advanced. Accessed February 28, 2023.

USCB. 2021b. American Community Survey, 5-year Estimates. Table DP03. Geography = Tennessee; Montgomery County, Tennessee; Block Group 2, Census Tract 1019.04, Montgomery County, Tennessee. Available at: https://data.census.gov/advanced. Accessed February 28, 2023.

USCB. 2021c. American Community Survey, 5-year Estimates. Table DP04. Geography = Tennessee; Montgomery County, Tennessee; Block Group 2, Census Tract 1019.04, Montgomery County, Tennessee. Available at: https://data.census.gov/advanced. Accessed February 28, 2023.

USCB. 2021d. American Community Survey, 5-year Estimates. Table B17017. Geography = Tennessee; Montgomery County, Tennessee; Block Group 2, Census Tract 1019.04, Montgomery County, Tennessee. Available at: https://data.census.gov/advanced. Accessed February 28, 2023.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2023. Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service. Available at: http://websoilsurvey.nrcs.usda.gov. Accessed February 2023.

United States Environmental Protection Agency (USEPA). 1998. Stormwater Detention Ponds. Available at: http://www.epa.state.il.us/water/conservation/lake-notes/stormwater-detention-ponds.pdf. Accessed February 22, 2022.

USEPA. 2020. Underground Injection Well Program. Available at: https://www.epa.gov/sites/default/files/2020-04/documents/uic_fact_sheet.pdf. Accessed February 22, 2023.

USEPA. 2023a. Green Book; Current Nonattainment Counties for All Criteria Pollutants. Available at: https://www3.epa.gov/airquality/greenbook/ancl.html. Accessed February 21, 2023.

USEPA. 2023b. Green Book; Tennessee Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available at: https://www3.epa.gov/airquality/greenbook/anayo_tn.html. Accessed February 21, 2023.

USEPA. 2023c. Outdoor Air Quality Data; Air Quality Statistics Report. Available at: https://www.epa.gov/outdoor-air-quality-data/air-quality-statistics-report. Accessed February 21, 2023.

USEPA. 2023d. EPA's Environmental Justice Screening and Mapping Tool (Version 2.1). Mapper. Printable Standard Report for Census Tract 1019.04, Block Group 2. Available at https://ejscreen.epa.gov/mapper/. Accessed February 28, 2023.

United States Fish and Wildlife Service (USFWS). 2007a. National Bald Eagle Management Guidelines. Available at: https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf. Accessed March 10, 2023.

USFWS. 2007b. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota. Available at: https://ecos.fws.gov/ServCat/DownloadFile/45796?Reference=44940. Accessed November 2022.

USFWS. 2014. Northern Long-eared Bat Interim Conference and Planning Guidance. Available at: https://www.fws.gov/media/northern-long-eared-bat-interim-conference-and-planning-guidance. Accessed November 2022.

USFWS. 2018. Redlips Darter (*Etheostoma maydeni*) Species Status Assessment, Version 1.1. May 2018. Atlanta, Georgia.

USFWS. 2022a. National Wetland Inventory. Available at: https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper. Accessed January 13, 2023.

USFWS. 2022b. Range-Wide Indiana Bat and Northern Long-eared Bat Survey Guidelines Available at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines. Accessed November 2022.

USFWS. 2023a. Environmental Conservation Online System (ECOS). Available at: https://ecos.fws.gov/ecp/. Accessed February 20, 2023.

USFWS. 2023b. Critical Habitat for Threatened & Endangered Species. Available at: https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77. Accessed February 20, 2023.

United States Geological Survey (USGS). 1986. Water Resources Investigations Report 82-4054: Preliminary Delineation and Description of the Regional Aquifers of Tennessee – The Highland Rim Aquifer System. Available at:

https://pubs.usgs.gov/wri/wri824091/pdf/wrir_82-4091_a.pdf. Accessed January 13, 2023.

USGS. 1995. Ground Water Atlas of the United States, Illinois, Indiana, Kentucky, Ohio, Tennessee, HA 730-k. 1995. Available at: https://pubs.usgs.gov/ha/ha730/ch_k/K-text4.html. Accessed January13, 2023.

USGS. 2019. National Land Cover Dataset Viewer: Multi-Resolution Land Characteristics Consortium. Available at: https://www.mrlc.gov/viewer/. Accessed February 20, 2023.

USGS. 2021a. Depth of groundwater used for drinking-water supplies in the United States. Available at: https://www.usgs.gov/publications/depth-groundwater-used-drinking-water-supplies-united-states. Accessed January 18, 2023.

USGS. 2021b. National Hydrography Dataset. Available at: https://www.usgs.gov/core-science-systems/ngp/national-hydrography. Accessed January 13, 2023

U.S. National Park Service. 2017. Physiographic Provinces. Available at: https://www.nps.gov/subjects/geology/physiographic-provinces.htm. Accessed January 13, 2023.

Veilleux, J. P., J. O. Whitaker, and S. L. Veilleux. 2003. Tree-roosting ecology of reproductive female eastern pipistrelles, Pipistrellus subflavus, in Indiana. Journal of Mammalogy 84:1068–1075.

Visit Clarksville Tennessee. 2023. Hotels. Categories. Available at: https://www.visitclarksvilletn.com/hotels/. Accessed February 28, 2023.

Walkinshaw, L. H. 1953. Life-history of the Prothonotary Warbler. Wilson Bulletin 65:152-168.

Whitaker, J. O. 1996. Field guide to North American Mammals. National Audubon Society. Alfred A. Knopf, New York.

Wright, A. H. and A. A. Wright. 1949. Handbook of Frogs and Toads of the United States and Canada. Third Edition. Cornell University Press, Ithaca and London.

