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KINGSTON BORROW SITE NO. 3 ENVIRONMENTAL ASSESSMENT

Roane County, Tennessee

Prepared by:
TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

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Table of Contents

List of Appendices

List of Tables

List of Figures

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Acronyms and Abbreviations

APE	Area of Potential Effect
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CWA	Clean Water Act
dB	Decibel
dBA	A-Weighted Decibel
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
ESA	Endangered Species Act of 1973
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
KIF	Kingston Fossil Plant
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOx	Nitrous Oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
pcf	Per Cubic Foot
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Officer
SO_2	Sulfur Dioxide
TDEC	Tennessee Department of Environment and Conservation
THC	Tennessee Historical Commission
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Introduction and Background

The Tennessee Valley Authority's (TVA) Kingston Fossil Plant (KIF) is a 1.7-gigawatt coal-burning power plant with nine generating units located in Roane County, Tennessee, at the confluence of the Clinch and Emory Rivers on the shore of Watts Bar Reservoir. KIF has the capacity to provide electricity to about 700,000 homes.

Historically, projects at KIF have relied primarily on on-site borrow sites (Borrow Site No. 1 & 2) to supply soil and fill. Ongoing projects such as the KIF landfill are anticipated to exhaust these borrow sites by the summer of 2020. Additional sources of borrow material are needed for Phase 2 of the landfill as well as other anticipated KIF projects.

TVA proposes to develop a new 62-acre borrow site (Borrow Site No. 3) to facilitate routine operations and various construction projects on the KIF property. The proposed borrow site consists of undeveloped lands in the central portion of the TVA property, north of the landfill and south of the plant's intake channel (see Figures 2-4 and 2-5). The proposed borrow site is mostly wooded lands with existing gravel access roads and two transmission lines crossing the borrow site.

1.2 Purpose and Need

TVA proposes to construct a new borrow site (Borrow Site No. 3) on existing TVA property at KIF. Current borrow sources at KIF are committed to landfill construction and operation (Borrow Site No. 1 and Borrow Site No. 2). However, landfill project phasing indicates soil types available in the proposed Borrow Site No. 3 may be needed to supplement the soil types available in the other borrow sites. Additionally, the proposed Borrow Site No. 3 is needed to provide borrow material for other current and future KIF operations and maintenance projects. By developing a new borrow site on KIF property, TVA would be able to cost effectively and efficiently support routine operations, as well as upcoming construction projects.

1.3 Decision to Be Made

TVA must decide whether to develop a new 62-acre borrow site at KIF. TVA's decision would consider factors such as potential environmental impacts, economics, availability of resources, and TVA's long-term goals. This Environmental Assessment (EA) has been prepared to support the decision-making process and determine whether an Environmental Impact Statement (EIS) should be prepared or whether a Finding of No Significant Impact may be issued.

1.4 Related Environmental Reviews

The following environmental reviews have been prepared for actions near the project location:

- Installation of Flue Gas Desulfurization System at Kingston Fossil Plant EA, 2006. This EA evaluates the impacts of the installation and operation of scrubbers for the removal of sulfur dioxide, and the associated on-site landfill for this system's waste disposal.

- Kingston Dry Fly Ash Conversion EA, 2010. This EA identifies the alternatives for converting the fly ash handling system at KIF from a wet to dry system and describes transportation of ash off-site.
- Installation of a Mechanical Gypsum Dewatering System at Kingston Fossil Plant Roane County, Tennessee, EA, 2010. This EA describes the dewatering of gypsum at KIF and impacts to resources.
- Kingston Fossil Plant Dewatering Project, 2016. This EA analyzes TVA's proposed action to construct a bottom ash mechanical dewatering facility at KIF to create dry coal combustion residuals for disposal in an approved landfill.
- CEC 40607 – This CEC was developed to authorize geotechnical investigations within the proposed Borrow Site No. 3. July 2019.
- Flue Gas Desulfurization System at Kingston Fossil Plant Supplemental EA, 2019. This Supplemental EA analyzes TVA's proposal to expand the boundary for the on-site Phase 2 landfill construction support areas and to develop a borrow site (Borrow Site No. 2) to facilitate the landfill's construction. The Final Supplemental EA was published in August 2019.
- Kingston Wastewater Treatment Facility Draft EA, 2019. This EA evaluates TVA's proposal to construct and operate a new wastewater treatment facility for wet flue gas desulfurization (WFGD) wastewater and to address U.S. Environmental Protection Agency (USEPA) effluent limitation guidelines. December 2019.

The description of the affected environment and the assessment of impacts contained in the documents listed above were used in support of the analyses of environmental resources in Chapter 3.

1.5 Scope of the Environmental Assessment

TVA prepared this EA to comply with the National Environmental Policy Act (NEPA), associated regulations promulgated by the Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508), and TVA's procedures for implementing NEPA. TVA considered the possible environmental effects of the proposed action and determined that the resources listed below are potentially impacted by the alternatives considered.

- Air Quality
- Climate
- Surface Water
- Groundwater
- Vegetation
- Wildlife
- Threatened and Endangered Species
- Solid and Hazardous Waste
- Visual Resources
- Cultural and Historic Resources
- Natural Areas
- Noise
- Socioeconomics and Environmental Justice

Given the nature of the project, the following resources are not found in the study area or would not be impacted by any of the project alternatives. These include:

- *Floodplains* – Based on a review of Roane County, Tennessee, Flood Insurance Rate Map 47145C0094G, effective 11/18/2009, topographic maps, and site reconnaissance, the borrow site project would avoid 100-year floodplains, which would be consistent with EO 11988.

- *Streams and Wetlands* – Based on a 2019 comprehensive KIF site survey, no streams or wetlands were identified within the project area. The Emory River is near the proposed borrow site but borrow activities would be performed in accordance with best management practices (BMPs), as outlined in state and local guidance documents. These BMPs are designed to prevent or greatly reduce the amount of suspended solids from leaving the site and entering nearby waters. No impacts to streams or wetlands are anticipated.

- *Recreation* – Public recreational activities are prohibited on the KIF property. The firing range shown on Figures 2-4 and 2-5 is used exclusively by TVA police and local law enforcement as a training facility; it is located outside the proposed borrow site and has an adequate backstop such that it would not be affected by borrow site construction or operation. Therefore, construction and operation of the borrow site would not have an impact on recreational activities.

- *Prime Farmland* - Portions of the project site contain soils that have been designated as Prime Farmland by the U.S. Department of Agriculture (USDA). Development of the borrow site would involve the clearing and grading of prime farmland soils. However, the entire KIF property has been heavily disturbed and no longer supports agricultural activities. In 2006, TVA determined the Farmland Conversion Impact Rating for the entire KIF property to be well below the critical score of 160 (TVA 2006). The proposed activities would not raise this rating to a critical level and, therefore, this resource is not analyzed in detail in this EA.

- *Navigation* – The proposed borrow site activities would not directly or indirectly affect commercial navigation on the Emory River or Watts Bar Reservoir. Because potential effects were found to be absent, this resource has not been brought forward for further evaluation.

- *Transportation* – TVA does not expect the proposed action to increase daily traffic entering or leaving KIF during the construction and operation of Borrow Site No. 3. Vehicles and equipment already located at KIF for the existing landfill would be used to develop the borrow site and haul borrow material to KIF project sites on internal roads. Potentially during tree removal operations, two to three logging trucks may enter and leave the site each day to pick up logs and transport them to an off-site lumber mill. Because of the small number of vehicles involved, no impact on local or regional traffic is anticipated from this activity.

TVA's action would satisfy the requirements of Executive Order (EO) 11988 (Floodplains Management), EO 11990 (Protection of Wetlands), EO 12898 (Environmental Justice), EO 13751 (Invasive Species); and applicable laws including the National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Clean Water Act (CWA), Clean Air Act, and Resource Conservation and Recovery Act (RCRA).

1.6 Public and Agency Involvement

TVA issued a Draft EA for public review and comment on December 6, 2019. Notice of Availability of the Draft EA was transmitted to state, federal, and local agencies and federally recognized tribes. It was also posted on Tennessee Valley Authority's (TVA's) public National Environmental Policy Act (NEPA) review website. A media announcement including a request for comments on the Draft EA was released in the Kingston area. Comments were accepted through December 21, 2019, via mail and e-mail.

Four comments were received. The Tennessee Department of Environment and Conservation (TDEC) commented that the Draft EA adequately addresses potential impacts to cultural and natural resources within the proposed project area. It concurred that the borrow site will need a stormwater permit and plan as described below in Section 1.7. TDEC recommended that a reference to state hazardous and solid waste management rules be included. One commenter supported Alternative A: No Action Alternative. Greenhouse gas emissions, coal ash management, and agency transparency concerns were other topics raised. Responses to comments received during the comment period are provided in Appendix C.

TVA has consulted with the Tennessee Historical Commission (THC), which is the State Historic Preservation Office (SHPO), and federally recognized tribes under Section 106 of the National Historic Preservation Act. Agency and public correspondence can be found in Appendix B.

1.7 Necessary Permits or Licenses

The proposed action would be subject to the TDEC Tennessee General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Stormwater Associated with Construction Activities. The development of a Stormwater Pollution Prevention Plan (SWPPP) is a component of this permit.

CHAPTER 2 – ALTERNATIVES

2.1 Alternatives Development Process

Two alternatives were identified during initial project scoping:

- *Alternative A – No Action*.
- *Alternative B – Construct and Operate Borrow Site No. 3*.

From the standpoint of NEPA, these two alternatives would be carried forward in the EA.

TVA also evaluated an alternative that was eliminated from further consideration: Commercial Off-site Borrow Sources. During initial project scoping, TVA considered using commercial permitted off-site sources of borrow material. However, the cost of purchasing and transporting borrow material to KIF would be three times the cost of using on-site borrow material. In addition, nearby borrow sites do not appear to have the quantities of material to meet projected needs at KIF. Use of an off-site source would also result in safety risks associated with increased truck traffic when transporting borrow material on local roads. Therefore, the use of existing, permitted off-site borrow material sources has been eliminated from further consideration for purposes of this EA.

2.2 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop a new borrow site at KIF. No additional onsite borrow material would be available for current or future projects at KIF and thus the No Action Alternative would not meet the purpose and need for action.

2.3 Alternative B – Construct and Operate Borrow Site No. 3

Under Alternative B, TVA would develop a new 62-acre borrow site on KIF property. As shown on Figures 2-1 through 2-5, Borrow Site No. 3 would be located north of the existing coal combustion residuals landfill and south of KIF's intake channel

Figure 2-1. Proposed Borrow Site No. 3, Facing North

Figure 2-2. Proposed Borrow Site No. 3, Facing South

Figure 2-3. Transmission Corridor Crossing Borrow Site No. 3, Facing Northeast

The borrow site would be developed as-needed based on project demands. When soil material is needed for a project, a 5- to 10-acre area would be cleared and grubbed of all vegetation, and topsoil would be stripped and stored within the limits of the borrow site. Temporary roads would be constructed and soil materials would be excavated to meet the volume needs required for a specific project. Once the project's needs were met, the exhausted portion of the borrow site would be graded, reclaimed with topsoil, and seeded. Based on projected needs, it is estimated that the borrow site would be exhausted within 20 years.

During tree clearing operations and borrow site preparations, no more than 10 additional workers would be onsite. Depending on tree value and size, it is anticipated that logging would result in some trees being chipped on site and used as mulch, or two to three log trucks leaving KIF per day and traveling to a lumber mill. TVA plans to clear trees during the winter whenever possible, but tree clearing could occur at any time throughout the year, consistent with TVA's programmatic consultation with the U.S. Fish and Wildlife Service (USFWS) on routine actions and federally listed bat species. Appropriate conservation measures would be applied depending on the timing of tree removal.

Once all erosion controls have been installed, grubbing of stumps and brush would be undertaken. The site would then be ready to borrow material. Borrow operations would require between two to five equipment operators and between five to 25 trucks and drivers depending on project (e.g., Phase 2 of the KIF landfill). All borrow material would be used onsite and would not travel on any public roads.

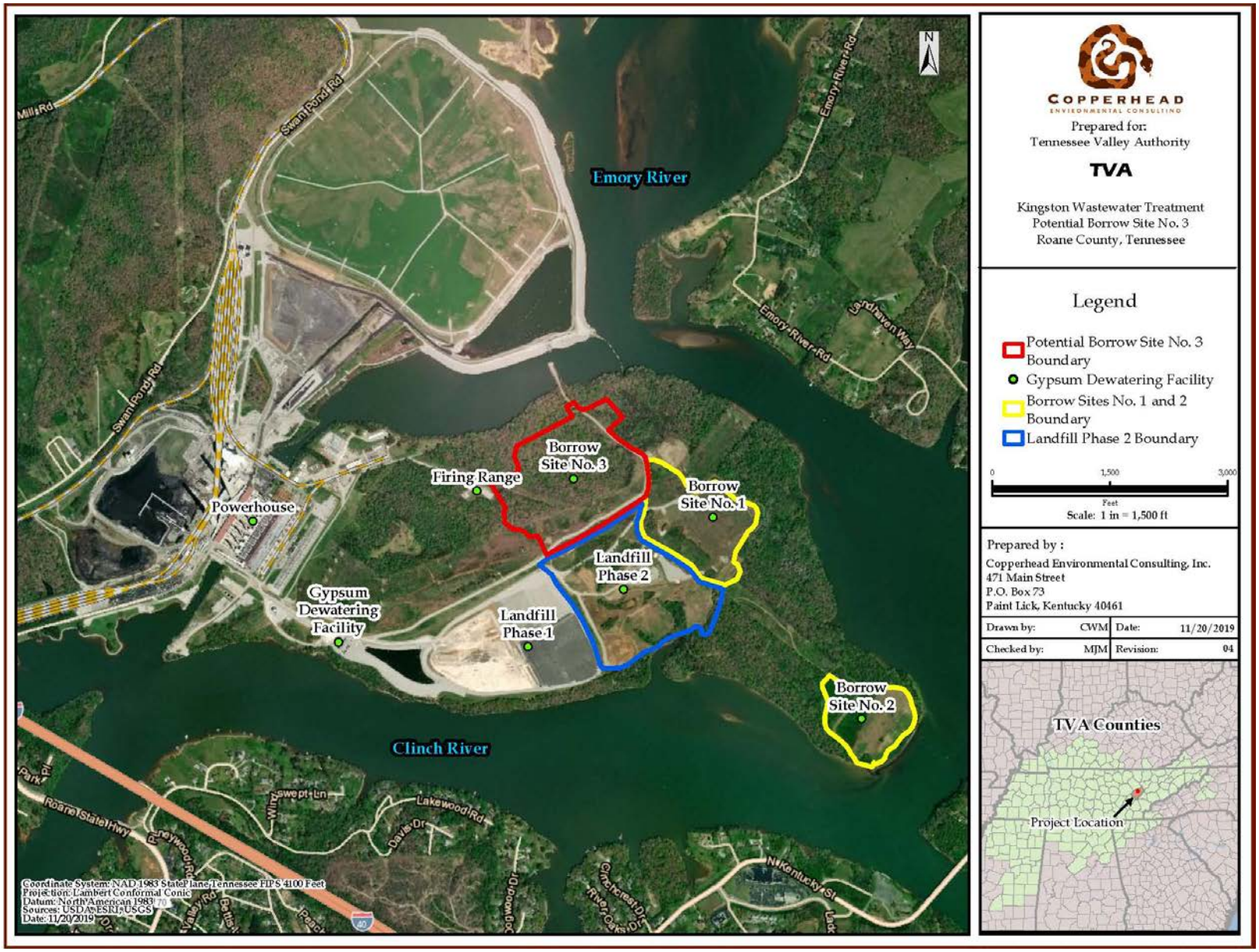

Figure 2-4. Project Location

Figure 2-5. Proposed Borrow Site No. 3

Construction and operation equipment would include, but not be limited to, bulldozers, backhoes, excavators, tri-axle dump trucks, pans, tub grinders, pickup trucks, logging equipment, chainsaws, logging trucks, and skid loaders.

