

PHASE 2 EAST REGION CONSOLIDATION – NORRIS  
PROPERTIES  
**FINAL ENVIRONMENTAL ASSESSMENT**  
Anderson County, Tennessee

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## Symbols, Acronyms, and Abbreviations

AADT	Average Annual Daily Traffic
ADA	Americans with Disabilities Act
APE	Area of Potential Effect
BMP	Best Management Practice
CFR	Code of Federal Regulations
CO	carbon monoxide
dB	decibel
dba	A-weighted decibel
DNL	Day-Night Sound Level
EA	Environmental Assessment
EO	Executive Order
HVAC	heating, ventilation, and cooling
ITMA	Inspection, Testing, Monitoring, and Analysis
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O <sub>3</sub>	ozone
Pb	lead
PM <sub>2.5</sub>	particulate matter particles less than 2.5 micrometers
PM <sub>10</sub>	particulate matter particles less than 10 micrometers
SHPO	State Historic Preservation Officer
SO <sub>2</sub>	sulfur dioxide
SR	state route
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TVA	Tennessee Valley Authority
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VPD	vehicles per day
VOC	volatile organic compounds

# CHAPTER 1 - PURPOSE OF AND NEED FOR ACTION

## 1.1 Introduction and Background

### 1.1.1 Introduction

In 2013, the Tennessee Valley Authority (TVA) developed an internal Valley-wide real estate strategy to effectively and efficiently manage the agency-wide real estate portfolio to reduce costs and maximize the financial return on TVA's real estate assets<sup>1</sup> including office space. At present, TVA occupies two properties in the City of Norris, Anderson County, Tennessee as shown in Figure 1-1. TVA could achieve work process efficiencies and cost savings by consolidating similar functions in one physical location.

To meet office space requirements and consolidate the operations in a more efficient and economical manner, TVA is proposing to relocate the Central Laboratories and Services program (formerly known as the Inspection, Testing, Monitoring, and Analysis [ITMA] program) from Summer Place Building, aquatic laboratory (lab) from Walnut Orchard, water quality lab from the Greenway Area Office building (Greenway), and associated equipment storage needs to the Norris Engineering Lab Complex (Engineering Lab). The consolidation effort would require interior renovations to some of the buildings at the Engineering Lab. The consolidation effort would relocate approximately 40 TVA staff and associated vehicles, and 35 boats to the Engineering Lab.

The project is divided into two phases. The *Phase 1 East Region Consolidation – Norris Properties Final Environmental Assessment* evaluates the potential impacts associated with Phase 1 which would be focused on interior renovations of certain structures at the Engineering Lab, and exterior work focused primarily in the southern and eastern portions of the property. Phase 1 exterior actions include the demolition of two small boat sheds and Building I, clearing of trees, installation of lights and cameras for security on the exterior of certain structures, construction of a stormwater detention pond, trenching and groundwork in the vicinity of Buildings B and I, repaving/reconfiguring of parking areas, and construction of a new boat shed(s) in the vicinity of Building I. The first *Phase 1 East Region Consolidation – Norris Properties Final Supplemental Environmental Assessment and Finding of No Significant Impact (FONSI)* also evaluates the removal of up to 750 cubic yards of soil from the Engineering Labs to an existing offsite landfill and up to 2,000 cubic yards of material to the Walnut Orchard site to fill the former basement of a demolished structure. The second *Phase 1 East Region Consolidation – Norris Properties Final Supplemental Environmental Assessment and FONSI*, completed February 11, 2020 evaluates the transport of approximately 37,000 cubic yards of soil from the Engineering Labs to either Walnut Orchard, for leveling the site, or to a landfill and the installation of an underground stormwater chamber system as an alternative to the previously evaluated stormwater pond.

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<sup>1</sup> Title to real property held by TVA is in the name of the United States of America.



Phase 2 is driven by security updates needed to bring the facility into compliance with current TVA security measures and protocols. Phase 2 would also address additional consolidation related actions that may be necessary as a result of TVA's ongoing evaluation of the condition of the existing facilities and program needs; this includes renovations to various buildings onsite that were unknown at the time of the Phase 1 assessment. This Phase 2 EA will evaluate the potential impacts associated with these additional actions in Phase 2.



Figure 1-1. Norris Properties – Walnut Orchard (north) and Engineering Labs (south)

### 1.1.2 Background

In January 2019, the Tennessee Valley Authority (TVA) issued a Finding of No Significant Impact (FONSI) and finalized the *Phase 1 East Region Consolidation – Norris Properties Environmental Assessment* (Phase 1 Final EA) which evaluated Phase 1 of TVA's proposal to consolidate certain operations to the Engineering Labs. The Phase 1 Final EA evaluates the potential impacts associated with certain interior renovations of structures at the Engineering Lab, and exterior work focused primarily in the southern and eastern portions of the property. Phase 1 interior renovations include: minimum renovations to Buildings D, G, N, and T,

moderate renovations to Buildings B, Q1, and Q2, and major renovations to Building J. Phase 1 exterior actions include: the demolition of two small boat sheds and Building I, clearing of trees, installation of lights and cameras for security, construction of a stormwater detention pond, trenching and groundwork in the vicinity of Buildings B and I, repaving/reconfiguring of parking areas, and construction of a new boat shed(s) in the vicinity of Building I.

In February 2019, TVA identified the need for moderate renovations to the interior of Building C for remediation of water intrusion, mold, and asbestos, the need for grading and additional tree removal in the area north of Building I to accommodate the Phase 1 activities, and replanting of a vegetative barrier south of Building B. Therefore, TVA performed additional analysis of potential effects in the *Revised Phase 1 East Region Consolidation – Norris Properties Environmental Assessment* and issued a Revised FONSI in March 2019. The revised EA and revised FONSI are incorporated herein by reference.

In May 2019, TVA discovered as a result of soils testing that approximately 500-750 cubic yards of removed overburden from the Phase 1 site, located within spoil piles on the site, contained contaminants at levels determined to be unsuitable for reuse as fill material and would need to be transported to an offsite waste landfill. Additionally, TVA required approximately 1,800-2,000 cubic yards of fill material to fill the former Building D basement area at Walnut Orchard to remediate long-term stability and safety concerns. The Revised Phase 1 EA assumed all soil would be remaining onsite. Therefore, TVA conducted two supplemental analyses associated with the removal of soils from the site.

The *Phase 1 Supplemental Environmental Assessment and Finding of No Significant Impact* (Phase 1 SEA and FONSI) was prepared in July 2019 to analyze the impacts associated with the transport of approximately 500-750 cubic yards of soil from the Engineering Labs to be disposed at an offsite waste landfill and approximately 1,800-2,000 cubic yards of soil to be placed as fill material in the former Walnut Orchard Building D basement. In conducting this assessment, TVA supplemented its prior assessments of January 2019 and March 2019 for the Phase 1 East Region Consolidation-Norris Properties project. Based on the findings of the Supplemental EA and FONSI, which is incorporated herein by reference TVA concluded that the proposal to remove 500-750 cubic yards of soil containing contaminants and/or not suitable for reuse as fill to an offsite waste landfill as well as transporting 1,800-2,000 cubic yards of soil suitable for reuse from the Engineering Lab site to the Walnut Orchard site would not be a major federal action significantly affecting the environment.

After completion of the Revised Phase 1 EA, and as construction contractors were finalizing plans for Phase 1 grading at the Engineering Labs, TVA identified the need to remove approximately 22,000-30,000 cubic yards of soil from the Phase 1 construction area to accommodate the desired grading plan and construction. It is possible some additional soil would also need to be brought into the site. Total soil moved would be approximately 37,000 cubic yards. In conducting this assessment, TVA supplemented its prior assessments of January 2019, March 2019, and July 2019 for the Phase 1 East Region Consolidation-Norris Properties project. Based on the findings of the second Supplemental EA and FONSI, which are incorporated herein by reference TVA concluded that the proposal to remove approximately

37,000 cubic yards of soil to and from the Engineering Lab would not be a major federal action significantly affecting the environment. The Second Phase 1 SEA and FONSI were completed in February 2020. This EA is for the Phase 2 East Region Consolidation – Norris Properties assessment. Phase 2 would be driven by security updates needed to bring the facility into compliance with current TVA security measures and protocols and, additional consolidation related actions, such as renovations to Building C, that were unknown at the time of the Phase 1 assessment and that may be necessary as a result of TVA’s ongoing evaluation of the condition of the existing facilities and program needs.

## 1.2 Purpose and Need

The overall project purpose continues to be to relocate portions of TVA operations into one location at the Engineering Lab to improve space utilization, foster greater synergies among employees, and to reduce TVA cyclic operations, maintenance and capital project costs consistent with TVA’s ongoing real estate strategy. To achieve the overall project goal, TVA needs to make security updates to bring the facility into compliance with current TVA security measures and protocols. TVA also needs to address additional consolidation-related actions that may be necessary as a result of TVA’s ongoing evaluation of the condition of the existing facilities and program needs; this includes building repairs and renovations the need for which were unknown at the time of the Phase 1 assessment. This Phase 2 EA is being prepared to evaluate the potential impacts associated with these additional actions.

## 1.3 Decision to be Made

TVA must determine whether to proceed with Phase 2 activities and continue the East Region Consolidation at the Engineering Lab.

## 1.4 Other Environmental Reviews and Documentation

Related environmental documents and materials were reviewed concerning this assessment. The contents of these documents help describe the affected properties and are incorporated by reference as appropriate. These are listed below.

- Phase 1 East Region Consolidation – Norris Properties Second Supplemental Draft Environmental Assessment (February 2020) – Environmental review for the removal of 22,000-37,000 cubic yards of soil to Walnut Orchard and an existing offsite landfill.
- Phase 1 East Region Consolidation – Norris Properties First Supplemental Environmental Assessment (July 2019) – Environmental review for the removal of 500-750 cubic yards of soil containing contaminants and/or not suitable for reuse as fill to an offsite waste landfill as well as the transport of 1,800-2,000 cubic yards of soil suitable for reuse from the Engineering Lab site to fill the former Building D basement at the Walnut Orchard site.
- Revised Phase 1 East Region Consolidation – Norris Properties Environmental Assessment (March 2019) – Environmental review for interior modifications of Buildings B, C, D, G, J, N, Q1, Q2, and T and installation of exterior lights and cameras on specific structures; demolition of Building I and two boat sheds; construction of new boat sheds and a shop; repaving/reconfiguring of parking lots/pavement; establishment of a new

stormwater detention pond; tree clearing, and various ground disturbing activities in the southern portion of the Engineering Labs property. The original Phase 1 EA and FONSI were published in January 2019.

- Categorical Exclusion Checklist (CEC) #40993 (May 2019) – Environmental review for the removal of an Underground Storage Tank at the Engineering Labs.
- CEC #36889 (May 2017) - Environmental review for the demolition and removal of Building F at the Engineering Lab due to fire damage.
- CEC #33138 (August 2015) - Environmental review for renovations to Building A at the Engineering Labs to meet current building standards and utilize the facility as a meeting room.
- CEC #30938 (August 2014) - Environmental review for the proposed sale of buildings and property associated with the Engineering Lab. Because TVA decided not to sell the buildings, this environmental review was not completed.

## 1.5 Scope of the Environmental Assessment

TVA has prepared this environmental assessment (EA) to comply with the National Environmental Policy Act (NEPA) and associated implementing regulations. TVA considered the possible environmental effects of the proposed action in conjunction with previous environmental reviews and new information regarding Phase 2 project activities, and determined that potential effects to the environmental resources listed below were relevant to the decision to be made; thus, the following environmental resources are addressed in detail in this EA.

- Historic and Archaeological Resources
- Aesthetics
- Terrestrial Wildlife including Threatened and Endangered Species
- Aquatic Ecology including Threatened and Endangered Species
- Surface Water
- Transportation
- Noise
- Solid and Hazardous Waste

TVA has determined that the analysis presented in the Revised Phase 1 EA and the Second Phase 1 SEA are consistent with the potential impacts associated with the Phase 2 project activities. Therefore, the previous analysis from the Revised Phase 1 EA and the Second Phase 1 SEA are incorporated into this Phase 2 EA by reference and additional analysis of the following resource areas is not necessary.

- **Land Use** – The Revised Phase 1 EA evaluated potential impacts to land use associated with the Phase 1 activities at the Engineering Labs and that analysis is incorporated here by reference. The Land Use analysis in the Revised Phase 1 EA discussed the entirety of the Engineering Lab property because of the scale of the land use data. The project area for the Phase 1 and Phase 2 activities both encompass

different portions of the Engineering Lab, there would be no changes to land use at the Engineering Lab associated with the Phase 2 activities. Since there would be no new impact to land use, additional review is not needed in the Phase 2 EA.

- **Vegetation** – While some vegetation would be cleared at the Engineering Lab under the proposed Phase 2 alternatives, no new information related to vegetation at the Engineering Lab has been identified beyond that already evaluated in the Revised Phase 1 EA and EA supplements. The vegetation analysis in the Revised Phase 1 EA and EA supplements are incorporated here by reference. All plant habitats present onsite are common and well represented throughout the region and possess no conservation value, therefore, there would be no new impact to vegetation associated with the Phase 2 activities and vegetation does not warrant additional review in the Phase 2 EA.
- **Air Quality** - All three Phase 1 EAs evaluated potential impacts to air quality associated with the Phase 1 construction activities at the Engineering Labs and that analysis is incorporated here by reference. The air quality analysis in the Revised Phase 1 EA and the two supplemental EAs discussed in general impacts associated with construction activities. While the project area for the proposed Phase 2 activities encompasses additional areas of the Engineering Labs beyond the Phase 1 project area, the Phase 2 construction activities are consistent with the activities evaluated in the Phase 1 EA and EA supplements. Since there would be no new impacts to air quality, additional review is not needed in the Phase 2 EA.
- **Socioeconomics** – The Revised Phase 1 EA evaluated potential impacts to socioeconomics associated with the Phase 1 construction activities at the Engineering Labs and that analysis is incorporated here by reference. Additionally, the Second Phase 1 SEA presented updated socioeconomic information for the City of Norris, that analysis is also incorporated here by reference. While the proposed Phase 2 activities may continue for a longer duration beyond that evaluated for Phase 1, and may require additional construction workers, all workers would be supplied by the construction contractors. No new jobs are anticipated to be created in association with the Phase 2 activities. New operational staff at the Engineering Lab would be existing TVA personnel transferring from other facilities as part of the consolidation activities. There would be no new impacts to socioeconomics of the City of Norris area associated with the Phase 2 activities and, therefore, socioeconomics does not warrant additional review in the Phase 2 EA.
- **Environmental Justice** – The Revised Phase 1 EA evaluated potential impacts to environmental justice associated with the Phase 1 construction activities at the Engineering Labs and that analysis is incorporated here by reference. Additionally, the Second Phase 1 SEA presented updated information on minority and low-income populations in the City of Norris, that analysis is also incorporated here by reference. No environmental justice communities are present in the immediate vicinity of the Engineering Labs. Since there would be no impacts to minority or low-income

communities from the proposed Phase 2 activities, environmental justice does not warrant additional review in the Phase 2 EA.

Additionally, TVA determined the following resources would not be affected by the proposed Phase 2 actions:

- **Floodplains** – The Engineering Lab is located outside of the 100-year floodplain; therefore, Phase 2 construction activities would be consistent with Executive Order (EO) 11988. Floodplains does not warrant additional review in the Phase 2 EA as the proposed project would have no significant impact on floodplains and their natural and beneficial values.
- **Wetlands** - No wetlands are present within the Engineering Lab. Therefore, wetlands do not warrant additional review in the Phase 2 EA, and the proposed project would have no significant impact on wetlands.
- **Prime Farmland** –Because the Engineering Lab is already a developed federal properties, there would be no conversion of prime farmland associated with the Phase 2 activities. Therefore, prime farmland does not warrant additional review in the Phase 2 EA, and the proposed project would have no significant impact on prime farmland.
- **Recreation** – The Phase 2 activities would be restricted to already developed federal property at the Engineering Lab where there are no recreation resources present. There are no recreational areas in the immediate vicinity of the Engineering Lab. Therefore recreation does not warrant additional review in the Phase 2 EA, and the proposed project would have no significant impact on recreation.

## 1.6 Necessary Permits or Licenses

In addition to the necessary approvals from TVA, the following permits would be required for implementation of the proposed action:

- Coverage under Tennessee General National Pollutant Discharge Elimination System [NPDES] Permit for Discharges of Stormwater Associated with Construction Activities.
- Asbestos Notification to the Tennessee Department of Environment and Conservation requires 10 working days prior to renovation and demolition activities (if needed).

## CHAPTER 2 - ALTERNATIVES

This chapter presents descriptions of the proposed action and its alternatives, a brief comparison of their environmental effects, and TVA's preferred alternative.

### 2.1 Description of Alternatives

The following are summaries for each alternative analyzed in this EA. The alternatives identified were evaluated based on a set of criteria including: cost, efficiency, sustainability, environmental impacts, and meeting TVA's commitment to demonstrate financial and environmental stewardship.

#### 2.1.1 Alternative A – No Action Alternative

Under the No Action Alternative, TVA would continue with the previously evaluated Phase 1 actions as described in the Revised Phase 1 EA and the additional actions evaluated under the first SEA and second SEA pending completion of that environmental review. No additional changes would occur at the Engineering Lab beyond the activities identified in those documents. Because many of the consolidation functions to be located at the Engineering Lab would require completion of the Phase 2 activities, this alternative would not meet the project's purpose and need. However it does provide a baseline comparison for the proposed action alternatives.

#### 2.1.2 Alternative B – Phase 2 Engineering Lab Modification

Under this alternative, TVA would complete consolidation of portions of TVA operations to the Engineering Lab located in Norris, Tennessee. Consolidation activities would be anticipated to begin in early 2020 and could last through 2021. This alternative would include the following actions; the affected buildings and locations of certain actions are shown on Figure 2.1-1:

##### Overall site improvements:

- Possible grade reconfiguration and repaving in the alley behind Buildings C and D as shown in Figure 2.1-1.
- Installation of antennas/cellular repeaters on the roof of Building B or a 30-45 foot radio tower on a concrete pad adjacent to Building D (Figure 2.1-1) along with associated conduit, cables and lighting.
- Trenching, foundation waterproofing, and other corrective measures around the exterior of various buildings (Buildings A, B, C, D, J, N, and junction of Buildings T and Q1) to address water intrusion, which may include construction of retaining walls, concrete gutters, re-grading, or similar methods to divert water.
- Exterior trenching behind Buildings C and D needed to survey and/or update/maintain sewer capabilities, electrical distribution; repair/replacements where needed.
- Connection of the new Boat Shop with the existing sanitation line.

- Limited tree clearing on TVA property to accommodate fences, gates, parking, and for security purposes. Tree clearing extending up to 10 feet on either side of the fences/gates in some areas, although clearing would only occur on TVA property; no trees would be cleared on private property. Several danger trees would be removed, mainly from the west side of the site. Wood waste would be either transported offsite to an appropriate disposal location or chipped, composted, ground, and/or distributed onsite as mulch.
- Potential repairs, replacements, and/or rerouting of existing water and utility lines and any associated repairs required to surrounding area.
- Landscaping at various locations in the Phase 2 construction area.
- Possible addition of concrete pad(s) to display large artifacts near the site entrance (in front of/behind Building A, in front of Building C or D, and in the triangle near the entrance).
- Possible relocation of a prefabricated modular shed from the Walnut Orchard site to the Engineering Lab site. The shed would be placed in the southern portion of the Engineering Lab property near the boat shed area or behind Building Q2 to limit the view for the rest of the Engineering Lab district. A concrete pad may be necessary for placement.
- Extension or addition of lit parking areas near Building B, C, and/or D, and in various locations around the property as shown in Figure 2.1-1; repaving in other areas around the campus as needed. Retaining walls / rip rap will be added in some areas to support elevation changes.
- Execute proper documentation for any existing onsite non-TVA utility lines or utility structures, including but not limited to sewer and water lines, that are not reflected in existing legal documents (such as easements, licenses, etc.).

*Modifications of site security measures:*

- Extension and relocation of the security fencing and gates surrounding the property. A preferred security fencing configuration is presented in Figure 2.1-1, however final configuration could vary slightly as modifications may be required as project plans are finalized. Trenching would be required for the electrical/fiber options wiring in association with the gates and between the gates and Building B. Existing fence may be removed/relocated/replaced in some areas.
- Addition of security fences and gates, including card readers, cameras, and light poles where required, including at the front entrance, to meet security and access requirements.
- Addition of security gate/card readers, cameras, illuminators in areas of the property not covered by existing systems. Illuminators would be downlights where possible. Light poles may be installed near entrance.



- Installation of security lights –freestanding or mounted on buildings – with down-lighting to be utilized where possible. Most lighting would likely be mounted to buildings; new decorative light poles may be added near the site entrance.
- Provide secondary emergency vehicle access to the site, in the event of fire.

Minor renovations to Building A:

- Repairs to doors, vents, gutters.
- Restoration of the existing fireplace to working condition. If any masonry work is require beyond the interior of the chimney (surrounding the fireplace or the exterior of the chimney) TVA would consult with the SHPO.
- Exterior pressure washing and painting.
- In-kind roof repair or replacement.
- Interior and exterior repairs/replacements may be required. If such repairs/replacements are identified as project planning progresses, TVA would consult with the SHPO.

Minor renovations to the Building A & C Connector:

- Potential abatement of asbestos and lead containing materials in the connector to Building A. Existing caulk is known to have asbestos containing materials. If this caulk is abated, windows and/or window seals may need to be replaced.
- Exterior pressure washing and painting.
- In-kind roof repair or replacement.
- Interior and exterior repairs/replacements may be required. If such repairs/replacements are identified as project planning progresses, TVA would consult with the SHPO.

Moderate renovations to Building B:

- Installation of awnings near roll-up doors and/or exterior doors. Non-original exterior doors would be replaced; new lights and security equipment would be added in proximity to the new doors.
- Exterior pressure washing and painting.
- In-kind repair or replacement of trim, doors, windows, roof and gutter systems, etc. as necessary
- Replacement of an existing exterior transformer on the south side of Building B; secondary conduits to be added.
- Installation of new condensing units and concrete pads/platforms; includes disconnects with line-set wall penetrations (placement on both the north and south side of the building).

- Installation of new heating, ventilation, and cooling (HVAC) unit with disconnect and new concrete pad/platform; includes 20x12 exterior duct penetration. Various ducts would be added to support utility and HVAC connections.
- In-kind repairs to both interior and exterior of Building B to address possible termite damage.
- Capping the trench that traverses the office area within Building B.

Major renovations to Building C:

- Life safety and deferred maintenance including but not limited to: interior and exterior lighting, flooring, electrical, low voltage, plumbing, HVAC, and exhaust upgrades and associated freon disposal, replacement of exterior condenser units and Americans with Disabilities (ADA) compliance.
- Installation of a new HVAC unit with disconnect and associated ducts to the second floor.
- Installation of various ducts to support utility and HVAC connections building wide.
- Installation of a fire sprinkler system. This system would be served by the existing site water main which runs between Buildings A and B. The new fire riser would be located in the Building C basement. The mains would be supported on the exterior walls. A new exterior Siamese fire hose connector may be installed. Actions would include trenching between Building C, the main site road, Building A, and the kiln. Hose bibbs would be added in various locations on the exterior of the building. A new fire department connection would be added.
- Installation of a new code compliant fire alarm system.
- Possible interior and exterior repairs/renovation to the basement to convert the space into a tornado shelter and/or storage space. Replacing/upgrading the existing sump pump with a reliable and redundant duplex system with control panel and alarm.
- Refurbish/renovate the entire interior including walls, flooring, ceiling, and doors.
- In-kind repair or replacement of non-original trim, doors, windows, roof and gutter systems (including the installation of new exterior double doors) and awning. Replacement windows would be consistent with original windows based on existing photographs.
- Installation of a roll-up entrance door or double door on the street (north) side of Building C, including the installation of a retractable fabric awning for the full width of the door. Includes new lighting, security equipment, hose bibb and exterior wood siding. The existing wood infill would be removed and brick used to infill the space around the replacement doors.
- Security improvements including cameras, car readers, and illuminators to be installed both in the interior and exterior of the building.

