JANUARY 10, 2020

ROANOKE-BLACKSBURG REGIONAL AIRPORT

Roanoke–Blacksburg Regional Airport Master Plan Update Working Paper 2

RS&H

Working Paper 2 Inventory of Existing Conditions

FINAL

January 10, 2020

Roanoke, Virginia

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Prepared by RS&H, Inc. at the direction of the Roanoke Regional Airport Commission

RS&H

ROANOKE-BLACKSBURG REGIONAL AIRPORT

PREPARATION

"The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein, nor does it indicate that the proposed development is environmentally acceptable in accordance with applicable public laws."

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CHAPTER 2

INVENTORY OF EXISTING CONDITIONS

2.1 INTRODUCTION

The purpose of this Chapter is to provide a description of the existing conditions at Roanoke-Blacksburg Regional Airport (referred to as ROA or the Airport). ROA is operated by the Roanoke Regional Airport Commission (RRAC). ROA is located approximately three miles northwest of downtown Roanoke in Southwest Virginia's famous Blue Ridge Mountains. The Airport property lies within the boundaries of Roanoke and Roanoke County. Although Roanoke is within the boundaries of Roanoke County, it is not part of the County. The Airport occupies approximately 912 acres and is bounded by Interstate 581 to the west, Hershberger Road Northwest to the south, and Peters Creek Road to the north.

The Airport is classified in the FAA's National Plan of Integrated Airport Systems (NPIAS) 2019-2023 Report as a Primary, Nonhub Commercial Service airport. Nonhub airports are defined as airports that enplane more than 10,000 passengers but less than 0.05% of total annual U.S. passengers. Inclusion in the NPIAS indicates that the Airport is eligible to compete for federal funding from the FAA.

ROA is one of the nine commercial service airports within the Virginia Department of Aviation (DOAV) Airport System, as described in the 2013 Virginia Air Transportation System Plan. Commercial Service airports provide national and, in some cases, international air carrier and/or commuter service to surrounding communities.

