DRAFT Environmental Assessment



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Metropolitan Nashville Airport Authority[™]

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ACHP	Advisory Council on Historic Preservation
ACI-NA	Airport Council International - North America
AIAA	Airport and Airway Improvement Act of 1982
AIP	Airport Improvement Program
AIRFA	American Indian Religious Freedom Act
AIT	Advanced Imaging Technology
ALP	Airport Layout Plan
APC	Automated Passport Control
APE	Area of Potential Effect
ARFF	Airport Rescue and Fire Fighting (facility)
ASNA	Aviation Safety and Noise Abatement (Act)
BMP	Best Management Practice
BNA	Nashville International Airport
Board	Board of Commissioners (MNAA)
CAA	Clean Air Act
СВР	US Customs and Border Patrol
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CONRAC	Consolidated Rental Car Facility
CSF	Consolidated Service Facility
CUP	Central Utility Plant
CWA	Clean Water Act
су	Cubic yards
DOI	Department of Interior

CZMA	Coastal Zone Management Area
dBA	A-weighted decibels
DNL	A-weighted Day Night Average Sound Level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
ETW	Exceptional Tennessee Water
FAA	Federal Aviation Adminiatration
FBO	Fixed based operator
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GHG	Greenhouse Gas
GIP	Green Infrastructure Practice
GTC	Ground Transportation Center
IAB	International Arrivals Building
LID	Low Impact Development
LRT	Light Rail Transit
LOS	Level of Service
MNAA	Metropolitan Nashville Airport Authority
MPC	Mobile Passport Control
MPU	Master Plan Update (2013)
MRO	Maintenance Repair Organization
MSA	Metropolitan Statistical Area

MTA	Metropolitan Transit Authority
NAE	Nashville Airports Experience
NAGPRA	Native American Graves Protection and Repartriation Act
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEM	Noise Exposure Map
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NPL	National Priorities List
NPS	National Park Service
NRI	Nationwide Rivers Inventory
NWSRA	National Wild and Scenic Rivers Act
OWS	Oil Water Separator
PCPI	Per Capita Personal Income
RCRA	Resource Conservation and Recovery Act
RON	Remain Overnight (airplanes)
RTA	Regional Transportation Authority
SARA	Superfund Amendments and Reauthorization Act of 1986
sf	Square feet
SHPO	State Historic Preservation Office
SIP	State Implementation Plan

SMS	Safety Management Systems
SPCC	Spill Prevention Control and Countermeasure
SSCP	Security Screening Check-point
SWPPP	Stormwater Pollution Prevention Plan
SWTF	Storm Water Treatment Facility
TAF	Terminal Area Forecast
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TDOA	Tennessee Division of Archaeology
THC	Tennessee Historical Commission
TSA	Transportation Security Administration
TSCA	Toxic Substances Control Act of 1976
TVA	Tennessee Valley Authority
TWRA	Tennessee Wildlife Resources Agency
USACE	United States Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compounds
W&P	Woods and Pool Economics, Inc.
WTMD	Walk-Through Metals Detectors

SECTION 1 INTRODUCTION AND BACKGROUND

1.1 ENVIRONMENTAL ASSESSMENT OVERVIEW

This Environmental Assessment (EA) has been prepared by Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) for the Metropolitan Nashville Airport Authority's (MNAA) planned BNA Vision program. BNA Vision is a comprehensive plan designed to enable Nashville International Airport (BNA or Airport) to meet the needs of increased growth in the region and accommodate rapidly increasing numbers of passengers flying into and out of BNA while maintaining the character of the Greater Nashville Area¹ (Figure 1.1-1). Between 2010 and 2016, the population of the Greater Nashville Area grew by nearly 20%, from approximately 1.6 million to 1.9 million, and BNA annual enplanements² increased by more than 55%, from

approximately 4.5 million to 7 million in the same period. By 2035, the population of the Greater Nashville Area is expected to surpass 2.5 million people, and BNA enplanements are expected to grow from approximately 7 million today to more than 10 million, a further increase of approximately 43% (Lynch, 2017).

In response to this unprecedented growth, MNAA has developed the BNA Vision, which combines several facility improvements to accommodate recent and projected enplanement increases, new generations of aircraft, and airport infrastructure needs targeted to enhance the passenger experience. Implementation of the BNA Vision would allow the Airport to continue to provide outstanding customer service, facilities, and services and "bring the heartbeat of Music City to the Airport" (this mantra is known as the *Nashville Airports Experience* [NAE]). The BNA Vision also ties to MNAA's culture and values, the service value, as follows:



Figure 1.1-1: Greater Nashville Area

 Integrity – Be professional, open, honest, and fair in dealings. Follow ethical standards and processes. Honor commitments.

¹ The Greater Nashville Area refers to the Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area (MSA), which includes the following counties: Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Maury, Robertson, Rutherford, Smith, Sumner, Trousdale, Williamson, and Wilson. ² Enplanement – Refers to a person boarding in the United States in scheduled or nonscheduled service on aircraft in intrastate, interstate, or foreign air transportation (49 CFR 1510.3).

- Service Promote a safe and secure environment. Deliver outstanding customer satisfaction. Support our community.
- Innovation Continue to improve. Be open to new ideas and foster change.
- Teamwork Respect and trust others. Communicate and coordinate with coworkers. Follow meeting behaviors.

Elements of the BNA Vision include several improvements and additions to BNA to accommodate existing and projected airport needs. Key features of the BNA Vision include a new International Arrivals Building (IAB); expansion and improvement of the terminal, including the ticketing lobby and baggage claim areas; expansion and improvements of Concourses A, B, and D; construction of a new parking garage and transportation center; construction of new onsite hotel; new airport administrative building; and on-airport road circulation modifications.

This EA has been prepared in compliance with the requirements of the National Environmental Policy Act (NEPA) and follows Federal Aviation Administration (FAA) guidelines for implementing NEPA (specifically FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*). This EA requires FAA approval.

This EA is organized into the following sections:

- Section 1: *Introduction and Background* provides the structure of the EA, an overview of the Airport, an overview of the BNA Vision, and an overview of applicable environmental initiatives and regulations.
- Section 2: *Purpose and Need* provides a brief description of issues at the Airport (i.e., the *Need*) and how MNAA's proposed approaches will resolve these issues (i.e., the *Purpose*). Section 2 also summarizes economic drivers such as the current and projected growth of the Greater Nashville Area that support the need to implement the BNA Vision.
- Section 3: Proposed Action and Alternatives provides an overview of the Proposed Action as well as various alternative solutions that were evaluated by MNAA to address the current and future needs of the Airport. This analysis includes a summary of how the evaluation was performed and identifies elements of the Proposed Action recommended for FAA's approval. It also includes discussion of several alternatives that were considered including the "No Action" alternative.
- Section 4: Environmental Consequences and Mitigation describes existing environmental conditions within the project study area and the environment(s) likely to be impacted by the project. This section also describes and compares the potential environmental effects that implementation of the Proposed Action and No Action alternatives would have on the affected environment. Pursuant to regulations at 40 Code of Federal Regulations (CFR) Sections 1508.7 and 1508.25(a)(2), as well as Council on Environmental Quality (CEQ) guidance documents, this section also discusses cumulative impacts. That discussion focuses on the effects that implementation of the Proposed Action would have on environmental resources, in combination with the effects on those resources due to past, present, and reasonably foreseeable actions. (Where appropriate, the EA contains figures and tables to clarify the analyses presented in this

section.)

- Section 5: Scoping and Public Involvement discusses agency coordination and public involvement associated with the EA process. The section also presents a list of Federal, state, and local agencies and other interested parties that have been involved in EA coordination efforts.
- Section 6: *References* contains a list of references used in the development of this EA.
- Section 7: *List of Preparers* contains a list of names and the qualifications of individuals who prepared, contributed to, and reviewed this EA.
- *Appendices* present the relevant material, analyses, and technical reports that were used to prepare this EA.

1.2 NASHVILLE INTERNATIONAL AIRPORT

1.2.1 Airport Administration

BNA is owned and operated by MNAA, a self-financing entity that uses no local tax dollars for operation. In 1970, the Metropolitan Government of Nashville/Davidson County formed MNAA to replace the City Aviation Department. MNAA is led by a Board of Commissioners (Board) comprised of representatives from business and finance, pilot association, neighborhoods, engineering, legal, and the Nashville Mayor's office. The Board's primary functions are: 1) to plan, construct, operate, and manage the airport system and 2) to ensure the promotion and development of the region's commerce and industry through air transportation. Under this charter, the Board oversees the administration, operation, and maintenance of BNA (R.W. Armstrong, 2013).

MNAA provides a framework through which air carriers interact with the community to establish a self-financing system of governance and to ensure a safe, efficient, and modern airport for the Greater Nashville Area. MNAA completed a Master Plan in 1973 to direct the Airport's long-term growth. MNAA has updated the 1973 Master Plan several times since; the most recent update was completed in 2013 and is referenced in this document as the Master Plan Update (MPU) (R.W. Armstrong, 2013).

A majority of MNAA's Administrative offices are located on the fourth floor of the terminal building. MNAA's Operations and Customer Affairs/Community Services offices are located in Concourse C. Other MNAA administrative offices are located in Concourses A, B, and D. Additional facilities housing MNAA offices include the Airport Rescue and Fire Fighting (ARFF) Facility, the Storm Water Treatment Facility (SWTF), and the MNAA Consolidated Service Facility (CSF).

1.2.2 Airport Location and Access

Nashville is the state capital and seat of Davidson County, Tennessee. It is located on the Cumberland River in Middle Tennessee and is a hub for the region's healthcare, finance, education, transportation, and entertainment industries.

The Airport is located approximately 6 miles southeast of downtown Nashville on approximately 4,500 acres (see Figure 1.1-1). Nashville's interstate system (including Interstates I-40, I-24, and I-65) provides regional access to the Airport, while local access is via I-40 and several arterials that surround and service the Airport, including Donelson Pike, Murfreesboro Road, and Briley Parkway (see Figure 1.2-1).



Figure 1.2-1: BNA Vicinity Map

Specifically, the passenger terminal is accessible from two principal access roads: 1) a dedicated off-ramp from eastbound I-40, and 2) Donelson Pike (a major north/south roadway that connects to the loop roadway [Terminal Drive] in front of the passenger terminal). Approximately 60% of vehicle traffic arrives and departs via I-40 off- and on-ramps. Terminal Drive encompasses, and provides access to, Long-term A surface parking lot, the Short-term parking garage facility, and the Consolidated Rental Car Facility (CONRAC). The Economy and

Long-term B parking lots are accessed from roadways that branch off from Terminal Drive (R.W. Armstrong, 2013).

1.2.3 Airport Layout/Facilities

The layout of the BNA Main Terminal and Concourse A-D is depicted on Figure 1.2-2. The terminal, which includes nearly one million square feet (sf), comprises several areas, each accommodating multiple functions, including concessions, airline gates, Transportation Security Administration (TSA) offices, and administrative support spaces, among



Figure 1.2-2 Airport Terminal Layout

others and is organized into four levels:

- Level 1, *Ground Transportation*, accommodates ground transportation services, including taxis, limousines, and shuttle buses.
- Level 2, *Baggage Claim*, accommodates the Airport's baggage handling system, baggage screening, baggage claim, airline offices, and additional support services and a centrally located Information Center.
- Level 3, *Ticketing Lobby and Security Screening Check-point* (SSCP), functions as the ticketing lobby including ticket counters and self-ticketing kiosks for the airlines, as well as offices and breakrooms for airline staff. To meet government-mandated security requirements established following the September 11, 2001 terrorist attacks, the main passenger SSCP has been improved to accommodate the latest technologies in both passenger and carry-on item screening. The current SSCP uses 10 screening lanes with five Walk-Through Metals Detectors (WTMD) and five Advanced Imaging Technology (AIT) scanning portals for screening passengers and 10 AIT x-ray devices for screening carry-on items. A separate screening lane has a WTMD for screening Airport employees prior to beginning work in the sterile areas. It also includes an AIT scanning portal for airport employees and airline crew who are flying. All personal items are scanned using an x-ray device, as well (R.W. Armstrong, 2013).
- Level 4, Administration, houses the majority of MNAA's Administrative offices.

Passenger circulation patterns within the main terminal follow a converging "V" plan, connecting the flow to and from the concourses to the center of the terminal and uniting all three levels supporting passengers (R.W. Armstrong, 2013). Airline gates are accessed by one of four concourses:

- **Concourse A** serves Air Canada, Frontier, and United Airlines, and houses the interim IAB. This concourse has general concessions and traveler amenities. MNAA maintenance staff perform several functions in office, breakroom, and shop spaces located on the ground level of this concourse. There are also airline, MNAA, and concession office and storage spaces on this concourse.
- **Concourse B** serves Alaska, Delta, Boutique Air, Contour, JetBlue, and WestJet Airlines. This concourse has general concessions and traveler amenities. There are MNAA, concessionaire, and airline storage facility and offices located on Concourse B.
- **Concourse C** presently serves American and Southwest Airlines. Of the concourses, Concourse C has the greatest number of food, drink, and retail concessions. MNAA, concessionaires, and Southwest and American Airlines occupy office and storage space on multiple levels of this concourse.
- **Concourse D** is currently not used for air service; however, ground-loaded gate positions have previously been used at the concourse. The concourse now houses TSA, MNAA, and Safety Management Systems (SMS) administrative offices and storage and break rooms located on multiple levels of this concourse.

The BNA airfield consists of four active bi-directional runways: three parallel runways oriented in a north/south direction (identified as 2R/20L, 2C/20C, and 2L/20R), and a crosswind runway (13/31), oriented in a northwest/southeast direction. Runway 2R/20L is 8,000 feet long and is

the airfield's easternmost. Runway 2C/20C, also 8,000 feet long, is situated between Runways 2R/20L and 2L/20R and south of Runway 13/31. Runway 2L/20R lies west of Runway 2C/20C and is 7,703 feet long. Runway 13/31 is the Airport's longest runway, measuring 11,029 feet. It crosses Runway 2L/20R and provides crosswind coverage for the Airport. All four runways are 150 feet wide (R.W. Armstrong, 2013). Aircraft parking aprons (or *ramps*) provide space for aircraft parking and circulation. A diagram of the Airport is provided as Figure 1.2-3.

Currently, Nashville's aircraft storage consists primarily of conventional general aviation hangars totaling 503,000 sf (R.W. Armstrong, 2013). The majority of the existing aircraft hangars are located south of the terminal building, between runways 2R/20L and 2C/20C, although in recent years, there has been significant development on the west side of the airfield including three private aircraft hangars and a new large 40,000 sf hangar to support an aircraft Maintenance Repair Organization (MRO), MNAA general aviation is supported by two fixed based operators (FBO), both of whom are also requesting to construct additional support and hangar facilities. Currently, MNAA is limited in its ability to support additional hangar development in new areas, as property which is ready and suitable for development is sparse. Remaining undeveloped property has obstacles such as terrain, rock, or lack of utilities which must be overcome. As a start in remedying this situation, MNAA is planning to prepare property to the



Figure 1.2-3 Airport Diagram (FAA Airport Facilities Directory, 2011)

southeast of Runway 2C/20C to support future hangar development. This land preparation will likely be completed in 2018.

Aircraft parking aprons or ramps provide space for aircraft parking and circulation. There are four categories of aircraft parking aprons: Terminal Apron, Cargo Apron, General Aviation Apron, and Military Apron. The BNA Vision addresses only the Terminal Apron which lies adjacent to the terminal. The Terminal Apron comprises nearly 11.5 million sf of pavement, with 46 gate positions for narrow-body equivalent aircraft on the airside of Concourses A, B, and C at the terminal and at least seven designated remain overnight (RON) aircraft parking positions for narrow-body aircraft³. Apron area is also available for four commuter/regional jet aircraft ground-loading gate positions near Concourse D (R.W. Armstrong, 2013).

³ The narrow-body equivalent aircraft index reference aircraft is a B737-700.

Airport passenger vehicle parking closest to the terminal includes the Short-term parking garage, rental car facility, and Long-term A lot (refer to Figure 1.2-4). Garage A (under construction on the west side of the short-term parking garage) was under design and contracted for construction before the BNA Vision was defined and was presented to the MNAA Board in June 2016. An EA for Garage A was submitted (Atkins, 2016) and associated permits have been issued. The project received a Finding of No Significant Impact (FONSI) for the Garage A EA in January 2017 (FAA, 2017).

1.2.4 Airport History and Development

The Airport originally opened in 1937 as Berry Field in honor of Colonel Harry S. Berry. At that time, the Airport facility consisted of a terminal building, two hangars, a 4,000-foot concrete runway and a flashing beacon. Original commercial air carriers were American Airlines and Eastern Airlines and within one year, 189,000 passengers had used the facility.

During World War II, Berry Field became a military base and additional acreage was added to the facility. In 1946, the military returned the now 1,500-acre airport site to the City of Nashville where it was managed by the City's Department of Aviation. Due to the rapid growth in air transportation, the City built a new passenger terminal in 1961 and expanded runway capacity in the following years. In 1970, the MNAA was formed and took over operation of the Airport.



Figure 1.2-4: Current Parking Adjacent to Terminal

As previously discussed, MNAA completed its first Master Plan in 1973. To meet future demand, the MPU recommended additional terminal space (i.e., a new terminal) and a new (third) parallel runway east of Donelson Pike. By 1977, the Airport consisted of 3,300 acres with three runways. The passenger terminal was renovated and expanded to 189,000 sf to accommodate growing passenger demand. MNAA updated the 1973 Master Plan in 1980 and 1984.

The original concept for the current passenger terminal was to support two equally proportioned 12-gate concourses. This changed in 1985 when American Airlines created a secondary hub at BNA. The result was a passenger terminal with four concourses: Concourses A and B to accommodate all airlines except American Airlines; Concourse C to serve all American Airlines narrow-body aircraft; and Concourse D primarily for American Eagle aircraft (i.e., J31 and ATR).

To support a hub environment, massive infrastructure projects would need to be constructed, including a new terminal building, fuel farm, additional airfield and apron, and support facilities. These new facilities were to be constructed further east of the existing terminal and operations.

In October 1985, American Airlines and the MNAA entered into a Special Facility Lease Agreement which required the MNAA to issue bonds to pay for the infrastructure improvements and in return, American Airlines was to construct the facilities and then lease the new space over a 45-year term. This arrangement also required that all airlines operating at BNA enter into an Airline Lease and Operating Agreement. This lease was executed in 1987 with a 30-year term.

When BNA became a hub for American Airlines in 1986, it began providing non-stop flights to many U.S. cities as well as international nonstop flights from London, England and Toronto, Canada. In 1987, the Airport dedicated the new 750,000 sf passenger terminal followed by major construction on a parallel runway east of Donelson Pike. The Airport's name was changed that year to the Nashville International Airport to reflect its international air service goals and the establishment of an American Airlines hub. In 1989, the original terminal building was demolished and the new parallel runway (2R/20L) was dedicated. By 1993, American Airlines accounted for approximately 80% of all passengers at BNA. Subsequent terminal modifications and additions included a secure connector between Concourses A/B and Concourses C/D, and the construction of a Federal Inspection Service (FIS) facility on Concourse A. In 1994, the Airport also relocated Runway 2C/20C and extended it to 8,000 feet.

After 1993, American Airlines began downsizing operations at BNA, while still obtaining additional apron space for regional jet parking for American Eagle. American Airlines closed its hub in Nashville in 1995. Later in the 1990s, American Airlines' downsizing was offset by Southwest Airlines' expansion of service and relocation from Concourse A to Concourse C. The closing of the American Airlines' hub as well as increased flights by Southwest and other carriers to and from BNA reduced the number of connecting passengers and increased the number of origination/destination passengers, resulting in different demands on the terminal and landside facilities, directly impacting access roadways, terminal curbsides, parking facilities, rental car facilities, security check-points, ticketing and lobby areas, and baggage claim areas (R.W. Armstrong, 2013).

In recent years, air traffic at BNA has grown tremendously, which has prompted the need to further expand and modify airport facilities to accommodate current and projected growth. To accomplish this, MNAA has developed the BNA Vision. Currently, there are approximately 5 million more passengers per year using landside facilities than when BNA operated as an American Airlines hub.

BNA is currently served by the following legacy and low fare scheduled carriers and their regional partners: Air Canada, Contour, Southwest, Alaska, Delta, United, American, Frontier, Boutique, WestJet, and JetBlue. In 2015, Southwest had the highest carrier market share for enplanements at BNA at 55.6%; followed by American at 20.2%; Delta at 15.8%; United at 6.2%; Frontier at 1.5%; and remaining carriers totaling 0.7% (Lynch, 2017).

1.3 BNA VISION OVERVIEW

MNAA has initiated the planning and programming for the next evolution of smart growth at the Airport to accommodate recent and projected enplanement increases, new generations of aircraft, and airport infrastructure needs. MNAA recognizes that current record passenger

growth has created the need to accelerate facility improvement projects identified in the Airport's MPU as well as study additional projects to maximize capacity and efficiency. In response, MNAA has formulated the *BNA Vision* which combines several landside and airside facility improvements targeted to enhance the passenger experience while positioning BNA for the future (BNA, 2017a). A schematic illustrating the BNA Vision is included as Figure 1.3-1. Initiatives identified in the BNA Vision include:

Parking Growth

- Provide additional parking. Construction of a new six-story parking garage (Garage A) is currently underway. The bottom level of the parking garage will be designated as a Ground Transportation Center (GTC) for commercial vehicles. This garage will provide a Parking Space Guidance System; increase capacity for 20,000 gallons of rain water harvesting for landscape irrigation; construct a green-screen vegetation wall; and construct a 50-kilowatt solar array on top level.
- The BNA Vision includes an additional, larger, parking facility in the current location of the existing Short-term parking garage (Garage B).



Figure 1.3-1: BNA Vision Concept

To support access to and from the new and modified facilities, landside roadway configurations would need to be expanded and modified. In the near term, reconfiguration would include new access and exit drives to and from CONRAC; Garages A, B, and C; hotel; and administrative offices. A new loop would be constructed to allow transportation network companies (staged in

the economy parking lot) access to a new ground transportation center in Garage A (refer to Figure 1.3-2).

With the potential future realignment of the Donelson Pike (to be undertaken by the Tennessee Department of Transportation [TDOT]), additional roadway modifications may be also necessary.



Figure 1.3-2: Modifications to Landside Roadway Configuration

International Arrivals Building

- Construct a state-of-the-art new concourse (Concourse T, connected to main terminal building) to accommodate the projected significant increase in the number of international travelers (projected to increase 100 to 200% over the next several years) and set the stage for attracting new nonstop flights to locations including Europe, Asia, and Latin America.
- Designate a new permanent IAB at Level 1 of Concourse T to meet projected international operations as well as adhere to current Customs and Border Protection standards. The new IAB will be programmed and designed to accommodate forecasted growth while enhancing the arrivals process. This project will coordinate with local US Customs and Border Patrol (CBP) officials to determine the desired arrivals process and overall capacity.

Terminal Improvements/Administrative Offices

- Expand central entrance hall of the terminal with natural light and airfield views and relocate ticketing lobby from the central terminal area into new landside wings added on the north and south ends of the terminal. The number of ticketing positions will be right-sized to meet forecasted passenger and airline growth as well as advances in self-serve kiosks, bag tagging, and other technological trends intended to improve passenger processing.
- Expand the current baggage claim area into the newly created landside wings on both sides of the terminal. As with ticketing positions, baggage claim will be right-sized based on forecasted passenger growth by increasing existing claim device length and adding baggage claim devices.
- Consolidate and/or construct additional administrative offices and related support facilities to accommodate staff displaced by other terminal improvements.
- Expand Passenger SSCP by increasing the number of SSCP lanes from the existing 10 to 24 based on TSA processing times and projected passenger forecasts.

Concourse Improvements

- Increase concessions and amenities at BNA. Through a parallel ongoing Concessions Master Plan program, the BNA Vision will plan, program, and design enhanced concessions and amenity opportunities for each of the BNA Vision project elements. Necessary space will be allocated based on passenger projections and amenity needs to provide excellent customer experiences as well as anticipated revenue generation.
- Construct Concourse T to accommodate the new IAB at Level 1, as discussed above.
- Expand Concourse B to utilize the existing superstructure and add another column bay width along the entire length of the concourse to increase square footage. This project would plan and program the additional area to increase hold room capacity while also offering enhanced concessions and amenities.
- Expand Concourse D to reactivate gates at the Airport by utilizing existing ramp and former ground-loading positions. This project would plan for an elevated departures level with supporting ramp space sized to facilitate additional gates with passenger boarding bridges to accommodate projected increases in needs for airline operational expansions. A new consolidated and centralized heating and cooling facility – or *Central Utility Plant* (CUP) – will be constructed at the end of the newly constructed Concourse D.
- Renovate Concourse A once a new permanent IAB is established at Concourse T. This will include demolition of the interim IAB facility and demolition, reconfiguration, and reconstruction of gates at the north end of the concourse, including the possible addition of new gates.
- Renovate and refresh Concourse C in conjunction with the construction of Concourse T, as three gates (i.e., Gates C2, C3, and C5) will be removed from Concourse C to accommodate Concourse T.

Ground Transportation Center

• Allow access to the terminal for various modes of transportation, including rideshare, taxis, shuttles, limousines, and buses. The Ground Transportation Center (GTC) will be

located within Garage A, currently under construction; once Garage B/C is constructed, the GTC may expand into Garage B/C.

Multi-modal Connector

 Construct infrastructure for a multi-modal connector to link BNA to potential future Nashville transit system. Multi-modal concepts include options for light rail transit (LRT) connections at the airport to downtown and other greater Nashville locations. This will be coordinated with future Metropolitan Nashville Public Works Department and the Nashville Metropolitan Transit Authority (MTA) planning efforts and upcoming Master Plan Updates and Donelson Pike realignment projects that may be undertaken in the future (and sponsored/led by other agencies), but while the BNA Vision is being implemented.

Landside Hotel

 Construct a 250- to 300-room hotel to provide travelers easy and convenient lodging. Growth in the Greater Nashville Area has prompted the Airport to consider options for an on-site hotel situated close to the terminal. A recently completed Hotel Feasibility Study (JLL, 2017) identified viable siting options and customer amenities which have been incorporated into the hotel design.

Support and Mitigation Areas

 Develop support areas. As part of BNA Vision implementation, MNAA has designated several properties within the current BNA boundary to be utilized as possible support areas during construction, as well as potential mitigation areas to support compliance with Metro's low impact development (LID) requirements. Further, where appropriate, placed fill within some support areas may be used to support project development.

Specialty Projects

Initiate specialty projects. Specialty projects will include larger studies that may have an
influence on the BNA Vision. These projects will be coordinated with the overall planning
and design efforts of the BNA Vision. These projects may include an evaluation of the
landside car rental operations, MPU, Sustainability Management Plan, and Energy
Strategy development.

1.4 PLANNING CONSIDERATIONS AND INITIATIVES

1.4.1 National Plan for Integrated Airport Systems

The National Plan of Integrated Airport Systems (NPIAS) report for Fiscal Years (FY) 2017 to 2021 was released by the FAA in September 2016. The NPIAS report identifies airports included in the national airport system (including identifying airports that are important to national air transportation), roles they serve, and types of airport development eligible for Federal funding under the Airport Improvement Program (AIP). The FAA has been publishing the NPIAS since 1984. The NPIAS also supports the strategic priorities and key initiatives identified in the FAA Administrator's Strategic Initiatives for safety, access, and global leadership by identifying airport improvements that will best meet those priorities. FAA recognizes that airport capital development needs are driven by current and forecasted traffic, use and age of facilities, and changing aircraft technology. FAA forecasts that capacity-

related development will continue to decrease while reconstructing pavement, bringing an airport up to design standards, and expanding or rehabilitating terminal buildings will increase (FAA, 2016).

The national airport system, envisioned when civil aviation was in its infancy, has been developed and nurtured by close cooperation with airport sponsors and other local agencies, as well as Federal and State agencies. Airports are critical to the national transportation system and contribute to a productive national economy and international competitiveness. To meet the demand for air transportation, FAA indicates airports and the national airport system possess the following characteristics (FAA, 2016):

- Safe and efficient, located where people will use them, and developed and maintained to appropriate standards;
- Affordable to both users and the Government, relying primarily on producing selfsustaining revenue and placing minimal burden on the general revenues of the local, State, and Federal governments;
- Flexible and expandable and able to meet increased demand and accommodate new aircraft types;
- Permanent with assurance that they will remain open for aeronautical use over the long term;
- Compatible with surrounding communities, maintaining a balance between the needs of aviation, the environment, and the requirements of residents;
- Developed in concert with improvements to the air traffic control system and technological advancement;
- Able to support a variety of critical national objectives, such as defense, emergency readiness, law enforcement, and postal delivery; and
- Extensive, providing as many people as possible with convenient access to air transportation, typically by having most of the population within 20 miles of a NPIAS airport.

FAA's NPIAS classifies BNA as a primary medium hub airport. As such, BNA serves between one-quarter of one percent and one percent of all annual passengers boarding aircraft in the United States (FAA, 2016).

1.4.2 Sustainable Growth

In 2010, MNAA was selected as one of 10 airports in the US to participate in FAA's *Sustainable Master Plan Pilot Program*. As a result of this selection, MNAA commissioned a Sustainability Study for BNA. FAA selected MNAA for the Program because of its leadership in implementing sustainability initiatives, such as projects that promote water conservation, energy efficiency, social well-being, and community involvement.

MNAA is committed to incorporating sustainability concepts throughout design, construction, and operation of BNA Vision projects. MNAA's Sustainability mission statement is to *Sustain the*

Heartbeat of the Mid-South by Cherishing its Resources to Ensure Music City Continues to Fly High. MNAA has adopted Airport Council International - North America's (ACI-NA) definition of sustainability, which is a four-pillar approach including economic, operational, natural resource, and social (EONS) considerations. Acknowledging the Airport's sustainability mission statement, BNA Vision incorporates sustainability objectives by:

- Reducing environmental impact through project planning, programming, design, construction, and operations;
- Supporting and maintaining high, stable levels of economic growth; and,
- Maintaining consistency with the needs and values of the surrounding community.

BNA Vision intends to set standards outlining sustainability objectives for each of the BNA Vision project elements.

1.5 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS

This EA has been prepared in accordance with FAA guidelines for implementing NEPA (specifically FAA Orders 1050.1F and 5050.4B) and complies with the requirements of NEPA and CEQ Regulations dated 28 November 1978 (40 CFR Parts 1500-1508). The primary legislation affecting these agencies' decision-making process is NEPA. Per FAA Order 5050.4B, an EA should also integrate impact determinations for special purpose laws if the no action, proposed action, or reasonable alternatives would affect any resources those laws protect. Special purpose laws refer to Federal laws, regulations, executive orders, or departmental orders that are outside NEPA. Refer to Appendix A for a list of applicable Special Purpose Laws. NEPA and other facets of the environmental impact assessment process are described below.

1.5.1 National Environmental Policy Act

NEPA requires that federal agencies consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed federal decisions. The CEQ was established under NEPA for the purpose of implementing and overseeing federal policies as they relate to this process. In 1978, the CEQ issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40 CFR §1500-1508 [CEQ 1978]). These regulations specify that an EA be prepared to:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a FONSI;
- Aid in an agency's compliance with NEPA when no EIS is necessary; and,
- Facilitate preparation of an EIS if one is necessary.

Information regarding the Proposed Action and alternatives will be used to assess potential environmental impacts and the decision-making process for the various elements of the Proposed Action.

1.5.2 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (ESA, 16 USC §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened or endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with USFWS under Section 7 of the ESA.

1.5.3 Clean Air Act and Conformity Requirements

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O₃), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. The USEPA has set forth regulations in 40 CFR 51, Subpart W, which require the proponent of a proposed action to perform an analysis to determine if implementation of the action would conform to the SIP.

1.5.4 Clean Water Act, Wetlands, and Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC §§ 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA and Executive Order (EO) 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging or filling in wetlands. EO 11988, *Floodplain Management*, requires federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains.

1.5.5 Cultural Resources Regulatory Requirements

The National Historic Preservation Act of 1966 (NHPA, 16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) which outlined procedures for the management of cultural resources on federal property. Cultural resources can include archaeological remains, architectural structures, and traditional

cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The NHPA requires federal agencies to consider potential impacts to cultural resources that are listed on, nominated to, or eligible for listing on, the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertaking might affect such resources. Protection of Historic and Cultural Properties (36 CFR 800 [2004]) provides an explicit set of procedures for federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with the SHPO.

EO 13007, Indian Sacred Sites, directs federal land (any land or interests in land owned by the U.S., including leasehold interests held by the U.S., except Indian trust lands) managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites (any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe [an Indian or Alaska Native tribe, band, nation, Pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, an "Indian" refers to a member of such an Indian tribe] or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion) provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

The American Indian Religious Freedom Act (AIRFA) (42 USC § 1996) established federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC §§ 3001–3013) requires consultation with Native American Tribes prior to excavation or removal of human remains and certain objects of cultural importance.

1.5.6 Sustainability and Greening

EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance, strives to improve efficiency and environmental performance in federal agencies by setting goals in the areas of energy efficiency, greenhouse gas emission mitigation, water conservation, waste management and recycling, green procurement, pollution prevention, and livable communities, among others. The EO specifies that every federal organization and agency must make the reduction of greenhouse gas emissions a priority and establishes specific goal-setting, inventorying, and reporting requirements for federal agencies. This includes an order for each agency to develop, implement, and update a Strategic Sustainability Performance Plan, which should work toward continual improvement of sustainable practices associated with federal actions.

SECTION 2 PURPOSE AND NEED

2.1 CURRENT AND PROJECTED GROWTH AT BNA

The Greater Nashville Area is one of the strongest growth areas in the country. Based on the *Nashville International Airport Enplanements Forecast* completed in April 2017 (included in Appendix B), air service at BNA is growing rapidly and is supported by the surrounding economically-thriving region. Air travel to and from BNA is driven by two primary sources: 1) travel by visitors coming to Nashville for tourism, convention, and business, and 2) travel by local residents fueled by strong industry, population growth, and relatively high incomes. Nashville experienced faster growth than the US as a whole in employment, total income, and per capita personal income (PCPI) from 2002 through 2015. This growth is partially the result of the relocation and expansion of companies currently located within the Greater Nashville Area. Industries and businesses located in the area include corporate operations, advanced manufacturing, music and entertainment, supply chain management, and healthcare.

Between 2010 and 2016, the population of the Greater Nashville Area grew from approximately 1.6 million to 1.9 million and BNA annual enplanements increased from approximately 4.5 million to 7 million in the same period, an increase of 55%. Additionally, auto rentals, Long-term parking ticket issuance, and Airport entrance traffic increased by approximately 51%, 3%, and 92%, respectively from 2010 to 2016 (BNA, 2017b). By 2035, the population of the Greater Nashville Area is expected to exceed 2.5 million people, and BNA enplanements are expected to grow from approximately 7 million today to more than 10 million, a further increase of approximately 43% (Lynch, 2017).

Included in the enplanement forecast is an expected increase in international passengers. In 2016, international enplanements (58,749) made up approximately 1% of total enplanements at BNA; however, according to Lynch (2017), international enplanements are projected to triple in the next several years.

The BNA enplanement forecast is illustrated in Figure 2.1-1. This graphic illustrates both historical enplanements and forecasts from several different sources, including the FAA Terminal Area Forecast (TAF), 2011 Master Plan, and BNA Vision forecast (TransSolutions, 2017).

Based on the continued growth of private industry as well as public support and coordination, the strong socioeconomic expansion of the Greater Nashville Area is projected to continue (Lynch, 2017). MNAA is looking to support this forecasted growth through the implementation of the BNA Vision.



Figure 2.1-1: BNA Enplanements, Historical and Forecasts

(Sources: FAA TAF, Airport records, 2011 BNA Master Plan, Mary A. Lynch analysis, *Master Plan was published in 2013. Analysis was based on data through 2011, in TransSolutions, 2017.)

2.2 PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed terminal improvements and ancillary development projects is to better meet the current and projected needs of the public, air carriers, and stakeholders at BNA. To meet the needs of Nashville's rapid and sustained growth, MNAA is embarking to program, design, and implement multifaceted improvements for the terminal building and associated infrastructure. This plan – known as *BNA Vision* – seeks to address five overarching issues:

- 1. **Expand Facilities.** Transform and expand existing facilities including the terminal, concourses, gates, international arrivals, and associated infrastructure to better meet projected operations and enplanements and ensure safe, secure, and efficient operations.
- 2. **Update Systems.** Address deficiencies associated with the aging design and infrastructure of the existing terminal building, including distribution of interior airport features (such as ticketing, security, concessions, and baggage handling) and the need to update mechanical and electrical systems and base building elements.
- Consolidate Functions to Improve Efficiency. Consolidate administrative functions to a central location near the terminal, re-configure concourses and gates to accommodate needs, and improve the customer experience by expanding existing check-point and processing facilities.

- 4. **Improve Accessibility.** Improve airport accessibility and level-of-service of ground transportation, curbside flow, and parking activities, and provide new accessible transient lodging.
- 5. **Improve Passenger and Aircraft Movement.** Improve overall efficiency and safety of landside passenger movement and airside aircraft movement to accommodate changes in the air transportation system, airport security, customs and border protection, and modern-generation aircraft.

2.3 NEED FOR THE PROPOSED ACTION

The original Airline Lease and Operating Agreement (Airline Agreement) was residual in nature - which required MNAA and the airlines to financially "true up" annually with monetary loss or surplus. If there was a loss, the airlines would cover such costs and if there was a surplus, the Airport would distribute the dollars back to the airlines. This Airline Agreement also gave the airlines a significant amount of approval rights in capital improvement project needs that MNAA deemed necessary. MNAA had to annually obtain majority in interest approval from the airlines to implement capital projects and purchases. By nature, this type of agreement fosters short term planning due to the required annual approvals and financial reconciliation.

In 2015, MNAA recognized that significant growth was occurring in the region and was expected to continue to grow. MNAA's parking facilities were near capacity, curbside traffic was becoming congested, new airlines were interested in coming to Nashville and enplanement numbers were significantly increasing. Recently forecasted numbers within the 2013 MPU were already behind actual and planned activity levels and associated development needs were nearing much sooner than projected. With the growth and facility demand, MNAA became confident that major expansions were going to be required to support landside and terminal activities. Due to the nature of the existing Airline Agreement, MNAA felt it was important to negotiate a new agreement with the airlines which would allow MNAA the flexibility to look long term and accelerate implementation of necessary expansions. Negotiations for a new agreement provides MNAA with the flexibility to implement landside capital investments to meet the demands of regional growth. With this flexibility, MNAA has planned and programmed necessary improvements and expansions through 2041. The program is known as the BNA Vision. Specific needs identified at BNA are detailed below.

2.3.1 Parking and Transportation

Airport accessibility, level-of-service of ground transportation, curbside flow, and parking must be either improved or added to provide adequate landside support. Based on the Nashville Metropolitan Transit Authority and the Regional Transportation Authority of Middle Tennessee (MTA/RTA) strategic plan, future access to the Airport may include service via light rail and expanded bus service to include express bus service, rapid bus service, and local bus service (MTA/RTA, 2016). The Airport requires upgrades to facilitate the movement of ground transportation into and out of the Airport. Current customer demand dictates the need for additional parking near the terminal. Current Short-term and Long-term lots are routinely full 2 or 3 days per week. As discussed in Section 1.3, a new six-story garage is currently under construction, but parking forecasts show that once this garage is constructed and operational, shortfalls will again be near. By 2026, approximately 4,858 spaces will be needed in the terminal area garages; once completed, Parking Garage A together with the Short-term parking garage will provide 4,529 spaces, which falls short of projected demand by approximately 329 spaces (Walker Parking Consultants, 2017).

Landside roads would need to be added and reconfigured to support access to and from new and modified facilities. Existing exit ramps for the CONRAC facility would be demolished and a new exit ramp and road would be constructed to allow rental cars to return to Terminal Drive. Modified access roadways would be constructed to provide access to and exit from the future Garages A, B, and C as well as the future hotel and administrative offices. Access to the new facilities would not be possible without roadway improvements. Movements for these new traffic patterns would be modeled to ensure that reconfigured system functions at an acceptable level of service for the long term.

A new loop road would be required to allow transportation network companies access to the new GTC on the first floor of Garage A. Without this loop, there would not be access to the new center and the service could not be provided in the designed location.

Potential design and construction for the realignment of Donelson Pike is currently being contemplated by TDOT. Current plans indicate that the construction could be complete by 2023. This timeline would require that the existing airport ring road configuration would also need to be redesigned to support access locations identified on the realignment concept. Although this project is separate from the BNA Vision – and considered a cumulative action within this EA – adjacent work may occur during Vision implementation. A separate NEPA process will be undertaken, with TDOT as the lead agency, for the Donelson Pike realignment project.

2.3.2 Terminal Expansion and Improvements

Although BNA's current terminal building has undergone multiple expansions and renovations since its establishment, the most recently completed MPU, along with recently experienced passenger enplanement growth and operations projections, indicate that the configuration of the existing terminal requires upgrade, improvement, and/or reconfiguration to meet projected demand and maintain the ability to operate efficiently and safely. Further, the terminal building and the concourses and landside facilities were designed to meet a different need including a greater number of transfer passengers and fewer origin/destination passengers from Nashville during the early 1990s when American Airlines utilized BNA as a hub. American Airlines passengers comprised approximately 80% of total passengers and Southwest passengers comprise approximately 20% and Southwest passengers comprise approximately 56% of passengers based on 2015 reporting, representing a significant shift towards origin/destination passengers. Additionally, since 2001, security procedures have evolved to include different procedures than when the airport was originally designed. As a result, current operations are not as efficient as they could be.

The existing facilities at BNA, including the terminal building, concourses, gates, and related infrastructure, are neither designed nor appropriately sized to meet projected operations and passenger enplanements and, correspondingly, ensure safe, secure, and efficient operations. Proposed improvements will address overall efficiency and safety of landside passenger movement and airside aircraft movement and parking.

The ticketing lobby, baggage claim, and the SSCP (located on Levels 2 and 3) experience deficiencies associated with design and aging infrastructure, including distribution of internal functions (such as ticketing, security, concessions, and baggage handling). The features require update to service the demand of projected passenger enplanements. Additionally, airport accessibility, level-of-service of ground transportation, curbside flow, and parking need to be improved or added to provide adequate landside support.