- Repair or replacement of existing non-original equipment such as the elevator to be code compliant.
- In-kind repair or replacement of brickwork, as needed.
- Modification and replacement of the existing roof and structural elements on the Building C rear basement stairway on the west side of the building. May also include raising elevation of landing at the bottom of the stairs, adding a weatherproof sheeting on the inside of the existing structure, and replacing the existing door.
- Exterior pressure washing and repainting.
- Removal of miscellaneous unnecessary and non-original added features including but not limited to metal brackets.
- New ventilation fan, replacement door, and light by basement.
- Installation of new mounted wall pack lighting units.
- Repair or replacement of the attic louver replacements on north and south elevations of the building.
- New condenser units with line-set penetrations through wall and disconnect (both south and west side of the building).
- Installation of wooden bat box(s) near Building C.
- Sealing of holes near the gutters and roof of the building to prevent entry of bats.

Major renovations to Building C& D Connector:

- Exterior pressure washing and repainting.
- Modifications to the circa 1990s interior of the Building C and D connector.
- Repair and/or replacement of breakers, panels, transformers, and the 1600 amp distribution center in Building C that serves both Buildings C and D (may require both interior and exterior work).
- Installation of a fire sprinkler system would require the addition of hose bibbs in the Building C & D Connector.
- In-kind repair or replacement of non-original trim, doors, windows, roof and gutter systems, etc. (including the installation of new exterior double doors) and awning.
- Security improvements including cameras, car readers, and illuminators to be installed both in the interior and exterior of the building.
- Installation of new mounted wall pack lighting units.
- Sealing of holes near the gutters and roof of the building to prevent entry of bats.

Moderate renovations to Building D:

- Improve the existing Building D entrance/exit on the rear (west) of the building for ADA compliance, with egress ramp and compliant handrails.
- Installation of a fire shutter system over the window located above and adjacent to the proposed egress ramp for code compliance: The preference is to retain all exterior openings and to install a rolling fire shutter. However, if this option is not feasible, TVA would consult with the SHPO.
- Installation of a new emergency exit on the rear (west) side of Building D.
- In-kind repair or replacement of failing double-leaf exterior doors. Repair is preferable, however, if repair is not possible then appropriate replacements would be installed.
- In-kind repairs or replacements to trim, doors, windows, roof and gutter systems.
- Exterior pressure washing and repainting.
- Possible elevation changes behind Building D to address water intrusion issues. Actions could include the removal of existing soil coverings (i.e. pavement, concrete, gravel, etc.), addition of soil, and rerouting of drainage pipes, and associated activities. This could also include possible relocation of utility poles due to height requirements for construction activities or safety associated with circulation of vehicles around the site. This would likely include repaving and installation of riprap along slopes.
- Potential to demolish or remove a non-original surge tank – a metal chamber located inside and extending above the roofline of the building – and removal of the associated roof/tress structure.
- Removal of miscellaneous unnecessary and non-original added features including but not limited to an exterior ladder and metal brackets.
- Installation of new mounted wall pack lighting units.
- Sealing of holes near the gutters and roof of the building to prevent entry of bats.

Minor renovations to Buildings G and H:

- Deferred maintenance to ensure code compliance.
- Interior and exterior repairs/replacements may be required. Should such modifications be needed, TVA would consult with the SHPO.

Major renovations to Building J:

- In-kind repair or replacement of the roof.
- Removal of the roll-up doors on the north face of the building and replacement with walls and windows. The new walls would be finished with an exterior insulation finish system (EIFS) with a finish coat that would replicate the finish of the existing exterior walls of the building.

- Replacement of existing exterior entry/exit doors with updated doors.
- Replace windows on the north side of the building.
- Installation of new HVAC units and concrete pads/platforms on the south side of the building including new building penetrations and conduit.
- New condenser units with line-set penetrations through wall and disconnect.
- Relocation of the walk-in cooler currently at Walnut Orchard to a location adjacent to the east side of Building J. The cooler would be placed on a newly installed concrete pad under a new shed roof. An additional new concrete pad would be installed adjacent to the cooler pad to house a generator for the cooler.
- Removal of the knee wall on the east side of Building J.

Minor renovations to Building N:

- Exterior pressure washing.
- In-kind repair or replacement of roof.
- Interior and exterior repairs/replacements may be required. Should such modifications be needed, TVA would consult with the SHPO.

Minor renovations to Building T:

- Installation of planking or another cover material over an existing trough formerly used for flow calibration using water velocity. Installation of a cover over the trough would allow this space to be used for storage without removing character-defining equipment.
- Possible interior and exterior painting.
- Possible replacement of interior lighting.
- In-kind repair or replacement of roof.
- Possible installation of new storage shelving.

Minor renovations to Buildings Q1 and Q2:

- Application of an exterior waterproof coating or single ply roofing system to stop water intrusion on Buildings Q1 and Q2.
- Roof repairs where Building B joins the Quonset Huts.
- Repairs to the water lines serving Buildings Q1 and Q2.

This alternative was identified based on a set of criteria including: cost, efficiency, workplace design, security requirements, sustainability, environmental impacts, and meeting TVA's commitment to demonstrate financial and environmental stewardship.

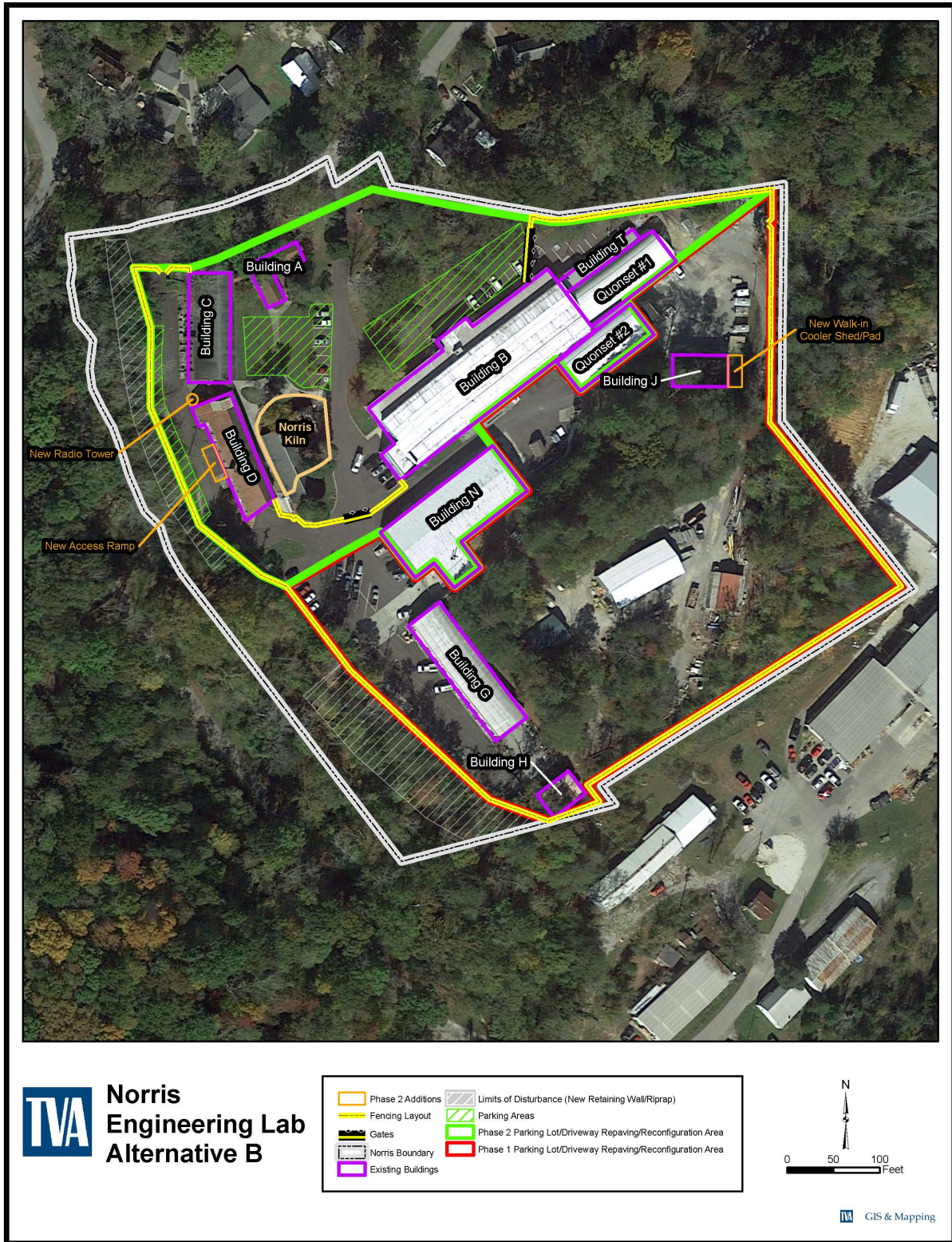


Figure 2.1-1. Engineering Lab Alternative B Project Area

### **2.1.3 Alternatives Considered and Eliminated**

In addition to the alternatives described above, TVA considered three other alternatives.

#### **2.1.3.1 *Alternative C – Demolition of Building C***

Under Alternative C, TVA considered demolition of Building C. Building C has been in an abandoned status for several years and experienced water intrusion which resulted in the development of mold in the building interior. Some degradation of the structure also occurred while the building was not maintained. Because of the age and degraded condition of the building, TVA considered demolition of Building C. This alternative was eliminated because Building C is a contributing structure to the Norris Historic District and because TVA was able to identify additional consolidation activities which could utilize the space, allowing for the renovation and restoration of this significant historic structure.

#### **2.1.3.2 *Alternative D – Sale of Buildings A, C, and D***

Under Alternative D, TVA considered the sale of Buildings A, C, and D. Under preliminary planning, TVA considered the sale of these structures to minimize the costs associated with restoring the buildings and bringing them up to date with current building and life-safety codes. This alternative was considered but eliminated because all three buildings are contributing structures to the Norris Historic District and because TVA was able to identify additional consolidation activities which could utilize the space, allowing for the renovation and restoration of these significant historic structures.

#### **2.1.3.3 *Alternative E – Demolition of Building H***

Under Alternative E, Building H would be demolished to increase the turning radius for vehicles in the southwest corner of the property. As Building H is a contributing structure to the historic district, this alternative was eliminated from consideration.

### **2.1.4 Alternatives Summary**

The alternatives identified above were evaluated based on a set of criteria including: cost, efficiency, workplace design, sustainability, environmental impacts, and meeting TVA's commitment to demonstrate financial and environmental stewardship. All of the alternatives carried forward for analysis in this EA, with the exception of the No Action Alternative, partially met the project purpose and need,

TVA has determined that from the standpoint of NEPA, there are two alternatives that will be carried forward in the EA: Alternative A – the No Action Alternative and Alternative B – Engineering Lab Modifications, as described above.

## **2.2 Comparison of Alternatives**

The environmental impacts of the alternatives are summarized in Table 2-2. These summaries are derived from the information and analyses provided in Chapter 3.

**Table 2-2. Summary and Comparison of Alternatives by Resource Area**

<b>Resource</b>	<b>A (No Action)</b>	<b>B (Phase 2 Modification)</b>
Historic and Archaeological Resources	Minor to Moderate	Minor
Aesthetics	Minor	Temporary and Minor
Wildlife	None	None
Threatened and Endangered Species	None	Minor
Surface Water	Minor	Temporary and Minor
Transportation	None	Temporary and Minor
Noise	Temporary and Minor	Temporary and Minor to Moderate
Solid and Hazardous Waste	None	Temporary and Minor

\* Impacts listed in this table are considered adverse unless otherwise noted.

## 2.3 Identification of Mitigation Measures

TVA would implement various best management practices (BMPs) to minimize potential environmental impacts resulting from renovation and construction activities. Additionally, specific mitigation measures would be implemented to address specific impacts. These BMPs and mitigation measures are outlined below and discussed in further detail in Chapter 3.

### 2.3.1 Best Management Practices

TVA would implement various BMPs throughout the Phase 2 project activities including:

- TVA has obtained coverage under General Permit for Storm Water Discharges Associated with Construction Activities TNR100000 (TDEC 2016) and developed a project-specific SWPPP with regard to the Phase 1 project activities at the Engineering Lab TNR135805. The SWPPP includes erosion control measures such as sediment traps, soil fences, and other BMPs that would be implemented to reduce impacts to surface water quality from sedimentation and soil erosion. The SWPPP would be updated to provide coverage for the additional construction activities as needed. The SWPPP would be updated to reflect new Phase 2 activities.
- Dust suppression mitigation BMPs such as covering trucks and wet suppression of soil stockpiles and deposition areas would be implemented throughout the project activities to reduce fugitive dust emissions.
- Vehicles would be maintained in good operating order to minimize emission of pollutants.



- Spills of oils, fuels, or other potentially hazardous materials would be addressed immediately and BMPs such as secondary containment and spill kits maintained onsite during construction would be used to assure that hazardous substances would not be released to the environment.
- TVA has distributed clean gravel cover on truck routes within the Engineering Lab property to minimize development of and the spread of dirt/mud offsite. Additionally, truck wheels would be washed, as needed, prior to leaving the site to minimize the spread of loose soil and mud onto the local roadways.

### 2.3.2 Mitigation Measures

To minimize and mitigate potential impacts to human health and the environment, TVA would employ the following mitigation measures:

- If TVA deems replacement of windows, doors, trim, or roof systems are necessary in to any buildings in the district and in-kind replacement is not possible or determines additional moderate renovations to structures or general features of the site not mentioned in this EA are necessary following completion of this analysis, TVA would engage in additional consultation with the State Historic Preservation Officer to determine appropriate mitigation for adverse effects.
- The following measures would be taken to ensure that those actions likely to affect the contributing buildings—pressure washing, repointing and repair of brick, and replacement/removal of historic windows and doors—would be in keeping with the SOI’s Standards for Rehabilitation:
  - Pressure Washing: Exterior pressure washing should start with a very low pressure (100 psi or below), even using a garden hose, and progressing as needed to slightly higher pressure—generally no higher than 300-400 psi). Scrubbing with a natural bristle or synthetic bristle brushes may also be used. It would also be tested first in an inconspicuous area to ensure it does not damage exterior siding, windows, or masonry.
  - Repointing/Repair of Brick: The new mortar must match the historic mortar in color, texture and tooling. Laboratory analysis may be required to match the binder components and their proportions with the historic mortar. The new mortar must have greater vapor permeability and be softer than the masonry units and the historic mortar. Replacement brick should match in color, texture, and size to blend with the full range of masonry units on a wall rather than a single brick or stone.
  - Replacement/Removal of Historic Windows: Preservation of historic windows should be the first consideration. When repair is not feasible, replacements must not change the historic appearance of windows through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame. Thus, when replacement is required instead of repair, additional SHPO consultation is required to ensure the proposed actions are in keeping with the SOI’s Standards for Rehabilitation.

- Replacement of Historic Doors: Preservation of historic doors should be the first consideration. When repair is not feasible or possible, replacements must not change the historic appearance of doors through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, panel and light configuration; the reflectivity and color of the glazing (if present); or the appearance of the frame. Thus, when replacement is required instead of repair, and in-kind replacement is not feasible, additional SHPO consultation is required to ensure the proposed actions are in keeping with the SOI's Standards for Rehabilitation.
- To minimize potential impacts to threatened and endangered bat species, tree removal would avoid June and July when Indiana bats and northern long-eared bats are most vulnerable in trees and TVA would implement the identified conservation measures identified in the bat strategy form in Appendix A.
- At least one month prior to renovations, Buildings C and D would be surveyed for evidence of wildlife. Should actively nesting/breeding wildlife be observed in these buildings, avoidance or minimization measures would be put in place (e.g. seasonal restrictions on activities). Additionally, TVA would install exclusion devices on the interiors of Buildings C and D during winter months and place wooden bat box(es) near Building C to provide alternate summer roosting habitat.
- For any existing on-site non-TVA utility lines or utility structures including but not limited to sewer and water lines on the Engineering Lab property that are not documented in existing legal documents (such as easements, licenses, etc.), TVA will work with the appropriate utility company to address and execute proper documentation.

In addition to the mitigation measures specific to the Phase 2 activities described above, TVA could also continue all mitigation measures described previously for ongoing Phase 1 activities including:

- To minimize potential impacts to transportation resources, TVA could travel the transportation route with a representative of the City prior to construction to identify areas of concern that may have occurred between the date of the field investigation and the commencement of the Phase 1 soil transport activities as described in the Phase 1 Second Supplemental EA.
- TVA would designate a point of contact to address any issues that may develop during the hauling and construction operations.
- Once soil transport activities begin, if it is determined that the noise and vibration from truck traffic are a nuisance to the surrounding community or congestion is an issue for drivers during peak traffic hours, TVA could work with the City to adjust the times of hauling operations to avoid additional disturbances.
- To mitigate potential impacts to transportation resources, TVA could compensate the City as necessary to prevent certain damages and to repair damages to infrastructure, if any, that would directly result or are directly resulting from TVA's activities associated with the transportation of the Engineering Lab soil or construction vehicle activities.

Alternatively, with the appropriate approvals, TVA or its contractors could conduct the repairs.

- Compensation associated with repairs following the completion of soil transport and construction activities is limited to repairs needed to bring the infrastructure back up to existing conditions, after impacts resulting from TVA activities.
- To minimize the potential for impacts to utilities, TVA could place steel plates on the roads or could coordinate with the utility providers as needed to place steel plates to minimize the potential for impacts.
- TVA could monitor the potential for vibrations created by any soil compaction activities. Should vibrations be identified from the soil compaction activities, which result in damage to buildings or property in the vicinity, TVA would stop compacting activities until appropriate mitigation measures are identified. Mitigation could include modifying compaction methods, installation of vibration monitors, taking photography, and maintaining documentation of existing damages to structures, if any, monitoring of changes in structures, if any, and/or the potential to provide compensation, as appropriate, should it be determined that structural damage, if any, was a direct result of the vibrations associated with TVA's activities.

## **2.4 Preferred Alternative**

Alternative B, Phase 2 Engineering Lab Modification, has been identified as TVA's preferred alternative. These additional modifications would enhance site security, usability and efficiency and meet TVA's purpose and need. A significant number of laboratory functions continue to operate at the Engineering Lab. Alternative B meets TVA's purpose and need by allowing for the continued operation and long-term management of the Engineering Lab facilities by improving the site security, usability and efficiency and meeting TVA security standards.

## **CHAPTER 3 - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This chapter describes the affected environment (existing conditions of environmental resources in the project area) and the anticipated environmental consequences that would occur from adoption of the alternatives described in Chapter 2.

### **3.1 HISTORIC AND ARCHAEOLOGICAL RESOURCES**

#### **3.1.1 Affected Environment**

The Revised Phase 1 EA evaluated Phase 1 of TVA's proposal to consolidate portions of TVA operations in the Norris, Tennessee area. No new information has been discovered during the current review that will change the findings presented in that document. The descriptions of the Affected Environment, background, work performed, and results presented in the Phase 1 Final EA are incorporated in this document by reference.

In March 2019, in association with the Phase 1 evaluation, TVA hired Thomason & Associates, Preservation Planners, of Nashville, Tennessee to reassess the Norris Engineering Laboratory Complex for listing in the NRHP. Through consultation with the Tennessee Historical Commission (THC) in February and March 2019, it was determined eligible for listing in the NRHP. Buildings A, B, C, D, G, H, Q1, Q2, and T are contributing buildings, and the tunnel kiln (formerly Building F) is a contributing structure. Buildings I, J, N, and P are non-contributing buildings and structures. Additionally, the Engineering Lab Complex is a contributing element to the Norris Historic District.

#### **3.1.2 Environmental Consequences**

##### **3.1.2.1 *Alternative A – No Action***

Under the No Action Alternative, no additional modifications would occur at the Engineering Lab beyond those previously evaluated in the Revised Phase 1 EA, first SEA, and second SEA. Those analyses are incorporated here by reference. Therefore, under Alternative A, there would be no additional impacts to historic and archaeological resources beyond those described in those documents. Phase 1 construction activities would continue. However, should the buildings onsite not be maintained over the long-term, they could deteriorate which could affect the integrity of the structures.

##### **3.1.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

TVA previously reviewed and consulted on the proposed demolition of Building F, previously determined in consultation as ineligible for listing on the NRHP, which had been struck by lightning and suffered severe fire and water damage. During preparation work for demolition in late 2017, TVA discovered an original brick tunnel kiln associated with TVA's Ceramic Research Laboratory (40AN218) partially buried underground and partially beneath Building F.

TVA began construction of the Ceramic Research Laboratory in 1935 with the purpose 1) to aid in the development of locally-sourced ceramic materials in the production of porcelain ceramic; 2) assist in the development of high temperature electrically heated kilns for the firing of ceramic ware, as well as evaluate the advantages and disadvantages of this type of firing and the comparative costs involved in building an operating an electric kiln; and 3) to do basic research work on the production of vitreous dinnerware made from American materials to compete with low-priced foreign dinnerware.

Upon discovery of the kiln, TVA halted the demolition work and notified the Tennessee State Historic Preservation Officer (SHPO) of the post review discovery. A plan was developed in consultation with the SHPO in order to proceed with the demolition of Building F and not adversely affect the kiln. This plan included the following commitments:

1. A cultural resources representative would be present to monitor the removal of siding and demolition in order to stop work if necessary.
2. Removal of the modern siding would be conducted by hand and the brick exterior walls of the east wing would be photo-documented.
3. Demolition of the modern Building F (west wing) would be completed and cleared using machinery.
4. The upper portion of the east wing would be demolished with an excavator by pulling the exterior brick walls outward to prevent damage to the steel and concrete floor located above the kiln.
5. The interior damaged walls and debris inside the building would be lifted out by excavator or a small skid steer.
6. All heavy equipment would remain on the existing paved surface.

TVA hired Thomason & Associates to monitor the demolition and to conduct an architectural assessment, including archival research, in order to document the kiln. TVA, in consultation with the SHPO, found that the demolition of Building F did not adversely affect the kiln and that the kiln is individually eligible for listing in the NRHP under Criteria A for its significant role in the experimentation and development of ceramic pottery in the Southeast Region. In addition the kiln is also individually eligible for the NRHP under Criteria C for its unique design developed through both a private company and TVA engineers.

TVA contracted with Wood Inc. to conduct a geophysical investigation at the kiln (40AN218) to determine if additional intact features associated with the Ceramics Research Laboratory were present. The geophysical survey identified a number of features adjacent to Buildings A, C, D, and the kiln. Following the demolition of Building F, Wood Inc. conducted a Phase II evaluation of site 40AN218 in order to test the features that were identified during the geophysical survey. Excavations revealed that the majority of the site where the original Ceramic Research Laboratory was located had been heavily impacted by construction activities and did not warrant additional investigation. A small feature located directly adjacent to the kiln and also the remains

of a later rotary kiln to the west of the kiln appear to be well preserved and contain intact archaeological deposits that contribute to the kiln's eligibility to the NRHP.

No work is proposed within the NRHP eligible boundary of the kiln, thus pending SHPO consultation, TVA finds that the proposed Phase 2 construction activities will not adversely affect the kiln (40AN218). TVA plans to work with the SHPO to develop interpretative materials and to develop plans to preserve the kiln for future generations. However, those activities will be evaluated in a separate action.