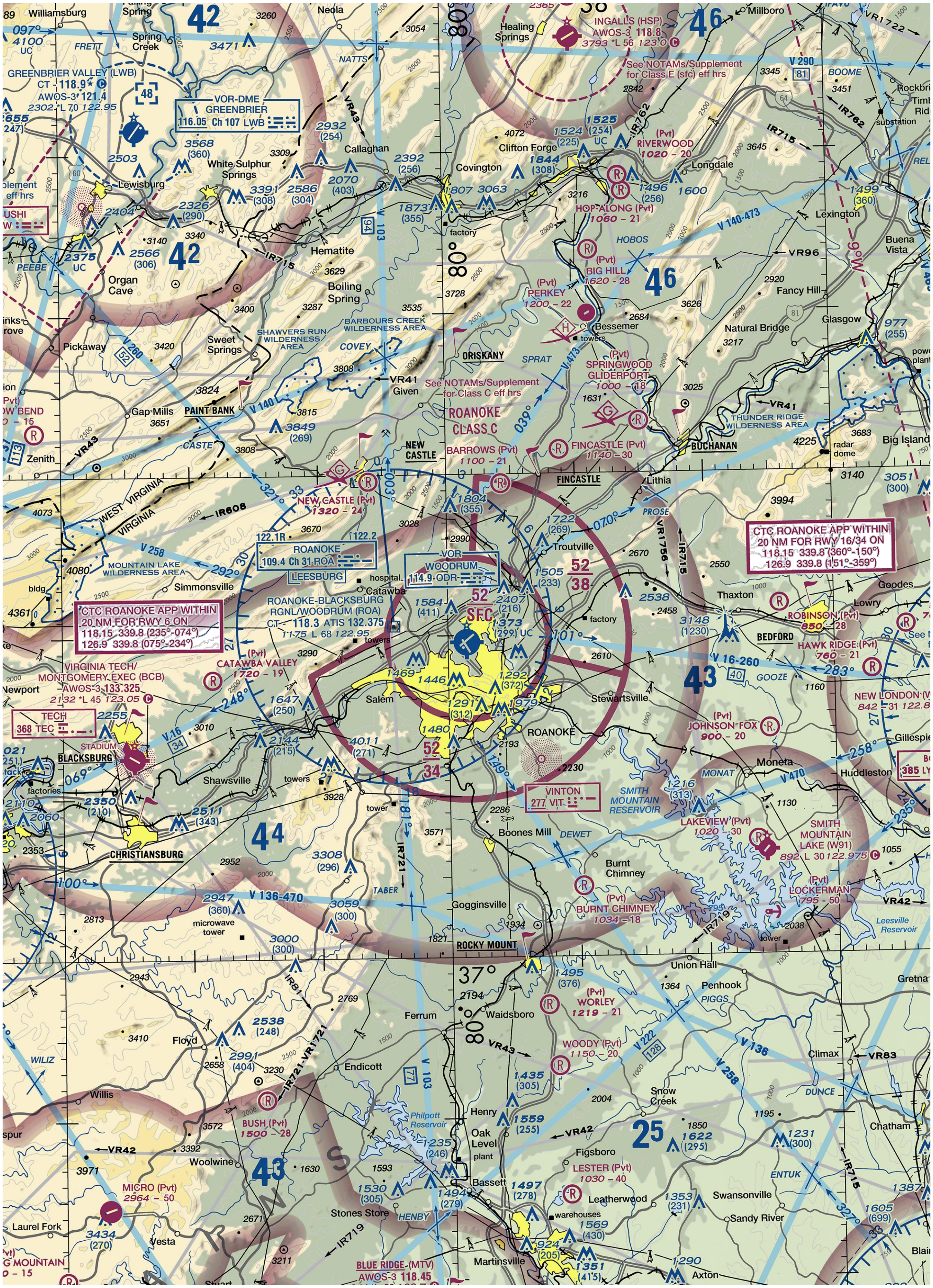
2.2 AIRSPACE MANAGEMENT SYSTEM

2.2.1 Airspace Structure

The National Airspace System is divided into airspace classes to designate the level of Air Traffic Control (ATC) service and operating rules for a given area. Classes A, B, C, D and E are the controlled airspaces and Class G is uncontrolled.

ROA's airspace is classified as Class C and comprises three airspace shelves centered about the Airport. The innermost shelf has a radius of five nautical miles from the Airport and extends vertically from the ground to 5,200 feet MSL. The outermost shelf is segmented into 2 pieces. The outermost shelf has a radius of 10 nautical miles from 3,400 to 5,200 feet MSL southwest to southeast of the Airport and 3,800 feet MSL to 5,200 feet MSL northeast to southeast of the Airport. These shelves are outlined in magenta on Sectional charts, shaded gray on low altitude en route charts, and uncolored on high altitude charts. Pilots must establish communication with ATC prior to entering Class C airspace. In addition, aircraft operating in or above Class C airspace must also have a working altitude reporting transponder (i.e., Mode C) on board. The ROA airspace structure is depicted on the Cincinnati Sectional Chart; an excerpt of which is depicted in *Figure 2-1*.

The air traffic control facility at ROA is a co-located Airport Traffic Control Tower (ATCT) and Terminal Radar Approach Control (TRACON) facility. The ATCT controllers handle only aircraft arriving at or departing from ROA. The TRACON service area is described in *Table 2-1*.



Source: FAA VFR Sectional Map, 2019

ROA SECTIONAL

FIGURE 2-1

TABLE 2-1
ROA TRACON SERVICE AREA

Boundary	Description
West	Virginia/West Virginia/Kentucky borders
East	Richmond, VA
North	Lewisburg, WV/Hotsprings, VA/Charlottesville, VA
South	Virginia/North Carolina border

Source: NACTA.org. Retrieved September 2019.

2.2.2 Nearby Airports

There are 16 airports located within 25 nautical miles (NM) of ROA. The nearby airports are listed in *Table 2-2*.

TABLE 2-2
NEIGHBORING AIRPORTS

Airport Name	Code	City	Use Type	Distance
Barrows Airport	VA04	Fincastle, VA	Private	10 NM N
Burnt Chimney Airport	70VA	Burnt Chimney, VA	Private	17 NM S
Catawba Valley Airport	VA10	Blacksburg, VA	Private	16 NM W
Ferguson Airport	81VA	Rocky Mount, VA	Private	15 NM SE
Fincastle Airport	VA83	Fincastle, VA	Private	13 NM NE
Hawk Ridge Airport	20VG	Bedford, VA	Private	25 NM E
Johnson Fox Field Airport	0VA1	Bedford, VA	Private	19 NM SE
Lakeview Aerodrome	VA68	Moneta, VA	Private	22 NM SE
Lockerman Seaplane Base	VA48	Gretna, VA	Private	25 NM SE
New Castle International Airport	VA85	New Castle, VA	Private	11 NM NW
Perkey Airport	79VG	Eagle Rock, VA	Private	22 NM NE
Robinson Airport	VG25	Bedford, VA	Private	19 NM E
Smith Mountain Lake Airport	W91	Moneta, VA	Public	23 NM SE
Springwood Airstrip Gliderport	08VA	Buchanan, VA	Private	17 NM NE
Virginia Tech/Montgomery Executive Airport	KBCB	Blacksburg, VA	Public	22 NM W
Worley Field Airport	0VA4	Rocky Mount, VA	Private	23 NM S