2.3.3 Terminal Apron and RON Capacity

The terminal apron comprises approximately 11.5 million sf of pavement on the airside of Concourses A, B, C, and D and provides seven RON aircraft parking positions for narrow-body aircraft. In addition to providing designated lanes for aircraft movement and parking, the apron area is also used for staging aircraft for deicing procedures. Several RON parking positions coincide with designated deicing positions. With more enplanements forecasted, airfield operations are also projected to increase, affecting airplane movements and RON parking demand. Based on projected growth, airfield operations for commercial airplanes are projected to increase approximately 27% in the next 10 years and 68% in the next 25 years (Lynch, 2017). Additionally, there is currently a projected shortfall of available space for both RON parking positions and deicing positions with forecasted aircraft activity and aircraft type.

2.3.4 Concourse Expansion, Improvements, and Location of Permanent IAB

Current forecasts at BNA necessitate concourse expansion and improvements to maintain efficiency, accommodate needs, and improve customer experience. Passenger loading bridges and gate configurations at BNA were designed for previous generation aircraft and associated passenger throughput. Next-generation aircraft that enable increased passenger loads are being developed and experiencing expanded use. Concourses A, B, C, and D require modifications to meet this forecasted need.

International arrival operations are currently located at Concourse A in a dedicated IAB. The IAB currently has operational challenges that necessitate renovation and eventual replacement.

The facility is undersized for the projected 100% - 200% increase in international passengers over the next few years and does not meet current design requirements for a modern U.S. CBP facility. Interim improvements within the existing facility foot print are underway which include streamlining passenger queueing in coordination with processing improvements such as the addition of Global Entry Program, Automated Passport Control (APC), and Mobile Passport Control (MPC) options. These improvements are anticipated to provide capacity relief while a permanent solution is developed. Despite these improvements, the existing IAB facility will

remain an undersized facility which utilities the outdated and staff intensive two-step passenger processes.

The placement of the existing IAB at the end of Concourse A was intended to accommodate inbound international flights only with a focus on passengers transferring to domestic flights upon arrival. The IAB was not designed to accommodate international passengers terminating their trip in Nashville. With the market shift from connecting international passengers to terminating international passengers an unwieldy operation has been put in place that requires all arriving international passengers to re-check their just claimed baggage, pass through a security re-screening process, proceed through a secure domestic concourse, exit the secure concourse, and reclaim their baggage in the domestic bag claim. This process requires additional steps for terminating passengers, introduces un-ticketed arrivals into a secure concourse, and increases operational costs for the airport and airlines.

Gates located on the IAB can only be used for international arrivals which limits their flexibility for other operations. This results in reduced operational flexibility and drives higher operational costs for theses gates. In a modern facility, these gates would at a minimum be available for international departures and ideally be available for any combination of international and domestic arrivals and departures.

Concourse B also requires modifications to accommodate larger aircraft. Larger passenger loads require larger hold rooms and the existing gate configurations at Concourse B are undersized to appropriately accommodate passengers and equipment associated with these aircraft. MNAA would also modify Concourse B in conjunction with the construction of Concourse T, since three gates (B1, B2, and B4) would be removed to accommodate Concourse T. Concourse C would also require minor modifications to internal functions due to the construction of Concourse T. MNAA would renovate Concourse C as part of the removal of gates C2, C3, and C5 during construction of Concourse T.

Concourse D is not currently utilized for air service for airline operations and currently provides office and storage space. To service the demand of projected passenger enplanements at BNA and correct existing design and infrastructure limitations, Concourse D requires renovation and expansion to service passengers.

In addition to concourse and terminal expansion, many of the infrastructure systems within the aging terminal building and concourses are outdated, resulting in greater maintenance and operational costs in terms of utilities, cleaning, heating and cooling, information and paging systems, and general maintenance. Continuous maintenance of these systems, including their mechanical, electrical, security and structural components, result in intermittent disruptions to the systems and unforeseen expenditures. To help alleviate this situation, and provide a consolidated space for new heating and cooling equipment, a CUP is being assessed. The CUP would be placed at the end of the newly reconstructed Concourse D, eliminating a sprawled and decentralized approach for installation, operation, and maintenance of equipment, piping, and controls.

2.3.5 Multi-modal Station

The MTA/RTA have engaged in a region-wide public discussion of the best strategies to improve regional mobility as the area continues to grow. LRT is being considered in four corridors where transit demand is expected to be the highest and where there is the greatest potential for new development – one of these corridors includes service to the Airport. MNAA recognizes transportation trends such as LRT and, to accommodate future infrastructure requirements, a multi-modal station will be needed at the Airport. In conjunction with planning efforts, Metro Nashville is in the process of developing a financing plan and public support for the project.

Although planned improvements such as the GTC and Donelson Pike realignment will improve traffic congestion around Terminal Drive and in front of the terminal building, regional growth is expected to continue which will increase interstate and other arterial roadway congestion. This, by default, will make access to the airport more difficult. Having a light rail spur directly to the terminal in the future is intended to provide an alternative mode of access.

2.3.6 Landside Hotel

Currently, there is no available lodging on the Airport premises or immediately adjacent to the Airport. The closest lodging options are approximately 2 miles away by car. MNAA recently completed a *Hotel Market and Feasibility Study* (JLL, 2017) to determine the need and economic viability of an on-airport hotel; further, the study included a site analysis for potential on-airport locations, size, terminal connectivity, and downtown access. The study evaluated Nashville's hotel market, growth in that market, and the existing hotel submarket in the vicinity of the Airport. The study found that there is a need for hotel space to support airport users and that a terminal-connected hotel can induce demand from other cities and downtown Nashville; therefore, the market would absorb new supply. For airport users (e.g., overnight stays pre- or post-travel, business conferences, day meetings with traveling constituents, passengers displaced by travel disruptions, *et al.*) who comprise the target market for the hotel, a full-service hotel with a room count between 275 and 300 rooms connected to the terminal would have the most beneficial impact on enhancing the passenger experience and would augment the overall positioning of the airport to serve the region.

2.3.7 MNAA and Airport Administration Office Space

The mezzanine does not accommodate current MNAA and Airport administrative needs (within the terminal) and the existing space currently utilized does not support staff growth over time. Currently, administration staff is scattered through multiple locations throughout the terminal building which creates inefficiencies for interdepartmental coordination and collaboration. Additionally, with terminal renovations and the proposed redevelopment of Concourse D, which also contains administrative offices and storage space, there will be a shortfall of office and storage space.

2.3.8 Support and Mitigation Areas

With any construction project at the Airport, MNAA and its contractors would need nearby property for construction staging, equipment storage, and temporary construction trailers/offices. In addition, due to potential environmental mitigation requirements of new projects, suitable property may be required to implement mitigation measures identified during the environmental permitting process. Therefore, MNAA needs to identify and designate potential support and / or mitigation areas to be utilized during the implementation of BNA Vision projects included in the Proposed Action.

A principal driver behind the need for mitigation areas is management of stormwater. Nashville is a Municipal Separate Storm Sewer System⁴ (MS4) that is managed by Metro Water Services Stormwater Division and regulated by TDEC. Metro Water Services has developed appropriate plans and guidelines to meet the requirements of the MS4 Permit, issued by TDEC under the U.S. Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) program; one of these plans is Low Impact Development (LID). LID is a site design approach that utilizes Green Infrastructure Practices (GIP) to meet Metro's MS4 permit requirements, which include the ability to infiltrate, evapotranspire, or harvest and use the first inch of rain. A few examples of GIP include the use of bioretention basins; permeable pavement; water quality swales; infiltration trenches; and grass channels.

Further, some of these support areas have previously been active fill sites. It may be possible that some of this fill could be retrieved and processed into reusable materials (such as soil or gravel) to support project development.

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⁴ A municipal separate storm sewer system (MS4) is a publicly owned conveyance or system of conveyances (including but not limited to streets, ditches, catch basins, curbs, gutters, and storm drains) that is designed or used for collecting or conveying stormwater and that discharges to surface waters of the State.

SECTION 3

PROPOSED ACTION AND ALTERNATIVES

This section summarizes the Proposed Action and the screening analysis conducted on the range of alternatives evaluated to develop the Proposed Action.

3.1 DEVELOPMENT OF THE PROPOSED ACTION

As discussed in Section 2.3, MNAA has identified specific needs of the Airport to implement elements of the BNA Vision. MNAA has developed the Proposed Action to address these needs. Needs specifically identified and evaluated to develop the Proposed Action include:

- Parking and transportation at Garage B/C
- Terminal expansion and improvements
- Concourse expansion, improvements, and location of permanent IAB
- Terminal apron and RON capacity
- Multi-modal station
- Landside hotel
- MNAA and Airport administrative office space
- Support and mitigation areas

MNAA considered multiple alternatives to address the above-listed needs and accomplish necessary development of facilities to meet the Proposed Action's *Purpose and Need*. In addition, MNAA has taken specific sustainability site strategies into consideration during the design of each project including: protection of sensitive land; high priority site/brownfield remediation; site assessment; protection and/or restoration of habitat; open space; rainwater management; heat island management; and, light pollution reduction.

3.2 SCREENING OF ALTERNATIVES

Alternatives identified during the development of the Proposed Action were generally evaluated based on four principal screening criteria:

- Level of passenger service provided
- Cost feasibility
- Impacts of construction on airport operations
- Ability to meet development objectives

3.3 SELECTION PROCESS FOR COMPONENTS OF THE PROPOSED ACTION

3.3.1 Parking and Transportation at Garage B/C

The existing short-term parking garage has 2,369 parking positions. Once current construction is completed, Garage A will have 2,160 parking positions available as well as a GTC located on

the lowest level of the garage. Due to current parking demand and increased demand over time, the BNA Vision team evaluated additional parking options and proposes to address the projected shortfall by constructing a larger parking facility in the location of the existing Short-term parking garage. The structural nature of the existing Short-term parking garage is not conducive to expanding upward; further, height clearances within the garage restrict access for high-profile vehicles. Therefore, MNAA proposes to demolish the Short-term parking garage and rebuild Garage B/C with increased structural engineering strength in its place (Figure 3.3-1).



Figure 3.3-1: Proposed Parking Garage B/C

Planning level elements considered as a part of Garage B/C include:

- General Vehicle Parking number of spaces yet to be finalized but it is anticipated to accommodate more than 4,000 additional spaces over a six-story structure.
- Ground Transportation Center growth this garage would include space at the lowest level to grow and/or reallocate modes to enhance the NAE.
- Hotel Garage B/C will also include up to 300 spaces to serve as hotel-specific space valeted from the hotel curbside. Space will also need to be allocated for temporary parking access for deliveries and other short-term / curbside services.
- Administrative Offices this includes up to 250-300 dedicated parking spaces for staff. Space will also need to be allocated for temporary parking access for deliveries and other short-term / curbside services.
- LRT Station a rail station possibility is being preserved at the plaza level (Garage B/C 5th level).
- Plaza deck this area acts as the intervening space between the hotel and administration building to be built on top of Garage B/C. Space will be provided to accommodate a future light rail station and train parking. A walking bridge will be constructed from the plaza to the terminal.
The BNA Vision team evaluated if this garage should be interconnected with Garage A or be separated by an open-air walk space. MNAA is proposing to connect the garages, as connecting them and allowing for maximized parking flexibility would better meet the customer demand. To achieve this and to accommodate all the elements being considered for the garage, the existing Garage B/C (Short-term parking garage) would be demolished and rebuilt to align at each level of Garage A. To maximize the overall parking count, Garage B/C would be larger than the existing garage. Additional 60'-0" column bays will be added to the east creating a larger floor plate.

The plan for Garage B/C includes the ability to reallocate GTC modes (e.g., limousine and resort shuttle buses) to the lowest level of Garage B/C. This level would also include vehicular access to both the proposed hotel and administration building as well as pedestrian access to the terminal building. Levels 2 to 4 would provide parking. Level 5 would include parking as well as the Plaza level (hotel lobby / administration building first floor / potential rail station and terminal access via a bridge). The sixth level would include additional parking on the eastern half of the garage only.

Landside access roads would be added or reconfigured to support access to and from new and modified facilities. An existing access road, which currently exists to enter the CONRAC facility, long-term A parking, and the short term parking garage, would be reconfigured. A new exit lane would be constructed to serve the CONRAC facility. This exit would ultimately flow north from the CONRAC facility to the Terminal Drive ring road. A new entrance road would be constructed from Terminal Drive, flowing south to allow access to Garages A, B, and C as well as the hotel and administrative offices. Exiting traffic from these facilities would flow to a common set of toll booths and then north to exit to Donelson Pike or to the Terminal Drive ring road. Entrances to the hotel and administrative offices may also be positioned off Terminal Drive across from the terminal building. Various interim conditions would exist during construction of the new facilities. The loop road access to Terminal Drive for transportation network companies is the only location that provides a direct connection to Terminal Drive. Otherwise, network vehicles would have to completely circle the Terminal Drive ring road to regain access to the new entrance road. This would hinder expeditious customer pick up service as well as cause unnecessary congestion and air emissions around the terminal complex.

Numerous similar alternatives were evaluated to identify the best solution for traffic flow. Each alternative had minor adjustments to see if noticeable improvements could be refined. Based on modeling results and traffic safety, the concept described above is the viable alternative. The final state of traffic flow will not be determined until TDOT's design of the Donelson Pike realignment project is known.

3.3.2 Terminal expansion and improvements

To enhance passenger experience, MNAA evaluated terminal expansion and improvements that would create an open central space with natural light and airfield views - preferable in delivering NAE. To achieve this, the current administrative mezzanine and central ticketing counters and offices would be removed to create an open central environment. With an open central space, existing ticketing would move into new landside wings added on the north and

south ends of the terminal. This design concept aligns with creating an open central hall as well as accommodating an expanded SSCP on the ticketing/departures level of the airport (refer to Figure 3.3-2).



Figure 3.3-2: Terminal Expansion Concept (Level 3)

MNAA is also proposing to move baggage claim, which is on Level 2, to the new landside wings (refer to Figure 3.3-3). Currently, there are eight baggage claim carousels on the Arrivals level of the airport. Construction of the new landside wings allows for baggage claim expansion on this level. Based on the *Nashville International Airport Facilities Requirements Simulation Study Report* (TransSolutions, 2017), ten baggage claim devices (slope-plate carousel) will be required by 2026 and 11 by 2041 to accommodate domestic passenger baggage claim requirements if major airlines (e.g., Southwest, American, Delta, etc.) are permitted exclusive use of baggage claim devices. Flat-plate carousels would require 18 additional devises by 2026 and 2041. If airlines are not given exclusive use of baggage carousels, fewer would be required. However, since Southwest, American, and Delta account for approximately 85% of arriving passengers, these airlines have been allocated exclusive use of baggage carousels. Refer to Figure 3.3-3 for layout of proposed baggage claim areas (TransSolutions, 2017).

As discussed below, MNAA also evaluated various concourse expansions to accommodate international arrivals, including creating a new Concourse T by expanding the Terminal building to the west (refer to Figure 3.3-4).



Figure 3.3-3: Terminal Expansion Concept (Level2)

3.3.3 Concourse expansion, improvements, and location of permanent IAB

As part of the iterative planning process, various options for concourse expansion and development of a permanent IAB were developed and evaluated to best fulfill the Proposed Action's purpose and need. Based on the MPU, 47 gates will be needed by 2031; currently there are 44 available gates. Each option included the required expansion to meet the needs for additional gates for both narrow- and wide-bodied aircraft and the housing of the IAB.

These options included:

- Option 1. IAB to remain on Concourse A.
- Option 2: IAB to be built on Concourse D.

- Option 3: IAB to be built between Concourses B and C, centered on the terminal building (referenced as Concourse T in this report⁵).
- Option 4: IAB to be built on a Satellite Concourse with an underground passenger walkway link to Concourse C.



Figure 3.3-4: Initial Concepts for Permanent IAB

Figure 3.3-4 depicts initial IAB location designs. Each option was evaluated based on a set of criteria and performance metrics. Only two options were deemed viable with a clear recommended approach (Options 1 and 3). Based on the principal screening criteria, Option 3 (IAB at Concourse T) offers the best solution to fulfill the needs of the Airport. Specific screening criteria included:

- Level of service (passenger NAE)
 - Image (welcome experience)
 - Travel distance (gate to IAB)
 - Vertical transitions (level changes)

⁵ For the purposes of this EA, the new proposed concourse is identified as Concourse T; however, this naming convention may be changed in the future.

- Passenger flow (understandable)
- Relative cost
 - Capital cost (IAB net)
 - Alternative funding opportunities
- Construction Impacts
 - Phasing / constructability (landside vs airside)
 - Schedule (IAB delivery)
 - Operational impact (gate / aircraft movement)
- MNAA IAB development objectives
 - Wide body aircraft
 - Narrow body aircraft
 - Domestic airline connectivity (fewer split operations)
 - o Airfield / ramp operational efficiency
 - CBP throughput (minimum of 800/hour)

The screening matrix for the IAB is included in Appendix C and Option 3 scored the highest. MNAA is proposing to implement Option 3. An additional benefit to this option is that the gating proximity is closer to multiple airlines to encourage international travel while minimizing splitting operations. Option 3 also carries forward the open centralized concept.

Placing the IAB between Concourses B and C creates a new gating opportunity (Concourse T); however, this would also impact existing gates and existing taxi lane locations. To provide six gates attached to a new central IAB on Concourse T, three gates would be displaced on Concourse B and three gates on Concourse C. Option 3 provides a net zero gate increase / decrease to BNA's overall gate count since the new Concourse T would accommodate six gates.

MNAA would renovate Concourse B in conjunction with the construction of Concourse T, since three gates (B1, B2, and B4) would be removed to accommodate Concourse T. Concourse C would also require minor modifications to internal functions due to the construction of Concourse T. MNAA would renovate Concourse C as part of the removal of gates C2, C3, and C5 during construction of Concourse T.

3.3.4 Terminal Apron and RON Capacity

To accommodate increased aircraft size and additional facilities, the current taxi lane must be moved (to the west), which would require partially filling of a large depression located immediately west of the terminal, commonly referred to as Merten's Hole⁶. While only a third of

⁶ Merten's Hole is pit/valley directly west of the terminal that was not previously filled. Merten's Hole has been used for clean snow storage and melting in the past during infrequent significant winter events.



Figure 3.3-5: Merten's Hole

Merten's Hole is required to be filled to accommodate safe aircraft movement around the new IAB (Concourse T), the airport is proposing to completely fill it to increase RON aircraft parking positions and add additional drainage to support de-icing capacity. The depression will be filled using approximately 580,000 cubic yards (cy) of material imported to the site. Identified potential sources of the fill include excavated material from Areas B, D, E, and F (as shown in Figure 3.3.7). As shown in Figure 3.3-5, existing tributaries, two wetlands and two springs at the bottom of Merten's Hole would require encapsulation and appropriate mitigation. Once it is filled, the surface would be used during construction as a lay-down yard/support area.

3.3.5 Multimodal Station

A light rail station component is part of the overall BNA Vision plan. Although still in the preliminary design phase, the new Garage B/C will be designed to accommodate access for light rail in the future. In planning for the future light rail, MNAA believes the terminal station should be centralized for convenient customer access to the terminal building and landside amenities.

3.3.6 Landside Hotel

Preliminary design of the hotel is in progress but various design options would generally be expected to have a similar environmental footprint/ effect as evaluated by the NEPA process.

Previous master planning efforts identified various locations for a potential hotel; these options included being directly attached to the terminal building in the Concourse A and D locations. Sites adjacent to the terminal were also evaluated. The BNA Vision required reevaluation of potential hotel locations due to competing interests including expansion needs



Figure 3.3-6: Landside Hotel and Administrative Offices Concept

for both ticketing and baggage claim and additional gate expansion at the north and south ends of the terminal building. The initial placement oriented the hotel tower in a north/south configuration within the front half of the rebuilt Short-term garage (i.e., Garage B/C). Continued BNA Vision planning re-oriented the hotel in an east/west configuration for two primary reasons: 1) solar studies confirmed that an east/west configuration takes better advantage of sun angles throughout the year, and 2) this configuration allows the planned multimodal rail station to be located closer to the terminal building resulting in a better transit passenger experience (due to shorter walks). The recently completed *Hotel Market and Feasibility Study* (JLL, 2017) further determined that a full-service hotel with a room count between 275 and 300 rooms connected to the terminal would have the most beneficial impact on enhancing the passenger experience and would augment the overall positioning of the airport to serve the region. Refer to Figure 3.3-6 for proposed hotel location.

3.3.7 MNAA and Airport Administrative Office Space

The current administrative mezzanine within the terminal would need to be removed to create a higher ceiling and an open central space to support the expanded passenger security screening process. Relocating administrative offices from the mezzanine is also supported by the fact that the airport administrative needs do not currently fit on the mezzanine and that the existing space would not support staff growth over time. Having MNAA staff in one location creates efficiency in interdepartmental coordination and collaboration.

During the programming and conceptual design stage, the design team explored various alternatives to where the administrative office could be located. These options included:

- 1. Maintaining the administrative offices within the terminal building but consolidating this function over a newly renovated Concourse A.
- 2. Placing the administrative offices within a separate building housed in the newly built garage (Garage B/C) immediately adjacent to the terminal building (refer to Figure 3.3-6)
- 3. Placing the administrative offices within a separate building on airport property but not adjacent to the terminal building.

Placing administrative offices in a new building housed in the newly built garage immediately adjacent to the terminal building proved to be the most cost effective and would allow administrative staff immediate access to the terminal building. Other synergies for this location include adjacent parking for personnel and convenient access to any potential future light rail connection.

This concept also balances out the high rise of a hotel with a multiple level office complex which will be designed to allow for future growth. Refer to Figure 3.3-6 for relative location of hotel and administrative offices.

3.3.8 Support and Mitigation Areas

As part of BNA Vision implementation, MNAA has designated several properties within the current BNA boundary to be utilized as possible support areas during construction as well as potential mitigation areas to support Metro's LID requirements. These properties are identified on Figure 3.3-7.

Borrow Sources

Areas B, D, E, and F may be utilized as borrow sources for fill for Merten's Hole. With the exception of Area E, these sites have been used as fill sites in the past (i.e., locations where excess soils and related materials from construction projects have been deposited for either short- or long-term



Figure 3.3-7: Potential Support Areas and Stream Mitigation Sites

management and storage) and contain previously placed material. Where appropriate, these areas may be used as fill sources to support proposed project development. Area E consists predominantly of native soil and rock. In addition to previously placed fill within these areas, rock may be removed to be utilized for site-development activities. Blasting may be required in some areas. Fill would be transported to project sites at the airport using standard and approved trucking methods. Haul routes from borrow sources would include existing on-airport private roads as well as commercially used roadways (i.e., major arterials currently used as local

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trucking routes) in the vicinity of the Airport; local neighborhood roads within residential developments would not be used as haul routes.

Staging Areas

Support areas may be utilized for staging equipment and supplies during construction activities. Staging areas would not be located in wetlands, within stream buffer areas, or floodplain areas.

Low Impact Development and Mitigation

MNAA is proposing to utilize Area C as an LID mitigation site to comply with Metro's storm water regulations. MNAA initially reviewed six potential LID sites prior to choosing Area C for LID mitigation. The six sites reviewed for LID mitigation are identified on Figure 3.3-8 and summarized in Table 3.3-1. Area C (McCrory Creek at Elm Hill Pike) was determined to be the best site for LID mitigation as it offered the most benefits and no significant drawbacks: further, since this site is already identified as open space on the Airport Layout Plan (ALP) (refer to Table 3.3-1), use as LID mitigation is consistent with long-term planning. Figure 3.3-9 illustrates the proposed implementation of LID requirements proposed for Area C. These improvements may include:

- Removal of impervious surfaces
- Removal of unnatural drainage conduits
- Preservation of open space meadows
- Development of rain gardens
- Planting swales with native plant materials
- Restoration of streambanks
- Removal of invasive species and plant natives



Figure 3.3-8: Potential LID Mitigation Sites

MNAA has also identified potential stream mitigation sites along Sims Branch and an unnamed tributary to Mill Creek; these stream segments are also identified in Figure 3.3-7. Although no specific projects have been identified in Area A, this support area could be utilized for future mitigation purposes.



Figure 3.3-9: Preliminary LID Development Design in Area C

Potential LID Site	Benefits	Drawbacks
McCrory Creek at Elm Hill Pike (Area C)	 Previously developed residential neighborhood Easy access Terrain allows attenuation for drainage to creek Length of stream – maximum benefit Ability to remove obsolete impervious surfaces and unnatural drainage conduits Compliment and add value to future commercial/light industrial development ALP designates open space Compliment surrounding residential neighborhood Multiple opportunities for LID mitigation measures Maintains protection for noise contour Metro Government identified area in need of improvement for stream restoration/flood plain improvement 	Future development area
McCrory Creek at Eastside in General	 Currently undeveloped Headwaters initiate on east side Ease of access 	 Industrial fill site activity ongoing Significant future development planned Would disturb natural conditions, don't need to restore native conditions – minimal LID value Terrain varies by 100 feet +/- Disturb native flora and fauna

Table 3.3-1: Evaluation Factors for Potential LID Sites

Potential LID Site	Benefits	Drawbacks
McCrory Creek at General Aviation Area	 Area is highly impacted by airport development Headwaters initiate to McCrory Creek 	 Developed aviation area Headwater of McCrory Creek Shallow bedrock limits options for mitigation alternatives Prone to sink holes Steep and land locked stream banks due to development Area also used as spill retention area (two spill gates)
Unnamed Tributary South of 2C	 Currently undeveloped Ease of access Located in Mill Creek watershed, same watershed as Vision projects. Tributaries to Mill Creek – improve runoff – Mill Creek home to Federally-endangered Nashville Crayfish. 	 Already slated for stream mitigation Proximity to runway – difficult location to maintain to add additional LID measures
Unnamed Tributary northwest of Embraer	 Located in Mill Creek watershed, same watershed as Vision Projects. Tributary to Mill Creek Plenty of stream length Ease of access Clearing could improve safety and security 	 Shallow bedrock Sinking stream disappears into bedrock and reappears further downstream Future commercial development area Undisturbed area – native conditions

Potential LID Site	Benefits	Drawbacks
Unnamed Tributary at VOR Area	 Could improve existing wetland in area Headwaters of unnamed tributary to Sims Branch Captures runoff from airfield and west side ramp areas Located within Mill Creek Watershed, same watershed as Vision Projects. 	 Steep terrain due to surrounding development Used as spill retention area Future development area due to proximity to airfield

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3.4 DESCRIPTION OF THE PROPOSED ACTION

Based on the selection process presented in Section 3.3, MNAA has developed the Proposed Action, which includes expanding the existing terminal building and the development of Concourse T, which would house the permanent IAB. The proposed action also includes modifications and/or expansions of other concourses, ticketing lobby, and baggage services; a multi-modal station; a new landside hotel; additional parking and transportation improvements; and use of support areas. Refer to Figure 3.4-1 for the general footprint of the Proposed Action elements. Potential support areas (Areas) are identified in Figure 3.3-7.

Table 3.4-1 details the elements of the Proposed Action across the terminal and ancillary facilities. The layout of the proposed facilities is provided in the *Proposed Space Utilization Plan* in Appendix D.

Area C will likely be used as a mitigation area to offset areas where LID requirements cannot be fully met.



Figure 3.4-1: Footprint of Proposed Action Projects

The BNA Vision will be constructed in a previously developed area with limited space. Meeting regulations for LID are anticipated to be a challenge. Area C is approximately 80 acres and is adjacent to an existing stream (McCrory Creek). A preliminary LID design is included as Figure 3.3-9.

Proposed Action Element	Description
Parking and Transportation at Garage B/C	 Demolish three-story short-term parking garage. Debris material will be crushed, sorted, and stockpiled. Metallic debris and concrete will be recycled and reused, respectively. Anything that cannot be recycled or reused will be disposed in an appropriate and permitted facility. Construct six-story Garage B/C at the same location. Construct new GTC on the bottom level (Level 1) of the new Garage B/C. Levels 2 to 4 would provide parking, while Level 5 would include parking as well as the Plaza level (hotel lobby / administration building first floor / potential rail station and terminal access via a bridge). Level 6 would include additional parking on the eastern half of the garage only. Hotel and administrative offices would be located atop the west side of Garage B/C. Perform roadway and other infrastructure improvements required to connect new parking facilities and the GTC to the existing Airport roadway system.
Terminal Expansion and Improvements/ Concourse T	 Demolish central ticketing, concessions, and necessary support spaces to create open central concept to allow for passenger security screening expansion. Expand footprint of terminal (increase size from 388,143 sf to 503,565 sf) into new landside wings added to the north and south ends to accommodate relocated ticketing lobby and baggage claim. Expand terminal to the west to construct Concourse T, which would house the new IAB and allow for additional functions such as retail, concessions, and customs/immigration. Construct six gates on Concourse T to replace three gates displaced from Concourse B and three gates displaced from Concourse C. Expand fuel hydrant system to accommodate servicing new gates.
Fill Merten's Hole to Expand Terminal Apron and RON Capacity	 Allow for aircraft movement to/from Concourse T and provide space for additional RON aircraft parking and for additional deicing positions by filling and paving the 580,000 cy Merten's Hole in the apron between Concourses B and C.
Concourse A Modifications	 Demolish interim IAB; IAB infrastructure would be removed and relocated to Concourse T. Increase size from 105,520 sf to 150,000 sf by extending Concourse A to the north. Extend Concourse A northward to provide newly aligned gate capacity with passenger boarding bridges. Overall gate capacity for eight narrow-bodies planes would remain the same. Refresh aesthetics and concessions to compliment other terminal improvements and improve passenger amenities.

Table 3.4-1: Elements of the Proposed Action

Proposed Action Element	Description
	 Expand fuel hydrant system to accommodate servicing new gates
Concourse B Modifications	 Increase size from 85,777 sf to 108,254 sf by widening concourse to increase efficiency and accommodate up-gaged aircraft. Reduce number of gates from 13 gates to 10 due to the creation of Concourse T. Refresh aesthetics and concessions to compliment other terminal improvements and improve passenger amenities.
Concourse C Modifications	 Reduce number of gates from 24 gates to 21 due to the creation of Concourse T. Refresh aesthetics and concessions to compliment other terminal improvements and improve passenger amenities.
Concourse D Modifications	 Increase size from 49,129 sf to 110,321 sf to add additional functions such as concessions and hold-rooms. Reactivate and expand Concourse D. This project would plan for an elevated departures level with supporting ramp space sized to facilitate six additional gates with passenger boarding bridges to accommodate projected increases in needs for airline operational expansions. Expand fuel hydrant system to accommodate servicing new gates. Construct a CUP at the end of Concourse D, which would allow the consolidation of heating, cooling, and related utility units at the Airport.
Multi-modal Connector Station	 Construct the framework (e.g., canopy and platform) for a multi- modal station on the top level of Garage B/C to accommodate future light rail transit.
Landside Hotel	 Construct a 200- to 300-room hotel on top of new Garage B/C to meet existing and projected demand at BNA. Hotel would be additional 10-11 stories with four garage levels below.
MNAA and Airport Administrative Office Space	 Demolish mezzanine level office space in terminal to create open centralized space with through views. Provide additional 50,000 sf office space in new Garage B/C for administrative functions to accommodate displaced staff due to terminal improvements. Administrative offices to be located atop west side of Level 5 (Plaza Level) of Garage B/C and will include 2 additional floors (Levels 6 and 7).

Proposed Action Element	Description
Support Area Designation and Use	 Utilize support areas to implement BNA Vision projects. To support Proposed Action implementation, additional airport-owned property may be accessed and used for construction staging, equipment storage, and temporary construction trailers/offices. In addition, support areas will also be evaluated for potential mitigation projects if required during permitting of proposed projects. Potentially utilize Areas B, D, E, and F as borrow sources for fill for Merten's Hole. Sourcing the fill material from these areas would require use of construction equipment, transport from the borrow site to Merten's Hole, temporary stockpiling of fill material, and potentially short-term intermittent blasting, depending on geotechnical considerations. Utilize Area C for LID mitigation as illustrated in Figure 3.3-8.

3.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, no improvements or changes to the existing terminal building, concourses, parking, or other ancillary facilities at BNA would occur. Therefore, implementation of the No Action Alternative would not expand facilities, update airport design or systems, enhance efficiency, improve accessibility, or improve passenger and aircraft movement. As such, the No Action Alternative would not meet the *Purpose and Need* for the Proposed Action.

As described in Section 2, by 2035 the population of the Greater Nashville Area is expected to surpass 2.5 million people and corresponding passenger traffic through BNA is projected to grow from approximately 12 million passengers per year today to 20 million passengers per year, a 67 % increase. The current configuration of the terminal and concourses would remain as they are today and continue to restrict aircraft and passenger movement. With increased passenger loading, inefficiencies will occur, crowding and congestion will increase and accessibility will decline. Finally, continually increasing maintenance and operational costs (e.g., utilities, cleaning, heat and cooling, and general maintenance) would continue.

Although the No Action Alternative would not meet the *Purpose and Need* for the Proposed Action, this alternative was retained for detailed analysis in this EA. The EA does so for environmental baseline comparative purposes, to fulfill CEQ regulations (40 CFR Part 1502) implementing NEPA, and to comply with FAA Orders 1050.1F and 5050.4B.

3.6 ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD

As detailed in Section 3.3, several variations of Proposed Action elements were evaluated to develop the Proposed Action as described in Table 3.4-1. Design alternatives that were evaluated but not carried forward as part of the Proposed Action included:

- Placing the permanent IAB at Concourse A, Concourse D, or a Satellite Concourse. The Concourse D and Satellite options were deemed infeasible as they did not meet the required screening criteria. The decision to locate the IAB at Concourse T instead of Concourse A was based on proximity to other international airlines and keeping the focus of BNA Vision improvements to the center of the terminal.
- Maintaining the existing Short-term garage and connecting with Garage A via an openair walkway. This option was deemed inadequate to fulfill the purpose and need of the Proposed Action, as the structural nature of the Short-term parking garage is not conducive to upward expansion, which is needed for projected capacity, structural integrity (to support upward expansion), and interior vehicle clearance).
- Constructing hotel tower in a north/south configuration within the front half of the rebuilt Short-term garage (i.e., Garage B/C). An east/west configuration proved to be a better design due sun angles throughout the year and provided shorter walking distances to the terminal.
- Constructing administrative offices within the Concourse A expansion or constructing new administrative office elsewhere on Airport property. These options were not selected, as they would be more expensive than locating administrative offices within the newly built Garage B/C. Additionally, an off-site location would not allow administrative staff immediate access to the terminal building.

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SECTION 4 ENVIRONMENTAL CONSEQUENCES AND MITIGATION

4.1 SECTION OVERVIEW

Section 4 presents a summary of existing environmental conditions for environmental and socioeconomic resources at BNA and in surrounding areas, relevant to each resource area and the area of potential effect (APE). The section then presents an evaluation of anticipated environmental effects associated with the Proposed Action and the No Action alternatives, as described in Section 3. Impacts to resource areas are evaluated in accordance with FAA Orders 1050.1F and 5050.4B. In accordance with FAA guidelines, this section describes environmental resources that the Proposed Action and reasonable alternatives are likely to affect. The amount of information on a potentially affected resource is based on the magnitude of the expected impact and is commensurate with the resource's importance. Order 5050.4B focuses on airport and ground based projects, not the airspace. This is consistent with the scope of the BNA Vision.

Resource areas addressed in this section include:

- Air quality
- Biological resources (including fish, wildlife, and plants)
- Federally listed endangered and threatened species
- Climate
- Coastal resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous materials, solid waste, and pollution prevention
- Historical, architectural, archaeological, and cultural resources
- Land use
- Natural resources and energy supply
- Noise and compatible land use
- Socioeconomics, environmental justice, and children's environmental health and safety risks
- Visual effects (including light emissions)
- Water resources (including wetlands, floodplains, surface waters, and wild and scenic rivers).

In addition to the aforementioned Federal guidance, this chapter also includes governing practices set forth by state and local government agencies including the Tennessee Department of Environment & Conservation (TDEC), the Tennessee Wildlife Resources Agency (TWRA), and the Metropolitan Planning Department of Nashville and Davidson County (Planning Department). TDEC is the lead regulatory agency in the State that oversees environmental management and stewardship; TWRA specifically oversees fish and wildlife resources. The Planning Department's responsibilities include working with local communities to create appropriate land use policies and transportation priorities in community plans, making recommendations to the Planning Commission on zoning decisions, and providing design services and citywide transportation planning in an effort to implement sustainable development and complete streets.

4.2 STUDY AREA

As discussed in Section 1.2.2, the Airport is located approximately 6 miles southeast of downtown Nashville (see Figure 4.2-1). For the purposes of describing the affected environment and environmental consequences for resource areas evaluated in this EA, the following geographic areas are defined:

- The Airport, which includes the approximate 4,500-acre site owned by MNAA. Proposed projects and support areas are within the Airport property.
- Davidson County, which includes Nashville (County Seat) and smaller communities within Davidson County. Nashville and Davidson County have a combined government known as the "Metropolitan Government of Nashville and Davidson County," or "Metro Nashville".
- Nashville-Davidson-Murfreesboro-Franklin MSA or the *Greater Nashville Area*, which includes Davidson and surrounding counties: Cannon, Cheatham, Dickson, Hickman, Macon, Maury, Robertson, Rutherford, Smith, Sumner, Trousdale, Williamson, and Wilson.



Figure 4.2-1: Greater Nashville Area

The study areas encompass areas that fulfill the requirements of NEPA and the environmental impact categories described in FAA Orders 1050.1F and 5050.4B.

4.3 IMPACT ASSESSMENT

For each resource area, this section evaluates effects of both the No Action and the Proposed Action alternatives. Effects⁷ include ecological (e.g., effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance an agency believes that the effect will be beneficial (40 CFR § 1508.8).

For each resource area, this section addresses impacts resulting from both construction and the operation of projects included in the Proposed Action. This section also addresses direct, indirect, and cumulative impacts, as defined below.

- Direct impacts are impacts that are caused by the action and occur at the same time and place (40 CFR § 1508.8[a]);
- Indirect impacts are impacts caused by the action but manifest later in time or farther removed in distance, but that are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8[b]); and
- Cumulative impacts are impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, whether Federal or non-Federal. If the proposed action would cause significant incremental additions to cumulative impacts, an EIS is required (40 CFR §§ 1508.7, 1508.8, 1508.25, and 1508.27[b][7], CEQ Regulations, and CEQ Guidance on *Considering Cumulative Effects Under the National Environmental Policy Act* [January 1997]).

For a cumulative impact to occur, the action must affect a given resource and must have the potential to interact with other actions with regard to that resource, either directly or collectively. Additionally, cumulative impacts must be assessed at the geographic scale at which the project may impact given resources and the scope of the cumulative impacts analysis may vary among resources.

4.4 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

To adequately assess potential cumulative effects, MNAA has identified past, present, and reasonably foreseeable actions at BNA and adjacent properties that have the potential to result in cumulative effects on resources identified in this EA.

Given the location of the Airport and the ongoing and projected growth in greater Nashville area, evaluation of cumulative impacts is best approached by assessing the Proposed Action in the context of groupings of foreseeable projects (as opposed to identifying single projects). To facilitate this approach, three principal cumulative project groupings have been identified based on proximity to the Airport, type of project, and impact to / from Airport operations:

⁷ Effects and impacts as used in 40 CFR § 1508.8 are synonymous.

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- On-Airport Projects
- Off-Airport Commercial / Urban Development
- Local Transportation Projects.

A discussion of cumulative impacts is presented in each of the environmental resource impact assessments (Section 4.5, *Air Quality* through Section 4.19, *Water Resources*).

On-Airport Projects

Recent and current projects considered in the cumulative effects analysis in this EA include:

- Construction of the Geothermal and Non-Potable Water Use Project, completed in 2016 (Lancaster, 2013);
- Construction of Garage A, currently ongoing; and
- Construction of the interim IAB, currently ongoing.

Reasonably foreseeable future actions considered in the cumulative effects analysis in this EA include projects depicted in the Future ALP, which includes proposed improvements to the Airport throughout the 20-year planning period. The plan presents several projects, including: proposed Airport pavements, including a 3,297-foot extension to Runway 2L with associated parallel taxiways; an extension of Taxiway K to the Runway 13 departure end, runway and taxiway safety areas and dimensions; and future support and ancillary facilities.

Off-Airport Commercial / Urban Development

Based on review of recent NPDES Construction General Permits issued by TDEC, additional development in areas surrounding the Airport includes construction of additional commercial and industrial buildings south and east of the Airport as well as construction of new commercial developments north of the Airport. Continued development in the vicinity of the Airport is consistent with current and projected growth in the region.

Local Transportation Projects

In addition to improvements at the Airport and ongoing urban and suburban development in the area, TDOT is considering the partial realignment of Donelson Pike (State Route [SR]-255) from taxiway bridges over existing Donelson Pike to Interstate [I]-40 in its long-term planning. Specific designs for its reconfiguration have not yet been finalized, although conceptual designs indicate a preference to realign Donelson Pike farther east from the BNA terminal. Although the timing of the realignment has not yet been determined, it is an important cumulative project to identify in the context of the BNA Vision since additional on-airport road realignments might be required in the future as a result of the Donelson Pike realignment depending on its final design. A preliminary concept of potential future road realignments is provided in Figure 4.4-1. As these plans are preliminary and not interdependent on the current proposed actions associated with the BNA Vision, the Donelson Pike realignment would be evaluated in a separate NEPA assessment undertaken by TDOT, that project's proponent.



Figure 4.4-1: Potential Future On-Airport and Donelson Pike Realignments

Additionally, the MTA/RTA have engaged in a region-wide public discussion of the best strategies to improve regional mobility as the area continues to grow. LRT is being considered in four corridors where transit demand is expected to be the highest and where there is the greatest potential for new development – one of these corridors includes service to the Airport. Metro Nashville is in the process of developing a financing plan and public support for the project.

4.5 AIR QUALITY

4.5.1 Affected Environment

4.5.1.1 Regulatory Context

Air pollution refers to the impact of a chemical substance that harms the quality of the air within the studied area. Air quality describes the amount of air pollution, with good air quality representing concentrations of air pollutants that "attain" the current goal for air quality. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing productivity or vigor of crops or natural vegetation, or reducing human or animal health.

As discussed in Section 1.5.3, the CAA requires the USEPA to set NAAQS for pollutants considered harmful to public health and the environment. The NAAQS include two types of air quality standards: primary standards, established to protect public health; and, secondary standards, established to protect public welfare and the environment.

The ambient air quality in an area is characterized with respect to compliance with the primary and secondary NAAQS. If the air quality in an area meets or is better than the NAAQS, then the area is considered to be in "attainment". If the air quality does not meet the NAAQS, then it is considered to be in "nonattainment". Once a nonattainment area meets the standards and additional re-designation requirements in the CAA [Section 107(d)(3)(E)], the USEPA will designate the area as a "maintenance area."