In June 2019, TVA Cultural Compliance archaeologists conducted a Phase I survey of the previously unsurveyed portions of the Engineering Lab complex. The survey included a pedestrian examination of the entire project area in addition to opportunistic shovel testing. The area surveyed covered approximately 7.1 acres and was bounded by Pine Road to the north, Sawmill Road to the west, and private property to the east and south (Figure 3.1-1). The Engineering Lab complex is situated on a hilltop which slopes sharply to the east, west, and south. A small, unnamed stream is located between Sawmill Road and the western boundary of the complex. The southeastern corner of the complex was surveyed by TVA Cultural Compliance personnel prior to the onset of Phase 1 construction and was not examined during this project. Likewise, the area encompassing Buildings A, C, and D, as well as the ceramic kiln, was not included as this portion of the property was examined separately under the Phase II survey as described above.

The Phase I survey area has previously been extensively disturbed by the construction and operation of the Engineering Lab complex and consists of a mix of buildings, sidewalks, parking lots, lawns and trees. The steep slope along the western boundary above Sawmill Road, which is covered by dense secondary growth vegetation, was examined via pedestrian survey only. Two shovel tests were excavated within a small area of open lawn located at the entrance to the complex. The soils within both test areas consisted of very dark grayish brown (10YR 3/2) clay loam to between 10 and 15 centimeters below ground surface, where clay and decayed rock were encountered. No artifacts were recovered and no intact soils were encountered. No archaeological resources were recorded as a result of the Phase I survey of the Engineering Lab complex beyond the kiln area.

As currently scoped, Phase 2 construction activities would include interior and/or exterior repairs to and renovations of the following Buildings: A, A Connector (to Building C), B, C, D, J, T, G, N, Q1, and Q2. While the level of renovations would vary, the project design avoids or minimizes alterations by applying the Secretary of Interior's Standards for Rehabilitation within the NRHP-eligible lab complex and from the complex to the NRHP-listed Norris Historic District. All proposed alterations, additions, replacements, or other changes would not diminish the design, setting, feeling, or association of the historic district—those aspects which convey the significance of the property under Criteria A and C—and, therefore, would have no significant impact.

## **3.2 AESTHETICS**

### **3.2.1 Affected Environment**

The Engineering Lab is located in a heavily wooded area adjacent to a residential area within the City of Norris, Tennessee approximately 1.5 miles from the intersection of U.S. Highways 61 and 441 (Figure 1-1). Industrial properties are located to the south and southwest of the Engineering Lab closer to U.S. Highway 61. Screened by trees, the Engineering Lab is not highly visible to any structures in the surrounding vicinity. It is possible that one or two of the closest residential properties may have a partial view of the Engineering Lab.

### **3.2.2 Environmental Consequences**

#### **3.2.2.1 *Alternative A – No Action***

Under the No Action Alternative, no additional modifications would occur at the Engineering Lab beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Therefore, under Alternative A, there would be no changes to the existing viewshed beyond those described in those documents. Phase 1 construction activities would continue. However, should the buildings onsite not be maintained, over the long-term they could deteriorate which could affect the appearance of the structures. Because of the surrounding vegetation, the structures are not highly visible to the surrounding vicinity, therefore, any potential impacts to aesthetics under the no action alternative would be minor and confined primarily to the site itself.

#### **3.2.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

Visual impacts associated with Alternative B would include minor, temporary impacts associated with the presence of construction equipment and vehicles during the construction period and long-term changes to the viewshed associated with the modifications to the site fencing, lighting, and modifications to the structures and site layout including additions of parking. Given the presence of screening vegetation, both construction impacts and the viewshed changes would be primarily limited to the site itself. The closest residential properties may notice construction equipment during the construction period, and may notice changes related to the fencing and site lighting. The other changes would likely not be visible to these residential neighbors. Because most of these actions would occur on the northern and western portions of the property, these actions would also be less visible to the industrial neighbors to the south. The majority of the renovations to the Engineering Lab structures will improve the aesthetics of the site by updating the structures and improving the landscaping. Overall, impacts to aesthetics associated with Alternative B would be minor.

## **3.3 WILDLIFE**

### **3.3.1 Affected Environment**

Habitats for terrestrial animal species reviewed for this supplemental EA include disturbed forest edges, forested fence lines, and mature trees scattered across mowed grass landscaping and

buildings proposed for renovations. Habitats and the terrestrial wildlife that may use these types of habitats are described in the Revised Phase 1 East Region Consolidation – Norris Properties Final Environmental Assessment.

Review of the TVA Regional Natural Heritage database in August 2019 indicated that no additional caves or other unique or important terrestrial habitats were identified within three miles of the project area than those previously addressed in the Revised Phase 1 EA.

Review of the US Fish and Wildlife Information for Planning and Consultation (USFWS IPaC <https://ecos.fws.gov/ipac/>; August 2019) resulted in two additional birds of conservation concern that have the potential to occur in the project area that were not previously reviewed in the Revised Phase 1 EA: bald eagle (*haliaeetus leucocephalus*) and Canada warbler (*Cardellina canadensis*). Of all the migratory birds of conservation concern extracted from the IPaC over the current and previous NEPA reviews, the project area only contains potential habitat for black-billed cuckoo, Canada warbler, eastern whip-poor-will, golden-winged warbler, prairie warbler, red cross-bill, red-headed woodpecker, rusty blackbird, wood thrush, and yellow-bellied sapsucker.

### **3.3.2 Environmental Consequences**

#### **3.3.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and there would be no additional impacts to wildlife beyond those previously evaluated.

#### **3.3.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

Under Alternative B, TVA would complete consolidation of portions of TVA operations to the Engineering Lab located in Norris, Tennessee and some or all of the fragmented forest and adjacent landscaping with scattered trees in the Phase 2 project area would be impacted. Both forested and herbaceous vegetation that may provide habitat for common wildlife species would be removed in association with the proposed actions.

Vegetation removal would occur on some or all of the areas of early successional, herbaceous habitat (lawn) and planted trees. Any wildlife (primarily common, habituated species) currently using these heavily disturbed areas may be displaced by increased levels of disturbance during construction actions, but it is expected that they would return to the project area upon completion of actions and landscaping.

Clearing of up to 2.3 acres of forested habitat (forest edges, fence rows, and naturally occurring trees incorporated into the landscaping) would take place as part of the proposed actions. Building renovations would also occur. Wildlife may utilize these forested areas and buildings for nesting and foraging. Direct effects to some individuals that are immobile during the time of construction may occur, particularly if construction activities transpire during breeding/nesting



seasons. At least one month prior to renovations, Buildings C and D would be surveyed for evidence of wildlife. Should actively nesting/breeding wildlife be observed in these buildings, avoidance or minimization measures would be put in place (e.g. seasonal restrictions on activities). Proposed actions are not likely to affect populations of species common to the area because of the above commitment, because proposed impacts occur over a relatively small area, and because similarly forested and building habitat exists in the surrounding landscape.

Bald eagle, black-billed cuckoo, Canada warbler, eastern whip-poor-will, golden-winged warbler, prairie warbler, red cross-bill, red-headed woodpecker, rusty blackbird, wood thrush, and yellow-bellied sapsucker may use the forested areas in the action area for foraging or nesting. Vegetation removal could occur at any time of year except June and July. Therefore all species have the potential to be present in the area at the time of vegetation removal for nesting and/or foraging. Direct impacts may occur to some individual birds that may be immobile at the time of vegetation removal (i.e. nestlings or eggs). Removal of this vegetation also would remove foraging and future nesting sites for individuals utilizing the area. Similarly suitable habitat is prevalent across the landscape immediately surrounding the proposed action area. Due to the relatively limited acreage of habitat affected by the proposed Phase 2 actions and the availability of additional habitat nearby, TVA biologists have determined that while a small number of individual birds have the potential to be impacted, the proposed actions would not impact populations of migratory birds of conservation concern.

### **3.4 AQUATIC ECOLOGY**

#### **3.4.1 Affected Environment**

The western portion of the Engineering Labs property, beyond the edge of existing pavement is forested and one forested perennial stream is located near the property boundary. Riparian conditions along this stream were evaluated during a December 2019 field survey using a Tennessee Division of Water Pollution Control Hydrologic Determination Field Data Sheet, Version 1.4. The perennial stream is approximately 5 feet wide and 1 foot deep with a gravel/silty substrate; there is a single culvert on the stream near the northern property boundary. This stream is classified as Streamside Management Zone Category A (requiring a 50 foot buffer be maintained to each side of the stream), Cowardin Code R4 (Riverine Intermittent), Hydrogeomorphic (HGM) Code Riverine.

#### **3.4.2 Environmental Consequences**

##### **3.4.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and there would be no new impacts to Aquatic Ecology beyond those previously evaluated. However, changes to aquatic ecology would likely occur over the long term due to factors such as population growth and land use changes within the area.

### **3.4.2.2 Alternative B – Phase 2 Engineering Lab Modification**

Aquatic ecology could be affected by the proposed action. Direct impacts would not be anticipated as no project actions are planned within 50 feet of the perineal stream. However, indirect impacts could occur due to modification of the adjacent vegetation, slope, and/or storm water runoff resulting from construction and maintenance activities. Potential impacts due to removal of streamside vegetation within the riparian zone include increased erosion and siltation, loss of instream habitat, and increased stream temperatures. Other potential effects resulting from construction and maintenance include herbicide runoff into streams. TVA would apply herbicide in accordance with BMPs to minimize the potential for runoff. Siltation has a detrimental effect on many aquatic animals adapted to riverine environments. Turbidity caused by suspended sediment can negatively impact spawning and feeding success of fish and mussel species (Brim Box and Mossa 1999; Sutherland et al. 2002). TVA would employ standard BMPs related to the use of herbicides on the Engineering Lab property and the implementation of the SWPPP should minimize the potential for soil runoff. Therefore, potential impacts to aquatic ecology would not be anticipated as a result of these actions.

The one perennial stream within the project area would be protected by Standard Stream Protection (Category A) of a 50 foot buffer to either side of the stream as defined in TVA 2017. The width of the SMZs is determined by the type of watercourse, primary use of the water resource, topography, or other physical barriers (TVA 2017). These categories of protection are based on the variety of species and habitats that exist in the streams as well as the state and federal requirements to avoid harming certain species. If impacts to the stream cannot be avoided, mitigation per the USACE/ TDEC permit requirements would be required.

## **3.5 THREATENED AND ENDANGERED SPECIES**

### **3.5.1 Affected Environment**

#### **3.5.1.1 Wildlife**

A review of the terrestrial animal species in the TVA Regional Heritage database in August 2019 resulted in records of one additional state-listed species (little brown bat) within three miles of the project footprint beyond those previously evaluated in the Revised Phase 1 EA. Records of one additional federally protected species (bald eagle) also came out of this August 2019 review. Descriptions of these species' habitat requirements are below. Descriptions of habitat requirements for previously identified terrestrial animal species of concern can be found in the Revised Phase 1 EA. Terrestrial animal species of conservation concern resulting from the 2017 and 2019 TVA database searches and reviewed for the proposed actions in this SEA are combined in Table 3.5-1.

Little brown bats primarily hibernate in caves and mines. During summer this species can be found in hot buildings where females form maternity colonies, hollow trees, and bridges. Colonies are usually close to water bodies where these bats prefer to forage. Foraging also

occurs among trees in open areas (Harvey et al, 2011, NatureServe 2019). The nearest known little brown bat record is from a cave approximately 1.4 miles from the proposed footprint. There are eight cave records within three miles, the nearest of which is approximately 1.3 miles from the project footprint. No caves were observed during field reviews in the actions areas in 2017, 2018, and 2019. No winter roosting habitat occurs in the proposed project. The closest known summer roosting site is approximately 6.0 miles away in the roof of a floating cabin.

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). One bald eagle nest is known from Anderson County, Tennessee, approximately 3.6 miles away. No suitable habitat for bald eagle exists in the project action area. No bald eagle nests were observed within 660 feet of the action areas during previous field reviews.

**Table 3.5-1. Federally listed terrestrial animal species reported from Anderson County, Tennessee and other species of conservation concern documented within three miles of the project area<sup>1</sup>**

Common Name	Scientific Name	Status <sup>2</sup>	
		Federal	State (Rank <sup>3</sup> )
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	D(S3)
Bald eagle	<i>Haliaeetus leucocephalus</i>	DM	D(S3)
Eastern small-footed bat	<i>Myotis leibii</i>	--	D(S2S3)
Gray bat	<i>Myotis grisescens</i>	LE	E(S2)
Indiana bat	<i>Myotis sodalis</i>	LE	E(S1)
Little brown bat	<i>Myotis lucifugus</i>	--	T(S3)
Northern long-eared bat	<i>Myotis septentrionalis</i>	LT	T(S1S2)
Smoky shrew	<i>Sorex fumeus</i>	--	D(S4)
Southeastern shrew	<i>Sorex longirostris</i>	--	D(S4)

<sup>1</sup> Source: TVA Regional Natural Heritage Database, extracted 8/30/2019; USFWS Information for Planning and Conservation (IPaC) resource list (<https://ecos.fws.gov/ipac/>), accessed 8/30/2019.

<sup>2</sup> Status Codes: D = Deemed in Need of Management; DM = Delisted but still being Monitored; E = Endangered; LE = Listed Endangered; LT = Listed Threatened; PS = Partial Status; T = Listed Threatened.

<sup>3</sup> State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Rare; S4 = Apparently Secure.

### 3.5.1.2 Aquatic Ecology

A review of the TVA Natural Heritage Database in January 2020 indicated two fish, 16 mussel, and one snail as federally-listed species within the Clinch River 10 digit HUC and/or Anderson County, Tennessee. Five state-listed fish species, 17 mussel, and one snail species are known to occur within the same area. The federally and state-listed species are detailed in Table 3.5-). Of the 24 listed aquatic species, 14 are extirpated from the Clinch River 10 digit HUC and will not occur within the project area.

The Tennessee Dace can be found inhabiting shallow pools in association with undercut banks and debris in small low gradient woodland tributaries in the upper Tennessee River drainage. Spawning occurs from April through July. Habitat for the Tennessee Dace was observed within the one perennial stream occurring within the Engineering Lab property.

**Table 3.5-2. Records of state-listed aquatic animal species from Anderson County and/or within the Clinch River 10 digit HUC**

Common Name	Scientific Name	Element Rank <sup>2</sup>	Federal Status <sup>3</sup>	State Status <sup>3</sup>	State Rank <sup>4</sup>
<b>FISH</b>					
Blue Sucker	<i>Cycleptus elongatus</i>	X		T	S2
Highfin Carpsucker	<i>Carpionodes velifer</i>	H?		D	S2,S3
Lake Sturgeon	<i>Acipenser fulvescens</i>	E		E	S1
Slender Chub	<i>Erimystax cahni</i>	X	LT	T	S1
Tennessee Dace	<i>Chrosomus tennesseensis</i>	H		D	S3
Yellowfin Madtom	<i>Noturus flavipinnis</i>	X	LT	T	S1
<b>MUSSELS</b>					
Alabama Lampmussel	<i>Lampsilis virescens</i>	X	LE	E	S1
Birdwing Pearlymussel	<i>Lemiox rimosus</i>	X	LE	E	S1
Cracking Pearlymussel	<i>Hemistena lata</i>	X	LE	E	S1
Dromedary Pearlymussel	<i>Dromus dromas</i>	X	LE	E	S1
Fanshell	<i>Cyprogenia stegaria</i>	X	LE	E	S1
Fine-rayed Pigtoe	<i>Fusconaia cuneolus</i>	X	LE	E	S1
Green Blossom Pearlymussel	<i>Epioblasma torulosa gubernaculum</i>	X	LE	E	S1
Orange-foot Pimpleback	<i>Plethobasus cooperianus</i>	H	LE	E	S1
Pink Mucket	<i>Lampsilis abrupta</i>	X	LE	E	S2
Ring Pink	<i>Obovaria retusa</i>	H	LE	E	S1
Rough Pigtoe	<i>Pleurobema plenum</i>	X	LE	E	S1
Sheepnose	<i>Plethobasus cyphyus</i>	E	LE	E	S2 S3
Shiny Pigtoe Pearlymussel	<i>Fusconaia cor</i>	E	LE	E	S1
Slabside Pearlymussel	<i>Pleuronaia dolabelloides</i>	E	LE	H?	S2
Spectaclecase	<i>Cumberlandia monodonta</i>	E	LE	H	S2 S3
Tennessee Clubshell	<i>Pleurobema oviforme</i>			H?	S2 S3
White Wartyback	<i>Plethobasus cicatricosus</i>	E	LE	H	S1
<b>SNAILS</b>					
Anthony's River Snail	<i>Athearnia anthonyi</i>	X	LE	E	S1
Spiny Riversnail	<i>Io fluvialis</i>	X			S2

<sup>1</sup> Source: TVA Natural Heritage Database, queried on 09/11/2014

<sup>2</sup> Heritage Element Occurrence Rank; E = extant record ≤25 years old; X = Extirpated

<sup>3</sup> Status Codes: E = Verified Extant; H? = Possibly Historic; H = Historical; X = Extirpated

<sup>4</sup> State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure

## **3.5.2 Environmental Consequences**

### **3.5.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and no new effects on sensitive wildlife aquatic species listed in Tables 3.5-1 and 3.5-2 or their habitats would occur beyond those previously evaluated.

### **3.5.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

#### **Wildlife**

Under Alternative B, TVA would complete consolidation of portions of TVA operations to the Engineering Lab located in Norris, Tennessee and some or all of the 2.3 acres of fragmented forest and trees scattered throughout the landscaping in the Phase 2 project area would be impacted. Both forested and herbaceous vegetation that may provide habitat for Threatened and Endangered wildlife species would be removed in association with the proposed actions.

Five state-listed (eastern small-footed bat, hellbender, little brown bat, smoky shrew, and southeastern shrew), one federally protected species (bald eagle), and three federally listed species (gray bat, Indiana bat, and northern long-eared bat) have been documented within three miles of the project footprint. Of these, seven species have the potential to utilize the project area. Habitat for hellbender and bald eagle does not exist within the project footprint. The proposed actions would be in compliance with the National Bald Eagle Management Guidelines. Hellbenders and bald eagles would not be impacted by the proposed actions.

Suitable habitat for smoky shrew and southeastern shrew occurs in forest fragments in the action area. Direct effects to some individuals may occur if they are nesting or borrowing in the action area at the time of vegetation removal or construction. Mobile individuals foraging in these areas are expected to flee when disturbed. Due to the relatively small amount of habitat proposed for removal and the existence of similarly suitable habitat immediately adjacent to the actions, proposed actions are not expected to affect populations of either shrew species. Populations of smoky shrew and southeastern shrew would not be significantly impacted by the proposed project activities.

Suitable winter roosting habitat for eastern small-footed bat, gray bat, little brown bat, Indiana bat, and northern long-eared bat does not occur in the action area. Five caves are known within three miles of the project footprint, however, the nearest of these occurs approximately 1.5 miles outside of the project footprint and would not be impacted by the proposed activities.

Multiple buildings are slated for modification and may have proposed actions including painting and pressure washing. Based on field reviews, Buildings C and D are the only buildings with the potential to house summer roosting bats. While a few of other buildings have structural characteristics that could support roosting bats, these buildings are actively being used and no signs of bat use have been observed. Buildings C and D however, have suitable roosting characteristics, are either infrequently used or have not been in use in recent months, have some small openings that could be used as entry and exit points by bats, and have not previously been surveyed internally for bat use. In March 2020, TVA conducted a survey of Buildings C and D and found some evidence of bat activity. It is unknown how frequently or extensively bats utilize these structures. It is possible that individual bats may use these buildings as short-term stop-over roosts during foraging bouts or migrations. At least one month prior to renovation, Buildings C and D would be surveyed for evidence of bats (i.e. guano, staining, bats themselves). Should bats be found roosting in the buildings, seasonal or timing restrictions would be placed on the actions to ensure bats are no longer present when renovations take place. TVA would install permanent wooden bat box(es) near Building C to provide alternate summer roosting habitat. Additionally, during the winter TVA would install exclusion devices on the inside of Buildings C and D to block potential entry points to the attic and roof areas of the buildings to deter bats from entering.

Approximately 2.3 acres of suitable foraging and summer roosting habitat exists along fence lines, forest fragments, forest edges, and around trees within landscaping for eastern small-footed bat, little brown bat, Indiana bat, and northern long-eared bat within the action area. Suitable gray bat foraging habitat does occur over wet areas within the project footprint. Tree removal is possible any time between August 15 and May 31. Tree roosting bat species listed above could be roosting in the area during late summer/fall and spring months. Therefore direct effects to individuals of these bat species could occur. However the months of June and July would be avoided which are the most critical times for Indiana bats and northern long-eared bats and likely others listed above, as this is when bats roosting in trees are birthing and rearing their young. Loss of these trees would also remove foraging habitat for all four tree-roosting bat species. Due to the avoidance tree removal during critical months for tree roosting species, lack of impacts to winter roosting habitat, the relatively small amount of forest being removed (2.3 acres), and an abundance of similarly suitable habitat on the landscape surrounding the project footprint, proposed actions are not expected to significantly impact eastern small-footed bats and little brown bats.

A number of activities associated with the proposed project were addressed in TVA's programmatic consultation with the U.S. Fish and Wildlife Service 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 page 5 of the TVA Bat Strategy Project Screening Form (Appendix A) and need to be reviewed/implemented as part of the proposed project. The project would avoid removing trees between June 1 and July 31 when Indiana bats and northern long-eared bats are having young in trees. Since tree removal would occur when there is a potential for bats to be in trees, identified conservation measures include a funding contribution towards future conservation and

recovery efforts for federally listed bats. With the implementation of the identified conservation measures and the building survey commitment, proposed actions would not significantly impact gray bat, Indiana bat, or northern long-eared bat.

**Aquatic Ecology**

Adverse water quality impacts can potentially result from the implementation of the proposed project, which could have direct and indirect impacts to aquatic biota within watercourses in the project area. However, watercourses that could be affected by the proposed project would be protected by standard BMPs and additional protection measures as identified in TVA 2017. These BMPs are designed in part to minimize disturbance of riparian areas and subsequent erosion and sedimentation that can be carried to streams. However, if impacts to the stream cannot be avoided due to design constraints, mitigation per USACE/TDEC permit requirements would be required.

There are no federally listed aquatic species or designated critical habitat within the proposed project, therefore no direct, indirect, or cumulative impacts to federally protected aquatic species would occur. Potential impacts to the state-listed Tennessee Dace could occur from loss of habitat should the perennial stream be altered. Under this scenario, TVA would be required to mitigate for stream impacts. However, no stream alteration is proposed under Alternative B. Therefore, no impacts to the Tennessee Dace are anticipated under the proposed action.

**3.6 SURFACE WATER**

**3.6.1 Affected Environment**

Surface water was evaluated in the Revised Phase 1 EA and second SEA, the results of those analyses are applicable to the current project actions and are incorporated by reference. The Engineering Labs and the TVA Walnut Orchard project area are located in Anderson County, TN and drain to water ways within the (8-digit HUC 06010207) Lower Clinch River watershed. The surface water streams in the vicinity of this project and their overall health ratings are listed below in Table 3.6-1. As described in Section 3.4 there is also one forested perennial stream on the western side of the Engineering Lab property. Health ratings are not available for that unnamed stream.