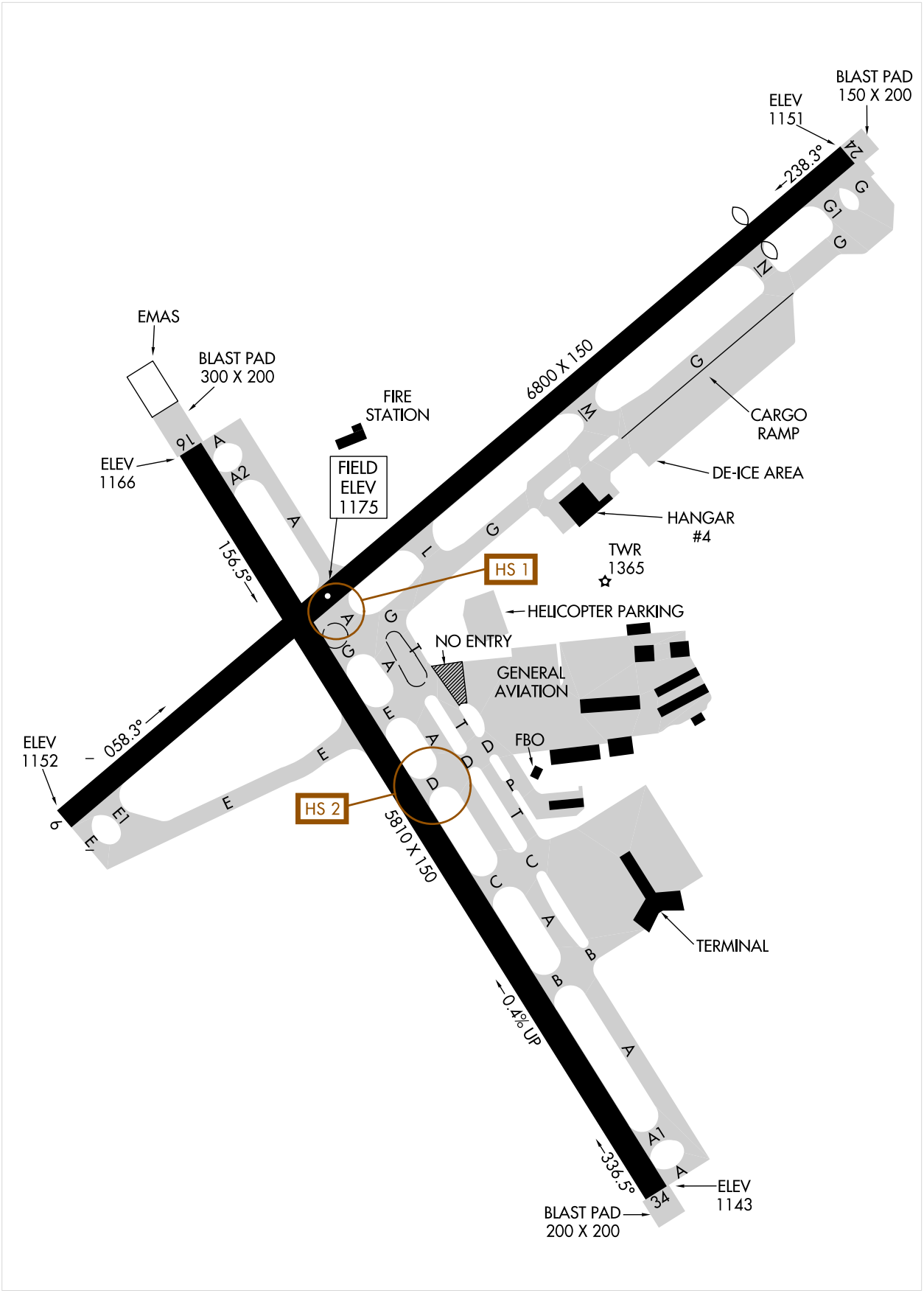
Source: RS&H, 2019; Great Circle Mapper, 2019; FAA, 2019

2.3 AIRFIELD

This section describes the existing airfield facilities, which includes the runway and taxiway systems, as well as aprons. The runways and taxiways are depicted in *Figure 2-2*.

