

SALE OF THE KNOXVILLE OFFICE COMPLEX AND THE
SUMMER PLACE OFFICE AND GARAGE COMPLEX AND
RELOCATION OF THE TVA KNOXVILLE OFFICES
DRAFT ENVIRONMENTAL ASSESSMENT
Knox County, Tennessee

Prepared for:
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Symbols, Acronyms, and Abbreviations

AADD	Average Annual Daily Traffic
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
APE	area of potential effects
AST	aboveground storage tank
ASTM	American Society of Testing and Materials
BMP	best management practice
CAA	Clean Air Act
CBRE	CB Richard Ellis
CFR	Code of Federal Regulations
CO	carbon monoxide
CGP	Construction General Permit
dBA	A-Weighted Decibel
EA	environmental assessment
EISA	Energy Independence and Security Act
ESA	Environmental Site Assessment
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
GSF	gross square feet
HCM	Highway Capacity Manual
HQ	administrative headquarters
I	interstate
KAT	Knoxville Area Transit
KOC	Knoxville Office Complex
KUB	Knoxville Utilities Board
LOS	Level of Service
MOA	Memorandum of Agreement
MPC	Metropolitan Planning Commission
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOC	Notice of Coverage
NO ₂	nitrogen dioxide
NO _x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Places
O ₃	ozone
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCB	polychlorinated biphenyl
PM _{2.5}	particulate matter having a diameter of less than 2.5 microns
PM ₁₀	particulate matter having a diameter of less than 10 microns
ppb	parts per billion
ppm	parts per million

KOC and SPC Property

SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SPC	Summer Place Complex
SWPPP	Storm Water Pollution Prevention Plan
TDEC	Tennessee Department of Environmental Conservation
THC	Tennessee Historic Commission
TPO	Transportation Planning Organization
TVA	Tennessee Valley Authority
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
UTGC	University of Tennessee Geonomics Core
V/C	volume to capacity
VOC	volatile organic compound

CHAPTER 1 – PURPOSE AND NEED FOR ACTION

1.1 Description of the Proposed Action

In order to meet the office space requirements and consolidate the operations of the Tennessee Valley Authority (TVA) in a more efficient and economical manner, TVA is proposing to sell two office complexes that it occupies in Knoxville, Tennessee and to work with a buyer to construct a smaller administrative headquarters (HQ) building in downtown Knoxville. At this time, the new administrative HQ building would be approximately seven stories above ground surface consisting of approximately 200,000 gross square feet (GSF). The properties to sell consist of the Knoxville Office Complex (KOC), which includes one office complex (the East and West Towers, and Concourse and Service levels) and the Fritts Lot; and the Summer Place Office and Garage Complex (SPC), which consists of a seven-level parking garage with approximately 700 parking spaces, an office building below the garage, and a five-story office tower adjacent to the garage.

1.2 Background

In 1972, TVA had the KOC towers constructed through a build-to-suit lease agreement on 2.64 acres to consolidate more than 25 TVA offices distributed in downtown Knoxville. TVA purchased the KOC in December 1992. In addition, TVA began leasing office space in the SPC building in 1979, and later purchased the building in April 1993. Over the last two decades, TVA's staffing numbers in downtown Knoxville have fluctuated from 2,000 in 1997 to approximately 800 employees in 2015. TVA currently has approximately 850 employees and contractors in the KOC and SPC.

In 2014, TVA developed an internal valley-wide strategic real estate program to manage TVA's agency-wide real estate portfolio effectively and efficiently. The program's goal is to reduce costs and maximize the financial return on TVA's real estate assets including office space. At present, TVA occupies the KOC and SPC in downtown Knoxville, Tennessee (Figure 1-1). However, it has been determined that the KOC is too large for current operations and both the KOC and SPC have large areas of unoccupied space. The findings of the strategic real estate program, coupled with deferred maintenance costs, resulted in TVA evaluating the sale of the KOC and SPC. Consistent with TVA's Land Policy, TVA proposes to foster maximum interest in the potential sale of the KOC and SPC and construction of TVA's new administrative HQ. TVA is not planning to include use restrictions other than those designed to protect TVA's program interests or to meet legal or environmental requirements.

1.3 Purpose and Need

The purpose of the proposed action is to consolidate the TVA administrative HQ components currently located in the KOC and SPC into one location in downtown Knoxville to improve space utilization and to reduce TVA cyclic operations and maintenance (O&M) and capital project costs consistent with TVA's real estate strategy. The project is needed because the KOC consists of approximately 750,000 gross square feet of space and is only about 40 percent occupied. The SPC consists of approximately 118,000 gross square feet (excluding the parking garage) with about 40 percent occupancy. The relocation would reduce energy consumption and foster collaboration and cohesiveness throughout the TVA HQ. In addition, through consolidation of the KOC and SPC into one HQ location, TVA would reduce expenses that are associated with having multiple locations.

1.4 Decision to be Made

The primary decision to be made by TVA is whether to sell the KOC and SPC and have a developer construct a new build-to-suit HQ facility at either the SPC location or on an existing disturbed site in downtown Knoxville.

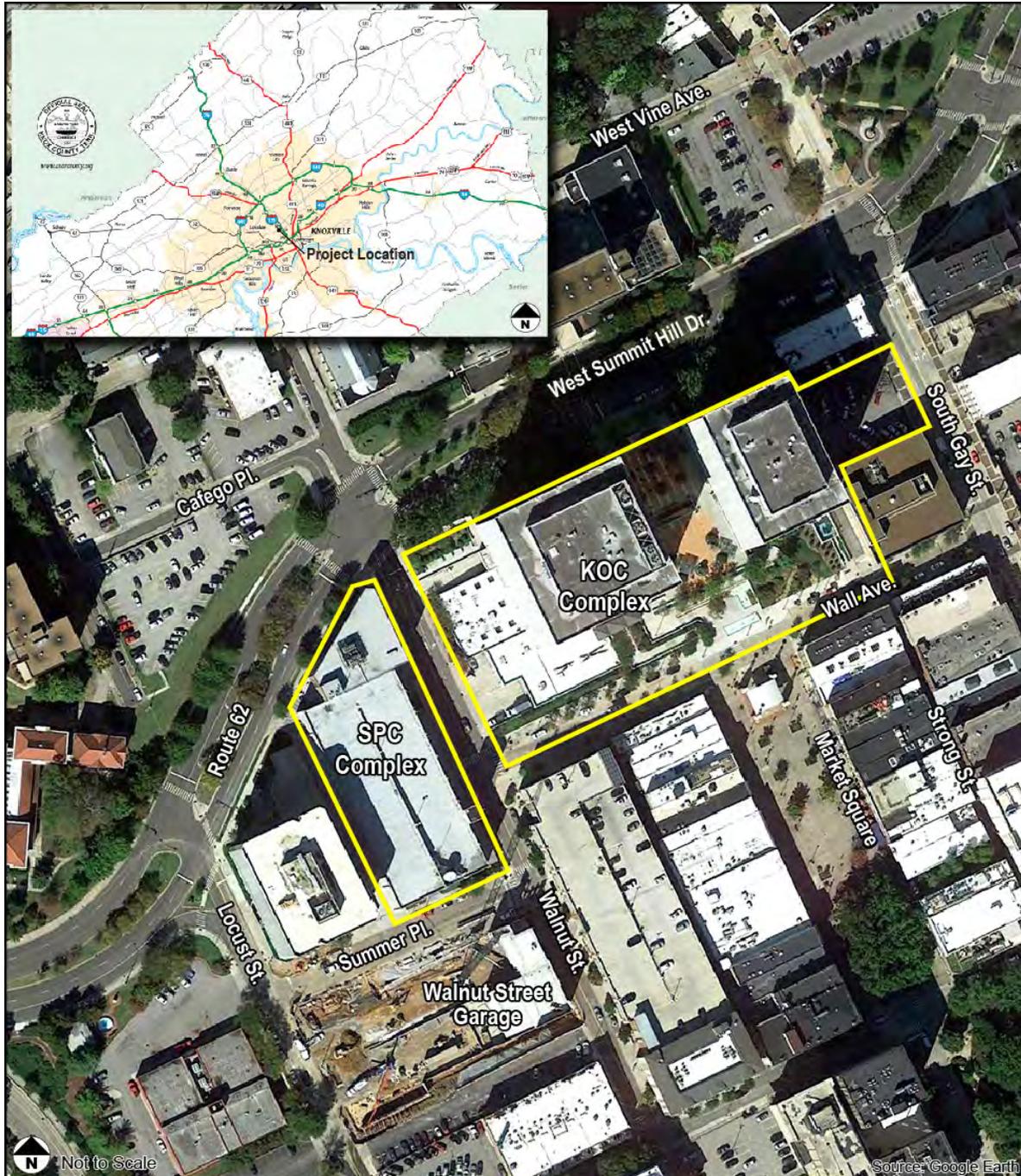


Figure 1-1. Map of the KOC and SPC in Knoxville

1.5 Related Environmental Reviews and Consultation Requirements

TVA completed an Environmental Assessment (EA) for the Knoxville Parking Garage in 2012. This EA analyzed the impacts related to constructing a parking garage in downtown Knoxville across from the SPC. A Finding of No Significant Impact (FONSI) was signed on September 10, 2012. The FONSI documented that the construction and operation of the parking garage, as well as the City of Knoxville's associated action of demolishing the Liberty Building and preparing the site for construction would not be a major federal action significantly affecting the human environment. The parking garage, now referred to as the Walnut Street Garage has been built and contains 1,100 parking space, of which TVA leases 700 of those spaces. TVA initiated consultation under Section 106 of the National Historic Preservation Act (NHPA) with the Tennessee State Historic Preservation Officer (SHPO) in October 2015 for the sale/lease of the KOC that would result in no change to the site, but not for a change in use that would result in a visual change to the landscape or earthmoving activities. TVA will re-open consultation with the SHPO on the proposed project. Furthermore, in addition to the SHPO, TVA will consult with federally recognized Indian tribes, the City of Knoxville, Knoxville-Knox County Metropolitan Planning Commission (MPC), Knox Heritage, the East Tennessee Historical Society, and the Market Square District Association for any adverse effects both direct and indirect to historic properties within the Area of Potential Effect (APE). A Memorandum of Agreement (MOA) will be developed between TVA, the SHPO and other consulting parties to address the known adverse effects and for phased identification and evaluation to address any unknown adverse effects. Additional information on this consultation can be found in Section 3.2 of this document.

1.6 Scope of the Environmental Assessment

The scope of this analysis is limited to the sale of KOC and SPC, potential construction/demolition laydown locations, and construction of a new HQ building. Following the sale of the properties, TVA intends to work with the buyer(s) to design an appropriate building for the new HQ. At this time, TVA expects that a buyer would propose to either reuse the KOC or demolish it and construct a new building. For the purposes of assessing the environmental effects of the proposed sale, TVA has considered each of these alternatives. The KOC consists of two towers (East Tower and West Tower), a concourse connecting the two buildings, and a subsurface service level also connecting the two buildings. The KOC also includes the Fritts Lot, an open, paved parking lot containing approximately 40 parking spaces and located immediately east of the East Tower. The SPC consists of a seven-level parking garage with approximately 700 parking spaces, an office building below the garage, and a five-story office tower adjacent to the garage. For the purposes of this analysis, TVA has analyzed the following:

- the sale and reuse of the KOC as office space with a maximum capacity of 2,000 or the demolition of the KOC;
- the sale, demolition, (full or partial) of the SPC and possible construction of a new HQ facility at the SPC location that would be approximately 200,000 GSF and accommodate approximately 850 TVA employees; and
- the sale and reuse of the KOC and the SPC as office space with maximum capacities of 2,000 and 300, respectively or the demolition of both the KOC and SPC; and the construction of a new HQ facility on an existing disturbed site in

downtown Knoxville that would be approximately 200,000 GSF and accommodate approximately 850 TVA employees.

Since a specific location in downtown Knoxville for a new HQ building other than on the SPC site has not been identified, additional analyses may be necessary if TVA selects a site other than the SPC as its preferred location for the new HQ building.

TVA conducted an internal preliminary review of the potential environmental resources that could be affected by the project. Due to the nature of the proposed action, the urban setting of the project area, and characteristics of the potential site of the new HQ building, TVA determined that the proposed action would not affect recreation, floodplains, aquatic species and habitats, botany, prime farmland, and wetlands. The following environmental resource areas are analyzed in this EA:

- Air Quality
- Cultural Resources
- Land Use
- Noise
- Socioeconomics and Environmental Justice
- Solid and Hazardous Waste
- Surface Water
- Transportation
- Visual Resources
- Wildlife and Threatened and Endangered Species
- Utilities

This draft EA is being issued for public review and comment. TVA will carefully review any comments received on the draft EA and address them, as appropriate, in the final EA.

1.7 Necessary Permits or Licenses

The following permits would be obtained prior to demolition and construction activities:

- Prior to demolition activities, the developer/owner or its designee would be required to submit an Asbestos Demolition/Renovation Ten Day Notice Form to the Knox County Department of Air Quality Management. The form would be submitted at least ten days prior to demolition activities and would be approved by Knox County before demolition could occur.
- A special waste disposal approval from the Tennessee Department of Environment and Conservation (TDEC) would be required when disposing of special wastes associated with demolition and/or construction activities. The special waste approval would be obtained by the developer/owner or its designee.
- A Tennessee General National Pollutant Discharge Elimination System Permit (NPDES) for discharges of storm water associated with construction activities (CGP) would be obtained by the developer/owner or its designee. As a requirement of the permit, a Stormwater Pollution Prevention Plan (SWPPP) would be developed to identify best management practices to be used to control sedimentation during ground disturbing activities. The developer/owner or its designee chosen to design the new building site would be required to comply with all applicable stormwater management regulations.

CHAPTER 2 - ALTERNATIVES

This chapter describes the alternatives that TVA has considered for the TVA HQ Relocation. Some of the alternatives considered are not further analyzed in this EA because they do not meet the purpose and need of the project.

2.1 Description of Alternatives

During preliminary internal scoping, a total of six alternatives were initially identified. Three of these alternatives are being retained for further analysis in this EA along with the No Action Alternative. These are: Alternative B1 – Sale of KOC and SPC and Construction of a New Building at SPC site; Alternative B2 – Sale of KOC and SPC and Construction of a New Building at SPC with partial demolition of SPC; and Alternative C - Sale of KOC and SPC and Construction of a New Build-to-Suit Building at an Existing Disturbed Site in Downtown Knoxville. Each alternative, including the No Action Alternative, is described below.

2.1.1 Alternative A – The No Action Alternative

Under the No Action Alternative, the TVA HQ Relocation would not occur. TVA would not sell the KOC or SPC, and TVA would retain ownership. TVA would continue its current operations at the KOC and SPC.