BNA is located in Davidson County, Tennessee, which is currently designated as "attainment" for all NAAQS (refer to Table 4.5-1).

Pollutant	Designation ^a
Carbon monoxide (CO)	Attainment
Lead (Pb)	Attainment
Nitrogen dioxide (NO ₂)	Attainment
Ozone (O ₃) 8-hour ^b	Attainment
Particulate matter (PM ₁₀)	Attainment
Particulate matter (PM _{2.5)}	Attainment
Sulfur Dioxide (SO ₂)	Attainment

Table 4.5-1 Attainment Designations for Davidson County, Tennessee

a http://www.epa.gov/green-book

^b Davidson County was nonattainment for the 1-hour ozone standard in 1995 but was redesignated as attainment and under a maintenance plan in October 1996.

The Nashville Area was historically designated as nonattainment area for the 1979 1-hour ozone NAAQS. The USEPA approved TDEC's request to redesignate the Nashville Area to attainment for 1-hour ozone standard and a maintenance plan for the area became effective on October 30, 1996. In 2004, the USEPA designated and classified areas for the 1997 8-hour ozone standard, ultimately revoking the 1-hour ozone NAAQS. However, based on its history of nonattainment, the Nashville Area is subject to an air quality maintenance plan under Section 110(a) of the CAA until 2018 (76 Fed. Reg. 5078) (USEPA, 2011). Under the transitional rules established by USEPA 40 CFR 51.905(e), upon revocation of the 1-hour NAAQS, conformity determinations pursuant to section 176(c) of the CAA are no longer required for the 1-hour NAAQS. Therefore, the Nashville Area is not subject to the General Conformity rules and a conformity determination is not required.

The Metro Public Health Department of Nashville/Davidson County (Metro Public Health) has established and maintains a permanent network of air quality monitoring stations across Davidson County to monitor and record the concentrations of criteria pollutants in the ambient air to determine compliance with the NAAQS. The most recent data available for the monitors closest to BNA, as obtained from the USEPA's AirData website, are summarized in Table 4.5-2. The applicable NAAQS for each monitored pollutant as well as the general distance and direction from BNA are also presented. As noted by the information presented in this table, there are no recent violations of the NAAQS.

Monitor Address Closest to BNA (Est. Distance and Direction from BNA)	Pollutant	Averaging Period	NAAQS	2014	2015	2016	Exceeds NAAQS?
1113 Elm Hill Pike,	CO	8-hr maximum	9 ppm	1.3	1.6	1.6	No
Nashville (3.6 mi, NW)		1-hr maximum	35 ppm	1.4	1.8	1.8	No
1526 New York Avenue, Knoxville (174 miles, E)	Pb	Rolling 3-month average	0.15 µg/m³	0.09	b	0.13	No
1113 Elm Hill Pike,NO2Nashville (3.6 mi, NW)		98 th percentile 1-hr maximum averaged over 3 years	100 ppb	51	55	54	No
		Annual mean	53 ppb	14.63°	15.32	16.1	No
3711 Bell Road, Nashville (3 mi, NE)	O ₃	8-hr, 4 th maximum, averaged over 3 years	0.070 ppm	0.071	0.064	0.068	No
Lester & Hart Sts, Nashville (6.6 mi, NW)	PM ₁₀	24-hr, not to be exceeded more than once per year on average over 3 years	150 µg/m³	34	66	56	No
105 South 17 th Street @Lockeland School, Nashville	PM _{2.5}	Annual mean averaged ver 3 years (primary standard)	12.0 µg/m³	10.5	9.6	8.9	No
(4.9 mi, NW)		Annual mean averaged over 3 years (secondary standard)	15.0 μg/m³	10.5	9.6	8.9	No
		24-hr, 98 th percentile averaged over 3 years	35.0 µg/m³	22	20	18	No

Table 4.5-2: Summary of Recent Air Monitoring Data near BNA

Monitor Address Closest to BNA (Est. Distance and Direction from BNA)	Pollutant	Averaging Period	NAAQS	2014	2015	2016	Exceeds NAAQS?
1015 Trinity Lane, Nashville (6.5 mi, NW)	SO ₂	1-hr, 99 th percentile daily maximums averaged over 3 years (primary standard)	75 ppb	13	7	2	No
		3 hr, not to be exceeded more than once per year (secondary standard)	500 ppb ^d	117	12	5	No

^a Information obtained from Monitor Values Reports found at: <u>https://www.epa.gov/outdoor-air-quality-data/monitor-values-report</u>

^b Rolling 3-month average not available.
 ^c Mean does not satisfy minimum data completeness criteria.

^d Standard presented as 0.500 ppm; values for 2014-2016 represent 1-hr maxima; 3-hr data not presented in USEPA Monitor Values Report.

4.5.2 Environmental Consequences

4.5.2.1 Methodology

NEPA requires Federal agencies to consider the environmental effects of proposed actions and their reasonable alternatives. Since the Proposed Action would have effects on air quality, the FAA must analyze those effects to meet NEPA requirements. To do so, the FAA examines those effects relative to the six NAAQS that the USEPA has set to protect public health throughout the Nation.

Although the USEPA establishes the NAAQS for each of the pollutants noted above, the responsibility for developing plans to meet the NAAQS lies with the states. Therefore, management of air quality conditions in Davidson County, Tennessee, including BNA, is the responsibility of TDEC and the Metro Public Health. TDEC is responsible for enforcing the CAA including demonstrating compliance with the NAAQS and preparing the SIP, whereas Metro Public Health is responsible for inspecting sources of air pollution, issuing permits for air emissions sources, preparing a comprehensive annual emissions inventory, and operating the ambient air monitoring network in Davidson County.

For proposed actions where air emissions are quantified, greenhouse gas (GHG) emissions should also be determined and presented in metric tons of carbon dioxide equivalents (CO₂e). GHGs include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF₆). The analysis of GHG emissions serves as a reasonable "proxy" to determine a project's effects on climate change and to provide interested parties with information about that change. Climate is further discussed in Section 4.8.

Taken together, FAA Orders 5050.4B and 1050.1F and the accompanying desk reference documents provide the basis for delineating the scope of the FAA's assessment of air quality impacts under NEPA and the CAA; contain guiding criteria for determining the extent of air quality analysis; and direct agency personnel to ensure that an air quality assessment prepared under NEPA includes an analysis and summary conclusions of the Proposed Action's impacts on air quality and an evaluation of the impact of the project on the NAAQS.

To meet NEPA requirements, air quality impacts due to the No Action and Proposed Action alternatives are evaluated. These impacts are estimated based on direct emissions (i.e., construction- and operations-related emissions) and indirect emissions (i.e., those occurring at a later time and/or distance) the Proposed Action would cause.

Instructions in the above-referenced FAA orders and guidance, CEQ regulations at 40 CFR 1500, and information from USEPA, TDEC, and Metro Public Health were used to address air quality impacts from the BNA Vision projects.

The analysis examines the changes in the air quality due to the No Action and the Proposed Action and the impacts the individual projects might have on the NAAQS. Because the Proposed Action is neither the cause nor driver of future flight projections or passenger projections, no impact to the operational emissions' inventories was calculated for the project based upon these factors. Under the Proposed Action, it is anticipated that approximately 350 additional employees will be required; this includes an increase in employees at terminal concessions and retail (estimated at 50 employees) and those required at the hotel (estimated at 300 employees). In addition, with the consolidation of heating, cooling, and related utility units, the following emissions-generating equipment is anticipated to be added to the CUP and is evaluated in this assessment:

- Three (3) 1,200-ton heat recovery chiller units;
- Three (3) 1,200-ton cooling towers; and
- Fifteen (15) 4-MMBTU/hr natural gas boilers.

Operational emissions calculated in this study are related to the increased emissions from new employees commuting daily to and from work and the addition of the above-listed equipment.

Construction emissions were estimated using the USEPA Motor Vehicle Emissions Simulator (MOVES version 2014a) (USEPA, 2015), NONROAD (Version 2008a) emissions model (USEPA, 2009), and other appropriate guidelines. As specific construction equipment and operating schedule have not been determined, an existing report, Criteria Air Pollutant and Greenhouse Gas Emissions Inventory for the Nashville International Airport dated September 2, 2016 (Atkins, 2016a), was utilized to scale the construction emissions for the Proposed Action. The emissions inventory in the existing report was developed in relation to the construction of the Terminal Area Parking Garage (Garage A) occurring at BNA adjacent to the current Proposed Action construction area. The amount of equipment, types of equipment and manpower for the Proposed Action were scaled based upon the acreage of disturbance from the Terminal Area Parking Garage project (approximately 5 acres) to the acreage for the filling of Merten's Hole (approximately 14 acres), the proposed terminal and concourse expansion (approximately 6 acres), and the construction of Garage B/C, GTC, proposed hotel and proposed administration building (approximately 10 acres). The construction emissions were spread across the proposed construction schedule based upon the phasing of when the activities are proposed to occur. Construction emissions for renovation of the interior sections of the terminal were not considered to be significant as they would generally occur indoors and would not involve significant heavy equipment.

4.5.2.2 General Conformity

Transportation Conformity is a way to ensure that Federal funding and approval are granted to those activities that are consistent and support air quality goals. The General Conformity Rule was developed to ensure that actions taken by federal agencies meet standards for air quality in nonattainment and maintenance areas. It ensures that transportation activities do not negatively impact air quality or interfere with the goals of the SIP. Under the CAA, a Federal agency (such as the FAA) considering an action that would occur in a maintenance area must ensure that the proposed action would conform with the applicable SIP for the criteria pollutant that has placed the project area in maintenance area status. The Federal agency must make that evaluation *before* taking any action on the proposed action.

The USEPA published the General Conformity Rule to prescribe how Federal agencies are to ensure compliance with the SIP using an "Applicability" test. The test determines whether a proposed action would cause emissions that exceed the *de minimis* levels for the criteria

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pollutant(s) for which the area has been designated a non-attainment or maintenance area. In the Conformity Rule, the USEPA has defined annual *de minimis* levels for every criteria pollutant (or pollutant precursor). Emissions below these levels would not be expected to have a significant adverse impact on air quality. If the project exceeds those levels, the Federal agency (i.e., FAA) must issue a formal General Conformity Determination. That Determination must include ways to fully offset project-related emissions for the criteria pollutant of interest. If the criteria emissions are below the *de minimis* levels, the Federal agency may presume that the proposed action conforms to the SIP.

As noted above, the Nashville area was historically designated a nonattainment area under the previous 1-hour O_3 NAAQS, but is currently in attainment of the current 8-hour O_3 NAAQS. Because of its past history of nonattainment, the area is subject to an air quality maintenance plan. However, under the transitional rules established by USEPA, the Nashville area is not subject to the General Conformity rules and a conformity determination is not required. Nonetheless, it can be useful to compare the proposed action's estimated emissions to the *de minimis* levels defined in the General Conformity Rule. The applicable *de minimis* thresholds for areas located in an O_3 maintenance area are 100 tons per year of nitrogen oxides (NO_x) and volatile organic compounds (VOC), both of which are considered precursors to ground level O_3 formation. In this analysis, these *de minimis* levels are used as a benchmark to put the construction emission inventory into context.

4.5.2.3 No Action Alternative

There are no construction-related (direct) or operational (indirect) emissions associated with the No Action Alternative.

4.5.2.4 Proposed Action Alternative

Operational and/or Long-term Impacts

The BNA Vision project will cause an increase in the number of employees at the Airport due to the expansion of the terminal and concourses and due to the construction of the hotel. It is estimated that an additional 50 employees will be needed to staff the additional areas/retail stores constructed in the terminal and concourses and an additional 300 employees will be associated with the new hotel. The emissions for the additional employees were considered to be the only indirect impacts and were scaled using the 2016 Operational Emissions Inventory Summary provided in Atkins 2016b for the Terminal Area Parking Garage for the Nashville International Airport. Based upon the additional employees, minimal additional emissions are anticipated. A summary of the calculated annual increased emissions is provided in Table 4.5-3.

Emissions Scenario		GHG ^a (metric tons/yr)								
	CO	CO NO _x PM ₁₀ PM _{2.5} SO ₂ VOC								
Additional 350	4.1	0.7	0.03	0.02	0.01	0.13	366.77			
Employees										
Central Utility Plant										
Chillers	NA ^b	NA	NA	NA	NA	NA	NA			
Cooling Towers	NA	NA	NA	NA	NA	NA	NA			
Boilers ^c	21.64	25.76	1.96	1.96	0.15	1.42	28,216			

Table 4.5-3: Operation	al Emissions Inventory
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^a GHG emissions are discussed in Section 4.8 – *Climate*.

^b Based on available information, units will be electric and corresponding emission estimates are not applicable (NA).

^c No controls assumed based on available information; emissions represent maximum potential to emit.

Construction Impacts

For the Proposed Action, construction-related emissions were calculated for the following elements:

- Garage B/C Complex
 - o Demolish three-story Short-term parking garage.
 - Construct six-story Garage B/C at the same location.
 - Construct GTC on bottom level of Garage B/C.
 - o Perform roadway construction to connect the new parking facilities.
 - Construct the framework for a multi-modal station.
 - Construct a 250- to 300-room hotel on the top of Garage B/C
 - Construct a 50,000-sf administrative office complex.
- Merten's Hole
 - Fill with 580,000 cy of material.
 - Pave approximately 14 acres.
- Terminal and Concourse Modifications
 - Expand footprint of terminal lobby (increase size from 388,143 sf to 503,565 sf) into new landside wings added to the north and south ends to accommodate relocated ticketing lobby and baggage claim.
 - Increase size from 105,520 sf to 150,000 sf by extending Concourse A to the north.
 - Increase size of Concourse B from 85,777 sf to 108,254 sf by widening concourse to increase efficiency and accommodate up-gaged aircraft.
 - Increase size of Concourse D from 49,129 sf to 110,321 sf to add additional functions such as concessions and hold-rooms.
 - Construct CUP (10,465 sf) at the end of Concourse D
- LID mitigation site in Area C
 - o Grade portions of site for swales and rain gardens.

Construction emissions are not calculated related to the internal renovations within the terminal, concourses, or office space. The renovation and expansion emissions are anticipated to be

minor in relation to the entire project, generally will occur indoors and will not involve heavy construction equipment.

Construction emissions represent seasonal and temporary emissions of fugitive dust and mobile source exhaust that would occur as a result of the construction activities associated with the Proposed Action. The emissions would be short term in nature (over a 7-year period), would not occur continuously during that construction period, and would be limited to the construction phase of the project only. Construction activities are expected to begin in early 2018.

Table 4.5-4 presents the total construction emissions associated with each project within the Proposed Action. Appendix E provides an estimated construction schedule and the associated emissions with each phase of the project.

Construction Phase	СО	NOx	SO ₂	PM ₁₀	PM _{2.5}	VOC	CO _{2e} ^a				
Construction Phase	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(metric tons)				
Excavation and Filling M	Excavation and Filling Merten's Hole										
Construction Equipment Exhaust	1,929	110	0	8	7	47	18,490				
Haul Truck Exhaust	9	15	0	1	1	2	1,430				
Worker Commute	4	14	0	1	1	1	2,086				
Demolition	-	-	-	-	-	-	-				
Surface Disturbance Equipment	6	14	0	1	1	1	1,640				
Material Movement (fugitive dust)	-	-	_	39	5	-	-				
Total for Filling Merten's Hole (3-year Construction Schedule)	1,948	153	0	50	15	51	23,646				
		Area)							
Construction Equipment Exhaust	1	2	0	0	0	0	194				
Worker Commute	0	1	0	0	0	0	96				
Surface Disturbance Equipment	0	1	0	0	0	0	88				
Total for Area C LID (1-year Construction Schedule)	1	4	0	0	0	0	378				
Terminals / Concourses											
Construction Equipment Exhaust	575	118	0	8	8	22	14,344				
Haul Truck Exhaust	0	-	-	-	-	-	-				

Table 4.5-4: Construction Emissions Estimated for Proposed Action

Construction Phase	CO	NOx	SO ₂	PM ₁₀	PM _{2.5}	VOC	CO _{2e} ^a
	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(metric tons)
Worker Commute	4	14	0	1	1	1	2,086
Demolition	-	-	-	11	2	-	-
Surface Disturbance Equipment	3	6	0	0	0	0	694
Material Movement (fugitive dust)	-	-	-	4	1	-	-
Total for Terminals / Concourses (7-year Construction Schedule)	582	138	0	24	12	23	17,124
Construction of Garage B/C							
Construction Equipment Exhaust	958	197	0	14	14	37	23,906
Haul Truck Exhaust	2	2	0	0	0	0	237
Worker Commute	4	14	0	1	1	1	2,086
Demolition	-	-	-	23	3	-	-
Surface Disturbance Equipment	5	10	0	1	1	1	1,156
Material Movement (fugitive dust)	-	-	-	4	1	-	-
Total for Garage B/C (6-year Construction Schedule)	969	223	0	43	20	39	27,385
Total Estimated Emissions for BNA Vision (7-year Construction Schedule)	3,500	518	0	117	46	113	68,533

^a GHG emissions are discussed in Section 4.8 – *Climate*.

^b Emissions based on conservative estimate of approximately 17 acres of land disturbance; design estimates approximately 4 acres for rain gardens and swales.

On average, the maximum annual construction-related emissions of VOC and NO_x are well within applicable 100-ton/year *de minimis* thresholds for an O₃ maintenance area (VOC and NO_x are O₃ precursors, as noted previously). Based upon the tentative construction schedule, the potential emissions of NO_x in Year 2018 may exceed the 100-tons/year threshold. Based upon the low level of NO_x emissions in the later years, the overall average NO_x emission rate of 66 tons/year and the fluidity of the construction schedule (i.e., the current tentative construction schedule is likely to change, potentially further spreading the construction emissions into later years and further lowering the emissions in Year 2018), it is not believed that these one-time construction-related emissions associated with the Proposed Action Alternative are not expected to have a significant adverse effect on the air quality of the area.

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Indirect and Cumulative Impacts

Indirect impacts associated with the Proposed Action are represented by the operational emissions discussed above. With respect to cumulative impacts, the Proposed Action is not anticipated to have a significant effect on long-term emissions or air quality in the vicinity of the Airport based on reasonably foreseeable on-airport, off-airport, and transportation projects identified in Section 4.4. To protect the quality of ambient air in Nashville (Davidson County), the city has implemented an Air Pollution Control Program which monitors and regulates potential sources of air pollution within the City. This program is charged with evaluating air pollution permits are issued to those sources that are operating in compliance with the applicable air pollution regulations or to those that are on an approved compliance schedule. The Air Pollution Control Program ensures that new development is in compliance with existing air quality regulations to reduce potential cumulative impacts of future development.

Mitigation and Best Management Practices

Emissions associated with the construction and operation of the Proposed Action are generally within USEPA's *de minimis* thresholds and are not expected to significantly affect the air quality of the area. Accordingly, no air quality mitigation measures are proposed. However, the following emissions reduction measures and BMPs during construction will be incorporated as practicable during construction activities to reduce adverse air quality effects:

- Develop and implement a comprehensive fugitive dust control plan;
- Stabilize ground surfaces as soon as practical to prevent wind erosion;
- Reduce equipment idling times;
- Maintain equipment regularly to prevent excessive construction equipment emissions;
- Use cleaner burning or low emissions fuels in equipment;
- Encourage employee carpooling;
- Limit construction activities when atmospheric conditions are conducive to O₃ formation (i.e. "high ozone days");
- Limit construction activities during high wind events to prevent dust;
- Utilize warm-mix asphalt during paving operations;
- Water or apply dust suppressants to unpaved areas regularly;
- Stabilize construction roads and laydown areas with suitable materials, like stone or stockpile pavement millings, to prevent wind erosion and dust generation by heavy equipment;
- Cover stockpile materials;
- Install cleaning pads to deter tracking dirt and mud to areas outside the airport as vehicles enter and leave the disturbed, project-related work sites; and
- Reduce vehicle speeds on unpaved roads.

4.6 BIOLOGICAL RESOURCES (INCLUDING FISH, WILDLIFE, AND PLANTS)

4.6.1 Affected Environment

4.6.1.1 Regulatory Background/Agency Coordination

The Fish and Wildlife Coordination Act (FWCA) (16 USC 662[a]) provides for U.S. Fish and Wildlife Service (USFWS) coordination if a federally approved or financed action would affect a stream or water body. To comply with the legislation, the FAA must coordinate with the USFWS to assess the effects of proposed FAA actions on aquatic areas. Also, the FAA or the airport sponsor, as appropriate, must consult with state wildlife agencies having jurisdiction over affected biotic resources.

MNAA has coordinated with the USFWS, TDEC's Natural Heritage Program, and the TWRA to identify and evaluate biological resources that could be affected by the implementation of the BNA Vision. Agency coordination letters and responses are included in Appendix F.

4.6.1.2 Existing Conditions

The Greater Nashville Area is located within the Interior Plateau Ecoregion of the United States which includes a diverse collection of ecoregions; specifically, the Airport is located within the Outer Nashville Basin, which is characterized by rolling to steep hills with some highly-dissected escarpments. This ecoregion encompasses a mosaic of urban, pasture, forest, and cropland. Streams in the region typically are low to moderate gradient; many have a limestone streambed interspersed with rock rubbly riffle areas, silty basins, and some sand and gravel reaches. The Airport is located within the Cumberland River drainage basin, which is known to have a very rich fish population, including approximately 161 native species (Etnier and Starnes1993). A U.S. Geological Survey (USGS) topographic map of the immediate vicinity of the Airport is provided as Figure 4.6-1.



Figure 4.6-1: USGS Topographic Map

The Proposed Action footprint is located entirely within the Airport property and encompasses the Terminal, surrounding apron, existing concourses, and existing parking and transit areas along the east side of the Terminal. The Terminal building and surrounding improvement areas are fully developed, except for Merten's Hole, which is an undeveloped depression directly west of the terminal. Merten's Hole is an approximately 14-acre topographic bowl surrounded by the paved apron and taxi lane connector. This area was not filled when the current airfield was constructed. It is located west of the terminal between Concourses B and C (refer to Figure 4.6-2).

A small stream, two springs, and herbaceous wetlands are present within Merten's Hole. Vegetative cover within Merten's Hole includes grasses, forbs, and small shrubs and seedlings (refer to Figure 4.6-3). It provides limited habitat for birds, small mammals, reptiles, and amphibians, as it is surrounded by paved areas. Due to airport hazards associated with wildlife, MNAA maintains the area through periodic bush-hogging to reduce wildlife habitat.

The Proposed Action footprint also includes four potential "support areas" along the perimeter of the airport to be used during construction and/or to be utilized for implementation of potential mitigation measures. The potential support areas are located entirely within MNAA-owned property and include both developed and undeveloped areas (refer to potential support areas A-D, depicted in Figure 4.6-1).

Area A is approximately 103 acres and is located along the southwest border of the airport. The northern portion of this property includes a former residential area within which vegetation has grown up; this area is currently predominantly wooded. A few outparcels with residents are still located in this area. The southern portion of this property is undeveloped and wooded.



Figure 4.6-2: Merten's Hole

• Area B – measuring approximately 50 acres – is located along the Knights of Columbus Boulevard along the northwest border of the airport and is currently utilized as a material stockpile site.

- Area C is located along the northeast edge of the airport and encompasses approximately 80 acres, comprising a former residential development that has become overgrown. McCrory Creek flows through Area C.
- Area D is located along the east side of the airport near the quarry. Area D, which comprises approximately 50 acres, has been designated as four fill sites⁸, one of which is currently active.
- Area E is located along the west side of the Airport, directly north of Vultee Boulevard. Area E, which encompasses approximately 14 acres is currently developed and utilized for parking.
- Area F, which is approximately 7 acres, is located directly west of Merten's Hole and the taxi lane and contains previously-placed rock fill.

Based on TDEC's Natural Heritage Program database of rare, threatened, and endangered species, a total of 69 state-listed rare, threatened, or endangered species are known to occur or are expected to occur in Davidson County; a list of these species is provided in Appendix G.

4.6.2 Environmental Consequences

4.6.2.1 Significance Threshold

With respect to biological resources, the FAA considers an impact to be significant if it would be likely to jeopardize the continued existence of a



Figure 4.6-3: Merten's Hole, photograph

federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. Although the FAA has not established a significance threshold for non-listed species, FAA Order 1050.1F specifies consideration must be given to:

- A long-term or permanent loss of unlisted plant or wildlife species (i.e., extirpation of the species from a large project area such as that which would likely result from development of a new commercial service airport);
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles, etc.) or their habitats;
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or

⁸ Fill sites are areas located within the Airport's boundaries that MNAA has dedicated to deposit clean fill material from development projects in the Nashville area. To date, BNA has dedicated a total of 130 acres for use as fill sites, including 12 tracts of land, ranging in size from 6 to 13 acres (more information is provided in Section 4.9.2).
• Adverse impacts on a species' reproductive success rates, natural mortality rates, nonnatural mortality (e.g., road kills and hunting), or ability to sustain minimum population levels required for population maintenance.

4.6.2.2 No Action Alternative

The No Action would have no direct or indirect impact on fish, wildlife, and plants beyond those that would occur under normal operation of BNA. Without the implementation of the BNA Vision projects or associated changes in management practices, fish, wildlife, and plants would continue to co-exist under current conditions with airport operations and ongoing maintenance activities.

4.6.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

As the airport terminal and immediately adjacent ancillary facilities are located within a fully developed area, there would be no direct impact to biological resources within these areas. However, the Proposed Action would impact biological resources within Merten's Hole and within potential support areas.

Merten's Hole and the potential support areas provide limited habitat for plants and wildlife, and impacts to biological resources in these areas would occur during construction and in the long term. Under the Proposed Action, Merten's Hole would be filled and the surface would be paved and utilized for airfield operations. In conjunction with filling Merten's Hole, two springs and 0.4 acre of palustrine emergent wetland would be filled and approximately 660 linear feet of perennial streams, tributaries to Sims Branch, would be encapsulated. Long-term impacts would consist of the permanent loss of approximately 14 acres of limited non-forested habitat as well as the 660 feet of stream and 0.4 acre of wetland all located within or adjacent to Merten's Hole.

Benefits could also be derived from filling Merten's Hole and encapsulating the streams that flows through its floor. Currently, these streams are susceptible to receiving pollutants released on the terminal ramp due to potential spills or accidents near Merten's Hole. Stream encapsulation would limit their susceptibility to potential pollutants in this area and therefore protect Sims Branch, downstream of Merten's Hole.

As discussed in Section 3, MNAA has designated several properties within the current BNA boundary to be utilized as possible support areas during construction as well as potential mitigation areas to support compliance with Metro Nashville's LID requirements. Areas B and D would be utilized for construction support. Due to the current disturbed nature of Areas B and D, impacts to biological resources in Areas B and D are anticipated to be minor; however, additional clearing in these areas could disturb wildlife. These areas may be used for construction staging, equipment storage, and temporary construction trailers/offices. These areas may also be used as a source for fill material required at Merten's Hole. There are no specific construction projects included in the Proposed Action in Area A.

Area C has been designated for LID mitigation. Required grading at the site would cause temporary disturbance to wildlife in the short term; however, the long-term reduction of invasive

species, the planting of native species, and the maintenance of Area C as "open space" will benefit wildlife in the long term. However, it should be noted that the LID site will be designed to be consistent with federal guidance (i.e., FAA Advisory Circular: Hazardous Wildlife Attractants on or Near Airports) and agreements pertaining to aircraft wildlife strikes. The LID site will not include bird attractants such as ponds. Species planted within the LID site will be consistent with approved species' lists for the Airport.

A segment of Sims Branch and an unnamed tributary to Mill Creek within Airport property have been identified as potential stream mitigation sites (refer to Figure 3.3-7). Mitigation activities could include limited clearing and grading; however, impacts to biological resources would be limited and the development of a mitigation site would be designed to benefit the environment and subsequently biological resources in the long term.

Construction Impacts

Potential short-term impacts to biological resources would consist of dust, noise, and changes in land use within and adjacent to construction activities. Although the airport discourages wildlife within Merten's Hole by periodically bush-hogging the area, some wildlife does occur in this area. During construction activities associated with filling Merten's Hole, wildlife would be expected to vacate the site. However, some individuals of less-mobile species (i.e., small mammals, reptiles, amphibians) could be killed during construction.

For land-disturbing activities within the support areas, wildlife would be expected to vacate the site; however, most wildlife would likely acclimate to human activity and return to adjacent areas. Land disturbance immediately adjacent to McCrory Creek (Area D) could potentially impact wildlife and aquatic species in the creek as a result of potential erosion and sediment; however, MNAA will maintain an appropriate buffer along the creek and implement best management practices (BMPs) to reduce the potential for water quality impacts during construction.

Indirect and Cumulative Impacts

Indirect impacts on biological resources resulting from implementation of the BNA Vision would be minor, as areas affected by the Proposed Action projects are currently developed, except for Merten's Hole, which will be directly impacted by the project. The unnamed tributaries to Sims Branch located within Merten's Hole would be encapsulated, reducing the total length of stream habitat within Airport property. However, since Merten's Hole is currently surrounded by developed areas, filling Merten's Hole is not expected to affect nearby wildlife resources. Downstream habitat will likely benefit in the long term as Sims Branch will not be susceptible to possible pollutants discharged in or around Merten's Hole.

Due to current and projected growth of the airport (identified on-airport projects) and the Greater Nashville Area (identified off-airport projects and transportation projects), in general, additional development will likely cause the conversion of undeveloped land to other uses, including residential, commercial, and industrial, and the loss of wildlife habitat from the area will likely occur over time. However, development within these areas must comply with Federal, state, and local environmental regulations, which will reduce potential impacts to biological resources through the use of required BMPs and environmental mitigation in some circumstances. The designation of Area C as a LID mitigation site would benefit biological resources in the long term, as Area C would remain as open space with site improvements. Removing impervious surfaces and manmade conveyances and planting native plants within Area C would be

expected to benefit wildlife in the long term and reduce potential adverse impact that the Proposed Action will have on the biological resources in the area.

Mitigation and BMPs

Proposed impacts to "waters of the U.S." and/or "waters of the State" (including wetlands) will be permitted by both TDEC and the USACE prior to construction. Mitigation measures and BMPs required by TDEC and/or the USACE will be implemented per permit conditions. Additional information on potential mitigation measures and BMPs associated with water quality protection is discussed in Section 4.18.2.3.

4.7 FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

4.7.1 Affected Environment

4.7.1.1 Regulatory Background/Agency Coordination

As discussed in Section 1.5.2, federally listed threatened and endangered species are regulated under the Endangered Species Act (ESA). Based on federal guidance and FAA regulations, MNAA coordinated with the USFWS in advance of and during preparation of this EA. Agency coordination letters and responses are included in Appendix F.

4.7.1.2 Existing Conditions

A total of 14 federally listed species are known or expected to occur in Davidson County. A list of these species is provided in Appendix G; however, based on the USFWS's project review (FWS# 2017-CPA-0370), there are no known occurrences of federally listed species within the Proposed Action footprint. Of the species that are known to or expected to occur in the county, the USFWS has identified the Nashville crayfish (*Orconectes shoupi*), the Indiana bat (*Myotis sodalis*), and the Northern long-eared bat (NLEB, *Myotis septentrionalis*) as species that could potentially be affected by the proposed project.

The endangered Nashville crayfish is endemic to the Mill Creek watershed in Davidson and Williamson Counties, TN. This species occurs in 1st-order & larger streams, generally with bedrock bottom, under slab rock within the Mill Creek watershed. The endangered Nashville crayfish has been documented downstream of the Airport in Sims Branch and an unnamed tributary to Mill Creek. The headwaters of these streams originate in the middle of the airfield at the Airport property.

In support of the Proposed Action (and specifically filling Merten's Hole), MNAA's consultants performed a Nashville crayfish survey on July 12, 2017 in streams that have the potential to be impacted by the Proposed Action. The streams flowing through Merten's Hole as well as downstream locations were surveyed for the presence of the Nashville crayfish. No Nashville crayfish habitat was observed in these streams and no Nashville crayfish were collected within the project area or downstream of the project area during this survey. Survey results were submitted to both the USACE and TDEC during the permitting process to fill Merten's Hole.

The Indiana bat typically hibernates in caves. However, maternity sites generally are established behind loose bark of dead or dying trees or in tree cavities. Additional foraging habitats include riparian areas, upland forests, ponds, and fields (NatureServe 2017). Based on correspondence with the USFWS, wooded areas within the potential support areas could contain suitable roost trees for the endangered Indiana bat.

There is no federally designated critical habitat within the Proposed Action project areas.

4.7.2 Environmental Consequences

4.7.2.1 Significance Threshold

A significant impact would occur when the USFWS or the National Marine Fisheries Service (NMFS) determines a proposed action would likely jeopardize a species' continued existence or destroy or adversely affect a species' critical habitat.

4.7.2.2 No Action Alternative

The No Action is anticipated to have no direct or indirect impact on federally listed threatened or endangered species.

4.7.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

As the Nashville crayfish does not occur within the project areas, no direct impact to the Nashville crayfish is anticipated as a result of implementing the Proposed Action.

As wooded areas within the potential support areas could contain suitable roost trees for both the Federally-listed endangered Indiana bat and the NLEB, there is a potential for suitable roost habitat to be impacted by the Proposed Action if tree removal is required in these areas during support activities. Direct impact to the Indiana bat is not anticipated, as tree removal would be scheduled to occur during winter months and suitable Indiana bat hibernacula are not present on Airport property. Should any tree clearing be proposed within the potential support areas, habitat assessments for endangered Indiana bat suitable roost trees should take place and the assessment submitted to the USFWS for review prior to proceeding with tree removal. To prevent potential impact to the Indiana bat, MNAA must coordinate with the USFWS prior to any tree removal to ensure that the Indiana bat is not adversely affected by the project.

Because there are no known occupied NLEB maternity roost trees within a 150-foot radius of the project or documented hibernaculum within 0.25 mile of the project, the project is eligible to be exempted from take for the NLEB under the final 4(d) rule⁹.

⁹ Incidental take of the northern long-eared bat at this location is excepted by the 4(d) rule (final issued January 16, 2016, 50 CFR Part 17) and is, therefore, not prohibited under the ESA.

Construction Impacts

Since the endangered Nashville crayfish is known to occur downstream of the airport property in Sims Branch and an unnamed tributary to Mill Creek, this species must be considered during construction of the Proposed Action. As such, the USFWS has requested to review work that would produce runoff into these streams.

To prevent adverse impacts to these streams and the Nashville crayfish, erosion and sediment control measures will be implemented during construction as discussed in Section 4.18.2.3.

Indirect and Cumulative Impacts

Indirect impacts of the BNA Vision on threatened and endangered species are expected to be minor, consisting primarily of the removal of potential habitat for the Indiana bat and the NLEB. The unnamed tributaries to Sims Branch located within Merten's Hole would be encapsulated, reducing the total length of stream habitat within the Airport property; however, these streams do not contain appropriate habitat for the Nashville crayfish. Currently, the open channel is at risk due to its proximity to the active airport. Potential for fuel or de-icing impacts to the stream are significantly reduced under the Proposed Action.

Potential clearing within support areas could reduce wooded habitat that could be utilized by the federally listed Indiana bat and/or the federally listed NLEB.

Indirect impacts to federally listed species could also occur as a result of erosion and sedimentation into receiving streams during construction. To prevent adverse impacts to receiving waters, erosion and sediment control measures will be implemented during construction as discussed in Section 4.18.2.3.

Due to current and projected growth in the region, which will likely cause the conversion of undeveloped land to other uses, including residential, commercial, and industrial, the loss of wooded habitat from the area as well as further development affecting streams within the Mill Creek watershed are likely to occur over time. However, land development is regulated on a Federal, State, and local level, which requires developers to implement measures to reduce adverse impacts to water quality. In addition, Federally-listed threatened and endangered species are protected under the Endangered Species Act. Regulatory programs will help reduce cumulative impacts to Federally-listed species in the long term.

The designation of Area C as a LID mitigation site would allow the riparian corridor along McCory Creek to remain intact over the long term, as Area C would remain an open space. Removing impervious surfaces and unnatural conveyances and planting native plants within Area C would be expected to benefit both water quality and wildlife habitat in the long term.

Mitigation and BMPs

Through coordination with the USFWS and permitting agencies (e.g., USACE, TDEC, and Nashville's Metro Planning Department), potential impacts to federally listed threatened and endangered species will be avoided and/or minimized through careful planning, seasonal construction schedules, and implementation of BMPs to reduce erosion and sedimentation affecting streams in the watershed. Streams within the watershed will also be protected through additional regulatory requirements regulating storm water and through the implementation of LID requirements.

4.8 CLIMATE

Greenhouse gases (GHGs) are air pollutants that trap heat in the earth's atmosphere and are emitted principally from the combustion of fossil fuels, decomposition of waste materials, and deforestation. According to EO 13693 – *Planning for Federal Sustainability in the Next Decade (2015)*, the six main GHGs whose emissions are related to human activities (e.g. combustion of fossil fuels, agriculture, land use change) are CO₂, CH₄, N₂O, and fluorinated gases such as HFCs, PFCs and SF₆. These gases are typically reported as carbon dioxide equivalents (CO₂e), which is a metric measure to compare the emissions from various GHGs based upon their global warming potential.

The transportation sector, which is the movement of people and goods by various modes of transportation including personal vehicles, trains, ships, airplanes, etc., accounted for approximately 27 percent of the total United States GHG emissions in 2015. The majority of GHGs emitted from transportation are in the form of CO_2 emissions from the combustion of petroleum products. The largest source of GHG emissions in the transportation sector is personal vehicles. The combustion of jet fuel by commercial aircraft contributed approximately 2 percent or 119 million metric tons (MMT) of CO_2 e of the total of GHGs emitted in the United States (6,587 MMT CO_2 e) (EPA, 2017).

The Metropolitan Government of Nashville and Davidson County has been proactive in the evaluation of GHG emissions with the establishment of a *Baseline Inventory of Greenhouse Gas Emissions* in 2009. The inventory, recently updated in 2016 and summarized in the draft document *Livable Nashville* (2017), indicates that approximately 13,461,292 metric tons of CO₂e were emitted in the Nashville-Davidson County community in 2014, of which approximately 37 percent (4,986,501 metric tons of CO₂e) was attributed to transportation and mobile sources.

The CEQ issued final guidance in August 2016 to assist Federal agencies in the evaluation of GHG emissions and the effects of climate change in NEPA reviews at a level corresponding to the extent of the effects of the proposed action (CEQ, 2016). Although the CEQ guidance has been withdrawn for further consideration pursuant to EO 13783, *Promoting Energy Independence and Economic Growth* (March 28, 2017), FAA guidance is available on how to address GHG emissions and climate change within NEPA evaluations (*1050.1F Desk Reference* and *Aviation Emissions and Air Quality Handbook, 2015*). As noted in the guidance, when other air emissions are quantified, GHG emissions associated with the proposed action should also be determined and presented in metric tons of CO₂e.

The evaluation of air emissions associated with the Proposed Action as presented in Section 4.5 indicates there would be an increase in GHG emissions during the construction period. These emissions would be short term in nature (over a 7-year period) and would not occur continuously during the construction period. The emissions estimated for the construction phase of the project are not estimated to cause GHG emissions to exceed 25,000 metric tons per year of CO_2e (Appendix E) on an average basis. Although no significance thresholds for GHG emissions from aviation sources have been established, this would represent approximately 0.2 percent of the total GHG emissions estimated for the Nashville-Davidson County community in 2014.

The long-term indirect emissions of CO2e estimated for the Proposed Action are associated with

the projected growth in the number of employees at the airport due to the expansion of the terminals and concourses and the construction of the hotel, and are estimated to be approximately 367 metric tons of CO₂e per year. This increase in GHG emissions associated with the BNA Vision project represents approximately 0.002 percent of the total GHG emissions for the Nashville-Davidson County community in 2014.

The short-term direct GHG emissions associated with construction activities, and the long-term indirect GHG emissions associated with projected employee growth, would not be significant. The cumulative impact of the Proposed Action on the global climate when added to other past, present, and reasonably foreseeable future action is not currently scientifically predictable.

4.9 COASTAL RESOURCES

Federal activities involving or affecting coastal resources must comply with the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and EO 13089, Coral Reef Protection. The CBRA bans Federal agencies from providing financial support for almost all actions within the Coastal Barrier Resource System, which primarily includes barrier islands along all coastlines of the United States. The CZMA requires federal proponents to certify a proposed activity would be consistent with the policies of a state's National Oceanic and Atmospheric Administration (NOAA)-approved Coastal Zone Management Plan (CZMP). EO 13089 requires federal agencies to protect coral reef ecosystems and the marine environment.

As Tennessee is not located within close proximity to coastal areas, and the state does not have a CZMP, federal regulations and EOs pertaining to coastal resources are not applicable to federal actions associated with airport development in Nashville and Davidson County.

Neither the No Action nor the Proposed Action alternatives would affect coastal resources.

4.10 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

As summarized in FAA Order 1050.F and FAA's *Environmental Desk Reference for Airport Actions (2007)*, Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (now codified at 49 U.S.C. § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land off a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, State, or local significance, only if there is no feasible and prudent alternative to the using that land and the program or project includes all possible planning to minimize harm resulting from the use.

The Proposed Action evaluated in this EA includes development of existing airport-owned property and MNAA does not seek to acquire land that is applicable under Section 4(f) of the DOT Act. Additionally, it is anticipated that the Proposed Action will not adversely affect any public park; recreation areas; historic site; or wildlife or waterfowl refuge of national, state, or local significance. Therefore, the proposed Airport development described in this document is not expected to adversely impact any of the previously mentioned lands.

4.11 FARMLANDS

The Natural Resources Conservation Service (NRCS) identifies important farmland and classifies it as prime farmland, unique farmland, or statewide and locally important farmland as defined below.

- Prime farmland defined as land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.
- Unique farmland defined as land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of them economically; and
- Statewide and locally important farmland defined as land that has been designated as "important" by either a state government (State Secretary of Agriculture or higher office) or by county commissioners or an equivalent elected body. The State Conservationist representing the NRCS must agree with the designation. Important farmlands may include pasturelands, croplands, and forests (even if zoned for development).

The majority of the land surrounding the airport is not classified as Prime Farmland. Although there are a few mapped soils within the airport property (including the existing terminal and parking areas) that are classified as Prime farmland; none of the Airport property is currently in agriculture. Therefore, neither the No Action nor Proposed Action alternatives would have an impact on farmlands.

4.12 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

4.12.1 Affected Environment

4.12.1.1 Regulatory Framework

Generally, the terms *hazardous materials*, *hazardous wastes*, and *hazardous substances* are associated with industrial wastes, petroleum products, dangerous goods or other contaminants. However, in a regulatory context, these terms have precise and technical meanings that are used for consistency and legal purposes.