ATTACHMENT 1

Project Figures

Figure 1-A

Aerial Map

TVA FY23 ECONOMIC DEVELOPMENT PROJECTS
MONTGOMERY COUNTY, TENNESSEE

Figure 1-A: Aerial Map

CMCCBP South Site / Project Area

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5753°N 87.2365°W

0 200 400 Feet
0 50 100 Meters

N

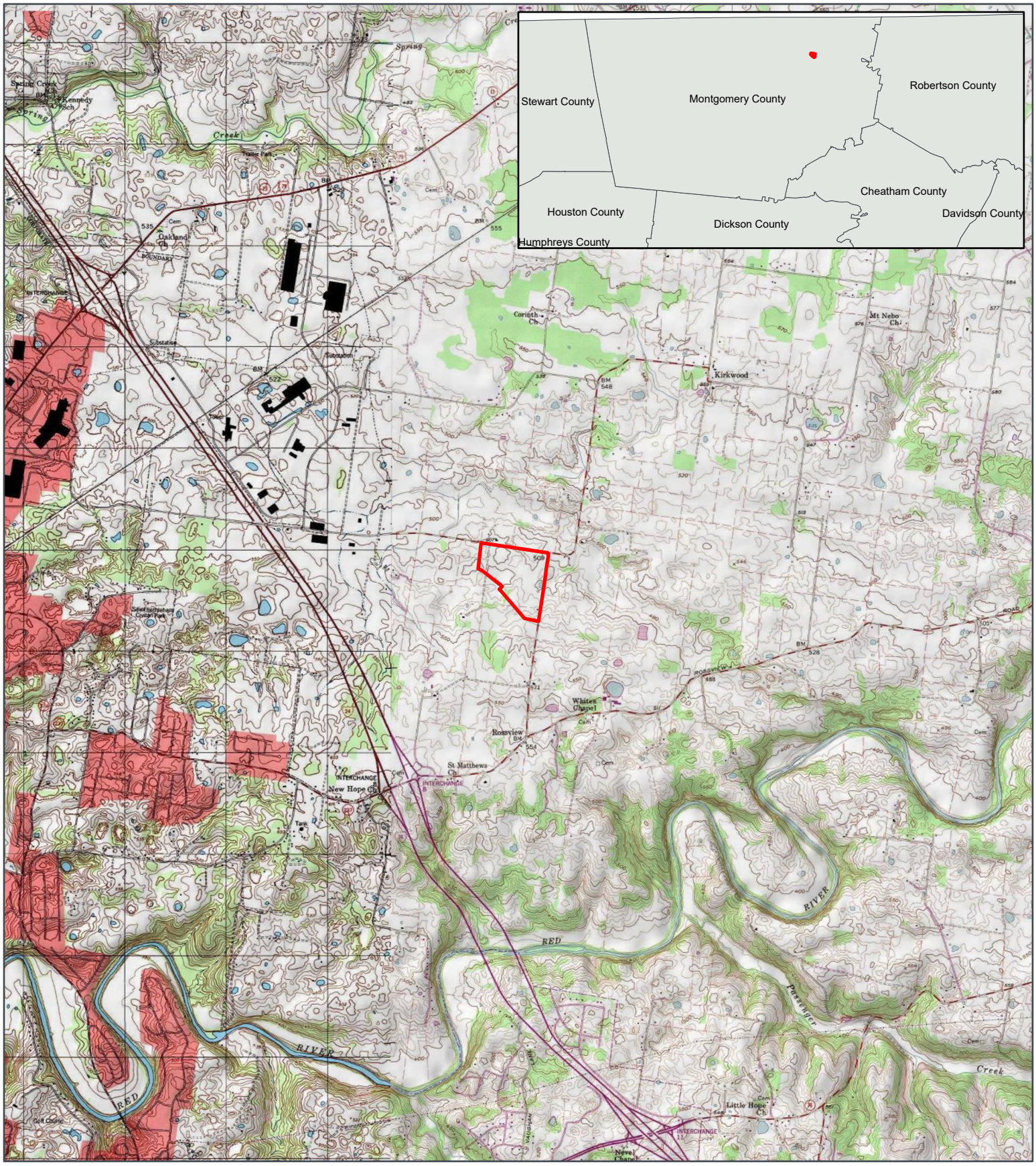
1:5,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-A Aerial
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-B