2.1.2 Alternative B1 – Sale of KOC and SPC towers and Construction of a New Building on the SPC site (full demolition of SPC)

Under Alternative B1, TVA would sell the KOC and SPC. Under this alternative, it is assumed the new developer/owner would reuse the KOC as office space with a maximum capacity of 2,000 or they would demolish and redevelop the site for its highest and best use, consistent with current zoning. The developer/owner would also demolish the existing structures on the SPC site (the parking garage, the building below the parking garage and the tower). The SPC site would be redeveloped with a new build-to-suit building for TVA's new administrative HQ. The new building would be approximately seven stories above grade, consist of approximately 200,000 GSF, and incorporate principles of sustainable design to comply with Executive Order 13693 and the Energy Independence and Security Act (EISA) of 2007. TVA would lease all or a portion of the newly constructed office building on the SPC site from the developer/owner and relocate approximately 850 TVA staff from the KOC to the new building¹. TVA expects the new facility to be designed and constructed as first class commercial office space with attractive, professional surroundings. The developer would be required to comply with all applicable federal, state and local city requirements. If TVA conveys title to the KOC prior to the developer completing construction of the building on the SPC site, TVA would negotiate a lease agreement with the new owner of the KOC and continue to occupy the KOC until TVA can move into the new building.

Consistent with TVA's Land Policy, the sale of the KOC would not include use restrictions other than those designed to protect TVA's program interests or to meet legal or environmental requirements.

¹ TVA employees that are currently located at the SPC would be temporarily relocated prior to any disposal of the site.

2.1.3 Alternative B2 – Sale of KOC and SPC towers and Construction of a New Building on the SPC site (partial demolition of SPC)

Under Alternative B2, TVA would sell the KOC and SPC. Under this alternative, it is assumed the new developer/owner would reuse the KOC as office space with a maximum capacity of 2,000 or they would demolish and redevelop the site for its highest and best use, consistent with current zoning. The developer/owner would also demolish the existing SPC garage and the building beneath the garage. The SPC tower would remain. TVA currently out-leases space in the SPC Tower to accommodate a non-TVA data center customer. Instead of displacing this occupant, TVA would assign the lease agreement to the developer or new owner. The SPC parking garage site would be redeveloped with a build-to-suit building for TVA's new HQ. The new building would be approximately seven stories above grade, consist of approximately 200,000 GSF, and incorporate principles of sustainable design to comply with Executive Order 13693 and EISA of 2007. TVA would lease all or a portion of the newly constructed office building from the developer/owner and relocate approximately 850 TVA staff from the KOC to the new building². TVA expects the new facility to be designed and constructed as first class commercial office space with attractive, professional surroundings. The developer would be required to comply with all applicable federal, state and local city requirements. If TVA conveys title to the KOC prior to completion of the new TVA HQ on the SPC site, TVA would negotiate a lease agreement with the new owner of the KOC and continue to occupy a portion of the KOC until TVA can move into the new building.

Consistent with TVA's Land Policy, the sale of the KOC would not include use restrictions other than those designed to protect TVA's program interests or to meet legal or environmental requirements.

2.1.4 Alternative C – Sale of KOC and SPC and Construction of a New Build-to-Suit Building at an Existing Disturbed Site in Downtown Knoxville

Under Alternative C, TVA proposes to sell the KOC and SPC sites and a developer would reuse the KOC and SPC as office space with maximum capacities of 2,000 and 300, respectively or the developer/owner would demolish both the KOC and the SPC and redevelop the sites for their highest and best use, consistent with current zoning. Also under Alternative C, a developer/owner would construct a new building on an existing disturbed site in downtown Knoxville for TVA's HQ. The new building would be approximately seven stories above grade, consist of approximately 200,000 GSF, and incorporate principles of sustainable design to comply with Executive Order 13693 and the EISA of 2007. TVA would lease all or a portion of the newly constructed office building from the developer/owner and relocate approximately 850 TVA staff from the KOC to the new building³. The new facility would be designed and constructed as first class commercial office space with attractive, professional surroundings. The developer would be required to comply with all applicable federal, state and local requirements. If TVA conveys title to the KOC prior to completion of the new TVA HQ, TVA would negotiate a lease agreement with the new owner of the KOC and continue to occupy a portion of the KOC until TVA can move into the new building.

² TVA employees that are currently located at the SPC would be temporarily relocated prior to any disposal of the site.

³ TVA employees that are currently located at the SPC would be temporarily relocated prior to any disposal of the site.

Consistent with TVA's Land Policy, the sale of the KOC and SPC sites would not include use restrictions other than those designed to protect TVA's program interests or to meet legal or environmental requirements.

Available existing unoccupied building sites in downtown Knoxville are limited and an available constructible site has not been identified for TVA's HQ. If Alternative C is identified as TVA's preferred alternative, it may be necessary to conduct additional, more location specific analyses.

2.1.5 Alternatives Considered but Eliminated From Further Discussion

TVA considered three additional alternatives for the proposed project. These were:

- Retain ownership and current operations of the KOC and SPC sites, and out lease the East Tower (Alternative D);
- Sell the KOC and SPC, consolidate TVA operations into the KOC East Tower, and lease back the East Tower (Alternative E); and
- Sell the KOC and SPC sites and relocate TVA HQ to an existing building in downtown Knoxville (Alternative F).

All of the alternatives were preliminarily evaluated by CB Richard Ellis (CBRE) based on a set of criteria including: cost, efficiency, workplace design, sustainability, environmental impacts, and meeting TVA's project mission to demonstrate financial and environmental stewardship. Based on this analysis it was determined that consolidating TVA staff into one of the KOC towers would not only involve high front-end capital costs but the building footprint limits flexibility. The new developer/owner would have to modify the existing infrastructure (e.g., information technology services and utilities) to separate the towers so that they act as fully independent buildings and to provide a secure environment for TVA employees. Furthermore, the floor plan restricts modern workplace design standards which is used for business efficiency and to recruit and retain employees. Therefore, Alternatives D and E do not fully meet TVA's purpose and need. After further investigation, it was also determined there are no existing buildings available for lease, in downtown Knoxville that can accommodate TVA HQ staff. Therefore, TVA determined Alternative F is not viable. Because Alternatives D, E, and F did not fully meet TVA's purpose and need, they were eliminated from further environmental analysis.

2.1.6 Potential Construction Laydown Areas

As part of the EA process, TVA considered potential laydown areas that a developer may need to secure for the storage of construction vehicles, equipment, and materials. Possible locations identified include:

- Existing 0.5-acre surface parking lot, containing approximately 85 parking spaces, across West Summit Hill Drive from the SPC tower (Site A),
- Existing 0.7-acre surface parking lot, containing approximately 75 parking spaces, on West Vine Avenue across from the Crowne Plaza Hotel (Site B),

Existing 0.2-acre surface parking lot, containing approximately 30 parking spaces, on Locust Street between Cafego Place and West Vine Avenue (Site C), and

- The 0.3-acre Fritts lot, containing approximately 40 parking spaces, located east of the KOC East Tower (Site D) (Figure 2-1).

There may also be the need to close one lane of Walnut Street during site preparation activities and the construction of a new TVA HQ building. Final laydown areas would be identified and selected by the developer/owner and any arrangements made for the use of the parking lots would occur directly between the developer and the owners of the parking lots at that time. Any lane closures would be coordinated with the City of Knoxville prior to commencement of site preparation and construction activities.



Figure 2-1. Potential Construction Laydown Areas and Lane Closure

2.2 Comparison of Alternatives

The environmental effects anticipated under the No Action and the Action Alternatives are compared and summarized below in Table 2-1.

Table 2-1. Summary and Comparison of Alternatives by Resource Area

Resource Area	No Action Alternatives	Alternative B1	Alternative B2	Alternative C
Air Quality	No direct or indirect impacts.	Minor, short-term direct impacts due to demolition and construction activities	Minor, long-term, adverse increase in emission levels from vehicles due to reuse of KOC and/or SPC	
Cultural Resources	No direct or indirect impacts.	Potential direct and indirect impacts to historic properties		
Land Use		Direct, adverse impact on the historic KOC		
Noise	No direct or indirect impacts.	No direct or indirect impacts.		
Socioeconomics and Environmental Justice	No direct or indirect impacts.	Beneficial, direct, long-term impact to the local economy from property tax generation	Beneficial, direct, long-term impact to the local economy from property tax generation	Beneficial, direct, long-term impact to the local economy from property tax generation
		Short-term beneficial impacts from purchase of building materials for new construction	Short-term beneficial impacts from purchase of building materials for new construction	Short-term beneficial impacts from purchase of building materials for new construction
				Minor, long-term, indirect beneficial impacts to the economy from TVA employee use of local businesses after relocation
Solid and Hazardous Waste	No direct or indirect impacts.	Minor, short-term, adverse impacts from waste generated during demolition and construction.	Minor, short-term, adverse impacts from waste generated during demolition and construction.	Minor, short-term, adverse impacts from waste generated during demolition and construction.
				Minor, long-term, adverse impacts due to waste generation from occupancy of the new HQ site
Surface Water	No direct or indirect impacts.	Minor, short-term direct impacts due to demolition and construction activities		
		Beneficial, direct and indirect impacts from treatment of stormwater		

Resource Area	No Action Alternatives	Alternative B1	Alternative B2	Alternative C
Transportation	No direct or indirect impacts.	Minor, short-term direct impacts from temporary lane closures	Minor, long-term, adverse impacts from loss of parking	Potential impacts from relocation of TVA employees to be investigated when site is selected
Visual Resources	No direct or indirect impacts.	Negligible, long-term, adverse, impacts from the construction of a new building	Potential moderate, adverse impacts due to reuse of KOC site to be investigated by owner/developer	
Terrestrial Wildlife and Threatened and Endangered Species	No direct or indirect impacts.	Minor, long-term impacts from displacement due to demolition		
Utilities	No direct or indirect impacts.	Direct and indirect, minor, short-term, adverse local impacts from temporary disruptions to utility service		

2.3 Identification of Mitigation Measures, Best Management Practices, and Suggested Construction and Design Measures

2.3.1 Mitigation Measures

TVA will employ the following measures to mitigate the adverse impacts that would occur under each alternative:

- A MOA would be developed between TVA, the SHPO, and other consulting parties to address the known adverse effect and for phased identification and evaluation to address any unknown adverse effects.

2.3.2 Best Management Practices

Under potentially applicable regulatory requirements, TVA anticipates that the developer/owner or its designee would be required to do the following items to be in compliance with all local, state and federal regulations:

- Demolition and construction would only occur between the hours of 7:00 am and 6:00 pm in accordance with the City’s noise ordinance.
- A hazardous materials survey would be performed prior to demolition of the KOC and SPC buildings to determine the presence of asbestos and lead containing materials. If found they would be abated and disposed of in accordance with state and federal regulations.
- Comply with the Occupational Safety and Health Administration (OSHA) Lead in Construction Standard 29 Code of Federal Regulations (CFR) 1926.62 during demolition.
- Recyclable and non-recyclable waste generated during construction will be disposed of at licensed facilities and would be the responsibility of the developer/owner.
- Wet suppression would be used during demolition and construction to control dust and other emissions.
- Prior to construction, a NPDES permit for discharges of stormwater from construction activities would be obtained and a SWPPP will be prepared.

2.3.3 Suggested Construction and Design Measures

TVA will include the following construction and design suggestions within the request for proposal for potential developers:

- The developer/owner to reduce construction waste by recycling and reusing materials whenever possible and to divert recyclable material from the municipal solid waste to the maximum extent practical.
- The developer/owner to design any new buildings to avoid large expanses of highly reflective/mirrored window glass that cause collision-related bird mortalities.
- The demolition of the SPC to not be initiated during maternity season for big brown bat (May –July) in order to avoid the potential for direct impacts to non-volant young.
- A Phase I ESA of the proposed building site to be performed to identify any existing environmental substance contamination prior to disturbance of the site, if Alternative C is identified as TVA's preferred alternative.

2.4 The Preferred Alternative

TVA has not identified a preferred alternative at this time.

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CHAPTER 3 – AFFECTED ENVIRONMENT

This chapter includes descriptions of the affected environment, which document the existing conditions of the project area. These descriptions serve as a baseline for understanding the resources that could be impacted by implementation of the alternatives described in Chapter 2. They also serve as the baseline conditions against which the TVA decision maker and the public can compare the potential effects of the alternatives under consideration. TVA conducted an internal preliminary review of the potential environmental resources that could be affected by the project. Based upon this review, several environmental resource areas were considered but determined not to require additional analysis due to the extensive existing disturbed area within downtown Knoxville. Potential effects were found to be absent regardless of the location for new construction and these resources do not require further evaluation. These resources are recreation, floodplains, aquatic species and habitats, botany, prime farmland, and wetlands.

The following resources have the potential to be affected by the proposed action:

- Air Quality;
- Cultural Resources;
- Land Use;
- Noise;
- Socioeconomics and Environmental Justice;
- Solid and Hazardous Waste;
- Surface Water;
- Transportation;
- Visual Resources;
- Wildlife and Threatened and Endangered Species;
- Utilities.

3.1 Air Quality

Under the authority of the Clean Air Act (CAA) (42 U.S.C. §7401 et seq.), the U.S. Environmental Protection Agency (EPA) regulates air emissions and pollutants. The EPA has set National Ambient Air Quality Standards (NAAQS) for the following pollutants: ozone (O₃), particulate matter (PM_{2.5} and ₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and lead (Pb). If any of these standards are exceeded in a geographic area (City, County, etc.), the area is considered a non-attainment⁴ area for that pollutant.

⁴ Non-attainment area is an area in the US that is not meeting NAAQS standards for a pollutant.

Each state (or regional government) is required by the EPA to develop a State Implementation Plan (SIP) that identifies the NAAQS attainment status for each pollutant. Knoxville/Knox County is in attainment for the following pollutants: O₃, PM₁₀, NO₂, CO, SO₂ and Pb. Knoxville is listed as a non-attainment area for PM_{2.5}. On August 2, 2012, the EPA suspended requirements for Knox County to submit a SIP demonstrating attainment for the PM_{2.5} standards because monitoring data has shown that the County has attained the annual and 24-hour PM_{2.5} standards. Knox County is currently preparing a maintenance plan for submittal to the EPA for PM_{2.5}. If the plan is accepted, the EPA will change Knoxville's status to attainment for PM_{2.5} (personal communication B. Rivera, 2016). Knoxville was previously listed as a non-attainment area for O₃ but this designation was changed to attainment by the EPA on July 13, 2015 (EPA 2015).

The CAA also identified 188 air toxics also known as hazardous air pollutants. The EPA has assessed this expansive list of toxics and identified a group of 21 as mobile source air toxics (MSATs), which are set forth in an EPA final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235). The EPA also extracted a subset of this list of 21 that it now labels as the six priority MSATs. These are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. These MSATs are considered the priority transportation toxics. According to the 2009 Federal Highway Administration (FHWA) interim guidance on MSAT, a meaningful MSAT impact can occur when a proposed project results in a significant increase in traffic capacity. When there are no "meaningful impacts on traffic volumes or vehicle mix," FHWA indicates that MSAT impacts are not expected to be important and require no further MSAT analysis.