Hazardous materials are defined as any substance or material that has been determined to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce (49 CFR part 172, table 172.101). This includes hazardous substances and hazardous wastes. *Hazardous waste* is defined as a waste that is considered hazardous if it is listed in, or meets the characteristics described in 40 CFR part 261, including ignitability, corrosively, reactivity, or toxicity. A *hazardous substance* is defined as any element, compound, mixture, solution, or substance defined as a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and listed in 40 CFR part 302. If released into the environment, hazardous substances may pose substantial harm to human health or the environment.

FAA Order 1050.1F states that four primary laws have been passed governing the handling and disposal of hazardous materials, substances, and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund) and the Community Environmental Response Facilitation Act of 1992. RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for consultation with natural resources trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment. The Pollution Prevention Act of 1990 and the Toxic Substances Control Act of 1976 (TSCA), as amended, also apply to FAA under FAA Order 1050.1F. The Pollution Prevention Act calls for pollution prevention through source reduction, recycling, and safe disposal. TSCA grants the USEPA authority to track the use of hazardous substances and use control methods to prevent chemicals from posing an unreasonable health risk.

4.12.1.2 Existing Conditions

Hazardous Materials

MNAA, along with over 100 tenants and lessees operating independent businesses at BNA, store, consume, process, and/or otherwise handle oil products in varying quantities, including such quantities which may subject them to federal regulation. MNAA makes every reasonable effort, through routine inspections and regular communication with tenants, especially in situations where direct MNAA permits or other environmental requirements are affected, to ensure that tenants are aware of and follow appropriate regulations. MNAA meets the oil storage capacity and other requirements listed in 40 CFR Part 112, and, as such, has prepared and implemented a Spill Prevention Control and Countermeasures (SPCC) plan. The SPCC provides adequate discharge prevention measures through the implementation of the SPCC. All employees handling oil, and their supervisors, will be properly trained in the topics covered by this Plan.

The types of oil-products controlled by MNAA that are subject to the SPCC regulations currently being stored, processed, or consumed include gasoline, diesel fuel, motor and lubrication oils, and small amounts of other miscellaneous oils. All bulk oil storage containers operated by MNAA have secondary containment. The secondary containment is accomplished by either an impervious secondary containment dike or by double-walled steel tanks.

An underground hydrant system is used primarily to fuel aircraft at the air carrier gates, although several tanker trucks are also in use to service aircraft, as needed. A bulk storage tank farm is located on the east side of the airport, while fuel is also obtained from local wholesalers (MNAA SPCC 2016).

During the preparation of this EA, MNAA also coordinated with TDEC's Division of Remediation (DoR) pertaining to DoR Sites located within close proximity of the airport. Based upon DoR's review of the project, they determined that there are twenty-one remediation sites within a onemile radius of the Airport. A map of these sites is included in the correspondence letter received from DoR provided in Appendix F. There are several sites that are identified by the DoR within the airport property, but none of the sites are located within the proposed project areas.

Solid Waste

Typical types of solid waste generated at the airport include industrial, construction, and municipal solid waste. MNAA contracts with private waste management companies for disposal of non-recycled waste. BNA's recycling program includes paper, cardboard, metal, plastic, lamps/lighting, tires, batteries, and debris from maintenance and construction and demolition projects. MNAA contracts the Metropolitan Nashville Department of Public Works Curby program for disposal of paper, cardboard, plastic, and metal. Approximately 7.31% of total waste in 2010 was recycled at BNA (MNAA, 2012).

BNA also has dedicated over 130 acres of land to accept clean fill material generated by local contractors/developers from development projects in middle Tennessee. This includes 12 tracts of land, ranging from six to 13 acres each. These "fill sites" allow developers within the Nashville Metropolitan area to reduce trucking distances by providing a relatively close disposal location, thereby reducing air pollutant and GHG emissions. In addition, these fill sites provide MNAA level land areas for future development projects, reducing the need to purchase and truck fill from off-site (MNAA, 2012).

Pollution Prevention

Pollution prevention is accomplished at BNA through the implementation of a site-specific SPCC and Stormwater Pollution Prevention Plan (SWPPP) (ERM, 2016a; ERM, 2016b). Approximately 25% of BNA's 4,500 acres is impervious. MNAA has an individual National Pollution Discharge Elimination System (NPDES) Permit authorizing treated wastewater and storm water discharges from BNA. The SPCC is designed to prevent the discharge of oil into the environment and the SWPPP is designed to minimize pollution through source control.

Potential pollution sources at BNA include: aircraft anti-icing/deicing; aircraft fueling; aircraft lavatory services; aircraft maintenance; building and grounds maintenance; cargo handling; chemical storage; construction areas; equipment cleaning/degreasing; equipment fueling; equipment maintenance; equipment storage; fuel storage; ground vehicle fueling; ground vehicle washing; pesticide/herbicide storage; runway anti-icing/deicing; and salt and sand storage and usage (ERM, 2016a).

Uncontrolled spills and storm water runoff from BNA could discharge to Mill Creek, Sims Branch, and McCrory Creek from ten identified storm water outfalls. To reduce the potential of stormwater impacts during routine, non-routine, and emergency operations at BNA, several structural controls have been implemented including: trench-drains around terminal gates at Concourse A, B, and C; oil/water separators (OWS); storm water treatment facilities; emergency spill gates; roofs and overhangs; secondary containment dikes; trenched aircraft deicing pad; glycol dump station; receiving port for OWS 2-5; South Ramp drainage basin diversion structure; detention ponds; and retention ponds (ERM, 2016a).

MNAA has also implemented BMPs, which prevent or reduce pollution from any type of activity. BMPs include processes, procedures, schedules of activities, prohibitions on practices, and other management practices to prevent or reduce storm water pollution. As a spill prevention BMP, MNAA has well-stocked spill kits located throughout the airport where fuel or other potential pollutants are stored or used. In addition, MNAA has recently purchased and equipped a spill response trailer for use by the spill response team in managing larger spills which occur.

4.12.2 Environmental Consequences

4.12.2.1 Significance Threshold

An action is considered significant if it involves a property on or eligible for the National Priority List (NPL); however, uncontaminated properties within a NPL site's boundary do not always trigger this significance threshold. Additionally, a significant impact could occur if a sponsor would have difficulty meeting applicable local, state, or Federal laws and regulations on hazardous materials or there is an unresolved issue with hazardous materials.

4.12.2.2 No Action Alternative

Under the No Action Alternative, MNAA would continue to operate its facilities as it does today. No impact to hazardous materials, solid waste, or pollution prevention are expected to occur. There would be no increase in the use of hazardous materials or in the generation of hazardous wastes. The Airport would continue to be subject to all the same regulations associated with transport, storage, and use of existing hazardous materials.

4.12.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

Implementation of the BNA Vision is not expected to introduce additional regulated substances and materials, other than those currently utilized by the airport. The Proposed Action would not cause an increase in the demand for aircraft fuel or other materials utilized for aircraft maintenance. The addition of any regulated substances will be stored and used in accordance with Federal, state, and local regulations. Modifications to existing infrastructure (i.e., existing trench drain system around the terminal gates) and associated storm water systems will be completed, as applicable, to manage storm water drainage at the airport.

MNAA will modify its existing SWPPP and SPCC, as applicable, to ensure compliance with local, state, and Federal regulations. In addition, existing discharge permits will be modified as needed to ensure compliance with local, state, and Federal regulations.

Construction Impacts

Construction activities can be expected to cause short-term and temporary increases of hazardous materials at the airport, such as the storage and use of gasoline and diesel fuels by construction equipment and trucks and other equipment accessing the construction areas, as well as the storage of oils, fluids, and lubricants associated with the maintenance of construction equipment. Any temporary fuel tanks or the temporary storage of other regulated materials will comply with Federal, state, and local regulations.

Other pollutants could include domestic waste from portable restrooms and miscellaneous construction and demolition debris. Demolition debris will be handled, evaluated, and recycled/disposed properly in accordance with applicable Federal, state, and local laws and regulations. Hazardous materials, including asbestos, are not expected to be encountered

during demolition (Frost Environmental Services, LLC., 2017). If suspect hazardous materials are encountered, work will cease so that the materials can be appropriately characterized. The materials will then be properly managed and disposed in accordance with all applicable laws and regulations.

Some lead concentrations have been detected within the painted components (i.e. piping) at the facility; therefore, proper containment, characterization and disposal of paint debris will be performed during demolition activities (Frost Environmental Services, LLC., 2017).

During grading activities, especially at Merten's Hole, the primary potential pollutant from construction activities is sediment and silt. Prior to initiating construction activities associated with the Proposed Action Alternative, MNAA will obtain permit coverage under the Tennessee General Permit (No. TNR10-0000) for Storm Water Discharges from Construction Activities. As required by the Permit, a site-specific SWPPP will be developed and implemented. General Construction BMPs (including silt fences, check dams, straw bales, and other controls as appropriate) will be incorporated into construction plans to help prevent erosion and protect water quality. In addition, the MNAA will comply with local erosion and sediment control regulations.

Indirect and Cumulative Impacts

Indirect and cumulative impacts associated with the Proposed Action would include potential pollutants entering the ground or storm water and receiving waters at the airport. This could affect biotic communities on airport property or downstream of the airport. Implementation of BMPs and good housekeeping procedures will help prevent potential indirect impacts to the environment from potential spills.

Cumulative impacts associated with on-airport, off-airport, and transportation projects identified in Section 4.4 will be reduced through the implementation of existing environmental regulations that are aimed to prevent and/or reduce potential pollutant sources. Examples include:

- NPDES regulations that are aimed to protect water quality by regulating point sources that discharge pollutants to waters of the U.S.
- Tennessee solid and hazardous waste regulations that require the management and reduction of waste.

In addition, MNAA's sustainability policies encourage the reduction, reuse, and recycling of solid and hazardous waste.

Mitigation and BMPs

The Airport will require construction contractors to maintain appropriate spill prevention plans and spill kits as applicable during construction activities. Spills would be handled in accordance with Airport procedures and protocols, consistent with Federal, state, and local regulations.

There are no sites within the project areas known or suspected to be contaminated by hazardous materials or contaminated substances and such materials are not expected to be encountered during implementation of the proposed action. If any hazardous materials are

encountered during excavations on the site, they will be appropriately identified and properly disposed in accordance with all applicable regulations.

Construction BMPs will include designating specific areas for construction equipment staging, maintenance, and fueling. These areas will be engineered to provide secondary containment and other control measures to avoid and/or minimize potential, inadvertent, releases of fuels, oils, and other contaminants to stormwater, soil and groundwater within the project area. The temporary facility would comply with all State regulations regarding the storage and handling of fuel and oil.

4.13 HISTORICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

4.13.1 Affected Environment

4.13.1.1 Existing Conditions

Refer to Section 1.5.5 for a discussion of cultural resources regulatory requirements.

Research at the Tennessee Division of Archaeology (TDOA) revealed that no previously recorded archaeological sites are located within the general footprint of the proposed action, but six previously recorded sites are located within the potential support areas (Areas B and C). No



Figure 4.13-1: Previously-identified cultural sites -Area B

previously recorded archaeological sites are located within Areas A, C, E, or F. Site 40DV428 is located within Area B and sites 40DV235, 40DV236, 40DV237, 40DV238, and 40DV241 are located within Area D (refer to Figures4.13-1 and 4.13-2).

Area B

• Site 40DV428 was originally recorded in 1991 during an archaeological survey conducted for the proposed runway 13/31 expansion at BNA (Ruple, 1992). The site represents the remains of a late nineteenth century historic residence. It appears on an 1871 historic map as the residence of a prominent local physician. It consists of two filled cellars and two cisterns. Further work was recommended for site 40DV428 to unequivocally determine its eligibility status for the NRHP.

Area D

- Site 40DV235 was recorded in 1987 as a result of an archaeological survey for the proposed relocation of State Route 255 (Donelson Pike) relocation (Kline, 1987). Site 40DV235 consists of a low density prehistoric lithic scatter and was recommended ineligible for the NRHP; no further work warranted.
- Sites 40DV236, 40DV237, 40DV238, and 40DV241 were originally recorded as a result of an archaeological survey for proposed airport expansion (DuVall, 1986). Site 40DV237 represents a low density prehistoric lithic scatter and was recommended NRHP ineligible; no further work. Sites 40DV236 and 40DV238 were recommended for further work as a result of the 1986 archaeological survey and this further



Figure 4.13-2: Previously-identified cultural sites - Area D

work occurred two years later (Spires and DuVall, 1988). Both sites represent Late Archaic prehistoric sites and archaeological testing did not located significant cultural deposits at either site. As a result, they were recommended NRHP ineligible; *no further work warranted*.

 Site 40DV241 is a small historic cemetery that consists of two grave markers. Duvall (1986) recommended avoidance of the cemetery and that a fence be constructed surrounding it. Additional archaeological monitoring in the vicinity of 40DV241 during runway clearing activities noted that avoidance measures were sufficient (Robbins and DuVall, 1988).

Research at the Tennessee Historical Commission (THC) indicated that no above ground historic resources are located within the general footprint of the proposed action or within 0.25 miles where visual effects from construction could change the viewshed of historic resources. One historic resource, the original 1940s terminal building (DV25575) is located at BNA within 0.25 miles. The building is still extant, however because of multiple renovations over the decades the building no longer retains its original appearance or integrity.

4.13.2 Environmental Consequences

4.13.2.1 No Action Alternative

The project area would be left unchanged under the No Action Alternative. No construction would occur and support areas would not be needed. Therefore, no direct, indirect, or cumulative archaeological or historical impacts would occur.

4.13.2.2 Proposed Action Alternative

The main area for proposed construction disturbance for the Proposed Action lies within its general footprint where previous construction activity including significant grading and fill has occurred for several decades. Any archaeological sites that may have existed within the general footprint have been very likely destroyed or covered with fill/pavement/concrete. The Proposed Action within the general footprint is unlikely to affect intact archaeological deposits. Activities associated with the Proposed Action will occur in previously-disturbed areas, where fill materials have been placed onto the ground surface.

As discussed above, one archaeological site (40DV428) is mapped within Area B and five archaeological sites (40DV235, 40DV236, 40DV237, 40DV238, and 40DV241) are mapped within Area D. Further work was recommended for 40DV428; thus, avoidance is recommended for this site boundary for any ground disturbing activity within Area B. All sites previously recorded within Area D, except 40DV241, have been determined NRHP ineligible, thus the deposits will not be adversely affected. Continued avoidance of the fenced off historic cemetery (40DV241) is recommended.

Only one historic resource, the 1940s terminal (DV25575) has been previously recorded within 0.25 mile of the general footprint of the Proposed Action. This building has lost its integrity and will not be adversely affected. Any additional extant historic buildings that may be located within 0.25 miles will have already been affected by a multitude of modern buildings associated with the built environment of BNA.

Neither construction nor long-term implementation / operation of the Proposed Action would be expected to affect historical, architectural, or cultural resources.

Indirect and Cumulative Impacts

Since neither construction nor long-term operation of the Proposed Action would be expected to affect historical, architectural, or cultural resources, no indirect or cumulative impacts to those resources would be anticipated under implementation of the Proposed Action.

Mitigation and BMPs

No mitigation or BMPs related to historical, architectural, or cultural resources would be required.

4.14 LAND USE

4.14.1 Affected Environment

The Airport is located approximately 6 miles southeast of downtown Nashville on approximately 4,500 acres. It is located within the urban services district of Metropolitan Nashville and Davidson County. As shown in Figure 4.14-1, the Airport is surrounded by areas that are zoned for industrial, commercial and residential land uses. The Proposed Action project areas, as well as support areas, are located entirely within Airport property. While the proposed hotel and terminal, concourse, and garage improvements are located well within the boundaries of Airport property, the potential support areas are located near the edge of the Airport property.

 Area A is located along the south side of the airport, which is bordered by residential properties to the south and east. Several residential lots with houses are located in this area and are surrounded by Area A.



Figure 4.14-1: Zoning Map

- Area B is located along the northwest side of the Airport and is bordered to the north by Knights of Columbus Boulevard and I-40. Office and residential zoning are located on the north side of I-40 in this area.
- Area C is located north of I-40 and is surrounded by mostly residential and mixed-use properties.
- Area D is located along the east side of the Airport and is surrounded by Airport property.
- Area E is located on the west side of the Airport on the north side of Vultee Boulevard.
- Area F is located along the west side of Merten's Hole.

As detailed in the Future ALP, MNAA has planned for future runway expansions, which will require additional runway protection zones and runway safety areas; however, runway expansions and the acquisition of additional property are not part of the current Proposed Action.

4.14.2 Environmental Consequences

4.14.2.1 Significance Threshold

The FAA has not established a significance threshold for land use and there are no specific

independent factors to consider for Land Use. However, the EA should discuss any inconsistency with approved state and/or local plans and laws and the NEPA document must include a letter from the public agency authorized by the state to plan for the area surrounding the airport that states the proposed action is consistent with existing land use (49 USC §47106(a)(1). MNAA requested input from the Metro Planning Department during the scoping process. Once received, the letter from the Metro Planning Department will be included in Appendix F.

4.14.2.2 No Action Alternative

Implementation of the No Action alternative will cause no changes in existing land use at the Airport or in surrounding areas.

4.14.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

All projects included in the Proposed Action are located within Airport-owned property and are compatible with existing and proposed land use surrounding the Airport. The current land use of properties adjacent to the Airport will not be affected by the Proposed Action, as it does not include changes in aircraft operations, new runway approaches, or other airport development activities that affect flight paths or fleet changes. (As stated in Section 2, changes in fleet are a driver for this action, rather than a result.) The projects, including the proposed hotel, have been designed to be consistent with existing FAA height restrictions for the Airport under current conditions. Additionally, the Metro Nashville has indicated that the Proposed Action is consistent with existing land use; a letter from the Metro Planning Department is pending.

No construction projects are proposed for Area A at this time. Areas B and D may be utilized for staging during construction or as fill sources for required fill material; however, due to the location of these areas, adjacent land use would not be affected. Area C may require some grading and land disturbance activities associated with mitigation project implementation, but these activities would not adversely affect the land use of adjacent properties. Areas E and F have been identified as potential borrow areas for fill required for Merten's Hole.

Specific operational and/or long-term impacts associated with Noise, Air Quality, and Socioeconomics are discussed separately in Sections 4.5 (Air Quality), 4.16 (Noise and Compatible Land Use), and 4.17 (Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks).

Construction Impacts

Construction-related impacts associated with the Proposed Action could include increased noise, air emissions and traffic associated with increased construction vehicles and demolition and construction activities. These potential impacts are discussed separately in Sections 4.5 (Air Quality), 4.16 (Noise and Compatible Land Use), and 4.17 (Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks).

Indirect and Cumulative Impacts

The Proposed Action is compatible with the existing land use within the vicinity of the Airport and is, therefore, not anticipated to modify existing land use in surrounding areas. As discussed above, surrounding areas are a mix of industrial, commercial, and residential land uses and the Proposed Action is not anticipated to affect these areas with respect to land use.

The areas surrounding the Airport have a diverse range of land uses and development patterns, including older suburban residential development, large employment and retail centers, and newer residential development. The area also has large parks, green space areas, and numerous waterways. Local and regional planning contemplates industrial, commercial, and residential growth and their impacts on air and water and other natural systems, including ecosystems. Metro Nashville Planning Department's responsibilities include working with local communities to create appropriate land-use policies and transportation priorities in community plans, making recommendations to the Planning Commission on zoning decisions, and providing design services and citywide transportation planning to implement sustainable development and complete streets. The area is expected to continue to grow, regardless of the Proposed Action, and will be governed by the land use zoning requirements established and enforced by the Metro Nashville.

The Proposed Action is consistent with reasonably foreseeable future development as well as with the approved ALP. This includes the designation of the LID mitigation site in Area C, which is designated as *open space* on the approved ALP; this is a compatible designation with LID mitigation. The Proposed Action is also compatible with the potential future realignment of Donelson Pike. If Donelson Pike were realigned in the future, on-airport and off-airport roadways would require reconfiguration, but general land use would not be affected.

Mitigation and BMPs

No land use compatibility impacts would occur as a result of the Proposed Action; therefore, no mitigation is proposed with respect to land use. BMPs and mitigation measures associated with construction activities are discussed in Sections 4.5 (Air Quality) and 4.16 (Noise and Compatible Land Use).

4.15 NATURAL RESOURCES AND ENERGY SUPPLY

4.15.1 Affected Environment

EO 13123, *Greening the Government through Efficient Energy Management* (64 FR 30851, June 8, 1999), encourages each Federal agency to expand the use of renewable energy within its facilities and in its activities. EO 13123 also requires each Federal agency to reduce petroleum use, total energy use and associated air emissions, and water consumption in its facilities.

In addition, federal regulations (40 CFR 1502.16 (e) and (f)) require alternatives to be assessed with respect to energy requirements, energy conservation, and the use of natural or consumable resources.

The airport passenger terminal currently uses large amounts of energy for indoor lighting, heating, ventilation, air conditioning, and conveyance systems. In addition, airport energy uses include lighting for the airfield, signage, roadways, parking lots, and other ancillary uses. BNA receives electric service from Nashville Electric Service and natural gas service through Piedmont Natural Gas. Tenant energy use accounts for approximately 25% of the BNA main

passenger terminal's electricity usage, which is sub-metered and billed to individual tenants (MNAA, 2012).

In accordance with FAA guidelines, MNAA incorporates principles of environmental design and sustainability, including pollution prevention, waste minimization, and resource conservation into its planning process for new projects. BNA has also demonstrated it sustainability efforts through the utilization of the existing 250-foot-deep lake (former quarry) to install a geo-cooling system for the airport. The project is expected to reduce electricity usage by 6,000 kilowatts of peak demand and result in annual savings of 1.3 million kilowatt-hours and 30 million gallons of potable water. The utility savings to MNAA are expected to be more than \$430,000 per year (MNAA, 2016c).

4.15.2 Environmental Consequences

This section describes the natural resource and energy supply needs associated with the No Action and the Proposed Action alternatives. The Federal government encourages airport development that minimizes the use of consumable natural resources and minimizes demands on energy supplies. FAA policy also encourages developing facilities that use the highest design standards and that incorporate sustainable designs. To comply with federal regulations, this EA evaluates project-related potential effects on natural resources and local energy supplies in the Greater Nashville Area. FAA has not established a significance threshold for Natural Resources and Energy Supply, but indicates that potential significant impacts would occur if changes in energy or natural resources demand exceeded supply of a particular resource. Therefore, changes in energy demands or other natural resource consumption typically will not result in significant impacts.

4.15.2.1 No Action Alternative

Current resource and energy consumption would be expected to remain similar as current demand under the No Action, as the BNA Vision projects would not be implemented and there would be no terminal expansion or new hotel constructed at the Airport

4.15.2.2 Proposed Action Alternative

Operational and/or Long-term Impacts

The Proposed Action is not expected to exceed current resources with respect to energy consumption.

As discussed in Section 1.4.2, MNAA is committed to incorporating sustainability concepts throughout design, construction, and operation of BNA Vision projects to reduce energy consumption and possible greenhouse gas emissions, among other sustainability goals. MNAA has identified energy efficiency, water efficiency, and healthy spaces as the top priorities within the sustainability goals, but many other sustainable design strategies have been incorporated, providing a holistic sustainable approach to the BNA Vision. Specifically, MNAA has taken specific sustainability site strategies into consideration during the design of each project including: protection of sensitive land; high priority site/brownfield remediation; site assessment;

protection and/or restoration of habitat; open space; rainwater management; heat island management; and light pollution reduction. As an example of utilizing sustainable development concepts, MNAA has designed the new parking garage to include: capacity for 20,000 gallons of rain water harvesting for landscape irrigation; a green-screen vegetation wall; and a 50-kilowatt solar array on top level.

In terms of aircraft operations, the Proposed Action is not causing an increase in aircraft operations, but rather is the result of additional and forecasted increases in operations.

Construction Impacts

The Proposed Action would temporarily increase the use of consumable materials with the terminal expansion and upgrades, construction of parking facilities, apron space, hotel, and ancillary, on-Airport facilities. With respect to construction and sourcing of raw materials, MNAA is committed to considering materials and products with sustainable properties like recycled content, regional access, bio based material, and sustainably harvested materials. Materials from manufacturers with current corporate sustainability plans would also be considered along with procurement of locally/ regionally produced products (MNAA Eco Charrette report).

Indirect and Cumulative Impacts

Through innovative projects such as BNA's geo-cooling system (through the quarry), MNAA has demonstrated that it supports energy efficient technologies. In addition, MNAA aims to further reduce its energy use through numerous sustainability strategies as discussed above. This proactive approach to reduce energy usage through the implementation of new technologies supports both the Airport's sustainability goals.

Implementation of the Proposed Action, including the expansion of the existing terminal and the construction of the hotel, will increase demand on existing energy resources. However, implementation of the Proposed Action is not expected to strain energy availability or resource consumption either at the project site, in its vicinity, or in the region as a whole. Where practicable, MNAA will incorporate energy efficient technologies throughout the design and construction of the proposed projects.

Mitigation and BMPs

As discussed above MNAA has incorporated sustainability concepts into the design of each of the Proposed Action projects. In addition, MNAA will incorporate BMPs and mitigation measures into the design and construction of the BNA Vision projects in accordance with federal, state, and local requirements; specifically, MNAA will incorporate LID requirements, as practicable, and agreed upon by Nashville's Metro Water Services Stormwater Division to reduce storm water and implement sustainability requirements.

This project is also expected to be constructed with resource conservation measures such as energy efficient lighting and more efficient heating and cooling systems which would minimize resource consumption by these improvements.

4.16 NOISE AND COMPATIBLE LAND USE

4.16.1 Affected Environment

This section describes the existing noise conditions in the vicinity of BNA.

4.16.1.1 Existing Aircraft-Related Noise

The A-weighted Day Night Average Sound Level (DNL) metric is the standard metric used by FAA to evaluate cumulative noise effects on people due to aviation activities, including aircraft flight operations, engine run up operations, and aircraft taxiing. Residential areas are considered compatible with aviation noise at levels below the DNL of 65 decibels (dBA) for exterior exposure. The most recent noise and land use compatibility study for the Airport was completed in the 2012 Noise Exposure Map (NEM) Update and the 2013 Master Plan Update. These studies, which followed the guidelines provided in Part 150 of the Federal Aviation Regulations (FAR), developed noise contours associated with aircraft operations at the Airport and identified the following impacts for the contours with noise levels at or above DNL 65 for the existing year 2017:

- DNL 70+ No impacts: and
- DNL 65-70 No dwelling units, 2 churches, no other impacts.

Following extensive review by all parties of interest, including the MNAA, the FAA and local residents, noise abatement and mitigation measures have been implemented at the Airport and its environs as part of FAA's voluntary program. Proactive acquisitions and abatement measures have been implemented by MNAA as BNA has developed and grown with the community, and it is expected these practices (e.g., noise abatement and mitigation measures) will continue in the future in a similar manner. The Noise Exposure Map for the existing year 2017 (see Figure 4.16-1) provides the current 65 DNL contours for BNA.



Figure 4.16-1: Forecast Condition (2017) Noise Exposure Map

Existing aircraft-related noise exposure is considered in the evaluation of existing and future construction, traffic, and cumulative impacts; however, operational aircraft noise is not addressed any further in this study.

4.16.1.2 Existing Ground Operations Noise

Existing ground airport operations on the terminal side (i.e., the aprons and ramp areas west and south of the terminal) include auxiliary vehicles such as refuelers, aircraft tugs, luggage carriers, etc., all of which contribute to noise generated at the terminal area. Land side ground operations (passenger arrival areas on east side of terminal) primarily consist of vehicle traffic associated with passenger, employee, and transportation services accessing BNA via I-40 on Terminal Drive and Donelson Pike. To a lesser extent, vehicle operations along other ancillary airport property roads also contribute to the noise environment. Based on an average distance of approximately 5,000 feet from the terminal area to the nearest residential areas, ground operations on the terminal side and landside transportation sources are not considered the dominant noise source when compared to aircraft-related noise exposures.

4.16.1.3 Traffic Noise

Residential neighborhoods in the vicinity of the airport property and support areas, and just beyond the 65 dBA DNL noise contour as shown on the NEM, would generally be classified as urban areas which are exposed to high levels of traffic noise from heavily-traveled arterial roadways including I-40, Briley Parkway, Murfreesboro Road, Elm Hill Pike, and Donelson Pike. Background DNL associated with area urban neighborhoods is estimated approximately 67 dBA, primarily based on an aircraft DNL of 60 dBA and a traffic DNL of 65 dBA (estimated to be 55 dBA during nighttime hours and 65 dBA during daytime hours). However, urban environments can often reach noise levels can reach as high as 80 dBA, especially during busy daytime periods. (Guide on Evaluation and Attenuation of Traffic Noise, American Association of State Highway and Transportation Officials (AASHTO), 1993).

4.16.1.4 Construction Noise

BNA is in a continual state of construction and renovation to address immediate and emerging needs with regard to airport operations and maintenance. Construction noise associated with these programs has been addressed through individual project approvals and is not expected to cause impacts to sensitive noise receptors, unless construction would take place in remote areas of the airport property adjacent to nearby noise sensitive receptors.

4.16.1.5 Cumulative Noise

Residential areas of concern located just beyond the 65 dBA DNL noise contour that are not in the BNA mitigation or transition areas, are assumed to have an existing cumulative average existing DNL of 67 dBA, primarily associated with aircraft noise (60 dBA DNL) combined with local urban roadway traffic noise (65 dBA DNL). These areas of concern include:

- The Sheffield Heights Apartments on Airways Circle (about 2,500 ft. north of Area B);
- The Malvin Heights and Happy Acres neighborhoods near Elm Hill Pike (about 5,000 ft. northeast of terminal area and adjacent to Area C);
- The Belair neighborhood west of Briley parkway (about 2,000 ft. west of Area B);
- Mirro Meadows and Stardust Acres west of Briley Parkway (about 800 ft. west of Area E on Vultee Drive; and.
- Several residential neighborhoods south of Murfreesboro Pike and west of Area A.

The Pulley Road residential area east of the airport (approximately 1,800 feet east of Area D) is expected to have a lower cumulative existing noise level of about 60 dBA DNL due to its more rural setting.

4.16.2 Environmental Consequences

This section describes the general conditions of the BNA Vision along with the laws and regulations addressing airport noise. It also discusses the effects the No Action and Proposed Action alternatives would have on existing noise levels in the Airport vicinity, as well as

measures to mitigate the potential adverse effects associated with implementation of the No Action or Proposed Action alternatives.

4.16.2.1 Background

MNAA completed an NEM Update in 2012. It was submitted to the FAA in December 2012 and approved on February 4, 2013. The FAA determined that the NEMs submitted for BNA complied with applicable Part 150 requirements. The NEM update is available on the MNAA's website and administrative offices. The NEM update provided cumulative exposure noise contours for annual operations at the airport for 2012, representing the year of submission, and 2017, representing a forecast year at least five years from the year of submission. Therefore, the noise contours on the 2017 NEM are considered representative of existing conditions for aircraft-related noise.

The BNA Vision was developed in response to projected growth in commercial flight demand (43% increase projected from 2017 to 2035) associated with rapid growth of the Greater Nashville MSA. The BNA Vision does not induce additional aircraft operations and aircraft noise was not included in the assessment. The potential for environmental noise impacts due to the proposed BNA Vision Plan are related to temporary construction equipment and traffic and long-term traffic volume increases related to employees for newly constructed facilities.

4.16.2.2 Regulatory Context

The evaluation of aviation-related noise impacts, including any identified for the implementation of the BNA Vision Plan, falls under the responsibility of the FAA. The FAA's basis for compliance with NEPA is FAA Order 1050.1F. Federal laws related to the consideration of noise impacts include:

- National Environmental Policy Act of 1969 (NEPA);
- Aviation Safety and Noise Abatement (ASNA) Act of 1979;
- Federal Aviation Act of 1958;
- Airport and Airway Improvement Act of 1982 (AAIA);
- Control and Abatement of Aircraft Noise and Sonic Boom Act of 1968; and
- Airport Noise and Capacity Act of 1990.

NEPA requires the analysis of project-related effects on the human environment. In meeting this requirement for federally-funded projects, FAA examines project-related noise effects resulting from proposed aviation projects and actions. ASNA requires the Secretary of Transportation (Secretary) to issue regulations establishing a system to measure and assess airport-related noise effects. The law also required the Secretary to identify land uses that are normally compatible with airport operations and the noise levels those operations cause. FAA, as the USDOT agency responsible for maintaining safe and efficient air traffic in the United States, met these requirements on the Secretary to set a national policy to reduce current and projected airport-related noise effects on communities. When analyzing airport project-related noise effects associated

with airport development. This is because noise affects resources on and off the airport. For example, noise calculations are used to determine noise effects on noise sensitive land uses to determine which uses are or are not compatible with project-related airport operations, such as parkland use, recreational area use, or settings of historic properties. FAA policy determines which of the above sensitive land uses will receive noise mitigation.

The FAA directs that analysis of traffic and construction noise impacts related to airport projects should be assessed in accordance with the methods promulgated by the Federal Highway Administration (FHWA) under 23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Highway traffic noise policies are promulgated independently by each state. TDOT provides specific noise analysis and abatement policies and procedures for compliance with 23 CFR 772 through the agency's *Highway Traffic Noise Policy 520-01*. TDOT defines thresholds of significance for traffic noise based on the land-use *Activity Category* of a property (e.g., a residential land use). These thresholds are expressed in dBA, the scale that most closely approximates the response characteristics of the human ear to traffic noise. Traffic noise is reported as one-hour equivalent sound levels (Leq(h)). Leq(h) values are steady-state sound levels that contain the same acoustic energy as time-varying sound levels over one hour. Table 4.16-1 presents FHWA's Noise Abatement Criteria (NAC) defined in terms of Leq(h) for various types of land-use Activity Categories.

Activity Category	L _{eq(h)} (dBA)	Description of Activity
A	57 (Exterior)	Land on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
В	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
С	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D		Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Table 4.16-1: FHWA Noise Abatement Criteri
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Source: FHWA Highway Traffic Noise: Analysis and Abatement Guidance, 2011.

Noise sensitive areas in the vicinity of BNA consist of residences, places of worship, hotels/motels and schools which are considered to be Activity Category B sensitive land use areas. When predicted traffic noise levels approach or exceed the NAC, or when predicted future noise levels increase substantially from existing levels, the FHWA and TDOT require that noise abatement measures be considered. TDOT defines the word "approach" to mean within one dBA of the FHWA NAC. If the NAC is exceeded, TDOT policy states that noise abatement needs to be considered if any future traffic noise level exceeds an existing noise level by 10

dBA or more. Table 4.16-2 presents the TDOT criteria used to define impacts due to noise increases associated with the proposed project, when the predicted future sound level is between 57 and 67 dBA.

Increase in Existing Noise Levels (dBA)	Subjective Descriptor
0 - 5	Minor Increase
6 - 9	Moderate Increase
10 or more	Substantial Increase

Table 4.16-2: TDOT Criteria to Define Impacts Due to Traffic/Construction Noise

Source: TDOT, Policy on Highway Traffic Noise Abatement, Policy 520-01, 2011.

4.16.2.3 No Action Alternative

Under the No Action Alternative, the BNA terminal and concourse facilities would be left unchanged and no construction would occur. Most of the enplanement volume increases (and corresponding airport entrance traffic volume increases) predicted to occur due to the growth of the Greater Nashville MSA would likely still occur under this alternative. Operational ground terminal and traffic noise level increases similar to the proposed action would likely occur anyway. Due to the lack of construction activities, the No Action Alternative would have no short-term direct, indirect, or cumulative noise impacts related to construction.

4.16.2.4 Proposed Action Alternative

MNAA plans to update the NEMs for BNA as required by Part 150, which could result in changes to the NEMs based on changes in air traffic. BNA enplanements are expected to grow from approximately 7 million in 2016, to more than 10 million by 2035, an increase of approximately 43% (Lynch, 2017). Based on long-term projections of aircraft operations, updated NEMs will be developed by MNAA to depict aircraft related noise exposure changes during the next MPU. The BNA Vision will support expected growth of air traffic by improving overall logistical efficiency of terminal ground operations, including on-site lodging options and improved landside transportation flow, thus aviation-related noise is not addressed in this study. While the Proposed Action would not cause any increase in aircraft operations which would lead to an increase in aircraft-related or ground operation noise levels, it could cause long-term impacts due to increased employee traffic accessing the airport daily, and short-term temporary noise impacts associated with construction activities.

Operational and/or Long-term Impacts

Long-term traffic volumes associated with the project's increased staffing for the new hotel and office plaza, as well as increased terminal services, are estimated to be 350 daily employees, beginning in 2022. Table 4.16-3 provides an estimate of total anticipated traffic on area roadways, based on TDOT traffic volumes from 2010 to 2016. Assuming traffic volumes increase at similar rates throughout the term of the BNA Vision development, the long-term increase in automobile traffic associated with new employees as a result of construction of the

new and upgraded facilities is expected to be minor. An increase in daily traffic associated with 350 new employees is small compared to total estimated airport traffic of 28,840 vehicles per day in 2024. Modeling of this traffic increase is not warranted given it takes a doubling of sound energy, or traffic volume, to increase the traffic noise by 3 dBA. Table 4.16-3 also presents the calculated noise exposure changes due to short-term construction and long-term employee traffic increases. The calculated noise exposure increases along airport access roads associated with temporary construction traffic and long-term traffic are estimated to be less than 0.2 and 0.1 dBA, respectively, and are considered imperceptible. Likewise, no indirect or cumulative noise impacts are anticipated on I-40, Donelson Pike, or Briley Parkway beyond the immediate vicinity of the airport property as a result of implementation of the proposed project components associated with the BNA Vision Plan, since those roadways have significantly higher traffic volumes than the airport access routes.

Traffic Volume Analysis	;										
	e Daily Traffic ¹	Ave. annual	Estimated ADT Increases During BNA Vision Implementation Period								
Location	2010	2016	2016 (%) ²	2017	2018	2019	2020	2021	2022	2023	2024
I-40 East of Terminal Drive	100,759	138,023	6.2%	146,531	155,563	165,151	175,331	186,138	197,612	209,792	222,723
I-40 West of Terminal Drive	113,381	153,514	5.9%	162,570	172,161	182,318	193,073	204,464	216,526	229,300	242,827
Briley Pkwy South of I-40	37,019	42,193	2.3%	43,176	44,182	45,211	46,264	47,342	48,444	49,573	50,728
Briley Pkwy at Vultee/Kermit	33,130	36,275	1.6%	36,849	37,432	38,024	38,626	39,237	39,858	40,488	41,129
Donelson Pike North	35,345	37,966	1.2%	38,435	38,910	39,391	39,878	40,371	40,870	41,375	41,886
Donelson Pike South	32,991	41,971	4.5%	43,875	45,865	47,946	50,121	52,395	54,772	57,257	59,854
Terminal Drive	12,622 15,483 3.8%			16,068	16,675	17,305	17,959	18,637	19,341	20,072	20,830
Donelson Airport Access Rd. 3	Access Rd. 3 2,354 4,005 11.7%		4,473	4,996	5,580	6,232	6,961	7,775	8,683	9,698	
Projected Total Airport ADT (Terminal Drive + Donelson)	14,976	19,488	5.0%	20,467	21,494	22,574	23,707	24,897	26,498	28,178	29,943
Percentage of Airport ADT on Terminal Drive	84%	79%		79%	78%	77%	76%	75%	73%	71%	70%
Short-Term Construction	on and Long	-Term Traff	ic DNL Expo	sure Cha	nges						
				2017	2018	2019	2020	2021	2022	2023	2024
Construction-Related ADT				500	1,000	1,000	1,000	500	500	500	500
Construction-Related ADT as a Percentage of Airport ADT [%]				2.4%	4.7%	4.4%	4.2%	2.0%	1.9%	1.8%	1.7%
Short-term Construction-Related Traffic DNL Exposure Change [dBA]				0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1
New Employee/Service Trips ADT (Hotel, Office Plaza, terminal services)				-	-	-	-	-	350	350	350
New Employee ADT Increase as a Percentage of Airport ADT [%]				NA	NA	NA	NA	NA	1.3%	1.2%	1.2%
Long-term Operating Traffic DNL Exposure Change [dBA]				NA	NA	NA	NA	NA	0.1	0.1	0.1
ADT-average daily traffic											

Table 4.16-3: Traffic Noise Impact Analysis

Assumptions:

1. Traffic for 2010 and 2016 provided by Tennessee Department of Transportation https://www.tdot.tn.gov/APPLICATIONS/traffichistory

2. Traffic increases after 2016 same percentage growth per year as average growth in period 2010-2016.

3. Donelson Pike Airport Access Road ADT is the calculated difference between Donelson north and Donelson south ADT.

4. Traffic speed remains same throughout project period.

5. All traffic assumed to be 10 % commercial truck traffic (consisting of 5% medium trucks, 5% heavy trucks)

6. DNL exposure change based on sound energy (traffic volume) increase defined by the formula = 10 x Log10(1+Project Traffic / Total Traffic)

Other operational noise sources such as equipment for baggage handling and aircraft services provided in the terminal apron area should increase proportionally to increases in air traffic.

However, since noise sensitive areas are located approximately one mile from the terminal apron area, noise from these operations are likely to remain insignificant compared to aircraft operations. A 43% increase in ground operations could result in nearly a 3 dBA increase in sensitive area noise exposures over an approximately 20-year timespan. Year-over-year, changes of ground terminal operations noise exposure would be insignificant compared to any future increases in aircraft-related noise exposures.

No operational or long-term noise impacts are anticipated as a result of implementation of the proposed project components associated with the BNA Vision Plan.

Construction Impacts

Heavy construction equipment noise levels will typically be 80 to 90 dBA at 50 feet when the equipment is operating at full load conditions. During demolition, excavation, and civil engineering phases, extremely loud heavy equipment such as jackhammers, hoe-rams, compactors, impact pile drivers, concrete saws, and other impact-type equipment can reach noise levels of 100 dBA at 50 feet. This very loud equipment is usually employed at the beginning of a demolition /construction project and is used less frequently as construction progresses to final stages, but can cause impacts at greater distances. Table 4.16-4 provides typical noise emission levels for various construction equipment.