Once the limits of excavation are reached, the disturbed area would be graded as necessary to manage stormwater runoff, and then stabilized with topsoil, seed, and straw or sod. This process would continue until all suitable fill is exhausted from the borrow site. Once all material is exhausted, the site would receive final grading and revegetation.

During operation of the borrow site, a temporary laydown area would be established within the borrow site footprint. This laydown area would be needed to stage material and maintain equipment. Additionally, temporary roads and stormwater management facilities would be constructed as needed.

2.4 Comparison of Alternatives

The environmental impacts of Alternative A and Alternative B are analyzed in detail in this EA and are summarized in Table 2-1. These summaries are derived from the information and analyses provided in the Affected Environment and Environmental Consequences sections of each resource in Chapter 3.

Table 2-1. Summary and comparison of alternatives by resource area

Issue Area	Alternative A – No Action	Alternative B – Construct and Operate Borrow Site No. 3
Air Quality	No impact.	Minor increase in local air emissions due to construction and operation activities.
Climate	No impact.	Negligible impact.
Surface Water	No impact.	Negligible water quality impacts with the implementation of appropriate BMPs.
Groundwater	No impact.	No significant impact.
Vegetation	No impact.	No significant impact as borrow site contains non-native weeds and early successional plants with no conservation value.
Wildlife	No impact.	Negligible impact.
Threatened and Endangered Species	No impact.	Impacts to federally listed Indiana bats and northern long-eared bats are possible due to suitable roosting tree removal. These impacts were addressed in TVA's programmatic consultation with USFWS. Appropriate conservation measures would be applied in accordance with TVA's Bat Strategy. With implementation of conservation measures, impacts are not expected to be significant.
Solid and Hazardous Waste	No impact.	Minor impact to solid waste during construction and operation. No impact to hazardous waste.
Visual	No impact.	Minor adverse impact as each phase of the borrow site is operated. Long-term impacts would be minor, as areas will be revegetated.
Cultural and Historic	No impact.	No impact.

Issue Area	Alternative A – No Action	Alternative B – Construct and Operate Borrow Site No. 3
Resources		
Natural Areas	No impact.	No impact.
Noise	No impact.	Minor intermittent impact due to construction and operation noise.
Socioeconomic and Environmental Justice	No impact.	Minor, beneficial increases in employment, payroll, and tax payments during tree removal activities. Beneficial impacts would extend to environmental justice if workers are hired from minority or low-income populations.

2.5 TVA's Preferred Alternative

TVA's preferred alternative is Alternative B, under which TVA would develop a 62-acre borrow site on KIF property. Alternative B is the only alternative that meets the purpose and need of the project to provide an adequate source of borrow material for KIF projects.

2.6 Summary of Mitigation Measures

Mitigation measures identified in Chapter 3 to avoid, minimize, or reduce adverse impacts to the environment are summarized below. TVA's analysis of Alternative B includes mitigation, as required, to reduce, avoid or minimize, adverse effects. Project-specific BMPs are also identified.

- *Visual Resources*. To minimize visual impacts from tree, vegetation, and soil removal, TVA would not clear the entire 62 acres at one time but operate the borrow site in phases of 5 to 10 acres. As each phase is completed, TVA would regrade and re-vegetate the area to minimize visual impacts.

- *Air Resources*. To reduce vehicle emissions from the development of the borrow site, TVA would ensure that all construction vehicles would be properly maintained, and would not idle equipment when not in use or idling times would be kept to a minimum. Fugitive dust would be minimized through the use of covered truck loads and wet suppression on gravel roads.

- *Threatened and Endangered Species.* Several activities associated with the proposed project 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) and completed in April 2018. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified in TVA's Bat Strategy Project Assessment. TVA would document removal of potentially suitable summer bat roost tree habitat and include this information in annual reporting to the USFWS. TVA currently plans to conduct the tree removal between October 15 and March 31, when Indiana and northern long-eared bats are not on the landscape. This would avoid any potential direct impact to juvenile bats at a time when they are unable to fly. If removal of suitable bat roost tree habitat needs to be removed when bats may be present on the landscape, additional conservation measures would be applied per the terms of the programmatic consultation. TVA also would set aside funding to be applied towards future bat-specific conservation projects per TVA's Bat Strategy.

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CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Air Quality

3.1.1 Affected Environment

The Clean Air Act regulates the emission of air pollutants and, through its implementing regulations, establishes National Ambient Air Quality Standards (NAAQS) for several "criteria" pollutants that are designed to protect the public health and welfare with an ample margin of safety. The criteria pollutants are ozone, particulate matter, carbon monoxide (CO), nitrous oxides (NO_x), sulfur dioxide (SO_2), and lead.

Specified geographic areas are designated as attainment, nonattainment, or unclassifiable for specific NAAQS. Areas with ambient concentrations of criteria pollutants exceeding the NAAQS are designated as nonattainment areas and new emissions sources in or near these areas are subject to more stringent air permitting requirements.

Roane County and all surrounding counties (Morgan, Anderson, Knox, Loudon, McMinn, Meigs, Rhea, and Cumberland) are in attainment for all criteria pollutants (EPA 2017). Roane County is also in compliance with Tennessee ambient air quality standards which can be found in the Tennessee Air Pollution Control Rules Chapter 1200-03-03.

The proposed project would be subject to both federal and state regulations that impose permitting requirements and specific standards for expected air emissions. These include Fugitive Dust in the Tennessee Air Pollution Control Rules Chapter 1200-03-08.

3.1.2 Environmental Consequences

3.1.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to the existing air quality conditions and no new impacts on air quality.

3.1.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Transient air pollutant emissions would occur during development and operation activities. Air quality impacts would primarily result from the staging and operation of construction vehicles, equipment, supplies, and worker personnel vehicles. The daily workforce for Borrow Site No. 3 would vary depending on borrow site construction and operation activities. Construction and operation equipment would include, but not be limited to, bulldozers, backhoes, excavators, tri-axle dump trucks, pans, tub grinders, pickup trucks, logging equipment, chainsaws, logging trucks, and skid loaders.

Combustion of gasoline and diesel fuels by internal combustion engines would generate local emissions of particulate matter, NO_x, CO, volatile organic compounds, and SO_2. Emissions associated with these vehicles and equipment are expected to result in minor impacts to air quality because there would be relatively few emissions sources (e.g., trucks, private vehicles) used during development and operations. Because development would occur in phases, air emissions would be generated over a longer period, but in smaller quantities during each discrete phase of development. Temporary air quality impacts would also occur from fugitive dust emissions during construction and operation of the borrow site.

Air quality impacts from borrow site activities would depend on both human factors (e.g., intensity of borrow operations, control measures) and natural factors such as wind speed and direction. However, even under unusually adverse conditions, these emissions from borrow activities would have, at most, a minor transient impact on air quality and would be well below the applicable ambient air quality standards.

To minimize air impacts, TVA requires all contractors to keep construction equipment properly maintained and to use BMPs (such as covered loads and wet suppression) which can reduce fugitive dust emissions by as much as 95 percent . TVA would obtain the proper Construction Permit from TDEC and would comply with its protective provisions. Overall, the potential impacts to air quality from borrow construction- and operation-related activities on local and regional air quality would be minor.

3.2 Climate

3.2.1 Affected Environment

Gases that trap heat in the atmosphere are called greenhouse gases (GHG). Gases that contribute to the greenhouse effect include: water vapor, carbon dioxide, methane, and NO_x. Global atmospheric concentrations of carbon dioxide, methane, NO_x, and certain manufactured GHGs have all risen significantly over the last few hundred years. Too much of these GHGs can cause Earth's atmosphere to trap more and more heat and affect climate change. Data trends indicate increasing temperatures, decreasing precipitation, declining cloud cover, and increasing solar radiation in the TVA power service area.

TVA power plant CO_2 emissions have dropped by approximately 47 percent between 2005 and 2017 due to a multitude of emission reduction projects instituted by TVA in this period.

Other activities that increase CO_2 emissions include land or forest clearing and land use changes associated with land development projects; construction activities involving use of fossil-fuel-powered equipment (e.g., bulldozers, loaders, haulers, trucks, generators, etc.); increases in demand for electric power due to greater industrial, residential, or commercial activity; and changes to amounts and patterns of traffic flow. Additionally, development of parks or wildlife management areas and protection of forested areas that absorb and store CO_2 serve to remove excess CO_2 in the atmosphere, a process known as carbon sequestration.

3.2.2 Environmental Consequences

3.2.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no new emissions of greenhouse gases and, therefore, this alternative would not impact climate change.

3.2.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Construction- and operation-related CO_2 emissions would be related to the combustion of gasoline and diesel fuels by internal combustion engines (vehicles, construction equipment, etc.). In addition, removal of approximately 35 acres of forest cover from the borrow site would contribute to GHG emissions because when forests are cleared, stored CO_2 may be released into the atmosphere. The tree removal would also reduce the long-term potential of the trees to continue storing CO_2. The total amount of these GHG emissions would be small and would be spread out over the life of the borrow site (up to 20 years). These emissions would not adversely affect regional GHG levels and would have no discernable link or effect to changes in global climate. Therefore, this alternative would not result in noticeable impacts on climate change.

TVA would continue to monitor climatic effects as they occur and continue to update its plans and policies as evidence of changing climate conditions continues to be gathered and as the forecasting capabilities continue to evolve.

3.3 Surface Water

3.3.1 Affected Environment

Hydrology

KIF is situated on a peninsula formed by the confluence of the Clinch and Emory Rivers. River flow rates past the site are regulated by upstream dams on the Clinch River (Melton Hill and Norris dams) and downstream on the Tennessee River by Watts Bar Dam. The flow rates are also influenced by upstream dam operations on the Tennessee River (Tellico and Fort Loudoun dams). Flow patterns can be complex in the Clinch and Emory River embayments. The Emory River flow fluctuates between flowing upstream from the Clinch River through the Emory River embayment to also flowing backwards upstream of KIF. Water is pushed up the Emory River because of inflows that raise the pool elevation in Watts Bar Reservoir. Such inflows typically occur when the reservoir is filling in the spring or during a flood event. Different rates and timing of releases from Watts Bar, Fort Loudoun, and Melton Hill reservoirs can also cause reverse flows in the Clinch River arm of Watts Bar Reservoir. There is also the potential for water from the Clinch River to flow upstream into the Tennessee River during the filling of Watts Bar Reservoir.

These flow patterns are further complicated by water temperature and density differences. Warmer water is less dense and therefore stays on the surface of a reservoir. In the summer, the sun and ambient air temperatures warm the surface water, introducing thermal layering that becomes stable and prevents mixing with deeper, cooler, and denser water. This stable thermal layering of water is known as stratification. The Emory River water stratifies during the summer, while Norris Dam and Melton Hill Dam discharges tend to keep the Clinch River relatively cool despite increased air temperatures in the summer. When Clinch River water flows upstream into the Emory River embayment to the KIF water intakes in the summer, this cooler water flows along the bottom of the embayment, and the warmer Emory River water flows downstream over the top of the cooler Clinch River water.

Current Water Quality

Borrow Site No. 3 drains to the Emory River (0601020804) and Clinch River (0601020704) 10-digit hydrologic unit code (HUC) watersheds. Both rivers are designated for domestic water supply, industrial water supply, fish and aquatic life, recreation, livestock, watering and wildlife, and irrigation. The Clinch River is also designated for navigation purposes.

Section 303(d) of the federal CWA requires that states develop a compilation of the streams and lakes that are “water quality limited.” Water quality limited streams are those that have one or more properties that violate water quality standards. They are considered impaired by pollution and not fully meeting designated uses. Presently, the Clinch and Emory River arms of Watts Bar Reservoir have been de-listed from the TDEC 303(d) list for any ash spill-related reasons; however, the areas surrounding the ash spill site continue to be monitored per TVA’s agreement with TDEC/EPA (TDEC 2016a). The Clinch River arm of Watts Bar Reservoir is listed as impaired by chlordane (a pesticide formerly used for agricultural purposes), mercury and PCB pollutants. Chlordane and PCB impairment is due

to contaminated sediments, while mercury impairment is due to industrial point source discharges and atmospheric deposition. The Clinch River has received discharges from the Oak Ridge Reservation and industrial and municipal dischargers as well as nonpoint discharges from agricultural fields and urban runoff. Additionally, the Clinch River is listed as threatened by loss of native mussel species for unknown reasons. Nearby tributaries to the Clinch River are also listed for PCBs, chlordane, and mercury; one nearby tributary is listed for arsenic (TDEC 2018a).

The Emory River arm of Watts Bar Reservoir is also listed on the state 303(d) list (TDEC 2018a) as impaired by chlordane, mercury, and PCBs pollutants. Chlordane impairment is due to contaminated sediments, mercury impairment is due to industrial point source discharges and atmospheric deposition, and PCB impairment is due to contaminated sediments and industrial point source discharges.

TVA conducts Reservoir Ecological Health assessments on Watts Bar Reservoir. Values of good, fair, or poor are assigned to each metric monitored by TVA. TVA monitors four locations on Watts Bar Reservoir: the deep, still water near the dam, called the forebay (Tennessee River Mile 532.5); the middle part of the reservoir (Tennessee River Mile 560.8); and the riverlike areas at the extreme upper end of the reservoir in the Tennessee (miles 600 to 601) and Clinch (miles 19 to 22) Rivers, called inflows. The overall ecological health condition for Watts Bar Reservoir rated fair in 2018.

Existing Wastewaters and Drainage Areas Including Stormwater

There are several existing wastewater streams at KIF permitted to be discharged by the KIF NPDES permit (Number TN0005452; TDEC 2018b) (see Figure 3-1). The primary streams that would potentially be impacted by this proposed project would be stormwater discharged from the area of the proposed borrow site.

There are no documented aquatic features within the proposed project boundary (TVA 2019).

Existing facilities and BMPs are used to ensure compliance with the permit conditions. Some plant process water is treated by process water basin(s) (PWBs) prior to being discharged. KIF has two such PWBs: one discharges to Outfall 001, and the FGD PWB discharges from IMP 01A to the condenser cooling water to be discharged from Outfall 002. Other stormwater discharges associated with the industrial activity at KIF are covered by the Tennessee Stormwater Multi-Sector General Permit for Industrial Activities TNR0510000, Tracking Number TNR051787, while construction stormwater discharges would be obtained and covered under TDEC General Permit for Stormwater Discharges Associated with Construction Activities (TDEC 2016b) or under an Individual permit.