2.3.1 Runways

The ROA Airport airfield comprises two asphalt runways. Runway 6-24 has a length of 6,800 feet and a width of 150 feet. Runway 16-34 has a length of 5,810 feet and a width of 150 feet. The runway characteristics are summarized in *Table 2-3* and the declared distances are described in *Table 2-4*.



Source: FAA Airport Diagram, 2019; Retrieved August 2019

AIRFIELD DIAGRAM

TABLE 2-3
RUNWAY CHARACTERISTICS

Characteristic	Runway 6-24	Runway 16-34
Orientation	SW-NE	NW-SE
Length (feet)	6,800'	5,810'
Width (feet)	150'	150'
Aircraft Approach Category	C	C
Design Group	IV	IV
Surface Type	Grooved Asphalt	Grooved Asphalt
Weight Capacity	S- 150,000 lbs D- 200,000 lbs 2D- 310,000 lbs	S- 150,000 lbs D- 200,000 lbs 2D- 310,000 lbs
Pavement Classification Number (PCN)	76/F/B/X/T	54/F/A/X/T
Markings	Precision/Non-Precision	Precision/Non-Precision
Lighting	HIRL	HIRL
Distance Remaining Signs	Yes	Yes

Source: ROA Airport (via 5010 Master Record), 2019

TABLE 2-4
RUNWAY DECLARED DISTANCES

	Rwy 6	Rwy 24	Rwy 16	Rwy 34
Physical Runway Length (feet)	6,800		5,810	
Takeoff Run Available (feet)	Full-Length	Full-Length	Full-Length	Full-Length
Takeoff Distance Available (feet)	Full-Length	Full-Length	Full-Length	Full-Length
Accelerate-Stop Distance Available (feet)	Full-Length	Full-Length	Full-Length	Full-Length
Landing Distance Available (feet)	Full-Length	6,010	Full-Length	Full-Length

Source: ROA Airport (via 5010 Master Record), 2019
Note: Rwy 24 Landing Distance Available is less than the physical runway length because the approach threshold is displaced.

2.3.2 Taxiways

The taxiway and airfield non-movement areas are depicted in *Figure 2-3*. The primary taxiways and their functions are described in *Table 2-5*. There are several other taxiway connectors and taxilanes that provide aircraft circulation within the airfield, aprons, and to /from the movement areas.

The pavement type for all taxiways is asphalt, except for the following taxiway segments, which are constructed of Portland cement concrete:

- Taxiway A (between Runway 6-24 and Taxiway E)
- Taxiway T (north of Taxiway E)
- Taxiway E (east of Runway 16-34)
- Taxiway G (between Taxiway A and Taxiway L)

LEGEND

Non-Movement Areas

Airport Property Line

Note: All other pavement areas are Movement Areas.

N

0 500' 1,000'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

TAXIWAYS AND NON-MOVEMENT AREAS

TABLE 2-5
PRIMARY TAXIWAYS

Taxiway	Function
A	Full-length parallel for Runway 16-34
E	Access to Runway 6 end
G	Partial parallel for Runway 6-24
T	Passenger terminal access/Partial parallel for Runway 16-34 (ADG-III <118' Wingspan)

Source: RS&H, 2019
Note: ADG – Airplane Design Group

2.3.3 Maintenance Road

Ground vehicles can circulate around the airfield using the airfield maintenance road. The maintenance road runs along the perimeter of the airfield providing access to critical navigational aids and RRAC facilities. It allows airside vehicles to maneuver around the airfield, largely outside of the movement areas for aircraft. The exception is the area north of Runway 16-34, where the road crosses through the Runway 16 blast pad, within the runway safety area, which requires clearance from ATC. Most of the roadway is a single-lane, unidirectional roadway. The maintenance road surface type ranges from asphalt to an improved gravel road (depending on location).

2.3.4 Airfield Hotspots

The FAA occasionally identifies "hot spots," or locations on an airfield with a history of runway incursions, or the potential for collision, and where heightened attention by pilots and drivers is necessary. The hotspots identified at ROA are described in *Table 2-6*.