USGS Quadrangle Map



TVA FY23 ECONOMIC DEVELOPMENT PROJECTS
MONTGOMERY COUNTY, TENNESSEE

Figure 1-B: USGS Quadrangle Map

CMCCBP South Site / Project Area

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5743°N 87.236°W

0 2,000 4,000 Feet
0 525 1,050 Meters

N

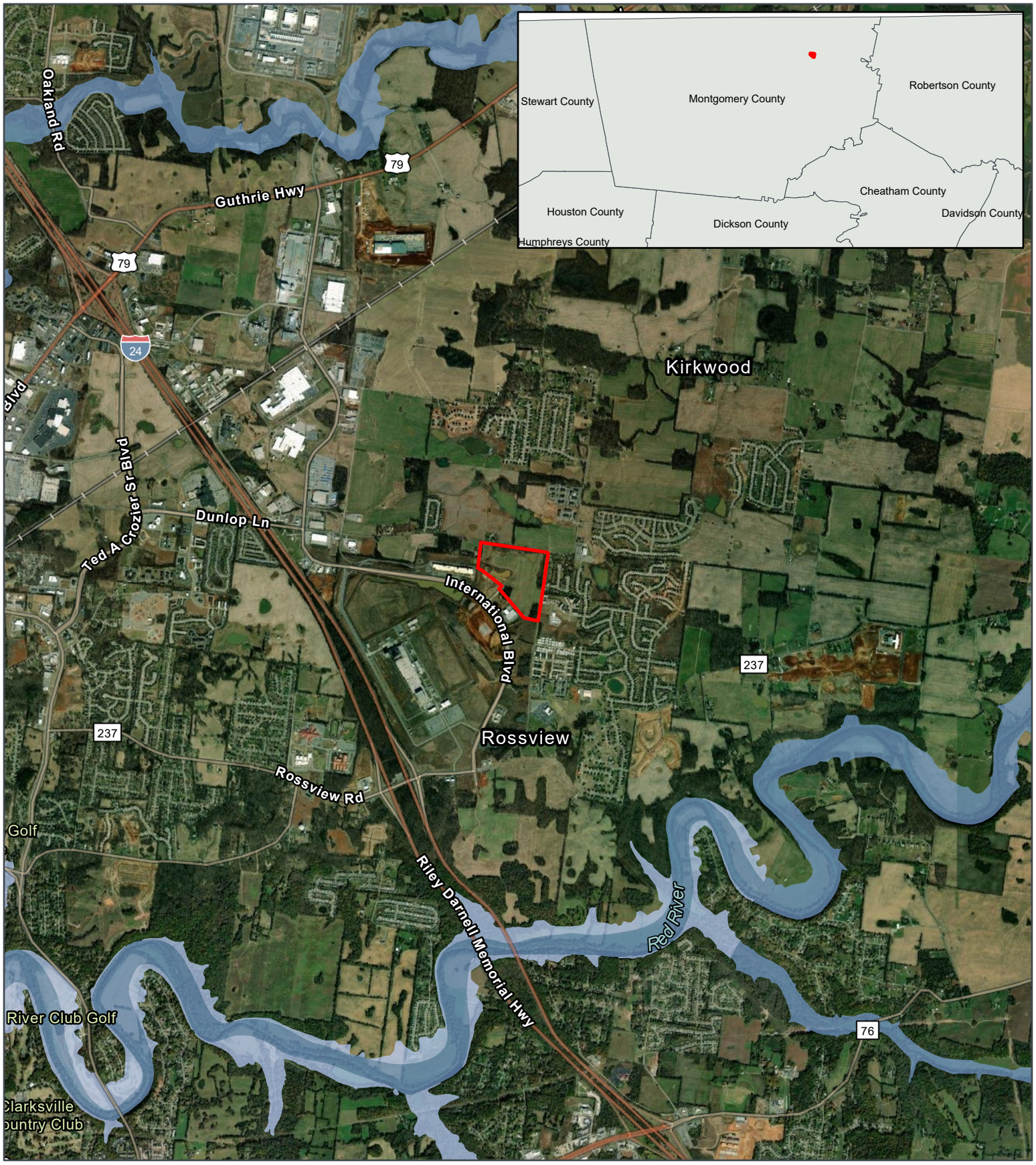
1:50,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-B USGS Topo
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-C

FEMA Floodplain Map



TVA FY23 ECONOMIC DEVELOPMENT PROJECTS
MONTGOMERY COUNTY, TENNESSEE

Figure 1-C: FEMA Floodplain Map

- CMCCBP SouthSite / Project Area
- 100-Year Floodplain
- Floodway

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5743°N 87.236°W

0 2,000 4,000 Feet
0 525 1,050 Meters

N

1:50,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-C Floodplain
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-D

NRCS Soils Map

Soil Unit Key

Ar : Arrington silt loam, 0 to 2% slopes, occasionally flooded
CsC2 : Cumberland silty clay loam 5 to 12% slopes, eroded
CuD2 : Cumberland soils, cherty variant, 10% to 25% slopes, eroded
Ld : Lindell silt loam, 0 to 2% slopes, occasionally flooded
Ne : Newark silt loam
PeB : Pembroke silt loam, 2 to 6% slopes
PeC : Pembroke silt loam, 6 to 12% slopes
W : Water

TVA FY23 ECONOMIC DEVELOPMENT PROJECTS
MONTGOMERY COUNTY, TENNESSEE

Figure 1-D:
NRCS Soils Map

CMCCBP South Site / Project Area
Soil Unit Boundary

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5751°N 87.237°W

0 200 400 Feet
0 50 100 Meters

N

1:5,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-D Soils
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-E

USFWS NWI and USGS NHD Map

TVA FY23 ECONOMIC DEVELOPMENT PROJECTS MONTGOMERY COUNTY, TENNESSEE

Figure 1-E: USFWS NWI and Water Inventory Map (NHD)

- CMCCBP South Site / Project Area
- NWI Wetlands
- NHD Flowline

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5743°N 87.2365°W

0 330 660 Feet
0 80 160 Meters

N

1:8,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-E NHD_NWI
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-F

Wetlands and Waterbodies Map

TVA FY23 ECONOMIC DEVELOPMENT PROJECTS
MONTGOMERY COUNTY, TENNESSEE

Figure 1-F: Wetlands and Waterbodies Map

- CMCCBP South Site / Project Area
- Ditch
- Stormwater Detention Pond
- Wetland

Montgomery County, TN
USGS 7.5' Quadrangle:
Sango, TN, 36087-E2
NAD 1983 UTM Zone 16N
36.5751°N 87.2364°W

0 240 480 Feet
0 60 120 Meters

N

1:6,000

Base Map: Esri ArcGIS Online, accessed April 2023
Updated: 4/5/2023
Project No. 78532
Layout: Fig1-F WDR
Aprx: 78532_tvaMontgomeryCounty

SWCA ENVIRONMENTAL CONSULTANTS

Figure 1-G

Terrestrial Zoology Resources Map


Figure 1-G
Terrestrial Zoology Resource Map for Montgomery County, Tennessee (Clarksville) InvestPrep Site; ESCS #41632
Legend
Area of Potential Effect (APE)
Suitable summer bat roosting habitat (Approximately 3.2 acres)
Unidentified raptor nest (inactive, November 2022)
Terrestrial Zoology Resource Map created by Megan Wallrichs based on November 2022 field surveys
N
Maxar, Microsoft