3.2 Cultural Resources

3.2.1 Regulatory Framework for Cultural Resources

Cultural resources or historic properties include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events. Federal agencies, including TVA, are required by the National Historic Preservation Act (NHPA) (16 U.S.C 470) and by NEPA to consider the possible effects of their undertakings on historic properties. *Undertaking* means any project, activity, or program, and any of its elements, which have the potential to have an effect on a historic property and that is under the direct or indirect jurisdiction of a federal agency or is licensed or assisted by a federal agency. An agency may fulfill its statutory obligations under NEPA by following the process outlined in the regulations implementing Section 106 of NHPA, at 36 CFR Part 800. Additional cultural resource laws that protect historic resources include the Archaeological and Historic Preservation Act (16 U.S.C. 469-469c), Archaeological Resources Protection Act (16 U.S.C. 470aa-470mm) and the Native American Graves Protection and Repatriation Act (925 U.S.C. 3001-3013).

Section 106 of the NHPA requires that federal agencies consider the potential effects of their actions on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the action. Section 106 involves four steps: 1) initiate the process; 2) identify historic properties; 3) assess adverse effects; and 4) resolve adverse effects. This process is carried out in consultation with the SHPO of the state where the undertaking takes place and other interested consulting parties, including federally recognized Indian tribes.

Section 110 of the NHPA sets out the broad historic preservation responsibilities of federal agencies and is intended to ensure that historic preservation is fully integrated into their

ongoing programs. Federal agencies are responsible for identifying and protecting historic properties and avoiding unnecessary damage to them.

Cultural resources are considered historic properties if they are included in or considered eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP eligibility of a resource is based on the Secretary of the Interior's criteria for evaluation (36 CFR 60.4), which state that significant cultural resources possess integrity of location, design, setting, materials, workmanship, feeling, association, and;

- a) are associated with events that have made a significant contribution to the broad patterns of our history; or
- b) are associated with the lives of persons significant in our past; or
- c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value; or
- d) have yielded, or may yield, information (data) important in prehistory or history.

The following properties that may not normally qualify for listing on the NRHP may be considered if;

- a) A religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- b) A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- c) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life.
- d) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or
- e) are accurately reconstructed buildings and part of a restoration plan, when no other similar building has survived; or
- f) is commemorative in intent, if design, age, tradition, or symbolic value has invested the marker with historic significance; or
- g) have achieved exceptional significance in the last 50 years.

NHPA requires any federal agency that proposes an undertaking with potential to adversely affect historic properties to identify an APE for resources that may be affected by the undertaking. The ACHP defines APE as "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist". In any given federal undertaking the APE for cultural resources is defined by the lead federal agency in consultation with the appropriate consulting parties. In defining the APE the agency head must consider direct and indirect consequences of the undertaking that could affect historic properties, regardless of whether those historic properties are located within the area in which project activities will take place.

A project may have effects on a historic property that are not adverse, if those effects do not diminish the qualities of the property that identify it as eligible for listing on the National Register. However, if the agency determines (in consultation) that the undertaking's effect on a historic property within the APE would diminish any of the qualities that make the

property eligible for the NRHP (based on the criteria for evaluation at 36 CFR Part 60.4), the effect is said to be adverse. Examples of adverse effects include disturbing an archaeological site, and erecting structures within the viewshed of a historic building in such a way as to diminish the structure's integrity of feeling or setting.

Agencies must resolve the adverse effects of their undertakings on historic properties. Resolution may consist of avoidance (such as choosing a project alternative that does not result in adverse effects), minimization (such as redesign to lessen the effects), or mitigation. Adverse effects to archaeological sites are typically mitigated by means of excavation to recover the important scientific information contained within the site. Mitigation of adverse effects to historic structures sometimes involves thorough documentation of the structure by compiling historic records, studies, and photographs. Agencies are required to consult with SHPOs, tribes, and others throughout the Section 106 process and to document adverse effects to historic properties resulting from agency undertakings.

3.2.2 Cultural History of the Affected Area

The human occupation of east Tennessee began at the end of the Ice Age with the Paleo-Indian Period (13,500 – 11,000 years before present, or "B.P."). In the southeastern U.S., prehistoric archaeological chronology is broken into four broad time periods: following the Paleo-Indian Period are the Archaic (11,000 – 3,000 B.P.), Woodland (3,000 – 1,100 B.P.), and Mississippian (1,100 – 500 B.P.) periods. Prehistoric land use and settlement patterns vary during each period, but short- and long-term habitation sites are generally located on flood plains and alluvial terraces along rivers and tributaries. Specialized campsites tend to be located on older alluvial terraces and in the uplands. European interactions with Native Americans in east Tennessee began in the middle of the 17th century with the rise of the fur trading industry. Due in part to the introduction of infectious diseases to which Native Americans lacked natural immunity, these interactions resulted in a rapid collapse of the native population, the cessation of elaborate ceremonialism and mound building, the rise of political networks between native groups and European colonists, and intense inter-tribal warfare.

James White established a fort below the confluence of the French Broad and Holston rivers in 1786. The site was selected as territorial capitol in 1791 and given the name Knoxville, in honor of General Henry Knox. In the same year, White laid out 64 one-half acre lots and formally organized the town. Two lots were set aside for churches and four for schools. The arrival of the East Tennessee and Georgia Railroad in 1855 made Knoxville a strategic center during the Civil War. Following the Civil War, Knoxville became a major urban center and in 1896 claimed to be the third largest wholesaling center in the entire South. From 1895 to 1904 over 5,000 new homes were constructed in Knoxville. Since its founding, Knoxville has grown to be Tennessee's third largest city (Wheeler 1998).

3.2.3 Area of Potential Effects (APE)

TVA proposes to relocate its HQ from its current location on the block bounded by Summit Hill Drive, Walnut Street, Gay Street and Wall Avenue in Knoxville, Tennessee. TVA has determined the APE for archaeology to be all TVA land proposed for sale (KOC and SPC parcels) and any area that would be affected by ground-disturbing activities associated with the construction of the proposed new HQ location. The architectural APE is the 0.5-mile viewshed surrounding the KOC and SPC (Alt B1 and B2) and the to-be-identified site of the new building to be constructed under Alternative C.

3.2.4 Background Research-Previous Surveys

A preliminary review indicates the following NHRP-listed properties within the architectural APE:

- Daylight Building
- Old Knoxville City Hall
- Gay Street Historic District
- Knoxville Iron Foundry Complex
- Minvilla
- Jackson Avenue Warehouse District and Extension
- Southern Terminal and Warehouse Historic District
- Knoxville Business College
- Mechanic's Bank and Trust Company Building
- Cowan, McClung and Company Building
- Market Square Historic District
- Knoxville Post Office
- Medical Arts Building
- William Blount Mansion
- Craighead-Jackson House
- Holston National Bank
- Andrew Johnson Hotel
- Lamar House Hotel
- Louisville and Nashville Freight Depot
- Louisville and Nashville Passenger Station
- Mall Building
- Old Post Office Building
- General Building
- Knoxville YMCA Building
- First Baptist Church
- Church Street Methodist Church
- Commerce Avenue Fire Hall
- First Presbyterian Church Cemetery
- Fort Sanders Historic District

TVA conducted an architectural assessment of the KOC and SPC buildings in 2015. In consultation with the TN SHPO the SPC was determined ineligible for listing on the NRHP. The KOC was determined eligible for the NRHP under criterion consideration G for its historical association with the growth and development of TVA during the late twentieth century. In 2013 archaeological investigations were conducted on a neighboring block for the Walnut Street Parking Garage. Based on Sanborn fire insurance maps, nineteenth century archaeological resources are likely present within the boundary of the KOC, Fritts, and SPC parcels. Archaeological surveys are currently being conducted at the KOC and SPC sites.

3.3 Land Use

The KOC occupies approximately 4.2 acres, including the Fritts Lot, and is surrounded to the north by West Summit Hill Drive, to the east by office buildings and South Gay Street, to the west by Walnut Street, and to the south by Wall Avenue and Market Square. The SPC is located west of the KOC; the two sites are separated by Walnut Street. The SPC is bounded to the north by West Summit Hill Drive, to the west by an office building and to the south by Summer Place (road) and the Walnut Street Garage. The SPC occupies approximately 1.5 acres. Land use surrounding the KOC and SPC is dominated by commercial buildings and retail space. The area known as Market Square is located to the south across Wall Avenue from the KOC. Market Square is a year-round venue for outdoor

events, restaurants, shopping, and entertainment. There is no vegetation onsite other than landscaped areas around the KOC and no natural water resources (i.e. streams) are found on either site.

TVA has occupied the KOC since the early 1970s and the SPC since 1979. The sites are located in downtown Knoxville which is highly developed. According to the *2014 Central City Sector Plan*, the land use for the KOC site is Public/Quasi Public Land and the SPC site is designated as Transportation/ Communications/Utilities (Based on the Sector Plan, the 15-year land use plan for both sites is Mixed Use Regional Center (MU-RC), (MPC 2014) (Figure 3-1). This designation is “a high intensity mixed use district located adjacent to downtown or along major arterial served with transit, (MPC 2014).” Both sites are zoned C-2 (general business district) and D-1 (downtown design overlay district) (City of Knoxville 2016). These zoning designations would remain in effect under the sector plan (Figure 3-2).

3.4 Noise

The EPA defines noise pollution as “unwanted or disturbing sound” and noise pollution is regulated under the Noise Control Act of 1972 (EPA 2016b). Noise is measured in decibels on the A weighted scale (dBA) which represents the range of sounds that can be heard by the human ear. The EPA has declared sound in excess of 55 dBA to be “normally unacceptable” for sensitive populations such as schools and residences. The KOC and the SPC are located in the downtown area of Knoxville and are surrounded by other commercial buildings, retail space and residential apartments. In addition to the residential apartments, the Crown Plaza Hotel and Immaculate Conception Church are located in the vicinity of the KOC and SPC sites and represent noise-sensitive populations. The sites are zoned C-2 (general business district) and are on major transit routes; therefore, both sites are inherently subject to certain levels of ambient noise. The typical noise level for urban areas is approximately 70 dBA and can temporarily reach up to 120 dBA due to sirens and other loud vehicles (EPA 1971). Common urban noise levels are listed in Table 3-1. The City of Knoxville has adopted a noise ordinance which requires construction activities to occur between 7:00am and 6:00pm (City of Knoxville 1992).

Table 3-1: Common urban noise levels (Earth Journalism Network 2014)

Noise Sources	dBA
Normal Conversation	60
Moderate Traffic	75
Heavy Traffic	85
Motorcycle	90
Garbage Truck	100
Emergency Response Siren	120

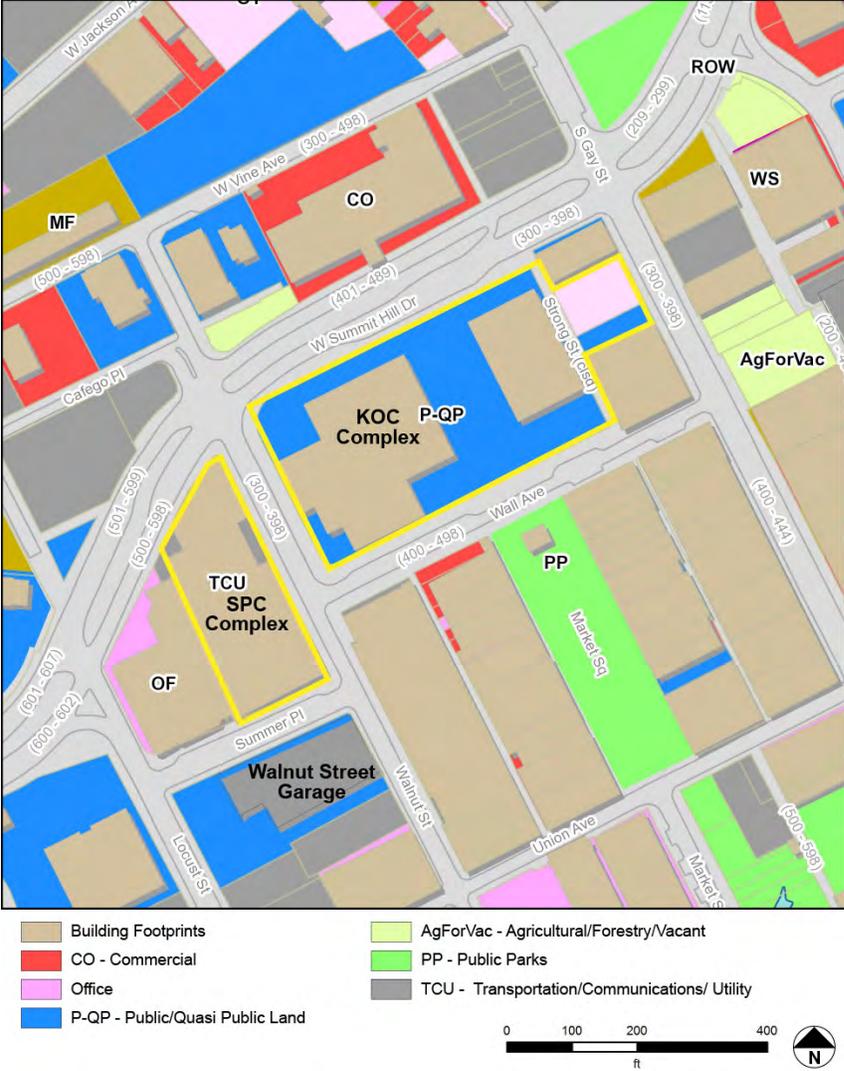


Figure 3-1. Existing Land Use at the KOC and SPC

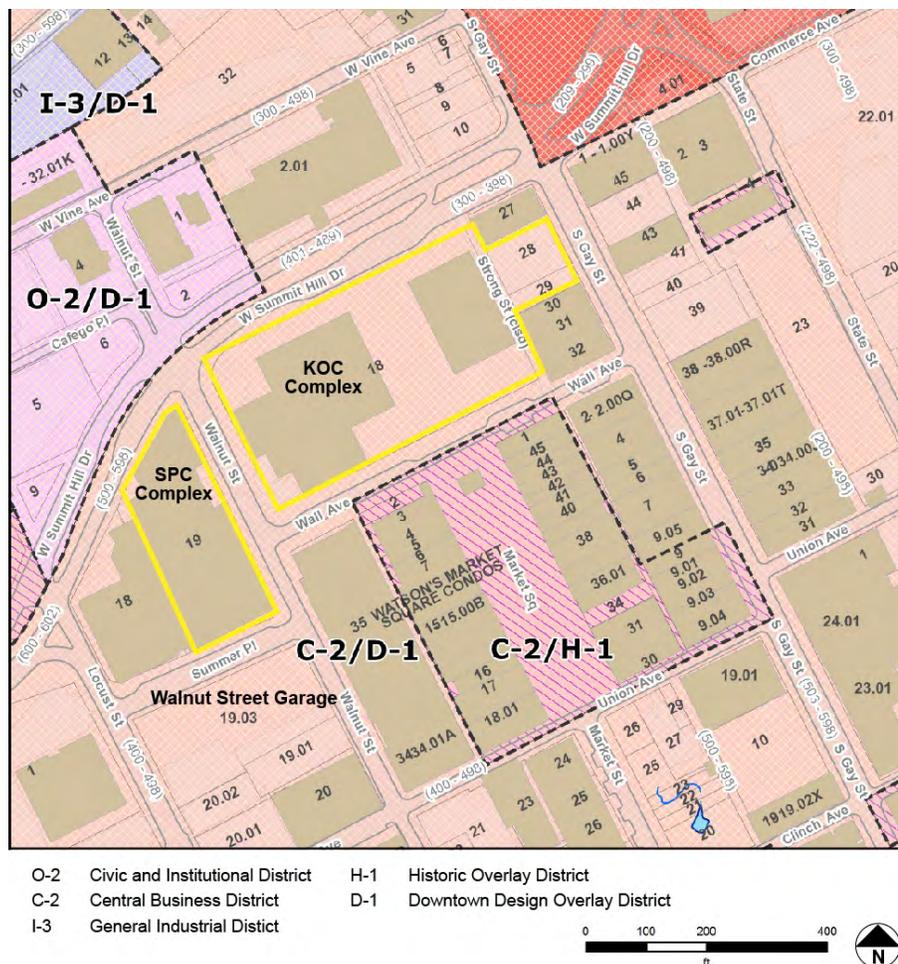


Figure 3-2. Existing Zoning

3.5 Socioeconomics and Environmental Justice

According to the 2010 U.S. Census the population of the City of Knoxville is 178,874 and the population of Knox County is 432,226 (Census 2010) (Table 3-2). The state of Tennessee’s population is 6,451,365. The KOC and SPC sites are located in Census Tract 1, Block Group 1 which has a population of 1,605. The city population increased by about 3.7 percent since the 2000 Census while the state experienced an 11.5 percent increase.