TABLE 2-6
AIRFIELD HOTSPOTS

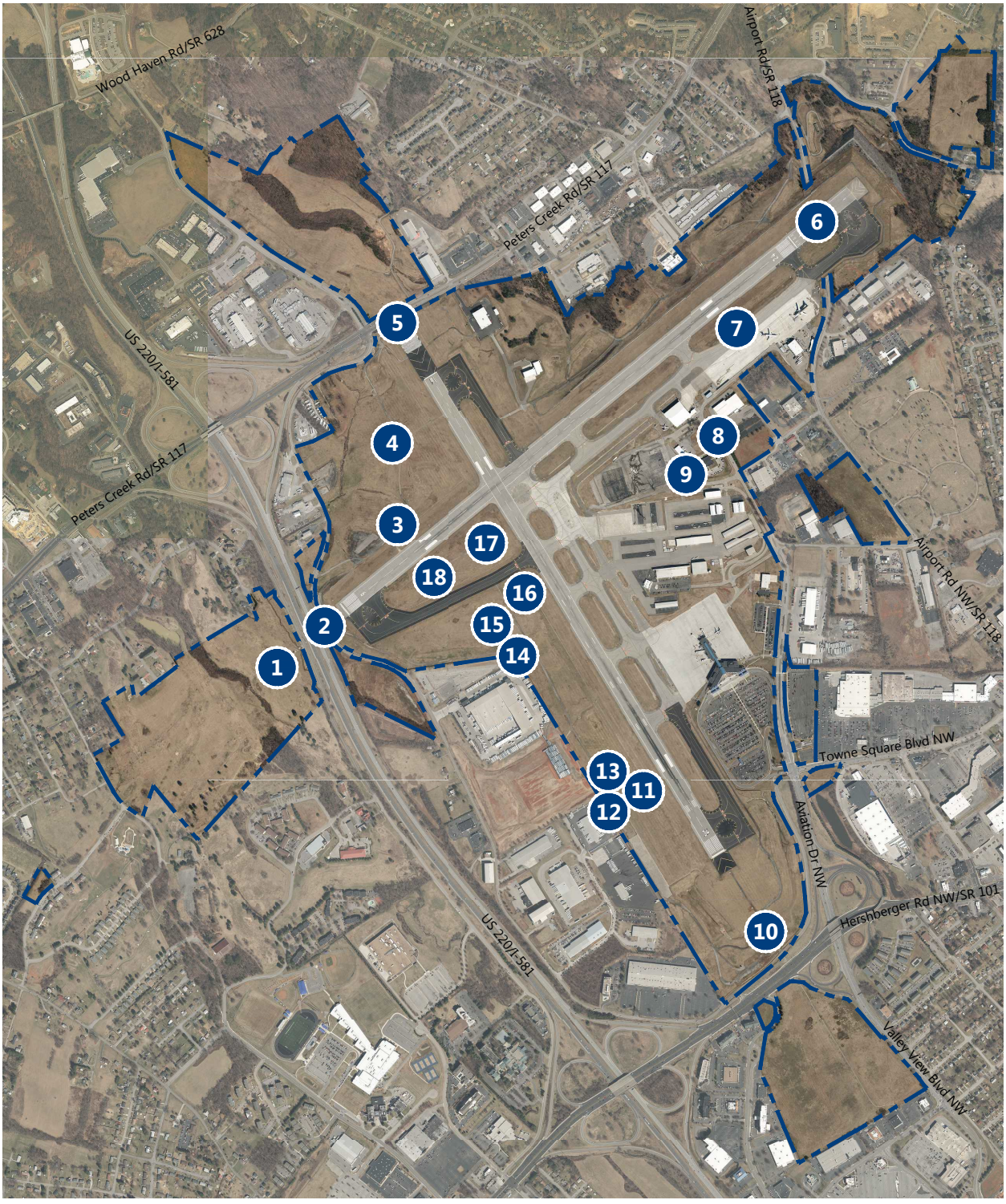
	Location	Description
Hot Spot 1	Intersection of Taxiway A and Taxiway G at Runway 24	Expanse of pavement
Hot Spot 2	Intersection of Taxiway A and Taxiway D	GA apron direct access to Runway

Source: FAA Airport/Facility Directory. Retrieved September 2019.

2.3.5 Navigational Aids

Navigational aids (NAVAIDs) include a variety of visual, electronic, and meteorological equipment that facilitate pilot navigation and maneuvering both on the ground and in the air. The following subsections describe the ROA NAVAIDs, which are depicted in *Figure 2-4*. The NAVAIDs are listed in *Table 2-7*.

Visual and electronic NAVAIDs support the safe operation of aircraft during periods of darkness and/or weather conditions that result in poor visibility. ROA has an Automated Surface Observing System (ASOS). The system's sensors include a wind speed and direction, altimeter, relative humidity, air temperature, precipitation type and amount, visibility, cloud height and density. The ASOS is located adjacent to the Runway 34 glideslope, west of the Runway 34 aiming point markers.