**Table 3.6-1 Norris 2017 Health Rating Results for Norris Reservoir**

<b>Monitoring location</b>	<b>Dissolved oxygen</b>	<b>Chlorophyll</b>	<b>Fish</b>	<b>Bottom life</b>	<b>Sediment</b>
Forebay	Poor	Good	Good	Fair	Fair
Mid-reservoir (Clinch River)	Poor	Good	Good	Good	Good
Mid-reservoir (Powell River)	Poor	Good	Good	Fair	Good

The federal Clean Water Act requires all states to identify all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards and to

establish priorities for the development of limits based on the severity of the pollution and the sensitivity of the established uses of those waters. States are required to submit reports to the United States Environmental Protection Agency (USEPA). The term “303(d) list” refers to the list of impaired and threatened streams and water bodies identified by the state. The Clinch River in the vicinity of the project is currently listed on Tennessee’s 303(d) list for temperature and flow alterations, due to upstream impoundment, Norris Dam (TDEC 2018). The Lower Clinch River in the vicinity of the project is also listed as an Exceptional Waters of Tennessee due to its classification as a State Scenic River. Buffalo Creek in the vicinity of the Engineering Lab Complex is also listed on the 303(d) list for Nitrate + Nitrite, Total Phosphorus and E coli impairment, due to municipal point source and pasture grazing. There is an USEPA approved pathogen TMDL that address the pathogen pollutant. Table 3.6-2 provides a listing of local streams with their state (TDEC 2013) designated uses.

**Table 3.6-2. Designations for Streams in the Vicinity of the Proposed Action**

Stream	Use Classification <sup>1</sup>							
	NAV	DOM	IWS	FAL	REC	LWW	IRR	TS
Clinch River		X	X	X	X	X	X	X
Unnamed Tributary of Clinch River			X	X	X	X		
Buffalo Creek			X	X	X	X		

<sup>1</sup> Codes: DOM = Domestic Water Supply; IWS = Industrial Water Supply; FAL = Fish and Aquatic Life; REC = Recreation; LWW = Livestock Watering and Wildlife; IRR = Irrigation, NAV = Navigation, TS = Trout Stream

<sup>2</sup> Not in project area, shown for flow network.

### 3.6.2 Environmental Consequences

#### 3.6.2.1 *Alternative A – No Action*

Under the No Action Alternative, no new consolidation related activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue. However, should the buildings onsite not be maintained over the long-term, they could deteriorate which could result in long-term impacts to surface water from solid waste and erosion of soils. Therefore, there could be minor long-term impacts to surface water as a result of the no action alternative.

#### 3.6.2.2 *Alternative B – Phase 2 Engineering Lab Modification*

The potential impacts associated with Phase 1 construction activities were evaluated in the Revised Phase 1 EA and are incorporated here by reference.

### **Construction/Demolition Impacts**

*Surface Runoff* - Demolition and construction activities have the potential to temporarily affect surface water via storm water runoff. Soil erosion and sedimentation can clog small streams and threaten aquatic life. TVA would comply with all appropriate state and federal permit requirements. Appropriate BMPs would be followed, and all proposed project activities would be conducted in a manner to ensure that waste materials are contained, and the introduction of



pollution materials to the receiving waters would be minimized. This site is already covered under a Notice of Intent (NOI) for a general construction storm water permit and has implemented a Storm Water Pollution Prevention Plan (SWPPP) to detail BMPs for Phase 1 activities. The proposed Phase 2 construction/demolition activities that may require site specific BMPs would need to be detailed in the site SWPPP. Because this project is in the vicinity of either impaired or exceptional waters, additional protective measures may be required, such as expanded buffer zones. Refer to the TDEC General Construction Storm Water permit (TDEC 2016b) for details. As in the case with the Phase 1 projects the SWPPP would identify specific BMPs to address construction-related activities that would be adopted to minimize storm water impacts. The Tennessee Erosion and Sediment Control Handbook (TDEC 2012) would be used to avoid contamination of surface water in the project area. Proper implementation of these controls is expected to result in only minor temporary impacts to surface waters.

Additionally, impervious buildings and infrastructure prevent rain from percolating through the soil and result in additional runoff of water and pollutants into storm drains, ditches, and streams. The proposed Phase 2 Engineering Lab site modifications would appear to not change impervious surface area significantly, beyond what was previously evaluated in the Revised Phase 1 EA and Phase 1 Second SEA. Under Phase 2, some modifications to storm water flows on site would be introduced to reduce the possibility of water damage and to better facilitate concentrated storm water flows. Any future development would need proper treatment with either implementation of the proper BMPs or to engineer a discharge drainage system that could handle any increased flows prior to discharge into the outfall(s).

*Domestic Sewage* - Portable toilets would be provided for the construction workforce as needed. These toilets would be pumped out regularly and the sewage would be transported by tanker truck to a publicly-owned wastewater treatment works that accepts pump out. The public sewer services on-site would continue to be evaluated to ensure they are in good working order. Should any maintenance or upgrades be needed on this system, Local and State regulatory authorities would be notified to see if any permitting would be required.

*Equipment Washing and Dust Control* – Equipment washing and dust control discharges would be handled in accordance with BMPs described in the Storm Water Pollution Prevention Plan for water-only cleaning.

*Chemical and Solid Waste Handling* – All chemicals would be properly handled, labeled and stored. Equipment would be checked for leaks to ensure they are in good working condition. Leaks and spills would be cleaned up and reported per regulatory requirements, utilizing proper handling and disposal techniques. Solid wastes would be properly maintained on-site and would be removed from the site in a timely manner for proper disposal.

There would be a potential for contaminated runoff to reach storm drains and thus, nearby waterbodies, however, with good housekeeping practices and BMP placement, these potential releases should be temporary and minor.

## **Operational Impacts**

Operational impacts to surface waters should be minor during operation of the proposed constructed/renovated Engineering Lab facility. More staff would be onsite which could increase septic output, solid wastes and even the potential for automobile leakage to be released to surface water stream. Any wastes produced during the operation of this facility would be properly handled and disposed. There would be a potential for contaminated runoff to reach storm drains and thus, nearby waterbodies, however, with good housekeeping practices and BMP placement, these potential releases should be temporary and minor.

### **3.7 TRANSPORTATION**

#### **3.7.1 Affected Environment**

Located in Norris, the project area is accessible from US-441 (State Route (SR)-71/Norris Freeway) which curves around the west side of the city and continues south for 21 miles before reaching Knoxville and north for 10 miles before terminating in Rocky Top. Interstate 75 passes 2 miles to the southwest of the city, with an exit providing access via SR-61/Andersonville Highway. The remainder of the Norris roadway network is made up of local roads within predominately residential areas.

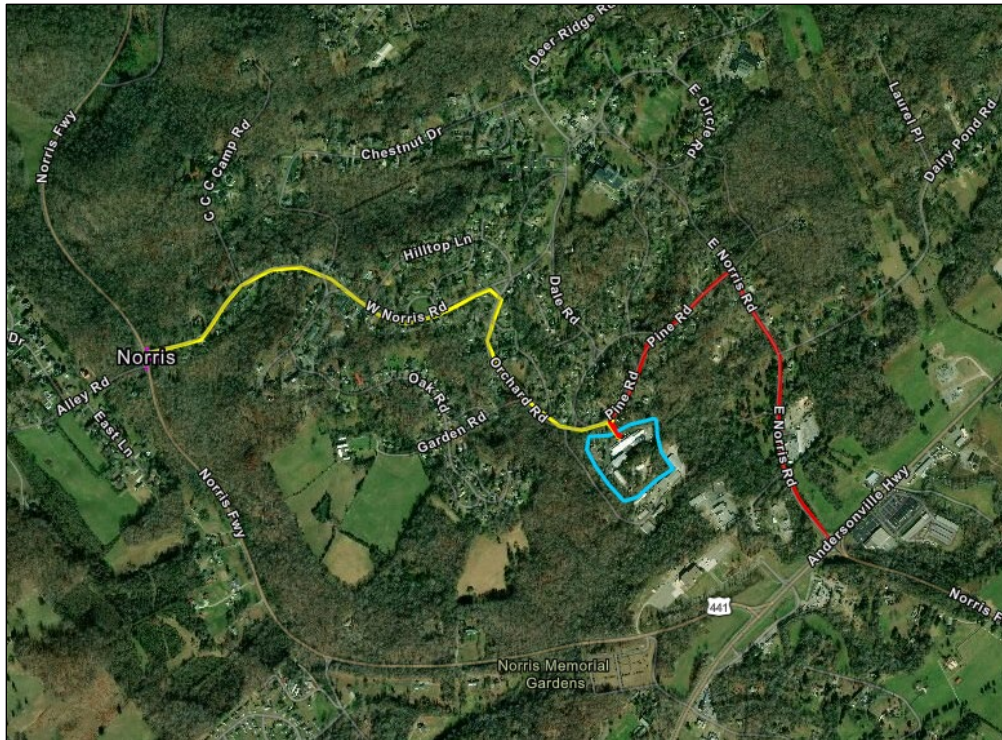
The proposed project would involve the movement of construction vehicles and construction workers private vehicles in and out of the Engineering Lab along one of two routes shown on Figure 3.7-1. Vehicles would follow either of these routes to and from major roadways in the vicinity. Route A from the Engineering Lab west to US-441 is approximately 1.2 miles one-way along Pine, Orchard, and West Norris Roads. Route B from the Engineering Lab to East Norris Road is approximately 0.4 miles one-way and 1 mile to SR-61.

In the first and second Phase 1 SEAs, data available through the Tennessee Department of Transportation (TDOT) was reviewed to consider current vehicular traffic near the project area. TDOT estimates the Average Annual Daily Traffic (AADT) at select locations along major roadways. AADT estimates are based on a 24-hour, two directional vehicle count at specific measurement locations. Based on an axle correction factor, the raw traffic volume data is mathematically adjusted for vehicle type. The data is also statistically corrected for a seasonal variation factor that considers time of year and day of the week. AADT maps provide estimated traffic volumes at measurement station locations along major roadways for any given year for which data is available (TDOT 2019).

AADT data specific to Route A is not available as there are no traffic count stations on Pine, Orchard, or West Norris Roads in the vicinity of the Engineering Lab. Route B offers two AADT station locations, one on US-441 (south of the Engineering Lab) and another along East Norris Road, north of the intersection with Pine Road. Table 3.7-1 presents the AADT data for 2013-2017 at each of these stations.

In 2017, the estimated AADT for US-441 was approximately 1,700 vehicles per day (VPD). That same year, East Norris Road reported an AADT of just over 3,300 VPD. As shown through the

traffic counts over the last five years, AADT for both stations has remained relatively steady, experiencing slight dips in VPD between 2016 and 2017. Due to the consistent AADTs within a relatively small geographical area, TVA can make the assumption that no specific areas of the Norris roadway network within the immediate project area have experienced a noticeable increase in traffic in recent years.



**Figure 3.7-1. Construction routes (Route A yellow and Route B red) from the Engineering Lab (blue) to major roadways in the vicinity**

**Table 3.7-1. AADT from 2012-2017**

Year	US-441/SR-71	East Norris Road
2017	1,727	3,314
2016	1,788	3,361
2015	1,737	3,298
2014	1,720	3,435
2013	1,718	3,464

Source: TDOT AADT

Given the short term nature of the proposed operation and the fact that traffic is not anticipated to be detoured to other routes, additional counts were not needed for this SEA.

A field investigation of the project area and proposed routes was conducted on August 29, 2019. Considering Route A along West Norris and Orchard Roads (shown in yellow on Figure

3.6-1), the investigation found a visually obvious seam running near the centerline of Orchard Road from Garden Road to West Norris Road and several breaks in the pavement at the intersection of West Norris Road and US-441.

The majority of the roadway surface of the proposed haul Route B (shown in red on Figure 3.6-1) appears to be in satisfactory condition, with the exception of some minor low spots or dips in the pavement (these may be rutting caused by the increased friction of various vehicles stopping at these intersections over time) near the intersection of Pine Road and Pine Place and near the intersection of East Norris Road and Dairy Pond Road.

Several utilities were observed on both of the proposed routes, including two culvert crossings near the intersection with Sawmill Road, potable water line crossings, and sanitary sewer lines running underneath Pine Road and Orchard Road.

### **3.7.2 Environmental Consequences**

#### **3.7.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and there would be no new transportation impacts beyond those previously evaluated.

#### **3.7.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

Impacts to transportation associated with the Phase 1 construction activities were evaluated in the Revised Phase 1 EA, first SEA, and second SEA, those analyses are incorporated here by reference. Alternative B would involve the movement of additional construction vehicles and construction workers vehicles along Pine, Orchard, and West Norris Roads in the vicinity of the Engineering Lab for a period of several months beyond the period already evaluated in those previous analyses. Multiple vehicles may traverse these roads at any time between 6:30 am and 6:30 pm on a weekday and on Saturdays throughout the course of the construction activities.

This increase in truck traffic along the local residential roadways could cause additional impacts specifically to Pine, Orchard, and West Norris Roads. Though existing traffic volumes on the local roadways are unknown, it can be assumed that the additional construction vehicle traffic on these residential streets would be noticeable, though it would be less traffic than evaluated in the second SEA and therefore this analysis would be bounded by the analysis in that document. Residents should not be significantly impeded from reaching their homes or from being able to enter and exit the residential areas under normal traffic conditions. It is possible that traffic congestion or safety could be a concern during peak traffic hours. If this were to become an issue, TVA could restrict truck traffic during these peak hours (approximately 6:30 am – 9 am and 4:30 pm – 6:30 pm). Additionally, TVA could alternate the use of both potential haul routes to minimize potential traffic congestion. Therefore, congestion related impacts would be considered minor and temporary.

In addition to increased traffic volumes, residents in houses along Pine, Orchard, East Norris, and West Norris Roads would be subject to an increase in traffic noise from the truck traffic. Construction vehicles produce road noise and can produce vibrations more discernible to surrounding receptors than smaller passenger vehicles and this could potentially be noticeable to residents in the homes along either Route A or Route B. The increased noise and potential vibrations would likely be more noticeable to residents during early morning hours on weekdays and particularly on Saturdays when more residents may sleep later in the mornings. Occasional truck noise would not constitute a significant impact to residents. To minimize potential impacts associated with elevated noise levels from the truck traffic, TVA could reduce truck trips to occur within normal working hours (8 am to 5 pm) on week days and reduced hours (10 am to 4 pm) on Saturdays. Additionally, TVA could alternate sending trucks along both potential haul routes to minimize impacts along either route. These impacts would be temporary and minor lasting only the duration of the Phase 2 construction activities.

In addition to increased traffic volumes, residents in houses along Pine, Orchard, East Norris, and West Norris Roads would be subject to an increase in traffic noise from the truck traffic. Dump trucks produce road noise and can produce vibrations more discernible to surrounding receptors than smaller passenger vehicles and this could potentially be noticeable to residents in the homes along either Route A or Route B. The increased noise and potential vibrations would likely be more noticeable to residents during early morning hours on weekdays and particularly on Saturdays when more residents may sleep later in the mornings. Truck noise would be a moderate, though temporary impact to residents as truck traffic would traverse these routes periodically throughout the construction period. To minimize potential impacts associated with elevated noise levels from the truck traffic, TVA could restrict the truck trips to a reduced set of hours (for example 8 am to 5 pm weekdays and 10 am to 4 pm on Saturdays). Additionally, TVA could alternate sending trucks along both potential haul routes to minimize impacts along either route. Overall, given the intermittent truck traffic, these impacts would be temporary and minor.

The residential roadways in Norris are not designed for high levels of industrial traffic. The utilities underlying these residential roadways could potentially be impacted by high volumes of heavy truck traffic. Deformation of the pavement, commonly called rutting, where heavy vehicles stop and make turning movements could occur. To minimize potential impacts to these underlying utilities, TVA would coordinate with the utility companies to identify locations of concern so that the utilities could take measures such as placing steel covers over these portions of the roadway if necessary to minimize the potential for impacts during the transportation work. Steel covers would help distribute the weight of the trucks and minimize the potential for impacts to the underlying utilities. TVA would also compensate the City as necessary to repair any damages resulting from the transportation of the soil. The City would organize, plan, and conduct the repair work. Repair efforts could include temporary lane closures to allow for repaving and repair efforts. These lane closures would be coordinated with the use of BMPs including appropriate signage, lane markers, flaggers where needed, and other measures to minimize potential impacts to travelers and to maximize safety. With the commitment to mitigate damages and limited to efforts needed to bring the roadway back up to existing conditions, impacts to roadways and utilities would be considered minor and temporary.

Overall, the use of either Route A or Route B is unlikely to result in significant impacts to human health and/or the environment, however, the use of Route B would likely lessen impacts as it relies on roadways that are better designed and maintained for frequent trucking.

Considering the existing conditions and increase in truckloads associated with the proposed soil transport activities, the following steps would be taken to limit and mitigate impacts:

- TVA would walk the routes with a representative of the City prior to construction to identify areas of concern that may have occurred between the date of the field investigation and the commencement of the hauling operations.
- The TVA construction manager or their designee will be on site at the Engineering Labs during Phase 2 construction activities and available to address any issues with roadways that may develop.
- Once soil transport activities begin, if it is determined that trucks are a nuisance to the surrounding community or congestion is an issue for drivers during peak traffic hours, TVA would work with the City to adjust the times of operations to reduce disturbances.
- To mitigate potential impacts to transportation resources, TVA would compensate the City as necessary to prevent and repair damages associated with the Phase 2 construction activities. Compensation associated with repairs following the completion of Phase 2 construction activities would be limited to repairs needed to bring the infrastructure back up to documented existing conditions.
- To minimize the potential for impacts to utilities, TVA would coordinate with the utilities as needed to identify areas where the utilities may wish to place steel plates to minimize the potential for impacts.

TVA has determined that with the opportunities described above for minimizing impacts, if necessary, the additional truck Phase 2 construction related traffic would not result in new impacts beyond those previously considered in the second SEA.

## **3.8 NOISE**

### **3.8.1 Affected Environment**

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the EPA and has been adopted by most federal agencies. A DNL of 65 A-weighted decibel (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like

construction. (The A-weighted sound level, used extensively in the U.S. for the measurement of community and transportation noise, represents the approximate frequency response characteristic of the average young human ear.) Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by the USEPA as a level below which there is no adverse impact. Additionally, to avoid potential long-term effects to hearing, USEPA established a 24-hour exposure level of 70 dBA (USEPA 1974).

Noise occurring at night generally results in a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of noise during the day. This perception is largely because background environmental sound levels at night in most areas are about 10 dBA lower than those during the day.

The Noise Control Act of 1972 directs federal agencies to comply with applicable federal, state, and local noise control regulations. The Engineering Lab and Walnut Orchard facilities are located within Norris City Limits. The Norris Municipal Code prohibits construction noise during the hours of darkness<sup>2</sup> on week days and Saturdays except in the case of urgent necessity in the interest of public health and safety. Additionally, the City of Norris sets a limit of 65 dB at the common lot line for industrial areas excluding noise from cars, trucks, or motorcycles (Municipal Technical Advisory Service 1996). Sound limits for vehicles within the City of Norris are as shown in Table 3.8-1:

**Table 3.8-1. Vehicle Sound Level Limits within Norris City Limits**

Sound Level in Decibels (dB)	Type of Vehicle	Where Measured
87	Buses and trucks over 10,000 pounds	At 50 feet
93	Buses and trucks over 10,000 pounds	At 25 feet
80	Buses and trucks under 10,000 pounds	At 50 feet
86	Buses and trucks under 10,000 pounds	At 25 feet
78	Passenger cars	At 50 feet
84	Passenger cars	At 25 feet
87	Motorcycles (includes other vehicles)	At 50 feet
93	Motorcycles (includes other vehicles)	At 25 feet

Source: Municipal Technical Advisory Service 1996

Vibration refers to groundborne noise and perceptible motion; the energy of vibration is transmitted in waves through the soil and bedrock. The movement of vehicles along roadways and construction activities both create vibrations, either continuous or transient in nature. Vibration can result in impacts to the human built environment such as movement of building walls or floors, rattling of windows, and shaking of items on walls, shelves, or surfaces, etc.. Additionally, vibration can result in impacts to the natural environment associated with shaking of trees, triggering of landslides or liquefaction, etc. As with noise, vibration attenuates with distance due to the spreading of the energy and frictional loss.

<sup>2</sup> The hours of darkness are defined as one half hour after official sunset and one half hour before official sunrise.

Vibratory ground motion may be assessed to determine peak particle velocity (PPV) measured in both the horizontal and vertical directions, typically in inches per second. The PPV is defined as the maximum instantaneous peak of the vibration signal. Therefore, the PPV can be measured to determine the potential for damage to various buildings and structures. Federal Transit Authority guidelines (2006) established the construction vibration damage criterion for non-engineered timber and masonry buildings to be 0.2 inches per second and for reinforced-concrete, steel, or timber buildings and structures the PPV is 0.5 inches per second. Damage thresholds for continuous vibration sources are approximately half of the thresholds for transient vibration sources.

In addition to the potential for damaging structures, vibration can cause annoyance to occupants within the vicinity, though it is generally more noticeable to those within structures as compared to outdoors. The effect of vibration on the human body is most frequently defined as the average of the squared amplitude of the signal. That is approximately 70 percent of the PPV for a single frequency vibration. The threshold for perception of vibration is typically around 64 VdB (the vibration velocity level in decibel scale).

### **3.8.2 Environmental Consequences**

#### **3.8.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and there would be no new noise impacts beyond those previously evaluated. Noise receptors in the vicinity of each facility would continue to experience ambient noise from the environment; normal activities at the Engineering Lab; ongoing construction related activities at the Engineering Lab; local traffic; and recreational activities in the vicinity. There would be no new noise or vibration along local roadways associated with the movement of construction vehicles.

#### **3.8.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

Under Alternative B, Phase 2 construction activities at the Engineering Lab would not contribute any additional noise above that already occurring as a result of the Phase 1 construction and soil transport activities. The impacts associated with the noise from the Phase 1 construction activities was evaluated in the Revised Phase 1 EA and the noise and vibrations associated with soil transport activities was evaluated in the First and Second Phase 1 SEA.

Construction traffic, similar to soil transport traffic as described in the Second SEA, would generate vehicle noise and vibration beyond the baseline from the passage of the trucks along either route from the Engineering Lab to the major roadways. Phase 2 construction traffic would, however, generate less additional noise and vibration than the soil transport activities evaluated in the Second SEA. Occasional truck noise as would be expected in association with the Phase 2 activities would not constitute a significant impact to residents. As large construction vehicles would visit the Engineering Labs only periodically as needed, the associated noise and vibration impacts would be temporary and minor.



Construction noise sources at the Engineering Labs would include a variety of construction equipment, examples of which are listed in Table 3.8-2. Table 3.8-2 describes noise emission levels at a distance of 50 feet for common construction equipment expected to be used during the soil deposition activities. As can be seen from this table, the anticipated noise levels at 50 feet from the noise source range from 75 dBA to 87 dBA based on data from the Federal Highway Administration (Federal Highway Administration 2006). As noise attenuates over distance, TVA anticipates that most noise generated as a result of construction activities at the Engineering Lab would attenuate to below the 65 dB limit at the property boundary as decreed in the Norris city noise ordinance.

**Table 3.8-2. Maximum noise levels at 50 feet for common construction equipment**

Equipment Type	Maximum Noise Level ( $L_{max}$ ) at 50 Feet (dBA, slow <sup>1</sup> )
Backhoe	78
Clam Shovel (dropping)	87
Compactor (ground)	83
Dozer	82
Dump Truck	76
Flat Bed Truck	74
Jackhammer	85
Mounted Impact Hammer (hoe ram)	90
Paver	85
Pickup Truck	75
Vibratory Concrete Mixer	80
Warning Horn	83

**Source:** Federal Highway Administration 2006

<sup>1</sup> Slow response as measured on the A scale of a sound level meter or time-weighted average.