According to the American Community Survey, the per capita personal income was \$35,313 for the block group, \$21,694 for the City of Knoxville, \$27,349 for Knox County, and \$23,722 statewide (Census 2010). The median household income for 2014 was \$34,494 for the City of Knoxville, \$47,543 for Knox County, and \$44,621 in Tennessee (Census 2015).

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations mandates federal agencies to consider potentially disproportionate health or environmental impacts that their activities may have on minority or low-income populations. Although TVA is not subject to this Executive Order it routinely evaluates the impacts of its actions on low-income and minority populations. Low-income and minority populations were identified through a review of 2010-2015

American Community Survey 5 year estimate. The percentage of all individuals living below the poverty level in the City of Knoxville and Knox County are 24.6 and 15.3 respectively. The percentage of individuals living below the poverty level in the City of Knoxville is higher than Knox County; and Knox County is lower than the State of Tennessee’s percentage (17.8 percent). The percentage of individuals living below the poverty level within the block group is the highest at 31.8 percent. The minority community in the City of Knoxville and Knox County is approximately 13.3 and 24.4 percent, respectively. The minority community in both the City and County are less than the minority community statewide. The minority community within the block group is the least of all at 12.7 percent. Within the City of Knoxville, the minority population breakdown is as follows: 17.1 percent Black, 0.4 American Indian or Native Alaskan, 1.6 percent Asian, 0.2 percent Hawaiian or Pacific Islander, 2.5 percent two or more races, and 4.6 percent Hispanic (Census 2010).

Table 3-2. Low-Income and Minority Demographics

	Census Tract 1, Block Group 1	City of Knoxville	Knox County	Tennessee	US
Total Population	1,605	178,874	432,226	6,346,105	308,745,538
Individuals Living Below Poverty (%)	31.8	24.6	15.3	17.8	15.6
Median household Income (\$)	35,313	33,494	47,543	44,621	53,482
Minority Population (%)	12.7	13.3	24.4	38	36.3

Source: 2010-2015 American Community Survey 5 year estimate

3.6 Solid and Hazardous Waste

In September 2016, a Phase I ESA was performed on the KOC, the Fritts Lot, and the SPC. A Phase I ESA investigates the current and historical uses of a property in order to identify pollutants and potential sources of environmental contamination. Regulatory database information was obtained from a commercial vendor, Environmental Data Resources, Inc. to identify any federal, state, local or tribal ASTM (American Society for Testing and Materials) listings within the vicinity of the KOC and SPC. Thirteen of the 119 listings were identified as a potential concern to the KOC and SPC.

During site reconnaissance of the KOC and the adjoining Fritts Lot, two above ground storage tanks (ASTs) and their associated backup generators were observed. The maintenance shop onsite appeared to be well-kept and all chemicals and waste oils were observed to be properly stored (HDR 2016). The Hazardous Storage Room contained chemicals and materials that were correctly labeled and stored in a safe manner. The Paint Shop contained paint storage and 55-gallon drums for paint disposal (HDR 2016). On the Fritts lot, an electrical vehicle charging station and a pay booth were located on the eastern side of the site.

During site reconnaissance of the SPC, an AST and its associated backup generator were observed on the west side of the property. The recycle room was observed to contain discarded computers, monitors, and other electronics (HDR 2016).

The historical investigation into the properties revealed that prior to construction of the KOC and SPC buildings, the sites were used for a variety of commercial activities including a tin shop, dry cleaners and an automotive garage. Additionally, in 1989 underground lines connecting two underground storage tanks (USTs) were found to have deteriorated and released approximately 3,100 gallons of gasoline (HDR 2016). TVA identified the extent of the contamination and remediated the pollution in the 1990's. A small diesel tank and the two USTs were removed in 1993 and 1994, respectively. On May 7, 1997, TDEC wrote to TVA stating that the incident was resolved. The extent of any potential soil contamination remaining from the spill could not be confirmed without further investigation.

Due to the age of the buildings on the sites, asbestos-containing materials (ACMs), lead-based paint, mercury-containing and polychlorinated biphenyls (PCB) containing materials are likely to be present.

3.7 Surface Water

Section 402 of the Clean Water Act (CWA), as amended, established the basic framework for regulating discharge of pollutants into the Waters of the U.S. The City of Knoxville maintains a municipal drainage system, and a NPDES permit was issued to the City of Knoxville in July 1996. TDEC manages the NPDES permit system with federal oversight from the EPA. No surface water resources, such as streams or rivers, exist on the KOC or the SPC sites. Stormwater from the KOC and SPC enters the municipal stormwater system and eventually discharges to the Tennessee River which is located approximately 0.5 miles south of the Complexes. Currently, no stormwater management devices exist on either site because they were developed prior to the adoption of stormwater regulations in Knoxville.

3.8 Transportation

The existing KOC is bounded by West Summit Hill Drive to the north, Wall Avenue to the south, Gay Street to the east, and Walnut Street to the west. The SPC is located to the west of the KOC Complex and is bounded by West Summit Hill Drive to the north, Summer Place (road) to the south, Walnut Street to the east, and Locust Street to the west. The major arterial routes serving the KOC and SPC include Western Avenue (State Route 62), Broadway/Henley Street (US 441), and West Summit Hill Drive. Clinch Avenue, Church Avenue, Locust Street, Walnut Street, and Gay Street serve as collectors, providing access to parking facilities. The majority of site commuter traffic to the KOC and SPC utilize I-40 and I-275, which can be accessed through the major intersection of Western Avenue/West Summit Hill Drive and Broadway/Henley Street.

Traffic engineers from Stantec Consulting Services, Inc. analyzed existing AM and PM peak hour traffic data to qualitatively assess traffic operations for the intersections immediately surrounding the KOC and SPC, including:

- Western Avenue/Summit Hill Drive and Broadway/Henley Street
- West Summit Hill Drive and Locust Street
- West Summit Hill Drive and Walnut Street
- West Summit Hill Drive and Gay Street

- Henley Street and Clinch Avenue
- Henley Street and Church Avenue
- Church Avenue and Locust Street
- Church Avenue and Walnut Street
- Clinch Avenue and Locust Street
- Clinch Avenue and Walnut Street

The City of Knoxville provided turning movement count data for Church Avenue and Locust Street (2012), Clinch Avenue and Locust Street (2012), West Summit Hill Drive and Gay Street (2014), West Summit Hill Drive and Walnut Street (2014), and West Summit Hill Drive and Locust Street (2014). AM and PM peak hour turning movement count data for the remaining intersections was estimated utilizing a combination of average annual daily traffic (AADT) data provided on the Knoxville Regional Transportation Planning Organization (TPO) website and balancing that data with adjacent intersections for which turning movement count data was provided. A review of historic AADT data provided on the Knoxville Regional TPO website reveals that overall traffic volumes have been declining since the early 2000's, with data from 2012, 2013, and 2014 representing the lowest volumes shown in the online archive (Knoxville Regional TPO 2016).

A capacity analysis was conducted for the study area intersections utilizing Synchro 9/SimTraffic, which is based on the methodology of the *2010 Highway Capacity Manual (HCM)* to establish average volume to capacity (V/C) ratios, delays, and level of service (LOS) for each intersection. Existing roadway geometry, signal timing, and traffic data were entered into the model.

The V/C ratio relates the demand at a particular intersection (traffic volume) to the available capacity. The available capacity for each movement varies depending on number of lanes, lane width, perception/reaction time, the amount of time a movement experiences a green light, and the total time it takes for a signal to make one complete cycle, among others. A V/C ratio of 1.0 means that the demand for a particular movement is equal to the capacity. A movement with a V/C ratio greater than 1.0 is considered undesirable because the movement volume exceeds the capacity and results in queuing, indicating unmet demand along that approach.

LOS is an evaluation of the quality of operation of an intersection and is a measure of the average delay a driver experiences while traveling through the intersection. LOS is dependent on a range of defined operating conditions such as traffic demand, lane geometry, and traffic signal timing and phasing.

LOS can range from A to F and is based on the average delay a vehicle would experience (in seconds) due to controlling factors at an intersection, such as a traffic signal or stop sign (Table 3-3). For a signalized intersection, LOS A indicates operations with an average control delay less than 10 seconds per vehicle, while LOS F describes operations with an average control delay in excess of 80 seconds per vehicle or where the V/C ratio is greater than 1.0. For an unsignalized intersection, LOS A indicates operations with an average control delay less than 10 seconds per vehicle, while LOS F describes operations with an average control delay in excess of 50 seconds per vehicle or where the V/C ratio is greater than 1.0.

Table 3-3. Level of Service Thresholds

LOS Criteria for Signalized and Unsignalized Intersections		
Level of Service	Average Control Delay (seconds/vehicle)	
	Signalized	Unsignalized
A	Less than or equal to 10.0	Less than or equal to 10.0
B	>10.0 and ≤20.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	Greater than 80.0 or v/c greater than 1.0	Greater than 50.0 or v/c greater than 1.0

Source: 2010 Highway Capacity Manual

The results of the capacity analysis indicate that all study area intersections operate at LOS C or better in both peak hours (Table 3-4). Some minor movements, such as those at the intersections of Henley Street and Church Avenue, and Henley Street and Clinch Avenue experience failing conditions (LOS E or F) during one or more peak hours. However, these approaches have minor volumes and overall intersection operations remain acceptable (LOS C or better). Overall, the capacity analysis results indicate relatively minimal congestion and delays for traffic accessing the KOC or SPC.

Table 3-4. Intersection Capacity Analysis Results

Intersection	Peak Hour	Delay (sec/veh)	LOS
Western Avenue/ West Summit Hill Drive and Broadway/Henley Street	AM	26.1	C
	PM	22.6	C
West Summit Hill Drive and Locust Street	AM	2.5	A
	PM	3.9	A
West Summit Hill Drive and Walnut Street	AM	5.3	A
	PM	12.7	B
West Summit Hill Drive and Gay Street	AM	19.1	B
	PM	22.8	C
Henley Street and Clinch Avenue	AM	15.8	B
	PM	23.0	C

Intersection	Peak Hour	Delay (sec/veh)	LOS
Henley Street and Church Street	AM	10.4	B
	PM	9.6	A
Clinch Avenue and Locust Street	AM	17.1	B
	PM	9.8	A
Clinch Avenue and Walnut Street	AM	10.7	B
	PM	9.0	A
Church Avenue and Locust Street	AM	22.7	C
	PM	29.2	C
Church Avenue and Walnut Street	AM	9.5	A
	PM	8.3	A

3.9 Visual Resources

The KOC is located at 400 West Summit Hill Drive and the SPC is located at 500 West Summit Hill Drive in Knoxville. The KOC currently contains two 12-story office buildings (East and West Towers) connected by a concourse, and a subsurface level connecting the two buildings (Figure 3-3). The KOC also includes the Fritts Lot, a paved parking lot containing approximately 50 parking spaces located east of the East Tower (Figure 3-4). The SPC site consists of a seven-level parking garage with approximately 700 parking spaces, an office building below the garage, and a five-story office tower (Figure 3-5). The location of these two sites is in the developed, downtown area of Knoxville with multi-story commercial, retail, hotel, office, and parking structures. Market Square is located to the south across Wall Avenue from the KOC site (Figure 3-6). Market Square is a year-round venue for outdoor events, restaurants, shopping, and entertainment. The Walnut Street Garage is located to the south of the SPC site. To the north of the KOC site is the Crown Plaza Hotel and Immaculate Conception Church and to the north of the SPC site are paved and gravel surface parking lots.



Figure 3-3. KOC from Market Square



Figure 3-4. Fritts Lot



Figure 3-5. SPC Parking Garage and Tower (on right) from the corner of Walnut Street and Wall Avenue



Figure 3-6. View of Market Square

3.10 Wildlife and Threatened and Endangered Species

Wildlife - The footprint of the KOC and SPC encompasses an urban environment with office buildings, parking lots, and small amounts of landscaping in downtown Knoxville. A few small areas within the project footprint contain manicured lawn, planted herbaceous vegetation and ornamental trees, and a few mature native trees. Various wildlife species associated with urban environments are present in the project area.

Mowed herbaceous fields and manicured lawns present at KOC and SPC offer little suitable habitat for many wildlife species but are used by many common species, especially where the landscape includes a few trees. Birds that utilize small grassy areas and planted trees in these urban environments include American robin, American goldfinch, blue jay, Carolina chickadee, chimney swift, house finch, house sparrow, northern cardinal, northern mockingbird, mourning dove, rock dove, song sparrow, and tufted titmouse (National Geographic 2002). Mammals that may be found in this environment include common mole, common raccoon, eastern chipmunk, eastern cottontail, eastern gray squirrel, house mouse, Norway rat, and Virginia opossum (Whitaker 1996). Reptiles that typically occur in such areas include eastern fence lizard and eastern garter snake (Conant and Collins 1998).