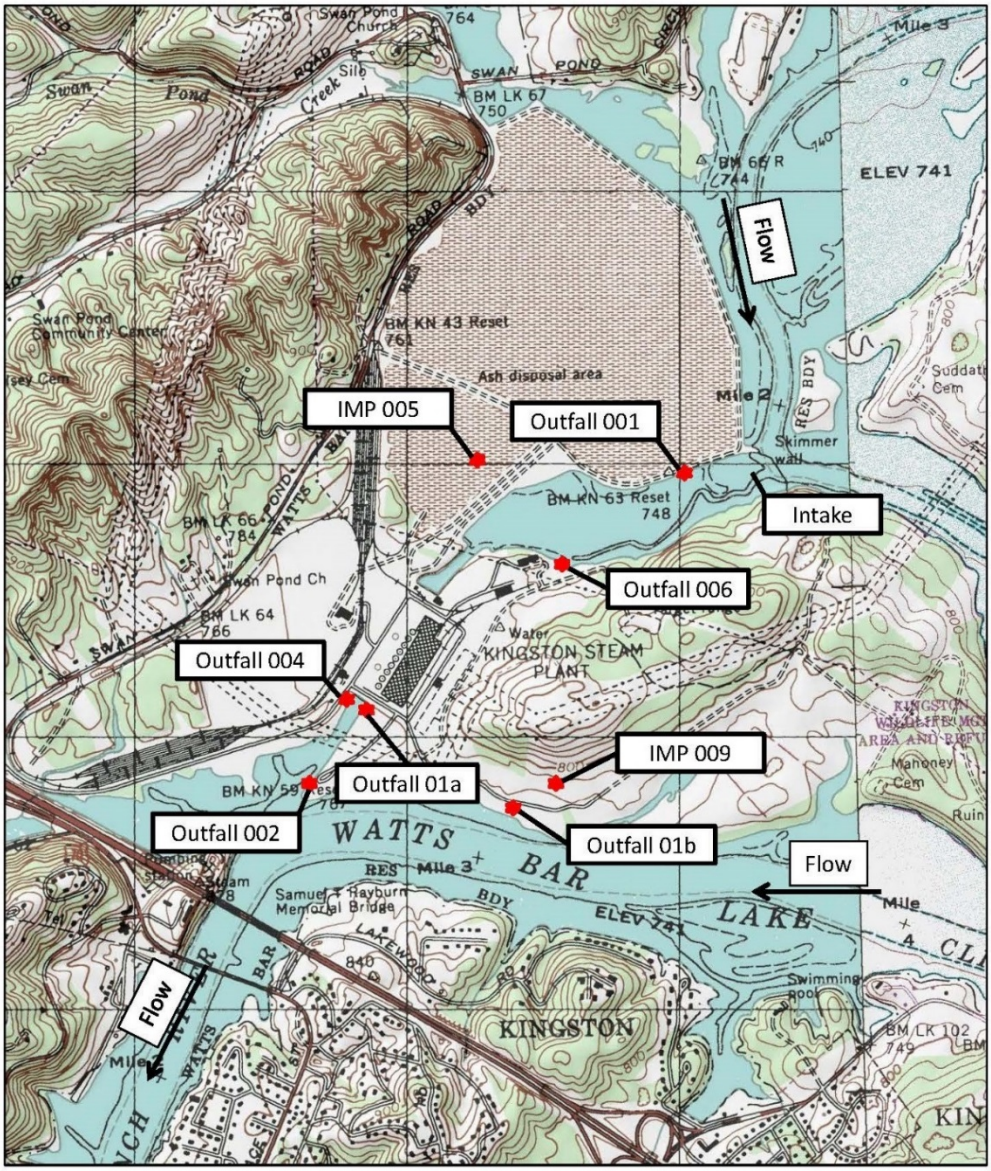

Figure 3-1. Outfalls and Internal Monitoring Points (IMP) at KIF

3.3.2 Environmental Consequences

3.3.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to the existing surface water conditions and no new impacts on surface water.

3.3.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Surface Runoff

Construction and demolition activities have the potential to temporarily affect surface water via stormwater runoff. TVA would comply with all appropriate state and federal permit requirements. An aquatic hydrologic determination (HD) survey of the proposed project documented no aquatic features that could be impacted in the project area, except for the

surrounding receiving streams. Construction activities of the associated project would be located on the plant property/borrow site. 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 pollutants to the receiving waters would be minimized. Sediment water basins and other sediment control features would be constructed to aid in on-site stormwater treatment. Either a General or an Individual Permit for Stormwater Discharges Associated with Construction Activities (TDEC 2016b) would be required for this project and this permit would require development of a project-specific SWPPP. The Tennessee Erosion and Sediment Control Handbook would be referenced to ensure BMPs are appropriate (TDEC 2012). Additional permitting for impacts to Waters of the State/Waters of the United States would not be expected due to the lack of direct aquatic features impacts.

Use of BMPs to reduce runoff into the Emory River and Watts Bar Reservoir would minimize adverse impacts and the proposed action is not anticipated to measurably affect water quality in these two water bodies.

Domestic Sewage

Workers would use portable toilets (porta potties/porta johns) and a crew wash station that would be cleaned on a regular basis. These toilets would be pumped out regularly, and the sewage would be transported by tanker truck to a publicly-owned wastewater treatment works that accepts pump out.

Equipment Washing and Dust Control

Equipment washing and dust control discharges would be handled in accordance with BMPs described in the SWPPP for water-only cleaning, and/or NPDES Permit TN0005452.

With the implementation of appropriate BMPs, only minor impacts to surrounding surface waters would be expected from borrow development and operation activities.

3.4 Groundwater

3.4.1 Affected Environment

KIF is in the Valley and Ridge Physiographic Province and is underlain by Cambrian-aged rocks of the Conasauga Group and Ordovician-aged rocks of the Knox Group. The Valley and Ridge aquifer consists of folded and faulted carbonate, sandstone, and shale. Soluble carbonate rocks and some easily eroded shales underlie the valleys in the province, and more erosion-resistant siltstone, sandstone, and cherty dolomite underlie ridges. The arrangement of the northeast-trending valleys and ridges is the result of a combination of folding, thrust faulting, and erosion. Compressive forces from the southeast have caused these rocks to yield, first by folding and subsequently by repeatedly breaking along a series of thrust faults. The result of the faulting is that geologic formations are repeated several times across the region. Carbonate-rock aquifers in the Chickamauga, Knox, and Conasauga groups are repeated throughout the Valley and Ridge Physiographic Province (Lloyd and Lyke 1995).

Groundwater is derived from infiltration of precipitation and from lateral inflow along the western boundary of the KIF reservation. Groundwater movement generally follows topography with flow in an easterly direction from Pine Ridge toward the Emory River and

Watts Bar Reservoir. The groundwater table in the proposed Borrow Site No. 3 area is located at approximately 782 feet above mean sea level (amsl).

The chemical quality of water in the freshwater parts of the Valley and Ridge aquifers is similar for shallow wells and springs. The water is hard, is a calcium-magnesium-bicarbonate type, and typically has a dissolved solids concentration of 170 mg/L or less. In places where the residuum that overlies the carbonate rocks is thin, the Valley and Ridge aquifers are susceptible to contamination by human activities (U.S. Geological Survey and TDEC 1995).

Public drinking water for Roane County comes from surface water on the Emory River. Public groundwater sources in Roane County were closed prior to December 2008, except for one, and it is located approximately 10 miles east of the project area.

3.4.2 Environmental Consequences

3.4.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to the existing groundwater conditions and no new impacts on groundwater.

3.4.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Groundwater contamination could result from sediment infiltration from stormwater runoff during construction and operation of Borrow Site No. 3. A 2019 geotechnical subsurface survey of the borrow site identified groundwater in only one location, approximately 18 feet below ground surface around a proposed stormwater impoundment on the east side of the project area (see Figure 3-2). BMPs, as described in A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority (Bowen et al. 2012), would be used to avoid contamination of groundwater in the project area. With the use of BMPs, no significant impacts to groundwater or groundwater resources are anticipated.

Figure 3-2. Groundwater Area Identified During Geotechnical Studies

3.5 Vegetation

3.5.1 Affected Environment

The KIF and surrounding areas are found within the Southern Limestone/Dolomite Valleys and the Rolling Hills Ecoregion, a subdivision of the Ridge and Valley Ecoregion. The Ridge and Valley Ecoregion occurs between the Blue Ridge Mountains to the east and the Cumberland Plateau to the west and is a relatively low-lying region made up of roughly parallel ridges and valleys that were formed through extreme folding and faulting events in past geologic time (Griffith et al. 1998). The Southern Limestone/Dolomite Valleys and the Rolling Hills Ecoregion is a heterogeneous subregion composed predominantly of limestone and cherty dolomite. Landforms are mostly undulating valleys and rounded ridges and hills, with many caves and springs. Soils vary in their productivity and land cover includes oak-hickory and oak-pine forests, pastures, intensive agriculture, and urban and industrial areas (Griffith et al. 1998).

Field surveys of the proposed borrow site were conducted in May 2019 as part of a comprehensive survey of the KIF property. The focus of these surveys was to document plant communities and infestations of invasive plants, and to search for populations of threatened and endangered plant species. Using the National Vegetation Classification System (Grossman et al. 1998), plant community types observed during field surveys can be classified as a combination of herbaceous and forest. About 70 percent of vegetated areas within the proposed borrow site are forested compared to 30 percent dominated by herbaceous vegetation. No forested areas in the proposed project area had structural characteristics indicative of old growth forest stands (Leverett 1996).

Deciduous forest is characterized by trees with overlapping crowns where deciduous species account for more than 75 percent of total canopy cover (Grossman et al. 1998). Substantial parts of the proposed borrow site supported mature second growth forest. In these areas, the average diameter of overstory trees ranged from 18-24” diameter at breast height (dbh) and the stands appeared relatively undisturbed. Sweetgum (*Liquidambar styraciflua*), yellow-poplar (*Liriodendron tulipifera*), and white ash (*Fraxinus americana*) are the most prevalent trees on lower slopes, along with redbud (*Cercis canadensis*), dogwood (*Cornus florida*), pawpaw (*Asimina triloba*), and buckeye (*Aesculus pavia*) in the shrub layer. The species composition shifts moving upslope and includes species like white oak (*Quercus alba*), hickories (*Carya tomentosa, C. glabra, C. cordiformis*), American beech (*Fagus grandifolia*), and basswood (*Tilia americana*). More disturbed areas are populated with smaller diameter trees that ranged from 6-10” dbh. These even age stands are dominated by sweetgum, yellow-poplar, and Virginia pine (*Pinus virginiana*) in the overstory and Japanese stiltgrass (*Microstegium vimineum*) in the herb layer. These areas are heavily disturbed by previous land uses.

Herbaceous vegetation, which is characterized by greater than 75 percent cover of forbs and grasses and less than 25 percent cover of other types of vegetation (Grossman et al. 1998), is found within the proposed borrow site within the open transmission line right-of-way and along road shoulders. By and large, these areas have been heavily disturbed by construction, maintenance, and operation of the KIF facility and the associated transmission lines. Common plant species include non-native brome grasses (*Bromus spp*.), autumn olive (*Elaeagnus umbellata*), Johnson grass (*Sorghum halepense*), tall fescue (*Schedonorus arundinaceus*), and sericea lespedeza (Lespedeza cuneata). Some native plants observed include dogbane (*Apocynum cannabinum*), common milkweed (*Asclepias*

syriaca), blackberry (*Rubus argutus*), yellow wingstem (*Verbesina alternifolia*), white wingstem (*Verbesina virginica*), and poverty oatgrass (*Danthonia spicata*).

EO 13112 (Invasive Species) directs TVA and other federal agencies to prevent the introduction of invasive species (both plants and animals), control their populations, restore invaded ecosystems, and take other related actions. EO 13751 (Safeguarding the Nation from the Impacts of Invasive Species) amends EO 13112 and directs actions by federal agencies to continue coordinated federal prevention and control efforts related to invasive species.

Some invasive plants have been introduced accidentally, but most were brought here as ornamentals or for livestock forage. Because these robust plants arrived without their natural predators (insects and diseases) their populations spread quickly across the landscape. No federal-noxious weeds were observed within the project area, but several non-native invasive plant species characterized by the Tennessee Invasive Plant Council as an Established Threat were observed in both herbaceous and forested habitats (Table 3-1).

Table 3-1. Invasive plant species characterized by the Tennessee Invasive Plant Council as an Established Threat observed within the footprint of proposed borrow site no. 3.

Common Name	Scientific Name
Autumn Olive	*Elaeagnus umbellata*
Chinese Lespedeza	*Lespedeza cuneata*
Chinese Privet	*Ligustrum sinense*
Japanese Honeysuckle	*Lonicera japonica*
Japanese Stilitgrass	*Microstegium vimineum*
Johnson grass	*Sorghum halepense*

3.5.2 Environmental Consequences

3.5.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No.2 3. Any changes occurring in the vegetation on site would be the result of other natural or anthropogenic factors and would not be the result of adoption of Alternative A.

3.5.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Adoption of Alternative B would result in clearing and grading of the proposed borrow site in phases. A substantial part of the proposed borrow site has been heavily disturbed by previous actions at KIF and does not support intact native plant communities. These areas are dominated by low diversity forest and non-native, invasive species and possess no conservation value. The mature forest that would be impacted does not represent a unique or rare plant community and the habitat is common and well represented throughout the region.

Impacts to vegetation may be permanent, but the vegetation found on much of the site is comprised of non-native weeds and early successional plants that have no conservation value. Approximately 28.79 acres of deciduous forest, 9.09 acres of mixed evergreen and deciduous forest, 44.98 acres of herbaceous vegetation, and 0.1 acre sparsely vegetated would be affected. Some of these areas overlap such as deciduous forest areas may have an underlayer of herbaceous vegetation which is why total acreage appears to be greater

than the actual 62-acre Borrow Site No. 3. The permanent conversion of these habitats to herbaceous vegetation after reclamation of the borrow site would not result in appreciable changes to the vegetation of the region. As a result, implementation of Alternative B would not significantly impact vegetation of the region.

3.6 Wildlife

3.6.1 Affected Environment

Terrestrial habitat within the proposed Borrow Site No.3 includes herbaceous vegetation (14.7 acres) along roads and in the transmission line rights-of-ways and forest (35.16 acres).

Herbaceous fields that have been heavily disturbed by activities associated with the KIF and transmission line corridors offer little suitable habitat for rare wildlife species but can be used by common species. Birds that utilize these areas include chipping sparrow, field sparrow, grasshopper sparrow, red-tailed hawk, red-winged blackbird, and white-throated sparrow (National Geographic 2002). Mammals that can be found in these areas include the common mole, coyote, ground hog, least shrew, white-footed mouse, and white-tailed deer (Whitaker 1996). Reptiles that may use these habitats in this region include black racer, black rat snake, corn snake, eastern kingsnake, and eastern milksnake (Gibbons and Dorcas 2005).

Birds that utilize small patches of disturbed forest and forest edges adjacent to industrialized areas include American crow, American robin, American goldfinch, blue jay, Carolina chickadee, Carolina wren, eastern bluebird, eastern towhee, indigo bunting, osprey, red-headed woodpecker, tufted titmouse, northern cardinal, northern mockingbird, red-shouldered hawk and yellow breasted chat (National Geographic 2002). Mammals found in and around these industrialized areas include common raccoon, eastern gray squirrel, hispid cotton rat, and Virginia opossum (Whitaker 1996). Common amphibian and reptile species also use similarly disturbed habitats and include American toad, eastern box turtle, eastern garter snake, and Fowler's toad (Powel et al. 2016).

Most of the proposed borrow site is comprised of mature, deciduous forest. Species composition as described in Section 3.5 includes hickories, sweetgum, yellow-poplar, white ash and white oak. This forest is part of a larger block of forest across the KIF site but is fragmented by existing transmission line rights-of-ways and roads. Birds that would utilize this forested habitat include barred owl, black-capped chickadee, blue jay, brown thrasher, common yellow-throat, eastern towhee, eastern wood-peewee, hairy woodpecker, northern cardinal, pileated woodpecker, turkey, white-throated sparrow, and yellow warbler (National Geographic 2002). Mammals likely found in this forest are similar to those found in the disturbed forest listed above with the potential addition of several species including bobcat, coyote, and red fox (Whittaker 1996). Amphibians and reptiles potentially found here include American toad, corn snake, eastern box turtle, eastern kingsnake, Fowler's toad, gray treefrog, and smooth earth snake (Gibbons and Dorcas 2005).

Review of the TVA Regional Natural Heritage database in August 2019 indicates that no records of caves exist within 3 miles of the proposed borrow site. Five heron rookeries have been reported within 3 miles of the proposed borrow site, though only one of these is still extant and is approximately 1.1 miles away. This heronry has been taken over by double-crested cormorants in recent years. In addition, 11 osprey nests have been reported within 3 miles of the project and four additional nests were observed during field reviews of

the KIF in July 2019. The closest of these nests is approximately 1,300 feet from the proposed borrow site and was active in 2019.