Construction EquipmentNoise Level (dBA) 50 feet from SourceConstruction Equipment		Noise Level (dBA) 50 feet from Source	
Air Compressor	81	Generator	81
Asphalt Cutting Saw	90	Grader	85
Backhoe	80	Jack Hammer	85
Chain Saw	76	Loader	85
Compaction Equipment	82	Locomotive (1000' of cars at 30 mph)	80
Concrete Mixer	85	Paving Machine	89
Concrete Pump	82	Truck (3-5 axle)	88
Dozer	85	Scraper	89
Excavator/Shovel	82	Pile Driver (impact)	100

Table 4.16-4: Typical Noise Emission Levels for Proposed Construction Equipment

Source: Federal Transit Authority, Noise and Vibration Manual, FTA-VA-90-1003-06, May 2006.

Construction equipment is generally assumed to operate at a load factor of 59% of full-load power, representing the equipment operating intermittently over time during construction periods. Typically, no more than a few heavy equipment units are operated in a given area at one time. Construction activities in the vicinity of the terminal associated with the BNA Vision Plan component projects will generally not expose noise sensitive areas to significantly more than the existing noise environment, given that construction activities are relatively short-term in duration at any given location and most sensitive areas are approximately 1 mile away from the terminal area. However, the use of extremely loud equipment described above may cause

noise impacts at greater distances. BNA Vision construction activities in peripheral areas of the airport, such as support areas and haul roads, which are as close as a few hundred feet from noise sensitive areas can create significant noise impacts.

Appendix I presents an evaluation of the source noise contribution from each of the proposed BNA Vision phased construction components in the immediate vicinity of the main terminal building and support areas beginning in late 2017 through 2024, as well as the associated estimated maximum DNL exposure for the nearest noise sensitive areas during the project. Each project component activity area was treated as a point source consisting of the accumulation of sound energy for each anticipated piece of equipment operating in that area. Although the equipment may operate intermittently over a fairly large area within the airport property, a sensitive noise receptor a long distance away would perceive the area as a point source.

Construction-related noise impacts would likely occur at residential areas in close proximity during implementation of the BNA Vision project components, as follows:

- Without adequate coordination and a communication plan, potential significant impacts of 13 dBA or more DNL exposure increase could occur at residential areas very near borrow sites and support areas during material movements, blasting, excavation and hauling to support the filling of Merten's Hole. These include Areas A, C, and E where distances from construction related activities to residents are approximately 300 to 800 feet. These impacts do not include quantitative analysis of blasting operations.
- Minor noise impacts of up to 4 dBA DNL exposure increase at residences in the vicinity of Areas B and D.
- Minor noise impacts of up to a 3 dBA increase are possible at times for various
 residential areas due to cumulative construction noise contributions from equipment
 operations at multiple project components, especially during simultaneous operation of
 extremely noisy equipment and activities, such as impact-type equipment, hoe rams,
 and concrete-cutting saws.
- Significant nighttime operations using on-property haul routes could create impacts to noise sensitive areas adjacent to those routes near the perimeter of the airport property, particularly in the neighborhoods west of Briley Parkway and those near support areas.

Construction-related traffic noise exposure was presented in Table 4.16-3. Impacts related to short-term construction traffic entering and exiting the airport are not anticipated.

Airport employees and the flying public may be exposed to noise or vibration at areas in the terminal where the proximity of passenger areas to construction activities is necessary. People in nearby commercial buildings may hear the construction noise but the overall impact will be short-term and insignificant.

Indirect and Cumulative Impacts

There is a potential for additional construction-related noise (including blasting) to occur in the vicinity of the Airport as a result of reasonably foreseeable off-airport and transportation projects

(unrelated to BNA Vision) identified in Section 4.4. MNAA will implement specific BMPs and mitigation measures to reduce potential impact of construction-related noise. In addition, blasting activities will be coordinated through a public communications plan with any potentially affected neighborhoods and would be limited to daytime hours.

Compared to aircraft-related noise increases, long-term and cumulative effects of increased terminal operations and traffic volume increases associated with implementation of the BNA Vision are anticipated to have no perceptible noise impact (noise increase estimated < 1 dBA DNL exposure increase over 17 years).

As shown on Table 4.16-3, increases in long-term traffic volumes entering and exiting the airport are minor compared to increases in overall traffic volumes on area roadways. Approximately 75 to 80 percent of airport traffic enters the terminal area via Terminal Drive from I-40.

Mitigation and BMPs

MNAA will continue to coordinate with the FAA, local residents, and the community, as required by Part 150 and as part of FAA's voluntary program to implement aircraft operation-related noise abatement and mitigation measures in the vicinity of Airport.

Construction-related noise impacts associated with BNA Vision projects will generally be mitigated by the attenuating effect of distance, topography, and existing structures, minimizing nighttime operation of significant noise-producing equipment, and the intermittent and short-lived character of the noise.

General noise-minimizing practices to be implemented to address noise impacts during the construction of the BNA Vision project components include, but are not limited to, the following:

- Construction-related activities at borrow sites and support areas which are near noisesensitive areas at the perimeter of the airport will be performed during daytime, 6 am to 10 pm, to the extent possible. Occasional night work may be required and if excessive noise is anticipated due to the nature of the work, temporary berms or other noise attenuating features will be considered.
- The operation of extremely loud and impact noise-producing equipment such as jackhammers, hoe-rams, pile drivers, concrete saws, etc. will be operated during daytime hours (6 am to 10 pm) to the extent practicable.
- Given that diesel engine exhaust noise is a major component of construction equipment noise, functional mufflers will be maintained on all equipment at all times.
- Construction material deliveries will be scheduled during daytime hours (6 am to 10 pm) to the maximum extent practicable.
- Engine braking will be discouraged for construction-related traffic during transit of airport access roads, support areas, and on the airport property.

- Blasting activities will be coordinated through a communications plan with the affected neighborhoods, and limited to daytime hours (6 am to 10 pm).
- Airport hotel and office plaza building design features will consider measures to reduce interior DNL to 45 dBA to be consistent with the anticipated activities.

Specific noise exposure increases for each component of the project are presented in Appendix I.

4.17 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

4.17.1 Affected Environment

4.17.1.1 Socioeconomics

This section discusses existing socioeconomic conditions within the Proposed Action footprint and surrounding area, including the current business and economic climate; population, demographics, and housing; and adjacent roadways and surface transportation.

Business and Economic Climate

The Greater Nashville Area is one of the strongest growth areas in the country. Nashville experienced faster growth than the US as a whole in employment, total income, and PCPI from 2002 through 2015. During this timeframe, Greater Nashville Area employment grew by over 26 percent and increased its share of the country's total employment from 0.057 percent to 0.063 percent. The employment forecast indicates that Nashville will continue to exhibit strong growth and that the Greater Nashville Area will have approximately 0.75 percent of the US employment by 2041 (Lynch, 2017).

Industries and businesses located in the area include corporate operations, advanced manufacturing, music and entertainment, supply chain management, and healthcare. The region is home to several Fortune 500 companies. Employment continues to be strong in the region with approximately 75,000 new jobs created in the last five years (Lynch, 2017).

MNAA currently employs approximately 300 people. In addition, the Airport has more than 100 tenants and lessees operating independent businesses at BNA, which employ approximately 5,000 people.

Population, Demographics, and Housing

Between 2010 and 2016, the population of the Greater Nashville Area grew from more than 1.6 million to an estimated 1.9 million; by 2035, that population is expected to exceed 2.5 million people (Lynch, 2017).

The U.S. Census Bureau (USCB) maintains and updates population and housing data for tracts, cities, MSAs, and states across the US; the most recent available data correlating population and housing are from 2015 estimates (USCB, 2015). Table 4.17-1 summarizes the population

trends between 2010 and 2015 in Census Tract 9801 (the census tract within which BNA is located), Davidson County, the Nashville-Davidson-Murfreesboro-Franklin MSA (the Greater Nashville Area), and the State of Tennessee. There are no residents in Census Tract 9801 as this tract consists primarily of BNA. In 2010, the Greater Nashville Area had a population of 1,670,890 people. Per USCB estimates, that population increased by 5.2% to 1,761,848 people in 2015.

Location	Total Population (2015)	Total Population (2015)Population Change (2010-2015)		Persons Per Square Mile	Total Housing Units	Vacant Housing Units (% of Total)		
Census Tract 9801	0	N/A	6.1	0	0	0		
Davidson County	658,506	4.8%	525.9	1,252.1	290,647	9.1%		
Nashville-Davidson- Murfreesboro- Franklin MSA ^a 1,761,848 5.2% 6,377.8 276.2 723,182 8.1% (Greater Nashville Area)								
State of Tennessee	6,499,615	2.4%	42,142.7	154.2	2,854,542	12.3%		
^a Nashville-Davidson-Murfreesboro-Franklin MSA, which includes the following counties: Cannon, Cheatham, Davidson, Dickson, Hickman, Macon, Maury, Robertson, Rutherford, Smith, Sumner, Trousdale, Williamson, and Wilson.								
Source: USCB 2015								

Table 4.17-1: Population and	Housing Data (2010-201	5)
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Populations in Davidson County and in the Greater Nashville Area increased from 2010 to 2015 by 4.8 percent and 5.2 percent, respectively. During the same period, the population in Tennessee grew by 2.4 percent, or about half the rate of Davidson County. Davidson County has a population density of roughly 4.5 times that of the greater Nashville MSA which encompasses not only Metro Nashville but also suburbs and outlying areas. The housing vacancy rate in Davidson County and the Nashville MSA is slightly less than that of the State of Tennessee. Within Census Tract 9801, BNA is the principal land use; as such, no resident population and no housing stock currently exists within the tract. BNA is surrounded by industrial, commercial, and residential land uses (refer to Section 4.14 for additional information on surrounding land use).

Adjacent Roadways and Surface Transportation at Airport

The BNA terminal area is served primarily by Donelson Pike to the east. It is also served to and from the west by ramps connecting to I-40. Other major roadways in the vicinity of BNA are Briley Parkway and Murfreesboro Pike. The I-24/I-40 interchange is approximately two miles west of BNA.

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is described accordingly:

- LOS A: describes free flow traffic conditions.
- LOS B: free flow conditions although presence of other vehicles begins to be noticeable.

- LOS C: increases in traffic density become noticeable but remain tolerable to the motorist.
- LOS D: borders on unstable traffic flow; the ability to maneuver becomes restricted; delays are experienced.
- LOS E: traffic operations are at capacity; travel speeds are reduced, ability to maneuver is not possible; travel delays are expected.
- LOS F: designates traffic flow breakdown where the traffic demand exceeds the capacity of the roadway; traffic can be at a standstill.

Existing traffic volumes on these roadways are presented in Table 4.17-2 below.

Roadway	Location	Avg. Daily Traffic Volume ¹	Existing Level of Service ²
Donelson Pike	North of I-40	41,399	В
Donelson Pike	Between I-40 and BNA	37,966	В
Donelson Pike	South of BNA	41,971	В
Terminal Drive	To/From West of BNA	15,483	А
I-40	West of Donelson Pike	153,514	D
I-40	East of Donelson Pike	132,139	D
¹ Source: TDOT 2016. ² Source: TRB 2008.			

Table 4.17-2: Traffic Volumes and Levels of Service (2016)

Existing LOS on roadways in the immediate vicinity of Proposed Action footprint range from very good (LOS A) on Terminal Drive serving BNA to poor (LOS D) on I-40 in segments not associated with airport access.

Airport vehicle parking closest to the terminal includes the Short-term parking garage, Garage D (current rental car facility), and Long-term A lot. Garage A (under construction on the west side of the short-term parking garage) was under design and contracted for construction before the BNA Vision was defined. Current customer demand dictates the need for additional parking near the terminal, as parking forecasts show that once Garage A is constructed and operational, shortfalls will again be near. By 2026, approximately 4,858 spaces will be needed in the terminal area garages; once completed, Parking Garage A together with the Short-term parking garage will provide 4,529 spaces, which falls short of projected demand by approximately 329 spaces (Walker Parking Consultants, 2017).

Environmental Justice

As part of EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, the CEQ issued guidance for each Federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (USEPA 2013). In

order to examine Environmental Justice issues, a discussion of the following census divisions are examined: Census Tract 9801 (includes BNA and some of the surrounding area); Davidson County (includes the City of Nashville); the Greater Nashville Area; and the State of Tennessee as a whole.

Table 4.17-3 summarizes income, percentage below poverty level, and employment levels in Census Tract 9801, Davidson County, the Greater Nashville Area, and the State of Tennessee. Since there are no residents in Census Tract 9801, income and employment data for this tract do not exist and are not applicable. In 2015, the median household income levels were slightly greater in Davidson County and the Greater Nashville Area (\$48,368 and \$54,047, respectively) than for the State of Tennessee as a whole (\$45,219).

Davidson County has a greater poverty level (18.2 percent) than the Greater Nashville Area (13.8 percent) and the State of Tennessee (17.6 percent). The U.S. Department of Health and Human Services (HHS) considers a family of four having an annual income of \$24,600 or less to be at the poverty level or "low income" (HHS, 2017).

Location	Median Household Income	Per Capita Income	Percent of Population in Poverty	Population in Labor Force	Unemployment Rate	Percent of Minority (non-White Population)
Census Tract 9801	N/A	N/A	0	0	0	0
Davidson County	\$48,368	\$29,589	18.2	368,439	7.2	43.2
Greater Nashville Area	\$54,047	\$29,280	13.8	934,422	6.8	26.6
State of Tennessee	\$45,219	\$25,227	17.6	3,172,519	8.4	25.3
Source: USCB 2	015.	•				

Table 4.17-3: Income, Poverty, Employment, and Ethnicity Data (2015)

Since Census Tract 9801 does not have a resident population, there are no minority or lowincome populations within the immediate vicinity of the Proposed Action footprint. The closest residential areas to the proposed project site (i.e., the terminal and its immediate vicinity) are over 0.5 mile away within Davidson County. In comparison to the Greater Nashville Area and the State of Tennessee which have a minority population less than 27 percent, Davidson County has a larger minority population at roughly 43 percent.

Approximately 18 percent of the population in Davidson County live below the poverty level, which is greater than the Greater Nashville Area and the State of Tennessee.

Children's Environmental Health and Safety

The school located nearest to the Proposed Action footprint is Hickman Elementary School, located approximately 1.7 miles north of the airport, on Ironwood Drive.

The daycare facility located closest to the airport is Child Care USA, which is 1.8 miles east of the Proposed Action footprint on Elm Hill Pike. There are several Metro Nashville recreational

facilities near the Airport including parks such as Seven Oaks Park (adjacent and on the west side of Area A), Ezell Road Park (approximately one mile south of Murfreesboro Road), and Elm Hill Public Use Area and Hamilton Park adjacent to J. Percy Priest Lake (approximately two miles east of the Airport).

4.17.2 Environmental Consequences

This section describes the environmental consequences associated with socioeconomics, environmental justice, and children's health and safety risks, resulting from the No Action and Proposed Action alternatives.

4.17.2.1 Background

Section 101(a) of NEPA notes it is the policy of the Federal government to create and maintain conditions that fulfill the social needs of present and future American generations.

Socioeconomics

Socioeconomic effects could involve relocating people from their homes, moving businesses, or causing substantial changes in local traffic patterns. They also involve dividing or disrupting established communities or planned development, and creating notable changes in employment.

Environmental Justice

EO 12898 requires Federal agencies to analyze project effects relative to low-income and minority populations. Environmental justice analysis considers the potential of the Proposed Action to cause disproportionate and adverse effects on low-income or minority populations. The analysis of environmental justice impacts and – as appropriate – any associated mitigation ensure that no low-income population or minority population bear a disproportionately high and adverse effect resulting from the implementation of the Proposed Action.

To help describe environmental justice, this EA relies on the guidance in Appendix A, Section 16 of FAA Order 1050.1F, which is consistent with DOT Order 5610.2(a), Environmental Justice in Minority and Low-Income Populations.

Children's Health and Safety Risks

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires Federal agencies to make child protection a high priority because children may be more susceptible to environmental effects than adults. Risks to children's safety can be attributed to air, food, drinking water, recreational waters, soil, or products they might use or to which they may be exposed. This EA considers the potential of the Proposed Action to cause disproportionately high and adverse effects on the environmental health and safety of children within the Proposed Action footprint.

4.17.2.2 Regulatory Context and Significance Thresholds

Federal statutes, regulations, executive orders, and administrative guidance related to the

consideration of socioeconomic, environmental justice, and children's health and safety risk impacts are as follows:

- 40 CFR, Parts 1500-1508, Protection of Environment,
- EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629, February 11, 1994);
- U.S. DOT Order 5610.2(a), *Environmental Justice in Minority and Low-Income Populations*, April 15, 1997;
- Environmental Justice: Guidance Under the National Environmental Policy Act, December 10, 1997; and
- Final Guidance for Consideration of Environmental Justice in Clean Air Act 309 Reviews, July 1999.

Per FAA Order 5050.B, a proposed action may have a significant impact when an action would cause:

- Socioeconomic impacts including extensive relocation, but sufficient replacement housing is unavailable; extensive relocation of community businesses that would cause severe economic hardship for affected communities; disruption of local traffic patterns that substantially reduce the Levels of Service of roads serving the airport and its surrounding communities; and a substantial loss in community tax base;
- Environmental Justice impacts such that an action would cause disproportionately high and adverse human health or environmental effects on minority and low-income populations; and,
- Children's Health & Safety Risks impacts such that an action causes disproportionate health and safety risks to children.

4.17.2.3 No Action Alternative

Under the No Action Alternative, no improvements or changes to the existing terminal building, concourses, parking, or other ancillary facilities at BNA would occur. This alternative would not expand facilities, update airport design or systems, enhance efficiency, improve accessibility, or improve passenger and aircraft movement. Therefore, there would be no changes in the existing socioeconomic conditions, environmental justice, or children's health and safety under this alternative.

Under no action, the airport would continue to operate in an inefficient manner and not facilitate processing of international or domestic enplanements effectively. Although such impacts would not result in significant effects for the Metro Nashville or the Greater Nashville Area, such impacts would impact travelers through unnecessary loss of time associated with travel through BNA. Finally, beneficial socioeconomic activity associated with the project – regional goods and services spending, short-term construction employment, long-term services employment – would not occur under the No-Action Alternative.
4.17.2.4 Proposed Action

Operational and/or Long-term Impacts

Socioeconomics

Implementation of the Proposed Action would result in marginal increases in traffic on the surrounding road network. There are proposed changes within the existing terminal area roadways, which will impact how vehicles access and exit the proposed terminal area; however, no modifications to public roadways are proposed and nor are there any proposed changes to entrance and exits to and from the Airport. The Proposed Action has been planned to accommodate future airport growth including a potential future relocation of Donelson Pike by TDOT.

With the exception of the proposed hotel and terminal expansion, elements of the Proposed Action would not substantively create new employment; rather, they comprise improvements to elements already at BNA and would draw from the existing labor force. The proposed hotel and terminal expansion are expected to create an additional 350 jobs with the bulk of those being a result of the proposed hotel.

As the new hotel is anticipated to primarily serve existing passengers, it is assumed that additional traffic generated by the hotel would be relatively minor and primarily consist of additional employees and service trips. Therefore, the LOS of each of the primary roads to the Airport is anticipated to remain the same, and no changes would need to be made to these roads to accommodate additional traffic demands generated by the implementation of the Proposed Action.

The Proposed Action footprint (specifically, the proposed full-service hotel and the Concourse D expansion which have the greatest potential to effect surface transportation given their locations) would be minor and would not have a significant traffic impact on the adjacent roadway network around BNA. With respect to Airport parking, near-terminal parking availability will improve under the Proposed Action, which will benefit Airport and customer satisfaction.

Under implementation of the Proposed Action, no permanent residences or other non-transient housing would be constructed either within Census Tract 9801 or elsewhere. The Proposed Action would not result in any displacement of current residences or other non-transient housing. As such, demographic and housing characteristics would not be expected to change.

Environmental Justice

There would be no direct impact to environmental justice communities under the Proposed Action, which occurs entirely on property owned by MNAA. The Proposed Action would not disrupt any home or business owners since no property acquisitions or commercial or residential relocations would be required. It should also be noted that opportunities could be provided to residents with some construction-phase and long-term service employment, which would provide potential positive impacts to area low-income populations.

Children's Health and Safety Risks

Implementation of the Proposed Action would not directly affect any school or recreational area as the Proposed Action would occur entirely on property owned by MNAA. The Proposed Action BNA Vision Environmental Assessment Draft December 2017

would use best management practices during construction and traffic management plans would reduce potential impacts to health and safety risks for the public at large, including children. Given that no locations where children congregate in significantly high percentages (e.g., schools, daycare centers, playgrounds, etc.) occur within or adjacent to the footprint of the Proposed Action, no significant children's health or safety impacts would reasonably be expected to occur with the implementation of the Proposed Action.

Construction Impacts

Socioeconomic Impacts - Construction

Construction of the Proposed Action would not cause the relocation of any homes or businesses. However, it would result in some temporary traffic pattern changes within the Airport property during the construction period. The peak time of construction is projected to be from about the third quarter of 2019 to the third quarter of 2020. During that time, construction would occur at Garage C, the Administration Building, Concourse D, part of the main terminal, and the new ticketing/baggage handling area. It is expected that an average construction workforce of 180 workers per workday would be on site. In addition, it is estimated that between 50 and 75 pieces of construction equipment could be on site during peak construction. These totals would result in marginal increases in traffic at BNA, on Donelson Pike, and I-40 and would not be significant.

Over the course of the project, it is estimated that the Proposed Action would result in roughly 3,000 temporary construction jobs. Given the size and diversity of the existing regional labor pool, it is anticipated that these workers would be drawn primarily from the local / regional labor force. Consequently, no long-term or significant impacts to local demographics resulting from inmigration to satisfy employment demand are expected as a result of the construction of the Proposed Action.

Potential noise impacts associated with construction traffic are addressed in Section 4.16.

Indirect and Cumulative Impacts

The Proposed Action would result in the net increase of approximately 350 permanent jobs at BNA; these jobs would result from the new hotel, as well as increased terminal services and amenities. As the population of the labor force in Davidson County is currently estimated to be approximately 387,000 (Tennessee Department of Labor & Workforce Development, 2017), the permanent jobs generated by the Proposed Action are relatively minor in comparison to the overall county-wide labor force; therefore, there would be no significant impacts to the labor force as a result of the Proposed Action.

Although the Proposed Action would not change the land use of surrounding areas, the introduction of the hotel is anticipated to have some induced socioeconomic impacts. A Hotel Market and Feasibility Study (JLL, 2017) was completed in conjunction with development of the BNA Vision. The study found that there is a need for hotel space to support airport user demand and that a terminal-connected hotel could absorb excess demand from other cities (i.e., given the ability to provide overnight airport lodging) and from downtown Nashville (i.e., demand for higher-end lodging preferably near / at the airport); therefore, the market would absorb new supply without a negative impact on existing lodging. The hotel would augment the overall

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positioning of the airport to serve the region. Additionally, in the long term, the Proposed Action is expected to have a benefit on the NAE, thereby having a positive impact of people visiting the Greater Nashville Area.

Although the current BNA Vision projects included in this EA would not affect current entrance and exit from the Airport, the future Donelson Pike realignment could affect both on-airport and off-airport roadways. Potential environmental and socioeconomic impacts of future road realignments are not addressed in this EA and will be addressed in a separate NEPA document, prepared in association with the Donelson Pike realignment.

BMPs and Mitigation

No adverse impacts related to socioeconomics in nearby communities, Davidson County, or the Greater Nashville Area are expected to occur as a result of implementing the Proposed Action. General mitigation measures and BMPs that will be implemented to reduce potential impacts to nearby communities during construction are discussed in Section 4.16.

During construction, MNAA will require contractors to develop a traffic management plan to minimize potential impacts to BNA customers.

4.18 LIGHT EMISSIONS AND VISUAL EFFECTS

4.18.1 Affected Environment

The Airport is located within a developed portion of Metro Nashville Davidson County and is surrounded by a mix of industrial, commercial, and residential areas (Figure 4.14-1). The Airport is illuminated by various types of landside and airside lighting for buildings, access roadways, automobile parking areas, apron areas, and runways. I-40 runs east-west along the north side of the Airport, Briley Parkway runs generally north-south along the west side of the airport, Murfreesboro Pike runs generally east-west along the south side of the airport, and Donelson Pike runs north-south through the east side of the Airport (Figure 4.18-1).



Figure 4.18-1: Airport Vicinity Map

The visual landscape of the area includes rolling hills with scattered industrial, commercial, and residential development. Areas north, south, and west of the Airport have the most development, where several mid-rise hotels and office buildings have been established along nearby Donelson Pike, Elm Hill Pike, Briley Parkway, and Murfreesboro Road. The residential development located closest to the proposed construction at the terminal is located approximately 0.55 mile to the north, immediately north of I-40. Residential neighborhoods are

located along the west side of Briley Parkway, adjacent to airport property but still more than a mile from the terminal.

4.18.2 Environmental Consequences

4.18.2.1 Significance Threshold

There are no Federal statutory or regulatory requirements for light emissions upon which to base an assessment of adverse impacts associated with light emissions and visual intrusions. However, FAA will consider potential effects to properties, and people's use of properties, covered by Section 4(f) of the DOT Act, Section 6(f) of the Land and Water Conservation Fund Act, and Section 106 of the NHPA.

4.18.2.2 No Action Alternative

The No Action alternative would have no effect on existing light emissions or visual effects other than existing conditions at the airport.

4.18.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

Due to the developed nature of the environment at and surrounding the Airport, light emissions associated with the Proposed Action are unlikely to have an adverse impact on human activity or sensitive receptors. Although there would be additional lighting associated with the terminal expansion, hotel, additional administrative offices, and garage expansion, these facilities are located more than 0.5 mile from the nearest commercial or residential development. As the closest residential neighborhood is on the north side of I-40, changes in lighting at the airport and alterations to the visual landscape result from the implementation of the BNA Vision would not be expected to adversely affect these residents.

Although implementation of BNA Vision projects would modify the visual landscape of the Airport, especially from viewing points along Donelson Pike, the nature of the Proposed Action is consistent with nearby development on and surrounding the Airport property. As discussed in Section 4.1.1, the surrounding area is currently developed and supports several mid-rise hotels and office buildings. Additionally, new facilities associated with the BNA Vision have been designed to be consistent with FAA and other relevant design standards and would be visually compatible with existing structures at the Airport.

Implementation of the BNA Vision projects is not anticipated to cause human annoyance or create adverse light emissions on light-sensitive land uses. Additionally, potential for visual impacts to historic structures is not anticipated to result from implementation of the Proposed Action (this is further addressed in Section 4.12).

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The operation of aircraft (arrivals and departures) at the Airport associated with the Proposed Action would not differ from the baseline setting. Therefore, visual impacts associated with aircraft operations would not occur.

Construction Impacts

As construction activities away from sensitive receptors could occur during both daytime and nighttime hours, construction lighting would be required (e.g., to facilitate progress and to ensure worker safety). This impact would be temporary and would occur within Airport property. Construction lighting will be designed and positioned such that it does not pose a safety hazard for traffic on adjacent roadways. Due to existing lights located on Airport property and along the roadways surrounding the airport, the addition of construction lighting is not anticipated to adversely impact residential properties, result in adverse light emissions on light-sensitive land uses or cause human annoyance.

Indirect and Cumulative Impacts

As the Greater Nashville Area continues to grow and areas around the airport become more developed, additional mid- to high-rise hotels and offices buildings, as well as light emissions associated with these development, will likely increase. Zoning regulations are in place to ensure that new development is compatible with the surrounding environment.

Mitigation and BMPs

The BNA Vision projects have been designed to be aesthetically pleasing and are not expected to adversely affect the visual landscape along Donelson Pike. LED lighting will be used throughout the BNA Vision projects. Where possible, BNA Vision design strategies will be implemented to avoid excess light emissions (light pollution) and many light pollution impacts can be avoided with proper fixture selection, distribution, and direction of light. As appropriate, lighting fixtures could include directional shielding, hooding, or sconces to enhance landside and roadway lighting, while reducing glare to adjacent areas.

4.19 WATER RESOURCES

4.19.1 Affected Environment

4.19.1.1 Wetlands

The Clean Water Act (CWA) of 1977 (33 U.S.C. 1344) defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 230.3).

Based on a wetland delineation performed within Merten's Hole, two herbaceous wetlands dominated by cattails, totaling 0.4 acre, occur at the bottom of Merten's Hole. Due to the developed nature of the project areas, no other wetlands are expected to occur within the project area or be affected by the Proposed Action. Should land-disturbing activities occur within

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undeveloped portions of the potential support areas, these areas will be evaluated for the presence of wetlands (as well as other jurisdictional waters) prior to any disturbance. All impacts to wetlands and other waters will be permitted appropriately.

4.19.1.2 Floodplains

EO 11988, Floodplain Management, directs Federal agencies to take actions to reduce the risk of flood loss, minimize flood impacts on human safety, health, and welfare and restore and preserve floodplain natural and beneficial values. The Federal Emergency Management Agency (FEMA) partners with tribes, states and communities to identify floodplains and create flood maps, known as Flood Insurance Rate Maps (FIRMs). These maps support the National Flood Insurance Program (NFIP) and provide the basis for community floodplain regulations and requirements. The only floodplain within the Proposed Action areas is located along McCrory Creek in Area C and the edge of Area D (Figure 4.19-1).



Figure 4.19-1: Flood Hazard Zones

4.19.1.3 Surface Waters/Water Quality

The airport is located within the Cumberland River Watershed and is drained by tributaries of both Mill Creek and the Stones River. All drainage from BNA flows to one of three named streams, McCrory Creek, Sims Branch, or Mill Creek. McCrory Creek flows to the Stones River and Sims Branch flows to Mill Creek. Both Mill Creek and the Stones River are tributaries of the Cumberland River. Unnamed tributaries to Sims Branch flow directly through the Proposed Action project area and McCrory Creek flows through Area C and along the edge of Area D.

Unnamed tributaries originate within Merten's Hole and Sims Branch flows north directly west of Merten's Hole and east of Runway 2L/20R. Based on Tennessee's 2016 303(d) list, this portion of Sims Branch (segment TN05130202 007_0150) has been designated as habitat impaired due to propylene glycol, low dissolved oxygen and other anthropogenic alterations. TDEC has also designated Sims Branch and its tributaries as an Exceptional Tennessee Water, as the federally-listed Nashville Crayfish has been collected in Sims Branch, downstream from airport property (TDEC, 2017).

Based on Tennessee's 2016 303(d) list, McCrory Creek (segment TN05130203001_0150), which flows through Area C and at the edge of Area D, is designated as impaired due to Nitrate + Nitrite and alteration in stream-side or littoral vegetative cover. USEPA approved a nutrient and siltation/habitat alteration TMDLs that address the known pollutants on October 31, 2002 and May 16, 2008 (TDEC, 2017).

4.19.1.4 Wild and Scenic Rivers and Exceptional Tennessee Waters

The National Wild and Scenic Rivers Act (NWSRA) describes those river segments designated, or eligible to be included, in the Wild and Scenic Rivers System. The Department of the Interior (DOI) National Park Service (NPS) River and Trail Conservation Assistance Program within NPS's National Center for Recreation and Conservation (NCRC) maintains a Nationwide Rivers Inventory (NRI) of river segments that appear to qualify for inclusion in the National Wild and Scenic River System. Under the provisions of the NWSRA, Federal agencies cannot assist, by loan, grant, license, or otherwise, in construction of any water resources project that would have direct and adverse impacts on river values. River segments protected under this legislation are administered by the NPS. There are no federally-designated Wild and Scenic River approximately 100 miles east of the Airport Study Area.

The NRI includes many more river segment throughout the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values. Under a 1979 Presidential Directive, and related CEQ procedures, federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments. There are several NRI river segments that are within the Greater Nashville Area, including: Harpeth River, South Harpeth River, East Fork Stones River, West Fork Stones River, and J. Percy Priest Reservoir. The J. Percy Priest Reservoir is formed by the Percy Priest Dam on the Stones River.

TDEC's Division of Water Pollution Control has designated certain Tennessee streams as

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Exceptional Tennessee Waters (ETW) (Rule 1200-4-3-.06(4)). In general, these are waterbodies with good ecological values, valuable recreational uses, and outstanding scenery. In exceptional waters, degradation cannot be authorized unless (1) there is no reasonable alternative to the proposed activity that would render it non-degrading and (2) the activity is in the economic or social interest of the public. Mill Creek and its tributaries are designated ETWs due to the presence of the federally Endangered Nashville crayfish. Although Sims Branch and unnamed tributaries within Merten's Hole are designated as ETWs, the Nashville crayfish does not occur within the project area.

4.19.2 Environmental Consequences

4.19.2.1 Significance Threshold

The following significance thresholds have been established for water resources:

- Notable adverse impacts to natural and beneficial floodplain values occur;
- Surface or groundwater quality standards established by Federal, state, or local and tribal regulatory agencies cannot be met; and,
- Actions that contaminate public drinking water supply (including groundwater aquifers) such that public health may be adversely affected.
- Impacts to wetlands that would:
 - Adversely affect a wetlands function to protect the quality or quantity of a municipal water supply, including sole source aquifers and a potable water aquifer.
 - Substantially alter the hydrology needed to sustain the affected wetland's values and functions or those of a wetland to which it is connected.
 - Substantially reduce the affected wetland's ability to retain floodwaters or storm runoff, thereby threatening public health, safety or welfare.
 - Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically-important timber, food, or fiber resources of the affected or surrounding wetlands.
 - Promote development that causes any of the above impacts.
 - Be inconsistent with applicable State wetland strategies.

4.19.2.2 No Action Alternative

Under the No Action alternative, no impacts to water resources would occur other than permitted and non-permitted discharges associated with storm water flow from the airport. Existing BMPs (specified in both the Airport's SPCC Plan and SWPPP) that the Airport implements during the regular course of business would continue to protect water quality of surface waters that flow through airport property.

4.19.2.3 Proposed Action Alternative

Operational and/or Long-term Impacts

Under the Proposed Action, the following direct impacts will occur as a result of the work at Merten's Hole:

- Filling 0.4 acre of palustrine emergent wetland and two springs;
- Encapsulating/filling approximately 627 linear feet of perennial stream, an unnamed tributary to Sims Branch; and,
- Encapsulating/filling approximately 33 feet of perennial stream, an unnamed tributary to Sims Branch.

These impacts will require permits from both the USACE and TDEC, prior to construction.

There is a potential for impact to McCrory Creek and its floodplain as a result of LID mitigation efforts within Area C. However, the purpose of the mitigation would be to improve water quality and mitigation efforts are expected to provide long-term benefit to McCrory Creek. Potential impacts to McCrory Creek are not determined at this point, but all impacts to water resources will be permitted appropriately, once design is complete. No fill will be added to the floodplain and no adverse effects to floodplain storage capacity would occur as a result of the LID implementation in Area C. In addition, no fill is proposed within the floodplain at the edge of Area D; therefore, no impact to the floodplain in Area D would occur as a result of the proposed action. No floodplain mitigation requirement is anticipated.

Potential impacts to surface water resulting from storm water runoff will be minimized through the implementation of LID requirements and operational BMPs as discussed below under the *Mitigation and BMPs* section.

No other long-term impacts to water resources are anticipated under the Proposed Action.

Construction Impacts

The primary impact to streams during construction activities is sediment and silt. However, other pollutants are also possible, including fuel spillage from heavy equipment, domestic waste from portable restrooms, and miscellaneous construction and demolition debris. Prior to initiating construction activities associated with the Proposed Action, MNAA will obtain permit coverage under the Tennessee General Permit (No. TNR10-0000) for Storm Water Discharges from Construction Activities. As required by the Permit, a project-specific SWPPP will be developed and implemented. General Construction BMPs (including silt fences, check dams, straw bales, and other controls as appropriate) will be incorporated into construction plans to help prevent erosion and protect water quality. In addition, the MNAA will comply with local erosion and sediment control regulations.

As previously discussed under operational impacts, the stream within Merten's Hole will be encapsulated as part of the Proposed Action. During construction, impacts to downstream portions of Sims Branch could include increased sediment in the water column resulting from erosion during grading activities; however, these potential impacts will be reduced through the implementation of BMPs. No other construction-related impacts are anticipated as a result of the Proposed Action.

Indirect and Cumulative Impacts

Foreseeable development in the vicinity of the Airport, including on-airport, off-airport, and transportation projects discussed in Section 4.4, have the potential to adversely affect water resources in the vicinity of the Airport on a cumulative basis through incremental increases in impervious surfaces and the unavoidable incremental impacts to streams and wetlands during the construction of new transportation and development projects. However, the implementation of Local, State, and Federal regulatory programs to protect water quality, wetlands, and water resources help prevent and/or reduce potential negative impacts. No adverse impacts to floodplains are anticipated.

Cumulative impacts associated with implementation of the Proposed Action would include the incremental impacts of implementing the BNA Vision on water, wetlands, and water resources when added to past, present, and reasonably foreseeable future changes in water, wetland, and water resources within the areas potentially affected by the project. On Federal, State, and local levels, development is subject to regulatory programs such as the CWA and the State Aquatic Resource Alteration Permit (ARAP) program, as well as Metro Nashville Planning requirements, which protect water quality by requiring new development to meet water quality standards, and where alterations to waters cannot be avoided, mitigation to provide for restoration of lost aquatic resource benefits. These regulatory programs include protective measures during project design, including avoidance and minimization of impacts to regulated waters, as well as comprehensive mitigation requiring the replacement of lost water and wetland ecosystem functions and in some cases enhancement of such functions. The CWA NPDES program requires compliance with water quality standards as a basic and essential requirement of all regulated discharges. These programs provide that continued development in the region will not cause degradation to water quality or diminish wetlands inventories or water resources. Local Metro Nashville requirements also incorporate measures that include peak flow protection, buffers, low-impact development requirements, and other general stormwater management provisions and protective measures. These measures will protect water resources and water quality from cumulative impacts of additional development in the long term.

Metro Nashville's LID requirements help reduce the cumulative impacts of urban development to area streams and water quality. LID uses GIP to reduce stormwater runoff volume through the infiltration, evapotranspiration, and/or rainwater reuse. Incorporating LID design into Airport development as well as development within the surrounding areas would reduce the long-term and cumulative impacts to both storm water quality and quantity. MNAA's designation of Area C for LID mitigation will benefit McCrory Creek in the long term.

Mitigation and BMPs

Impacts to "waters of the U.S." require authorization from the USACE under Section 404 of the CWA. Similarly, impacts to "waters of the State" require permits from TDEC under Section 401

of the CWA and the ARAP program¹⁰, Tennessee Water Quality Control Act¹¹, and the NPDES stormwater discharge program. In conjunction with refinements in site design and Section 404 and ARAP permitting, the impacts may increase or decrease once final design of the Proposed Action is completed. The proposed project would be designed to avoid and minimize impacts to aquatic resources to the extent practicable. Efforts to further minimize impacts would continue throughout the design, permitting, and construction process.

To mitigate for stream loss, MNAA proposes to make improvements to a stream located on MNAA property and to mitigate the loss of wetlands, MNAA proposes to purchase credits from the Swamp Road Wetland Mitigation Bank. MNAA will complete stream and wetland mitigation requirements as conditioned by the USACE and TDEC during the permitting process. Stream and wetland mitigation commitments will be scheduled as required in the permits.

MNAA will comply with all permitting requirements with respect to impacts to wetlands and streams, and as required by Sections 401, 402, and 404 of the Clean Water Act (CWA) as well as Tennessee's ARAP program. During construction, MNAA will also comply with a TDEC-approved SWPPP to reduce potential impacts to streams and other surface waters due to construction. In the long term, water resources at the Airport will be protected through the implementation of BMPs identified in the Airport's SWPPP and SPCC Plan.



 ¹⁰ Rules of Tennessee Department of Environment and Conservation, Water Quality Control Board, Division of Water Pollution Control, Chapter 1200-4-7, Aquatic Resource Alteration.
 ¹¹ Tennessee Water Quality Control Act of 1977, TCA 64-3-101.

SECTION 5 SCOPING AND PUBLIC INVOLVEMENT

5.1 SECTION OVERVIEW

This section summarizes the interagency coordination and public involvement associated with the EA process. The section also presents a list of Federal, state, and local agencies and other interested parties that have been involved in the development of the EA. The FAA and other Federal agencies implementing NEPA must give members of the public an opportunity to provide input during the project development process. Public participation is an important element of Federal agencies' evaluation and presentation of information about the proposed action, reasonable alternatives, and expected environmental effects. This participation also provides the Federal decision maker with information about issues most important to the public that the proposed action and its reasonable alternative(s) would affect.

The CEQ gives Federal agencies instructions on NEPA's public involvement process at 40 CFR 1506.6. In addition, many special purpose laws applicable to airport projects require additional notice and opportunity for public involvement.

5.2 AGENCY SCOPING

Early notification and scoping letters regarding implementation of the BNA Vision and the development of the EA were mailed to agencies and Native American tribal representatives in February 2017, establishing initial coordination and requesting pertinent information about issues of importance and/or about these entities' concerns regarding potential adverse environmental effects associated with the Proposed Action.

The following government agencies were included in the scoping process:

- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (USEPA)
- U.S. Army Corps of Engineers (USACE)
- U.S. Coast Guard
- U.S. Forest Service
- Federal Highway Administration (FHWA)
- U.S. Department of Agriculture Farm Services Agency
- National Park Service (NPS)
- Tennessee Valley Authority (TVA)
- Tennessee Department of Environment & Conservation (TDEC)
- Tennessee Wildlife Resources Agency (TWRA)
- Tennessee Historical Commission (THC) / State Historic Preservation Office (SHPO)

- Tennessee Division of Forestry
- Tennessee Department of Transportation (TDOT)
- Metropolitan Government of Nashville & Davidson County

MNAA also initiated tribal coordination as part of the scoping process. MNAA included the following tribes in the initial scoping process.

- Absentee Shawnee Tribe of Oklahoma
- Alabama-Coushatta Tribe of Texas
- Alabama-Quassarte Tribal Town of Oklahoma
- Cherokee Nation
- Chickasaw Nation of Oklahoma
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Kialegee Tribal Town
- Muscogee (Creek) Nation of Oklahoma
- Poarch Band of Creek Indians
- Seminole Nation
- Shawnee Tribe of Oklahoma
- Thlopthlocco Tribal Town
- United Keetoowah Band of Cherokee Indians of Oklahoma

Government agencies and tribes that responded to the scoping request included: USACE, USEPA, USFWS, TVA, TDEC, Alabama-Coushatta Tribe of Texas, and the Eastern Band of Cherokee Indians. Scoping response letters received are included in Appendix F and their contents are summarized in Table 5.2-1. MNAA has incorporated information provided by these agencies into this EA.