Buildings can be used by bats and other wildlife. Bats in this area known to use human structures include the big brown bat, eastern red bat, southeastern bat, and tricolored bat (Harvey 1992). Evidence of roosting bats has been observed in many areas of the SPC garage. Bat guano was collected from nine different locations on four different collection dates between May 10, 2016 and June 24, 2016. DNA analysis of 46 guano samples was conducted by the University of Tennessee Genomics Core (UTGC). All of these samples were determined to be from big brown bats (UTGC 2016). The presence of this species was also confirmed by the observation of four big brown bats visually in one of the nine roosting locations on July 6, 2016.

European starlings, house finches, house sparrows, rock doves, and mourning doves are likely to nest in the SPC garage and may also nest on the KOC as well. Northern mockingbirds, American robins, and song sparrows have nested in trees and/or shrubs outside the KOC. American crows, American kestrels, Cooper's hawks, ospreys, red-tailed hawks, red shouldered hawks, and vultures have been observed perched on or nearby the KOC and SPC or flying over the project area. No raptor nests exist on the KOC or SPC.

Review of the TVA Regional Natural Heritage database in August 2016 indicates that thirteen caves are reported within three miles of the project area. No caves occur within the project footprint. The closest cave occurs approximately one mile away on the south side of the Tennessee River. No other unique or important terrestrial habitats exist in the action area.

In addition, one heronry was reported approximately 2.9 miles from the project footprint. No other aggregations of migratory birds have been reported within three miles of the project area.

Threatened and Endangered Species – Due to the highly developed nature of the project area, there is no potential for the presence of any threatened or endangered plants. A review of the TVA Regional Natural Heritage Database in August of 2016 resulted in two federally listed animal species (Berry Cave salamander and gray bat) and four state-listed animals (common barn owl, hellbender, peregrine falcon, and Tennessee cave salamander) within three miles of the project footprint. One federally protected species (bald eagle) has been documented in Knox County, Tennessee. Additionally, the US Fish and Wildlife Service (USFWS) has determined that the federally endangered Indiana bat and federally threatened northern long-eared bat both have the potential to occur in Knox County (Table 3-5).

Table 3-5. Federally listed terrestrial animal species reported from Knox County, Tennessee and other species of conservation concern document within three miles of the KOC and SPC¹

Common Name	Scientific Name	Status ²	
		Federal	State(Rank ³)
Amphibians			
Berry Cave salamander ⁴	<i>Gyrinophilus gulolineatus</i>	C	T(S1)
Hellbender	<i>Cryptobranchus alleganiensis</i>	PS	D(S3)
Tennessee cave salamander	<i>Gyrinophilus palleucus</i>	--	T(S2)
Birds			
Bald eagle	<i>Haliaeetus leucocephalus</i>	DM	D(S3)
Common barn-owl	<i>Tyto alba</i>	--	D(S3)
Peregrine falcon	<i>Falco peregrinus</i>	PS:LE	E(S1B)
Mammals			
Gray bat	<i>Myotis grisescens</i>	LE	E(S2)
Northern long-eared bat ⁵	<i>Myotis septentrionalis</i>	LT	--(S1S2)
Indiana bat ⁵	<i>Myotis sodalis</i>	LE	E(S1)

¹ Source: TVA Regional Natural Heritage Database and Tennessee Natural Heritage Program data, extracted 08/24/2016 and USFWS Information for Planning and Conservation (<https://ecos.fws.gov/ipac/>), accessed 08/24/2016.

² Status Codes: C = Candidate for federal listing; D = Deemed in Need of Management; DM = Delisted, recovered, and still being monitored; E = Endangered; LE = Listed Endangered; LT = Listed Threatened; PS = Partial Status; T = Threatened.

³ State Ranks: S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S#B = Status of Breeding population.

⁴ A subspecies of hellbender found in the Ozarks of Missouri and Arkansas is federally listed. Species of hellbender found in Knox County are not federally listed.

⁵ Federally listed species with the potential to occur in the project area, though they have not yet been reported from Knox County, Tennessee.

Peregrine falcons nest on ledges, rocky cliffs, tree hollows, river banks, and man-made structures including the edges of city buildings. These falcons hunt for prey in open areas including farmlands, lakeshores, river mouths, cities and airports (NatureServe 2016). Records of this species establishing territory in downtown Knoxville have existed since the mid-1990's (Nicholson 1997). In recent years, this species has been observed flying around the downtown Knoxville area but has not been closely associated with the KOC or SPC. Several blocks from the KOC, this species was regularly observed perching on top of a Hilton Hotel, however the perch (a sign) was removed and a new perching location has not been observed since the mid-2000s (personal communication C. Nicholson, August 25, 2016). Potentially suitable habitat for peregrine falcon does exist on the KOC and SPC, though no nests have been reported on these.

Common barn-owls prefer open habitats such as grasslands, deserts, marshes, and agricultural fields. They nest and roost in hollow trees, cavities in cliffs and riverbanks, nest boxes, and many human structures (barns; Palmer-Ball 1996, NatureServe 2016). A record of this species is known approximately 2.5 miles from the project. Suitable nesting and roosting habitat for common barn-owl does not occur in the immediate vicinity of the KOC and SPC, although it does occur a short distance to the north.

Tennessee Cave Salamanders are only found in cave systems, often in or near sinkholes where larger invertebrates populations tend to occur, a source of food for this species. They can be found under rocks in shallow quiet pools of water (Petranka 1998). No cave habitat is known from the project footprint. The two closest records of this species are from caves approximately 2.9 miles away, on the south side of the Tennessee River. Suitable habitat for Tennessee cave salamanders does not exist in the project area.

Hellbenders are aquatic species known from large, rocky, cool, fast-flowing streams, with large shelter rocks. Nests are prepared beneath large rocks or submerged logs (Petranka 1998, NatureServe 2016). One historical record of this species occurs approximately 0.7 miles away in the Tennessee River. Suitable habitat for hellbender does not exist in the project area.

Berry Cave salamanders are aquatic species known from caves in the ridge and valley areas of Tennessee (Petranka 1998). Berry Cave salamanders have been reported from only four places in the world. The Meade's Quarry Cave system approximately 2.9 miles away has one of the two known remaining viable populations of this species (NatureServe 2016). No cave habitat is known from the project footprint. Suitable habitat for Berry Cave salamander does not exist in the project area.

Bald eagles are protected under the Bald and Golden Eagle Protection Act (USFWS 2013). This species is associated with large, mature trees capable of supporting its massive nests. These are usually found near larger waterways where eagles forage (Turcotte and Watts 1999). Records document the occurrence of two bald eagle nests in Knox County, the closest of which is approximately 10.0 miles from the project area. Suitable habitat does not exist for bald eagles in the project footprint. No bald eagle nests or resident bald eagle pairs have been observed in the downtown Knoxville area.

Gray bats roost in caves year-round and migrate between summer and winter roosts during spring and fall (Tuttle 1976). Although they prefer caves, gray bats have been documented roosting in large numbers in buildings (Gunier and Elder 1971). Gray bats forage over bodies of water including rivers and lakes (Harvey 1992). Seven records of gray bat exist from Knox County. Four of these records are of caves used as hibernating sites, the closest of which is approximately 10.9 miles away. Two dead gray bats have been observed in the basement garage below the KOC, one in 2005 and one in 2014. TVA staff have observed individual bats (species unknown) roosting on the outside of the garage door to this parking garage. Staff reported that bats flush as soon as they are disturbed and occasionally one flushes into the garage rather than out. In 2008 and 2016 a single gray bat was observed alive roosting on the side of the SPC garage. As reported above, bat guano collected from the SPC garage in 2016 was analyzed to determine what species have been roosting in the garage in recent months. None of the guano was identified as gray bat guano. This suggests that gray bats do not roost in the SPC garage with any regularity. No suitable maternity roosting habitat, winter hibernacula, or foraging habitat for gray bat occurs in the project action area. Gray bat records from the KOC and SPC are likely occasional transients or migrating individuals.

Indiana bats hibernate in caves in winter and use areas around them in fall and spring (for swarming and staging), prior to migration back to summer habitat. During the summer, Indiana bats roost under the exfoliating bark of dead and living trees in mature forests with an open understory often near sources of water. Indiana bats are known to change roost trees frequently throughout the season, yet still maintain site fidelity, returning to the same summer roosting areas in subsequent years. This species forages over forest canopies, along forest edges, and tree lines, and occasionally over bodies of water (Pruitt and TeWinkel 2007, Kurta et al. 2002, USFWS 2016). Although less common, Indiana bats have also been documented roosting in buildings (Butchkoski and Hassinger 2002). No records of Indiana bat are known from Knox County. The closest records of Indiana bat are a summer mist net capture from Anderson County, approximately 17.0 miles away, and a historical hibernacula record from Campbell County, approximately 20.1 miles away. As reported above, guano analyzed from the SPC garage was not from the Indiana bat. No suitable winter roosting, summer roosting, or foraging habitat for Indiana bat exists in the project footprint.

The northern long-eared bat predominantly overwinters in large hibernacula such as caves, abandoned mines, and cave-like structures. During the fall and spring they utilize entrances of caves and the surrounding forested areas for swarming and staging. In the summer, northern long-eared bats roost individually or in colonies beneath exfoliating bark or in crevices of both live and dead trees. Roost selection by northern long-eared bat is similar to Indiana bat; however it is thought that northern long-eared bats are more opportunistic in roost site selection. This species has also been documented roosting in abandoned buildings and under bridges. Northern long-eared bats emerge at dusk to forage below the canopy of mature forests on hillsides and roads, and occasionally over forest clearings and along riparian areas (USFWS 2014). Two records of northern long-eared bats exist from Knox County. These are from a mist net survey in 2011 approximately 12.7 and 13.1 miles away. As reported above, guano analyzed from the SPC garage was not from northern long-eared bats. No suitable winter roosting, summer roosting, or foraging habitat for northern long-eared bats exists on the KOC or SPC sites.

3.11 Utilities

The Knoxville Utilities Board (KUB) provides water, wastewater, electricity, and natural gas to over 445,000 customers in Knoxville and parts of seven surrounding counties, including the KOC and the SPC sites (KUB 2016). KUB's water service area is located in the Appalachian watershed. More specifically, the source of drinking water is surface water from the Tennessee River. The utility company has four wastewater treatment plants that treat wastewater before treated wastewater is returned to the Tennessee River. The KUB is provided electricity from TVA and natural gas from East Tennessee Natural Gas. The KUB also markets renewable energy from the TVA power system. This includes, but is not limited to:

- 18 wind-powered turbines located on Buffalo Mountain in Anderson County, Tennessee, with a combined capacity of 29 megawatts;
- 16 solar generation sites that provide a total solar capacity of 300 kilowatts; and
- The wastewater treatment facility in Memphis currently generates 8 megawatts of methane gas on an annual basis (provides electricity to approximately 1,043 homes per year).

Communications to the KOC and SPC sites are provided by AT&T.

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CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

This chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this EA. Impacts would occur from building demolition and construction as well as operation of the proposed new TVA HQ building. Impacts can also occur both directly at each of the alternative sites as well as off-site. Cumulative impacts from the TVA HQ Relocation are further discussed at the end of this chapter.

4.1 Air Quality

4.1.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. There would be no construction activities, changes in emissions from building equipment or changes in traffic patterns. Therefore, the implementation of the No Action Alternative would have no direct or indirect impacts on air quality.

4.1.2 Alternative B1

Under Alternative B1, the KOC and SPC site would be sold to a developer/owner who would in turn reuse the KOC site as an office building or demolish it and redevelop it according to existing zoning, and construct a new TVA HQ on the SPC site. There would be minor, short-term direct impacts to air quality due to demolition and construction activities at the SPC and KOC which may cause dust and soil to become air born. These impacts would be mitigated by using best management practices (BMPs) such as covering or wetting exposed soil. It is anticipated that demolition activities would take approximately four months and construction activities would take approximately a year. Construction vehicles would temporarily increase the overall emissions coming from vehicles, but the impact would be negligible.

No additional traffic would be generated from the lease/construction of a new TVA administrative HQ on the SPC site because no new traffic patterns would be created. Approximately 850 TVA employees would be relocated to a new build-to-suit building across the street from their current location. Therefore, there would be no increase in emissions coming from vehicles. The reuse/redevelopment of the KOC could result in an increase in traffic which would result in minor, long-term, adverse increase of emission levels in the project area.

EPA has developed a “Hot Spot Analysis” for determining if a project will have adverse impacts on levels of PM_{2.5}. This analysis is not required for the TVA HQ Relocation because the project does not meet EPA’s criteria (40 CFR 93.123(b)(1) as amended), and, in accordance with FHWA guidance, “40CFR 93.123(b)(1)(i) should be interpreted as applying only to projects that would involve a significant increase in the number of diesel transit busses and diesel trucks on the facility.” Such an increase is not proposed.

Under this alternative, heating and cooling equipment for the new TVA HQ on the SPC site would be modern efficient units, and it is not anticipated that they would generate emissions above de minimis⁵ thresholds. The reuse/redevelopment of the KOC would result in

⁵ De minimis is the maximum amount of emissions allowed in order to be considered a negligible impact.

additional workers using the building. This would result in a net increase of emissions produced by the operation of the building (HVAC, etc). The increase is not expected to exceed de minimis thresholds because the owner would be required to obtain an operational permit for the equipment used for the operation of the building. The permit would be contingent upon the equipment not producing emissions that exceed the maximum allowable standards for the emission (Knox County 1982). Projects with emission levels below de minimis thresholds are considered to be in conformity with the CAA. Implementation of Alternative B1 would have negligible direct and indirect impacts on air quality.

4.1.3 Alternative B2

Impacts to air quality under Alternative B2 would be similar to those experienced under Alternative B1. Impacts due to demolition and construction activities are expected to be slightly less under Alternative B2 because only a portion of the SPC site would be demolished.

4.1.4 Alternative C

Under Alternative C, there would be minor, short-term direct impacts to air quality due to demolition and construction activities of the KOC and SPC which may cause dust and soil to become air born. These impacts will be mitigated by using BMPs such as covering or wetting exposed soil. It is anticipated that demolition activities would take approximately four months and construction activities would take approximately a year. Construction vehicles would temporarily increase vehicle emissions, but the impact would be negligible.

Under this alternative, the addition of employees to a disturbed site in downtown Knoxville and the subsequent increase in traffic would potentially result in a minor, long-term, direct adverse increase of emission levels surrounding the project site. The reuse of the KOC and SPC as office buildings could increase the capacity of the buildings over current conditions which would increase traffic to the sites. The increase in traffic would result in minor, long-term, adverse increases of emissions from vehicles. If the KOC and SPC were demolished and redeveloped, it is assumed the redevelopment would be consistent with current zoning. The redevelopment could result in minor, long-term, adverse increases of emissions from vehicles. If Alternative C is identified as TVA's preferred alternative, additional environmental review may be necessary to better address location-specific impacts.