Construction personnel, especially equipment operators, would use appropriate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

During construction it is possible that there could be a need for soil stabilization using soil compacting equipment which can induce both noise and vibration. Vibrations created by such activities can have the potential to affect nearby facilities and structures as well as be a source of annoyance to people in the vicinity. TVA would monitor the vibrations created by any soil compaction activities. Should vibrations be identified which are resulting in damage to buildings or affecting people in the vicinity, TVA would stop compacting activities until appropriate mitigation measures are identified. Mitigation could include modifying compaction methods, installation of vibration monitors, photography and documentation of existing damages to structures, monitoring of changes in structures, and/or providing compensation should it be

determined that structural damage occurred from vibrations associated with TVA's activities at the Engineering Lab. Both noise and vibration associated with soil moving and compaction activities would be short-term. Therefore, noise and vibration impacts associated with the no action alternative at and in the vicinity of the Engineering Lab would be expected to be moderate and temporary.

Following completion of Phase 2 construction activities, the ambient sound environment at the Engineering Lab during operations would be expected to return to near ambient levels. Noise levels at the industrial properties adjacent to the Engineering Lab's southern boundary would be 65 dB or less at the property boundary in accordance with the local ordinance. TVA activities at the Engineering Lab would be similar to previous existing operations (office space, boat storage, and maintenance) as prior to commencement of consolidation activities. While there would be additional operational vehicle traffic, it is assumed the overall ambient environment at the Engineering Lab would return to near similar levels after completion of construction. It is possible somewhat higher noise levels may occur during morning and evening transit periods as employees arrive or leave the site. Based on the nature of the activities at the Engineering Lab in comparison to the neighboring industrial land uses, it is assumed overall noise levels would also be 65 dB or less by the edge of the Engineering Lab property. Overall, noise impacts under Alternative B at and in the vicinity of the Engineering Lab are anticipated to be temporary and minor.

### **3.9 SOLID AND HAZARDOUS WASTE**

#### **3.9.1 Affected Environment**

Solid waste is more commonly referred to as trash or garbage and is generated by normal, day-to-day operations. It is generally managed in a variety of ways including reduction, recycling and disposal in landfills. Reduction considers the design, production, and use of materials to reduce the amount of waste; recyclables are those items diverted from the solid waste stream such as paper, glass, plastic, and metals; and disposal refers to the placement of solid waste in engineered areas designed to protect the environment from contaminants. Solid waste is generally considered low risk and may be disposed of in dumpsters pending removal from site by the contracted municipal waste hauler for disposal in a licensed landfill. Most construction debris, such as cleared trees, packing materials, and scrap lumber and metals would also fall into this category.

Hazardous materials are solids, liquids, or gases that have properties that pose the potential to harm people, other living organisms, property, or the environment. Hazardous materials have the potential to become or to create hazardous waste. Hazardous materials include materials that are radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, biohazardous, toxic, pathogenic, or allergenic as defined by U.S. Department of Transportation regulations. These materials pose a risk to health, safety, and property when transported in commerce (49 CFR 172.101, Hazardous Materials Table). The National Fire Protection Association, in Section 704 of the National Fire Code, uses a different system for identifying the hazards associated with materials developed primarily with the needs of fire protection agencies in mind.

Hazardous waste refers to a class of wastes specifically defined in the Resource Conservation and Recovery Act (RCRA). These wastes contain certain toxic chemicals or have certain characteristics that cause them to be a significant risk to the environment and/or human health with respect to storage, transportation, or disposal. Hazardous waste may be classified as hazardous because of toxicity, reactivity, ignitability, or corrosivity. Certain types of wastes are “listed” or identified as hazardous by the EPA in 40 CFR 263.

At present the Engineering Lab generates general waste (food, wastewater, general office trash) in addition to certain lab wastes such as various fluids (preservatives, alcohol, acids, etc.) batteries, and other miscellaneous materials. All solid and or hazardous waste currently generated at the Engineering Lab and Walnut Orchard are disposed in accordance with all appropriate local, state, and federal requirements

### **3.9.2 Environmental Consequences**

#### **3.9.2.1 *Alternative A – No Action***

Under the No Action Alternative, no new consolidation activities would be conducted beyond those previously evaluated in the Revised Phase 1 EA, First SEA, and Second SEA. Those analyses are incorporated here by reference. Phase 1 construction activities would continue and there would be no new generation of solid or hazardous wastes beyond those previously evaluated.

#### **3.9.2.2 *Alternative B – Phase 2 Engineering Lab Modification***

The Revised Phase 1 EA analyzed the solid and hazardous waste impacts associated with the Phase 1 construction activities at the Engineering Lab. The first and second SEAs evaluated the solid and hazardous waste impacts associated with the proposed soil transport activities. Those results are incorporated in this SEA by reference.

Solid and or hazardous waste currently generated at the Engineering Lab are disposed in accordance with all appropriate local, state, and federal requirements. For the proposed project, any additional waste would be disposed in accordance with Solid and Hazardous Waste Rules and Regulations of the State of Tennessee (TDEC DSWM Rule 004 Chapters 11 and 12).

Some materials at the Engineering Lab may include asbestos containing materials (ACM) or lead paint. Such hazardous materials would be addressed prior to commencement of any demolition or renovation activities that could affect those materials. Such materials would be evaluated (e.g. waste determinations) and managed (e.g. inspections, container requirements, permitted transport) in accordance with applicable federal and state rules including TDEC Solid and Hazardous Waste Rules and Regulations as described in TDEC Division of Solid Waste Management Rule 0400 Chapters 11 and 12, respectively, including all appropriate notifications be provided prior to any renovation/demolition activity. Hazardous materials would be removal, handling, and disposal by appropriately trained and licensed personnel and contractors. Therefore, no air quality or other impacts would be anticipated with respect to the handling and disposal of such hazardous wastes.

During construction, a minor temporary increase in hazardous waste would occur due to the use of heavy equipment and other machinery. Potential hazardous waste items could include petroleum fuels, hydraulic fluids, testing supplies, vehicle batteries and paints. This increase would be minor and temporary. Any spills would be immediately addressed and BMPs such as secondary containment and spill kits maintained onsite during construction would be used to assure that hazardous substances would not be released to the environment. Therefore, impacts associated with hazardous materials during construction would be minor.

Upon completion of the construction activities, waste handling at the Engineering Lab would increase above present levels as a result of the new functions and lab actions transferred to the site. As these functions and lab actions were previously located at other TVA facilities in the vicinity, there would be a net decrease in the wastes generated at those locations. Therefore, overall, there would largely be a net balance in the total quantities of wastes generated by these facilities and functions. TVA's current procedures for handling of these wastes would continue. All wastes would be handled and disposed in accordance with all appropriate federal, state, and local regulations. Overall, there would be no anticipated new impacts in association with solid and hazardous waste in association with operations at the Engineering Lab.

As the offsite landfills are designated, permitted waste disposal areas, and as TVA would obtain appropriate disposal agreements with the respective landfill(s) as needed, there would be no new solid or hazardous waste related impacts at the landfills associated with the transport and disposition of any construction debris.

### **3.10 CUMULATIVE IMPACTS**

Cumulative impacts are defined in the Council on Environmental Quality's regulations at 40 C.F.R. § 1508.7 as follows:

Cumulative impact is 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 non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cumulative impacts are defined in the Council on Environmental Quality's regulations at 40 C.F.R. § 1508.7 as follows:

Cumulative impact is 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 non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past actions that have already occurred and present actions are integrated into the existing baseline conditions discussed above and include the activities evaluated in the Revised Phase

1 EA and the first SEA. Potential future projects in the vicinity of the Engineering Lab and Walnut Orchard are described below:

- **Phase 1 Consolidation Activities at the Engineering Lab** – TVA is currently engaged in Phase 1 construction at the Engineering Lab. Phase 1 construction is concentrated in the southern and eastern portions of the property and included vegetation clearing, demolition of Building I, construction of new boat sheds, certain interior renovations to various existing buildings, excavation of soil unsuitable for use as fill, and excavation and construction of a stormwater detention pond. Phase 1 construction activities are anticipated to continue throughout 2020.
- **Phase 1 Soil Transport Activities** – TVA needs to remove soil from the Phase 1 construction area to accommodate the desired grading plan and construction. It is possible additional soil would also need to be brought into the site for use as stable fill material (the soil being removed from the site is unsuited for this use). Total soil moved to and from the Engineering Labs would be approximately 37,000 cubic yards. Additionally, TVA is considering an alternative enclosed stormwater chamber within the Phase 1 construction area rather than the originally evaluated stormwater pond to allow for the construction of additional parking above the chamber. Soil transport and stormwater chamber construction activities could occur from early to mid-2020.
- **Long-Term Stabilization of the Engineering Lab Kiln** - TVA plans to work with the SHPO to develop interpretation and to preserve the Engineering Lab kiln for future generations. At present the details of this long-term stabilization and preservation are unknown, but could include work on the kiln structure to ensure long-term stability and/or construction of protective measures to shield the kiln from the elements. These activities could also include installation of interpretive signs and landscaping features. Overall, the stabilization actions could reflect activities similar to those found at a small-scale construction project such as renovations to a single story structure.
- **Extension of Sawmill Road** – The City of Norris is currently coordinating with the Tennessee Department of Transportation to plan and implement the extension of Sawmill Road, located on the west side of the Engineering Lab, south to SR-61. The purpose of the extension would be to link the industrial properties of the Engineering Lab, RTE, and Perfect Polish to SR-61 so that the industrial traffic would have a more direct route to these facilities, avoiding the more residential roadways (along Pine, Orchard, and West Norris Roads) currently utilized to access all of these facilities.
- **Water Line Repairs, Upgrades, and/or Relocation** – A Norris Water District water main currently present within the Engineering Lab boundary may require reinforcement, repair, and/or relocation of all or a portion of the current line crossing under the roadway (east of Buildings G and H), or rerouting the line to the west side of the pavement/parking area on the west side of Buildings G and H.

TVA has determined there would be no cumulative impacts to wildlife associated with the Phase 2 construction activities in conjunction with the ongoing and potential future projects. TVA has also determined there would be potential cumulative impacts to historic and archaeological resources, aesthetics, threatened and endangered species, transportation, noise, and solid and hazardous waste associated with the Phase 2 construction activities and these ongoing and potential future projects. These impacts are described below.

- **Historic and Archaeological Resources** – The combined Phase 1, Phase 2, and kiln projects could result in cumulative impacts to historic and archaeological resources due to the changes to the NRHP-eligible Engineering Lab and the corresponding impacts to the NRHP-listed Norris Historic District. Both Phase 1 and Phase 2 construction activities would include interior and/or exterior repairs to and rehabilitation of various buildings at the Engineering Lab. While the level of renovations would vary in these resources, the project design avoids or minimizes alterations by applying the Secretary of Interior’s Standards for Rehabilitation within the NRHP-eligible lab complex and from the complex to the NRHP-listed Norris Historic District. All proposed alterations, additions, replacements, or other changes would not diminish the design, setting, feeling, or association of the historic district—those aspects which convey the significance of the property under Criteria A and C—and, therefore, would have no significant cumulative impact. The kiln project would preserve an important historic resource and resulting in a beneficial impact.
- **Threatened and Endangered Species** – Cumulative impacts to threatened and endangered species could result from the combined projects, particularly the gray bat, Indiana bat, and northern long-eared bat, and little brown bat could occur if TVA were unable to limit the removal of trees to the winter season between November 15 and March 31. To minimize potential cumulative impacts to these bat species, TVA would survey and mark all potentially suitable bat trees and TVA would implement the identified conservation measures identified in the bat strategy form in Appendix A. Therefore, potential cumulative impacts to these bat species would be minor.
- **Surface Water** – Cumulative impacts to surface water could result from soil runoff associated with the combined projects. TVA would implement a SWPPP including erosion control measures such as sediment traps, retaining walls, and other BMPs that would be implemented for each respective project to reduce impacts to surface water quality from sedimentation and soil erosion. Therefore, cumulative impacts to surface water from the combined projects would be anticipated to be minor and temporary.
- **Transportation** – Cumulative transportation related impacts could result from the combined projects. Each of these activities would generate increased construction truck traffic along the local roadways (Pine, Orchard, and West Norris Roads) which could result primarily in increased stress along these roadways, potentially resulting in damage to the roadways. As evaluated and described in the Phase 1 Second SEA, TVA remains committed to mitigating the impacts of roadway damage by compensating the City of Norris for any necessary repairs to return the roadways to their current state. Therefore,

these cumulative impacts would be temporary and minor lasting only the length of the combined projects.

- **Noise** – Cumulative noise and vibration related impacts could result from the combined projects. Each of these activities would generate increased construction truck traffic along the local roadways as described under Transportation. Additionally, compaction of soils at the Engineering Lab could result in vibrations that affect neighboring properties. These vibrations could contribute to cumulative effects on structures such as increasing stress on the structure or propagating previously existing damage. These cumulative impacts would be moderate minor and temporary lasting only the length of the combined projects.
- **Solid and Hazardous Waste** – Cumulative solid and hazardous waste related impacts could result from the combined projects. Each of these projects would generate varying quantities and types of waste material. Wastes associated with the soil transport activities would be limited to soil, debris and material found within the soil, and possible fluids and materials associated with the construction and transportation equipment. While the environmental analyses for these potential future projects are still in progress, it can be assumed that such wastes would be handled in accordance with all appropriate local, state, and federal regulations. Therefore, while the combined projects would generate additional quantities of solid and hazardous waste above that normally generated at the Engineering Lab, these wastes would be treated and disposed appropriately and at existing permitted facilities designed to accept such waste. Therefore, the cumulative impacts of the combined projects with regard to solid and hazardous waste would be minor and temporary.

### 3.11 Unavoidable Adverse Environmental 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 Council for Environmental Quality and the courts. Impacts associated with the proposed activities have the potential to cause unavoidable adverse effects to several environmental resources.

Specifically, temporary impacts to water quality from runoff could impact nearby receiving water bodies during construction activities. Adverse impacts would also in association with removing the trees and vegetation at the Engineering Lab. In addition, construction activities would generate noise, vibrations, and fugitive dust. Noise, vibration, and dust impacts along local roadways would be temporary, occurring only as individual trucks pass by and lasting only the length of the proposed actions. Noise, vibration, and dust impacts at the Engineering Lab would also be temporary and would be managed through BMPs such as dust control or mitigated by conducting vibration monitoring and providing compensation as necessary. Transportation related impacts from the construction traffic would also be temporary and minor. Should

damages to local roadways occur, the impacts would be mitigated by TVA providing compensation for any necessary repairs.

With the application of appropriate BMPs and mitigation measures in addition to adherence to permit requirements, all of these unavoidable adverse effects would be minor.

### **3.12 Relationship of Short-Term Uses and Long-Term Productivity**

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, timber management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and nonmarket, for future generations. Long-term impacts would be those that last beyond the life of the project.

The proposed action would remove some vegetation. Short-term impacts to productivity could include disruptions to wildlife in the vicinity of the project area (terrestrial) as a result of construction noise and temporary disturbances. Following construction, there would be more operational activity at the Engineering Lab, however the majority of this activity would occur within the disturbed areas of the site. Therefore, it is anticipated that wildlife use of the surrounding area would return to previous levels once the noise and disruptions associated with the construction activities cease. Therefore, only minor impacts would be anticipated to short-term uses of the Engineering Lab site.

Long-term impacts would continue to be associated with the operation of the Engineering Lab. While there would be a minor increase in activity around the site, the majority of the long-term productivity impacts would have been associated with the initial construction of the site. Therefore, no new impacts to long-term productivity would be anticipated.

### **3.13 Irreversible and Irretrievable Commitments of Resources**

As used here, irreversible commitments of resources include the use or consumption of non-renewable resources because of a decision or implementing a proposed action. For example, extracting ore is an irreversible commitment. Irretrievable commitments involve the use or commitment of resources for a period of time, even a long period. An example of an irretrievable resource commitment is the loss of timber production on a newly cleared transmission line right-of-way through a previously forested area. In that case, removal of the transmission line and the right-of-way would eventually result in the restoration of forestland and timber productivity.

Implementation of the proposed action would result in the irreversible or irretrievable commitments of resources associated with the construction activities. Gas, oils, and fluids would be utilized in the construction vehicles and equipment. These materials are generally considered as an irreversible and irretrievable use. Additionally, certain construction materials would be dedicated for use in the construction activities rendering those materials unavailable for other uses thus constituting irreversible and irretrievable use.



## CHAPTER 4 - LIST OF PREPARERS

### 4.1 NEPA Project Management

#### **Cindy Light, PMP**

Project Role: Project Manager – Strategic Real Estate  
Education: M.B.A., Business Administration; B.S., Organizational Management;  
M.C.R., Masters of Corporate Real Estate  
Experience: 22 years in Project Planning and Performance; 16 years in Utility Industry

#### **Ruth Horton**

Position: Environmental Program Manager  
Education: B.A, History; NEPA Certification Training  
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in Environmental Compliance

#### **Carol Butler Freeman, PG**

Project Role: NEPA Specialist  
Education: MS, Geological Sciences; BS, Geology  
Experience: 11 years in NEPA compliance

### 3.2 Other Contributors

#### **Paul G. Avery**

Project Role: Historic and Archaeological Resources  
Education: MA, Anthropology; BA, Anthropology; BS, Forensic Investigations  
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#### **Elizabeth Hamrick**

Project Role: Wildlife and Threatened and Endangered Species  
Education: MS, Wildlife and Fisheries Science; BA, Biology, BA, Anthropology  
Experience: 18 years conducting field biology, 13 years in technical writing, 11 years  
compliance with NEPA and ESA

#### **Hallie A. Hearnese**

Project Role: Historic Structures, Architectural Historian  
Education: M.A. in Public History, B.S. in Historic Preservation  
Experience: 7 years of experience in cultural resource management (CRM) as an  
architectural historian; 1 year in Cultural Compliance (Section 106/110 of  
the NHPA); 4 years as research assistant

#### **Craig L. Phillips**

Position: Aquatic Community Ecologist  
Education: MS and BS, Wildlife and Fisheries Science

Experience: 8 years sampling and hydrologic determination for streams and wet-weather conveyances; 7 years in environmental reviews

**Marianne Shuler**

Project Role: Archaeologist

Education: B.A. in Religion, emphasis in Middle Eastern Archaeology

Experience: 15 years of experience in cultural resource management and compliance with NHPA, including experience in ARPA, 3 years of experience in Tribal Relations

**Brandon Whitley**

Project Role: Aquatic Biologist

Education: BS, Wildlife and Fisheries Science

Experience: 2 years conducting field biology, 1.5 years NEPA and ESA compliance

**A. Chevales Williams**

Project Role: Surface Water

Education: B.S., Environmental Engineering

Experience: 13 years of experience in water quality monitoring and compliance; 12 years in NEPA planning and environmental services.

**Carrie Williamson**

Project Role: Floodplains

Education: B.S., Environmental Engineering

Experience: 13 years of experience in water quality monitoring and compliance; 12 years in NEPA planning and environmental services.

## CHAPTER 5 - LITERATURE CITED

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**APPENDIX A**  
**Agency Consultation**

**From:** [Hamrick, Elizabeth Burton](#)  
**To:** [robbie\\_sykes@fws.gov](mailto:robbie_sykes@fws.gov); [ross\\_shaw@fws.gov](mailto:ross_shaw@fws.gov)  
**Subject:** RE: Notification in accordance with TVA Programmatic Consultation for Routine Actions and Federally listed bats  
**Date:** Thursday, September 19, 2019 3:15:00 PM  
**Attachments:** [Completed\\_NorrisPropertiesEA\\_Phase2\\_TVA-Bat-Strategy\\_09.19.2019June-2019-FINAL.pdf](#)

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Good afternoon,

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

The attached form is serving at TVA's mechanism to determine if project-specific activities are within the scope of TVA's bat programmatic consultation and if there is project-specific potential for impact to covered bat species, necessitating conservation measures, which are identified for the project on pages 5-8. The form also is serving as the primary means of notification to the USFWS and others as needed.

***Project: Phase 2 East Region Consolidation - Norris Properties Environmental Assessment, Anderson County, TN. The project purpose is to relocate portions of TVA operations into one location to improve utilization, reduce costs, and maximize returns. The project entails security updates to the Engineering Labs, updates and renovations to facilities to bring them up to code and to accommodate the relocated operations. Removal of up to 2.3 acres of potentially suitable summer roosting bat trees would occur between Nov 15 and March 31. Area is 1.4 miles from Norris Dam with historic Indiana bat records and more recent NELB records. Old Buildings proposed for renovations would be surveyed for bat use prior to renovations.***

Thank you.