Agency/Tribe	Response Date	Summary of Response/Concerns
USACE	March 22, 2017	Proposed activities may involve work in wetlands/waters of the U.S.; therefore, a Department of Army permit may be required. Once plans are finalized, the applicant should apply for and obtain any required permits prior to any disturbance to stream and/or wetland that may occur due to project construction.
USEPA	April 12, 2017	A review of the proposed project area shows the passage of a stream, Sims Branch, beneath the airport. Evaluate and identify details of potential impacts to the stream in the Draft EA. Identify implementable measures to prevent erosion and sediment runoff from the project site both during and after the transformation and expansion of the airport in the site construction plans.
USFWS	March 22, 2017	Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the terminal area and adjacent improvement areas, and we have no concerns with those areas. It appears that most of the potential support areas around the airport boundary are cleared sites. However, if any tree clearing is proposed at these sites, habitat assessments for endangered Indiana bat (<i>Myotis sodalis</i>) suitable roost trees should take place and the assessment submitted to our office for review before tree removal occurs. Additionally, the endangered Nashville crayfish (<i>Orconectes shoupi</i>) is known to occur off the airport property in Sims Branch and an unnamed tributary to Mill Creek. These streams are located off the northwest boundary of the airport. Any work that could cause runoff, etc., into these streams should be properly coordinated with USFWS.
TVA	March 21, 2017	TVA staff has reviewed the scoping information and identified existing TVA transmission lines in the vicinity of your proposed action. TVA requests that MNAA consider the possibility that TVA may need a new transmission line in this area in the future, which may require an expansion of the existing right-of-way easement. TVA requests a copy of the draft and final EAs so that they may stay informed of MNAA's decision.

Table 5.2-1: Responses to Scoping

Agency/Tribe	Response Date	Summary of Response/Concerns
TDEC – Division of Underground Storage Tanks	February 24, 2017	A review of TDEC records indicates that there are no known issues in the designated areas relative to the Division.
TDEC – Division of Water Resources	March 20, 2017	From the information submitted, the activities will require coverage under Tennessee's General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Associated with Construction Activities (CGP) and an associated Storm Water Pollution Prevention Plan (SWPPP), as they will well exceed one acre of land disturbance. The potential support area to the southwest appears to exceed 100 acres, with drainage to Mill Creek. This support area would require a hydrologic determination and potentially an Aquatic Resource Alteration Permit (ARAP) based on the close proximity to Mill Creek. The eastern support area appears to cover more than 75 acres and is in a previously disturbed area. The potential support area to the northeast appears to cover over 100 acres and is adjacent to/impinging upon McCrory Creek which would likely require a buffer zone and potentially need to be included in an ARAP. The potential support area to the northwest appears to cover in excess of 15 acres and would need to be included in the CGP as well.
TDEC – Division of Remediation	April 26, 2017	There are 21 sites within one mile of the subject property (project areas). A map of nearby known DoR and drycleaner sites along with site information is included with the letter.
TDEC-Office of Policy and Planning	March 16, 2017	Within TDEC, the Office of Policy and Planning is responsible for the coordination of department-wide responses to requests for review and comment on Draft EAs and EISs (NEPA documents) for proposed projects within Tennessee that trigger requirements pursuant to NEPA. Future scoping letters should be sent to appropriate division or field office. TDEC recently launched a new public-facing portal for the submittal of NEPA document review requests. To submit a NEPA document review request on a draft EA or draft EIS, visit the NEPA Comment Request Portal webpage and complete the submittal information.

Agency/Tribe	Response Date	Summary of Response/Concerns
Alabama- Coushatta Tribe of Texas	March 10, 2017	No immediately known impacts to cultural assets of the Alabama-Coushatta Tribe of Texas are anticipated in conjunction with the proposal (BNA Vision). For areas not previously disturbed, request consideration of archaeological evaluation to avoid additional impacts to unknown cultural resources. In the event of the inadvertent discovery of archaeological artifacts and/or human remains, activity in proximity to the location should cease and appropriate authorities, including the Alabama-Coushatta Tribe of Texas and the State Historic Preservation Office, notified without delay for additional consultations.
Eastern Band of Cherokee Indians	March 13, 2017	From the aerial photographs provided with the letter dated 16 February, it seems that the majority of the APE has been heavily disturbed by previous activities. The likelihood for finding intact cultural deposits and human burials is minimal, but deep ground disturbance could uncover intact soil deposits. Before we provide concurrence or non-concurrence, we would appreciate the opportunity to review the Environmental Assessment. Upon review of the EA, we would issue a formal statement regarding Cherokee interests within the APE. In the event that project design plans change, or cultural resources or human remains are inadvertently discovered, the EBCI THPO requests all work should cease and this office notified to continue the government-to-government consultation process as stipulated under §36CFR800.

5.3 DRAFT EA NOTIFICATION AND DISTRIBUTION

As the public comment process is very important to the environmental review process, MNAA made the Draft EA available to the public on December 21, 2017 via hard copy and on the Airport's website; a copy of the Notice of Availability (NOA) is provided in Appendix I.

Prior to the public comment period, MNAA published the NOA in *The Tennessean* and on BNA's website. The NOA provided information to interested parties regarding where they could access a hard copy of the Draft EA. The BNA website included a copy of the NOA and directions for downloading the Draft EA. The NOA also informed interested parties that they had 30 days from the date of the NOA to submit written comments on the Draft EA via letter or email to MNAA.

Comments and comment responses received during the comment period are included in Appendix J.

SECTION 6 REFERENCES

- Atkins North America, 2016a. Criteria Air Pollutant and Greenhouse Gas Emissions Inventory. Nashville International Airport, as presented in Appendix A to the Environmental Evaluation (Short Environmental Assessment) for Airport Development Projects: BNA Terminal Area Parking Garage, September 2, 2016.
- Atkins North America, 2016b. Environmental Evaluation (Short Environmental Assessment) for Airport Development Projects – Terminal Area Parking Garage, September 23, 2016.
- Council on Environmental Quality. *Implementing regulations for the National Environmental Policy Act codified at 40 CFR 1500, et seq.*, last revision noted April 25, 2007.
- Council on Environmental Quality. Memorandum for Heads of Federal Departments and Agencies: Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Review, August 1, 2016.
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- Etnier, Davide A. and Wayne C. Starnes. *The Fishes of Tennessee*. Knoxville: The University Press, 1993.
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- Executive Order 13783 of March 28, 2017. *Promoting Energy Independence and Economic Growth*, 82 Fed. Register No. 61, 16093-16097, March 31, 2017.
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Manager					
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Appendix A Special Purpose Laws

Table 1-1	. A list of statutes, r	egulations, and exec	utive orders included	in defining
the term,	"special purpose lay	ws."		

Statute or Executive Order	Implementing Regulation or Guidance	Notes
Statutes		
49 USC. Subchapter I, section		Formerly, Section 4(f) of the Dept. of
303.c.		Transportation Act.
49 USC Subpart B, Chapter 471, section 47106.(c).		Environmental Requirements for new airports, new runways, or major runway extensions.
American Indian Religious Freedom Act	43 CFR, Parts 7.32, 7.7	
Anadromous Fish Conservation Act	50 CFR, Part 401	
Archeological and Historic Preservation Act	36 CFR, Part 68	
Archeological Resources	25 CFR, Part 262	
Protection Act	36 CFR, Part 79	
	43 CFR, Parts 3, 7	
Clean Air Act	40 CFR, Part 93	See Subpart B
Coastal Barrier Resources Act		
Coastal Zone Management Act	15 CFR, Part 930	See Subparts C and D
Comprehensive Environmental	40 CFR, Part 307	See Subpart J for more information on
Response, Conservation, and Liability Act		various topics addressed for this law.
Endangered Species Act, Section 7	50 CFR, Parts 17, 402	Part 17 lists species.
Farmland Protection Policy Act	7 CFR, Part 657, 658	
Land and Water Conservation	36 CFR, Part 59	
Act, section 6(f)		
Magnuson-Stevens Act	50 CFR, Part 600	See Subpart J for Essential Fish Habitats and Subpart K for Coordination and Consultation.
Marine Mammal Protection Act	50 CFR, Part 18, 216	
Migratory Bird Treaty Act	50 CFR, Part 21	
National Historic Preservation Act	36 CFR, Parts 800 et. seq.	
National American Graves	43 CFR, Part 10	When airports occur on Indian
Repatriation Act	25 CFR, Part 262.8	reservation land or Federal lands.
Resource Conservation and	40 CFR, Part 256	See Subpart E.
Recovery Act		
Safe Drinking Water Act	40 CFR, Part 141	
Uniform Relocation and Real	49 CFR, Part 49	
Property Acquisition Policy Act	FAA Order 5100.38B	
Wild and Scenic Rivers Act	36 CFR, Part 297	

April 2006

ORDER 5050.4B

Executive Orders	Implementing Regulation or Guidance	Notes
11593 Protection and		
Enhancement of the Cultural		
Environment		
11593. Protection and		
Enhancement of the Cultural		
Environment		
11990, Protection of Wetlands	DOT Order, 5660.1A	
11998, Floodplain Management	DOT Order 5650.2	
12372, Intergovernmental Review		
of Federal Programs		
12898, Federal Actions to		
Address Environmental Justice in	DOT Order 5610.2	
Minority Populations and Low-		
Income Populations		
13007, Indian Sacred Sites		
13045, Protection of Children		
from Environmental Health Risks		
and Safety Risks		
13089, Coral Reef Protection		
13112, Invasive Species		
13158, Marine Protection Areas		Includes Great Lakes
13175, Consultation and		
Coordination With Indian Tribal	FAA Order 1210.20	
Governments		
13186, Responsibilities of		
Federal Agencies to Protect		
Migratory Birds		
13274, Environmental		
Stewardship and Transportation		
Infrastructure Projects		

Appendix B Nashville International Airport Enplanements Forecast

Nashville International Airport Enplanements Forecast

Prepared by Mary A. Lynch, in association with TransSolutions, LLC

April 11, 2017

1.0 EXECUTIVE SUMMARY

As the following report will demonstrate, the Nashville socioeconomic environment is strong according to local and national sources of historical and forecast population, income, and labor data. The convention, tourism, and business growth is supported by active building and development programs in the community. Air service at the Nashville International Airport (BNA) is growing and the markets served by the various carriers are profitable with strong load factors and revenue generation. This scenario supports an Airport enplanement forecast which recognizes and continues the strong recent growth in traffic. The enplanement forecast for BNA, and its comparison to other forecasts, are presented in **Exhibit 1.1**. The 2017 FAA TAF forecast is consistent with the BNA Vision/ALERT forecasts.



Sources; FAA TAF, Airport records, 2011 BNA Master Plan, Mary A. Lynch analysis

2.0 NASHVILLE SOCIOECONOMICS

The Nashville--Davidson--Murfreesboro--Franklin, TN Metropolitan Statistical Area (MSA), as defined by the US Office of Management and Budget, is comprised of the following counties:

- Cannon, TN Cheatham, TN
 - Hickman, TN
- tham, TN Davidson, TN man. TN • Macon. TN
- Dickson, TNMaury, TN
- Robertson, TN Rutherford, TN
- Smith, TN
- Sumner, TN
- Trousdale, TN
- Williamson, TN Wilson, TN

The socioeconomics evaluated in this report cover this area, and will be referred to as Nashville. Historical and forecast socioeconomics for Nashville were gathered from two primary sources. The Economic Study & Forecast: Metropolitan Nashville Airport Authority, Boyd Center for Economic Research, The University of Tennessee, Knoxville (Boyd Study) provided Nashville MSA data on population, taxable sales, total income, per capita personal income (PCPI) and wages & salaries. Woods & Poole Economics, Inc. (W&P) provided data at the United States, county and MSA level for population, total employment, total personal income and PCPI. These data sources were used in the analysis of the Nashville socioeconomics and in developing enplanement forecasts.

Air travel to and from BNA is driven by two primary sources in the area. Travelers visiting Nashville are attracted by the vibrant tourism, convention and business elements of the area. Travel by local Nashville residents is fueled by the strong industry and population growth, and strong income factors in and around the area. These elements provide a strong base for the recent dynamic growth of enplanements at BNA and for the continuing growth in air travel.

These elements will be discussed individually in the following sections.

2.1 Economics, Businesses and Jobs

Nashville is one of the stronger growth areas in the country according to the W&P summary of economic forecasts.¹ This evaluation is supported by recent and forecast socioeconomic performance in the W&P data. **Exhibit 2.1** presents some of this data graphically.

¹ The 2016 Complete Economic and Demographic Data Source, Woods & Poole Economics, Inc., page 8







Source: Woods & Poole, Inc.

The exhibit indicates that Nashville experienced faster growth than the United States in employment, total income and PCPI from 2002 through 2015.

The first graph in the exhibit indicates that Nashville increased its share of the country's total employment over that time, from 0.057 percent to 0.063 percent. Nashville employment grew over 26 percent from 2002 through 2015, a compound average annual growth rate (CAAGR) of 1.8 percent. Over this time, employment in the US grew only 14 percent, a CAAGR of just 1 percent. The employment forecast indicates that Nashville will continue to outpace the US in growth throughout 2041, increasing 56 percent over 2015 versus the US forecast growth of only 38 percent. By 2041, Nashville's share of US employment will represent over 0.75 percent of the nation's total.

The middle graphic in the exhibit shows a similar pattern of growth in Nashville's total income versus US total income. From 2002 through 2015, a Nashville CAAGR of almost 3 percent exceeded the US CAAGR of only 2 percent, increasing Nashville's share of the country's total income from 0.52 percent to 0.59 percent. From 2015 through 2041, the W&P forecast projects that Nashville's total income will more than double, while the US will see only a 74 percent increase in total income. Thus by 2041, Nashville will have 0.74 percent of the country's total income.

The bottom graph in the exhibit indicates that Nashville PCPI has remained at or above US PCPI for the entire historical period shown, and will continue to remain above US PCPI throughout 2041.

Nashville's performance level in these socioeconomic indicators supports the idea that growth in the demand for air travel at BNA might also exceed the growth rates for US enplanements.

Nashville is home to several Fortune 500 companies such as HCA Holdings Inc., Community Health Systems, Dollar General Group, Tractor Supply Co., LifePoint Health, and Delek US Holdings². Some of the employment growth in Nashville generated by the relocation of companies and by the expansion of companies currently located in the MSA is tracked by the Nashville Chamber of Commerce. Recent job growth is noted in **Table 2.1**. The types of companies expanding and relocating to create these new jobs include corporate operations, advanced manufacturing, music and entertainment, supply chain management, and healthcare.

Table 2.1Employment Generation in Nashville							
Fiscal Year Number of New Jobs Relocations ²							
2016-2017	7,456 ¹	Not Available					
2015-2016	12,137	Not Available					
2014-2015	17,562	37					
2013-2014	19,525	39					
2012-2013	10,918	29					
2011-2012	14,351	49					
2010-2011	7,321	30					
2009-2010	9,450	18					
2008-2009	7,286	34					

1. Only 4.5 months of the year

2. Some jobs are due to expansion

Source: Nashville Chamber of Commerce

In 1990, Nashville initiated the Nashville Partnership 2000 (P2000) to create an organization that would work together to raise money to market the Nashville region and attract businesses to the area. Every five years the Partnership creates a five-year action strategy with very specific goals regarding socioeconomic growth. The organization is now P2020. Among the accomplishments attributed to the organization are:

- More than 850 new companies relocated to the Nashville region
- Expansion of many local companies
- More than 378,000 new jobs created in the region
- Significant population and income growth

 $^{^{2}\} http://www.bizjournals.com/nashville/blog/2016/06/nashville-s-fortune-500-companies-reeled-in-more.html$

Its budget for the implementation of its P2020 strategic plan exceeds \$20 million and its funding is dominated by the private sector. The public private segment of its budgeting includes more than 275 businesses, investors and government organizations.³

With this level of private industry and public support and coordination over a 27-year period, it is likely that the strong socioeconomic expansion of the area will continue.

2.2 <u>Conventions, Tourism & Hotels</u>

Nashville is home to numerous tourist attractions and special events:

- Music and entertainment venues such as Music Row, Ryman Auditorium/The Grand Ole Opry, and the Country Music Hall of Fame and Museum
- Historical homes and plantations such as the Belle Meade Plantation, the Belmont Mansion, Fort Nashborough, and Travellers Rest Plantation
- Outdoor venues such as the Nashville Parthenon, Centennial Park, the Nashville Zoo, Cheekwood Botanical Gardens, and Museum of Art
- Annual events such as the Music City Food + Wine, Live on the Green and Ascend Amphitheater, CMA Music Fest, Bonnaroo, New Year's Eve, and Fourth of July celebrations

These attractions and events draw millions of visitors annually. The Nashville Convention and Visitors Corp. (NCVC) brands and sells the area actively. NCVC has offices in Chicago, Atlanta, Washington D.C., Los Angeles, and Denver that market conventions and tourism into Nashville. This active and well-funded promotion of the area insures its continued growth and expansion.

Hotel space in Nashville is expanding to accommodate the ever-growing convention and tourism markets as presented in **Table 2.2**. Data from 2006 through 2016 was provided by the NCVC. Room growth was estimated for 2017-2019 based upon the Davidson County, TN Hotel Development Pipeline. This level of growth indicates that the growth in convention, tourism and business activity in Nashville is expected to continue.

Table 2.2Hotel Room Growth						
	# of Rooms	Avg. Increase /Year				
2006	33,052					
2011	35,727	535				
2016	39,420	739				
2017*	40,693	1,273				
2018*	44,404	3,710				
2019*	46,982	2,578				

Source: NCVC

³ http://icic.org/works-cities-chamber-partnership-leads-catalytic-growth-10-county-nashville-metro/

*The estimated number of potential new hotel rooms was calculated by weighting the number of rooms expected by the likelihood that the project will be realized.

Overall performance of the hotel and tourism industries in Nashville since 2010 is summarized in **Table 2.3** and **Table 2.4**. The contribution of the hotel occupancy tax has more than doubled in the six recorded years, adding almost \$65 million to the local economy. Hotel occupancy has increased to 75% despite the additions to area hotel capacity cited in **Table 2.2**. Convention activity has doubled since 2010, due largely to the opening of the new convention center in 2013. This activity supports the expectations of continued growth in the economy embodied in the socioeconomic forecasts presented in the previous section.

Table 2.3 Hotel & Convention Performance									
<u>2010*</u> 2011 2012 2013 2014 2015 2016									
Hotel Occupancy Tax (000)	\$25,165	\$31,555	\$34,971	\$40,204	\$49,883	\$57,028	\$64,709		
Number of Visitors (million)	10.0	11.2	11.5	12.2	13.1	13.5	13.9		
Hotel Occupancy Rate (%)	59%	63%	66%	69%	73%	74%	75%		
Conventions Held	288	406	419	537	610	638	687		
Convention Delegates	354,193	462,323	469,114	551,267	633,594	747,404	781,460		
Hotel Rooms Sold (000)	4,985	5,626	6,023	6,355	6,824	7,068	7,308		

*Flood in May 2010. Gaylord Opryland Resort & Convention Center closed May-November. Source: NCVC

Table 2.4 Hotel & Convention Performance Year Over Year Change								
							CAAG	Total Increase
2011* 2012 2013 ₂₀₁₄ 2015 2016							2010- 2016	2010- 2016
Hotel Occupancy Tax	25.4%	10.8%	15.0%	24.1%	14.3%	13.5%	17.0%	157.1%
Number of Visitors	12.0%	2.7%	6.1%	7.4%	3.1%	3.0%	5.6%	39.0%
Hotel Occupancy Rate % Point Change	4	3	3	4	1	1	2.7 %Pts.	16 %Pts.
Conventions Held	41.0%	3.2%	28.2%	13.6%	4.6%	7.7%	15.6%	138.5%
Convention Delegates	30.5%	1.5%	17.5%	14.9%	18.0%	4.6%	14.1%	120.6%
Hotel Rooms Sold	12.9%	7.1%	5.5%	7.4%	3.6%	3.4%	6.6%	46.6%

*Flood in May 2010. Gaylord Opryland Resort & Convention Center closed May-November. Source: NCVC

3.0 BNA RECENT AIR SERVICE DEVELOPMENT

An analysis conducted for the Airport in November of 2015^4 analyzed the air service at the Airport. Much of this discussion is drawn from that analysis.

Nashville is currently served by the following legacy and low fare scheduled carriers and their regional partners:

- Air Canada Alaska American Boutique
- Contour
 Olda
 Frontier
 JetBlue
- Southwest United Southwest

Carrier market shares for 2015 are presented in **Table 3.1**⁴:

Table 3.1 Air Carrier Shares of BNA Enplanements		
Carrier	Share	
Southwest	55.6%	
American	20.2%	
Delta	15.8%	
United	6.2%	
Frontier	1.5%	
Other	0.7%	

The Airport experienced significant growth 2013 through 2016, partly due to the addition of the new markets presented in **Table 3.2**⁴:

Table 3.2			
New Markets at BNA			
		Daily	
<u>Airline</u>	<u>Airport</u>	<u>Departures</u>	Service Started
Southwest	DAL	3.0	November 2014
Southwest	DCA	3.0	August 2014
Southwest	EWR	2.0	March 2013
Southwest	LGA	3.0	January 2013
Southwest	OAK	1.0	June 2015
Southwest	PIT	1.0	September 2013
Southwest	PNS	2.0	November 2013
Southwest	RSW	1.0	January 2013
Alaska	SEA	1.0	September 2015
Delta	LAX	1.0	April 2013

⁴ Report of the Airport Consultant, Metropolitan Nashville Airport Authority, Airport

Improvement Revenue Bonds, Series 2015A (Non-AMT) and Series 2015B (AMT)

Prepared by Trillion Av, LLC, Austin, TX in association with AVK Consulting, Inc., Partners for Economic Solutions
JetBlue	BOS	2.0	May 2016
JetBlue	FLL	1.0	May 2016
SeaPort	MSL	1.0	January 2015
OneJet	IND	0.6	September 2015

BNA growth is depicted graphically in **Exhibit 3.1**. This exhibit displays how traffic growth exploded after 2013. Growth from 2013 through 2016 was 5.2 percent, 6.6 percent, 5.6 percent and 11.3 percent, respectively. The rate of growth over this period far exceeded the growth of traffic in the US as a whole.

Most of Southwest Airlines' markets at BNA were more profitable on a revenue per available seat mile basis in CY 2014 than its system average. In FY 2015 Southwest averaged a 79 percent load factor. American Airlines routes to DFW, CLT and ORD operated at load factors above 80 percent in FY 2015. Of American's nine routes at BNA during that time, eight operated at load factors of 75 percent or above. Delta's average load factor at BNA was 86 percent in FY 2015. Such high load factors might warrant additional capacity for these carriers at BNA⁴.

BNA's distribution of traffic across several major carriers, and its service by both legacy and low fare carriers, give it a healthy traffic base. Strong performance in yield and load factors have contributed to the carriers' willingness to expand markets and capacity at the Airport. This bodes well for continued growth at BNA.



4.0 ENPLANEMENT FORECAST

The Nashville area's strong socioeconomic environment, its vibrant convention, tourist and business growth, and its solid air service base provide support for continued growth in enplanements.

Nashville enplanements have experienced unprecedented growth since 2010. This growth is depicted in **Exhibit 4.1** and **Exhibit 4.2**. Exhibit 4.1 presents BNA enplanements as recorded and forecast in the January 2017 FAA TAF. BNA enplanements are graphed on the left axis and US enplanements are graphed on the right axis. Exhibit 4.2 presents the share of total US enplanements represented by BNA. While the pattern of growth appears somewhat similar in Exhibit 4.1, Exhibit 4.2 indicates that the overall trend in BNA's share 1996 through 2010 was gradually upward, from 0.57 percent in 1996 to 0.63 percent in 2010. BNA's share of US total enplanements increased sharply from 0.63 percent in 2010 to 0.75 percent in 2016. The FAA TAF projects the BNA share to increase further to 0.83 percent in 2018, and to remain around that level throughout the forecast period. The FAA TAF for BNA has recognized the recent high growth of traffic at the Airport and incorporated this into its forecast.



Source: 2017 FAA TAF

In order to determine whether or not such growth is reasonable, a series of forecasts was developed using local Nashville socioeconomics for comparison to the FAA TAF projections. Historic and forecast socioeconomic data from two different sources were used to develop these independent forecasts: Woods & Poole Economics data, and data from the Boyd Center for Economic Research. Statistics on employment,

total income, PCPI, wages and salaries, and taxable sales were used in developing a number of regression equations relating enplaned passengers at BNA to local data.

Historically, the two sources of socioeconomic data were reasonably close. In the forecasts, the Boyd Center data tended to incorporate slightly higher growth. The difference appeared to be in what the two sources assumed for growth in the immediate years, 2016-2018. Beyond that period, the growth rates of the various measures were not vastly different.

Eight different equations were calculated, and all proved to be statistically significant. That is, in all of the equations, the socioeconomic variable used to explain changes in enplanements accounted for over 85 percent of the variation. It is interesting to note that all of the equations projected traffic higher than the FAA TAF. Four of the equations produced results that were so high as to be judged unreasonable. The other four resulted in projections that ranged from 2.0 percent to 5.5 percent above the FAA TAF by 2041.

While all of the forecasts developed using socioeconomic regression analysis were statistically reliable overall, and those that were reasonable were within close range of the FAA TAF, none of the regression equations adequately forecasted the 2014-2016 (and year-to-date 2017) sharp increase in enplanements. Only the FAA TAF forecast picked up the short-term sharp increases. All of the equations gradually caught up with, and slowly overtook, the FAA TAF later in the forecast period⁵.

For this reason, it is recommended that the forecast used for planning and development at the airport be a combination of the FAA TAF forecast (2017-2021) and the forecast resulting from the Boyd Center PCPI based regression (2026-2041). By 2041, the Boyd Center forecast is virtually identical to the Woods & Poole forecast developed using employment. However, the Boyd Center-based forecast seems to show the expectations for higher short term growth better than the Woods & Poole forecast. Given that the center is local, it is possible that this projection might more accurately recognize the local, short-term trends. The forecasts are presented in **Exhibit 4.3**. The graphic indicates that all of the forecasts cluster closely, providing some degree of confidence that the forecast range is reasonable according to a number of different measures from several different sources. The absolute numbers for the selected forecast are presented in **Table 4.1**.

⁵ Since the Boyd socioeconomic forecasts only went out to 2026, the regressions using the Boyd data were extended through 2041 using the growth rates in the FAA TAF enplanement forecast.



Source: Mary A. Lynch analysis

7	Table 4.1 BNA											
Enj	olanements											
2011	4,806,092											
2012	4,923,323											
2013	5,178,915											
2014	2014 5,521,701											
2015	20145,521,70120155,831,513											
2016	6,489,739											
Forec	ast											
2017	7,091,433											
2021	7,716,463											
2026	8,618,358											
2031	9,424,887											
2041	11,176,900											

Source: Mary A. Lynch analysis

Included in this forecast are expectations for incremental international passengers at BNA. A 2016 study conducted for the Airport identified possible international markets and developed expectations for enplanements at BNA for those markets. These international enplanements are an element of the growth embodied in the forecast presented above. The international forecasts were developed through 2021. For this projection, the forecasts were extrapolated through 2041 using regional growth rates in the FAA's 2017 Aerospace Forecast. The domestic/international split included in this forecast is presented in **Table 4.2**.

			Table 4.2	2		
		Domestic/I	nternationa	l Enplanem	ents	
		Inte	rnational E	nplanemen	ts ¹	
	<u>2016</u>	2017	2021	2026	2031	<u>2041</u>
YYZ	49,218	66,219	66,219	78,647	93,408	131,762
CUN	8,472	11,947	17,599	21,309	25,802	37,827
LHR	-	-	29,395	33,257	37,628	48,166
SJU	-	3,295	6,590	7,979	9,661	14,163
PUJ	-	-	5,109	6,186	7,490	10,981
MBJ	-	-	875	1,060	1,283	1,882
SJO	-	-	875	1,060	1,283	1,882
FPO	1,058	-	1,210	1,430	1,690	2,361
MEX	-	-	14,638	17,724	21,461	31,463
KEF	-	-	23,986	28,350	33,509	46,812
Total	58,749	81,461	166,496	197,003	233,215	327,300
		D	omestic En	planements		
	<u>2016</u>	2017	2021	2026	2031	<u>2041</u>
	6,430,990	7,009,972	7,549,967	8,421,355	9,191,673	10,849,601
			Total Enpl	anements		
	2016	2017	2021	2026	2031	2041
	6,489,739	7,091,433	7,716,463	8,618,358	9,424,887	11,176,900

1. Airport management provided 2016-2021 2021-2041 Mary A. Lynch analyses

Appendix C Screening Matrix for IAB

Nashville IAB Programming and Planning Ar Qualitative Evaluation of Elements (WEIGHT)	alysis ED)								
		IAB on Co	ncourse A	IAB on Co	oncourse D	IAB on G	rand Hall	IAB S	atellite
EVALUATION CRITERIA	Weight Factor	Optio	on 01	Optio	on 02	Optio	on 03	Opti	on 04
SCHEMATIC DIAGRAMS OF CONCEPTS									
		RAW	WTD	RAW	WTD	RAW	WTD	RAW	WTD
Level of Service (Passenger NAE)									
Image (Welcome Experience)	3	3	9	3	9	5	15	4	12
Travel Distance (Gate to IAB)	2	4	8	3	6	5	10	2	4
Vertical Transitions (Level Changes)	1	5	5	5	5	4	4	3	3
Passenger Flow (Understandable)	2	3	6	3	6	5	10	3	6
Relative Cost									
Capital Cost (IAB - Net)	3	3	9	5	15	3	9	2	6
Alternative Funding Opportunties	2	3	6	3	6	5	10	5	10
Construction Impacts									
Phasing / Constructability (Landside vs Airside)	2	4	8	5	10	2	4	3	6
Schedule (IAB Delivery)	1	4	4	5	5	3	3	2	2
Operational Impact (Gate / aircraft movement)	2	3	6	5	10	3	6	4	8
Wide Body Aircroft	2	5	10	2	4	4	0	4	0
Norrow Body Alician	2	3	10	2	4	4	0	4	0
Nation Body Alicial	3	4	6	3	9	5		2	2
Airfield / Ramp Operational Efficiency	3	5	15	1	3	5	15	2	5
CBP throughout (800/hr min)	1	5	5	1	1	4	4	4	4
	•			•	•	-			
UNWEIGHTED	TOTALS>>	53		49		56		41	
WEIGHTED	TOTALS>>		101		94		116		80
Raw Bes Bette Good Fai Poo	Evaluation I t 5 r 4 d 3 r 2 r 1	Rating							

Appendix D Proposed Space Utilization Plan



CORGAN Nashville International Airport*

BNA TERMINAL & LANDSIDE EXPANSION OVERALL FLOOR PLANS - EXISTING - GROUND TRANSPORTATION LEVEL 08/25/17



AE1-0-100Z



Airline Club Bag Screening BHS Baggage Claim Circulation / Airside Circulation / Landside Circulation / Sterile Amenity Concessions Support / Concessions Holdrooms / Domestic Holdrooms / International Hotel Immigration / Custom Inspection / Quarantine Mech. / Elec. / Comm. Restrooms / BOH Restrooms / Public SSCP / TSA Support Support / Airline Support / Airport Ticketing Counter / Queuing Open To Below Unprogrammed / Unassigned **KEYPLAN** GARAGE

AE1-0-200Z



^{08/25/17}



KEYPLAN

GARAGE

NORTH

 \bigoplus

PLAN NORTH

Airline Club Bag Screening BHS Baggage Claim Circulation / Airside Circulation / Landside Circulation / Sterile Amenity Concessions Support / Concessions Holdrooms / Domestic Holdrooms / International

Hotel

Immigration / Custom Inspection / Quarantine Mech. / Elec. / Comm. Restrooms / BOH Restrooms / Public SSCP / TSA Support Support / Airline Support / Airport Ticketing Counter / Queuing Open To Below

Unprogrammed / Unassigned



08/25/17

AE1-0-400Z



08/25/17

Nashville International Airport*

AE1-0-500Z





^{08/25/17}

Nashville International Airport*

AE1-0-700Z





BNA TERMINAL & LANDSIDE EXPANSION OVERALL PLANS - 2041 - GROUND TRANSPORTATION LEVEL 08/25/17

AE1-2-100Z



BNA TERMINAL & LANDSIDE EXPANSION OVERALL PLANS - 2041 - ARRIVALS LEVEL

08/25/17

Nashville International Airport*

AE1-2-200Z



OVERALL PLANS - 2041 - DEPARTURES LEVEL

Nashville International Airport*

08/25/17

AE1-2-300Z



CORGAN Nashville International Airport*

BNA TERMINAL & LANDSIDE EXPANSION OVERALL PLANS - 2041 - MEZZANINE LEVEL 08/25/17

AE1-2-400Z



OVERALL PLANS - 2041 - PLAZA LEVEL 08/25/17

Nashville International Airport*

AE1-2-500Z





Nashville International Airport*

OVERALL PLANS - 2041 - CANOPY LEVEL 08/25/17



OVERALL PLANS - 2041 - ROOF LEVEL

Nashville International Airport*

08/25/17

AE1-2-700Z

Appendix E Air Quality Support Tables

					Total	Hours of Op	eration					Emission	Factor	rs (gm/h	p-hr)			
Equipment Type	500	ЦВ	Load Eastor	TAPG	Merten's Hole	Area C LID	Terminals / Concourses	Garage B/C	CO2	со	Methane (CH ₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO ₂	Total Gas HC	voc
Pilings	300	nr	Load Factor	IAIG		7		earage 5/ e										
	2270002045	202	0.42	1 200		-	1 5 4 9	2 5 80	F 4 C 20	1 47	0.01	0.24	4.00	0.20	0.20	0.00	0.20	0.20
	2270002043	1207	0.43	1,290	-	-	1,546	2,580	546.20	2.21	0.01	0.34	4.80	0.29	0.29	0.00	0.36	0.39
ATE D46-32 DIESEL HAIVINIER	2270002081	128.7	0.59	1,290	-	-	1,548	2,580	550.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
100 TON CRL, L.B. L3218	2270002045	270	0.43	5,160	-	-	6,192	10,320	546.20	1.47	0.01	0.34	4.86	0.29	0.29	0.00	0.36	0.39
	2270002036	235	0.59	10,320	-	-	12,384	20,640	554.04	1.83	0.02	0.28	3.99	0.26	0.25	0.00	0.29	0.33
	2270002051	260	0.59	860	-	-	1,032	1,720	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
Craffes	2270002045	520	0.42	5 4 6 0			6 102	10.220	546.20	4 47	0.01	0.04	1.00	0.20	0.00	0.00	0.00	0.20
250 TON CLRL, MAN 999	2270002045	530	0.43	5,160	-	-	6,192	10,320	546.20	1.47	0.01	0.34	4.86	0.29	0.29	0.00	0.36	0.39
Comansa LC400 Tower Crane	2270002045	148	0.43	5,268	-	-	6,322	10,536	546.20	1.47	0.01	0.34	4.86	0.29	0.29	0.00	0.36	0.39
	2270002020	262	0.50	126	270	-	454	252	554.04	4.02	0.02	0.00	2.00	0.00	0.05	0.00	0.00	0.00
	2270002036	262	0.59	126	3/8		151	252	554.04	1.83	0.02	0.28	3.99	0.26	0.25	0.00	0.29	0.33
ROTARY SCREED, 16-40	2270002081	8	0.59	3,870	11,610		4,644	7,740	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
20-28 DISKS X 28-30 D	2270002081	6	0.59	3,870	11,610		4,644	7,740	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
	2265002081	5	0.43	1,882	5,646		2,258	3,764	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
OUTSIDE 32" TRENCHER ROLLER	2270002030	11	0.59	3,870	11,610		4,644	7,740	560.16	3.26	0.02	0.50	5.07	0.52	0.50	0.00	0.52	0.56
OUTSIDE 32" TRENCHER ROLLER	2270002030	11	0.59	126	3/8		151	252	560.16	3.26	0.02	0.50	5.07	0.52	0.50	0.00	0.52	0.56
VIBRA, 2DR, 22"X36"	2270002009	5	0.43	754	2,262		905	1,508	587.14	4.45	0.03	1.00	6.61	0.77	0.75	0.00	1.03	1.10
VIBRA, 1DR, 37"X54"	2270002009	1	0.43	126	378		151	252	587.14	4.45	0.03	1.00	6.61	0.77	0.75	0.00	1.03	1.10
DNU, CONCR SAW 40 HP, 36"	2270002039	40	0.59	11,610	34,830		13,932	23,220	574.27	3.02	0.02	0.48	4.56	0.48	0.47	0.00	0.49	0.54
OUTSIDE RATE FOR CASE 560	2270002030	51	0.59	126	378		151	252	560.16	3.26	0.02	0.50	5.07	0.52	0.50	0.00	0.52	0.56
2000 GAL WATERTRUCK	2270002051	360	0.59	1,564	4,692	469	1,877	3,128	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
175 TON, MAN, 777	2270002045	500	0.43	252	756		302	504	546.20	1.47	0.01	0.34	4.86	0.29	0.29	0.00	0.36	0.39
KOM PC60 0.4CY, 6.7MT	2270002036	53.6	0.59	1,324	3,972		1,589	2,648	554.04	1.83	0.02	0.28	3.99	0.26	0.25	0.00	0.29	0.33
GRADALL XL4200, 1.0CY CRWL	2270002036	173	0.59	126	378		151	252	554.04	1.83	0.02	0.28	3.99	0.26	0.25	0.00	0.29	0.33
CAT 613C 11CY, 175HP	2270002018	175	0.59	1,546	4,638		1,855	3,092	544.03	1.77	0.01	0.27	4.00	0.27	0.26	0.00	0.28	0.31
САТ 973 3.8СҮ, 210 НР	2270002069	210	0.59	3,870	11,610		4,644	7,740	546.98	1.96	0.01	0.30	4.24	0.29	0.28	0.00	0.31	0.34
CAT 950F 3.2CY, 170HP	2270002060	170	0.59	3,870	11,610	1,161	4,644	7,740	550.31	2.25	0.01	0.35	4.81	0.36	0.35	0.00	0.37	0.40
CAT 14G 200HP, 14"	2270002048	200	0.59	3,870	11,610	1,161	4,644	7,740	555.22	1.78	0.01	0.25	3.62	0.27	0.27	0.00	0.26	0.29
IR SD100F 1DR, 84", 125HP	2270002015	125	0.59	1,759	5,277		2,111	3,518	569.01	2.35	0.02	0.33	4.06	0.35	0.34	0.00	0.36	0.39
CAT PS180 18T, 9WHL	2270002015	76.4	0.59	502	1,506		602	1,004	569.01	2.35	0.02	0.33	4.06	0.35	0.34	0.00	0.36	0.39
IR SD100F 1DR, 84", 125HP	2270002015	125	0.59	1,507	4,521		1,808	3,014	569.01	2.35	0.02	0.33	4.06	0.35	0.34	0.00	0.36	0.39
5000 GLN, WATER WAGON	2270002051	187	0.59	5,590	16,770		6,708	11,180	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
DNU, GEN SET 5-9 KW GAS	2265002027	270	0.72	5,590	16,770		6,708	11,180	1076.72	257.78	0.91	5.20	2.87	0.17	0.15	0.01	6.11	5.38
OUTSIDE XL4100 1CY 6X6	2270002036	12	0.72	5,590	16,770		6,708	11,180	554.04	1.83	0.02	0.28	3.99	0.26	0.25	0.00	0.29	0.33
Forklifts/Manlifts																		
4 TON EXT. BOOM FORKLIFT	2265002057	120	0.63	6,235	-	-	7,482	12,470	782.47	88.79	0.50	2.85	5.95	0.08	0.07	0.00	3.35	2.95
30' SCISSOR LIFT	2265002057	82	0.63	15,050	-	-	18,060	30,100	782.47	88.79	0.50	2.85	5.95	0.08	0.07	0.00	3.35	2.95
Air Compressors																		
375 CFM, PORT. DSL	2270002081	103	0.59	6,020	-	-	7,224	12,040	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
Welding Machines																		
300 AMP DC DIESEL	2270002027	32.7	0.43	9,890	-	-	11,868	19,780	571.81	3.25	0.02	0.74	5.74	0.63	0.61	0.00	0.76	0.81
Vehicles																		
4X2 1/2 TON E.C., GAS	2265002081	260	0.59	17,200	-	-	20,640	34,400	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
DNU, CREW BUS: 44 PASS	2270002051	260	0.59	6,020	-	-	7,224	12,040	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
Trucks																		
2 TON FLATBED, DSL	2270002051	260	0.59	6,020	-	-	7,224	12,040	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
4X2 1 TON STD, GAS	2265002081	260	0.59	21,930	-	-	26,316	43,860	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
Mechanic Equipment																		
2 TON MECH TRUCK W/ EQUIPMENT	2270002051	360	0.59	6,020	-	-	7,224	12,040	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
Miscellaneous Equipment																		
GEN SET 5KW W/ LIGHT TOWER	2270002027	6.7	0.43	8,600	-	-	10,320	17,200	571.81	3.25	0.02	0.74	5.74	0.63	0.61	0.00	0.76	0.81

					Total	Hours of Op	peration					Emission	Factor	rs (gm/h	p-hr)			
Equipment Type	SCC	НР	Load Factor	TAPG	Merten's Hole	Area C LID	Terminals / Concourses	Garage B/C	CO2	со	Methane (CH₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO₂	Total Gas HC	voc
Civil/Concrete Equipment																		
SAW GAS CONCRETE	2265002039	8	0.78	11,610	34,830	-	13,932	23,220	574.27	3.02	0.02	0.48	4.56	0.48	0.47	0.00	0.49	0.54
TAMPER GAS PLATE 24"	2265002006	6	0.55	5,590	16,770	-	6,708	11,180	1043.61	277.41	0.97	5.52	3.33	0.13	0.12	0.01	6.49	5.71
TROWEL MACH 36"	2270002021	8	0.59	5,590	16,770	-	6,708	11,180	568.14	3.12	0.02	0.46	4.67	0.48	0.46	0.00	0.48	0.53
TROWEL MACH 48"	2270002021	8	0.59	15,480	46,440	-	18,576	30,960	568.14	3.12	0.02	0.46	4.67	0.48	0.46	0.00	0.48	0.53
Structural Excavation Equipment																		
SKID STEER, 1700#, 0.4CY	2270002069	61	0.59	15,050	-		18,060	30,100	546.98	1.96	0.01	0.30	4.24	0.29	0.28	0.00	0.31	0.34
VIBRA, 2DR, 22"X36"	2270002009	5	0.43	1,720	-		2,064	3,440	587.14	4.45	0.03	1.00	6.61	0.77	0.75	0.00	1.03	1.10
CAT D6R-LGP 185HP, 20MT	2270002069	185	0.59	1,720	-		2,064	3,440	546.98	1.96	0.01	0.30	4.24	0.29	0.28	0.00	0.31	0.34
TOTAL				252,413	304,770	2,791	302,896	504,826										