Review of the USFWS's Information for Planning and Consultation website in August 2019 resulted in five migratory bird species of conservation concern identified as having the potential to occur in the project action area (bald eagle, bobolink, rusty blackbird, woodthrush, yellow-bellied sapsucker). Suitable habitat exists for all of these species except the rusty blackbird exists in the action area. Wood thrush and yellow-bellied sapsucker have been observed in nearby forest fragments. No bald eagles or their nests have been observed at KIF during recent site visits, but they have been seen foraging over the Clinch and Emory Rivers in past years.

3.6.2 Environmental Consequences

3.6.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to existing habitat conditions and no new impacts on wildlife.

3.6.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Under the Action Alternative, TVA would construct and operate a new 62-acre borrow site. Actions taking place within the project footprint would remove wildlife habitat and introduce additional noise and vehicular traffic in adjacent areas. This would result in the displacement of any wildlife (primarily common, habituated species) currently using the area. Direct effects to some individuals may occur if those individuals are immobile during the time of habitat removal. This could be the case if activities took place during breeding/nesting seasons. Habitat removal likely would disperse mobile wildlife into surrounding areas to find new food sources, shelter sources and to reestablish territories. Due to the amount of similarly suitable habitat in areas immediately adjacent to and close by on the KIF peninsula, impacts to populations of common wildlife species likely would be negligible Following the proposed action, those species of animal that can utilize reseeded areas are expected to return to the borrow site.

The closest osprey nest is approximately 1,300 feet from the borrow site and the closest wading bird colony is approximately 1.1 miles away. Due to the distance from construction and operation activities, neither of these species is expected to be impacted directly or indirectly.

Some migratory birds of conservation concern identified by the USFWS may be impacted by the proposed action. Wood thrush and yellow-bellied sapsucker have been observed in mature forests on the KIF peninsula near the project action area. It is expected that these species forage and nest (wood thrush only) in the action area. While Bobolink has not been observed on the KIF site, moderately suitable habitat for this species may occur in the action area in herbaceous habitats. Direct effects to individual wood thrushes would be avoided if tree removal takes place between October 15 and March 31 (outside of the nesting season when this species is residing in Central America or starting to migrate north). Direct effects could occur to yellow-bellied sapsuckers if tree clearing occurs during the winter, but it is expected that individuals disturbed by tree clearing actions would flush to adjacent habitats. Impacts could be long-term because of the permanent loss of forested habitat within the proposed borrow site. Bobolinks nest on the ground in herbaceous habitats and the habitat found in the project action area is only moderately suitable for this species. Individual bobolinks that do not flush to adjacent habitats could be directly impacted by vegetation and soil removal as well as vehicles driving through herbaceous

habitats during nesting season. If a suitable seed mix suitable for this species is used to reseed this area it is possible that the project area may once again become suitable for this species several years after project actions are complete. Due to the ability of some species to flush to adjacent habitats, the relative abundance of similarly suitable habitat nearby, and the relatively small size of the area of disturbance, it is expected that impacts to populations of these migratory bird species would be negligible.

3.7 Threatened and Endangered Species

3.7.1 Affected Environment

In the United States, species may be federally listed as threatened or endangered under the ESA, which affords broad protections to the listed species. A species' status is critically reviewed prior to listing and, once listed, federal agencies are required to follow structured procedures to conserve endangered and threatened species when taking a federal action that may jeopardize these species. The State of Tennessee also requires separate protections for species considered endangered or of special concern within the state.

Plants

A July 2019 query of the TVA Heritage database indicated that two federally listed and fifteen state-listed plant species are known from within 5 miles of the proposed project area. Two other federally listed plants have been previously reported from Roane County, Tennessee, where the project would be located (Table 3-2). A field review of the KIF plant site indicates that no habitat for federal or state-listed plant species occurs in the potential affected area. Much of the habitat within the study area has been severely degraded and is populated primarily with non-native species. Some forested habitats are relatively intact, but do not contain habitat for state or federally listed plants. No designated critical habitat for plants occurs in the proposed project area.

Table 3-2. Plant species of conservation concern previously reported from within 5 miles of the KIF site and federally listed plants known from Roane County, Tennessee.

Common Name	Scientific Name	Federal Status[2]	State Status[2]	State Rank[3]
PLANTS				
Earleaf Foxglove	*Agalinis auriculata*	-	E	S2
American Hart's-tongue Fern[4]	*Asplenium scolopendrium* var. *americanum*	T	E	S1
Spreading False-foxglove	*Aureolaria patula*		S	S3
Cumberland Rosemary	*Conradina verticillata*	T	T	S3
Tall Larkspur	*Delphinium exaltatum*	-	E	S2
Northern Bush-honeysuckle	*Diervilla lonicera*	-	T	S2
Mountain Bush-honeysuckle	*Diervilla sessilifolia* var. *rivularis*	-	T	S2
Western Wallflower	*Erysimum capitatum*	-	E	S1S2
Schreber Aster	*Eurybia schreberi*	-	S	S1

Common Name	Scientific Name	Federal Status[2]	State Status[2]	State Rank[3]
PLANTS				
Naked-stem sunflower	*Helianthus occidentalis*	-	S	S2
Fetter-bush	*Leucothoe racemosa*	-	T	S2
Slender Blazing-star	*Liatris cylindracea*	-	T	S2
Mountain Honeysuckle	*Lonicera dioica*	-	S	S2
Large-flowered Barbara's-buttons	*Marshallia grandiflora*	-	E	S2
Monkey-face Orchid[4]	*Platanthera integrilabia*	T	END	S2S3
Heller's Catfoot	*Pseudognaphalium helleri*	-	S	S2
Prairie Goldenrod	*Solidago ptarmicoides*	-	E	S1S2
Virginia Spiraea	*Spiraea virginiana*	T	E	S2
Northern White Cedar	*Thuja occidentalis*	-	S	S3

[1] Source: TVA Natural Heritage Database, queried July 2019
[2] Status Codes: E = Listed Endangered; S = Special Concern; T = Listed Threatened.
[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] Federal-listed species occurring within the county where work would occur, but within 5 miles of the project area

Terrestrial Species

Review of the TVA Natural Heritage Project Database in August 2019 indicated that there are no records of Tennessee state-listed terrestrial animal species within 3 miles of the proposed borrow site. Historical records for the piping plover and red knot at KIF ash ponds were discussed in the KIF Dewatering Supplemental EA (TVA 2016), but habitat for these species is no longer present at the facility following ash pond closures; thus these species will not be discussed further. Two federally listed terrestrial animal species (gray bat and northern long-eared bat) have also been reported from Roane County, Tennessee, in more recent years. The USFWS determined that the federally listed Indiana bat also has the potential to occur throughout the state of Tennessee. Thus, impacts to these species are evaluated (Table 3-3).

Table 3-3. Federally and state-listed terrestrial animal species located within Roane County, Tennessee, and other species of concern documented within 3 miles of the project footprint at KIF.

Common Name	Scientific Name	Federal Status[1]	State Rank[2]
BIRDS			
Bald eagle[3]	*Haliaeetus leucocephalus*	DM	D(S3)
MAMMALS			
Gray bat[3]	*Myotis grisescens*	LE	E(S2)
Indiana bat[4]	*Myotis sodalis*	LE	E(S1)
Northern long-eared bat[3]	*Myotis septentrionalis*	LT	T(S1S2)

Source: TVA Regional Natural Heritage Database and USFWS IPaC, extracted 8/23/2019.
[1] Status Codes: D = Deemed in need of management; DM = Delisted, recovered, and still being monitored; E = Endangered; LE = Listed Endangered; LT = Listed Threatened; T = Threatened.
[2] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable.
[3] Federally listed or protected species known from Roane County, Tennessee, but not within 3 miles of the project footprint.
[4] Federally listed species that is not yet known from Roane County, Tennessee, but is thought to occur statewide.

Bald eagles are protected under the Bald and Golden Eagle Protection Act (USFWS 2013). This species is associated with larger mature trees capable of supporting its massive nests. These are usually found near larger waterways where the eagles forage (USFWS 2007). Records document the occurrence of four bald eagle nests in Roane County, Tennessee, however only two of these records are extant. The nearest nesting record is approximately 5.2 miles from the project footprint. Bald eagles have been seen foraging over the Emory River adjacent to the KIF in the past. However, no bald eagles or bald eagle nests were observed during field reviews across the KIF plant site in July 2019. Potential nesting trees occur in the mature forested section of 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). Bats disperse over bodies of water at dusk where they forage for insects emerging from the surface of the water (Tuttle 1976b). Gray bats have been reported from acoustic recordings, from a cave, and from mist-net captures in Roane County. The closest of these records is an acoustic recording approximately 6.1 miles from the proposed borrow site. The nearest recorded cave is greater than 3 miles from the proposed borrow site. Foraging habitat and sources of drinking water exist in the Emory and Clinch Rivers near the project action area.

Indiana bats hibernate in caves in winter and use areas around them for swarming (mating) in the fall and staging in the spring, prior to migration back to summer habitat. During the summer, Indiana bats roost under the exfoliating bark of dead snags and living trees in mature forests with an open understory and a nearby source of water (Pruitt and TeWinkel 2007, Kurta et al. 2002). Indiana bats are known to change roost trees frequently throughout the season, while still maintaining site fidelity, returning to the same summer roosting areas in subsequent years (Pruitt and TeWinkel 2007). No records of Indiana bat are known from Roane County, Tennessee. The closest Indiana bat record is a summer mist net capture on Oak Ridge National Laboratory property approximately 16.0 miles away. The closest known Indiana bat hibernacula is approximately 23.4 miles away.

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 (typically greater than 3 inches dbh). Roost selection by northern long-eared bats is similar to that of Indiana bats, but 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). There is one known northern

long-eared bat hibernacula in Roane County, approximately 9.9 miles away. The closet record of northern long-eared bats is from a mist-net survey approximately 8.3 miles away.

No caves are known within 3 miles and no known caves or suitable winter roosting structures exist on the project footprint. Based on the 2019 Range-Wide Indiana Bat Survey Guidelines (USFWS 2019), TVA has determined that the mature deciduous forest that covers 35.16 acres of the site is suitable habitat for summer roosting Indiana bat and northern long-eared bat. Snags, white oaks, and other species with suitable cracks and crevices were observed in the action area. This forest offers foraging habitat for these two bat species as well. Additional foraging habitat and sources of drinking water exist in the Emory and Clinch Rivers near the project action area.

Aquatic Species

The TVA Regional Natural Heritage Project database and the USFWS IPaC database (assessed August 8, 2019) indicated that 20 federally listed endangered, one federally listed threatened, and six state-listed aquatic animals are currently known from Roane County and/or within the 10-digit HUC Emory River and Clinch River watersheds (Table 3-4).

Table 3-4. Records of federal and state-listed aquatic animal species within the Emory River (0601020804) and Clinch River (0601020704) 10-digit HUC watersheds (TVA Request ID 34623).[1]

Common Name	Scientific Name	Element Rank[2]	Federal Status[3]	State Status (rank[4])
FISH				
Ashy Darter	*Etheostoma cinereum*	E		E (S2S3)
Blue Sucker	*Cycleptus elongatus*	H?		T (S2)
Highfin Carpsucker	*Carpiodes velifer*	H?		D (S2S3)
Lake Sturgeon	*Acipenser fulvescens*	E		E (S1)
Longhead Darter	*Percina macrocephala*	E		T (S2)
Spotfin Chub	*Erimonax monachus*	E	LT	T (S2)
Tangerine Darter	*Percina aurantiaca*	E		D (S3)
Tennessee Dace	*Chrosomus tennesseensis*	E		D (S3)
MUSSELS				
Alabama Lampmussel	*Lampsilis virescens*	E	LE	E (S1)
Cracking Pearlymussel[5]	*Hemistena lata*	X	LE	E (S1)
Cumberland Bean[5]	*Villosa trabalis*		LE	E (S1)
Dromedary Pearlymussel[5]	*Dromus dromas*	X	LE	E (S1)
Fanshell	*Cyprogenia stegaria*	H	LE	E (S1)
Fine-rayed Pigtoe	*Fusconaia cuneolus*	H	LE	E (S1)
Orange-foot Pimpleback	*Plethobasus cooperianus*	H	LE	E (S1)
Oyster Mussel	*Epioblasma capsaeformis*	E	LE	E (S1)

Common Name	Scientific Name	Element Rank[2]	Federal Status[3]	State Status (rank[4])
Pink Mucket	*Lampsilis abrupta*	H	LE	E (S2)
Purple Bean	*Villosa perpurpurea*	E	LE	E (S1)
Ring Pink	*Obovaria retusa*	H	LE	E (S1)
Rough Pigtoe[5]	*Pleurobema plenum*	X	LE	E (S1)
Rough Rabbitsfoot[5]	*Quadrulla cyclindrica*		LE	E (S2)
Sheepnose	*Plethobasus cyphyus*	E	LE	E (S2S3)
Shiny Pigtoe Pearlymussel	*Fusconaia cor*	H	LE	E (S1)
Slabside Pearlymussel	*Pleuronaia dolabelloides*	H?	LE	E (S2)
Spectaclecase	*Cumberlandia monodonta*	H	LE	E (S2S3)
Turgid Blossom Pearlymussel[5]	*Epioblasma turgidula*	X	LE	E (SX)
White Wartyback	*Plethobasus cicatricosus*	H	LE	E (S1)
SNAILS				
Anthony's River Snail[5]	*Athearnia anthonyi*	X	LE	E (S1)

[1] Source: TVA Natural Heritage Database and USFWS IPaC, queried on 8/8/2019
[2] Heritage Element Occurrence Rank; E = extant record ≤25 years old; H=historical record ≥ 25 years old; H?=possibly historical; X = Extirpated
[3] Status Codes: LE or E = Listed Endangered; LT or T = Listed Threatened; D = Deemed In Need of Management
[4] State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; SX = Extirpated
[5] Source: IPaC Database, queried on 8/8/2019

3.7.2 Environmental Consequences

3.7.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to existing habitat conditions and no new impacts on threatened and endangered species.

3.7.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Plant Species

Adoption of Alternative B would not result in impacts to state or federally listed plant species because no species are present on-site. TVA property within the proposed action area is comprised of some relatively intact forested habitats and heavily disturbed areas of forest and herbaceous vegetation. These habitats do not possess the characteristics needed to support state and federally listed plants that have been previously reported from near KIF. Adoption of Alternative B would result in substantial disturbance and alterations within the proposed borrow site, but those affects would not impact state or federally listed plant species.

Terrestrial Species

Impacts to four federally listed or protected species were analyzed due to the potential for the species to occur in the project area. Of these, three federally listed species (gray bat, Indiana bat, and northern long-eared bat) have the potential to be impacted by the proposed actions. No bald eagle nests would be impacted as none exist within 5 miles of the action area. Borrow site activities would be in compliance with the National Bald Eagle Management Guidelines. Bald eagles would not be significantly impacted by proposed actions.

No caves or other hibernacula for gray bat, Indiana bat or northern long-eared bat exist in the project footprint or would be impacted by the proposed project. Approximately 35.16 acres of suitable summer roosting habitat for Indiana bat and northern long-eared bat occurs in the project area. This wooded area also offers foraging habitat for Indiana and northern long-eared bat. The nearby Emory and Clinch Rivers offer additional foraging habitat and sources of drinking water for all three bat species. While efforts would be made to minimize impacts to tree roosting Indiana and northern long-eared bats by removing trees between October 15 and March 31, tree removal could occur at any time of year.

Several activities associated with the proposed project 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) and completed in April 2018. For those activities with potential to affect bats, TVA committed to implementing specific conservation measures. These activities and associated conservation measures are identified on pages 5 and 6 of the TVA Bat Strategy Project Screening Form (see Appendix A) and would be reviewed/implemented as part of the proposed project. With the implementation of the identified conservation measures, Alternative B is not anticipated to have a significant impact on threatened and endangered bat species.