**Liz Hamrick**

Terrestrial Zoologist  
Biological Compliance

400 W Summit Hill Dr. WT 11C-K  
Knoxville, TN 37902

865-632-4011 (w)  
[ecburton@tva.gov](mailto:ecburton@tva.gov)

**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.<sup>1</sup>

**Project Name:** Phase 2 East Region Consolidation - Norris Properties Environmental Assessment **Date:** 9/18/2019  
**Contact(s):** Carol Freeman **CEC#:** **Project ID:** 2019-34  
**Project Location (City, County, State):** Norris, Anderson County, Tennessee

**Project Description:**

The project purpose is to relocate portions of TVA operations into one location to improve utilization, reduce costs, and maximize returns. The project entails security updates to the Engineering Labs, updates and renovations to facilities to bring them up to code and to accommodate the relocated operations

**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:**

- |   |  |
|---|--|
| <input type="checkbox"/> 1 Manage Biological Resources for Biodiversity and Public Use on TVA Reservoir Lands | <input type="checkbox"/> 6 Maintain Existing Electric Transmission Assets        |
| <input type="checkbox"/> 2 Protect Cultural Resources on TVA-Retained Land                                    | <input type="checkbox"/> 7 Convey Property associated with Electric Transmission |
| <input checked="" type="checkbox"/> 3 Manage Land Use and Disposal of TVA-Retained Land                       | <input type="checkbox"/> 8 Expand or Construct New Electric Transmission Assets  |
| <input type="checkbox"/> 4 Manage Permitting under Section 26a of the TVA Act                                 | <input type="checkbox"/> 9 Promote Economic Development                          |
| <input type="checkbox"/> 5 Operate, Maintain, Retire, Expand, Construct Power Plants                          | <input type="checkbox"/> 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.**

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

<input checked="" type="checkbox"/> 18. Erosion control, minor	<input type="checkbox"/> 57. Water intake - non-industrial	<input type="checkbox"/> 79. Swimming pools/associated equipment
<input checked="" type="checkbox"/> 24. Tree planting	<input type="checkbox"/> 58. Wastewater outfalls	<input type="checkbox"/> 81. Water intakes – industrial
<input type="checkbox"/> 30. Dredging and excavation; recessed harbor areas	<input type="checkbox"/> 59. Marine fueling facilities	<input type="checkbox"/> 84. On-site/off-site public utility relocation or construction or extension
<input checked="" type="checkbox"/> 39. Berm development	<input type="checkbox"/> 60. Commercial water-use facilities (e.g., marinas)	<input type="checkbox"/> 85. Playground equipment - land-based
<input type="checkbox"/> 40. Closed loop heat exchangers (heat pumps)	<input type="checkbox"/> 61. Septic fields	<input type="checkbox"/> 87. Aboveground storage tanks
<input type="checkbox"/> 45. Stream monitoring equipment - placement and use	<input type="checkbox"/> 66. Private, residential docks, piers, boathouses	<input type="checkbox"/> 88. Underground storage tanks
<input type="checkbox"/> 46. Floating boat slips within approved harbor limits	<input type="checkbox"/> 67. Siting of temporary office trailers	<input type="checkbox"/> 90. Pond closure
<input checked="" type="checkbox"/> 48. Laydown areas	<input type="checkbox"/> 68. Financing for speculative building construction	<input type="checkbox"/> 93. Standard License
<input type="checkbox"/> 50. Minor land based structures	<input type="checkbox"/> 72. Ferry landings/service operations	<input type="checkbox"/> 94. Special Use License
<input type="checkbox"/> 51. Signage installation	<input type="checkbox"/> 74. Recreational vehicle campsites	<input type="checkbox"/> 95. Recreation License
<input type="checkbox"/> 53. Mooring buoys or posts	<input checked="" type="checkbox"/> 75. Utility lines/light poles	<input type="checkbox"/> 96. Land Use Permit
<input type="checkbox"/> 56. Culverts	<input type="checkbox"/> 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.**

<input type="checkbox"/> 15. Windshield and ground surveys for archaeological resources	<input checked="" type="checkbox"/> 34. Mechanical vegetation removal, includes trees or tree branches > 3 inches in diameter	<input checked="" type="checkbox"/> 69. Renovation of existing structures
<input type="checkbox"/> 16. Drilling	<input checked="" type="checkbox"/> 35. Stabilization (major erosion control)	<input type="checkbox"/> 70. Lock maintenance/ construction
<input checked="" type="checkbox"/> 17. Mechanical vegetation removal, does not include trees or branches > 3" in diameter (in Table 3 due to potential for woody burn piles)	<input checked="" type="checkbox"/> 36. Grading	<input type="checkbox"/> 71. Concrete dam modification
<input type="checkbox"/> 21. Herbicide use	<input checked="" type="checkbox"/> 37. Installation of soil improvements	<input type="checkbox"/> 73. Boat launching ramps
<input type="checkbox"/> 22. Grubbing	<input checked="" type="checkbox"/> 38. Drain installations for ponds	<input checked="" type="checkbox"/> 77. Construction or expansion of land-based buildings
<input type="checkbox"/> 23. Prescribed burns	<input checked="" type="checkbox"/> 47. Conduit installation	<input type="checkbox"/> 78. Wastewater treatment plants
<input type="checkbox"/> 25. Maintenance, improvement or construction of pedestrian or vehicular access corridors	<input type="checkbox"/> 52. Floating buildings	<input type="checkbox"/> 80. Barge fleeting areas
<input checked="" type="checkbox"/> 26. Maintenance/construction of access control measures	<input type="checkbox"/> 54. Maintenance of water control structures (dewatering units, spillways, levees)	<input type="checkbox"/> 82. Construction of dam/weirs/ levees
<input type="checkbox"/> 27. Restoration of sites following human use and abuse	<input type="checkbox"/> 55. Solar panels	<input type="checkbox"/> 83. Submarine pipeline, directional boring operations
<input type="checkbox"/> 28. Removal of debris (e.g., dump sites, hazardous material, unauthorized structures)	<input type="checkbox"/> 62. Blasting	<input type="checkbox"/> 86. Landfill construction
<input type="checkbox"/> 29. Acquisition and use of fill/borrow material	<input type="checkbox"/> 63. Foundation installation for transmission support	<input type="checkbox"/> 89. Structure demolition
<input type="checkbox"/> 31. Stream/wetland crossings	<input type="checkbox"/> 64. Installation of steel structure, overhead bus, equipment, etc.	<input type="checkbox"/> 91. Bridge replacement
<input type="checkbox"/> 32. Clean-up following storm damage	<input type="checkbox"/> 65. Pole and/or tower installation and/or extension	<input type="checkbox"/> 92. Return of archaeological remains to former burial sites
<input type="checkbox"/> 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	<input type="checkbox"/> Oct 15 - Nov 14	<input type="checkbox"/> Nov 15 - Mar 31	<input type="checkbox"/> Apr 1 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
VA	<input type="checkbox"/> Sep 16 - Nov 15	<input type="checkbox"/> Nov 16 - Apr 14	<input type="checkbox"/> Apr 15 - May 31, Aug 1 - Sept 15	<input type="checkbox"/> Jun 1 - Jul 31
AL	<input type="checkbox"/> Oct 15 - Nov 14	<input type="checkbox"/> Nov 15 - Mar 15	<input type="checkbox"/> Mar 16 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
NC	<input type="checkbox"/> Oct 15 - Nov 14	<input type="checkbox"/> Nov 15 - Apr 15	<input type="checkbox"/> Apr 16 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
MS	<input type="checkbox"/> Oct 1 - Nov 14	<input type="checkbox"/> Nov 15 - Apr 14	<input type="checkbox"/> Apr 15 - May 31, Aug 1 - Sept 30	<input type="checkbox"/> 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:   **ac**  **trees**  **N/A**

STATE	SWARMING	WINTER	NON-WINTER	PUP
GA, KY, TN	<input type="checkbox"/> Oct 15 - Nov 14	<input checked="" type="checkbox"/> Nov 15 - Mar 31	<input type="checkbox"/> Apr 1 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
VA	<input type="checkbox"/> Sep 16 - Nov 15	<input type="checkbox"/> Nov 16 - Apr 14	<input type="checkbox"/> Apr 15 - May 31, Aug 1 - Sept 15	<input type="checkbox"/> Jun 1 - Jul 31
AL	<input type="checkbox"/> Oct 15 - Nov 14	<input type="checkbox"/> Nov 15 - Mar 15	<input type="checkbox"/> Mar 16 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
NC	<input type="checkbox"/> Oct 15 - Nov 14	<input type="checkbox"/> Nov 15 - Apr 15	<input type="checkbox"/> Apr 16 - May 31, Aug 1 - Oct 14	<input type="checkbox"/> Jun 1 - Jul 31
MS	<input type="checkbox"/> Oct 1 - Nov 14	<input type="checkbox"/> Nov 15 - Apr 14	<input type="checkbox"/> Apr 15 - May 31, Aug 1 - Sept 30	<input type="checkbox"/> 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 Sep 19, 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):**  ( **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   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**

TVA Action	Total 20-year	Winter	Volant Season	Non-Volant Season
3 Manage Land Use and Disposal of TVA-Retained Land	12,587.72	6,290.12	3,777.6	2,520

**STEP 12) Amount contributed to TVA's Bat Conservation Fund upon activity completion:** \$  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
<input type="checkbox"/>	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	<b>NV1</b> - 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.
<input type="checkbox"/>	17, 23, 34	<b>SHF2</b> - Site-specific conditions (e.g., acres burned, transport wind speed, mixing heights) will be considered to ensure smoke is limited and adequately dispersed away from caves so that smoke does not enter cave or cave-like structures.
<input type="checkbox"/>	17, 23, 34	<b>SHF4</b> - If burns need to be conducted during April and May, when there is some potential for bats to present on the landscape and more likely to enter torpor due to colder temperatures, burns will only be conducted if the air temperature is 55° or greater, and preferably 60° or greater.
<input type="checkbox"/>	17, 22, 23, 32, 33, 34, 35, 36	<b>SHF7</b> - Burning will only occur if site specific conditions (e.g. acres burned, transport wind speed, mixing heights) can be modified to ensure that smoke is adequately dispersed away from caves or cave-like structures. This applies to prescribed burns and burn piles of woody vegetation.
<input type="checkbox"/>	33, 34	<b>TR3*</b> - Removal of suitable summer roosting habitat within documented bat habitat (i.e., within 10 miles of documented Indiana bat hibernacula, within 5 miles of documented northern long-eared bat hibernacula, within 2.5 miles of documented Indiana bat summer roost trees, within 5 miles of Indiana bat capture sites, within 1 mile of documented northern long-eared bat summer roost trees, within 3 miles of northern long-eared bat capture sites) will be tracked, documented, and included in annual reporting. Project will therefore communicate completion of tree removal to appropriate TVA staff.
<input type="checkbox"/>	33, 34	<b>TR4*</b> - 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.
<input type="checkbox"/>	33, 34	<b>TR9</b> - 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.

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

	<p>69, 77, 89, 91</p>	<p><b>AR1</b> - Projects that involve structural modification or demolition of buildings, bridges, and potentially suitable box culverts, will require assessment to determine if structure has characteristics that make it a potentially suitable unconventional bat roost. If so a survey to determine if bats may be present will be conducted. Structural assessment will include:</p> <ul style="list-style-type: none"> <li>○ Visual check that includes an exhaustive internal/external inspection of building to look for evidence of bats (e.g., bat droppings, roost entrance/exit holes); this can be done at any time of year, preferably when bats are active.</li> <li>○ Where accessible and health and safety considerations allow, a survey of roof space for evidence of bats (e.g., droppings, scratch marks, staining, sightings), noting relevant characteristics of internal features that provide potential access points and roosting opportunities. Suitable characteristic may include: gaps between tiles and roof lining, access points via eaves, gaps between timbers or around mortise joints, gaps around top and gable end walls, gaps within roof walling or around tops of chimney breasts, and clean ridge beams.</li> <li>○ Features with high-medium likelihood of harboring bats but cannot be checked visually include soffits, cavity walls, space between roof covering and roof lining.</li> <li>○ Applies to box culverts that are at least 5 feet (1.5 meters) tall and with one or more of the following characteristics. Suitable culverts for bat day roosts have the following characteristics:             <ul style="list-style-type: none"> <li>● Location in relatively warm areas</li> <li>● Between 5-10 feet (1.5-3 meters) tall and 300 ft (100 m) or more long</li> <li>● Openings protected from high winds</li> <li>● Not susceptible to flooding</li> <li>● Inner areas relatively dark with roughened walls or ceilings</li> <li>● Crevices, imperfections, or swallow nests</li> </ul> </li> <li>○ Bridge survey protocols will be adapted from the Programmatic Biological Opinion for the Federal Highway Administration (Appendix D of USFWS 2016c, which includes a Bridge Structure Assessment Guidance and a Bridge Structure Assessment Form).</li> <li>○ Bat surveys usually are NOT needed in the following circumstances:             <ul style="list-style-type: none"> <li>● Domestic garages /sheds with no enclosed roof space (with no ceiling)</li> <li>● Modern flat-roofed buildings</li> <li>● Metal framed and roofed buildings</li> <li>● Buildings where roof space is regularly used (e.g., attic space converted to living space, living space open to rafters) or where all roof space is lit from skylights or windows. Large/tall roof spaces may be dark enough at apex to provide roost space</li> </ul> </li> </ul>
	<p>69, 77, 89, 91</p>	<p><b>AR2</b> - Additional bat P/A surveys (e.g., emergence counts) conducted if warranted (i.e., when AR1 indicates that bats may be present).</p>
	<p>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</p>	<p><b>SSPC2</b> - 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.</p>
	<p>17, 18, 21, 22, 24, 25, 26, 30, 31, 33, 34, 35, 36, 40, 46, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 66, 67, 68, 69, 70, 72, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 87, 88, 91, 93, 95, 96</p>	<p><b>SSPC5 (26a, Solar, Economic Development only)</b> - Section 26a permits and contracts associated with solar projects, economic development projects or land use projects include standards and conditions that include standard BMPs for sediment and contaminants as well as measures to avoid or minimize impacts to sensitive species or other resources consistent with applicable laws and Executive Orders.</p>

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

<input type="checkbox"/>	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	<b>L1</b> - Direct temporary lighting away from suitable habitat during the active season.
<input type="checkbox"/>	16, 26, 36, 37, 38, 39, 48, 50, 52, 59, 60, 62, 66, 67, 69, 72, 75, 77, 78, 79, 86	<b>L2</b> - 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).

<sup>1</sup>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).

**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](mailto: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)  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   ac  trees and that use of Take will require \$  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.



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

January 22, 2019

Mr. E. Patrick McIntyre, Jr.  
Executive Director  
and State Historic Preservation Officer  
Tennessee Historical Commission  
State Historic Preservation Office  
2941 Lebanon Pike  
Nashville, Tennessee 37214

Dear Mr. McIntyre:

TENNESSEE VALLEY AUTHORITY (TVA), NORRIS ENGINEERING LABORATORY  
COMPLEX (NEL) PROPOSED RENOVATIONS, ANDERSON COUNTY, TENNESSEE  
(36.187552, -84.069266)

TVA has previously consulted with your office, first in 2015 then again in 2018 and 2019, regarding proposed renovation projects at the NEL in Norris, Anderson County, Tennessee. In 2019, TVA received concurrence from your office that NEL is eligible for listing in the National Register of Historic Places (NRHP) as a district, and that proposed undertakings associated with the consolidation of TVA operations at NEL would have no adverse effect.

Since the most recent consultation in August of 2019, TVA has continued to develop and modify plans for NEL. The overall project purpose continues to be the consolidation and relocation of portions of TVA operations into one location at NEL to improve space utilization and to reduce TVA cyclic operations and maintenance and capital project costs. The project would consolidate similar functions to achieve work process efficiencies while fostering greater synergies among employees. To achieve this overall project goal, TVA would need to make security updates to bring the facility into compliance with current TVA security measures and protocols. TVA also needs to address additional consolidation-related actions that may be necessary as a result of TVA's ongoing evaluation of the condition of the existing facilities and program needs; this includes renovations to various buildings onsite and the need to relocate additional staff and functions from Summer Place (in Knoxville), that were unknown at the time of previous assessments. In addition to the previously reviewed work, TVA now proposes additional actions at NEL including site improvements and renovations to Buildings A, B, C, D, G, H, J, N, T, Q1, and Q2 (Figures 1 and 2). If additional activities or alternatives emerge as the project moves forward, additional consultation is required to ensure the proposed actions are in keeping with the Secretary of the Interior's (SOI's) Standards for Rehabilitation. The proposed project includes the following actions, described in detail within the enclosed scope of work for proposed renovations at NEL, and illustrated in photographs included on the enclosed DVD. The only substantive change to the scope of work since your site visit to NEL on December 17,

2019 is that the original equipment within Building T would be retained and covered with planking to allow for storage.

### **Area of Potential Effects (APE)**

Given the presence of screening vegetation, both construction impacts and viewshed changes would be primarily limited to the site itself. The nearest residents may notice the use of construction equipment during the construction period, and may notice changes related to the fencing and site lighting. The other changes would likely not be visible to these residential neighbors. Because most of these actions would occur on the northern and western portions of the property, these actions would also be less visible to the industrial neighbors to the south. The majority of the renovations to NEL structures would improve the aesthetics of the facility by updating the structures that have been constructed and renovated at different times throughout the operation of the NEL facility by both TVA and the U.S. Bureau of Mines. Therefore, TVA has determined the APE to be the extent of the NEL property, which reflects the recommended NRHP boundary of the site (see Figures 1-2). This APE includes the area of proposed ground disturbance and building renovations where physical effects could occur, as well as the entire extent of NEL where visual effects on aboveground resources could occur.

### **Archaeological Resources**

#### *Phase I Survey of Remainder of NEL*

In June 2019, TVA Cultural Compliance archaeologists conducted a Phase I survey of the previously un-surveyed portions of the NEL complex. The survey included a pedestrian examination of the entire project area in addition to opportunistic shovel testing. The area surveyed covered approximately 7.1 acres and was bounded by Pine Road to the north, Sawmill Road to the west, and private property to the east and south (Figure 3). The complex is situated on a hilltop with steep slopes on the southwest, south, and southeast east sides of the property. A small, intermittent stream is located between Sawmill Road and the western boundary of the complex. The southeastern corner of the complex was surveyed by TVA Cultural Compliance personnel prior to the onset of construction; we consulted with you concerning that survey in 2018. That portion of the APE was not re-examined during this project. Likewise, the area encompassing Buildings A, C, and D, as well as the ceramic kiln (40AN218), was not included in the Phase I survey as this portion of the property is being subjected to archaeological testing, as discussed below.

The survey area consisted primarily of areas where buildings are located, or that have been paved or covered by gravel. The area has been extensively disturbed by the construction and operation of NEL. The slope along the western boundary above Sawmill Road, which exceeds 15 percent, is covered by dense secondary vegetation. These areas were examined via pedestrian survey only. Two shovel tests were excavated within the only area of open lawn, which is located at the entrance to the complex. The soils within both tests consisted of very dark grayish brown (10YR 3/2) clay loam to between 10 and 15 centimeters below ground



Mr. E. Patrick McIntyre, Jr.  
Page 3  
January 22, 2020

surface, where clay and decayed rock were encountered. No artifacts were recovered and no intact soils were encountered.

No archaeological resources were recorded as a result of the survey of the remainder of the NEL complex, excluding the vicinity of the Kiln (40AN218).

*Phase II Kiln (Area encompassing Buildings A, C, and D)*

Earlier this year, TVA consulted with your office regarding the proposed Phase II testing plan for site 40AN218, TVA Norris Ceramic Research Laboratory. Site 40AN218 is an early to mid-twentieth century tunnel kiln and research facility located at NEL. TVA contracted with Wood Environment & Infrastructure Solutions, Inc. ("Wood") to conduct Phase II archaeological testing in July of this year. A copy of the draft report titled, *Phase II Evaluation-TVA Norris Ceramic Research Laboratory, Site 40AN218, Norris, Anderson County, Tennessee*, is enclosed.

The Phase II testing was focused on selected anomalies among those identified during the previous geophysical survey. The selected anomalies were investigated through a combination of shovel test probing, test unit excavations, mechanical trenching and tile probing. In addition, Wood was tasked with the documentation and removal of over 400 ceramic plates associated with the ceramic laboratory. These plates were located in a crawl space under the adjacent Building D. The tunnel kiln and adjacent rotary kiln were further documented as well.

Based on the testing, Wood recommends that no additional work is needed in the area of the former location of the Research Laboratory (previously identified as Building B) and in the area around the former Refractories Building (Building E) as these areas have been heavily affected by past construction and demolition activities. Testing under Building D, where TVA discovered the ceramic plates, showed no archaeological deposits and is not considered historically significant. No additional work is recommended under Building D. The recovered plates are significant for better understanding the products and experiments that took place at the ceramics lab and should undergo additional analysis and archival research.

One feature that was excavated directly north of the tunnel kiln contained the largest concentration of artifacts. Remains of the adjacent rotary kiln (Kiln #2) may be located west of the tunnel kiln. The tunnel kiln is well preserved and an excellent architectural example of early electric tunnel kiln innovation and design. Wood recommends that the kiln, include a 10-meter buffer around the facility. This buffered area includes the intact deposits and Kiln #2 area. Wood's final Phase II report will include a recommendation that the Kiln (40AN218) be considered eligible for the NRHP under Criterion D. For the kiln as a whole, TVA has determined that kiln is eligible for the NRHP under Criteria A, C, and D and it is eligible as a contributing resource to the NEL.

TVA has read the enclosed report and agrees with the recommendations of the authors.

TVA finds that the proposed consolidation would not adversely affect the Norris kiln because no work would occur within the buffer area. TVA is developing plans for appropriate interpretation

and preservation for this important resource and will consult further with your office in the near future.

### **Historic Architectural Resources**

The entire NEL complex is located within the NRHP-listed Norris Historic District. Thomason and Associates Preservation Planners reassessed the NEL complex for NRHP eligibility in March 2019 (Thomason 2019). Your office concurred with its eligibility for listing in the NRHP as the NEL historic district. Buildings A, B, C, D, G, H, Q1, Q2, and T are contributing to the character of the complex, as is the tunnel kiln (formerly Building F). The remaining buildings and structures J, N, and P are non-contributing. We agreed earlier that two modern boat sheds and Building I were ineligible through consultation; TVA subsequently demolished/removed these structures.

Preservation of character-defining features and retention and use of historic buildings has been a key component in TVA's further development of plans at NEL. The original plans in 2015 included the disposal of Buildings A, C, D, and F (the kiln). TVA recognizes the significance of these facilities and their contribution to the history of NEL and Norris. As the proposed project plans have changed, TVA now proposes the retention of said resources, including the sensitive rehabilitation of Buildings C and D and general site improvements. Throughout project development and design, TVA has adapted proposed plans to meet the SOI's Standards for Rehabilitation in order to make sympathetic renovations and updates when retention of original components is not feasible. This effort has minimized direct and visual effects to NEL and the surrounding Norris Historic District.

Overall, the proposed site improvements would be limited to the NEL property and would minimize visual changes within the district. TVA would choose locations for new added components, including concrete pads, an ADA-accessible ramp, and a radio tower, that minimize visual impact to contributing buildings and the landscape of the district. Additionally, tree cutting and the addition of the fence and gates may be visible to the NEL district or surrounding Norris Historic District; however the gate and fence would feature a dark finish and simple design and be set back and limited to a small section near the northwest corner of the property to Building C.

Renovations to historic and contributing buildings at NEL would be sensitive to the district and would not diminish the district's integrity of feeling or association. The following measures would be taken to ensure that those actions likely to affect the contributing buildings—pressure washing, repointing and repair of brick, and replacement/removal of historic windows and doors—would be in keeping with the SOI's Standards for Rehabilitation:

- **Pressure Washing:** Exterior pressure washing should start with a very low pressure (100 psi or below), even using a garden hose, and progressing as needed to slightly higher pressure—generally no higher than 300-400 psi). Scrubbing with a natural bristle or synthetic bristle brushes may also be used. It would also be tested first in an inconspicuous area to ensure it does not damage exterior siding, windows, or masonry.

- Repointing/Repair of Brick: The new mortar must match the historic mortar in color, texture and tooling. Laboratory analysis may be required to match the binder components and their proportions with the historic mortar. The new mortar must have greater vapor permeability and be softer than the masonry units and the historic mortar. Replacement brick should match in color, texture, and size to blend with the full range of masonry units on a wall rather than a single brick or stone.
- Replacement/Removal of Historic Windows: Preservation of historic windows should be the first consideration. When repair is not feasible, replacements must not change the historic appearance of windows through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame. Thus, when replacement is required instead of repair, additional State Historic Preservation Office (SHPO) consultation is required to ensure the proposed actions are in keeping with the SOI's Standards for Rehabilitation.
- Replacement of Historic Doors: Preservation of historic doors should be the first consideration. When repair is not feasible or possible, replacements must not change the historic appearance of doors through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, panel and light configuration; the reflectivity and color of the glazing (if present); or the appearance of the frame. Thus, when replacement is required instead of repair and in-kind replacement is not feasible, additional SHPO consultation is required to ensure the proposed actions are in keeping with the SOI's Standards for Rehabilitation.

As currently proposed, the alterations would not include the removal of any character-defining equipment or features that characterize the key laboratory facilities that continue to reflect TVA's significant past and inform current research. Likewise, the installation of additional elements, including the relocation of a small modular storage shed, and addition of a radio tower, parking areas, and a security fence and gate, would not diminish the feeling or association of the NEL district. The shed would be sited sensitively to limit visibility from contributing buildings. The radio tower would not exceed 45 feet in height, and would therefore, not exceed the height of the tallest projection (an inactive surge tank tower) that currently extends from the roof of Building C.

Since December 17, during our site visit to review these proposed actions, TVA has changed the proposed plan for Building T. The removal of original equipment is no longer proposed. The enclosure of the calibration equipment (concrete trough) in Building T would allow for the retention of the original character-defining equipment to remain in place in Building T, while providing a flat surface for storage of equipment. The additional storage would be needed because of the consolidation of additional lab activities to NEL.

Given the sensitivity and compatible design proposed for this project and that no original character-defining features are proposed for removal or replacement, TVA finds that this project would have no adverse effects to NEL or the Norris Historic District.

Mr. E. Patrick McIntyre, Jr.  
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January 22, 2020

Pursuant to 36 CFR 800.5(c), we are notifying you of TVA's finding of no adverse effect to historic properties for the proposed undertaking, providing the documentation specified in § 800.11(e), and providing you an opportunity to review this finding. In addition, we are seeking your agreement with TVA's eligibility determinations and finding that the undertaking as currently planned will have no adverse effects on historic properties.