EPA has developed a "Hot Spot Analysis" for determining if a project will have adverse impacts on levels of PM_{2.5}. This analysis is not required for the TVA HQ Relocation because the project does not meet EPA's criteria (40 CFR 93.123(b)(1) as amended), and, in accordance with FHWA guidance, "40CFR 93.123(b)(1)(i) should be interpreted as applying only to projects that would involve a significant increase in the number of diesel transit busses and diesel trucks on the facility." Such an increase is not proposed.

Under this alternative it is expected the developer/owner would use modern efficient heating and cooling equipment for the new TVA HQ and for the reuse of the KOC and SPC sites. Therefore, it is not anticipated that they would generate emissions above de minimis thresholds. The reuse of the KOC and SPC would result in additional workers using the building. This would result in a net increase of emissions produced by the operation of the building (HVAC, etc). The increase is not expected to exceed de minimis thresholds because the owner would be required to obtain an operational permit for the equipment used for the operation of building. The permit would be contingent upon the equipment not

producing emissions that exceed the maximum allowable standards for the emission (Knox County 1982). Projects with emission levels below de minimis thresholds are considered to be in conformity with the CAA.

4.2 Cultural Resources

4.2.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. The implementation of the No Action Alternative would have no direct or indirect impacts on cultural resources.

4.2.2 Alternative B1

Alternative B1 has the potential to result in both direct and indirect effects on historic properties, which include archaeological sites, historic sites and historic structures. Specifically, direct effects to historic properties could result from ground-disturbing activities related to the construction or demolition of any building within the APE. Indirect impacts include visual effects to historic settings associated with historic sites and structures within the APE.

Under Alternative B1, there would be an adverse effect on the KOC by removal of this historic property from Federal ownership. Because no preferred alternative has been chosen, additional effects to historic properties cannot be determined at this time. TVA is proposing a MOA between TVA, the SHPO and other consulting parties to address the known adverse effect and for phased identification and evaluation to address any unknown adverse effects. The MOA would stipulate measures that TVA would take to avoid, minimize, or mitigate adverse effects to historic properties that may result from this undertaking. If it is determined that additional historic properties would be adversely affected by the proposed undertaking TVA would, in consultation with the SHPO and other consulting parties, develop a treatment plan to resolve the adverse effects.

TVA will consult with federally recognized Indian tribes, the City of Knoxville, Knoxville-Knox County Metropolitan Planning Commission, Knox Heritage, the East Tennessee Historical Society, and the Market Square District Association on this undertaking prior to the conclusion of this environmental analysis.

4.2.3 Alternative B2

Alternative B2 has the potential to result in both direct and indirect effects on historic properties as described under Alternative B1.

4.2.4 Alternative C

Alternative C has the potential to result in both direct and indirect effects on historic properties as described under Alternative B1. If Alternative C is identified as TVA's preferred alternative, additional site investigations and consultations would be completed.

4.3 Land Use

4.3.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. No changes in land use would occur. The implementation of the No Action Alternative would have no direct or indirect impacts on land use.

4.3.2 Alternative B1

Under Alternative B1, the KOC would be sold to a developer/owner who would reuse it as office space or demolish it and redevelop it consistent with existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. The new buildings' use would be consistent with the current land use on and surrounding the KOC and the SPC and would not impact the land use and zoning of the surrounding properties. Therefore, no direct or indirect impacts to land use are anticipated under Alternative B1.

4.3.3 Alternative B2

Under Alternative B2, the KOC would be sold to a developer/owner who would reuse the KOC as office space or demolish it and redevelop it consistent with existing land use and zoning restrictions. The SPC tower would continue its current operation and the SPC garage would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. The new buildings' use would be consistent with the current land use on and surrounding the KOC and the SPC and would not impact the land use and zoning of the surrounding properties. There would be no changes in land use or zoning under this alternative; therefore, no direct or indirect impacts to land use are anticipated under Alternative B2.

4.3.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would in turn reuse the sites as office space or demolish and redevelop them consistent with existing land use and zoning restrictions. No changes to the land use or zoning would occur. A new TVA HQ building would be constructed on an existing disturbed site with similar land use in downtown Knoxville. The new building would not impact the surrounding land use or zoning of the new site. Therefore, no direct or indirect impacts to land use are anticipated under Alternative C.

4.4 Noise

4.4.1 Alternative A

Under the No Action Alternative, TVA would not dispose of the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. No additional noise would be created by the continuation of current operations. The implementation of the No Action Alternative would have no direct or indirect impacts on noise.

4.4.2 Alternative B1

Under Alternative B1, the KOC would be sold to a developer/owner who would reuse it as office space or demolish it and redevelop it consistent with existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. It is anticipated that demolition activities would take approximately four months and construction activities would take approximately a year. Under Alternative B1, there would be minor, short-term direct adverse noise impacts due to demolition and construction activities at the KOC and SPC. Typical construction activities produce noise levels ranging from 80-100 dBA (Table 4-1) (EPA, 1971). Noise sensitive populations would experience an increase in noise during construction over normal urban noise levels. This increase would be slight because the populations are already located in a noisy urban setting with sounds that can approach up to 120 dBA. In addition, the closest sensitive populations are located several hundred feet from the construction site and noise from demolition and construction would be reduced the further away from these sites.

Table 4-1: Typical noise from construction activities

Construction Phase	dBA levels (at 50 ft.)
Ground Clearing	88-91
Excavation	91-98
Foundation	85-88
Erection	88
Finishing	91-98

In order to reduce the short-term impacts, demolition and construction activities would only occur between the hours of 7:00 am and 6:00 pm in accordance with the City of Knoxville's noise ordinance. Additionally, noise-reducing BMPs such as noise barriers could be used to help reduce construction noise impacts.

Once constructed, the reuse/redevelopment of the KOC and new building on the SPC site would generate additional noise that would be similar to the current sources associated with a downtown urban area. The noise created by the operation of these buildings would not exceed EPA standards. Therefore, there would be no long-term, direct or indirect noise impacts from the implementation of Alternative B1.

4.4.3 Alternative B2

Impacts to noise under Alternative B2 would be slightly less to those experienced under Alternative B1 due to the demolition of only a portion of the SPC.

4.4.4 Alternative C

In the short-term, demolition and construction activities could be for a longer period of time than under Alternatives B1 and B2 due to the potential demolition and redevelopment of both the KOC and SPC and an additional construction site. Long-term, direct impacts from noise under Alternative C would be similar to those experienced under Alternatives B1 and B2. If Alternative C is identified as TVA's preferred alternative, a more detailed analysis would be performed for the identified location.

4.5 Socioeconomics and Environmental Justice

4.5.1 Alternative A

Under the No Action Alternative, TVA would not sell or vacate the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. The implementation of the No Action Alternative would have no direct or indirect impacts on socioeconomics and environmental justice.

4.5.2 Alternative B1

Under Alternative B1 the KOC and SPC would be sold to a developer/owner who would in turn reuse the KOC as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. In addition, the SPC would be demolished and an approximately 200,000 GSF build-to-suit building would be constructed on the SPC. Currently, TVA makes payments in lieu of taxes to state and local governments such as Tennessee and Knox County. While there would be a decrease in these payments by TVA due to the sale of the KOC and SPC to a private developer/owner, the private developer/owner would pay property taxes to the County (and to the City of Knoxville) that likely would be more than the payments received in lieu of taxes from TVA. This would result in a beneficial, direct, long-term impact to the local economy. New retail services and

business employment would likely result from the reuse/redevelopment of the KOC site resulting in beneficial impacts. In the short-term, the purchase of building materials, construction supplies, and construction equipment would have beneficial impacts on the economy.

Under Alternative B1 no minority or low-income residents would be displaced by the sale of the KOC and SPC. While there may be minority and low-income populations in the vicinity of the KOC and SPC (e.g., within the block group as defined by the U.S. Census), the TVA HQ Relocation would not disproportionately affect these groups. Because there would be no long-term changes in air quality (see Section 4.1) and noise levels would not increase above typical urban noise levels (see Section 4.4), low-income and minority populations would not be disproportionately affected. The storage and disposal of demolition and construction debris and equipment from the KOC, potential laydown areas, and/or SPC site is not expected to disproportionately affect minority or low-income populations. Waste removed from the sites would be transported to one of the following landfills (Figure 4-1):

- Chestnut Ridge Landfill which is located approximately 15 miles north of TVA HQ at 140 Fleenor Mill Road, Heiskel TN 37754. (Figure 4-1). Construction vehicles would leave the KOC and SPC sites, enter Interstate 275 via West Summit Hill Drive, and take I-275 to I-75 north to reach the landfill.
- Poplar View Landfill, LLC which is located approximately 10 miles northeast of TVA HQ at 1730 McMillan Station Road, Knoxville, TN 37924. Construction vehicles would leave the KOC and SPC sites heading east on West Summit Hill Drive and take Interstate 40 north to exit 392a (State Route 11W/Rutledge Pike). Vehicles would then make a right on McMillan Station Road to reach the landfill.
- Riverside C&D Landfill, LLC which is located approximately 3 miles east of TVA HQ at 3330 Delrose Drive, Knoxville, TN 37914. Construction vehicles would leave the KOC and SPC sites heading east on West Summit Hill Drive, and proceed onto Dandridge Avenue. From there, construction vehicles would make a slight left turn onto Delrose Drive to reach the landfill.

The temporary increase in construction-related traffic would be negligible and would not be expected to adversely affect disadvantaged populations. The above landfills are pre-existing sites that employ methods to prevent pollution from affecting surrounding communities. Therefore, there would be no adverse or disproportionate direct or indirect impacts to minority or low-income populations.

4.5.3 Alternative B2

Impacts to socioeconomics and environmental justice under Alternative B2 would be similar to those experienced under Alternative B1.

4.5.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would reuse the sites as office space or demolish and redevelop them consistent with the existing land use and zoning restrictions. Currently, TVA makes payments in lieu of taxes to state and local governments such as Tennessee and Knox County. While there would be a decrease in these payments by TVA due to the sale of the KOC and SPC to a private developer/owner, the private developer/owner would pay property taxes to the County (and to the City of Knoxville) that likely would be more than the payments received in lieu of taxes from TVA. This would result in a beneficial, direct, long-term impact to the local economy. In the short-term, the purchase of building materials, construction supplies, and

construction equipment would add income to the economy. This would create a short-term beneficial socioeconomic impact.

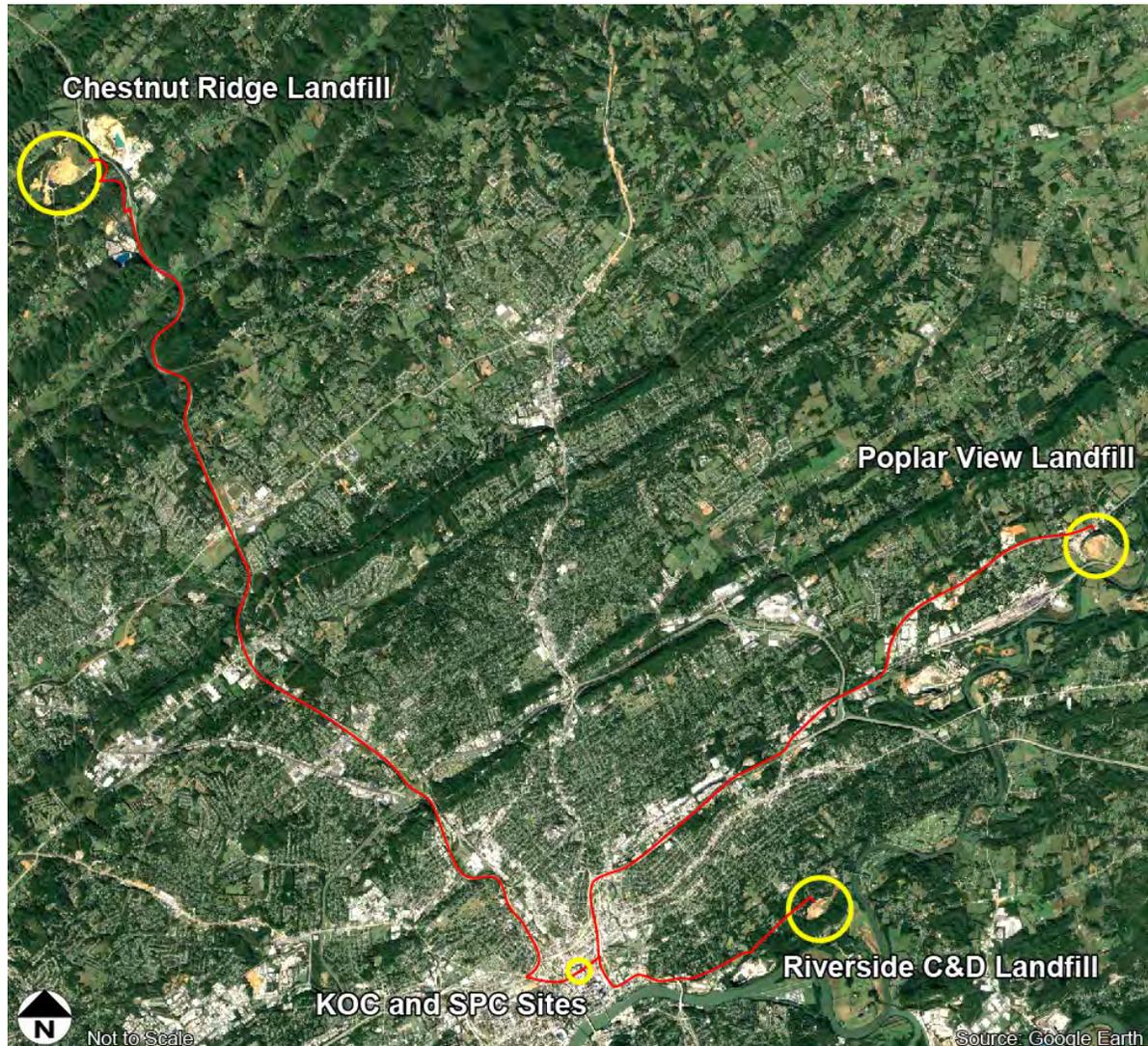


Figure 4-1. Location of the Chestnut Ridge Landfill from the KOC and SPC

Additionally, there would be an increase in spending by new employees or patrons in the downtown Knoxville area with the reuse or redevelopment of the KOC and/or SPC sites. This would, in turn, generate additional sales taxes and revenues for local and state governments. Secondary jobs related to the increased economic activity stimulated by the proposed action may also result in additional retail service and business employment opportunities through a multiplier effect, yielding additional sales and income tax revenues for local and state government. This impact would have a minor, long-term, indirect and beneficial impact on the economy

Under Alternative C, TVA would construct a new HQ building on a pre-existing disturbed site somewhere in downtown Knoxville. While there may be minority and low-income populations in the vicinity of this site, the TVA HQ Relocation would not disproportionately

affect these groups. Because there would be no long-term changes in air quality (see Section 4.1) and noise levels would not increase above typical urban noise levels (see Section 4.4), low-income and minority populations would not be disproportionately affected. It is assumed that construction vehicles accessing the site would use the shortest, most direct route while avoiding residential areas of the city. Waste removed from the sites would be transported to one of the landfills identified under Alternative B1. The temporary increase in construction-related traffic would be negligible and would not be expected to adversely affect disadvantaged populations. There would be no negative direct or indirect impacts to minority or low-income populations. The TVA HQ Relocation would not have disproportionate ecological or human health effects on low-income or minority populations. If Alternative C is identified as TVA's preferred alternative, it may be necessary to conduct additional analyses to better address location-specific impacts.