Aquatic Species

No water features were documented within the footprint of the proposed borrow site, but Watts Bar Reservoir, Emory River, and Clinch River occur nearby. All construction and operation activities would be done in accordance with BMPs, as outlined in documents such as the Tennessee Erosion and Sediment Control Handbook, to avoid potential impacts to nearby water features. These BMPs are designed to prevent or greatly reduce the amount of suspended solids from leaving the site and entering adjacent waters. With proper implementation of BMPs, no impacts to threatened and endangered aquatic species known to occur within the vicinity of the proposed borrow site would occur.

3.8 Solid and Hazardous Waste

3.8.1 Affected Environment

Solid waste consists of a broad range of materials that include refuse, sanitary wastes, contaminated material, scrap metals, nonhazardous wastewater treatment plant sludge, nonhazardous air pollution control wastes, various nonhazardous industrial waste, and other materials (solid, liquid, or contained gaseous substances). Solid wastes are generally managed through recycling and local landfills.

Hazardous wastes consist of materials that may be harmful to human health or the environment due to their toxicity, reactivity, ignitability, or corrosivity. Hazardous materials and management of these materials are regulated under a variety of federal laws including

the Occupational Safety and Health Administration standards; Emergency Planning and Community Right to Know Act; RCRA; the Comprehensive Environmental Response, Compensation, and Liability Act; and the Toxic Substances Control Act. The federal laws regulating hazardous wastes are under RCRA and its implementing regulations codified in Title 40 CFR Parts 260-280. The regulations define what constitutes a hazardous waste and establishes a “cradle to grave” system for management and disposal of hazardous wastes. KIF is considered a small quantity generator by TDEC for generation of hazardous waste. The types of hazardous waste currently generated onsite include small quantities of waste paint; waste paint solvents; mercury contaminated debris; sandblasting, scraping, paint chips; solvent rags due to cleaning electric generating equipment; Coulomat (used as moisture removal from oil); and liquid-filled fuses.

3.8.2 Environmental Consequences

3.8.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not construct or operate Borrow Site No. 3. Therefore, no hazardous or solid substances would be generated from construction or operation activities.

3.8.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Trash and any other solid wastes generated from construction and operation activities would be managed as required by applicable state regulations in conformity with TVA’s environmental procedures and BMPs. Solid waste generated during borrow site construction and operation are expected to be minimal. Any wastes associated with borrow site activities would be managed in accordance with the solid and hazardous waste rules and regulations of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12, respectively).

During the development of Borrow Site No. 3 phases, some vegetative debris and waste would be generated due to clearing, stripping, and grading activities. Any debris, primarily cleared vegetation, would be disposed of in accordance with all federal, state, and local regulations. TVA does not burn brush or debris.

No hazardous wastes would be generated and KIF’s designation as a small quantity generator would not change as a result of implementing the proposed action. Oily wastes generated during servicing of heavy equipment would be managed by TVA-approved vendors who service on-site equipment using appropriate self-contained used oil reservoirs. Appropriate spill prevention, containment, and disposal requirements for equipment/vehicle spills or releases would be implemented to protect workers and the environment. Therefore, no impacts from hazardous wastes are anticipated.

3.9 Visual Resources

3.9.1 Affected Environment

This assessment provides a review of the visual attributes of existing scenery, along with the anticipated impacts resulting from the proposed action. The classification criteria used in this analysis are adapted from a scenic management system developed by the U.S. Forest Service and integrated with planning methods used by TVA. The classification process is also based on the methodology and descriptions adapted from Landscape Aesthetics, A Handbook for Scenery Management, Agriculture Handbook Number 701 (U.S. Forest Service 1995).

Scenic resources within a landscape are evaluated based on several factors that include scenic attractiveness, integrity and visibility. Scenic attractiveness is a measure of scenic quality based on human perceptions of intrinsic beauty as expressed in the forms, colors, textures and visual composition of each landscape. Scenic integrity is a measure of scenic importance based on the degree of visual unity and wholeness of the natural landscape character during human alteration. The varied combinations of natural features and human alterations both shape landscape character and help define their scenic importance. The subjective perceptions of a landscape's aesthetic quality and sense of place are dependent on where and how it is viewed. For this analysis, the affected environment is the borrow site, as well as the physical and natural features of the landscape around it.

Views of the landscape are described in terms of what is seen in the foreground, middle ground, and background distances. In the foreground, an area within 0.5 mile of the observer, details of objects are easily distinguished. In the middle ground, from 0.5 mile to 4 miles from the observer, objects may be distinguishable but their details are weak and tend to merge into larger patterns. In the distant part of the landscape, the background, details and colors of objects are not normally discernible unless they are especially large, standing alone, or have a substantial color contrast. In this assessment, the background is measured as 4 to 10 miles from the observer. Visual and aesthetic impacts associated with an action may occur as a result of the introduction of a feature that is not consistent with the existing viewshed. Consequently, the visual character of an existing site is an important factor in evaluating potential visual impacts.

The visual landscape at and around KIF has changed over the last 65 years. The power plant, smokestacks, transmission lines, ash disposal area, and the landfill Phases 1 and 2 have continued to change the viewshed. Other development, such as the Interstate 40 bridge (Samuel T. Hayburn Memorial Bridge) over the Clinch River and the residential areas along the banks of the Emory and Clinch Rivers, have also modified the landscape.

The proposed borrow site is on a high point and includes wooded areas, transmission lines, and access roads. Viewers that would likely have direct views of the southeast portion of the KIF property, where Borrow Site No. 3 is located, include motorists traveling along Interstate 40 near the Samuel T. Rayburn Memorial Bridge, recreational users along the Clinch and Emory Rivers, KIF employees and visitors, and area residents along the Watts Bar Reservoir shoreline.

The potential impacts to the visual environment from a given action are assessed by evaluating the potential for changes in the scenic value class ratings based upon landscape scenic attractiveness, integrity, and visibility. Sensitivity of viewing points available to the public, their viewing distances and visibility of the proposed action are also considered during the analysis. These measures help identify changes in visual character based on commonly held perceptions of landscape beauty and the aesthetic sense of place. The extent and magnitude of visual changes that could result from the proposed facility were evaluated based on the process and criteria outlined in the U.S. Forest Service scenic management system. Based on the criteria used for this analysis, the overall scenic class for the affected environment is fair at the proposed borrow site.

3.9.2 Environmental Consequences

3.9.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to existing scenery and no new impacts on scenic resources.

3.9.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Development of the proposed borrow site would change the scenic integrity of the landscape because forested and herbaceous areas would be cleared and maintained free of vegetation while borrow material is excavated. To minimize visual impacts from tree, vegetation, and soil removal, TVA determined that it would not clear the entire 62 acres at one time but operate the borrow site in phases, 5 to 10 acres at a time. The scenic attractiveness and integrity in the foreground would be reduced to low, but there are relatively few viewers in this area (KIF workers and visitors). Visual impacts would occur to motorists traveling along I-40 near the Samuel T. Rayburn Memorial Bridge, recreational users along the Clinch and Emory Rivers, employees and visitors to the plant, and area residents. Most of these viewers would be between 0.5 and 4 miles from the proposed borrow site and thus most impacts would occur in the middle ground. The region's rolling topography is expected to preclude views of the proposed borrow site (and associated impacts) for viewers further than 4 miles away.

Visual impacts would occur over the long term. Based on current projections, the operational life of Borrow Site No. 3 is expected to be approximately 20 years. Once a phase has been exhausted, TVA would regrade and re-vegetate the area, thereby reducing visual impacts. As a result of phased development and revegetation, visual impacts under Alternative B would occur throughout the life of Borrow Site No. 3 and are anticipated to be minor.

3.10 Cultural and Historic Resources

3.10.1 Affected Environment

Federal agencies are required by the National Historic Preservation Act (NHPA) and NEPA to consider the possible effects of their undertakings on historic properties. The term "undertaking" means any project, activity, or program that is funded under the direct or indirect jurisdiction of a federal agency or is licensed, permitted, or assisted by a federal agency. Historic properties are cultural resources (archaeological sites, districts, buildings, structures, objects, and locations of important historic events) that are included or considered eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the National Park Service. To be considered a historic property a cultural resource must meet one of four criteria: (a) association with important historical events; (b) association with the lives of significant historic persons; (c) having distinctive characteristics of a type, period, or method of construction, or representing the work of a master, or having high artistic value; or (d) having yielded or having the potential to yield information important in history or prehistory. It must also possess integrity of location, design, setting, materials, workmanship, feeling, and association.

An agency may fulfill its statutory obligations under NEPA by following the process outlined in 36 CFR Part 800, regulations implementing NHPA. This process consists of four major tasks: (1) initiation (defining the undertaking and the area of potential effects [APE], and identifying the consulting parties); (2) identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties); (3) assessment of adverse effects (determining whether the undertaking would damage the qualities that make the property eligible for the NRHP); and (4) resolution of adverse effects (by avoidance, minimization, or mitigation). Throughout the process the agency must consult with the appropriate State Historic Preservation Officer (SHPO), federally-recognized Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

If the agency determines (in consultation) that the undertaking's effect on a historic property within the APE would diminish any of the qualities that make the property eligible for the NRHP, the effect is said to be adverse. Examples of adverse effects would be ground disturbing activity in an archaeological site, or erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting. Federal agencies are required to resolve the adverse effects of their undertakings on historic properties. Resolution may consist of avoidance (such as choosing a project alternative that does not result in adverse effects), minimization (such as redesign to lessen the effects), or mitigation. Adverse effects to archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic structures sometimes involves thorough documentation of the structure by compiling historic records, studies, and photographs. Agencies are required to consult with SHPOs, tribes, and others throughout the Section 106 process, prior to expending any funds on the undertaking, and to take their views into account when planning the undertaking.

An undertaking's APE is defined as the geographic area or areas within which the undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist.

3.10.2 Environmental Consequences

3.10.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would have no undertaking; therefore Section 106 of the NHPA would not be triggered and there would be no APE.

3.10.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Area of Potential Effects (APE)

The proposed actions under Alternative B qualify as an undertaking with potential to affect historic properties. The APE for the proposed Borrow Site No. 3 project consists of all areas where ground disturbance would result from the undertaking (the project footprint), plus any areas within a half-mile radius from which the borrow site would be visible, where visual effects to above-ground historic properties could occur (the viewshed). The project footprint consists of the 62-acre proposed soil borrow site. This site is mostly covered by a thick stand of vegetation, with two cleared transmission line corridors and an access road. The viewshed consists of areas within a half-mile radius outside the project footprint, from which the borrow site would be visible. Most land in the viewshed has been cleared for transmission line corridors or for activities associated with the operation and maintenance of KIF. The viewshed is based on an analysis of aerial photography and current satellite imagery and reflects areas within a half-mile of the project footprint in which views to the borrow site would not be blocked by vegetation or buildings.

Above-ground Resources

TVA examined existing data sources to identify any above-ground historic properties, such as structures or monuments, in the APE. This background study included historic maps, current and historic imagery from satellites and aerial photography, records available from the NRHP, the Tennessee Historic Commission online viewer, and previous cultural resources surveys. Almost all areas within the viewshed are part of the KIF reservation.

One exception is a very small part of the shoreline opposite the KIF side of the Emory River, which is private property within a subdivision. Views to the project from that property would be partially obscured by six steel transmission line towers, each of which supports three 161-kV conductors (steel cables carrying electricity). The towers range in height from 56 to 124 feet. The affected private property contains one structure, a single-family home. Based on examination of historic maps (USGS 7.5-minute Elverton Quadrangle, 1935, 1940, 1953, and 1968 editions) this structure post-dates 1968 and does not meet the minimum age criterion to be considered a historic structure.

No resources listed on the NRHP are in the APE and the Tennessee Historical Commission Online Viewer shows no inventoried properties in the APE. TVA's circa 1940 land acquisition maps for this area show four different farmsteads within the half-mile radius located to the north, west, and south of the project footprint. Each of these consists of a one-story frame house and associated outbuildings such as barns, cisterns, sheds, and garages. The maps also show an isolated one-story frame house located east of the footprint on the property of E. H. Cochran. None of these resources is extant; TVA demolished them prior to beginning construction on KIF. The only extant structures within the viewshed are those associated with KIF and the associated transmission system. TVA found previously that KIF does not meet the criteria of eligibility for the NRHP, in consultation with the Tennessee SHPO, who agreed by letter dated March 10, 2010. The associated transmission towers date to the time of KIF construction and are not of a type considered eligible for the NRHP.

Parts of the viewshed on the KIF reservation were included in a prior cultural resources survey (McKee and Karpynec 2009), which did not identify any NRHP-eligible above-ground resources in the current APE. Concurrent with this EA, TVA also carried out a historic architectural survey in connection with a proposed waste water treatment (WWT) facility, which would be in and around the powerhouse area. The survey area includes much of the western half of the Borrow Site No. 3 viewshed. The survey did not identify any above-ground resources within the Borrow Site No.3 APE.

Based on these various sources of information, TVA finds there are no above-ground cultural resources in the APE that are listed or eligible for listing in the NRHP under Alternative B.

Archaeological Sites

One prior archaeological survey included a small portion of the project footprint (Wild 2005). TVA performed that survey in connection with the then-proposed flue gas desulfurization (FGD, or "scrubber") project. The survey identified no archaeological sites in the current project footprint, but it was limited to a small part of the footprint. To identify any archaeological sites that could be affected by the current undertaking TVA carried out an archaeological survey of the entire 62-acre project footprint (Ross and Bradbury 2019). Background research carried out at the Tennessee Division of Archaeology prior to the fieldwork indicated that no archaeological sites had been identified in the project footprint previously. One structure (probably a rural house) is shown just outside the northern project limit, in the APE, on historic maps dating to 1935 and 1941, along the south bank of Swan Pond Creek. The structure is not depicted on later maps and was likely demolished before 1952. The survey included systematic pedestrian survey supplemented with systematic shovel testing. Many areas within the APE have low probability for archaeological sites due to slopes greater than 10%, exposed bedrock (lack of soils), or

past disturbance. The survey did not identify any archaeological sites. Based on this survey TVA found that no archaeological sites are in the project footprint. Pursuant to 36 CFR Part 800.4 TVA consulted with the Tennessee SHPO, who agreed with TVA's finding (letter dated June 5, 2019); none of the consulted tribes objected to the undertaking or identified resources of concern in the APE. TVA also consulted with the following federally recognized Indian tribes regarding properties within the proposed project's APE that may be of religious and cultural significance to them and eligible for the NRHP: 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, Shawnee Tribe, Thlopthlocco Tribal Town, and the United Keetoowah Band of Cherokee Indians in Oklahoma. No tribe objected to the undertaking or identified resources of concern in the APE.

There are no above-ground historic architectural properties in the APE that are listed or eligible for listing in the NRHP. There also are no archaeological sites in the project footprint portion of the APE. Therefore, Alternative B would result in no effects on NRHP-listed or –eligible archaeological sites.

3.11 Natural Areas

3.11.1 Affected Environment

Natural areas include managed areas, ecologically significant sites, and Nationwide Rivers Inventory streams. This section addresses natural areas within 5 miles of KIF.

This particular area is especially rich in natural areas due to its proximity to the Oak Ridge National Laboratory and its associated reservation. Additionally, TVA has designated multiple sites within the 5-miles radius as habitat protection areas. The TVA Natural Heritage database indicated that 20 natural areas occur within 5 miles of KIF. These areas are shown in Table 3-5.

Table 3-5. Natural areas within 5 miles of KIF.