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.

Please contact Hallie Hearnese in Knoxville by telephone, (865) 632-3463 or by email, [hahearnese@tva.gov](mailto:hahearnese@tva.gov), with your comments.

Sincerely,



Edward W. Wells on Behalf of Clinton E. Jones  
Manager  
Cultural Compliance

HAH:ABM

Enclosures

cc (Enclosures):

Ms. Jennifer Barnett  
Tennessee Division of Archaeology  
1216 Foster Avenue, Cole Bldg. #3  
Nashville, Tennessee 37210

#### **References Cited**

Philip Thomason

2019 *National Register of Historic Places Reassessment, Norris Engineering Laboratory Complex*, Prepared for Tennessee Valley Authority. Thomason and Associates Preservation Planners, Nashville, Tennessee.

INTERNAL COPIES ONLY, NOT TO BE INCLUDED WITH OUTGOING LETTER:

S. Dawn Booker, WT 11C-K  
Michael J. Dobrogosz, WT 11A-K  
Michael C. Easley, BR 2C-C  
Patricia B. Ezzell, WT 7D-K  
Ruth Horton, WT 11B-K  
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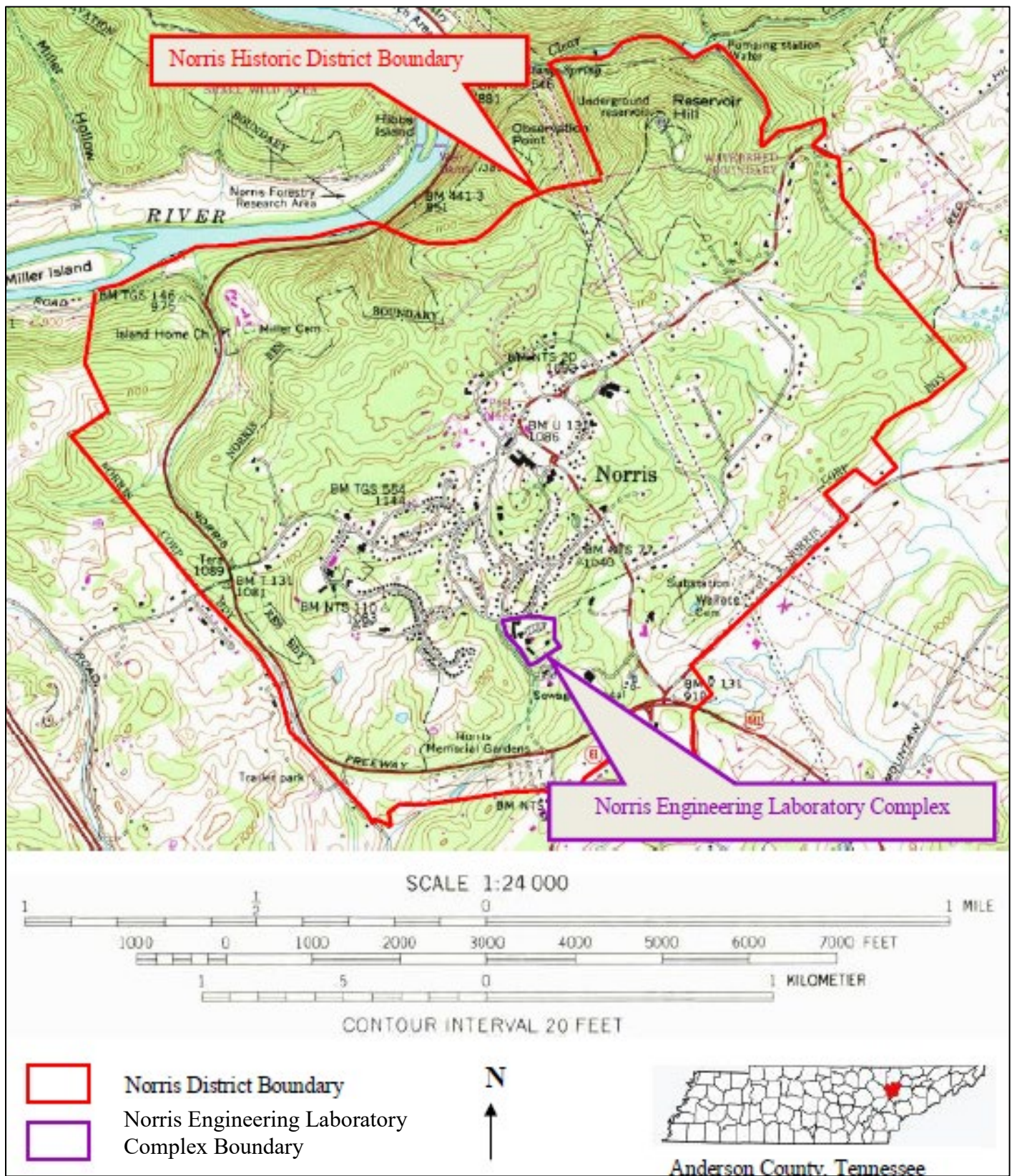
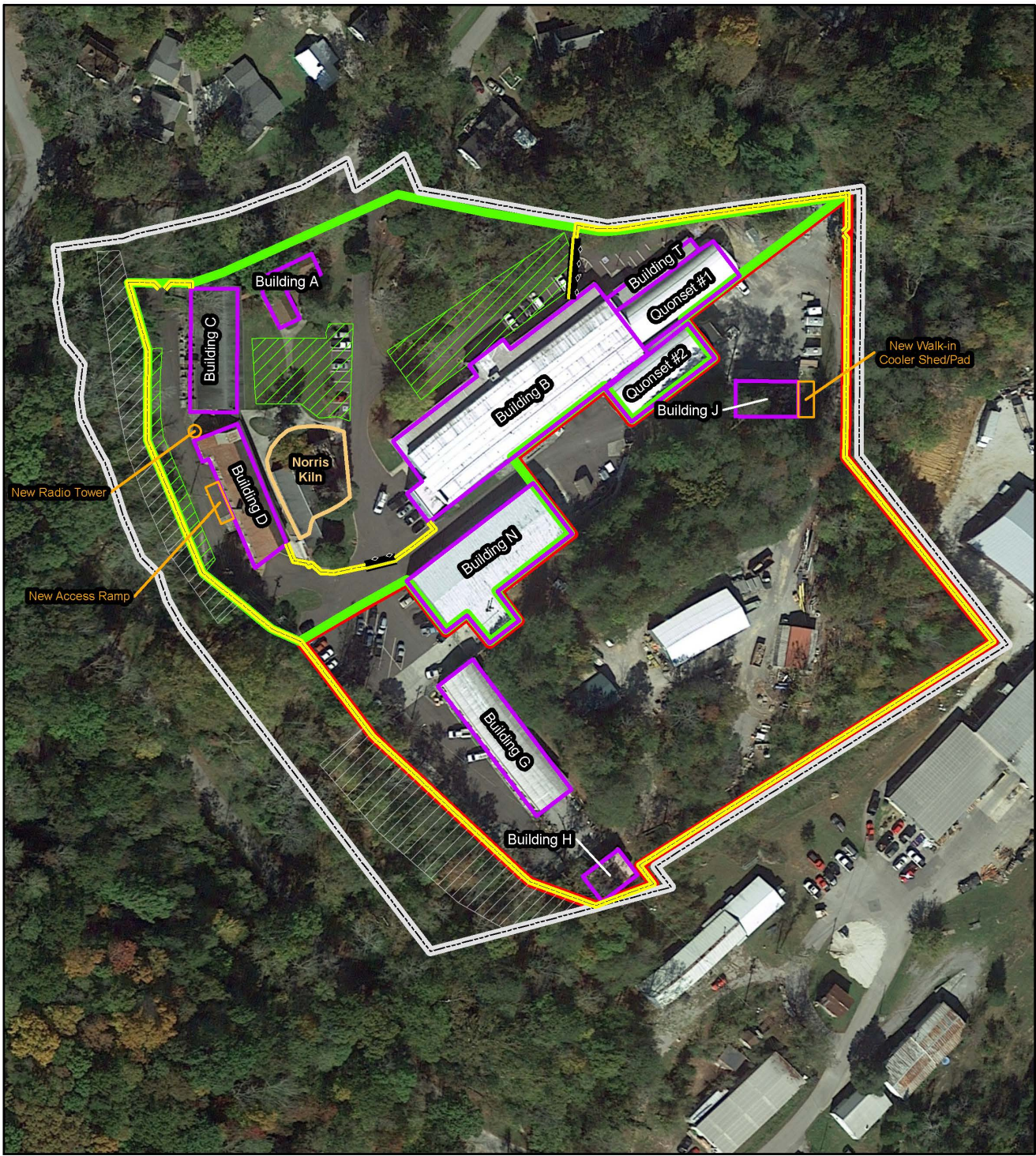


Figure 1. Norris Engineering Laboratory Complex NRHP boundary within the Norris Historic District boundary depicted on the 1973 topographic quadrangle map.



**TVA** Norris Engineering Lab Alternative B

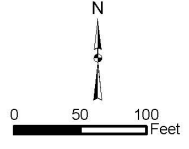


Figure 2. Site plan of NEL showing additional proposed actions.



Figure 3. Norris Engineering Labs complex archaeological survey area.



DRAFT REPORT

## Phase II Evaluation – TVA Norris Ceramic Research Laboratory, Site 40AN218, Norris, Anderson County, Tennessee

Wood Project No.: 7361191228

Wood Cultural Report of Investigations No.: 2019-059

Lead Federal Agency: Tennessee Valley Authority



Prepared for:

Marianne Shuler, Tennessee Valley Authority  
400 W. Summit Hill Dr., Knoxville, TN 37902

September 4, 2019



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

January 22, 2020

Mr. Brett Barnes  
Tribal Historic Preservation Officer  
Eastern Shawnee Tribe of Oklahoma  
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Manager  
Historic & Cultural Preservation Department  
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Ms. Whitney Warrior  
Director of Natural Resources  
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Indians in Oklahoma  
18263 W. Keetoowah Circle  
Tahlequah, Oklahoma 74464

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), NORRIS ENGINEERING LABORATORY COMPLEX (NEL) PROPOSED RENOVATIONS, ANDERSON COUNTY, TENNESSEE (36.187552, -84.069266)

TVA previously consulted with your office in 2015, then again in 2018 and 2019, regarding proposed renovation projects at the NEL in Norris, Anderson County, Tennessee. Through consultation in 2019, NEL was determined eligible for listing in the National Register of Historic Places (NRHP) as a district and that proposed undertakings associated with the consolidation of TVA operations at NEL would have no adverse effect.

Since the most recent consultation in August of 2019, TVA has continued to develop and modify plans for NEL. The overall project purpose continues to be the consolidation and relocation of portions of TVA operations into one location at NEL to improve space utilization and to reduce TVA cyclic operations and maintenance and capital project costs. The project would consolidate similar functions to achieve work process efficiencies while fostering greater synergies among employees. To achieve this overall project goal, TVA would need to make security updates to bring the facility into compliance with current TVA security measures and protocols. TVA also needs to address additional consolidation-related actions that may be necessary as a result of TVA's ongoing evaluation of the condition of the existing facilities and program needs; this includes renovations to various buildings onsite and the need to relocate additional staff and functions from Summer Place (in Knoxville), that were unknown at the time of previous assessments. In addition to the previously reviewed work, TVA now proposes additional actions at NEL including site improvements and renovations to Buildings A, B, C, D, G, H, J, N, T, Q1, and Q2 (Figures 1 and 2). If additional activities or alternatives emerge as the project moves forward, additional consultation is required to ensure the proposed actions are in keeping with the Secretary of the Interior's (SOI's) Standards for Rehabilitation. The proposed project includes the following actions described in detail within the attached scope of work for proposed renovations at NEL. Photographs illustrating these actions can be provided upon request.

### **Area of Potential Effects (APE)**

Given the presence of screening vegetation, both construction impacts and viewshed changes would be primarily limited to the site itself. The nearest residents may notice the use of construction equipment during the construction period, and may notice changes related to the fencing and site lighting. The other changes would likely not be visible to these residential neighbors. Because most of these actions would occur on the northern and western portions of the property, these actions would also be less visible to the industrial neighbors to the south. The majority of the renovations to NEL structures would improve the aesthetics of the facility by updating the structures that have been constructed and renovated at different times throughout the operation of NEL by both TVA and the U.S. Bureau of Mines. Therefore, TVA has determined the APE to be the extent of the NEL property, which reflects the recommended NRHP boundary of the site (see Figures 1-2). This APE includes the area of proposed ground disturbance and building renovations where physical effects could occur, as well as the entire extent of NEL where visual effects on aboveground resources could occur.

## **Archaeological Resources**

### *Phase I Survey of Remainder of NEL*

In June 2019, TVA Cultural Compliance archaeologists conducted a Phase I survey of the previously un-surveyed portions of the NEL complex. The survey included a pedestrian examination of the entire project area in addition to opportunistic shovel testing. The area surveyed covered approximately 7.1 acres and was bounded by Pine Road to the north, Sawmill Road to the west, and private property to the east and south (Figure 3). The complex is situated on a hilltop with steep slopes on the southwest, south, and southeast east sides of the property. A small, intermittent stream is located between Sawmill Road and the western boundary of the complex. The southeastern corner of the complex was surveyed by TVA Cultural Compliance personnel prior to the onset of construction; we consulted with you concerning that survey in 2018. That portion of the APE was not re-examined during this project. Likewise, the area encompassing Buildings A, C, and D, as well as the ceramic lab and kiln (40AN218), was not included in the Phase I survey as this portion of the property is being subjected to archaeological testing, as discussed below.

The survey area consisted primarily of areas where buildings are located, or that have been paved or covered by gravel. The area has been extensively disturbed by the construction and operation of NEL. The slope along the western boundary above Sawmill Road, which exceeds 15 percent, is covered by dense secondary vegetation. These areas were examined via pedestrian survey only. Two shovel tests were excavated within the only area of open lawn, which is located at the entrance to the complex. The soils within both tests consisted of very dark grayish brown (10YR 3/2) clay loam to between 10 and 15 centimeters below ground surface, where clay and decayed rock were encountered. No artifacts were recovered and no intact soils were encountered.

No archaeological resources were recorded as a result of the survey of the remainder of the NEL complex, excluding the vicinity of the ceramic lab and kiln (40AN218).

### *Phase II Kiln (Area encompassing Buildings A, C, and D)*

In 2019, TVA consulted with your office regarding the proposed Phase II testing plan for site 40AN218, TVA Norris Ceramic Research Laboratory. Site 40AN218 is an early to mid-twentieth century tunnel kiln and research facility located at NEL. TVA contracted with Wood Environment & Infrastructure Solutions, Inc. ("Wood") to conduct Phase II Archaeological testing in July of this year. Please see a link of the draft report titled, *Phase II Evaluation-TVA Norris Ceramic Research Laboratory, Site 40AN218, Norris, Anderson County, Tennessee* here [https://www.dropbox.com/s/qtiyv8mtvkhnh9e/Wood\\_TVA\\_Norris%20Kiln%20PhaseII\\_DraftReport\\_9-4-19\\_FULL.pdf?dl=0](https://www.dropbox.com/s/qtiyv8mtvkhnh9e/Wood_TVA_Norris%20Kiln%20PhaseII_DraftReport_9-4-19_FULL.pdf?dl=0)

The Phase II testing was focused on selected anomalies among those identified during the previous geophysical survey. The selected anomalies were investigated through a combination

of shovel test probing, test unit excavations, mechanical trenching and tile probing. In addition, Wood was tasked with the documentation and removal of over 400 ceramic plates associated with the ceramic laboratory. These plates were located in a crawl space under the adjacent Building D. The tunnel kiln and adjacent rotary kiln were further documented as well.

Based on the testing, Wood recommends that no additional work is needed in the area of the former location of the Research Laboratory (previously identified as Building B) and in the area around the former Refractories Building (Building E) as these areas have been heavily affected by past construction and demolition activities. Testing under Building D, where TVA discovered the ceramic plates, showed no archaeological deposits and is not considered historically significant. No additional work is recommended under Building D. The recovered plates are significant for better understanding the products and experiments that took place at the ceramics lab and should undergo additional analysis and archival research.

One feature that was excavated directly north of the tunnel kiln contained the largest concentration of artifacts. Remains of the adjacent rotary kiln (Kiln #2) may be located west of the tunnel kiln. The tunnel kiln is well preserved and an excellent architectural example of early electric tunnel kiln innovation and design. Wood recommends that the kiln, include a 10-meter buffer around the facility. This buffered area includes the intact deposits and Kiln #2 area. Wood's final Phase II report will include a recommendation that the Kiln (40AN218) be considered eligible for the NRHP under Criterion D. For the kiln as a whole, TVA has determined that kiln is eligible for the NRHP under Criteria A, C, and D and it is eligible as a contributing resource to the NEL.

TVA has read the attached report and agrees with the recommendations of the authors.

TVA finds that the proposed consolidation would not adversely affect the Norris kiln because no work would occur within the buffer area. TVA is developing plans for appropriate interpretation and preservation for this important resource and will consult in the near future.

### **Historic Architectural Resources**

The entire NEL complex is located within the NRHP-listed Norris Historic District. Thomason and Associates Preservation Planners reassessed the NEL complex for NRHP eligibility in March 2019 (Thomason 2019). The Tennessee State Historic Preservation Officer (SHPO) concurred with its eligibility for listing in the NRHP as the NEL historic district. Buildings A, B, C, D, G, H, Q1, Q2, and T are contributing to the character of the complex, as is the tunnel kiln (formerly Building F). The remaining buildings and structures J, N, and P are non-contributing. We earlier agreed that two modern boat sheds and Building I were ineligible through consultation; TVA subsequently demolished/removed these structures.

Preservation of character-defining features and retention and use of historic buildings has been a key component in TVA's further development of plans at NEL. The original plans in 2015

included the disposal of Buildings A, C, D, and F (the kiln). TVA recognizes the significance of these facilities and their contribution to the history of NEL and Norris. As the proposed project plans have changed, TVA now proposes the retention of said resources, including the sensitive rehabilitation of Buildings C and D and general site improvements. Throughout project development and design, TVA has adapted proposed plans to meet the SOL's Standards for Rehabilitation in order to make sympathetic renovations and updates when retention of original components is not feasible. This effort has minimized direct and visual effects to NEL and the surrounding Norris Historic District.

Overall, the proposed site improvements would be limited to the NEL property and would minimize visual changes within the district. TVA would choose locations for new added components, including concrete pads, an ADA-accessible ramp, and a radio tower, that minimize visual impact to contributing buildings and the landscape of the district. Additionally, tree cutting and the addition of the fence and gates may be visible to the NEL district or surrounding Norris Historic District; however the gate and fence would feature a dark finish and simple design and be set back and limited to a small section near the northwest corner of the property to Building C.

Renovations to historic and contributing buildings at NEL would be sensitive to the district and would not diminish the district's integrity of feeling or association. The following measures would be taken to ensure that those actions likely to affect the contributing buildings—pressure washing, repointing and repair of brick and replacement/removal of historic windows and doors—would be in keeping with the SOL's Standards for Rehabilitation:

- **Pressure Washing:** Exterior pressure washing should start with a very low pressure (100 psi or below), even using a garden hose, and progressing as needed to slightly higher pressure—generally no higher than 300-400 psi). Scrubbing with a natural bristle or synthetic bristle brushes may also be used. It would also be tested first in an inconspicuous area to ensure it does not damage exterior siding, windows, or masonry.
- **Repointing/Repair of Brick:** The new mortar must match the historic mortar in color, texture and tooling. Laboratory analysis may be required to match the binder components and their proportions with the historic mortar. The new mortar must have greater vapor permeability and be softer than the masonry units and the historic mortar. Replacement brick should match in color, texture, and size to blend with the full range of masonry units on a wall rather than a single brick or stone.
- **Replacement/Removal of Historic Windows:** Preservation of historic windows should be the first consideration. When repair is not feasible, replacements must not change the historic appearance of windows through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, and muntin configuration; the reflectivity and color of the glazing; or the appearance of the frame. Thus, when replacement is required instead of repair, additional SHPO consultation is required to ensure the proposed actions are in keeping with the SOL's Standards for Rehabilitation.

- Replacement of Historic Doors: Preservation of historic doors should be the first consideration. When repair is not feasible or possible, replacements must not change the historic appearance of doors through inappropriate designs, materials, finishes, or colors which radically change the sash, depth of reveal, panel and light configuration; the reflectivity and color of the glazing (if present); or the appearance of the frame. Thus, when replacement is required instead of repair and in-kind replacement is not feasible, additional SHPO consultation is required to ensure the proposed actions are in keeping with the SOI's Standards for Rehabilitation.

As currently proposed, the alterations would not include the removal of any character-defining equipment or features that characterize the key laboratory facilities that continue to reflect TVA's significant past and inform current research. Likewise, the installation of additional elements, including the relocation of a small modular storage shed, and addition of a radio tower, parking areas, and a security fence and gate, would not diminish the feeling or association of the NEL district. The shed would be sited sensitively to limit visibility from contributing buildings. The radio tower would not exceed 45 feet in height, and would therefore, not exceed the height of the tallest projection (an inactive surge tank tower) that currently extends from the roof of Building C.

Since December 17, during our site visit to review these proposed actions, TVA has changed the proposed plan for Building T. The removal of original equipment is no longer proposed. The enclosure of the calibration equipment (concrete trough) in Building T would allow for the retention of the original character-defining equipment to remain in place in Building T, while providing a flat surface for storage of equipment. The additional storage would be needed because of the consolidation of additional lab activities to NEL.

Given the sensitivity and compatible design proposed for this project and that no original character-defining features are proposed for removal or replacement, TVA finds that this project would have no adverse effects to NEL or the Norris Historic District.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with the following federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the 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, Kialgee 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 listing in the NRHP pursuant to 36 CFR Part 800.2(c)(2)(ii), 800.3 (f)(2), and 800.4 (a)(4)(b).

Sir/Madam  
Page 6  
January 22, 2020

Please respond by February 21, 2019 if you have any comments on the proposed undertaking. If you have any questions, please contact me by phone, (865) 632-2464, or by email, mmshuler@tva.gov.

Sincerely,



Marianne Shuler  
Senior Specialist, Archaeologist and Tribal Liaison  
Cultural Compliance

HAH:ABM

Enclosures

cc (Enclosures):

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

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

Ms. Sheila Bird  
Cultural Preservation Consultant  
Shawnee Tribe  
Post Office Box 189  
Miami, Oklahoma 74355

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

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

Ms. Charlotte Wolfe  
Section 106 Compliance  
Officer/Environmental Scientist  
United Keetoowah Band of  
Cherokee Indians in Oklahoma  
18263 W. Keetoowah Circle  
Tahlequah, Oklahoma 74464

### References Cited

Philip Thomason

2019 *National Register of Historic Places Reassessment, Norris Engineering Laboratory Complex*, Prepared for Tennessee Valley Authority. Thomason and Associates Preservation Planners, Nashville, Tennessee.