ATTACHMENT 2

TVA Bat Strategy Project Screening Form

From:	Hamrick, Elizabeth Burton
To:	"robbie_sykes@fws.gov"; "ross_shaw@fws.gov"
Subject:	RE: Notification in accordance with TVA Programmatic Consultation for Routine Actions and Federally listed bats
Date:	Friday, April 14, 2023 11:24:00 AM
Attachments:	Completed_MontgomeryCo_InvestPrep_TVA-Bat-Strategy_04.14.2023.pdf image001.png

Good morning,
Attached is an updated Bat Strategy Form for this project with additional Conservation Measures added. We noticed accidental omissions upon final review. No proposed actions have changed since our prior submission.

Thank you,

Liz Hamrick
Terrestrial Zoologist
Biological Compliance

TENNESSEE VALLEY AUTHORITY

M. 503-449-2373 **E.** ecburton@tva.gov
400 West Summit Hill Drive, Knoxville, TN 37902

From: Hamrick, Elizabeth Burton
Sent: Thursday, December 1, 2022 3:33 PM
To: 'robbie_sykes@fws.gov' <robbie_sykes@fws.gov>; 'ross_shaw@fws.gov' <ross_shaw@fws.gov>
Subject: RE: Notification in accordance with TVA Programmatic Consultation for Routine Actions and Federally listed bats

Good afternoon,
TVA's programmatic ESA consultation on routine actions and bats was completed in April 2018.For projects with NLAA or LAA determinations, TVA will be providing project-specific notification to relevant Ecological Service Field Offices. This notification also will be stored in the project administrative record. For projects that utilize Take issued through the Biological Opinion, that Take will be tracked and reported in TVA's annual report to the USFWS in March of the following year.

The attached form is serving at TVA's mechanism to determine if project-specific activities are within the scope of TVA's bat programmatic consultation and if there is project-specific potential for impact to covered bat species, necessitating conservation measures, which are identified for the project on page 5. The form also is serving as the primary means of notification to the USFWS and others as needed.

Project: InvestPrep - Montgomery County EA, Montogmery County, Tennessee. Utilize TVA InvestPrep funding matched with non-TVA funding to assist with the grading of a 200,396 SF (at minimum) compacted dirt
building pad on Lot 19B. Approximately 9.03 acres of forest are to be removed between Nov 15 and March 31. Approximately 3.2 acres of forest offer potentially suitable summer roosting habitat for Indiana bats and northern long-eared bats. No caves would be impacted. Proposed actions are approximately 4 miles from Dunbar Cave in Montgomery County with records of northern long-eared bat. Approximately 3.2 acres of *Take* would be used in association with this project.

Liz Hamrick
Terrestrial Zoologist
Biological Compliance

TENNESSEE VALLEY AUTHORITY

W. 865-632-4011 **M.** 503-449-2373 **E.** ecburton@tva.gov
400 West Summit Hill Drive, Knoxville, TN 37902

Project Review Form - TVA Bat Strategy *(06/2019)*

*This form should **only** be completed if project includes activities in Tables 2 or 3 (STEP 2 below). This form is not required if project activities are limited to Table 1 (STEP 2) or otherwise determined to have no effect on federally listed bats. If so, include the following statement in your environmental compliance document (e.g., add as a comment in the project CEC): "Project activities limited to Bat Strategy Table 1 or otherwise determined to have no effect on federally listed bats. Bat Strategy Project Review Form NOT required." This form is to assist in determining required conservation measures per TVA's ESA Section 7 programmatic consultation for routine actions and federally listed bats.*[1]

Project Name: InvestPrep - Montgomery County EA **Date:** Sep 29, 2022

Contact(s): Brittany Kunkle **CEC#:** **Project ID:** 41364

Project Location (City, County, State): Clarksville, Montgomery County, TN

Project Description:

Utilize TVA InvestPrep funding matched with non-TVA funding to assist with the grading of a 200,396 SF (at minimum) compacted dirt building pad on Lot 19B.

SECTION 1: PROJECT INFORMATION - ACTION AND ACTIVITIES

STEP 1) Select TVA Action. If none are applicable, contact environmental support staff, Environmental Project Lead, or Terrestrial Zoologist to discuss whether form (i.e., application of Bat Programmatic Consultation) is appropriate for project:

- ☐ 1 Manage Biological Resources for Biodiversity and Public Use on TVA Reservoir Lands
- ☐ 2 Protect Cultural Resources on TVA-Retained Land
- ☐ 3 Manage Land Use and Disposal of TVA-Retained Land
- ☐ 4 Manage Permitting under Section 26a of the TVA Act
- ☐ 5 Operate, Maintain, Retire, Expand, Construct Power Plants
- ☐ 6 Maintain Existing Electric Transmission Assets
- ☐ 7 Convey Property associated with Electric Transmission
- ☐ 8 Expand or Construct New Electric Transmission Assets
- ■ 9 Promote Economic Development
- ☐ 10 Promote Mid-Scale Solar Generation

STEP 2) Select all activities from Tables 1, 2, and 3 below that are included in the proposed project.

TABLE 1. Activities with no effect to bats. Conservation measures & completion of bat strategy project review form NOT required.