MANAGED AREA NAME	MANAGED AREA TYPE	DISTANCE FROM KIF
RAYBURN BRIDGE TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	0.39
STOWE BLUFF TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	1.31
SUGAR GROVE TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	1.66
SOUTHWEST POINT PARK	Park	2.21
WETLAND RESERVE PARCEL	Wetland Reserve Parcel	2.50
WALDEN RIDGE PARTNERS LLC CONSERVATION EASEMENT	Conservation Easement	3.45
MCGLOTHLIN-LARGEN WILDLIFE MANAGEMENT AREA	Wildlife Management Area	3.81
RILEY CREEK ISLANDS TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	3.92
LONG ISLAND TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	4.45
WATTS BAR WILDLIFE MANAGEMENT AREA - LONG ISLAND	Wildlife Management Area	4.45
WATTS BAR STATE WILDLIFE MANAGEMENT AREA	Wildlife Management Area	4.47
MARNEY BLUFF TVA HABITAT PROTECTION AREA	TVA Habitat Protection Area	4.66
CAMPBELL BEND BLUFFS AND FOREST - OAK RIDGE RESERVATION	Preserve	4.74
DESIGNATED CRITICAL HABITAT - SPOTFIN CHUB - LITTLE TENNESSEE RIVER	Designated Critical Habitat	4.79
EMORY RIVER - NATIONAL RIVERS INVENTORY	National Rivers Inventory	4.81
MOUNT ROOSEVELT WILDLIFE MANAGEMENT AREA	Wildlife Management Area	4.85
CLIFTY CREEK GORGE - TNC PRESERVE	Preserve	4.86
OAK RIDGE NATIONAL LABORATORY RESERVATION	National Laboratory Reservation	4.89
CLIFTY CREEK GORGE - TNC PRESERVE	Preserve	4.93
BLACK OAK RIDGE CONSERVATION EASEMENT	Conservation Easement	4.95

The closest of these areas to KIF is Rayburn Bridge TVA Habitat Protection Area (0.39-miles), designated as such to protect habitat for rare plant species. The remaining natural areas are found between 1-5 miles from KIF.

Prior to 2019, TVA had a license agreement with TWRA to manage the Kingston Fossil Plant Wildlife Management Area (WMA), the boundaries of which were within the proposed limits of this project. However, TVA and TWRA have since rescinded that agreement, and that WMA is no longer active.

3.11.2 Environmental Consequences

3.11.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not develop or operate Borrow Site No. 3. There would be no changes to the existing landscape, and therefore no direct or indirect impacts to natural areas.

3.11.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Implementation of the proposed action would result in development of 62 acres within the boundaries of the larger KIF property. No portions of the project lie within nor adjacent to a natural area. There would be no direct or indirect impacts on natural areas because of the distance between the proposed borrow site and existing natural areas.

3.12 Noise

3.12.1 Affected Environment

Noise is defined as unwanted or unwelcome sound usually caused by human activity and added to the natural acoustic setting of a locale. It is further defined as sound that disrupts normal activities or diminishes the quality of the environment. Community response to noise is dependent on the intensity of the sound source, its duration, the proximity of noise-sensitive land uses and the time of day the noise occurs (i.e., higher sensitivities would be expected during the quieter overnight periods).

Sound is measured in units of decibels (dB) on a logarithmic scale. Therefore, increasing the noise level by 5 dB results in a noise level perceived by the human ear to be twice as loud as the original source. Given that the human ear cannot perceive all pitches or frequencies in the sound range, sound level measurements are typically weighted to correspond to the limits of human hearing, as measured in dBA. A noise change of 3 dBA or less is not normally detectable by the average human ear. An increase of 5 dBA is generally not readily noticeable and a 10-dBA increase is usually felt to be "twice as loud" as before.

The Noise Control Act of 1972, along with its subsequent amendments (Quiet Communities Act of 1978, USC 42 4901-4918), delegates authority to the states to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. Although there are no federal, state, or local regulations for community noise in Roane County, USEPA guidelines (1974) recommend that Ldn (day-night average sound level) not exceed 55 dBA for outdoor residential areas. The USEPA noise guideline recommends an Ldn of 55 dBA, which is sufficient to protect the public from the effect of broadband environmental noise in typical outdoor and residential areas. These levels are not regulatory goals but are “intentionally conservative to protect the most sensitive portion of the American population” with “an additional margin of safety” (USEPA

1974). The U.S. Department of Housing and Urban Development (HUD) considers an Ldn of 65 dBA or less to be compatible with residential areas (HUD 1985).

Sound from a source spreads out as it travels from the source and the sound pressure level diminishes with distance. In addition to distance attenuation, the air absorbs sound energy. Atmospheric effects (wind, temperature, precipitation) and terrain/vegetation effects also influence sound propagation and attenuation over distance from the source. An individual's sound exposure is determined by measurement of the noise that the individual experiences over a specified time interval.

Community noise refers to outdoor noise near a community. A continuous source of noise is rare for long periods and is typically not a characteristic of community noise. Typical background day/night noise levels for rural areas range between 35 and 50 dBA whereas higher-density residential and urban areas background noise levels range from 43 dB to 72 dBA (USEPA 1974). Background noise levels greater than 65 dBA can interfere with normal conversation, watching television, using a telephone, listening to the radio and sleeping.

The KIF property is bordered by the Clinch River/Watts Bar Reservoir to the south, Emory River to the east and north, and a partially wooded ridge to the west. Noise emission levels from generating facilities such as KIF can range from 70 dBA to 100 dBA (USDOI 2008). Noise from generators at TVA facilities produce a constant, low frequency drone during generation. However, because they are housed in buildings, they are not audible at a distance.

The nearest sensitive noise receptors include homes located along Swan Pond Road to the west of the plant, on Swan Pond Circle and Emory River Road to the north, and on Lakewood Landing, Windswept Lane, and Lakewood Drive to the south. The closest residences are along Emory River Road, approximately 0.5 miles north of the proposed borrow site. Residences south of KIF are as close as 0.9 miles from the proposed borrow site, where traffic on I-40 is the greatest source of noise. The Swan Pond Baptist Church is located approximately 1 mile west of the proposed borrow site.

Construction noise associated with the proposed action would include the use of chainsaws, bulldozers, backhoes, excavators, tri-axle dump trucks, pans, tub grinders, pickup trucks, and skid loaders. These types of equipment emit 80 to 85 dBA at a distance of 50 feet (FHWA 2017).

3.12.2 Environmental Consequences

3.12.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not construct or operate Borrow Site No. 3. Therefore, there would be no changes to the existing noise environment and no new impacts on sensitive receptors.

3.12.2.2 Alternative B – Construct and Operate Borrow Site No. 3

Construction activities would primarily occur during the day on weekdays; however, construction activities could occur at night or on weekends, if necessary. Based on a simplified analysis of straight-line noise attenuation from the project boundary, it is estimated that construction phase noise levels would attenuate to below the USEPA and HUD guidelines at sensitive noise receptors to the west and south. For example, the sound level of construction equipment emitting 85 dBA at 50 feet would be approximately 32.9

dBA at the nearest residences on Emory River Road (0.5 miles away) and approximately 28 dBA at residences (approximately 0.9 miles away) on Lakewood Drive.

Given the intermittent nature of construction and operation noise at the borrow site and existing noise from landfill operations and other plant sources, the impact of noise generated from borrow activities is expected to be minor.

3.13 Socioeconomics and Environmental Justice

3.13.1 Affected Environment

KIF is in Roane County and the largest population center near the project is the City of Kingston to the southeast. Population and income estimates were derived from the most recent US Census data and are provided in Table 3-6 below. This includes information on low-income and minority populations. EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) mandates federal agencies to consider potentially disproportionate health or environmental impacts that their activities may have on minority or low-income populations. Although TVA is not subject to this EO, it routinely evaluates the impacts of its actions on low-income and minority populations.

Table 3-6. Population and income.

Metric	State of Tennessee	Roane County	City of Kingston
Population	6,770,010	53,140	5,825
Per Capita Income	$27,277	$25,555	$28,270
Median Household Income	$48,708	$45,407	$48,616
Persons in Poverty (Percent)	15.3	15.2	11.5
Minority Population (Percent)	21.5	5.7	8.6

Source: US Census 2019

Workers involved in the construction and operation of Borrow Site No. 3 would primarily be existing workers employed at KIF. Additional temporary workers (e.g., loggers and drivers for logging trucks) may be needed to harvest and remove trees from areas of the borrow site.

3.13.2 Environmental Consequences

3.13.2.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would not construct or operate Borrow Site No. 3. There would be change in the workforce and therefore no impacts on socioeconomics or environmental justice.

3.13.2.2 Alternative B – Construct and Operate Borrow Site No. 3

While most of the workers involved in the proposed action are anticipated to be existing KIF workers or contractors, implementation of the proposed action would result in minor, short-term beneficial impacts on socioeconomics, primarily through the temporary use of additional workers to cut trees as well as transport logs to a lumber mill during tree removal. Because temporary workers would likely be local to Roane County, there would be no anticipated increase in sales or lodging taxes. However, the proposed action would provide employment for these workers for the duration of construction and operation activities. Beneficial impacts would extend to environmental justice if workers are hired from minority or low-income populations. Beneficial impacts would be minor due to the relatively small

number of additional workers that may be hired and the short duration during which each phase of the borrow site would be developed.

3.14 Unavoidable Adverse Impacts

Unavoidable adverse impacts are the effects of the proposed action on natural and human resources that would remain after mitigation measures or BMPs have been applied. Mitigation measures and BMPs are typically implemented to reduce a potential impact to a level that would be below the threshold of significance as defined by the CEQ and the courts. Impacts associated with development and operation of Borrow Site No. 3 have the potential to cause unavoidable adverse effects to several environmental resources.

Impacts associated with construction have the potential to cause unavoidable adverse effects to wooded habitats. Tree clearing may affect a small acreage of potential wood thrush habitat as well as remove summer habitat for bats. TVA has agreed to conservation measures as part of its bat programmatic consultation with USFWS and it is anticipated that unavoidable adverse impacts would be minimal due to the quality of habitat being removed and similar habitat in region.

Other unavoidable impacts associated with Alternative B include the use of construction equipment. Equipment use may result in varying amounts of air emissions and noise that may potentially impact onsite workers. Emissions from construction activities and equipment are minimized through implementation of BMPs, including proper maintenance of construction equipment and vehicles.

3.15 Relationship of Short-Term Uses to Long-Term Productivity

NEPA requires a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. This EA focuses on the analyses of environmental impacts associated with the development and operation of the borrow site. This section includes an evaluation of the extent that the short-term uses preclude any options for future long-term use of the borrow site.

Development and operation activities would have a negative effect on a limited amount of short-term uses of the environment such as air, noise, and visual resources as described above. Most environmental impacts during development and operation activities would be relatively short term and would be addressed by BMPs and mitigation measures. Activities would have a minor, short-term impact to the local economy through the creation of jobs.

In the long-term, use of the borrow site is not anticipated to affect long-term use of KIF as the area would be graded and revegetated after borrow material has been exhausted.

3.16 Irreversible and Irretrievable Commitments of Resources

This section describes the expected irreversible and irretrievable environmental resource commitments used in the development and operation of the borrow site. The term irreversible commitments of resources describes environmental resources that are potentially changed by construction or operation and that could not be restored at some later time to the resource's state prior to construction or operation. For example, the operation of the borrow site under Alternative B would be an irretrievable commitment of the soils at the site as well as fuel for equipment and vehicle operation. Under Alternative A, no irreversible or irretrievable commitments would occur as the borrow site would not be developed.

3.17 Cumulative Effects

CEQ regulations for implementing the procedural provisions of the NEPA of 1969, as amended (42 USC § 321 et seq.) define cumulative impact as: "…the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR § 1508.7).

The proposed action identified under Alternative B would occur on land that is mostly wooded and/or previously disturbed. The potential for direct and indirect effects from project activities is generally low. For resources where no direct or indirect effects were identified, there would be no cumulative effects. The proposed project would not contribute cumulatively related to floodplains, streams and wetlands, prime farmland, navigation, transportation, recreation, cultural and historic resources, and natural areas.

Unless otherwise stated, the geographic scope of analysis is assumed to include a 5-mile radius around KIF. This is the area in which indirect and cumulative effects are expected to occur. This area is largely defined by rural and industrial land use, water features, and agricultural and forested lands in unincorporated areas.

Past, present and reasonably foreseeable future actions were identified within the 5-mile radius and include the following:

- KIF Flue Gas Desulfurization System
- KIF Gypsum Dewatering System
- KIF Bottom Ash Dewatering Facility
- KIF Landfill Phase 2
- KIF Wastewater Treatment Facility

As shown in Table 3-7, the cumulative impacts associated with the proposed action in combination with the above identified actions and the ongoing operations at KIF would be minor.

Table 3-7. Cumulative impacts.

Resource Area	Alternative B – Construct and Operate Borrow Site No. 3
Air Quality	Minor cumulative impacts. The construction- and operation-related air emissions even with other ongoing and future actions at KIF are not expected to result in any changes to NAAQS attainment.
Climate	Minor cumulative impacts. The construction- and operation-related air emissions from the borrow site project with air emissions from other ongoing and future actions at KIF and in the region are not expected to significantly affect climate.
Surface Water	Minor cumulative impacts due to the limited scale of the borrow site phasing and the BMP minimization measures that would be implemented to minimize impacts to water quality. No long-term water quality or ecological health impacts are anticipated.
Groundwater	Minor cumulative impacts as only a small part of the borrow site is in a groundwater area and BMPs would minimize potential groundwater impacts.
Vegetation	Minor cumulative impacts. The long-term conversion of the borrow site to herbaceous vegetation after reclamation would not result in appreciable changes to the vegetation of the region.
Wildlife	Minor cumulative impacts due to the relative abundance of similarly suitable habitat nearby and the relatively small size of the area of disturbance.
Threatened and Endangered Species	Minor cumulative impacts as TVA has committed to implementing specific conservation measures as part of its programmatic consultation with the USFWS on routine actions and federally listed bats.
Solid and Hazardous Waste	Minor short- and long-term cumulative impacts due to the small waste volumes generated and the regional solid waste management capacity. The capability of regional waste management facilities to continue accepting waste would not be compromised.
Visual	Minor cumulative impacts on the visual landscape during development and operation of phases of the borrow site. As phases are completed, areas will be graded and revegetated.
Noise	Minor cumulative noise impacts.
Socioeconomic and Environmental Justice	Minor beneficial cumulative impacts from the employment of temporary workforce during tree removal. The proposed action is not expected to contribute to cumulative impacts on environmental justice.

CHAPTER 4 – LIST OF PREPARERS

4.1 NEPA Project Management

Name:	**Ashley Pilakowski**
Education:	B.S., Environmental Management
Project Role:	NEPA compliance, document preparation and project management
Experience:	8 years in environmental planning and policy and NEPA compliance.

Name:	**Lori Whitehorse**
Education:	B.S., Plant and Soil Science
Project Role:	TVA Environmental Program Manager
Experience:	16 years of environmental regulatory compliance

Name:	**Marty Marchaterre (Copperhead)**
Education:	J.D., Law; B.A., History and Political Science
Project Role:	Project Manager, NEPA Coordinator
Experience:	28 years of experience in NEPA document preparation.

4.2 Other Contributors

Name:	**Adam Datillo**
Education:	M.S., Forestry and B.S., Natural Resource Conservation Management
Project Role:	Vegetation
Experience:	15 years of experience in ecological restoration and plant ecology, 8 years in botany

Name:	**Elizabeth B. Hamrick**
Education:	M.S., Wildlife and Fisheries Science; B.A., Biology
Project Role:	Terrestrial Ecology (Animals), Terrestrial Threatened and Endangered Species
Experience:	17 years conducting field biology, 12 years technical writing, 8 years compliance with NEPA and ESA.