LEGEND — Airport Property Line

1 - Rwy 6 MALSR	6 - Rwy 24 REIL	11 - Rwy 34 PAPI	16 - Segmented Circle/ Windcone
2 - Rwy 6 REIL	7 - Rwy 24 PAPI	12 - Rwy 34 Glideslope	17 - VOR
3 - Rwy 6 VASI	8 - RTR	13 - ASOS	18 - Rwy 6 Glideslope
4 - ASR	9 - Beacon	14 - DME	
5 - Rwy 34 LOC	10 - Rwy 34 MALSR	15 - Rwy 6 LOC	

N

0 800' 1,600'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

NAVIGATIONAL AIDS

TABLE 2-7
NAVIGATIONAL AIDS

	Rwy 06	Rwy 24	Rwy 16	Rwy 34	Airport -Wide
Visual Aids					
Approach Lighting	MALSR/REIL	REIL	-	MALSR	-
Beacon	-	-	-	-	Yes
Lighting System	HIRL	HIRL	HIRL	HIRL	-
Runway Markings	Precision	Non-Precision	Non-Precision	Precision	-
Segmented Circle/Wind Cone	-	-	-	-	Yes
Visual Slope Indicator	VASI-4	PAPI-4	-	PAPI-4	-
Electronic Aids					
ASOS	-	-	-	-	Yes
ASR	-	-	-	-	Yes
DME	-	-	-	-	Yes
Glideslope	Yes	-	-	Yes	-
Localizer	Yes	-	-	Yes	-
RTR	-	-	-	-	Yes
VOR	-	-	-	-	Yes

Source: FAA Chart Supplements; RRAC, 2019
Notes: ASOS = Automated Surface Observing System, ASR = Airport Surveillance Radar, DME = Distance Measuring Equipment, HIRL = High Intensity Runway Lights, MALSR = Medium Intensity Approach Light System with Runway Alignment Indicator Lights, PAPI = Precision Approach Path Indicator, REIL = Runway End Identifier Lights, RTR = Remote Transmitter/Receiver, VASI = Visual Approach Slope Indicator, VOR = Very High Frequency Omni-Directional Range

2.3.6 Local Air Traffic Control Procedures

This section describes the airspace classification, aeronautical charts and approach capabilities at ROA.

2.3.6.1 Visual Flight Rules Procedures

Aircraft under Visual Flight Rules (VFR) departing and arriving ROA are under positive control of Roanoke ATC. An aircraft departing the Airport will receive departure instructions from the ATC. Aircraft leaving ROA Class C airspace must comply with local airspace restrictions. Aircraft landing at ROA must contact ATC prior to entering the Class C airspace.

2.3.6.2 Instrument Flight Rules Procedures

For departing IFR aircraft, the FAA assigns headings during VFR weather and issues standard instrument Departure Procedures during IFR weather. Departure Procedures improve pilot/controller communication by making it more convenient to issue departure clearances. The departure sequence is to fly a heading and altitude assigned by the controller prior to departure, and then proceed with the assigned SID after being cleared by the controller. Departure Procedures also aide the transition from the terminal airspace to the en route airways and facilitate the hand-off of aircraft from ROA ATC to other controllers.

There are five Departure Procedures at ROA, two are conventional Departure Procedures and three are Area Navigation (RNAV) Departure Procedures . The current procedures are listed in *Table 2-8*. In addition,

takeoffs from Runway 34 and landings on Runway 16 are not authorized at night or during IFR conditions due to terrain. ROA currently does not have any Standard Terminal Arrival Routes (STARs) which would bring arrivals into the ROA airspace. Some airlines have developed GPS-based proprietary departure procedures that are not published for general use. These departure procedures and the implications for how they affect runway utility are described in *Chapter 4 - Facility Requirements*.

TABLE 2-8
ROA AIRSPACE PROCEDURES

Airport	Procedure Type	Runway	Current
ROA	Departure Procedure	Runway 24	DIXXY
ROA	Departure Procedure	Runway 16 and Runway 24	HOKEE
ROA	RNAV Departure	Runway 24	BUFIY
ROA	RNAV Departure	Runway 6	SCUTA
ROA	RNAV Departure	Runway 16	MONAT
ROA	ILS	Runway 34	ILS or LOC
ROA	VOR/DME (Circling)	Any	VOR/DME
ROA	Localizer-type Directional Aid	Runway 6	LDA Z
ROA	Localizer-type Directional Aid	Runway 6	LDA Y
ROA	RNAV Arrival	Runway 24	RNAV
ROA	RNAV Arrival	Runway 34	RNAV
ROA	RNAV Arrival	Runway 6	RNAV
ROA	RNAV Arrival	Runway 24	RNAV
ROA	RNAV Arrival	Runway 34	RNAV
ROA	RNAV Arrival	Runway 6	RNAV

Source: Airnav.com, August 2019.