■ 1. Loans and/or grant awards	☐ 8. Sale of TVA property	☐ 19. Site-specific enhancements in streams and reservoirs for aquatic animals
☐ 2. Purchase of property	☐ 9. Lease of TVA property	☐ 20. Nesting platforms
☐ 3. Purchase of equipment for industrial facilities	☐ 10. Deed modification associated with TVA rights or TVA property	☐ 41. Minor water-based structures (this does not include boat docks, boat slips or piers)
☐ 4. Environmental education	☐ 11. Abandonment of TVA retained rights	☐ 42. Internal renovation or internal expansion of an existing facility
☐ 5. Transfer of ROW easement and/or ROW equipment	☐ 12. Sufferance agreement	☐ 43. Replacement or removal of TL poles
☐ 6. Property and/or equipment transfer	☐ 13. Engineering or environmental planning or studies	☐ 44. Conductor and overhead ground wire installation and replacement
☐ 7. Easement on TVA property	☐ 14. Harbor limits delineation	☐ 49. Non-navigable houseboats

TABLE 2. Activities not likely to adversely affect bats with implementation of conservation measures. Conservation measures and completion of bat strategy project review form REQUIRED; review of bat records in proximity to project NOT required.		
☐ 18. Erosion control, minor	☐ 57. Water intake - non-industrial	☐ 79. Swimming pools/associated equipment
☐ 24. Tree planting	☐ 58. Wastewater outfalls	☐ 81. Water intakes – industrial
☐ 30. Dredging and excavation; recessed harbor areas	☐ 59. Marine fueling facilities	☐ 84. On-site/off-site public utility relocation or construction or extension
☐ 39. Berm development	☐ 60. Commercial water-use facilities (e.g., marinas)	☐ 85. Playground equipment - land-based
☐ 40. Closed loop heat exchangers (heat pumps)	☐ 61. Septic fields	☐ 87. Aboveground storage tanks
☐ 45. Stream monitoring equipment - placement and use	☐ 66. Private, residential docks, piers, boathouses	☐ 88. Underground storage tanks
☐ 46. Floating boat slips within approved harbor limits	☐ 67. Siting of temporary office trailers	☐ 90. Pond closure
☐ 48. Laydown areas	☐ 68. Financing for speculative building construction	☐ 93. Standard License
☐ 50. Minor land based structures	☐ 72. Ferry landings/service operations	☐ 94. Special Use License
☐ 51. Signage installation	☐ 74. Recreational vehicle campsites	☐ 95. Recreation License
☐ 53. Mooring buoys or posts	☐ 75. Utility lines/light poles	☐ 96. Land Use Permit
☐ 56. Culverts	☐ 76. Concrete sidewalks	

Table 3: Activities that may adversely affect federally listed bats. Conservation measures AND completion of bat strategy project review form REQUIRED; review of bat records in proximity of project REQUIRED by OSAR/Heritage eMap reviewer or Terrestrial Zoologist.		
☐ 15. Windshield and ground surveys for archaeological resources	☐ 34. Mechanical vegetation removal, includes trees or tree branches > 3 inches in diameter	☐ 69. Renovation of existing structures
☐ 16. Drilling	☐ 35. Stabilization (major erosion control)	☐ 70. Lock maintenance/ construction
☐ 17. Mechanical vegetation removal, does not include trees or branches > 3" in diameter (in Table 3 due to potential for woody burn piles)	☐ 36. Grading	☐ 71. Concrete dam modification
☐ 21. Herbicide use	☐ 37. Installation of soil improvements	☐ 73. Boat launching ramps
☐ 22. Grubbing	☐ 38. Drain installations for ponds	☐ 77. Construction or expansion of land-based buildings
☐ 23. Prescribed burns	☐ 47. Conduit installation	☐ 78. Wastewater treatment plants
☐ 25. Maintenance, improvement or construction of pedestrian or vehicular access corridors	☐ 52. Floating buildings	☐ 80. Barge fleeting areas
☐ 26. Maintenance/construction of access control measures	☐ 54. Maintenance of water control structures (dewatering units, spillways, levees)	☐ 82. Construction of dam/weirs/ levees
☐ 27. Restoration of sites following human use and abuse	☐ 55. Solar panels	☐ 83. Submarine pipeline, directional boring operations
☐ 28. Removal of debris (e.g., dump sites, hazardous material, unauthorized structures)	☐ 62. Blasting	☐ 86. Landfill construction
☐ 29. Acquisition and use of fill/borrow material	☐ 63. Foundation installation for transmission support	☐ 89. Structure demolition
☐ 31. Stream/wetland crossings	☐ 64. Installation of steel structure, overhead bus, equipment, etc.	☐ 91. Bridge replacement
☐ 32. Clean-up following storm damage	☐ 65. Pole and/or tower installation and/or extension	☐ 92. Return of archaeological remains to former burial sites
☐ 33. Removal of hazardous trees/tree branches		

STEP 3) Project includes one or more activities in Table 3? ◉ **YES (Go to Step 4)** ○ **NO (Go to Step 13)**

STEP 4) Answer questions *a* through *e* below (applies to projects with activities from Table 3 ONLY)

a) Will project involve continuous noise (i.e., ≥ 24 hrs) that is greater than 75 decibels measured on the A scale (e.g., loud machinery)?
- (•) **NO** (NV2 does not apply)
- ( ) **YES** (NV2 applies, subject to records review)

b) Will project involve entry into/survey of cave?
- (•) **NO** (HP1/HP2 do not apply)
- ( ) **YES** (HP1/HP2 applies, subject to review of bat records)

c) If conducting **prescribed burning** (**activity 23)**, estimated acreage**:** [ ] and timeframe(s) below; [■] **N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	[ ] Oct 15 - Nov 14	[ ] Nov 15 - Mar 31	[ ] Apr 1 - May 31, Aug 1- Oct 14	[ ] Jun 1 - Jul 31
VA	[ ] Sep 16 - Nov 15	[ ] Nov 16 - Apr 14	[ ] Apr 15 - May 31, Aug 1 – Sept 15	[ ] Jun 1 - Jul 31
AL	[ ] Oct 15 - Nov 14	[ ] Nov 15 - Mar 15	[ ] Mar 16 - May 31, Aug 1 - Oct 14	[ ] Jun 1 - Jul 31
NC	[ ] Oct 15 - Nov 14	[ ] Nov 15 - Apr 15	[ ] Apr 16 - May 31, Aug 1 - Oct 14	[ ] Jun 1 - Jul 31
MS	[ ] Oct 1 - Nov 14	[ ] Nov 15 - Apr 14	[ ] Apr 15 - May 31, Aug 1 – Sept 30	[ ] Jun 1 - Jul 31