Name:	**Steve Cole**
Education:	M.A., Anthropology, PhD, Anthropology (Archaeology specialization)
Project Role:	Cultural and Historic Resources
Experience:	15 years in cultural resources, 4 years teaching at universities/colleges

Name:	**Craig Phillips**
Education:	M.S. and B.S., Wildland and Fisheries Scient
Project Role:	Aquatics
Experience:	7 years sampling and hydrologic determination for streams and wet weather conveyances, 5 years in environmental reviews

Name:	**A. Chevales Williams**
Education:	B.S., Environmental Engineering
Project Role:	Surface Water
Experience:	14 years of experience in water quality monitoring and compliance; 13 years of NEPA planning and environmental services

Name:	**Richard Borthwick (Copperhead)**
Education:	PhD, Biology (Candidate); M.S., Biology and Ecology; B.S., Natural Resource and Environmental Management and Wildlife and Fisheries
Project Role:	Wildlife, Threatened and Endangered Species
Experience:	10 years of experience performing environmental assessments and field surveys.

Name:	**Kelsie Eshler (Copperhead)**
Education:	B.A., Environmental Earth Science
Project Role:	Solid and Hazardous Waste; Socioeconomic
Experience:	3 years of experience performing environmental assessments and field surveys.

Name:	**Chris McNees (Copperhead)**
Education:	B.S., Environmental Studies
Project Role:	Geographic Information Systems
Experience:	15 years of experience in restoration, remediation, spatial analysis, sample collection, lab analysis, and habitat assessments.

Name:	**Drew Vankat (Copperhead)**
Education:	M.S., Environmental Policy and Planning and B.Phil., Urban and Environmental Planning
Project Role:	Socioeconomics and Environmental Justice, Surface Water, QA/QC
Experience:	12 years of experience with environmental policy including NEPA document preparation.

Name:	**Ray Eaton (Copperhead)**
Education:	B.S., Environmental Studies
Project Role:	Groundwater
Experience:	11 years of experience with wetlands, streams, and threatened and endangered species.

CHAPTER 5 – ENVIRONMENTAL ASSESSMENT RECIPIENTS

5.1 Federal Agencies

United States Fish and Wildlife Services

5.2 Federally Recognized Tribes

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
Shawnee Tribe
Thlopthlocco Tribal Town
the United Keetoowah Band of Cherokee Indians in Oklahoma

5.3 State Agencies

Tennessee Department of Environment and Conservation
Tennessee Historical Commission, State Historic Preservation Office
Tennessee Wildlife Resources Agency

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CHAPTER 6 – LITERATURE CITED

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Appendix A – TVA Bat Strategy Project Review Form

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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: Kingston Fossil Plant Borrow #3 **Date:** 11/13/2019

Contact(s): Ashley Pilakowski **CEC#:** **Project ID:** 434946

Project Location (City, County, State): Roane County, Tennessee

Project Description:

TVA proposes to develop a new 62-acre borrow site (Borrow Site No. 3) to facilitate various construction projects on the KIF property. The proposed borrow site consists of undeveloped lands in the central portion of the property, north of the landfill and south of the plant's intake channel.

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: [35.16] (•)**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)	Elizabeth Hamrick	Date	Nov 13, 2019

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): [35.16] **(**(•)**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 35.16 ◉ **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 Nov 13, 2019

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
5 Operate, Maintain, Retire, Expand, Construct Power Plants		1,382.53	249.2	72.48

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
■	15, 16, 17, 18, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 45, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 90, 91, 92, 93, 94, 95, 96	**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.
■	33, 34	**TR1*** - Removal of potentially suitable summer roosting habitat during time of potential occupancy has been quantified and minimized programmatically. TVA will track and document alignment of activities that include tree removal (i.e., hazard trees, mechanical vegetation removal) with the programmatic quantitative cumulative estimate of seasonal removal of potential summer roost trees for Indiana bat and northern long-eared bat. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR4*** - Removal of suitable summer roosting habitat within potential habitat for Indiana bat or northern long-eared bat will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
■	33, 34	**TR9** - If removal of suitable summer roosting habitat occurs when bats are present on the landscape, a funding contribution (based on amount of habitat removed) towards future conservation and recovery efforts for federally listed bats would be carried out. Project can consider seasonal bat presence/absence surveys (mist netting or emergence counts) that allow for positive detections without resulting in increased constraints in cost and project schedule. This will enable TVA to contribute to increased knowledge of bat presence on the landscape while carrying out TVA's broad mission and responsibilities.
■	16, 17, 18, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 73, 76, 77, 78, 80, 81, 82, 83, 86, 87, 88, 89, 90	**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.

■	16, 17, 18, 21, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 69, 70, 71, 73, 76, 77, 80, 81, 82, 83, 84, 86, 87, 88, 89, 90, 91	**SSPC3** (**Power Plants only**) - Power Plant actions and activities will continue to implement standard environmental practices. These include: o Best Management Practices (BMPs) in accordance with regulations: • Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage o Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement o Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) o Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to • Minimize fuel and chemical use Ensure proper disposal of waste, ex: used rags, used oil, empty containers, general trash, dependent on plant policy • Maintain every site with well-equipped spill response kits, included in some heavy equipment • Conduct Quarterly Internal Environmental Field Assessments at each sight • Every project must have an approved work package that contains an environmental checklist that is approved by sight Environmental Health & Safety consultant. • When refueling, vehicle is positioned as close to pump as possible to prevent drips, and overfilling of tank. Hose and nozzle are held in a vertical position to prevent spillage o Construction Site Protection Methods • Sediment basin for runoff - used to trap sediments and temporarily detain runoff on larger construction sites • Storm drain protection device • Check dam to help slow down silt flow • Silt fencing to reduce sediment movement o Storm Water Pollution Prevention (SWPP) Pollution Control Strategies • Minimize storm water contact with disturbed soils at construction site • Protect disturbed soil areas from erosion • Minimize sediment in storm water before discharge • Prevent storm water contact with other pollutants • Construction sites also may be required to have a storm water permit, depending on size of land disturbance (>1ac) o Every site has a Spill Prevention and Control Countermeasures (SPCC) Plan and requires training. Several hundred pieces of equipment often managed at the same time on power generation properties. Goal is to minimize fuel and chemical use
■	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**L1** - Direct temporary lighting away from suitable habitat during the active season.
■	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	**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).

The Project is trying to clear all trees Oct 15-March 31 but may spill over into Staging (spring) if NEPA schedule is delayed. Therefore no funding contribution is currently required. If clearing gets pushed past March 31 then a funding contribution will be required for the remaining forested acres to be cleared.

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) Ashley Pilakowski 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 35.16 ◉ 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.

Appendix B – Consultation Correspondence

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

June 5, 2019

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

RE: TVA / Tennessee Valley Authority, Kingston Fossil Plant, Landfill Expansion, Re-Determined Area of Potential Effects, Kingston, Roane County, TN

Dear Mr. Jones:

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

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

Your cooperation is appreciated.

Sincerely,

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

EPM/jmb

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

May 24, 2019

Mr. E. Patrick McIntyre, Jr.
Executive Director
and State Historic Preservation Officer
Tennessee Historical Commission
2941 Lebanon Pike
Nashville, Tennessee 37243-0442

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), KINGSTON FOSSIL PLANT (KIF), LANDFILL EXPANSION, RE-DETERMINED AREA OF POTENTIAL EFFECTS (APE), ROANE COUNTY, TENNESSEE (35.900145° N, 84.504787° W)

TVA proposes to use an approximately 55-acre area within KIF in Roane County, Tennessee as a soil borrow area. Material excavated from the soil borrow would be used in the closure of KIF landfills and various other projects at KIF as needed. TVA has determined that the proposed soil borrow constitutes an undertaking (as defined at 36 CFR § 800.16(y)) of the type with potential to cause effects on historic properties.

TVA has determined that the APE consists of the 55-acre soil borrow area, within which ground disturbance would occur, and the viewshed within a half-mile radius surrounding this area, within which visual effects to above-ground properties could occur, if any such properties are located in the APE. Initially, TVA proposed a project footprint of 62.4 acres. That figure included seven acres for a possible land bridge that TVA was considering building across the intake channel. However, the land bridge portion of the project was removed from the scope of the project after the archaeological survey report had been completed. Therefore, we currently define the APE to include only the land that would be affected by the proposed soil borrow, as shown below in Figure 1. The final report will contain a corrected project map.

TVA contracted with Cultural Resources Analysts, Inc. (CRA) for a Phase I Archaeological survey of the APE. Two bound copies of the draft report, titled, *Phase I Archaeological Survey of a Proposed Borrow Pit totaling Approximately 62.4 Acres at TVA's Kingston Fossil Plant in Roane County, Tennessee*, are enclosed. An electronic copy can be downloaded from the following link:
https://drive.google.com/file/d/1KCdB8-4c4FXWSwZfMPtMeLSPCaIHv7-c/view?usp=sharing

Background research performed prior to the field survey revealed that the APE has not been included in any prior systematic archaeological surveys, and no previously-recorded archaeological sites are located within the APE. The survey identified no archaeological sites. Shovel testing results indicate that large areas within the APE have been subjected to ground

disturbing actions in the past. CRA recommends no additional archaeological investigations in connection with the proposed undertaking.

All areas within the half-mile radius have been included in prior historic architectural surveys. Most of this area was included in a 2002 Cultural Resources Survey performed by TRC in connection with a proposed storage/disposal area (Wild et al. 2002). That survey identified no National Register of Historic Places (NRHP) -eligible above-ground properties. The APE also includes a small area north of KIF, on the opposite side of the Emory River. This area was included in a cultural resources survey performed in 2015 by Amec Foster Wheeler (Greene et al. 2015). That survey also did not identify NRHP -eligible above-ground properties. Our offices have agreed previously that KIF is ineligible for inclusion in the NRHP due to extensive modifications of the original plant (please see your letter dated 3/3/2010). Therefore, TVA finds there are no NRHP -listed or NRHP -eligible above-ground resources in the APE.

We have read the enclosed report and agree with the authors' findings and recommendations. TVA finds that no historic properties are located in the APE.

Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your comment on the enclosed report and on TVA's finding that the undertaking would result in no effects on historic properties.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the APE that may be of religious and cultural significance and eligible for listing in the NRHP.

Should you have any questions or comments, please contact Steve Cole in Knoxville by email, sccole0@tva.gov or by phone, (865) 632-2551.

Sincerely,

Clinton E. Jones
Manager
Cultural Compliance

SCC:ABM
Enclosures
cc (Enclosures):
Ms. Jennifer Barnett
Tennessee Division of Archaeology
1216 Foster Avenue, Cole Bldg. #3
Nashville, Tennessee 37210

References Cited

Greene, James, Mathew Prybylski, and Richard J. Stallings

2015 *Cultural Resources Survey, Emory River Road House Lots, Kingston Fossil Plant, Roane County, Tennessee*. Report Submitted to Tennessee Valley Authority, Knoxville, Tennessee. Report submitted by Cultural Resource Analysts, Knoxville, Tennessee.

Wild, Michael J., Ted Karpynec, Kristin Wilson, and Jeffery L. Holland

2002 *Cultural Resources Survey of an Approximately 120-Acre Tract for Proposed Storage/Disposal Area Near Kingston Steam Plant in Roane County, Tennessee*. Submitted to TVA, Norris, Tennessee. Submitted by TRC, Atlanta, Georgia.

INTERNAL COPIES NOT TO BE INCLUDED WITH OUTGOING LETTER:

Lana D. Bean, WT 10 C-K
David L. Bowling, WT 11B-K
Stephen C. Cole, WT 11B-K
Michael C. Easley, BR 4A-C
Patricia B. Ezzell, WT 7C-K
Susan R. Jacks, WT 11C-K
Paul J. Pearman, MR 4G-C
M. Susan Smelley, BR 4A-C
W. Douglas White, WT 11B-K
Lori A. Whitehorse, WT 11B-K
ECM, WT CA-K

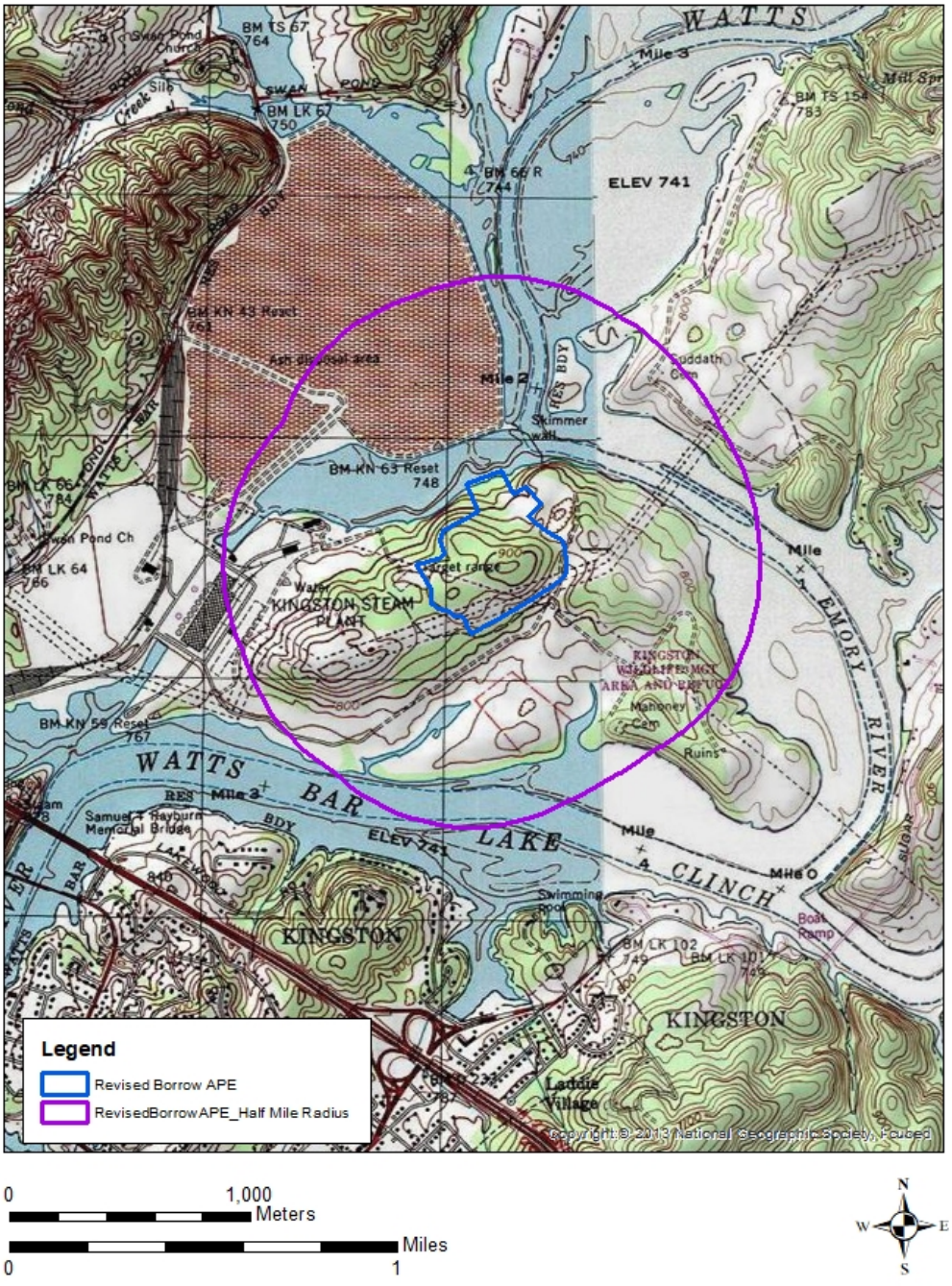

Figure 1. APE: project footprint (blue) and half mile radius (purple).