4.6 Solid and Hazardous Waste

4.6.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. The implementation of the No Action Alternative would have no direct or indirect impacts on solid and hazardous waste.

4.6.2 Alternative B1

Under Alternative B1 the KOC and SPC would be sold to a developer/owner who would in turn reuse the KOC as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. During demolition and construction, waste would be generated. The impact to the solid waste stream would be short-term and adverse. Construction debris, including demolition waste, would be taken to either the Chestnut Hill Landfill, Poplar View Landfill or the Riverside C&D Landfill for proper disposal. Prior to the sale of the KOC and SPC, a hazardous materials survey would be conducted to determine the presence of asbestos and lead containing materials. If found, they would be abated and disposed of in accordance with state and federal regulations. Recyclable and non-recyclable waste generated during construction would be disposed of at licensed facilities and would be the responsibility of the developer/owner.

Under Alternative B1, general waste would be generated by TVA employees and the amount of waste generated would not create additional impacts over current conditions. The new TVA HQ would operate in a sustainable and energy efficient manner.

4.6.3 Alternative B2

Impacts to solid and hazardous waste under Alternative B2 would be similar to those experienced under Alternative B1.

4.6.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would reuse the sites as office space or demolish and redevelop them consistent with the existing land use and zoning restrictions. Impacts due to the sale of the KOC and SPC sites would be the same as Alternative B1.

TVA would have a new HQ building constructed on an existing disturbed site somewhere in downtown Knoxville. Prior to construction at a new site, TVA would recommend a Phase I ESA to be performed to identify any existing RECs. Any RECs that are identified during the

Phase I ESA would be remediated according to all state and federal regulations prior to construction of the new building. All solid and hazardous waste would be disposed of in accordance with all state and federal regulations. The removal of hazardous waste from the new site, if any, would result in beneficial, direct, and indirect impacts.

Under Alternative C, general waste generated by TVA employees at a new HQ building in downtown Knoxville would be the same as currently generated at the KOC and SPC sites. However, the developer/owner would reuse the KOC and SPC as office space or redevelop it, which would create additional waste over current conditions resulting in minor, long-term, adverse impacts. The new TVA HQ and the redevelopment of the KOC and SPC would operate in a sustainable and energy efficient manner.

If Alternative C is identified as TVA's preferred alternative, further analysis would be performed to evaluate specific impacts at the chosen location as additional information becomes available.

4.7 Surface Water

4.7.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. The implementation of the No Action Alternative would have no new direct or indirect impacts on surface water.

4.7.2 Alternative B1

Under Alternative B1 the KOC and SPC would be sold to a developer/owner who would in turn reuse the KOC as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. Erosion and runoff of soil and other pollutants from the construction site, demolition site, and potential laydown areas, could enter the municipal sewer system and eventually enter local waterways. Prior to demolition a Tennessee General NPDES permit for discharges of storm water associated with construction activities would be obtained by the developer/owner or its designee. As a requirement of the permit, a Stormwater Pollution Prevention Plan (SWPPP) would be developed to identify best management practices to be used to control sedimentation during ground disturbing activities. During construction, one or more laydown areas would be used to stage construction vehicles and materials. BMPs would be used at the laydown areas to control stormwater runoff and would be outlined in the SWPPP. Under Alternative B1, there would be minor, short-term direct adverse impacts to surface water due to demolition and construction activities.

Once constructed, the reuse/redevelopment of the KOC site and the new building on the SPC site would generate stormwater runoff, but it would be similar to current sources. No additional impervious area is expected to be added to either site. New stormwater treatment facilities would be installed on the SPC and on the KOC if it is redeveloped as required by the City of Knoxville to treat stormwater runoff from the new buildings which would minimize these impacts. This would result in beneficial, long-term, direct and indirect impacts to surface water since stormwater runoff is not currently being treated onsite.

4.7.3 Alternative B2

Impacts to surface water under Alternative B2 would be similar to those experienced under Alternative B1.

4.7.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would reuse the sites as office space or demolish and redevelop them consistent with the existing land use and zoning restrictions. The reuse of the KOC and SPC as office space would generate stormwater runoff, but it would be similar to the current sources. No additional impervious area is expected to be added to either site. If the KOC and SPC are redeveloped, the redevelopment would generate storm water runoff. However, new stormwater treatment facilities would be installed as required by the City of Knoxville to treat stormwater runoff from the new buildings which would minimize these impacts. This would result in beneficial, long-term, direct and indirect impacts to surface water since stormwater runoff is not currently being treated onsite.

Under Alternative C, a new HQ building would be constructed on a pre-existing disturbed site somewhere in downtown Knoxville. Since the new building would be constructed on a preexisting disturbed site, it is assumed that any increase in impervious area on the site would likely be minor. There would be minor, short-term direct adverse impacts to surface water due to construction activities. Erosion and runoff of soil and other pollutants from the construction site could enter the municipal sewer system and eventually enter local waterways.

Prior to demolition at either site, a Tennessee General NPDES permit for discharges of storm water associated with construction activities would be obtained by the developer/owner or its designee. As a requirement of the permit, a Stormwater Pollution Prevention Plan (SWPPP) would be developed to identify best management practices to be used to control sedimentation during ground disturbing activities. The developer/owner chosen to design the new building site would be required to comply with all applicable stormwater management regulations.

4.8 Transportation

4.8.1 Alternative A

Under the No Action Alternative, TVA would not dispose of the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. There would be no change to existing traffic patterns. TVA employees would continue to utilize existing parking facilities as they do today. Minimal congestion currently occurs and all intersections operate at acceptable levels (LOS C or better). The implementation of the No Action Alternative would have no direct or indirect impacts on transportation.

4.8.2 Alternative B1

Under Alternative B1 the KOC and SPC would be sold to a developer/owner who would in turn reuse the KOC as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. It is anticipated that demolition activities would take approximately four months and construction activities would take approximately a year. During demolition and construction, there could be the need to close one lane of Walnut Street during site preparation and construction activities. In addition, there could be lane closures for utilities work associated with construction of the new building. Any lane closures would be temporary in nature and would result in minor, short-term, direct, adverse transportation impacts.

Under this alternative, the 680-space parking garage located on the SPC site would be demolished. Approximately 610 parking spaces within the SPC garage are utilized by TVA employees and 10 parking spaces are utilized by a tenant in the SPC tower. The sale of the KOC would likely displace vehicles that currently use the Fritts lot, which is located on the

east side of the property and has a capacity of approximately 50 parking spaces. The Fritts lot is primarily utilized by assigned TVA fleet vehicles, as well as employees and visitors to the Knoxville Visitors Center. Therefore, under this alternative, approximately 680 vehicles would be displaced to other parking facilities within Downtown Knoxville.

The TVA currently leases 700 of the 1,100 parking spaces in the Walnut Street garage, which is located directly across Summer Place from the SPC site. While TVA does not specify where an employee must park, it is likely that a significant portion of employees currently utilizing the SPC garage would utilize the leased spaces in the Walnut Street garage. Other parking facilities that are within three blocks of the SPC site and offer daily and monthly parking include the Market Square garage (700 spaces), the Daylight lot (36 spaces), the Locust Street lot (46 spaces), the Hilton Garage (398 spaces), the Locust Street garage (645 spaces), the YMCA lot (72 spaces), the Masonic lot (38 spaces), the Holiday Inn garage (419 spaces), the Crowne Plaza garage (250 spaces), the Vine Avenue lot (77 spaces), and the Jackson Avenue lot #2 (190 spaces). Employees could also park at the Knoxville Civic Auditorium and Coliseum and take the Knoxville Area Transit's (KAT) Blue Trolley Line. Furthermore, TVA employees are encouraged to utilize alternative modes of transportation such as carpooling, transit, walking and biking.

TVA fleet vehicles that currently park in the Fritts lot would likely be relocated to a parking facility near the SPC site, such as the Walnut Street garage. Employees and visitors of the Knoxville Visitors Center could utilize the Union Avenue lot (24 spaces), the Promenade garage (277 spaces), or the Crowne Plaza garage (250 spaces), which are located within two blocks of the Knoxville Visitors Center building.

The displacement of TVA employees and Knoxville Visitor Center employees and visitors to other nearby parking facilities is likely to have a minimal impact on the regional roadway network. Employees are likely to continue to travel the same roadways that they do now with only slight adjustments to travel patterns near the parking facilities.

The reuse of the KOC as office space would likely have the most impact on the transportation network. It is estimated that the existing buildings could contain up to 2,000 employees. The 2010 – 2014 US Census American Community Survey indicates that approximately 82 percent of Knoxville commuters drive alone to work (Census 2010). Therefore, if the KOC site was fully occupied as office space, up to 1,640 employees would drive alone, potentially resulting in moderate, long-term adverse impacts to the local roadway network and to parking. However, it should be noted that less intensive uses, such as a mixed-use development, would likely have a lesser impact on the transportation network. In either case, the Downtown District is subject to the Downtown Design Review Board. The Downtown Design Review Board is responsible for issuing a certificate of appropriateness consistent with Appendix B, Article IV, Section 5.5 of the Knoxville zoning code. As part of the certification of appropriateness approval process, a developer would have to submit a site plan that includes parking. Furthermore, Knoxville's Metropolitan Planning Commission has established the concept of 'peripheral parking' for the Downtown District. The 'peripheral parking' concept encourages the 'increased use of excess parking supply at the Knoxville Coliseum' leading to a 'dominant pedestrian atmosphere in the central core area.' The 'peripheral parking' concept also recommends 'taking advantage of shuttle service by the downtown trolleys' (Metropolitan Planning Commission 1987). The free downtown KAT trolley line operates Monday – Friday between 7:00 AM and 6:00 PM and stops within one block of the KOC complex.

Based on the information provided above, as well as the preliminary capacity analysis discussed in this section, this Alternative is not anticipated to result in significant transportation impacts.

4.8.3 Alternative B2

The impacts to transportation would be similar to those under Alternative B1.

4.8.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would reuse the sites as office space or demolish and redevelop them consistent with the existing land use and zoning restrictions. During demolition and construction, there could be the need to close one lane of Walnut Street during site preparation and construction activities. In addition, there could be lane closures for utilities work associated with construction of the new building. Any lane closures would be temporary in nature and would result in minor, short-term, direct, adverse transportation impacts.

It is estimated that the KOC and SPC could contain up to 2,000 and 300 employees, respectively. The 2010 – 2014 US Census American Community Survey indicates that approximately 82 percent of Knoxville commuters drive alone to work (Census 2010). Therefore, if the KOC site was fully occupied as office space, up to 1,640 employees would drive alone and up to 246 employees would drive alone to the SPC. This would potentially result in moderate, long-term adverse impacts to the local roadway network and to parking. As part of a site plan approval process, a developer would have to conduct a more detailed evaluation of traffic and parking impacts. However, it should be noted that less intensive uses, such as a mixed-use development, would likely have a lesser impact on the transportation network. In either case, the Downtown District is subject to the Downtown Design Review Board. The Downtown Design Review Board is responsible for issuing a certificate of appropriateness consistent with Appendix B, Article IV, Section 5.5 of the Knoxville zoning code. As part of the certification of appropriateness approval process, a developer would have to submit a site plan that includes parking. Furthermore, Knoxville's Metropolitan Planning Commission has established the concept of 'peripheral parking' for the Downtown District. The 'peripheral parking' concept encourages the 'increased use of excess parking supply at the Knoxville Coliseum' leading to a 'dominant pedestrian atmosphere in the central core area.' The 'peripheral parking' concept also recommends 'taking advantage of shuttle service by the downtown trolleys' (Metropolitan Planning Commission 1987). The free downtown KAT trolley line operates Monday – Friday between 7:00 AM and 6:00 PM and stops within one block of the KOC complex.

During construction of a new TVA HQ building in downtown Knoxville there could be a need for lane closures. Any lane closures would be temporary in nature and would result in minor, short-term, direct, adverse transportation impacts.

With the relocation of approximately 850 TVA employees to a new facility, Alternative C would result in a measurable impact that would likely occur on the roadway network around the identified site. If Alternative C is identified as TVA's preferred alternative, additional analysis would be required prior to the construction of the new facility.

Based on the information provided above, as well as the preliminary capacity analysis discussed in this section, this Alternative is not anticipated to result in significant transportation impacts.

4.9 Visual Resources

4.9.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. The implementation of the No Action Alternative would have no direct or indirect impacts on visual resources.

4.9.2 Alternative B1

Under Alternative B1 the KOC and SPC would be sold to a developer/owner who would in turn reuse the KOC as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 7 story and 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. The reuse of the KOC and demolition of the SPC would be noticeable from the surrounding area. However, to some extent, the view looking towards the SPC tower from across West Summit Hill Drive would remain the same. If the KOC were redeveloped as mixed use development and the SPC demolished, the redeveloped area would be noticeable to the surrounding area, but it is assumed that the architecture, scale, design, and use of the new buildings would be compatible with the surrounding area creating a long-term beneficial impact.

4.9.3 Alternative B2

Under Alternative B1, the KOC would be sold to a developer/owner who would reuse the site as an office building or demolish and redevelop it according to land use and zoning restrictions. The SPC tower would continue its current operation and the SPC garage would be demolished and a new, approximately 200,000 GSF built-to-suit building would be constructed for use by TVA for its HQ. The demolition of the SPC garage would be noticeable from the surrounding area. However, to some extent, the view looking towards the KOC and SPC tower from across West Summit Hill Drive would remain the same. If the KOC were redeveloped as mixed use development and the SPC garage demolished, the redeveloped area would be noticeable to the surrounding area, but it is assumed that the architecture, scale, design, and use of the new buildings would be compatible with the surrounding area creating a long-term beneficial impact.

4.9.4 Alternative C

Under Alternative C, the KOC and SPC would be sold to a developer/owner who would reuse the sites as office space or demolish and redevelop them consistent with the existing land use and zoning restrictions. The redeveloped area would be noticeable to the surrounding area, but it is assumed that the architecture, scale, design, and use of the new buildings would be compatible with the surrounding area creating a long-term beneficial impact. A new TVA HQ on an existing disturbed site would also be noticeable to the surrounding area in that location. Because this location would be in downtown Knoxville which is a fully developed urban environment, the scale, design, and use of new buildings would be consistent with the surrounding development. If Alternative C is identified as TVA's preferred alternative, additional analysis may be necessary to better address location-specific impacts.