2.3.6.3 Noise Abatement Procedures

The FAA approved several operational strategies proposed by the RRAC for implementation at ROA to reduce noise impacts in neighboring communities. These strategies (as worded in the Record of Approval) and their current implementation status are as follows:

- **Strategy 1 – Improve Taxiways/Taxiing Procedures**
  - Reduce noise by controlling the location of aircraft pre-flight runups including; shifting pre-flight runups to the ramp areas, Taxiway G closer to the GA ramp, and Taxiway T; or constructing a new hold apron on Taxiway G closer to the GA ramp.
- **Strategy 2 – Isolate Maintenance Runup Activity**
  - Reduce noise levels in residential areas by restricting location and orientation of aircraft undergoing maintenance runups.
- **Strategy 3 – Construct Noise Barriers**
  - Reduce ground-based noise levels in residential areas surrounding the Airport by blocking the line-of-sight between the aircraft and residences.
- **Strategy 4 – Modify Aircraft Departure Procedures**
  - Reduce noise as a result of aircraft using recommended noise abatement departure procedures

- **Strategy 5 – Institute Preferential Runway Use**
  - Shift the aircraft to runway ends that would reduce the impact on populated areas; i.e. arrivals to Runway 34.
- **Strategy 6 – Control Maintenance Runups**
  - Reduce noise levels in populated areas by limiting the time aircraft can perform the runups at night
- **Strategy 7 – Institute Use Restrictions**
  - Reduce noise levels in populated areas by limiting the type of or time an aircraft can operate at the Airport

2.3.7 Meteorological Conditions

2.3.7.1 Historical Meteorological Conditions

The historical meteorological data for ROA is described in *Table 2-9*. The data was obtained from the National Oceanic and Atmospheric Administration (NOAA) as measured by the on-airport ASOS.

TABLE 2-9
AIRPORT CLIMATE DATA SUMMARY

Item	Value
Annual Mean Temperature	58° F
Annual Mean Max. Temperature	68° F
Annual Mean Min. Temperature	48° F
Typical Hottest Month	July
Mean Daily Max. Temperature of the Hottest Month	88° F
Average Annual Precipitation	47 inches
Average Annual Snowfall	19 inches

Source: NOAA- National Climatic Data Center Annual Climatological Summary, 2019
Note: Data from 2009-2018

2.3.7.2 Magnetic Declination

The magnetic declination for ROA is described in *Table 2-10* using NOAA's World Magnetic Model. Magnetic declination is the angle between true north and the horizontal trace of the local magnetic field. Current declination and the annual rate of change are used to validate the runway heading designation.

TABLE 2-10
MAGNETIC VARIATION

Item	Value
Declination	8° 40' W
Change per Year	0° 1' W
Uncertainty	± 0° 21'

Source: NOAA- Magnetic Declination
Date: August 2019

2.4 PASSENGER TERMINAL

The passenger terminal building is located at 5202 Aviation Dr NW, east of Runway 16-34 and south of the general aviation area. The building was completed in 1989. There have been several renovations/modifications to the terminal facility since its completion. The major modifications resulting in functional area changes are referenced below:

- Security Screening Renovation (2002)
  - Addition of a single security lane in throat from terminal to concourse, upper level
- Lower Level Concourse Improvements (2006)
  - Renovation of portion of lower level into an Airport Operations Center and associated offices
- Passenger Screening Reconfiguration (2009)
  - Loss of Gate 1 holdroom to accommodate two screening lanes
- Terminal Building Modifications for Checked Baggage Screening (2012)
  - Removal of Explosives Trace Detector (ETD) machines from the ticket lobby
  - Modifications to ticket counters and Airline Ticket Offices to accommodate two mini in-line checked baggage inspection systems
  - Modifications to make up area to accommodate two make-up carousels
- Terminal Building Renovation (2013)
  - New restrooms, upper level in Airport Administration area and Concourse
  - Escalator replacement
  - Replace ceilings throughout upper level
  - Provide new millwork at departure lounges
- Concessions Renovation (2014)
- Office Modifications (2015)