d) Will the project involve vegetation piling/burning?
- ( ) **NO** (SSPC4/ SHF7/SHF8 do not apply)
- (•) **YES** (SSPC4/SHF7/SHF8 applies, subject to review of bat records)

e) If **tree removal (activity 33 or 34)**, estimated amount: [9.03] (•)**ac** ( )**trees** ( )**N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	[ ] Oct 15 - Nov 14	[■] Nov 15 - Mar 31	[ ] Apr 1 - May 31, Aug 1- Oct 14	[ ] Jun 1 - Jul 31
VA	[ ] Sep 16 - Nov 15	[ ] Nov 16 - Apr 14	[ ] Apr 15 - May 31, Aug 1 – Sept 15	[ ] Jun 1 - Jul 31
AL	[ ] Oct 15 - Nov 14	[ ] Nov 15 - Mar 15	[ ] Mar 16 - May 31, Aug 1 - Oct 14	[ ] Jun 1 - Jul 31
NC	[ ] Oct 15 - Nov 14	[ ] Nov 15 - Apr 15	[ ] Apr 16 - May 31, Aug 1 - Oct 14	[ ] Jun 1 - Jul 31
MS	[ ] Oct 1 - Nov 14	[ ] Nov 15 - Apr 14	[ ] Apr 15 - May 31, Aug 1 – Sept 30	[ ] Jun 1 - Jul 31

If warranted, does project have flexibility for bat surveys (May 15-Aug 15): ( ) **MAYBE** ( ) **YES** (•) **NO**

**** For **PROJECT LEADS** whose projects will be reviewed by a Heritage Reviewer (Natural Resources Organization only), **STOP HERE**. Click File/ Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information. Otherwise continue to Step 5. ****

SECTION 2: REVIEW OF BAT RECORDS (applies to projects with activities from Table 3 ONLY)

STEP 5) Review of bat/cave records conducted by Heritage/OSAR reviewer?

(•) **YES** ( ) **NO** (Go to Step 13)

Info below completed by:

[ ] **Heritage Reviewer**	(name)		Date	
[ ] **OSAR Reviewer**	(name)		Date	
[■] **Terrestrial Zoologist**	(name)	Megan Wallrichs	Date	Oct 4, 2022

Gray bat records: [ ] None [ ] Within 3 miles* [ ] Within a cave* [☒] Within the County

Indiana bat records: [ ] None [ ] Within 10 miles* [ ] Within a cave* [ ] Capture/roost tree* [☒] Within the County

Northern long-eared bat records: [ ] None [☒] Within 5 miles* [☒] Within a cave* [ ] Capture/roost tree* [ ] Within the County

Virginia big-eared bat records: [☒] None [ ] Within 6 miles* [ ] Within the County

Caves: [ ] None within 3 mi [☒] Within 3 miles but > 0.5 mi [ ] Within 0.5 mi but > 0.25 mi* [ ] Within 0.25 mi but > 200 feet* [ ] Within 200 feet*

Bat Habitat Inspection Sheet completed? (•) **NO** ( ) **YES**

Amount of SUITABLE habitat to be removed/burned (may differ from STEP 4e): [3.2] **(**(•)**ac** ( )**trees)*** ( )**N/A**

STEP 6) Provide any additional notes resulting from Heritage Reviewer records review in Notes box below then . . . . . Go to Step 13

Notes from Bat Records Review (e.g., historic record; bats not on landscape during action; DOT bridge survey with negative results):

STEPS 7-12 To be Completed by Terrestrial Zoologist (if warranted):

STEP 7) Project will involve:

- ☐ Removal of suitable trees within 0.5 mile of P1-P2 Indiana bat hibernacula or 0.25 mile of P3-P4 Indiana bat hibernacula or any NLEB hibernacula.
- ☒ Removal of suitable trees within 10 miles of documented Indiana bat (or within 5 miles of NLEB) hibernacula.
- ☐ Removal of suitable trees > 10 miles from documented Indiana bat (> 5 miles from NLEB) hibernacula.
- ☐ Removal of trees within 150 feet of a documented Indiana bat or northern long-eared bat maternity roost tree.
- ☐ Removal of suitable trees within 2.5 miles of Indiana bat roost trees or within 5 miles of Indiana bat capture sites.
- ☐ Removal of suitable trees > 2.5 miles from Indiana bat roost trees or > 5 miles from Indiana bat capture sites.
- ☐ Removal of documented Indiana bat or NLEB roost tree, if still suitable.
- ☐ N/A

STEP 8) Presence/absence surveys were/will be conducted: ○ **YES** ◉ **NO** ○ **TBD**

STEP 9) Presence/absence survey results, on _____ ○ **NEGATIVE** ○ **POSITIVE** ◉ **N/A**

STEP 10) Project ◉ **WILL** ○ **WILL NOT** require use of Incidental Take in the amount of 3.2 ◉ **acres or** ○ **trees** proposed to be used during the ■ **WINTER** ○ **VOLANT SEASON** ○ **NON-VOLANT SEASON** ○ **N/A**

STEP 11) Available Incidental Take (prior to accounting for this project) as of Dec 1, 2022

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
9 Promote Economic Development	7,444.99	6,749.79	695.2	0

STEP 12) Amount contributed to TVA's Bat Conservation Fund upon activity completion: $ 0 OR ○ **N/A**

TERRESTRIAL ZOOLOGISTS, after completing SECTION 2, review Table 4, modify as needed, and then complete section for Terrestrial Zoologists at end of form.