TAPG - Terminal Area Parking Garage

Garage B/C's hours are estimated to be 2x the TAPG hours based upon size of the project

Merten's Hole's hours are estimated to only include sitework and equipment, but are estimated to be 3x the TAPG hours based upon the size of the project On the summary table (Table 3) Merten's Hole construction emissions are multiplied by 2 to capture additional emissions if on-site fill areas are utilized. Terminal / Concourse's hours are estimated to be 20% higher than TAPG hours

				Merten's	Emiss	ions (tor	ns)							Area C	LID Em	issions (tons)			
Equinment Type	CO2	со	Methane (CH₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO ₂	Total Gas HC	voc	CO2	со	Methane (CH₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO ₂	Total Gas HC	voc
Dilinge				I																<u> </u>
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cranes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
250 TON CLRL, MAN 999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Comansa LC400 Tower Crane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Site Work Equipment	20	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0	
	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROTARY SCREED, 16-40	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20-28 DISKS X 28-30"D	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENT PUMP 12"	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTSIDE 32" TRENCHER ROLLER	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTSIDE 32" TRENCHER ROLLER	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIBRA, 2DR, 22"X36"	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIBRA, 1DR, 37"X54"	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNU, CONCR SAW 40 HP, 36"	520	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTSIDE RATE FOR CASE 560	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2000 GAL WATERTRUCK	589	1	0	0	3	0	0	0	0	0	58.903	0.113	0.002	0.021	0.347	0.000	0.016	0.000	0.022	0.025
175 TON, MAN, 777	98	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KOM PC60 0.4CY, 6.7MT	77	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRADALL XL4200, 1.0CY CRWL	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 613C 11CY, 175HP	287	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT 973 3.8CY, 210 HP	867	3	0	0	7	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CAT 950F 3.2CY, 170HP	706	3	0	0	6	0	0	0	0	1	70.640	0.289	0.002	0.045	0.617	0.000	0.045	0.000	0.047	0.051
CAT 14G 200HP, 14"	838	3	0	0	5	0	0	0	0	0	83.847	0.269	0.002	0.037	0.547	0.000	0.040	0.001	0.040	0.044
IR SD100F 1DR, 84", 125HP	244	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT PS180 18T. 9WHL	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IR SD100F 1DR, 84", 125HP	209	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5000 GLN. WATER WAGON	1094	2	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNU GEN SET 5-9 KW GAS	3869	926	3	19	10	1	1	0	22	19	0	0	0	0	0	0	0	0	0	0
	88	0	0		1	-	0	0	0	5	0	0	0	0	0	0	0	0	0	0
Forklifts/Manlifts	00	0	0	V	1		0	0	0		0			0					0	
4 TON EXT. BOOM FORKLIET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30' SCISSOR LIFT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Air Compressors	0	0	0		0	0	0	0	0		0	<u> </u>	0	0	0	0	0		0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wolding Machines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
300 AIVIP DC DIESEL	U	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0			0	-	-		0		-			0	0					
4X2 1/2 TON E.C., GAS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
DINU, CREW BUS: 44 PASS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trucks	- 1											1					1	1		-
2 TON FLATBED, DSL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4X2 1 TON STD, GAS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mechanic Equipment								1		1		1						1		
2 TON MECH TRUCK W/ EQUIPMENT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous Equipment																		-		_
GEN SET 5KW W/ LIGHT TOWER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

				Merten'	s Emiss	ions (to	ns)							Area C	CLID Em	issions (tons)			
Fauinment Type	CO2	со	Methane (CH₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc	CO2	со	Methane (CH ₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc
Civil/Concrete Equipment																				
SAW GAS CONCRETE	138	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAMPER GAS PLATE 24"	64	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TROWEL MACH 36"	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TROWEL MACH 48"	137	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structural Excavation Equipment																				
SKID STEER, 1700#, 0.4CY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIBRA, 2DR, 22"X36"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAT D6R-LGP 185HP, 20MT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10,103	964	4	22	55	4	4	0	26	24	213	1	0	0	2	0	0	0	0	0

			Tei	minal / C	oncou	rses Emi	ssions (to	ns)						Garage	B/C Er	nissions	(tons)			
	CO2	со	Methane (CH ₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO ₂	Total Gas HC	voc	CO2	со	Methane (CH ₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO ₂	Total Gas HC	voc
Equipment Type			(* 4)										1 47							
Pilings																				
150 TN CRAWLER CRANE	113	0	0	0	1	0	0	0	0	0	188	1	0	0	2	0	0	0	0	0
ATE D46-32 DIESEL HAMMER	72	0	0	0	1	0	0	0	0	0	120	1	0	0	1	0	0	0	0	0
100 TON CRL, L.B. LS218	433	1	0	0	4	0	0	0	0	0	721	2	0	0	6	0	0	0	0	1
EXCAVATOR - JD 330LC 2.3 CY	1049	3	0	1	8	0	0	0	1	1	1748	6	0	1	13	1	1	0	1	1
PICKUP TRUCK	94	0	0	0	1	0	0	0	0	0	156	0	0	0	1	0	0	0	0	0
Cranes						•	•													
250 TON CLRL, MAN 999	850	2	0	1	8	0	0	0	1	1	1416	4	0	1	13	1	1	0	1	1
Comansa LC400 Tower Crane	242	1	0	0	2	0	0	0	0	0	404	1	0	0	4	0	0	0	0	0
Site Work Equipment			-	-					-				-	-		-	-			
OUTSIDE XL4100 1CY 6X6	14	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0
ROTARY SCREED, 16-40'	13	0	0	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0
20-28 DISKS X 28-30"D	10	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0
CENT PUMP 12"	3	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
OUTSIDE 32" TRENCHER BOULER	19	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0
OUTSIDE 32" TRENCHER ROLLER	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
VIBRA 2DR 22"X36"	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
VIBRA 1DR 37"X54"	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNUL CONCE SAW 40 HP 36"	208	1	0	0	2	0	0	0	0	0	347	2	0	0	3	0	0	0	0	0
OUTSIDE BATE FOR CASE 560	200	0	0	0	0	0	0	0	0	0	547	0	0	0	0	0	0	0	0	0
	236	0	0	0	1	0	0	0	0	0	303	1	0	0	2	0	0	0	0	0
175 TON MAN 777	230	0	0	0	1	0	0	0	0	0	65	0	0	0	1	0	0	0	0	0
KOM PC60.0 4CV 6 7MT	31	0	0	0	0	0	0	0	0	0	51	0	0	0	1	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0
CAT 612C 11CV 175HD	115	0	0	0	1	0	0	0	0	0	101	1	0	0	1	0	0	0	0	0
CAT 013C 11CT, 173HP	247	1	0	0	2	0	0	0	0	0	579	2	0	0	1	0	0	0	0	0
CAT 0505 3.801, 210 HP	247	1	0	0	2	0	0	0	0	0	171	2	0	0	4	0	0	0	0	0
	283	1	0	0	2	0	0	0	0	0	4/1	2	0	0	4	0	0	0	0	0
CAT 14G 200HP, 14	335	1	0	0	2 1	0	0	0	0	0	162	2	0	0	4	0	0	0	0	0
	30	0	0	0	1	0	0	0	0	0	105	1	0	0	1	0	0	0	0	0
CAT PS180 181, 9WHL	1/	0	0	0	0	0	0	0	0	0	28	0	0	0	0	0	0	0	0	0
IR SD100F IDR, 84 , 125HP	84	0	0	0	1	0	0	0	0	0	139	1	0	0	1	0	0	0	0	0
SOUU GEN, WATER WAGON	437	274	0	0	3	0	0	0	0	0	729	1	0	0	4	0	0	0	0	12
DNU, GEN SET 5-9 KW GAS	1548	3/1	1	/	4	0	0	0	9	8	2580	618	2	12	/	0	0	0	15	13
OUTSIDE XL4100 1CY 6X6	35	0	0	0	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0
	400							0	-		010	0.0		2	6	0		0	2	
	488	55	0	2	4	0	0	0	2	2	813	92	1	3	6	0	0	0	3	3
30' SCISSOR LIFT	805	91	1	3	6	0	0	0	3	3	1341	152	1	5	10	0	0	0	6	5
Air Compressors																				
375 CFM, PORT. DSL	269	2	0	0	3	0	0	0	0	0	449	3	0	0	4	0	0	0	0	0
Welding Machines																				
300 AMP DC DIESEL	105	1	0	0	1	0	0	0	0	0	1/5	1	0	0	2	0	0	0	0	0
Vehicles		r	1		[1	1		1			r	1							
4X2 1/2 TON E.C., GAS	1944	11	0	2	18	2	2	0	2	2	3239	19	0	3	31	3	3	0	3	3
DNU, CREW BUS: 44 PASS	655	1	0	0	4	0	0	0	0	0	1092	2	0	0	6	0	0	0	0	0
Trucks			1			1		-										-		-
2 TON FLATBED, DSL	655	1	0	0	4	0	0	0	0	0	1092	2	0	0	6	0	0	0	0	0
4X2 1 TON STD, GAS	2478	14	0	2	23	2	2	0	2	2	4130	24	0	4	39	4	4	0	4	4
Mechanic Equipment			1																	_
2 TON MECH TRUCK W/ EQUIPMENT	907	2	0	0	5	0	0	0	0	0	1512	3	0	1	9	0	0	0	1	1
Miscellaneous Equipment		-										-								
GEN SET 5KW W/ LIGHT TOWER	19	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0

			Те	rminal / C	oncour	rses Emis	ssions (to	ons)						Garage	B/C Er	nissions	(tons)			
Fauinment Type	CO2	со	Methane (CH₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc	CO2	со	Methane (CH₄)	NMHC	NO _x	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc
Civil/Concrete Equipment																				
SAW GAS CONCRETE	55	0	0	0	0	0	0	0	0	0	92	0	0	0	1	0	0	0	0	0
TAMPER GAS PLATE 24"	25	7	0	0	0	0	0	0	0	0	42	11	0	0	0	0	0	0	0	0
TROWEL MACH 36"	20	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0
TROWEL MACH 48"	55	0	0	0	0	0	0	0	0	0	92	1	0	0	1	0	0	0	0	0
Structural Excavation Equipment																				
SKID STEER, 1700#, 0.4CY	392	1	0	0	3	0	0	0	0	0	653	2	0	0	5	0	0	0	0	0
VIBRA, 2DR, 22"X36"	3	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
CAT D6R-LGP 185HP, 20MT	136	0	0	0	1	0	0	0	0	0	226	1	0	0	2	0	0	0	0	0
TOTAL	15,748	575	3	21	118	8	8	0	23	22	26,247	958	4	34	197	14	14	0	38	37

Table 2 Estimate of Emissions from Other Construction Sources BNA Vision Air Emissions Estimate

					Hours of	Operation					Emissio	on Fact	tors (gm	/hp-hr)			
Equipment Type	SCC	НР	Load Factor	Merten's Hole	Area C LID	Terminals / Concourses	Garage B/C	CO2	со	Methane (CH₄)	ИМНС	NOx	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc
Hauling																	
Dump Truck	2265002081	360	0.59	12,083	-	-	1,999	556.88	3.21	0.02	0.48	5.27	0.51	0.49	0.00	0.49	0.53
Worker's Commute																	
Employee Vehicle	2270002051	260	0.59	25,348	1,161	25,348	25,348	536.20	1.03	0.01	0.19	3.16	0.15	0.15	0.00	0.20	0.23
Surface Disturbance																	
Crawler	2270002069	61	0.59	69,832	1,161	29,928	49,880	546.98	1.96	0.01	0.30	4.24	0.29	0.28	0.00	0.31	0.34
Scrapers	2270002018	175	0.59	4,330	1,161	1,856	3,093	544.03	1.77	0.01	0.27	4.00	0.27	0.26	0.00	0.28	0.31

Table 2 Estimate of Emissions from Other Construction Sources BNA Vision Air Emissions Estimate

			1	Merten's	Emissi	ons (ton	s)							Area C L	ID Em	issions (tons)			
Equipment Type	CO2	со	Methane (CH₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO₂	Total Gas HC	voc	CO2	со	Methane (CH₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO₂	Total Gas HC	voc
Hauling																				
Dump Truck	1,575	9	0	1	15	1	1	0	1	2	-	0	0	0	0	0	0	0	0	0
Worker's Commute																				
Employee Vehicle	2,298	4	0	1	14	1	1	0	1	1	105	0	0	0	1	0	0	0	0	0
Surface Disturbance																				
Crawler	1,515	5	0	1	12	1	1	0	1	1	25	0	0	0	0	0	0	0	0	0
Scrapers	268	1	0	0	2	0	0	0	0	0	72	0	0	0	1	0	0	0	0	0

Table 2 Estimate of Emissions from Other Construction Sources BNA Vision Air Emissions Estimate

		Terminal / Concourses Emissions (tons)					Garage B/C Emissions (tons)													
Equipment Type	CO2	со	Methane (CH₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc	CO2	со	Methane (CH₄)	NMHC	NOx	PM ₁₀	PM _{2.5}	SO2	Total Gas HC	voc
Hauling																				
Dump Truck	0	0	0	0	0	0	0	0	0	0	261	2	0	0	2	0	0	0	0	0
Worker's Commute																				
Employee Vehicle	2298	4	0	1	14	1	1	0	1	1	2298	4	0	1	14	1	1	0	1	1
Surface Disturbance																				
Crawler	649	2	0	0	5	0	0	0	0	0	1082	4	0	1	8	1	1	0	1	1
Scrapers	115	0	0	0	1	0	0	0	0	0	192	1	0	0	1	0	0	0	0	0

Table 3 Summary of Construction Emissions by Project BNA Vision Air Emissions Estimate

Construction Phase	со	NO _x	SO ₂	PM ₁₀	PM _{2.5}	voc	CO _{2e}	
Construction Phase	(tons)	(tons)	(tons)	(tons)	(tons)	(tons)	(metric tons)	
Filling Merten's Hole								
Construction Equipment Exhaust	1,929	110	0	8	7	47	18,490	
Haul Truck Exhaust	9	15	0	1	1	2	1,430	
Worker Commute	4	14	0	1	1	1	2,086	
Demolition	-	-	-	-	-	-	-	
Surface Disturbance Equipment	6	14	0	1	1	1	1,640	
Material Movement (fugitive dust)	-	-	-	39	5	-	-	
Total for Filling Merten's Hole	1 0/9	152	0	50	15	51	22 646	
(3-year Construction Schedule)	1,940	155	0	50	15	51	23,646	
Area C - LID								
Construction Equipment Exhaust	1	2	0	0	0	0	194	
Worker Commute	0	1	0	0	0	0	96	
Surface Disturbance Equipment	0	1	0	0	0	0	88	
Total for Area C LID	1	4	0	0	0	0	378	
Terminals / Concourses								
Construction Equipment Exhaust	575	118	0	8	8	22	14,344	
Haul Truck Exhaust	0	-	-	-	-	-	-	
Worker Commute	4	14	0	1	1	1	2,086	
Demolition		-	-	11	2	-	-	
Surface Disturbance Equipment	3	6	0	0	0	0	694	
Material Movement (fugitive dust)	-	-	-	4	1	-	-	
Total for Terminals / Concourses	500	100	0	04	10	00	17 104	
(7-year Construction Schedule)	562	130	0	24	12	23	17,124	
Construction of Garage B/C								
Construction Equipment Exhaust	958	197	0	14	14	37	23,906	
Haul Truck Exhaust	2	2	0	0	0	0	237	
Worker Commute	4	14	0	T	1	1	2,086	
Demolition	-	-	•	23	3	-	-	
Surface Disturbance Equipment	5	10	0	1	7	1	1,156	
Material Movement (fugitive dust)	-	-	-	4	1	-	-	
Total for Garage B/C	060	222	0	12	20	20	27 295	
(6-year Construction Schedule)	909	223	U	43	20	39	27,303	
Total Estimated Emissions for BNA Vision (8-year Construction Schedule)	3,500	518	0	117	46	113	68,533	

Table 4 Summary of Construction Emissions Estimated by Year BNA Vision Air Emission Estimate

	со	NO _x	SO ₂	PM ₁₀	PM _{2.5}	VOC	CO _{2e}
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)
Filling Merten's Hole	1,559	122	0	40	12	40	18,917
Area C - LID	1	4	-	-	-	-	378
Terminals / Concourses	114	27	0	5	2	5	3,358
Garage B/C	194	45	0	9	4	8	5,477
Total	1,868	198	0	53	18	53	28,130

2018 Emissions Estimate

2019 Emissions Estimate

	со	NO _x	SO2	PM ₁₀	PM _{2.5}	voc	CO _{2e}
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)
Filling Merten's Hole	-	-	-	-	-	-	-
Terminals / Concourses	137	32	0	6	3	6	4,029
Garage B/C	242	56	0	11	5	10	6,846
Total	379	88	0	16	8	15	10,875

2020 Emissions Estimate

	со	NO _x	SO ₂	PM ₁₀	PM _{2.5}	VOC	CO _{2e}		
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)		
Filling Merten's Hole	-	-	-	-	-	-	-		
Terminals / Concourses	91	22	0	4	2	4	2,686		
Garage B/C	194	45	0	9	4	8	5,477		
Total	285	66	0	12	6	11	8,163		
2021 Emissions Estimate									

2021 Emissions Estimate

	со	NO _x	SO ₂	PM ₁₀	PM _{2.5}	voc	CO _{2e}
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)
Filling Merten's Hole	-	-	-	-	-	-	-
Terminals / Concourses	46	11	0	2	1	2	1,343
Garage B/C	97	22	0	4	2	4	2,739
Total	143	33	0	6	3	6	4,082

2022 Emissions Estimate

	со	NO _x	SO2	PM ₁₀	PM _{2.5}	voc	CO _{2e}
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)
Filling Merten's Hole	195	15	0	5	2	5	2,365
Terminals / Concourses	80	19	0	3	2	3	2,350
Garage B/C	194	45	0	9	4	8	5,477
Total	469	79	0	17	7	16	10,192

Table 4 Summary of Construction Emissions Estimated by Year BNA Vision Air Emission Estimate

	со	NO _x	SO2	PM ₁₀	PM _{2.5}	VOC	CO _{2e}						
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)						
Filling Merten's Hole	195	15	0	5	2	5	2,365						
Terminals / Concourses	69	16	0	3	1	3	2,015						
Garage B/C	48	11	0	2	1	2	1,369						
Total	312	43	0	10	4	10	5,748						

2023 Emissions Estimate

2024 Emissions Estimate

	со	NO _x	SO2	PM ₁₀	PM _{2.5}	voc	CO _{2e}
Task	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(metric tons/yr)
Filling Merten's Hole	-	-	-	-	-	-	-
Terminals / Concourses	46	11	0	2	1	2	1,343
Garage B/C	-	-	-	-	-	-	-
Total	46	11	0	2	1	2	1,343
Table 5 Summary of Operational Emissions for New Sources BNA Vision Air Emissions Estimate

Natural Gas Compustion - Natural Gas Bollers											
		Ν	IO _x	(00	C	CO ₂	L	ead	Ν	I ₂ O
Natural Gas Total H	leater	Emission	Emission								
Usage Rate Size		Factor	Rate								
(10° scf/year) (mmBti	u/hr)	(lb/10 ⁶ scf)	(lb/hr) / (tpy)								
515	60	100	5.88	84	4.94	120.000	7,059	0 0005	0.00003	22	0.13
515	00	100	25.76	04	21.64	120,000	30,918	0.0003	0.00013	2.2	0.57

		S	SO ₂	Me	ethane	V	OC	F	ΡM
Natural Gas	Total Heater	Emission	Emission	Emission	Emission	Emission	Emission	Emission	Emission
Usage Rate	Size	Factor	Rate	Factor	Rate	Factor	Rate	Factor	Rate
(10° scf/year)	(mmBtu/hr)	(lb/10 ⁶ scf)	(lb/hr) / (tpy)						
515	60	0.6	0.04	23	0.14	5.5	0.32	7.6	0.4
515	00	0.0	0.15	2.0	0.59	5.5	1.42	7.0	1.9

Emission factors - AP-42 Table 1.4-1 and 1.4-2 for small boilers.

New equipment proposed to be installed during this project:

Three (3) 1,200 ton chillers (similar to Trane CVHF) - Appear to be all electric, therefore no emissions estimated.

Three (3) 1,200 ton cooling towers (similar to Marley NC8414XAS3) - Appear to be all electric, therefore no emissions estimated.

15 new 4 mmBTU/hr natural gas boilers (similar to Raypak X-Therm H7-4005) - emissions estimated above. Specification sheets not available - assumed no controls.

Appendix F Agency Coordination Letters

SCOPING DISTRIBUTION LIST

Government Agencies

USACE Nashville District ATTN: Ms. Tammy Turley 3701 Bell Road Nashville, TN 37214

U.S. Fish and Wildlife Service Tennessee Field Office ATTN: Ms. Mary Jennings Field Supervisor 446 Neal Street Cookeville, TN 38501

U.S. Environmental Protection Agency Region 4 ATTN: Mr. Heinz Muller Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303

Tennessee Valley Authority ATTN: Mr. Justin Maierhofer 400 W. Summit Hill Dr. Knoxville, TN 37902-1499

National Park Service, Southeast Region ATTN: Stan Austin, Regional Director 100 Alabama Street, SW 1924 Building Atlanta, GA 30303

U.S. Forest Service ATTN: Tony Tooke Regional Forester Region 8 (Southern Region) 1720 Peachtree Road, NW Atlanta, GA 30309

U.S. Coast Guard Marine Safety Unit 225 Tully St. Paducah, KY 42003

Federal Highway Administration Tennessee Division Office ATTN: Sabrina David 404 BNA Drive Building 200, Suite 508 Nashville, TN 37217 TDEC Office of Policy and Planning ATTN: Ms. Michelle B. Walker William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 2nd Floor Nashville, TN 37243

TDEC Division of Natural Areas ATTN: Ms. Stephanie Whitaker William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 2nd Floor Nashville, TN 37243

TDEC Division of Air Pollution Control ATTN: Ms. Lacey Hardin William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor Nashville, TN 37243

TDEC Division of Remediation ATTN: Mr. Andy Binford William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 14th Floor Nashville, TN 37243

TDEC/TN Historical Commission ATTN: Mr. E. Patrick McIntyre, Jr. THC NEPA Contact Clover Bottom Mansion 2941 Lebanon Rd. Nashville, TN 37243-0442

Tennessee Division of Archaeology ATTN: Jennifer Bennett 1216 Foster Avenue Cole Building #3 Nashville, TN 37243

TDEC Division of Water Pollution Control ATTN: Mr. Jimmy Smith 312 Rosa L. Parks Avenue, 11th Floor Nashville, TN 37243

TDEC Division of Water Pollution Control ATTN: Ms. Tisha Calabrese TDEC/Division of Water Resources 312 Rosa Parks Ave Nashville, TN 37243 TDEC Division of Water Resouces Water Resources Manager Nashville Environmental Field Office 711 R.S. Gass Blvd. Nashville, TN 37214

TDEC Division of Underground Storage Tanks ATTN: Mr. Robert E. Wilson 711 R.S. Gass Blvd. Nashville, TN 37214

Tennessee Division of Forestry ATTN: Mr. Thomas E. Dailey District Forester P.O. Box 2666 Knoxville, TN 37901-2666

TN Wildlife Resources Agency Region II ATTN: Mr. Robert Todd Ellington Agricultural Center 5105 Edmondson Pk. Nashville, TN 37211

Farm Services Agency ATTN: Mr. Gene Davidson, State Executive Director 579 U.S. Courthouse 801 Broadway Nashville, TN 37203-3816

Tennessee Department of Transportation ATTN: Mwafaq Aljabbary James K. Polk Building, Suite 900 505 Deaderick Street Nashville, Tennessee 37243-0334

Metropolitan Government of Nashville & Davidson County Metropolitan Planning Department ATTN: Doug Sloan 800 2nd Avenue South Nashville, TN 37219-6300

TRIBAL CONSULTATION DISTRIBUTION LIST

Ms. Henrietta Ellis THPO, Director of Cultural Resources Absentee Shawnee Tribe of Oklahoma 2025 S. Gordon Cooper Dr. Shawnee, OK 74801

Mr. Bryant Celestine THPO Alabama-Coushatta Tribe of Texas 571 State Park Road 56 Livingston, TX 77351

Ms. Augustine Asbury Cultural Preservationist Alabama-Quassarte Tribal Town of Oklahoma P.O. Box 187 Wetumka, OK 74883

Mr. Wayne Isaacs Environmental Programs Director Cherokee Nation P.O. Box 948 Tahlequah, OK 74465-0948

Ms. LaDonna Brown NEPA Coordinator Chickasaw Nation of Oklahoma P.O. Box 1548 Ada, OK 74821-1548 Mr. Russ Townsend THPO Eastern Band of Cherokee Indians P.O. Box 455 Cherokee, NC 28719

Ms. Robin DuShane THPO Eastern Shawnee Tribe of Oklahoma P.O. Box 350 Seneca, MO 64865

Mr. Henry Harjo THPO Kialegee Tribal Town P.O. Box 332 Wetumka, OK 74883

Mr. Glen Moore Environmental Administrator Muscogee (Creek) Nation of Oklahoma P.O. Box 580 Okmulgee, OK 74447

Ms. Laura Cook Environmental Director Poarch Band of Creek Indians 5811 Jack Springs Rd. Atmore, AL 36502

Mr. Mickey Douglas Environmental Director Seminole Nation of Oklahoma P.O. Box 1498 Wewoka, OK 74884

Ms. Jodi Hayes Tribal Administrator Shawnee Tribe of Oklahoma P.O. Box 189 Miami, OK 74355 Mr. Charles Coleman THPO Thlopthlocco Tribal Town P.O. Box 188 Okemah, OK 74859

Ms. Brandi Ross Environmental Director United Keetoowah Band of Cherokee Indians in Oklahoma P.O. Box 746 Tahlequah, OK 74464 Example Scoping Letter



One Terminal Drive, Suite 501 • Nashville, TN 37214-4114 • 615-275-1600

February 16, 2017

Ms. Tisha Calabrese Benton TDEC/Division of Water Resources Water Resources Manager 312 Rosa L. Parks Ave. Nashville, TN 37243

Re: Metropolitan Nashville Airport Authority - BNA Vision Environmental Assessment Scoping and Request for Information

Dear Ms. Benton:

By 2035, the population of the greater Nashville area is expected to surpass 2.5 million people and corresponding passenger traffic though Nashville International Airport (BNA) is projected to grow from approximately 12 million passengers per year today to 20 million by 2035 - a 66 percent increase. Over the past four consecutive years, BNA passenger traffic has increased almost 30 percent. To meet the needs of this sustained growth, the Metropolitan Nashville Airport Authority (MNAA) is embarking to design and implement multifaceted improvements for the terminal and associated infrastructure. These improvements – known as BNA Vision – seek to address five overarching issues:

- Transform and expand existing facilities including the terminal building, concourses, and gates to better meet projected operations and enplanements and ensure safe, secure and efficient operations.
- Address deficiencies associated with the aging design and infrastructure of the existing terminal building, including distribution of internal functions (such as ticketing, security, concessions, and baggage handling) and the need to update mechanical and electrical systems and base building elements.
- Enhance the efficiency of the terminal and configuration of concourses and gates to accommodate changes in the air transportation system, airport security, customs and border protection, and modern-generation aircraft.
- Improve airport accessibility and level-of-service of ground transportation, curbside flow, and parking activities, and provide new accessible transient lodging.

BOARD OF COMMISSIONERS Robert J. Joslin, Chair A. Dexter Samuels PhD, Vice Chair Aubrey B. Harwell III, Secretary Megan Barry, Mayor

John E. Doerge Rod Essig Amanda Farnsworth Bill Freeman Nicole R. Maynard Kabir Singh Sandhu P.E. PRESIDENT AND CEO Robert R. Wigington



One Terminal Drive, Suite 501 • Nashville, TN 37214-4114 • 615-275-1600

• Improve overall efficiency and safety of landside passenger movement and airside aircraft movement.

MNAA is in the process of refining a series of design alternatives for development at and adjacent to the existing terminal building – within existing airport property – to address the aforementioned issues. Figure 1 (attached) identifies the project location and improvement areas. Figure 2 (attached) identifies the specific project components anticipated within the BNA Vision. Figure 3 (attached) identifies areas of MNAA property that may be used to assist with low impact design elements.

Pursuant to the National Environmental Policy Act (NEPA) and regulations issued by the Council of Environmental Quality (CEQ), MNAA intends to prepare an Environmental Assessment (EA) that evaluates the potential effects on the environment of a range of design alternatives as well as the No Action Alternative. The EA will be prepared for review and approval by the Federal Aviation Administration (FAA) and will follow FAA guidelines for implementing NEPA (specifically FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*).

The Draft EA is expected to be released for public review in June 2017. The EA will include an introduction of the proposed action; the purpose and need for the project; a detailed description of alternatives under consideration; a discussion of the affected environment of the geographic area; an analysis of potential effects on environmental impact categories due to the implementation of the alternatives; and an evaluation of potential cumulative effects of the project.

The intent of this initial scoping and coordination letter is to seek input from Federal, State, and Local agencies to identify potential issues or concerns that may warrant evaluation during preparation of the EA. MNAA respectfully requests your input on the proposed action. Please provide any relevant information, environmental data, or concerns that your agency or organization may have regarding the proposed action.

Please provide this information by 5:00 pm on March 20, 2017 by email to Michelle Baker at <u>michelle_baker@nashintl.com</u> and to Aaron Goldschmidt at <u>aaron.goldschmidt@amecfw.com</u> or by mail to the following addresses.



One Terminal Drive, Suite 501 • Nashville, TN 37214-4114 • 615-275-1600

Michelle Baker, PE Assistant Manager, Environmental Compliance Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, TN 37214

and

BNA Vision Scoping Comments c/o Amec Foster Wheeler 3800 Ezell Road Suite 100 Nashville, TN 37211

If you have any questions, or need additional information, please feel free to contact me at 615-275-1783. Thank you for your time and we look forward to your response.

Sincerely,

time M. Vitt

Christine M. Vitt Vice President, Strategic Planning and Sustainability

Enclosure:

Figure 1 – Nashville International Airport and Vicinity Figure 2 – Nashville International Airport Terminal and Adjacent Improvement Areas Figure 3 – Nashville International Airport Potential Support Areas

cc: Michelle Baker, MNAA Ross Payton, Corgan & Associates Aaron Goldschmidt, AMEC FW

FIGURE 1 Nashville International Airport and Vicinity



FIGURE 2 BNA Vision:

Nashville International Airport Terminal and Adjacent Improvement Areas



FIGURE 3 Nashville International Airport Potential Support Areas



Scoping Letter Responses



DEPARTMENT OF THE ARMY NASHVILLE DISTRICT, CORPS OF ENGINEERS REGULATORY DIVISION 3701 BELL ROAD NASHVILLE, TENNESSEE 37214

March 22, 2017

SUBJECT: Reference File No. LRN-2017-00276; Metropolitan Nashville Airport Authority Scoping Project, Davidson County, TN

Michelle Baker, PE Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, TN 37214

Dear Ms. Baker:

This is in response to your February 16, 2017, request for our comments regarding the subject project.

The U.S. Army Corps of Engineers (USACE) has regulatory responsibilities pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344). Under Section 10, the USACE regulates all work in, or affecting, navigable waters of the U.S. Under Section 404, the USACE regulates the discharge of dredged and/or fill material into waters of the U.S. (33 CFR Part 328).

A review of the information provided indicates that some of the subject activities may involve work in wetlands/waters of the U.S.; therefore, a Department of the Army permit may be required.

We understand the project may not have specific design plans at this time, and this inquiry is an initial review to obtain preliminary information for project scoping. Once plans are finalized, the applicant should apply for and obtain any required permits prior to any disturbance to streams and/or wetlands that may occur due to project construction. The applicant may apply at any time.

If you have questions regarding this matter, please contact me at the above address or telephone (615) 369-7505. Thank you for the opportunity to review and comment on this proposed project.

Sincerely,

fuln to Furt

Joshua Frost Chief, Technical Services Branch Regulatory Division

Fikri, Mary Motte

From:	Goldschmidt, Aaron P
Sent:	Wednesday, April 12, 2017 10:02 AM
То:	Fikri, Mary Motte
Cc:	Custer, Bertisabel M.; McFarling, Doug
Subject:	FW: Metropolitan Nashville Airport Authority-BNA Vision Scoping Request on improvements at the Nashville International Airport

Another scoping letter for the master file. Aaron

From: White, Roshanna [mailto:White.Roshanna@epa.gov]
Sent: Wednesday, April 12, 2017 6:14 AM
To: michelle_baker@nashintl.com; Goldschmidt, Aaron P <Aaron.Goldschmidt@amecfw.com>
Cc: Militscher, Chris <Militscher.Chris@epa.gov>; Buskey, Traci P. <Buskey.Traci@epa.gov>
Subject: Metropolitan Nashville Airport Authority-BNA Vision Scoping Request on improvements at the Nashville International Airport

Dear Ms. Christine Vitt:

In accordance with the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act, and the

Council on Environmental Quality's implementing regulations (40 CFR 1500-1508), the Environmental

Protection Agency (EPA) appreciates the opportunity to provide scoping comments on the Metropolitan

Nashville Airport Authority's intent to design and implement multifaceted improvements for the terminal and

associated infrastructure at the Nashville International Airport.

The EPA understands that the project's reconstruction and expansion is needed to meet the approximate 20

million passengers per year increase by 2035. We also understand that the following comments may be used to

advise you on conditions to consider during the environmental evaluation:

A review of the proposed project area shows the passage of a stream, Sims Branch,

beneath the airport. Evaluate and identify details of the potential impacts to the stream in the draft environmental assessment. Identify implementable measures to prevent erosion and sediment runoff from the project site both during and after the transformation and expansion of the airport in the site construction plans.

Thank you for the opportunity to provide scoping comments on the Metropolitan Nashville Airport Authority's BNA Vision. Once the environmental assessment is complete for this project, please send hard copies, CDs, and/or a link to the electronic version of the document, as appropriate, to the following address below:

1

EPA Region IV-NEPA Program Office

61 Forsyth Street Southwest, 9T25

Atlanta, Georgia 30303

If you have any questions regarding these comments, please contact me at the information below.

Roshanna White | Life Scientist | NEPA Office Resource Conservation and Restoration Division U.S. Environmental Protection Agency | Region IV 61 Forsyth Street SW | Atlanta, GA 30303 Voice: 404-562-9035 | Email: white.roshanna@epa.gov

United States Department of the Interior



FISH AND WILDLIFE SERVICE Tennessee ES Office 446 Neal Street Cookeville, Tennessee 38501



March 22, 2017

Ms. Michelle Baker Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, Tennessee 37214-4114

Subject: FWS# 2017-CPA-0370. MNAA - BNA Vision Environmental Assessment, Davidson County, Tennessee.

Dear Ms. Baker:

Thank you for your correspondence of February 16, 2017, concerning Metropolitan Nashville Airport Authority's (MNAA) preparation of an environmental assessment (EA) to evaluate potential impacts associated with the design alternatives in support of the BNA Vision project. The BNA Vision would involve multifaceted improvements for the MNAA terminal and associated infrastructure. The improvements would occur at and adjacent to the existing terminal building. You have requested that our agency provide any concerns that we may have regarding the proposed action. U.S. Fish and Wildlife Service (Service) personnel have reviewed the information submitted, and we offer the following comments.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the terminal area and adjacent improvement areas, and we have no concerns with those areas. It appears that most of the potential support areas around the airport boundary are cleared sites. However, if any tree clearing is proposed at these sites, habitat assessments for endangered Indiana bat (*Myotis sodalis*) suitable roost trees should take place and the assessment submitted to our office for review before tree removal occurs. Additionally, the endangered Nashville crayfish (*Orconectes shoupi*) is known to occur off the airport property in Sims Branch and an unnamed tributary to Mill Creek. These streams are located off the northwest boundary of the airport. Any work that could cause runoff, etc, into these streams should be properly coordinated with our office.

Thank you for the opportunity to comment on this action. If you have any questions regarding the information which we have provided, please contact Robbie Sykes of my staff at 931/525-4979 or *robbie_sykes@fws.gov*.

Sincerely,

Roht E. Sph for

Mary E. Jennings Field Supervisor

United States Department of the Interior



FISH AND WILDLIFE SERVICE Tennessee ES Office 446 Neal Street Cookeville, Tennessee 38501



March 22, 2017

Ms. Michelle Baker Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, Tennessee 37214-4114

Subject: FWS# 2017-CPA-0370. MNAA - BNA Vision Environmental Assessment, Davidson County, Tennessee.

Dear Ms. Baker:

Thank you for your correspondence of February 16, 2017, concerning Metropolitan Nashville Airport Authority's (MNAA) preparation of an environmental assessment (EA) to evaluate potential impacts associated with the design alternatives in support of the BNA Vision project. The BNA Vision would involve multifaceted improvements for the MNAA terminal and associated infrastructure. The improvements would occur at and adjacent to the existing terminal building. You have requested that our agency provide any concerns that we may have regarding the proposed action. U.S. Fish and Wildlife Service (Service) personnel have reviewed the information submitted, and we offer the following comments.

Endangered species collection records available to the Service do not indicate that federally listed or proposed endangered or threatened species occur within the terminal area and adjacent improvement areas, and we have no concerns with those areas. It appears that most of the potential support areas around the airport boundary are cleared sites. However, if any tree clearing is proposed at these sites, habitat assessments for endangered Indiana bat (*Myotis sodalis*) suitable roost trees should take place and the assessment submitted to our office for review before tree removal occurs. Additionally, the endangered Nashville crayfish (*Orconectes shoupi*) is known to occur off the airport property in Sims Branch and an unnamed tributary to Mill Creek. These streams are located off the northwest boundary of the airport. Any work that could cause runoff, etc, into these streams should be properly coordinated with our office.

Thank you for the opportunity to comment on this action. If you have any questions regarding the information which we have provided, please contact Robbie Sykes of my staff at 931/525-4979 or *robbie_sykes@fws.gov*.

Sincerely,

Roht E. Splan for

Mary E. Jennings

Field Supervisor



Tennessee Valley Authority, 400 West Summit Hill Drive, WT11D, Knoxville, Tennessee 37902-1499

March 21, 2017

Mr. Aaron Goldschmidt BNA Vision Scoping Comments C/o Amec Foster Wheeler 3800 Ezell Road Suite 100 Nashville, TN 37211

Dear Mr. Goldschmidt:

METROPOLITAN NASHVILLE AIRPORT AUTHORITY (MNAA) - BNA VISION, ENVIRONMENTAL ASSESSMENT SCOPING AND REQUEST FOR INFORMATION – TENNESSEE VALLEY AUTHORITY (TVA) COMMENTS

Thank you for providing TVA an opportunity to participate in the initial scoping period for the MNAA draft environmental assessment for the BNA Vision. Our staff has reviewed the scoping information and identified existing TVA transmission lines in the vicinity of your proposed action (Figure 1). TVA would like to request that MNAA consider the future possibility that TVA may need a new transmission line in this area in the future, which may require an expansion of the existing right-of-way easement. TVA would like to request a copy of the draft and final EAs so that we may stay informed of MNAA's decision.

If you have questions, please contact me at <u>abhenry@tva.gov</u> or (865) 632-4045.

Sincerely,

Angthen

Amy B. Henry, Manager, NEPA Program and Valley Projects Resources & River Management

Enclosure



Figure 1. TVA Transmission Lines in the Vicinity of MNAA's Proposed Project



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION NASHVILLE ENVIRONMENTAL FIELD OFFICE 711 R.S. Gass Blvd Nashville, TENNESSEE 37243

(615) 687-7000 STATEWIDE 1-888-891-8332

FAX (615) 687-7078

February 24, 2017

Michelle Baker Asst. Mgr., Env. Compliance MNAA One Terminal Drive, Suite 501 Nashville, TN 37214

RE: Environmental Inquiry – BNA Vision MNAA One Terminal Drive, Nashville Facility ID # Not Applicable

Dear Ms. Baker:

The Division of Underground Storage Tanks (Division) has reviewed the February 16, 2017 environmental inquiry for the referenced location. A review of our records indicates that there are no known issues in the designated areas relative to the Division.

If you have any questions about this letter, please do not hesitate to contact me at (615) 687-7089.

Tell us how we're doing! Please take 5-10 minutes to complete our customer survey form at http://tn.gov/environment/article/contact-tdec-customer-service-form

Sincerely,

John 7. Wright

John Wright Technical Consultant Division of Underground Storage Tanks

c: Carrie Ancell-Nashville Central Office Filed to Gas Log

EI03112016/jtw/519000002.2417



STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION DIVISION OF WATER RESOURCES William R. Snodgrass - Tennessee Tower 312 Rosa L. Parks Avenue, 11th Floor Nashville, Tennessee 37243-1102

March 20, 2017

Ms. Michelle Baker, PE Assistant Manager, Environmental Compliance Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, TN 37214

re: Nashville International Airport EA Scoping – BNA Vision Project Davidson County, TN

Dear Ms. Baker:

Staff within the Division of Water Resources have reviewed the information submitted regarding the proposed BNA Vision project that was submitted by Christine M. Vitt. At this stage, the information is understandably limited and the DWR response cannot address the project in detail. From the information submitted, the activities will require coverage under Tennessee's General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Storm Water Associated with Construction Activities (CGP) and an associated Storm Water Pollution Prevention Plan (SWPPP), as they will well exceed one acre of land disturbance. In figure 3, the potential support area to the southwest appears to exceed 100 acres, with drainage to Mill Creek. This support area would require a hydrologic determination and potentially an Aquatic Resource Alteration Permit (ARAP) based on the close proximity to Mill Creek. The eastern support area to the northeast appears to cover over 100 acres and is adjacent to/impinging upon McCrory Creek which would likely require a buffer zone and potentially need to be included in an ARAP. The potential support area to the northwest appears to cover in excess of 60 acres. The infrastructure improvement area shown in Figure 2 appears to cover in excess of 15 acres and would need to be included in the CGP as well.

If you have any further questions, I will be glad to try to assist you. You may reach me at (615) 532-0170 or tom.moss@tn.gov.