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

May 24, 2019

Mr. Brett Barnes
Tribal Historic Preservation Officer
Eastern Shawnee Tribe of Oklahoma
127 West Oneida
Seneca, Missouri 64865

Ms. RaeLynn Butler
Manager
Historic & Cultural Preservation Department
The Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Mr. Bryant Celestine
Tribal Historic Preservation Officer
Alabama-Coushatta Tribe of Texas
571 State Park Road 56
Livingston, Texas 77351

Mr. Galen Cloud
Tribal Historic Preservation Officer
Thlopthlocco Tribal Town
Post Office Box 188
Okemah, Oklahoma 74859

Mr. David Cook
Tribal Administrator
Kialegee Tribal Town
Post Office Box 332
Wetumka, Oklahoma 74883

Ms. Devon Frazier
Tribal Historic Preservation Officer
Absentee Shawnee Tribe of Indians of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, Oklahoma 74801

Dr. Linda Langley
Tribal Historic Preservation Officer
Coushatta Tribe of Louisiana
Post Office Box 10
Elton, Louisiana 70532

Ms. Alina J. Shively
Tribal Historic Preservation Officer
Jena Band of Choctaw Indians
Post Office Box 14
Jena, Louisiana 71342

Ms. Erin Thompson
Interim Tribal Historic Preservation Officer
United Keetoowah Band of Cherokee Indians in Oklahoma
Post Office Box 1245
Tahlequah, Oklahoma 74465

Ms. Tonya Tipton
Shawnee Tribe
Post Office Box 189
Miami, Oklahoma 74355

Ms. Elizabeth Toombs
Cherokee Nation
Post Office Box 948
Tahlequah, Oklahoma 74465

Mr. Stephen Yerka (NHPA)
Tribal Historic Preservation Office
Eastern Band of Cherokee Indians
Post Office Box 455
Cherokee, North Carolina 28719

Dear Sir/Madam:

TENNESSEE VALLEY AUTHORITY (TVA), KINGSTON FOSSIL PLANT (KIF), LANDFILL EXPANSION, RE-DETERMINED AREA OF POTENTIAL EFFECTS (APE), ROANE COUNTY, TENNESSEE (35.900145° N, 84.504787° W)

TVA proposes to use an approximately 55-acre area within KIF in Roane County, Tennessee as a soil borrow area. Material excavated from the soil borrow would be used in the closure of KIF landfills and various other projects at KIF as needed. TVA has determined that the proposed soil borrow constitutes an undertaking (as defined at 36 CFR § 800.16(y)) of the type with potential to cause effects on historic properties.

TVA has determined that the APE consists of the 55-acre soil borrow area, within which ground disturbance would occur, and the viewshed within a half-mile radius surrounding this area, within which visual effects to above-ground properties could occur, if any such properties are located in the APE. Initially, TVA proposed a project footprint of 62.4 acres. That figure included seven acres for a possible land bridge that TVA was considering building across the intake channel. However, the land bridge portion of the project was removed from the scope of the project after the draft archaeological survey report had been completed. Therefore, we currently define the APE to include only the land that would be affected by the proposed soil borrow, as shown below in Figure 1. The final report will contain a corrected project map.

An electronic copy of the draft report, titled, *Phase I Archaeological Survey of a Proposed Borrow Pit totaling Approximately 62.4 Acres at TVA's Kingston Fossil Plant in Roane County,* can be downloaded from the following link:
https://drive.google.com/file/d/1KCdB8-4c4FXWSwZfMPtMeLSPCaIHv7-c/view?usp=sharing

Background research performed prior to the field survey revealed that the APE has not been included in any prior systematic archaeological surveys, and no previously-recorded archaeological sites are located within the APE. The survey identified no archaeological sites. Shovel testing results indicate that large areas within the APE have been subjected to ground disturbing actions in the past. Cultural Resources Analysts, Inc. recommends no additional archaeological investigations in connection with the proposed undertaking.

All area within the half-mile radius have been included in prior historic architectural surveys. Most of this area was included in a 2002 Cultural Resources Survey performed by TRC in connection with a proposed storage/disposal area (Wild et al. 2002). That survey identified no National Register of Historic Places (NRHP) -eligible above-ground properties. The APE also includes a small area north of KIF, on the opposite side of the Emory River. This area was included in a cultural resources survey performed in 2015 by Amec Foster Wheeler (Greene et al. 2015). That survey also did not identify NRHP -eligible above-ground properties. In 2010 TVA found, that KIF is ineligible for inclusion in the NRHP due to extensive modifications of the original plant. Therefore, TVA finds there are no NRHP -listed or NRHP -eligible above-ground resources in the APE.

We have read the enclosed report and agree with the authors' findings and recommendations. TVA finds that no historic properties are located in the APE.

Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your comment on the enclosed report and on TVA's finding that the undertaking would result in no effects on historic properties.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding properties within the proposed project's APE that may be of religious and cultural significance to them and eligible for the NRHP: 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, Shawnee Tribe, Thlopthlocco Tribal Town, and the United Keetoowah Band of Cherokee Indians in Oklahoma.

By this letter TVA is providing notification of these findings and is seeking your comments regarding any properties that may be of religious and cultural significance and may be eligible for inclusion in the NRHP pursuant to 36 CFR Part 800.2(c)(2)(ii), § 800.3(f)(2), and § 800.4(a)(4)(b).

Please respond by June 23, 2019 with any comments on the proposed undertaking. If you have any questions please contact me by phone, (865) 632-2464, or by email at mmshuler@tva.gov.

Sincerely,

Marianne Shuler
Senior Specialist, Archaeologist and Tribal Liaison
Cultural Compliance

KDN:ABM
Enclosures
cc (Enclosures):

Mr. Paul Barton
Assistant Director of Cultural Preservation
Eastern Shawnee Tribe of Oklahoma
127 West Oneida
Seneca, Missouri 64865

Mr. Jonas John
Director, Heritage Department
Coushatta Tribe of Louisiana
Post Office Box 10
Elton, Louisiana 70532

Ms. Corain Lowe-Zepeda
Tribal Historic Preservation Officer
Historic & Cultural Preservation Department
The Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Mr. Russell Townsend
Tribal Historic Preservation Officer
Eastern Band of Cherokee Indians
Post Office Box 455
Cherokee, North Carolina 28719

Ms. Charlotte Wolfe
United Keetoowah Band of Cherokee Indians in Oklahoma
Post Office Box 1245
Tahlequah, Oklahoma 74465

References Cited

Greene, James, Mathew Prybylski, and Richard J. Stallings

2015 *Cultural Resources Survey, Emory River Road House Lots, Kingston Fossil Plant, Roane County, Tennessee*. Report Submitted to Tennessee Valley Authority, Knoxville, Tennessee. Report submitted by Cultural Resource Analysts, Knoxville, Tennessee.

Wild, Michael J., Ted Karpynec, Kristin Wilson, and Jeffery L. Holland

2002 *Cultural Resources Survey of an Approximately 120-Acre Tract for Proposed Storage/Disposal Area Near Kingston Steam Plant in Roane County, Tennessee*. Submitted to TVA, Norris, Tennessee. Submitted by TRC, Atlanta, Georgia.

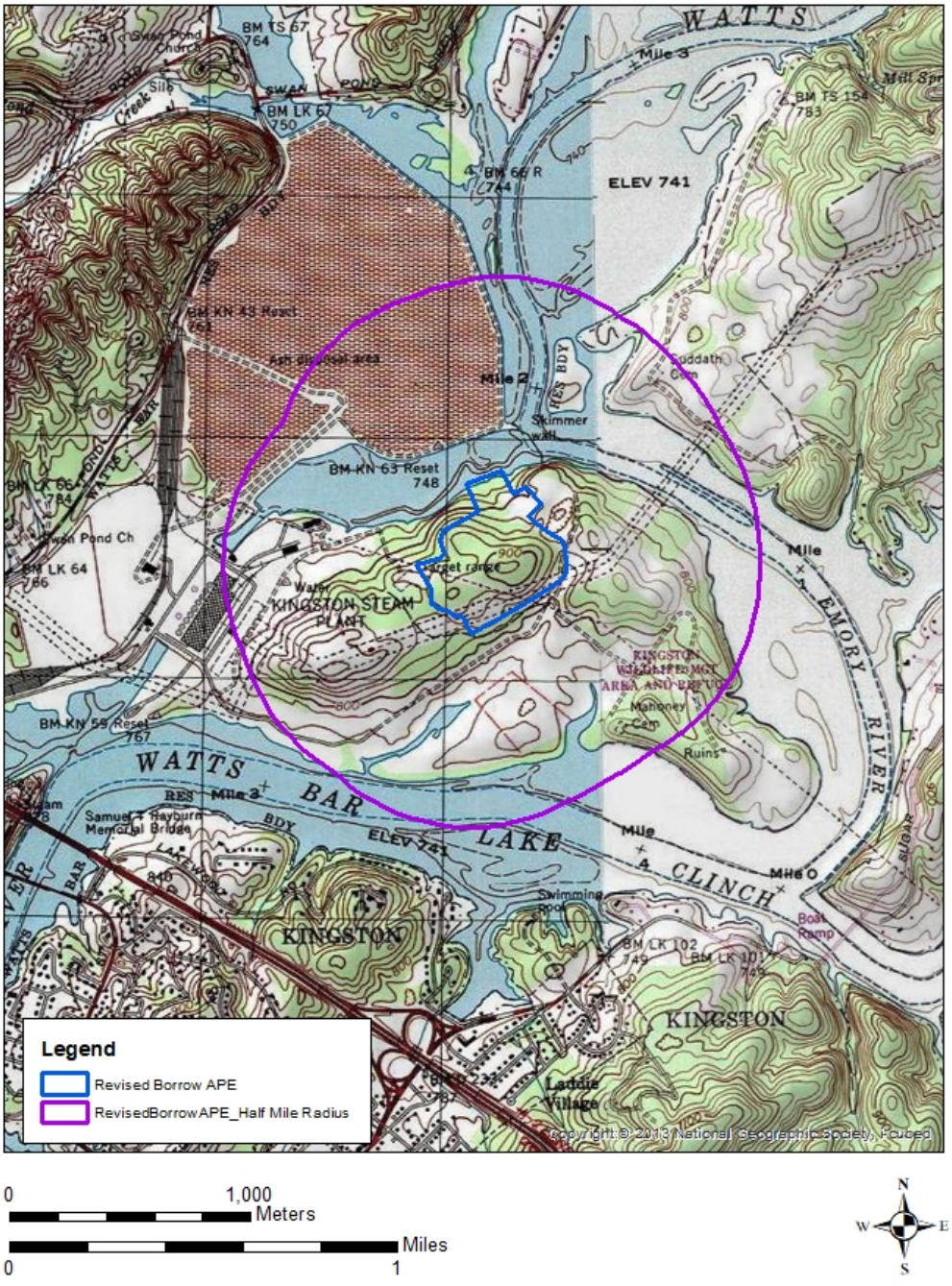

Figure 1. APE: revised project footprint (blue) and half mile radius (purple).

Appendix C – Public Comments on Draft EA and TVA Responses

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A Draft Environmental Assessment (EA) was released for public review and comment on December 6, 2019. Notice of Availability of the Draft EA was transmitted to state, federal, and local agencies and federally recognized tribes. It was also posted on Tennessee Valley Authority's (TVA's) public National Environmental Policy Act (NEPA) review website. A media announcement including a request for comments on the Draft EA was released in the Kingston area. Comments were accepted through December 21, 2019, via mail and e-mail. Four comments were received. Responses to comments raised during the comment period are provided below.

1. **Comment:** The Tennessee Department of Environmental Conservation (TDEC) appreciates the opportunity to provide comments on the Draft EA. TDEC believes the Draft EA adequately addresses potential impact to cultural and natural resources within the proposed project area. (Commenter: TDEC)

   Response: Comment Noted.

2. **Comment:** TDEC recommends that the Final EA consider and reflect that any wastes associated with borrow area activities be managed in accordance with the Solid and Hazardous Waste Rules and Regulation of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12, respectively). (Commenter: TDEC)

   Response: TVA revised the Final EA to specifically include a reference to the Solid and Hazardous Waste Rules and Regulations identified by TDEC.

3. **Comment:** TDEC concurs that the KIF borrow site will require a Construction Stormwater General Permit and a Stormwater Pollution Prevention Plan. The Best Management Practices for controlling erosion which include revegetating the areas after the borrow material has been removed are appropriate. (Commenter: TDEC)

   Response: Comment Noted.

4. **Comment:** While TVA's reduction of Greenhouse Gases is praiseworthy, it is also unfortunate that its continued rate of production of GHGs is unsustainable. Our current state of climate disruption is a crisis that requires a crisis response, not "business as usual" such as this proposal envisions.

   I support Alternative A on this matter and urge the urgent development of plans that address the pressing nature of our current climate disruption. We need plans that lay out a path for drastic reduction of GHG's from TVA facilities over the next decade to keep global warming under 1.5 degrees Celsius. (Commenter: Richard Henighan)

   Response: Comment noted on commenter's preference for Alternative A. TVA forecasts a reduction of up to 60 percent below 2005 carbon dioxide emission levels by the end of 2020. TVA also has considered climate change during the development of its 2019 Integrated Resource Plan (IRP), which is a long-term plan that provides direction on how TVA can best meet future demand for power. It shapes how TVA will continue to provide low-cost, reliable, clean electricity; support environmental

stewardship; and foster economic development in the Tennessee Valley for the next 20 years. TVA's diverse power supply was comprised of 53% carbon-free generation in 2018, and the 2019 IRP strategies show an average reduction of CO_2 emissions from 2019 to 2038 of 18.9 to 23.4%. More information regarding the 2019 IRP can be found here: https://www.tva.gov/Environment/Environmental-Stewardship/Integrated-Resource-Plan.

5. **Comment:** I live very close to the proposed borrow site. My home is built on one of the parcels of property effected by the ash spill. I truly wish that you would study other options of storing the fly ash. 1) I feel like this area has been damaged enough by the ash spill. The leaching that has and does occur. 2) the airborne effects of dumping fly ash out in the open to be carried into nearby homes and the adjacent river. 3) the proposed area harms the natural beauty of the lake and green space. Surely there is another option I realize it may be more cost to ship it somewhere else that is equipped to handle hazardous materials. I believe doing the cheap, easy option is what caused the ash spill disaster. (Commenter: Travis Wright)

   Response: Comment noted. Coal ash storage is outside the scope of this EA, which addresses TVA's proposed development of a borrow area to provide suitable fill material for projects at KIF. TVA previously evaluated alternatives for managing coal ash residuals impoundments in the Ash Impoundment Closure Environmental Impact Statement which can be found here: (https://www.tva.gov/Environment/Environmental-Stewardship/Environmental-Reviews/Closure-of-Coal-Combustion-Residual-Impoundments).

6. **Comment:** It is important for the Tennessee Valley Authority to step forward and be responsive to questions that Tennesseans have about Kingston. After all the problems we have seen with mismanagement of facilities and clean up, it is imperative to get this right for the safety of Tennesseans.

   East Tennesseans deserve transparency and detailed information from TVA as this process moves forward. I believe that open meetings are an important part of transparency. I encourage TVA to open each of their meetings to the public. As Senator, I would follow the lead of the Tennessee Legislature in calling for TVA to have open meetings. (Commenter: Manny Sethi)

   Response: Comment noted. While this comment does not appear to be related to the scope of this EA, being transparent with the public is fundamental to how TVA does business:

   - The TVA Board's quarterly business meetings are open to the public and streamed live on the internet.
   - The day before each Board meeting, the Board members host a Listening Session so members of the public can speak about any TVA topic.
   - TVA also hosts public meetings, open houses, and public comment periods to share information and get public input.

- TVA advisory committees of Valley stakeholders host public meetings and listening sessions, as well; these are the Regional Resource Stewardship Council and Regional Energy Resource Council.
- TVA files detailed financial reports with the Securities & Exchange Commission, provides access to Freedom of Information records, reaches the public through social media, and posts extensive information on tva.gov.