SECTION 3: REQUIRED CONSERVATION MEASURES

STEP 13) Review Conservation Measures in Table 4 and ensure those selected are relevant to the project. If not, manually override and uncheck irrelevant measures, and explain why in ADDITIONAL NOTES below Table 4.

Did review of Table 4 result in ANY remaining Conservation Measures in **RED**?

- ○ **NO** (Go to Step 14)
- ◉ **YES** (STOP HERE; Submit for Terrestrial Zoology Review. Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date", and submit with project information).

Table 4. TVA's ESA Section 7 Programmatic Bat Consultation Required Conservation Measures

The Conservation Measures in Table 4 are automatically selected based on your choices in Tables 2 and 3 but can be manually overridden, if necessary. To Manually override, press the button and enter your name.

Manual Override

Name: Elizabeth Hamrick

Check if Applies to Project	Activities Subject To Conservation Measure	Conservation Measure Description
		NV1 - Noise will be short-term, transient, and not significantly different from urban interface or natural events (i.e., thunderstorms) that bats are frequently exposed to when present on the landscape.
		SHF2 - Site-specific conditions (e.g., acres burned, transport wind speed, mixing heights) will be considered to ensure smoke is limited and adequately dispersed away from caves so that smoke does not enter cave or cave-like structures.
		SHF4 - If burns need to be conducted during April and May, when there is some potential for bats to present on the landscape and more likely to enter torpor due to colder temperatures, burns will only be conducted if the air temperature is 55° or greater, and preferably 60° or greater.
		SHF7 - Burning will only occur if site specific conditions (e.g. acres burned, transport wind speed, mixing heights) can be modified to ensure that smoke is adequately dispersed away from caves or cave-like structures. This applies to prescribed burns and burn piles of woody vegetation.
		SHF8 - Brush piles will be burned a **minimum of 0.25 mile from documented, known, or obvious caves or cave entrances** and otherwise in the center of newly established ROW when proximity to caves on private land is unknown.
		TR3* - Removal of suitable summer roosting habitat within documented bat habitat (i.e., within 10 miles of documented Indiana bat hibernacula, within 5 miles of documented northern long-eared bat hibernacula, within 2.5 miles of documented Indiana bat summer roost trees, within 5 miles of Indiana bat capture sites, within 1 mile of documented northern long-eared bat summer roost trees, within 3 miles of northern long-eared bat capture sites) will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
		SSPC2 - Operations involving chemical/fuel storage or resupply and vehicle servicing will be handled outside of riparian zones (streamside management zones) in a manner to prevent these items from reaching a watercourse. Earthen berms or other effective means are installed to protect stream channel from direct surface runoff. Servicing will be done with care to avoid leakage, spillage, and subsequent stream, wetland, or ground water contamination. Oil waste, filters, other litter will be collected and disposed of properly. Equipment servicing and chemical/fuel storage will be limited to locations greater than 300-ft from sinkholes, fissures, or areas draining into known sinkholes, fissures, or other karst features.
		SSPC5 (**26a, Solar, Economic Development only**) - Section 26a permits and contracts associated with solar projects, economic development projects or land use projects include standards and conditions that include standard BMPs for sediment and contaminants as well as measures to avoid or minimize impacts to sensitive species or other resources consistent with applicable laws and Executive Orders.

	L1 - Direct temporary lighting away from suitable habitat during the active season.
	L2 - Evaluate the use of outdoor lighting during the active season and seek to minimize light pollution when installing new or replacing existing permanent lights by angling lights downward or via other light minimization measures (e.g., dimming, directed lighting, motion-sensitive lighting).

[1]Bats addressed in consultation (02/2018), which includes gray bat (listed in 1976), Indiana bat (listed in 1967), northern long-eared bat (listed in 2015), and Virginia big-eared bat (listed in 1979).

Hide All Unchecked Conservation Measures

- (•) HIDE
- ( ) UNHIDE

Hide Table 4 Columns 1 and 2 to Facilitate Clean Copy and Paste

- (•) HIDE
- ( ) UNHIDE

NOTES (additional info from field review, explanation of no impact or removal of conservation measures).

Field Review identified 3.2 acres of suitable bat habitat. Project to remove habitat in Winter.

STEP 14) Save completed form (Click File/Save As, name form as "ProjectLead_BatForm_CEC-or-ProjectIDNo_Date") in project environmental documentation (e.g. CEC, Appendix to EA) AND send a copy of form to batstrategy@tva.gov
Submission of this form indicates that Project Lead/Applicant:

[ ] (name) is (or will be made) aware of the requirements below.

- Implementation of conservation measures identified in Table 4 is required to comply with TVA's Endangered Species Act programmatic bat consultation.
- TVA may conduct post-project monitoring to determine if conservation measures were effective in minimizing or avoiding impacts to federally listed bats.

For Use by Terrestrial Zoologist Only

☒ Terrestrial Zoologist acknowledges that Project Lead/Contact (name) Brittany Kunkle has been informed of any relevant conservation measures and/or provided a copy of this form.

☒ For projects that require use of Take and/or contribution to TVA's Bat Conservation Fund, Terrestrial Zoologist acknowledges that Project Lead/Contact has been informed that project will result in use of Incidental Take 3.2 (•) ac ( ) trees and that use of Take will require $ 0 contribution to TVA's Conservation Fund upon completion of activity (amount entered should be $0 if cleared in winter).

For Terrestrial Zoology Use Only. Finalize and Print to Noneditable PDF.