Sincerely,

tions di Mose

Thomas A. Moss, P.G. Environmental Review Coordinator Compliance and Enforcement Unit

cc: April Grippo, NEFO DWR Manager



STATE OF TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

Division of Remediation 312 Rosa L. Parks 14th Floor Nashville, TN 37243

Date: April 26, 2017

Re: Environmental Review NEPA Environmental Assessment Metropolitan Nashville Airport Authority – BNA Vision Davison County

Dear: Ms. Christine Vitt

The Division of Remediation (DoR) has received your environmental review request on March 14, 2017 regarding the Metropolitan Nashville Airport Authority – BNA Vision Environmental Assessment Request in Davidson County, TN. After reviewing your maps and our project files, we have concluded that there are twentyone sites within one mile of the subject property. Attached with this letter is a map of known DoR and drycleaner sites within the projected area and an Excel spreadsheet with information on the twentyone sites within the projected area.

If you have any further questions, do not hesitate to call:

Shannon Gray, Central Office Environmental Scientist 3, at 615-532-0910.

Sincerely,

Barry Brawley, P.G Deputy Director of Field Operations

cc: Nashville Field Office Central Office files



Division of Remediation Sites									
DIVISION	DOR_FACILITY_ID	PRIMARY_NAME	TDEC_SITE_ID	STATUS	EFO	LATITUDE	LONGITUDE	SITE_LOCATION	SITE_CITY
DOR	19559	AIR NATIONAL GUARD - BERRY FIELD	8292	Open	Nashville	36.111944	-86.676667	240 Knapp Boulevard	Nashville
DOR	19585A	Triumph Aerostructures	4775	Open	Nashville	36.122204	-86.692893	1431 Vultee Blvd.	Nashville
DOR	SRS190832	Metro Correctional Work Center	92099	Closed	SRP	36.088224	-86.68392	5113 Harding Place	Nashville
DOR	19534	ESB INC./EXIDE NASHVILLE SERVICE CENTER	4324	Non-site	Nashville	36.1208	-86.676234	A6-147 Space Park Dr S	Nashville
DOR	19542	COUCHVILLE PIKE DUMP	55864	Non-site	Nashville	36.11449	-86.64188	COUCHVILLE & DONELSON PK	NASHVILLE
DOR	19639	EMBRAER AIRCRAFT MAINTENANCE	7912	Closed	Nashville	36.135805	-86.682639	10 Airways Blvd	Nashville
DOR	SRS190507	Dell Computer Corp	92847	Closed	SRP	36.105297	-86.67687	1 Dell Parkway	Nashville
DOR	SRS190349	American Airlines	83902	Closed	SRP	36.125476	-86.666037	931 Airport Service Road	Nashville
DOR	SRS190517	Metro Airport (Former American Airlines B.	5793	Closed	SRP	36.130605	-86.681387	One Terminal Drive	Nashville
DOR	SRS190314	Genesco Powerhouse	2544	Closed	SRP	36.112778	-86.693333	1415 Murfreesboro Pike	Nashville
DOR	19552	NASHVILLE METRO ARPT DUMP	55875	Closed	Nashville	36.117943	-86.663323	DONELSON-COUCHVILLE PIKE	NASHVILLE
DOR	19585	AVCO/AEROSTRUCTURES, INC.	4775	Open	Nashville	36.122204	-86.692893	1431 Vultee Blvd.	Nashville
DOR	19589	NASHVILLE MUNICIPAL AIRPORT	5793	Non-site	Nashville	36.130605	-86.681387	One Terminal Drive	Nashville
DOR	SRS190837	Metro Nashville Airport	5793	Open	Central Office	36.130605	-86.681387	One Terminal Drive	Nashville
DOR	SRS191007	Metropolitan Nashville Airport Authority	92645	Closed	SRP	36.107569	-86.675449	1520 Murfreesoro Pike	Nashville
DOR	SRS190793	American Airlines Fuel Farm Facility Nashville	83902	Closed	SRP	36.125476	-86.666037	931 Airport Service Road	Nashville
DOR	SRS190243	Alamo Rent-A-Car	83922	Closed	SRP	36.115512	-86.670175	115 Hanger Court	Nashville

DOR- Known Drycleaners

185 - 185

Division	DCERP_ID	FACILITY_NAME	FACILITY_ADDRESS	CITY	STATE	ZIP	COUNTY_NAME	Comments	POINT_X	POINT_Y
DOR- DCERP	D-19-110	Elm Hill Cleaners	509 Donelson Pike	Nashville	TN	37214	Davidson	<null></null>	-86.666797	36.148371
DOR- DCERP	D-19-123	Express Cleaners	519 Donelson Pike	Nashville	TN	37214	Davidson	<null></null>	-86.666073	36.148219
DOR- DCERP	D-19-127	Mr. C's Cleaners	2006 Murfreesboro Rd	Nashville	TN	37217	Davidson	<null></null>	-86.654171	36.09522
DOR- DCERP	D-19-198	Coit Services	1182 Antioch Pike	Nashville	TN	37211	Davidson	<null></null>	-86.698877	36.09421

	COUNTY	DROMULCATED	
	COUNTY	PROIVIOLGATED	DELISTED
37217	Davidson	7/5/1991	7/27/2000
37217	Davidson	<null></null>	<null></null>
37211	Davidson	<null></null>	<null></null>
37211	Davidson	<null></null>	<null></null>
<null></null>	Davidson	<nuli></nuli>	<null></null>
37217	Davidson	<null></null>	<null></null>
37217	Davidson	<null></null>	<null></null>
37214	Davidson	<null></null>	<null></null>
37214	Davidson	<null></null>	<null></null>
37217	Davidson	<null></null>	<null></null>
<null></null>	Davidson	<null></null>	<null></null>
37217	Davidson	<null></null>	<null></null>
37214	Davidson	<null></null>	<null></null>
37214	Davidson	<nuli></nuli>	<null></null>
37217	Davidson	<null></null>	<null></null>
37214	Davidson	<null></null>	<null></null>
37214	Davidson	<null></null>	<null></null>

.41

8. Y - 90

Fikri, Mary Motte

From:Goldschmidt, Aaron PSent:Thursday, March 16, 2017 1:25 PMTo:Fikri, Mary MotteCc:McFarling, Doug; Custer, Bertisabel M.Subject:FW: EA Scoping and Request for Information

FYI

From: BAKER, MICHELLE [mailto:Michelle_Baker@NASHINTL.com]
Sent: Thursday, March 16, 2017 11:22 AM
To: Goldschmidt, Aaron P <Aaron.Goldschmidt@amecfw.com>
Cc: VITT, CHRISTINE <CHRISTINE_VITT@NASHINTL.com>
Subject: FW: EA Scoping and Request for Information

FYI, I received the following regarding NEPA requests within TDEC.

Μ

Michelle J. Baker, PE, C.M. Assistant Manager, Environmental Compliance

phone: (615) 275-1444 mobile: (615) 504-2890

From: Matthew K. Taylor [mailto:Matthew.K.Taylor@tn.gov]
Sent: Thursday, March 16, 2017 1:11 PM
To: BAKER, MICHELLE
Cc: VITT, CHRISTINE; Kendra Abkowitz
Subject: RE: EA Scoping and Request for Information

Ms. Baker,

I will forward your EA scoping request to the appropriate Divisions. If they have specific comments on the scope of the project you should hear back from them directly.

Additionally, I want to provide you with information regarding how to submit a NEPA related review requests to the Tennessee Department of Environment and Conservation (TDEC). Within TDEC, the Office of Policy and Planning is responsible for the coordination of department-wide responses to requests for review and comment on draft environmental assessment and draft environmental impact statements (NEPA documents) for proposed projects within Tennessee that trigger requirements pursuant to NEPA.

Request for Comment on NOIs/Scoping Request/Environmental Consultation Requests \rightarrow Notifications of intent (NOI), environmental review requests, or requests for information pertaining to the scoping of a future NEPA document should be directed to appropriate division or field office staff for review. If you are unsure who the appropriate contact is for the respective division or field office, please feel free to contact me and I can help you.

Request for Comment on NEPA Documents \rightarrow TDEC recently launched a new public facing portal for the submittal of NEPA document review requests, and a companion public database housing TDEC's responses to NEPA document review requests. The new external submittal portal should help create a centralized and

standard process, streamlining the submittal of NEPA document review requests to TDEC. This new process will also assist in the internal assigning and distribution of review requests by utilizing an internal back-end feature. Following a completed review, requesting agencies will be notified by an automated email directing them to the public database housing TDEC's responses to NEPA document review requests.

To submit a NEPA document review request on a draft EA or draft EIS, visit the <u>NEPA Comment Request</u> <u>Portal</u> webpage and complete the submittal information.

For more information regarding the NEPA document review process, visit <u>https://www.tn.gov/environment/topic/policy-national-environmental-policy-act-at-tdec</u>

If you have any questions please feel free to let me know.

Thank you!,



Matt Taylor | Policy Analyst Office of Policy and Planning, TDEC William R. Snodgrass Tennessee Tower 312 Rosa L Parks Ave, 2nd Floor Nashville, TN 37243 Email: <u>Matthew.K.Taylor@tn.gov</u> Office: 615-532-1291 Cell: 615-979-2449

Tell us how we're doing! Please take 5-10 minutes to complete <u>TDEC's Customer Service Survey</u>

From: Kendra Abkowitz Sent: Thursday, March 16, 2017 11:17 AM To: Matthew K. Taylor Subject: Fwd: EA Scoping and Request for Information

Begin forwarded message:

From: "BAKER, MICHELLE" <<u>Michelle_Baker@NASHINTL.com</u>> To: "Kendra Abkowitz" <<u>Kendra.Abkowitz@tn.gov</u>> Cc: "VITT, CHRISTINE" <<u>CHRISTINE_VITT@NASHINTL.com</u>> Subject: EA Scoping and Request for Information

*** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. ***

Good Morning, Ms. Abkowitz.

The attached Environmental Assessment Scoping and Request for Information related to the BNA Vision at Nashville International Airport was sent last month and returned to us today as undeliverable. It appears that the contact

information was incorrect. We would appreciate your assistance in this review. Please contact us if you have any questions or require additional information.

Respectfully, Michelle Baker

Michelle J. Baker, PE, C.M. Assistant Manager, Environmental Compliance

Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, TN 37214 phone: (615) 275-1444 mobile: (615) 504-2890 fax: (615) 275-4052



Metropolitan Nashville Airport Authority (MNAA) owns and operates both Nashville International Airport (BNA) and John C. Tune Airport (JWN) and provides *The Nashville Airports Experience:* great airports for passengers, partners and employees.



ALABAMA-COUSHATTA TRIBE OF TEXAS

571 State Park Road 56 • Livingston, Texas 77351 • (936) 563-1100

March 10, 2017

Metropolitan Nashville Airport Authority Attn: Michelle Baker One Terminal Drive, Suite 501 Nashville, TN 37214

Dear Ms. Baker:

On behalf of Mikko Colabe III Clem Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult us regarding the BNA Vision proposal in Davidson County.

Our Tribe maintains ancestral associations within the state of Tennessee despite the absence of written records to completely identify Tribal activities, villages, trails, or burial sites. However, it is our objective to ensure significances of American Indian ancestry, especially of Alabama-Coushatta origin, are administered with the utmost considerations.

Upon review of your February 16, 2017 submission, no immediately known impacts to cultural assets of the Alabama-Coushatta Tribe of Texas are anticipated in conjunction with this proposal. For areas not previously disturbed, we request consideration of archaeological evaluation to avoid additional impacts to unknown cultural resources. In the event of the inadvertent discovery of archaeological artifacts and/or human remains, activity in proximity to the location must cease and appropriate authorities, including this Office, notified without delay for additional consultations.

Additional copies of this determination may be disseminated at your discretion. Should you require further assistance, please do not hesitate to contact us.

Sincerely,

Bryant J. Celestine Historic Preservation Officer

Office (936) 563 – 1181

celestine.bryant@actribe.org



Eastern Band of Cherokee Indians Tribal Historic Preservation Office P.O. Box 455 Cherokee, NC 28719 Ph: 828-359-6852 Fax 828-488-2462

DATE: 13 – March – 2017

 TO: Metropolitan Nashville Airport Authority ATTN: Michelle Baker
 One Terminal Drive, Suite 501
 Nashville, TN 37214

PROJECT: BNA Vision

Ms. Baker:

The Tribal Historic Preservation Office of the Eastern Band of Cherokee Indians (EBCI THPO) would like to thank you for the opportunity to comment on this proposed section 106 activity under §36CFR800.

From the aerial photographs provided with the letter dated 16 February, it seems that the majority of the APE has been heavily disturbed by previous activities. The likelihood for finding intact cultural deposits and human burials is minimal, but deep ground disturbance could uncover intact soil deposits. Before we provide concurrence or non-concurrence, we would appreciate the opportunity to review the Environmental Assessment. Upon review of the EA, we would issue a formal statement regarding Cherokee interests within the APE. In the event that project design plans change, or cultural resources or human remains are inadvertently discovered, the EBCI THPO requests all work should cease and this office notified to continue the government to government consultation process as stipulated under §36CFR800.

If we can be of further service, or if you have any comments or questions, please feel free to contact me at (828) 359-6852.

Sincerely,

Dey mist

Holly Austin Tribal Historic Preservation Office Eastern Band of the Cherokee Indians

C: Aaron Goldschmidt

RESOURCE CAPACITY REVIEW LIST

Mr. Scott Coop Major Account Services Piedmont Gas Via email: scott.coop@duke-energy.com

Mr. Vaughn Spears Senior Engineer Nashville Electric Service 1214 Church Street Nashville, TN 37246

Mr. Mark Sturtevant Director, Metro Public Works Metropolitan Government of Nashville & Davidson County 750 South 5th Street Nashville, TN 37206

Mr. Scott Potter Director, Water Services Metropolitan Government of Nashville & Davidson County 1600 2nd Ave North Nashville, TN 37208 Example Resource Capacity Review Letter



Metropolitan Nashville Airport Authority

One Terminal Drive, Suite 501 • Nashville, TN 37214-4114 • 615-275-1600

July 11, 2017

Mr. Vaughn Spears Senior Engineer **Nashville Electric Service** 1214 Church Street Nashville, TN 37246

SUBJECT: Metropolitan Nashville Airport Authority – BNA Vision Request for Resource Capacity Review

Dear Mr. Spears:

By 2035, the population of the greater Nashville area is expected to surpass 2.5 million people and corresponding passenger traffic through Nashville International Airport (BNA) is project to grow from approximately 12 million passengers per year today to 20 million by 2035 - a 66 percent increase. Over the past four consecutive years, BNA passenger traffic has increase almost 30 percent. To meet the needs of this sustained growth, the Metropolitan Nashville Airport Authority (MNAA) is embarking to design and implement multifaceted improvements for the terminal and associated infrastructure. These improvements – known as *BNA Vision* – seek to address five overarching issues:

- Transform and expand existing facilities including the terminal building, concourses, and gates to better meet projected operations and enplanements and ensure safe, secure, and efficient operations.
- Address deficiencies associated with the aging design and infrastructure of the existing terminal building, including distribution of internal functions (such as ticketing, security, concessions, and baggage handling) and the need to update mechanical and electrical systems and base building elements.
- Enhance the efficiency of the terminal and configuration of concourses and gates to accommodate changes in the air transportation system, airport security, customs and border protection, and modern-generation aircraft.
- Improve airport accessibility and level-of-service of ground transportation, curbside flow, and parking activities, and provide new accessible transient lodging.

BOARD OF COMMISSIONERS Robert J. Joslin, Chair A. Dexter Samuels PhD, Vice Chair Aubrey B. Harwell III, Secretary Megan Barry, Mayor

Dierks Bentley John E. Doerge Amanda Farnsworth Bill Freeman Kabir Singh Sandhu P.E. Christy Smith

PRESIDENT AND CEO Robert R. Wigington Page 2 of 3 Mr. Vaughn Spears Nashville Electric Service July 11, 2017

• Improve overall efficiency and safety of landside passenger movement and airside aircraft movement.

MNAA is currently refining a series of design alternatives for development at and adjacent to the existing terminal building – within existing airport property – to address the aforementioned issues. Figure 1 (attached) identifies the project location and improvement areas. Figure 2 (attached) identifies the specific project components anticipated within the BNA Vision. Figure 3 (attached) identified areas of MNAA property that may be used to assist with low impact development (LID) elements.

Pursuant to the National Environmental Policy Act (NEPA) and regulations issued by the Council of Environmental Quality (CEQ), MNAA is preparing an Environmental Assessment that evaluates the potential effects on the environment of a range of design alternatives as well as the No Action Alternative. The EA is being prepared for review and approval by the Federal Aviation Administration (FAA) and follows FAA guidelines for implementing NEPA (specifically FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*).

The Draft EA is expected to be released for public review in August 2017. The EA Will include an introduction of the proposed action; the purpose and need for the project; a detailed description of alternatives under consideration; a discussion of the affected environment of the geographic area; an analysis of potential effects on environmental impact categories due to the implementation of the alternatives; and, an evaluation of potential cumulative effects of the project.

FAA guidance on EA preparation indicates that, where possible, "the NEPA document (e.g., the appendix) or a project administrative file should include letters or documents addressing the capacities of local public utilities and suppliers to provide energy and natural resources for the proposed action and alternative(s)." MNAA respectfully requests your input on the proposed action as relates to your agency's capacity and ability to meet the demands that this project will present now and into the future, as a direct or indirect result of implementation of the Proposed Action.

Please provide any relevant information, environmental data, or concerns that your agency may have regarding the proposed action. Please provide this information by email to Michelle Baker at michelle_baker@nashintl.com and to Aaron Goldschmidt at aaron.goldschmidt@amecfw.com or by mail to the following addresses:
Page 3 of 3 Mr. Vaughn Spears Nashville Electric Service July 11, 2017

> Michelle Baker, PE Assistant Manager, Environmental Compliance Metropolitan Nashville Airport Authority One Terminal Drive, Suite 501 Nashville, TN 37214

and

BNA Vision Scoping Comments c/o Amec Foster Wheeler 3800 Ezell Road, Suite 100 Nashville, TN 37211

If you have any questions, or need additional information, please feel free to contact me at 615.275.1783. Thank you for your time and we look forward to your response.

Sincerely,

hrutino M Vitt

Christine M. Vitt Vice President, Strategic Planning & Sustainability

MJB/mjb

Attachments: Figure 1 – Nashville International Airport and Vicinity Figure 2 – Nashville International Airport Terminal and Adjacent Improvement Areas Figure 3 – Nashville International Airport Potential Support Areas

cc (via email): Michelle Baker, MNAA – michelle_baker@nashintl.com Ross Payton, Corgan & Associates – Ross.Payton@corgan.com Aaron Goldschmidt, AMEC FW – Aaron.goldschmidt@amecfw.com

FIGURE 1 Nashville International Airport and Vicinity



FIGURE 2 BNA Vision:

Nashville International Airport Terminal and Adjacent Improvement Areas



FIGURE 3 Nashville International Airport Potential Support Areas



Resource Capacity Review Letter Responses (Pending)

Appendix G Species Lists

State-listed Rare, Threatened or Endangered Species for Davidson County, Tennessee											
Common Name	State Status	Habitat									
Plants	•										
Purple Prairie-clover											
Dalea purpurea	E	Barrens									
White Prairie-clover											
Dalea candida	Т	Barrens									
Eggert's Sunflower											
Helianthus eggertii	S	Barrens And Roadsides									
Davis' Sedge											
Carex davisii	S	Bottomlands, Riparian Soils									
Eastern Yampah											
Perideridia americana	E	Cedar Barrens									
Northern Prickly-ash											
Zanthoxylum americanum	S	Cedar Thickets									
Duck River Bladderpod											
Paysonia densipila	S	Cultivated Fields									
Harbison's Hawthorn											
Crataegus harbisonii	E	Dry Rocky Calcareous Woods									
Shaggy False Gromwell Onosmodium											
hispidissimum	E	Dry Woods									
Pale Umbrella-wort	-										
Mirabilis albida		Glades									
Evolvulus											
	5	Glades									
Glade Onion A		Oladaa									
IIIUM Stellatum	E	Glades									
Glade Cleft Phiox	- -	Clades									
Topposoo Milk voteb	1	Glades									
Astronolus toppossoonsis	c	Glados									
Astragalus terrinesseerisis	3	Glades									
	S	Glades									
Popo's Sand-parsley Ammosolinum	3	Glades									
nonei	Т	Glades									
Carolina Anemone											
Anemone caroliniana	F	Glades And Cedar Woodlands									
Limestone Blue Star											
Amsonia tabernaemontana var											
gattingeri	s	Glades, Barrens, And Rocky River Bars									
Braun's Rockcress											
Boechera perstellata	E	Limestone Bluffs									
Short's Bladderpod											
Physaria globosa	E	Limestone Talus Slopes And Cliffs									
Pubescent Sedge											
Carex hirtifolia	S	Lowland Forests									
American Chestnut											
Castanea dentata	S	Mesic To Dry Forests									
Deam's Copperleaf	S	Mesic Woods-Sandbars									

State-listed Rare, Threatened or Endangered Species for Davidson County, Tennessee											
Common Name	State Status	Habitat									
Acalypha deamii											
Willow Aster											
Symphyotrichum praealtum	E	Moist Prairies And Marshes									
Price's Potato-bean											
Apios priceana	E	Openings In Rich Woods									
Pyne's Ground-plum											
Astragalus bibullatus	E	Ordovician Limestone Glades									
Tennessee Coneflower											
Echinacea tennesseensis	Т	Ordovician Limestone Glades									
White Water-buttercup Ranunculus											
aquatilis var. diffusus	E	Ponds And Streams									
Prairie Parsley											
Polytaenia nuttallii	Т	Prairies And Open Dry Areas									
American Ginseng											
Panax quinquefolius	S-CE	Rich Woods									
Butternut											
Juglans cinerea	Т	Rich Woods And Hollows									
Svenson's Wild-rye											
Elymus svensonii	Т	Rocky Bluffs									
Western Wallflower											
Erysimum capitatum	E	Rocky Bluffs									
Silky Dogwood											
Cornus obliqua	S	Rocky River Shores									
Leafy Prairie-clover											
Dalea foliosa	E	Rocky Washes In Glades									
Yellow Honeysuckle	-										
Lonicera flava	1	Rocky Woods And Thickets									
Sand Grape		Sandy, Daaly, Divarbanka									
Vitis rupestris	E	Sandy, Rocky Riverbanks									
Stallaria fantinalia	e	Seens And Limestone Creek Rode									
Vollow Suppyholl	3	Seeps And Limestone Creek Beds									
Schoonolirion crocoum	т	Wet Areas In Glades									
American Weter pappywort Hydroactyle	1	Wet Aleas III Glades									
americana		Wet Soils And Pools									
Short's Rock-cross											
Boechera shortii	G	Wooded Bluffs & Floodplaips									
Birds	0										
Bilds		Aroos aloss to large hadies of water, reacts in									
Pold Fords		Areas close to large bodies of water, roosts in									
Balu Eagle		shellered siles in winter, communal roost siles									
Paulaeelus leucocepitalus		Bruchy cross thickets and carub in open									
Dewick's Wien		Blushy aleas, thickets and scrub in open									
Bachman's Sparrow		Dry open pipe or oak woods: posts on the									
Aimonhila aastivalis	F	around in dense cover									
Least Rittern		Marshes with scattered bushes or other woody									
Ivohruchus avilie		arowth: readily uses artificial wetland babitate									
Coruloan Warbler		Mature deciduous forest particularly in									
Dendroice cerulee		flood plains or mesic conditions									

State-listed Rare, Threatened or En	dangered Spec	ies for Davidson County, Tennessee
Common Name	State Status	Habitat
Barn Owl		Open and partly open country, often around
Tyto alba	D	human habitation; farms.
Peregrine Falcon		Varied habitats including farmlands, marshes,
Falco peregrinus	E	river mouths, and cities; often nests on ledges.
Mammals	-	
Meadow Jumping Mouse		Open grassy fields; often abundant in thick
Zapus hudsonius	D	vegetation near water bodies; statewide.
		Outcrops, cliffs, talus slopes, crevices,
Allegheny Woodrat Neotoma magister	D	sinkholes, caves & karst.
Gray bat Myotis grisescens		Cave obligate year-round; frequents forested
	E	areas; migratory.
Indiana bat Myotis sodalis		Hibernates in caves; spring/summer maternity
		roosts are normally under the bark of standing
	E	trees.
Northern long-eared bat		Hibernation occurs primarily in caves, mines,
Myotis septentrionalis		and tunnels. Summer roost sites include
		crevices or hollow in trees or beneath loose
		bark; also know to roost in small spaces
		Ecroged with building of other structures.
	Para Not	clearings, and over pends (Natureserve
	State Listed	2015)
Pontilos	Oldie Listed	2010).
Reptiles		Dry upland areas including brushy cut-over
Eastern Slender Glass Lizard		woodlands and grassy fields: pearly statewide
Ophisaurus attenuatus longicaudus	П	but obscure: fossorial
		Slow moving deep water of rivers sloughs
Alligator Snapping Turtle		oxbows, swamps, and lakes; middle and west
Macrochelys temminckii	D	Tennessee; obscure.
Amphibians		
Hellbender Cryptobranchus		Rocky, clear creeks and rivers with large
alleganiensis	D	shelter rocks.
Streamside Salamander Ambystoma		Seasonally ephemeral karst streams: middle
barbouri	D	Tennessee.
Fish	-	<u>.</u>
Lake Sturgeon Acipenser fulvescens	E	Bottoms of large, clean rivers and lakes.
		Large rivers, mostly in Tennessee River
Highfin Carpsucker Carpiodes velifer	D	drainage.
Redband Darter Etheostoma		Limestone streams; Nashville Basin & portions
luteovinctum	D	of Highland Rim.
		Small rivers, in deep, strongly flowing riffles
Smallscale Darter Etheostoma		with gravel, boulder, and coarse rubble
microlepidum	D	substrates; Cumberland River drainage.
		Small-large rivers with moderate gradient in
Slenderhead Darter Percina		shoal areas with moderate-swift currents;
phoxocephala	D	portions of Tenn & Cumb river watersheds.
Blue Sucker		
Cycleptus elongatus	<u> </u>	Swift waters over firm substrates in big rivers.
Molluscs		

State-listed Rare, Threatened or Endangered Species for Davidson County, Tennessee											
Common Name		State Status	Habitat								
Tan Riffleshell <i>Epioblas</i> <i>walkeri</i>	ma florentina	E	Found in river headwaters, in riffles and shoals in sand and gravel substrates; Tennessee & Cumberland river systems.								
Pink Mucket Lampsilis abrupta		E	Generally a large river species, preferring sand-gravel or rocky substrates with mod- strong currents; Tennessee & Cumberland river systems								
Salamander Mussel Sir ambigua	npsonaias	Rare, Not State Listed	In sand or silt under large, flat stones in areas of swift current; occurred historically in E Fk Stones R; 2005 obs in lower Duck R.								
Cumberlandian Combsl Epioblasma brevidens	nell	E	Large creeks to large rivers, in coarse sand or mixtures of gravel, cobble, or rocks; Tennessee & Cumberland river systems.								
Orangefoot Pimpleback cooperianus	Plethobasus	E	Large rivers in sand-gravel-cobble substrates in riffles and shoals in deep flowing water; Cumberland & Tennessee river systems.								
Lithasia duttoniana		Rare, Not State Listed	Rocky substrates in riffle systems; bedrock in flowing water below main section of riffles; Duck River (TN River system).								
Crustaceans		1									
Nashville Crayfish Orco	nectes shoupi	E	1st-order & larger streams, generally with bedrock bottom, under slabrock; endemic to Mill Creek watershed; Davidson & William. cos.								
Insects											
Baker Station Cave Bee Pseudanophthalmus ins	etle sularis	Rare, Not State Listed	Terrestrial cave obligate; northern Central Basin; known from single historical record in Davidson County.								
Planarian											
A Cave Obligate Planar Sphalloplana buchanan	ian i	Rare, Not State Listed	Aquatic cave obligate; northern Central Basin; Davidson County; taxonomy poorly understood.								
KEY:											
STATE STATUS											
CODE D. Deemod in Need of	Any analian or out	anaging of pangan	DESCRIPTION								
D, Deemed in Need of Management	believes should be distribution, habita determine manag themselves succes	species of hongan investigated in o t needs, limiting fa ement measures sfully. This category	rder to develop information relating to populations, actors, and other biological and ecological data to necessary for their continued ability to sustain y is analogous to Special Concern.								
E, Endangered	Any species or sub	species whose pros	spects of survival or recruitment within the state are in the foreseeable future								
T, Threatened	Any species or su foreseeable future	ibspecies that is li	kely to become an endangered species within the								
S, Special Concern	Any species or sub specific habitat req its status.	species of plant tha uirements or scient	t is uncommon in Tennessee, or has unique or highly ific value and therefore requires careful monitoring of								
CE, Commercially Exploited	Due to large number meet market dema of Natural Heritage review process.	ers being taken fron nd. These plants ar e does not recomn	n the wild and propagation or cultivation insufficient to e of long-term conservation concern, but the Division nend they be included in the normal environmental								
Sources:TDEC, 2016a. A Gu TDEC, 2016b. Rare	ide to the Rare Animals Plant List. Tennessee N	s of Tennessee. Nashv latural Heritage Progr	ville: Division of Natural Areas. am, Todd Crabtree (State Botanist).								

Federally-listed Species f	ior Davidson (County, Tennessee ^a
Species	Federal Status ¹	Habitat Comments
Clams		<u>.</u>
Yellow blossom (pearlymussel) <u>Epioblasma florentina</u> <u>florentina</u>	Endangerd	Riffles, creeks and medium rivers (NatureServe 2016).
Cumberlandian Combshell <i>Epioblasma brevidens</i>	Endangered	Large creeks to large rivers; in substrates ranging from coarse sand to mixtures of gravel, cobble, and boulder-sized particles (NatureServe 2016).
Orangefoot Pimpleback (pearlymussel) <i>Plethobasus cooperianus</i>	Endangered	Medium to large rivers in sand, gravel, and cobble substrates (NatureServe 2016).
Pink Mucket (pearlymussel) <i>Lampsilis abrupta</i>	Endangered	Medium to large rivers, associated with fast-flowing waters with rocky substrates, but also found in deeper waters with slower currents with sand and gravel substrates (NatureServe 2016).
Ring Pink (mussel) <i>Obovaria retusa</i>	Endangered	Medium and large rivers; prefers sand and gravel bars (NatureServe 2016).
Tan Riffleshell Epioblasma florentina walkeri (=E. walkeri)	Endangered	Riffles and shoals of creeks and medium rivers (NatureServe 2016).
Crustaceans		
Nashville crayfish Orconectes shoupi	Endangered	Inhabits moderately flowing streams with firm (usually rock) bottoms within the Mill Creek watershed in Davidson and Williamson Counties, Tennessee (NatureServe 2015).
Mammals	-	
Gray bat Myotis grisescens	Endangered	Roosts almost exclusively in caves; rare occurrences in man-made structures and mines. Bats typically forage in forested areas along streams (NatureServe 2015).
Indiana bat Myotis sodalis	Endangered	Hibernates primarily in caves, but also known to hibernate in mines and in one dam and one tunnel. Maternity sites generally are behind loose bark of dead or dying trees or in tree cavities and foraging habitats include riparian areas, upland forests, ponds, and fields (Natureserve 2015).
Northern long-eared bat Myotis septentrionalis	Threatened	Hibernates primarily in caves, mines, and tunnels. Summer roost sites include crevices or hollow in trees or beneath loose bark; also known to roost in small spaces associated with buildings or other structures. Forages within forests, forest edges, clearings, and over ponds (Natureserve 2015).

Federally-listed Species for Davidson County, Tennessee ^a												
Species	Federal Status ¹	Habitat Comments										
Flowering Plants												
Braun's Rock-cress Arabis perstellata	Endangered	Typically found on mesic, shady, steep, north-facing wooded slopes over soils derived from limestone (Natureserve 2015).										
Guthrie's (=pyne's) Ground-plum <i>Astragalus bibullatus</i>	Endangered	Occurs in limestone cedar glade ecosystems in the Middle Tennessee Central Basin (Natureserve 2015).										
Leafy Prairie-clover Dalea foliosa	Endangered	Occurs in open, thin-soiled limestone glades and limestone barrens (Natureserve 2015).										
Price's Potato-bean Apios priceana	Threatened	Inhabits open, mixed-oak forests, forest edges and clearings on river bottoms and ravines (Natureserve 2015).										
Short's Bladderpod Physaria globosa	Endangered	Occurs on dry, open limestone ledges on river bluffs, talus of lower bluff slopes, and shale at cliff bases, often along major waterways. Also occurs on thin, calcareous soils in cedar glades (Natureserve 2015).										
^a Source: USFWS, 2017. <u>htt</u> <u>county?fips=47037</u> (access	^a Source: USFWS, 2017. <u>https://ecos.fws.gov/ecp0/reports/species-by-current-range-</u> <u>county?fips=47037</u> (accessed July 10, 2017).											

¹ The Endangered Species Act (ESA) defines an endangered species as one "in danger of extinction throughout all or a significant portion of its range" (§ 1532). A threatened species is one that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (§ 1532).

Appendix H Project Source Noise Levels vs. Schedule

Project Source Noise Levels vs. Schedule

							Cons	structio	n Source	e DNL by	y Semi-a	nnual P	eriod						Minimum Distance to			DNL contribution at	Estimated DNI	
Project Phase	Project Component	Description	2017-2	2018-1	2018-2	2019-1	2019-2	2020-1	2020-2	2021-1	2021-2	2022-1	2022-2	2023-1	2023-2	2024-1	2024-2	Peak Source DNL [dBA]	Nearest Sensitive area (ft)	Description of nearest sensitive area	Other Attenuation [dBA]	nearest sensitive area [dBA]	Increase Over Existing 60 DNL [dBA]	Conclusion/ Recommendation
	Fill Mertens Hole;	Average No. of 90 dBA Equipment Operating		4	4															Residential Areas Near	0			Significant impact. Restrict
	Borrow on Vultee Drive and Haul to Apron Area	Average No. of 85 dBA Equipment Operating Source DNL Output at 50 ft. [dBA]		4	4 102.6													102.6	800	Briley Pkwy and Vultee Drive (Mirro Meadows, Stardust Acres)	None	78.6	11.9	parcel to daytime only. Communications plan for blasting.
	Fill Mertens Hole;	Average No. of 90 dBA Equipment		4	4															Residential areas	-3			
	Excavate Borrow at Support Areas B and D:	Average No. of 85 dBA Equipment Operating		4	4													102.6	1800	along Pulley Road to east and Sheffield	Vegetation	68.5	3.8	Moderate impact. Restrict work at Support Areas B and D to daytime only.
	Haul to Apron Area	Source DNL Output at 50 ft. [dBA]		102.6	102.6															Apts. on Airways Court	regetation			
	Miscellaneous	Average No. of 90 dBA Equipment Operating	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				0			
c	Construction Operations at Support	Average No. of 85 dBA Equipment Operating	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	99.6	500	Residential Areas Near support areas	None	79.6	Significan 12.9 work at Suj C to c	Significant impact. Restrict work at Support Areas A and C to daytime only.
	Areas A and C	Source DNL Output at 50 ft. [dBA]	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6	99.6							
BNA Vision Project 1	D Concourse Expansion	Average No. of 90 dBA Equipment Operating	2	2	2	1	1	1												Residential areas northeast (Malvin Heights) and east (Percy Priest Woods)	-10	50.3	0.1	No impact
		Average No. of 85 dBA Equipment Operating	5	5	5	5	5	5										100.3	5000		I-40 and Donelson elevated segments,			
		Source DNL Output at 50 ft. [dBA]	100.3	99.4	100.3	96.7	98.3	96.7													Terminal buildings			
		Average No. of 90 dBA Equipment Operating	2	2	2	1	1	1												Residential areas northeast (Malvin Heights) and east (Percy Priest Woods)	-10			
	Expand Ticketing and Baggage Claim	Average No. of 85 dBA Equipment Operating	5	4	3	2	2	2										100.3	5000 Heights) and east (Percy Priest Woods)		I-40 and Donelson 50.3 elevated segments,	50.3	0.1	No impact
		Source DNL Output at 50 ft. [dBA]	100.3	100.1	99.9	97.1	97.1	97.1												Terminal buildings				
		Operating			2	2														Desidential array	-5			
	Demo Garage	Operating			3	3												107.2	5000	Residential areas northeast (Malvin		62.2	1.2	Minor impact
		Average No. of 85 dBA Equipment Operating			5	5														(Percy Priest Woods)	I-40 Elevated			
		Source DNL Output at 50 ft. [dBA]			107.2	107.2															segment			
	Parking Garage C,	Average No. of 90 dBA Equipment Operating			10	10	8	8	5	5	3	3								Residential areas	-5			
BNA Vision Project 2	Office Plaza and Multi- modal Facility, Parking	Average No. of 85 dBA Equipment Operating			20	20	15	15	10	10	10	10						107.1	5000	northeast (Malvin Heights) and east (Derey Priost Woods)	I-40 Elevated	62.1	1.2	Minor impact
	Garage B, Hoter	Source DNL Output at 50 ft. [dBA]			107.1	107.1	106.1	106.1	104.1	104.1	102.4	102.4								(Percy Priest Woods)	segment			
	Parking Garage C,	Average No. of 90 dBA Equipment Operating			3	3	2	2	1		2	2	2	1	1					Residential areas	-5			
BNA Vision Project 2A / 2B	Office Plaza and Multi- modal Facility, Parking	Average No. of 85 dBA Equipment Operating			5	5	4	3	2		5	5	4	3	2			101.7	5000	northeast (Malvin Heights) and east	I-40 Elevated	56.7	0.4	No impact
	B, Hotel	Source DNL Output at 50 ft. [dBA]			101.7	101.7	100.1	99.9	97.1		100.3	100.3	100.1	97.5	97.1					(Percy Priest Woods)	segment			

Project Source Noise Levels vs. Schedule

							Cons	structio	n Source	e DNL b	y Semi-a	innual P	eriod						Minimum Distance to			DNL contribution at	Estimated DNI	
Project Phase	Project Component	Description	2017-2	2018-1	2018-2	2019-1	2019-2	2020-1	2020-2	2021-1	2021-2	2022-1	2022-2	2023-1	2023-2	2024-1	2024-	Peak Source 2 DNL [dBA]	Nearest Sensitive area (ft)	Description of nearest sensitive area	Other Attenuation [dBA]	nearest sensitive area [dBA]	Increase Over Existing 60 DNL [dBA]	Conclusion/ Recommendation
		Average No. of 90 dBA Equipment			4	4	4	3	3	3	2	2	1	1						Residential areas	-10			
	International Arrivals Building	Average No. of 85 dBA Equipment Operating			10	10	10	8	8	7	7	6	5	4				103.3	5000	northeast (Malvin Heights) and east (Percy Priest Woods)	I-40 and Donelson elevated segments,	53.3	0.2	No impact
BNA Vision		Source DNL Output at 50 ft. [dBA]			103.3	103.3	103.3	102.2	102.2	102.0	100.7	100.5	98.3	97.9						(,	Terminal buildings			
Project 3		Average No. of 90 dBA Equipment Operating			2	2	2	2	2	2	2	2	2	2						Residential areas	-5			
	Central Terminal Lobby	Average No. of 85 dBA Equipment Operating			5	5	5	5	5	5	5	5	5	5				100.3	5000	northeast (Malvin Heights) and east	I-40 Elevated	55.3	0.3	No impact
		Source DNL Output at 50 ft. [dBA]			100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3	100.3						(Percy Priest Woods)	segment			
	Consolution A	Average No. of 90 dBA Equipment Operating										5	5	3	3	2	2			Residential areas	-10			
	Concourse A Renovation and Expansion	Average No. of 85 dBA Equipment Operating										10	10	6	6	4	4	104.1	5000 no He (Pere	northeast (Malvin Heights) and east	I-40 and Donelson	54.1	0.2	No impact
		Source DNL Output at 50 ft. [dBA]										104.1	104.1	101.9	101.9	100.1	100.1			(Percy Priest Woods)	Terminal buildings			
		Average No. of 90 dBA Equipment Operating										5	5	3	3	2	2			Residential areas	ential areas10	n 54.1	0.2	No impact
BNA Vision Project 4	Renovation and Expansion	Average No. of 85 dBA Equipment Operating										10	10	6	6	4	4	104.1	5000	northeast (Malvin Heights) and east (Percy Priest Woods)	I-40 and Donelson elevated segments.			
		Source DNL Output at 50 ft. [dBA]										104.1	104.1	101.9	101.9	100.1	100.1				Terminal buildings			
	Canadurad C	Average No. of 90 dBA Equipment Operating										5	5	3	3	2	2			Residential areas northeast (Malvin Heights) and east	-10			
	Renovation and	Average No. of 85 dBA Equipment Operating										10	10	6	6	4	4	104.1	5000		I-40 and Donelson	54.1	0.2	No impact
	Expansion	Source DNL Output at 50 ft. [dBA]										104.1	104.1	101.9	101.9	100.1	100.1			(Percy Priest Woods)	elevated segments, Terminal buildings			
Long-term	Terminal Equipment	Average No. of 85 dBA Equipment Operating	12	12	13	13	14	14	14	15	15	16	16	17	17	18	18			Residential areas	-10			
Terminal Operations	Operations Escalate at +3% per year	Source DNL Output at 50 ft. [dBA]	98.0	98.2	98.3	98.4	98.5	98.7	98.8	98.9	99.1	99.2	99.3	99.4	99.6	99.7	99.8	99.8	5000	Heights), east (Percy Priest Woods)	I-40 and Donelson elevated segments, Terminal buildings	49.8	0.2 0.2 0.2 0.1 11.5 Sig Deve	No impact
	Miscellaneous Construction Operations at Support	Average No. of 85 dBA Equipment Operating	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		200	Residential areas west (Malvin Heights),	0		Existing 60 DNL Image: Constraint of the second	Significant impact. Restrict work at Limited Impact Development Area to daytime only.
BINA VISION	Area: Low Impact Development Mitigation Area C	Source DNL Output at 50 ft. [dBA]	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	200	Acres) and northeast (Hickory Bend)	None	18.2		

Asssumptions:

10 dBA added to operations between 10 pm to 7 am to calculate DNL.

59% Equipment loading factor during normal, intermittent operation of construction/terminal services equipment.

67 dBA, Assumed average existing urban DNL in sensitive areas around perimeter of airport property and just outside the 65 dBA DNL curve.

100 dBA, assumed DNL for extremely loud construction sources at 50 ft. (e.g. pile driver)

90 dBA, assumed DNL for very loud construction sources at 50 ft. (e.g., concrete saw, heavy truck, etc.)

dBA, assumed DNL for moderately loud construction sources (dozer, loader, excavator, etc.) and terminal equipment (e.g. tuggers, refuelers) at 50 ft.

Appendix I Notice of Availability (To be included in Final) Appendix J Public Comments and Responses (To be included in Final)