4.10 Wildlife and Threatened and Endangered Species

4.10.1 Alternative A

Under the No Action Alternative, TVA would not dispose of the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. Common mammals and resident and migratory birds would continue to opportunistically use the KOC and SPC and

the surrounding landscaping. An occasional individual gray bat may temporarily roost overnight on the SPG or KOC basement garage door while moving from summer to winter hibernacula or while on a foraging bout. Buildings and landscaping vegetation would remain in place in their current state. Alternative A would not result in any anticipated direct or indirect impacts to wildlife or terrestrial threatened or endangered species.

4.10.2 Alternative B1

Under Alternative B1, the KOC would be sold to a developer/owner who would reuse the site as an office building or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF, built-to-suit building would be constructed for use by TVA for its HQ. This alternative would result in disturbance of wildlife in the project footprint due to the permanent removal of some structures and pavement demolition. Displaced wildlife may move into adjacent buildings in the downtown Knoxville area.

Direct effects of building demolition may occur to some individuals that may be immobile during the time of construction (i.e., juvenile animals or eggs). This could be the case if deconstruction activities took place during breeding/nesting seasons. European starlings, house finch, house sparrow, mourning doves or rock doves likely nest in the SPC garage. Northern mockingbirds, American robins, and song sparrows have nested in trees and/or shrubs around the KOC complex. \ Should demolition occur during spring and summer months, young individuals of these bird species may be directly affected if they are unable to fledge. Adults and mobile juveniles would flush to adjacent urban areas if disturbed, thereby avoiding any direct impacts. As discussed in Chapter 3, guano analysis and visual surveys identified big brown bats roosting in the SPC garage. Four big brown bats were observed roosting together on July 6, 2016 in the garage. Big brown bat maternity roosts can range in size from 20 individuals to several hundred. Big browns bats give birth in late May and early June and usually have twins. Young are typically volant by late July. Based on the size of the guano piles observed in the garage, there is some potential for a small maternity roost of big brown bats to occur in the garage. Once demolition begins on the SPC, the amount of disturbance will likely discourage any roosting in the remaining portions of the building. However, if demolitions actions begin while non-volant young are roosting in the SPC garage, they may be directly affected by the demolition. Therefore, it is recommended that demolition not be initiated during maternity season for big brown bat (May –July) in order to avoid the potential for direct impacts to non-volant young. Adults and mobile juveniles would flush to adjacent urban areas if disturbed, thereby avoiding any direct impacts. Proposed actions may result in impacts to a small number of individuals of common birds and bat species. Because these species are common in this region, the potential impacts of the proposed actions on common wildlife are expected to be negligible. Impacts to common wildlife species would not be significant.

Under Alternative B1, no suitable habitat for hellbender, Tennessee cave salamander, Berry Cave salamander, bald eagle, common barn-owl, Indiana bat, and northern long-eared bat exist within the KOC and SPC footprints. These species would not be affected by actions proposed under Alternative B1. Individual gray bats have been observed in the KOC and SPC. Based on the infrequent occurrence of gray bat and the analysis of guano samples taken from the SPC garage during summer of 2016, it is likely that presence of gray bat is infrequent and opportunistic during migration and foraging bouts only. Proposed actions may affect but are not likely to adversely affect gray bat. Consultation with the USFWS is underway regarding impacts to gray bat. Peregrine falcons have been observed in the downtown Knoxville area but have not been associated with the KOC or SPC. Similarly suitable urban buildings provide habitat throughout the downtown area. Removal

of the KOC and SPC would not affect peregrine falcon. Any new buildings could be designed to avoid large expanses of highly reflective/mirrored window glass that are known to cause collision-related bird mortalities. Therefore, no significant impacts to threatened or endangered species terrestrial animal species are anticipated.

4.10.3 Alternative B2

Impacts for Alternative B2 would be the same as with Alternative B1.

4.10.4 Alternative C

Under Alternative C, TVA would sell the KOC and SPC and a new HQ building would be constructed on an existing disturbed site in downtown Knoxville. It is assumed the KOC and SPC would be reused as office space or redeveloped consistent with current land use and zoning restrictions. Impacts to common wildlife species and threatened and endangered species under this alternative would be identical to those previously discussed under Alternative B1. Under Alternative C, it is unlikely that any threatened or endangered species would be found on a previously disturbed location in downtown Knoxville. However, TVA would verify this if Alternative C is selected as its preferred alternative when a location is identified by the prospective developer.

4.11 Utilities

4.11.1 Alternative A

Under the No Action Alternative, TVA would not sell the KOC or SPC. TVA would retain ownership and maintain operations of the KOC and SPC. No changes to existing utilities would need to occur. Since the buildings are not fully occupied, there would not be an increase in the use of utilities. The implementation of the No Action Alternative would have no direct, or indirect impacts on utilities.

4.11.2 Alternative B1

Under Alternative B1, the KOC would be sold to a developer/owner who would reuse the site as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC would be demolished and a new, approximately 200,000 GSF built-to-suit building would be constructed for use by TVA for its HQ. While TVA would not require the developer/owner to utilize alternative energy sources, the selected developer/owner would have to incorporate principles of sustainable design and energy efficiency consistent with design standards applicable to federal agencies including pertinent provisions of Executive Order 13693 and the Energy Independence and Security Act (EISA) of 2007.

The utilities systems that would serve the new building at the SPC would not over burden existing systems. Water consumption would be a result of sanitary uses, human consumption, and landscaping and are already accounted for within the utility systems. The developer would be required to incorporate principles of sustainable design and energy efficiency in the new building and this would reduce water consumption. The new TVA HQ would consume a negligible portion of the total water consumption in KUB's water and wastewater systems.

Electricity consumption would result from light systems, space heating, and mechanical and electrical devices. New energy efficient equipment would be used in the new TVA HQ to a new built-to-suit building at the SPC to minimize its energy demand and consistent with EO 13693 and EISA. Compared to the total energy consumed on the KUB electric system, the new building's consumption would be trivial.

Although unlikely, it is possible that natural gas could be used for heating purposes in the new building. This use also would use state of the art efficient equipment consistent with EO 13693 and EISA. Compared to the total natural gas consumed from the KUB gas system, the new building's consumption would be trivial.

Small temporary disruptions to utility services to adjacent properties, from construction activities, may occur. Any disruptions would be advertised according to KUB requirements and care would be taken to minimize these disruptions. The action would result in direct and indirect, minor, short-term, adverse local impacts. Neither the operation nor the construction of the proposed facilities would cause long-term disruption of utilities in neighboring areas.

4.11.3 Alternative B2

Under Alternative B2, the KOC would be sold to a developer/owner who would in turn reuse the site as office space or demolish and redevelop it consistent with the existing land use and zoning restrictions. The SPC tower would continue its current operation and the SPC garage would be demolished and a new, approximately 200,000 square-foot built-to-suit building would be constructed for use by TVA for its HQ. If the KOC were used as office space and the existing office space in the SPC remains, the use of utilities under Alternative B2 would likely increase over the use in Alternative B1 because the square footage of office space would be greater under Alternative B2 than for B1. However, the increase would not likely require substantial utility improvements because all of the regional services have sufficient capacity. If the KOC were redeveloped the impacts would be the same as under Alternative B1.

Small temporary disruptions to utility services to adjacent properties, from construction activities, may occur. Any disruptions would be advertised according to KUB requirements and care would be taken to minimize these disruptions. The action would result in direct and indirect, minor, short-term, adverse local impacts. Neither the operation nor the construction of the proposed facilities would cause long-term disruption of utilities in neighboring areas.

4.11.4 Alternative C

Under Alternative C, TVA would sell the KOC and SPC and a new HQ building would be constructed on an existing disturbed site in downtown Knoxville. It is assumed the KOC and SPC would be reused as office space or they would be demolished and redeveloped consistent with the existing land use and zoning restrictions. The use of utilities under Alternative C would likely increase compared to the other alternatives because the new, approximately 200,000 square-foot HQ building would increase overall square footage. However, the increase would not require substantial utility improvements because all of the regional services have sufficient capacity. Impacts would be similar to those of Alternative B1.

Small temporary disruptions to utility services to adjacent properties, from construction activities, may occur. Any disruptions would be advertised according to KUB requirements and care would be taken to minimize these disruptions. The action would result in direct and indirect, minor, short-term, adverse local impacts. Neither the operation nor the construction of the proposed facilities would cause long-term disruption of utilities in neighboring areas.

4.12 Cumulative Effects

The Council on Environmental Quality regulations require agencies to assess the cumulative effects of their projects during the decision making process. Cumulative effects are defined as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

In other words, would the proposed project add to or interact with the environmental impacts of past, present, or future actions, regardless of the agency or group implementing those actions? The impacts of past actions are generally represented by baseline conditions. This section of the EA provides a description of the cumulative impacts that the proposed action, combined with other projects in the area, may have on the human environment.

Table 4-2 provides a brief description of each of the projects used in the cumulative impacts analysis.

Past, present and future development has affected and will continue to affect the natural, cultural, and social environment in Downtown Knoxville and the surrounding communities. Current and future development continues to result in a loss of vegetation, putting pressure on natural habitats and adversely affecting wildlife. In addition, development increases impervious surfaces, which in turn increases stormwater runoff. Additional development would put pressure on community services and increase demand for utilities, particularly, electrical, and water supplies. While KUB prepares for regional growth, each future project would have to prepare studies to determine if KUB’s current and future capacities would be adequate. With an increase in development there also comes an increase in roadway congestion and the level of service on roadways could become problematic. Air quality has been affected in the past and the proposed plans in Table 4-2 have the potential to affect air quality in the future. Elevated noise levels could also occur. Finally, future development projects may present views of a more densely developed environment and could affect historic and archaeological resources. The proposed project would contribute a minor amount to these cumulative impacts.

Beneficial cumulative impacts associated with past, current, and future development include increased job opportunities, improved building housing, and an increase in the local and state tax base. The proposed project would contribute to these beneficial cumulative impacts. Overall the cumulative impacts associated with the proposed project would be insignificant.

4.13 Unavoidable Adverse Environmental Impacts

Environmental impacts for all action alternatives have been described in detail in the previous sections of this chapter. In general, there would be unavoidable adverse effects from any of the action alternatives. There would be permanent changes to the appearance of the KOC and SPC sites due to their redevelopment, and, under Alternative C, to the presently undeveloped site selected for the new TVA HQ building. Whether or not these changes would be adverse depends on building design criteria, as well as the site of the new TVA HQ building under Alternative C, that are not yet defined. Construction would generate fugitive dust, construction vehicle emissions, and noise, but these would be temporary and minor in nature.

Table 4-2. Cumulative Impact Projects

Resource Area	Alternative B1	Alternative B2	Alternative C	Former State Supreme Court Site	Cumberland Ave. Corridor Project	Sevier Ave. Streetscapes project	UT pedestrian Bicycle bridge	River walk at the Bridges project	North Central Street Project	Cumulative Impacts?
Air Quality	Minor Adverse, Short-term, and Long-term			Minor Adverse, Short-term, and Long-term	Minor, Adverse, short-term	Minor, Adverse, short-term	None	None	None	Yes
Cultural Resources	Adverse, long-term			None	None	None	Potential, long-term	Potential, Long-term	None	Yes
Land Use	No impacts			Minor, long-term	None	Minor, long-Term	Beneficial	None	None	No
Noise	Minor, short-term			Minor, short-term	Minor, short-term	Minor, short-term	Minor, short-term	Minor, short-term	Minor, short-term	Yes
Socioeconomics and Environmental Justice	Short-term and long-term beneficial			Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Yes
Solid and Hazardous Waste	Minor, short-term	Minor, Adverse, Temporary and Long-term		Long-term, beneficial	None	None	None	None	None	No
Surface Water	Minor adverse short-term; long-term, beneficial			None	None	None	Short-term, Adverse	Short-term, Adverse	None	No
Transportation	Minor, temporary; Potential moderate, long-term	Potential moderate, long-term		Potential adverse, long-term	Beneficial; long-term	Beneficial; long-term	Beneficial; long-term	Beneficial; long-term	Beneficial; long-term	Yes
Visual Resources	Negligible			Beneficial	None	None	Beneficial	Beneficial	None	Yes
Terrestrial Wildlife and Threatened and Endangered Species	Minor, adverse, long-term			None	None	None	None	None	None	No
Utilities	Minor, Adverse, Temporary			Minor, short-term	Long-term, beneficial	Minor, short-term	Minor, short-term	No	Beneficial	No

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

The long-term benefits of selling the KOC and SPC and constructing a smaller, more energy efficient TVA HQ would occur at the expense of short-term impacts in the vicinity of the sites. These short-term impacts would occur during the period of construction or renovation, and would include localized noise and air pollution, as well as some possible traffic detours and delays. However, these impacts are temporary and proper controls would be utilized to prevent these impacts from having a lasting effect on the human environment.

Short-term gains to the local economy would occur as local companies and workers are hired and local businesses provide services and supplies during the construction of buildings. However, upon completion of the project, the gains to the local economy would evolve into a long-term benefit as patrons to the redeveloped areas would provide consistent business to the surrounding merchants.

4.15 Irreversible and Irretrievable Commitments of Resources

The reuse/demolition of the KOC and SPC complexes and the construction of a new TVA HQ building would require a commitment of fuel, including natural gas and energy for demolition and construction. Other resource commitments during the construction period would include construction materials and labor. After demolition and construction activities are completed, there would be a commitment of utilities, fuel and power. All of these resources relating to the construction and maintenance of the redeveloped sites and its infrastructure are considered irretrievably committed.

Compared to TVA's existing use of the KOC and SPC, a new HQ building would require a lower expenditure of funds, energy, and fuel.

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Chuck Nicholson, NEPA Technical Reviewer, TVA

Ismail Saunders, Traffic Analyst, Stantec

Marianne Schuler, Cultural Resources, TVA

Marc Willis, Project Principal, Stantec

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CHAPTER 6 – ENVIRONMENTAL ASSESSMENT RECIPIENTS

6.1 Federal Agencies

U.S. Fish and Wildlife Service

6.2 Congressional Delegation

Office of Congressman John J. Duncan, Jr.

Office of U.S. Senator Lamar Alexander

Office of U.S. Senator Bob Corker

6.3 State Agencies

Tennessee Department of Economic and Community Development

Tennessee Department of Environment and Conservation

Tennessee Historical Commission

Tennessee Department of Tourism Development

Tennessee Department of Transportation

6.4 Individuals and Organizations

Central Business Improvement District

City of Knoxville

Crown Plaza

East Tennessee Historical Society

Fraternal Order of Eagles

John & Tracy Hamari re: Carpenter's Union

Immaculate Conception Church

Knox County

Knox Heritage

Knoxville Chamber of Commerce

Knoxville Community Development Corp

Knoxville-Knox County Metropolitan Planning Commission

Fred R Langley & Co

Lincoln Memorial University

Market Square District Association

Meta Enterprises

The Nexus Group

Summit Towers Apartments

TVA Credit Union

Visit Knoxville

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