ATTACHMENT 3

USFWS Concurrence Letter

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: 2023-0068347
Project Name: InvestPrep - Montgomery County

April 13, 2023

Federal Nexus: yes
Federal Action Agency (if applicable): Tennessee Valley Authority

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'InvestPrep - Montgomery County'

Dear Elizabeth Hamrick:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on April 13, 2023, for 'InvestPrep - Montgomery County' (here forward, Project). This project has been assigned Project Code 2023-0068347 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (DKey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the determination of “May Affect, Not Likely to Adversely Affect” the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that consultation on the Action is complete and no further action is necessary unless either of the following occurs:

- new information reveals effects of the action that may affect the northern long-eared bat in a manner or to an extent not previously considered; or,
- the identified action is subsequently modified in a manner that causes an effect to the northern long-eared bat that was not considered when completing the determination key.

15-Day Review Period

As indicated above, the Service will notify you within 15 calendar days if we determine that this proposed Action does not meet the criteria for a “may affect, not likely to adversely affect” (NLAA) determination for the northern long-eared bat. If we do not notify you within that timeframe, you may proceed with the Action under the terms of the NLAA concurrence provided here. This verification period allows the identified Ecological Services Field Office to apply local knowledge to evaluation of the Action, as we may identify a small subset of actions having impacts that we did not anticipate when developing the key. In such cases, the identified Ecological Services Field Office may request additional information to verify the effects determination reached through the Northern Long-eared Bat DKey.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Gray Bat *Myotis grisescens* Endangered
- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Price"s Potato-bean *Apios priceana* Threatened
- Short's Bladderpod *Physaria globosa* Endangered
- Slabside Pearlymussel *Pleuronaia dolabelloides* Endangered
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

You may coordinate with our Office to determine whether the Action may affect the species and/or critical habitat listed above. Note that reinitiation of consultation would be necessary if a new species is listed or critical habitat designated that may be affected by the identified action before it is complete.

If you have any questions regarding this letter or need further assistance, please contact the Tennessee Ecological Services Field Office and reference Project Code 2023-0068347 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

InvestPrep - Montgomery County

2. Description

The following description was provided for the project 'InvestPrep - Montgomery County':

> Utilize TVA InvestPrep funding matched with non-TVA funding to assist with the grading of a 200,396 SF (at minimum) compacted dirt building pad on Lot 19B. Project would require removal of 9.03 acres of trees in winter.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@36.57414205,-87.23561313093276,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   No

9. Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

   No

10. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
(If unsure, answer "Yes.")

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

11. Will the action cause effects to a bridge?

    No

12. Will the action result in effects to a culvert or tunnel?

    No

13. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

    No

14. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

15. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

16. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

17. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

18. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    No

19. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

20. Will the action include drilling or blasting?

    No

21. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

22. Will the proposed action involve the use of herbicides or pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

23. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    No

24. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

    Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

25. Will the action use only downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting)
when installing new or replacing existing permanent lights? Or for those transportation agencies using the Backlight, Uplight, Glare (BUG) system developed by the Illuminating Engineering Society, will all three ratings (backlight, uplight, and glare) be as close to zero as is possible, with a priority of "uplight" of 0?

    Yes

26. Will the action direct any temporary lighting away from suitable northern long-eared bat roosting habitat during the active season?

    Note: Active season dates for northern long-eared bat can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    Yes

27. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

28. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property and has a diameter breast height of six inches or greater.

    No

29. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Yes

30. [Semantic] Does your project intersect a known sensitive area for the northern long-eared bat?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state agency or USFWS field office

    Automatically answered
    No

31. Will all tree cutting/trimming or other knocking or bringing down of trees be restricted to the inactive (hibernation) season for northern long-eared bat?

    Note: Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    Yes

32. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 10 acres?

    No

33. Will the action cause trees to be cut, knocked down, or otherwise brought down in a way that would fragment a forested connection (e.g., tree line) between two or more forest patches of at least 5 acres?

    The forest patches may consist of entirely contiguous forest or multiple forested areas that are separated by less than 1000’ of non-forested area. A project will fragment a forested connection if it creates an unforested gap of greater than 1000’.

    No

34. Will the action result in the use of prescribed fire?

    No

35. Will the action cause noises that are louder than ambient baseline noises within the action area?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

9.1

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

9.1

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

Yes

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

3.2

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

0

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

No

Will all project activities by completed by April 1, 2024?

Yes

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

ATTACHMENT 4

Agency Correspondence

Reaux, Derek

From: TN Help <tnhelp@service-now.com>
Sent: Monday, March 13, 2023 1:21 PM
To: Beliles, Emily
Cc: Reaux, Derek; Harle, Michaelyn S
Subject: Clarksville-Montgomery County Corporate Business Park South/ TVA Tracking# CRMS50601726107 - Project # SHPO0002714

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

03-13-2023 12:13:06 CDT

Dr. Michaelyn Harle
TVA
MHarle@tva.gov

RE: Tennessee Valley Authority (TVA), Clarksville-Montgomery County Corporate Business Park South/ TVA Tracking# CRMS50601726107, Project#: SHPO0002714, Clarksville, Montgomery County, TN

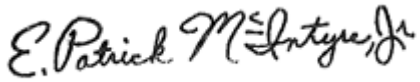
Dear Dr. Harle:

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

Considering the information provided, we concur that no historic properties eligible for listing in the National Register of Historic Places will be affected by this undertaking. If project plans are changed or archaeological remains are discovered during project construction, please contact this office to

determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Please provide your Project # when submitting any additional information regarding this undertaking. Questions or comments may be directed to Jennifer Barnett, who drafted this response, at Jennifer.Barnett@tn.gov, +16156874780.

Sincerely,



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

Ref:MSG7760554_Xg2BogtW2Bne81es9NAL