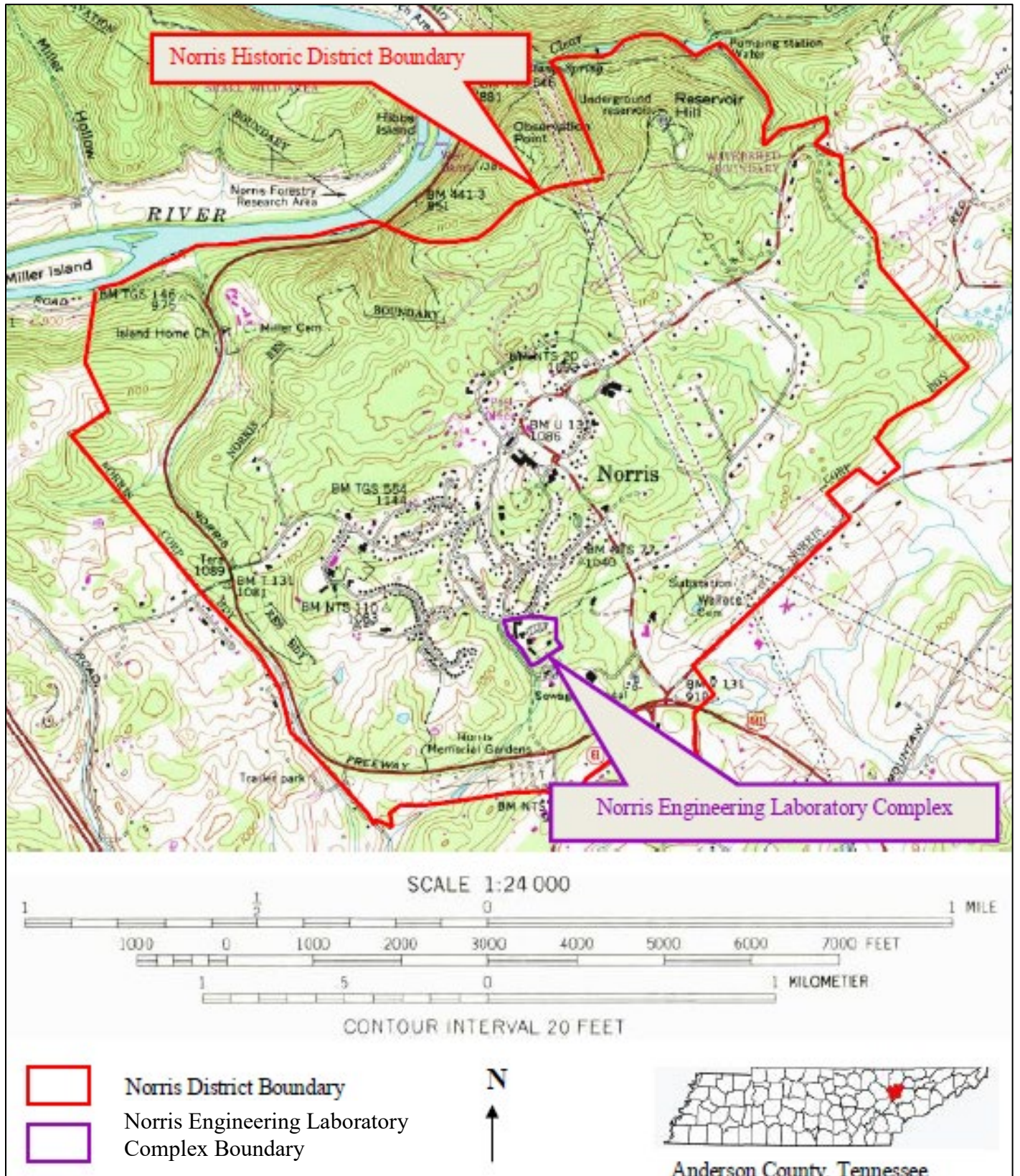
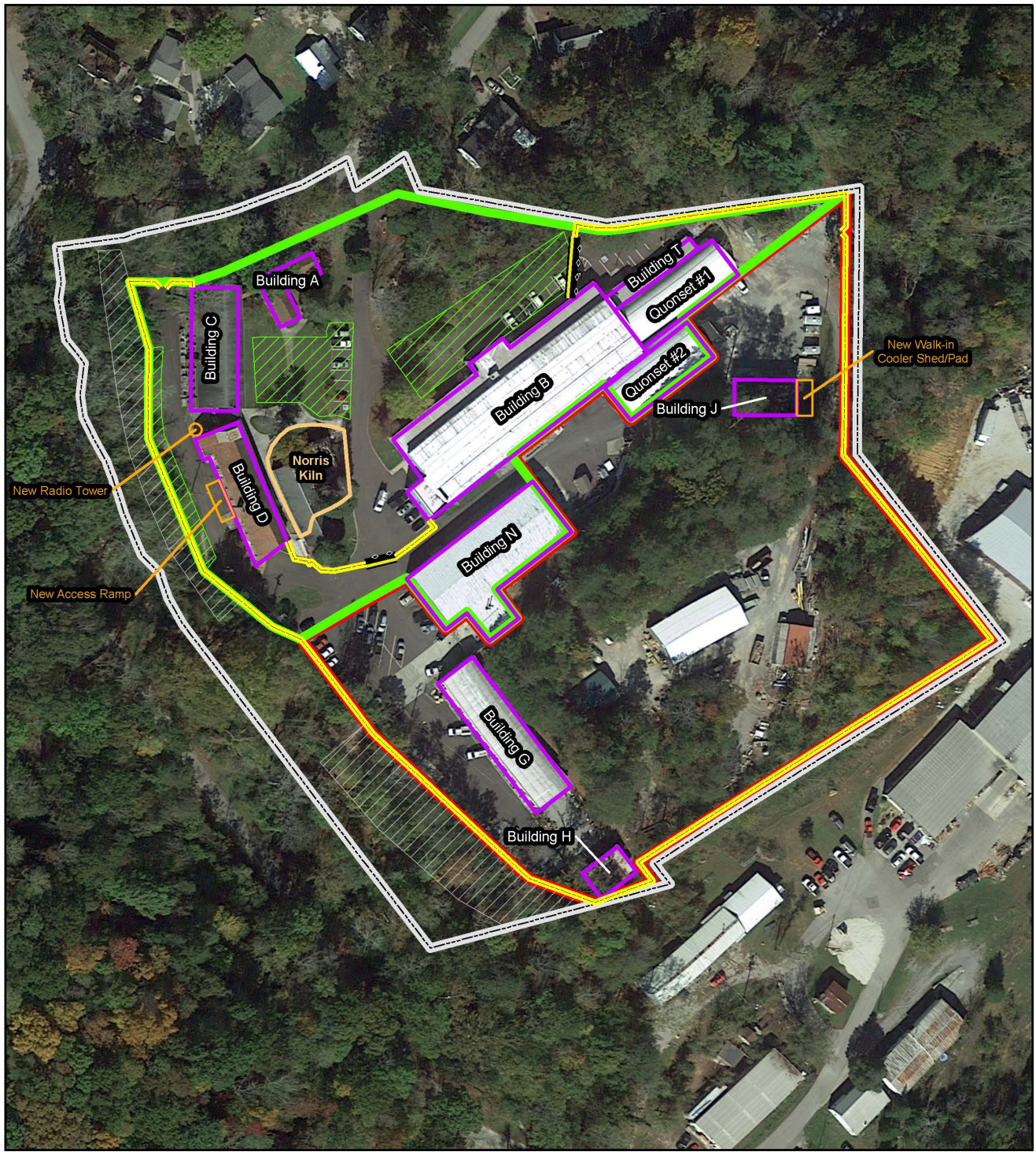


Figure 1. Norris Engineering Laboratory Complex NRHP boundary within the Norris Historic District boundary depicted on the 1973 topographic quadrangle map.



**TVA** Norris Engineering Lab Alternative B

	Phase 2 Additions		Limits of Disturbance (New Retaining Wall/Riprap)
	Fencing Layout		Parking Areas
	Gates		Phase 2 Parking Lot/Driveway Repaving/Reconfiguration Area
	Norris Boundary		Phase 1 Parking Lot/Driveway Repaving/Reconfiguration Area
	Existing Buildings		

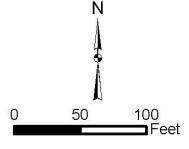


Figure 2. Site plan of NEL showing additional proposed actions.



Figure 3. Norris Engineering Labs complex archaeological survey area.



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

February 12, 2020

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

RE: TVA / Tennessee Valley Authority, Norris Ceramics Research Laboratory and Kiln, 40AN218, Norris, Anderson County, TN

Dear Mr. Jones:

Pursuant to your request, this office has reviewed documentation concerning the above-referenced undertaking. Our review of and comment on your proposed undertaking are among the requirements of Section 106 of the National Historic Preservation Act. This Act requires federal agencies or applicants for federal assistance to consult with the appropriate State Historic Preservation Office before they carry out their proposed undertakings. The Advisory Council on Historic Preservation has codified procedures for carrying out Section 106 review in 36 CFR 800 (Federal Register, December 12, 2000, 77698-77739).

Based on the information provided, we concur that site 40AN218 is eligible for inclusion in the National Register of Historic Places under Criterion A, C, and D. We further concur that the project as currently proposed will not adversely affect 40AN218 or the Norris Engineering Lab Historic District or the Norris Historic District.

This office has no objection to the implementation of this project as currently planned. If project plans are changed or previously unevaluated archaeological resources are discovered during project construction, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act. Questions and comments may be directed to Claire Meyer (615-770-1099). We appreciate your cooperation.

Sincerely,

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

EPM/cem

**APPENDIX B**  
**Public Comments and Responses**

## APPENDIX B – PUBLIC COMMENTS AND RESPONSES

The Phase 2 East Region Consolidation – Norris Properties Environmental Assessment was released for comment on January 22, 2020. The comment period closed on February 5, 2020. TVA transmitted the Draft EA to various agencies. The Draft EA was posted on TVA's public National Environmental Policy Act (NEPA) review website (<http://www.tva.gov/nepa>). A notice of availability including a request for comments on the Draft EA was published in the Clinton Courier newspaper serving the City of Norris, Tennessee. Comments were accepted through February 5, 2020, via TVA's website, mail, and e-mail.

Two comment letters were submitted by email from TDEC and the Norris Water Commission during the comment period. These comment letters are included at the end of this appendix. Additionally, there were a total of five written comments submitted. These comments concentrated on impacts to cultural and natural resources, air resources, solid waste, and water utilities. Following the close of the comment period, a local resident contacted the Norris project representative with verbal comments. These comments concentrated on transportation, noise, and air quality issues as well concerns about the public participation process. TVA's responses to all comments raised are provided below.

**Comment 1 (Cultural and Natural Resources):** TDEC believes the Draft EA adequately addresses potential impacts to cultural and natural resources within the proposed project area. (*Commenter: Tennessee Department of Environment and Conservation [TDEC]*).

**Response 1:** Comment noted.

**Comment 2 (Air Resources):** The proposed project includes building demolition and renovation activities, and both asbestos and lead are mentioned as present on-site. If asbestos removal or demolition is planned to occur, additional consideration should be given to ensure that demolition related emissions are minimized, that any asbestos containing material (ACM) is identified and managed properly during demolition and that the appropriate notifications be provided prior to any renovation/demolition activity. TDEC encourages TVA to include these considerations in the Final EA (*Commenter: TDEC*).

**Response 2:** Section 1.6 has been updated to include an asbestos notification if needed. Subsection 3.9.2.2 has been updated to include a discussion of the handling and disposal of ACM.

**Comment 3 (Air Resources):** TDEC recommends that should open burning be considered for disposal of wood wastes generated from the proposed project, alternatives to open burning, including chipping, composting or grinding of wood waste be evaluated first. If open burning is selected for wood waste disposal, TVA should consider implementing a smoke management plan, not burning on air quality alert days, and coordinating burning with other agencies (local land

State air pollution control agencies, forestry agencies and local fire departments). TDEC encourages TVA to include discussion relating to these considerations in the Final EA (*Commenter: TDEC*).

**Response 3:** Comment noted. Because of the proximity to the residential area, to avoid potential air quality impacts TVA would not dispose of wood waste by burning onsite at the Engineering Lab. Subsection 2.1.2 has been updated to clarify that wood waste will be either transported offsite to an appropriate disposal location or chipped, composted, ground, and distributed onsite as mulch.

**Comment 4 (Solid Waste):** TDEC recommends that the Final EA consider and explicitly reflect that any wastes associated with such activities in Tennessee be managed in accordance with the Solid and Hazardous Waste Rules and Regulation of the State of Tennessee (TDEC DSWN Rule 0400 Chapters 11 and 12, respectively) (*Commenter: TDEC*).

**Response 4:** Subsection 3.9.2.2 has been updated to reflect that all waste disposal will comply with Solid and Hazardous Waste Rules and Regulation of the State of Tennessee (TDEC DSWM Rule 0400 Chapters 11 and 12, respectively).

**Comment 5 (Water Main):** A 6 inch underground water main crosses a portion of the Engineering Lab site on the east side of Buildings G and H. This water main was likely installed in the 1930s or 1940s. The water main underlies the roadway that would be utilized by vehicles traveling through the site. The Norris Water Commission supports/recommends rerouting this water main to the outer edge of the parking lot along the western side of the Engineering Lab property to avoid vehicle traffic passing over this line (*Commenter: Tony Wilkerson, Norris Water Commission*).

**Response 5:** The waterline mentioned in Mr. Wilkerson's letter belongs to the Norris Water District. TVA intends to add reinforced paving in the area where the water main is currently located. Upon completion of construction, the water main would be at a depth of approximately 42 inches. Based on TVA's engineering analysis, TVA believes that at that depth and with the reinforced paving the water main would be sufficiently protected from the planned truck traffic. However, TVA is open to discussing the water line further with the Water District to address any remaining concerns or considerations. Potential additional considerations for the Water District might include 1) installation of an empty PVC pipe near the existing water line in preparation for future replacement of the line, 2) reinforcement, repair, and/or replacement of all or a portion of the current line crossing under the roadway (east of Buildings G and H), or 3) rerouting the line to the west side of the pavement/parking area on the west side of Buildings G and H.

**Comment 6 (Transportation/Noise and Vibration/Air Quality/Schedule):** A Norris resident living along Route A inquired about the public notification process and requested information regarding where the notifications of availability of the Draft EA were initially published. The resident also commented that truck traffic associated with activities arising under the Phase 1

SEAs is causing noise and vibration disruptions and air quality impacts to residents along the transportation route. Additionally, the resident was concerned about transportation activities being conducted on weekends (particularly Sundays) and holidays. The resident also asked about operational traffic levels in the future once the construction is complete. (*Commenter: Local Resident*)

**Response 6:** The Second Phase 1 Draft SEA was published for public comment on the TVA website on November 25, 2019. Notifications of availability of the Second Phase 1 Draft SEA were also published in the Clinton Courier on December 4, 2019. The comment period closed on December 10, 2019. The Draft Phase 2 EA was published for public comment on January 22, 2020. The notice of availability of the Draft Phase 2 EA was published on the TVA website and in the Clinton Courier on that same date. The public comment period closed on February 5, 2020. In addition to the comment periods on these two draft documents, TVA participated in Norris City Council meetings on July 8, 2019 and February 10, 2020 to discuss the potential soil transport activities. TVA considered all comments received during city council meetings while completing the environmental reviews. TVA has also released information on several occasions in recent months to share information about ongoing activities at the Engineering Labs through Twitter, Facebook, media advisories, and news interviews/articles.

TVA evaluated the potential noise, vibration, and air quality impacts associated with transportation of soil from the Engineering Labs to TVA's Walnut Orchard facility and/or an offsite landfill in the *Phase 1 East Region Consolidation – Norris Properties Second Supplemental Draft Environmental Assessment*. TVA found that transportation, noise, and air quality impacts associated with the transport of soil would all be temporary and minor. The impacts would occur only during the transport activities and the transport activities would occur for only a brief period of time. While two routes for transportation activities were evaluated (see Figure 3.7-1 in this EA), Route A is preferred because the road width is wider with shoulder options as compared to Route B, which is somewhat more narrow and lined by ditches. There are fewer major intersections, less traffic volume, and more moderate turns on Route A. Route B would require trucks to make a near 90 degree turn onto E. Norris Road which is more complicated for larger vehicles and would result in greater safety and traffic flow concerns. Therefore, TVA has selected Route A as the preferred route for transportation of soil and other construction traffic. The City of Norris expressed strong preference for TVA to follow Route A moving west from the Engineering Labs as opposed to Route B to the east.

TVA has committed to communicating with the city, giving notice, and operating on reduced hours should there be a need for soil hauling or construction vehicles on the public roadways on Sundays. The majority of the soil hauling activities which resulted in increased truck traffic are currently expected to be completed in spring 2020. TVA anticipates a lower frequency of construction vehicles traveling into and out of the Engineering Lab site during the Phase 2 construction activities. This should further minimize any impacts associated with noise, vibration, and air quality. TVA does anticipate the number of vehicles entering and leaving



the site for normal operations will increase from previous numbers, however, these increases should not significantly increase the amount of traffic above current levels, and should not contribute to congestion or safety issues. Additionally, the City of Norris is considering an extension of Sawmill Road as discussed in Section 3.10 of this EA. Sawmill Road would connect the industrial area around the Engineering Labs with SR-61 to the south. It is anticipated that most industrial traffic and many employees would utilize this route once it is available.



STATE OF TENNESSEE  
DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
NASHVILLE, TENNESSEE 37243-0435

DAVID W. SALYERS, P.E.  
COMMISSIONER

BILL LEE  
GOVERNOR

February 5, 2020

**Via Electronic Mail to [wdwhite0@tva.gov](mailto:wdwhite0@tva.gov)**

Attn: W. Douglas White, NEPA Specialist  
Tennessee Valley Authority  
400 West Summit Hill Drive, WT 11B-K  
Knoxville, TN 37902

Dear Mr. White:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments on the Tennessee Valley Authority (TVA) Phase 2 East Region Consolidation at the Norris Properties Site *Draft Environmental Assessment (EA)*, which evaluates security updates needed to bring the facility into compliance with current TVA security measures and protocols. The Phase 2 East Region Consolidation Draft EA also addresses additional consolidation related actions including renovations of various structures that may be necessary, and which were unknown at the time of the Phase 1 assessment. According to TVA, these actions are necessary for completion of the planned consolidation effort based on TVA's ongoing evaluation of the condition of the existing facilities and program needs. Actions considered in detail within the Draft EA include:

- **Alternative A – No Action Alternative** – Under the No Action Alternative, TVA would continue with the previously evaluated Phase 1 actions as described in the Revised Phase 1 EA and the additional actions evaluated under the first SEA and second SEA pending completion of that environmental review. No additional changes would occur at the Engineering Lab beyond the activities identified in those documents.
- **Alternative B – Phase 2 Engineering Lab Modification** – Under this alternative, TVA would complete consolidation of portions of TVA operations to the Engineering Lab located in Norris, Tennessee. TVA anticipates consolidation activities to begin in early 2020 and possibly last through 2021. This alternative would include a number of site improvements, modifications of site security measures, and renovations to buildings on-site.<sup>1</sup>

TDEC has reviewed the Draft EA and provides the following comments:

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<sup>1</sup> For more information on specific activities identified by TVA, please see pages 13-20 of the Draft EA document.

## **Cultural and Natural Resources**

TDEC believes the Draft EA adequately addresses potential impacts to cultural and natural resources within the proposed project area.<sup>2</sup>

## **Air Resources<sup>3</sup>**

The proposed project includes building demolition and renovation activities, and both asbestos and lead are mentioned as present on-site. If asbestos removal or demolition is planned to occur additional consideration should be given to ensure that demolition related emissions are minimized, that any asbestos containing material (ACM) is identified and managed properly during demolition and that the appropriate notifications be provided prior to any renovation/demolition activity.<sup>4</sup> TDEC encourages TVA to include these considerations in the Final EA.

TDEC recommends that should open burning be considered for disposal of wood wastes generated from the proposed project, alternatives to open burning, including chipping, composting or grinding of wood waste, be evaluated first. If open burning is selected for wood waste disposal TVA should consider implementing a smoke management plan, not burning on air quality alert days, and coordinating burning with other agencies (local and State air pollution control agencies, forestry agencies and local fire departments). TDEC encourages TVA to include discussion relating to these considerations in the Final EA.

## **Solid Waste**

TDEC recommends that the Final EA consider and explicitly reflect that any wastes associated with such activities in Tennessee 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).

TDEC appreciates the opportunity to comment on this Draft EA. Please note that these comments are not indicative of approval or disapproval of the proposed action or its alternatives, nor should they be interpreted as an indication regarding future permitting decisions by TDEC. Please contact me should you have any questions regarding these comments.

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<sup>2</sup> This is a state-level review only and cannot be substituted for a federal agency Section 106 review/response. Additionally, a court order from Chancery Court must be obtained prior to the removal of any human graves. If human remains are encountered or accidentally uncovered by earthmoving activities, all activity within the immediate area must cease. The county coroner or medical examiner, a local law enforcement agency, and the state archaeologist's office should be notified at once (Tennessee Code Annotated 11-6-107d).

<sup>3</sup> No permitted air contaminant sources are mentioned as being demolished, relocated or newly constructed on-site. If any new sources are to be constructed, please contact TDEC's Division of Air Pollution Control air permitting program for information and assistance in receiving any needed air permits. For more information, please visit <https://www.tn.gov/environment/program-areas/apc-air-pollution-control-home/apc/permit-air-home.html>.

<sup>4</sup> For more information on TDEC's Asbestos Demolition or Renovation Notification requirements, please visit <https://www.tn.gov/environment/program-areas/apc-air-pollution-control-home/apc/asbestos-information/notification-of-asbestos-demolition-or-renovation.html>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Matthew Taylor', with a stylized flourish at the end.

Matthew Taylor

Senior Policy Analyst, Office of Policy and Sustainable Practices

Tennessee Department of Environment and Conservation

[Matthew.K.Taylor@tn.gov](mailto:Matthew.K.Taylor@tn.gov)

(615) 532-1291

cc: Kendra Abkowitz, PhD, TDEC, OPSP  
Daniel Brock, TDEC, DOA  
Lacey Hardin, TDEC, APC  
Lisa Hughey, TDEC, DSWM  
Tom Moss, TDEC, DWR  
Stephanie Williams, TDEC, DNA

Cindy K. Light

2-4-2020

Project Manager, Strategic Real Estate

TVA

Cindy,

We support the East Region Consolidation efforts.

Potential impact to the additional renovations included in Phase 2

2.1.2

*Alternative B-Phase 2 Engineering Lab Modifications*

Overall site improvements

-Trenching, foundation waterproofing, and other corrective measures around the exterior of various buildings (Buildings A, C, D, N, junction of Buildings T and Q1) to address water intrusion, which may include construction of retaining walls, concrete gutters, re-grading, or similar methods to divert water.

N- 6" water main on the sides and where existing parking lot is. And the water main continues south by Building G by Building H on thru to Sawmill Road at a fire hydrant.

-Potential repairs, replacements, and /or rerouting of existing water and utility lines.....

" I would support/recommend TVA reroute the 6" water main to the outer edge of the parking lot near Bldg. N and Bldg. G on past Building H and connect back into the existing water main that goes to the fire hydrant on Sawmill Road." And have a fire hydrant installed behind Bldg. H or close to existing-being on a 6" water main- branched off of newly installed water line."

Along side of Building G on east side-there is a 6"/4" water main close to the building that TVA installed. And built the building there.

Also truck entrance to newly constructed Boat Shop-between Bldg. G and Bldg. H. The water main installed in 1930's-1940's by TVA, ( 85 yrs) -Depth of water main and age of infrastructure – Concerns are there with 18 wheelers or heavy equipment traveling that route.

With rerouting the water main utilities, it allows TVA heavy equipment-trucks etc.. to maneuver with out any concerns between Bldg. G and Building H. (also relocating away from Building H-historic structure) and continue the efforts of any corrective measures needed to the exterior of the buildings mentioned.

I would ask that the above mentioned be took in consideration during this Phase 2 project. For the present and future of all involved.

Sincerely

Tony Wilkerson

Norris Water Commission