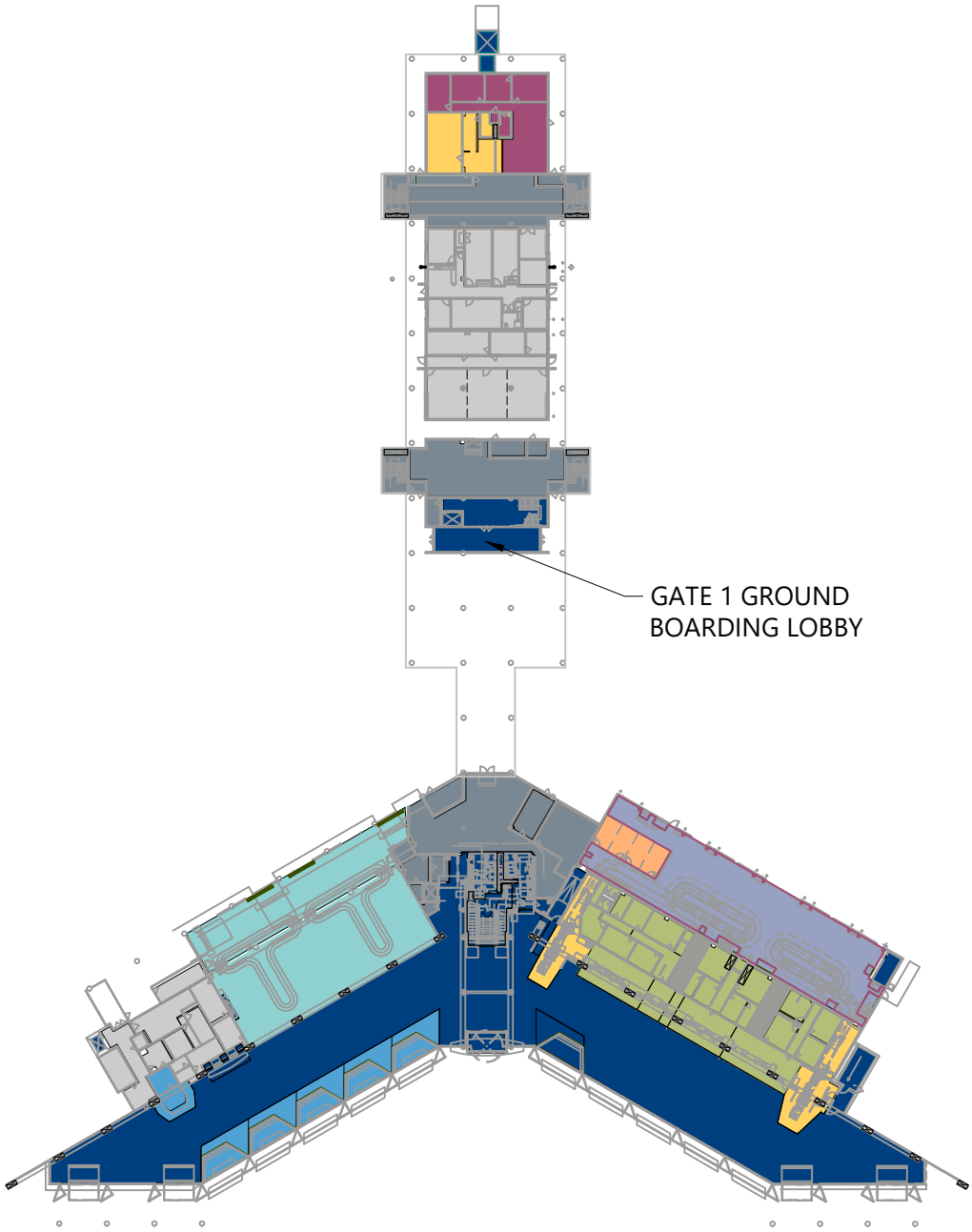
2.4.1 Terminal Building

The passenger terminal facility is a Y-shaped, two-level building.

The lower level includes ticketing, baggage claim, rental car counters, circulation, and restrooms. Airline offices, baggage make-up areas, baggage drop-off areas, mechanical and systems rooms, and airline operations space are located on the secure side of the lower level.

The non-secure, upper level includes meeter/greeter areas, RRAC offices, restrooms, and concessions. The passenger security screening checkpoint, TSA offices, departure lounges, additional restrooms, and concessions are located on the secure side of the upper level.

The terminal building area is categorized into the primary processing components. The terminal building is depicted in *Figure 2-5* and *Figure 2-6* with the primary processing components identified. Those components and general dimensions are described in *Table 2-11*.



LEGEND

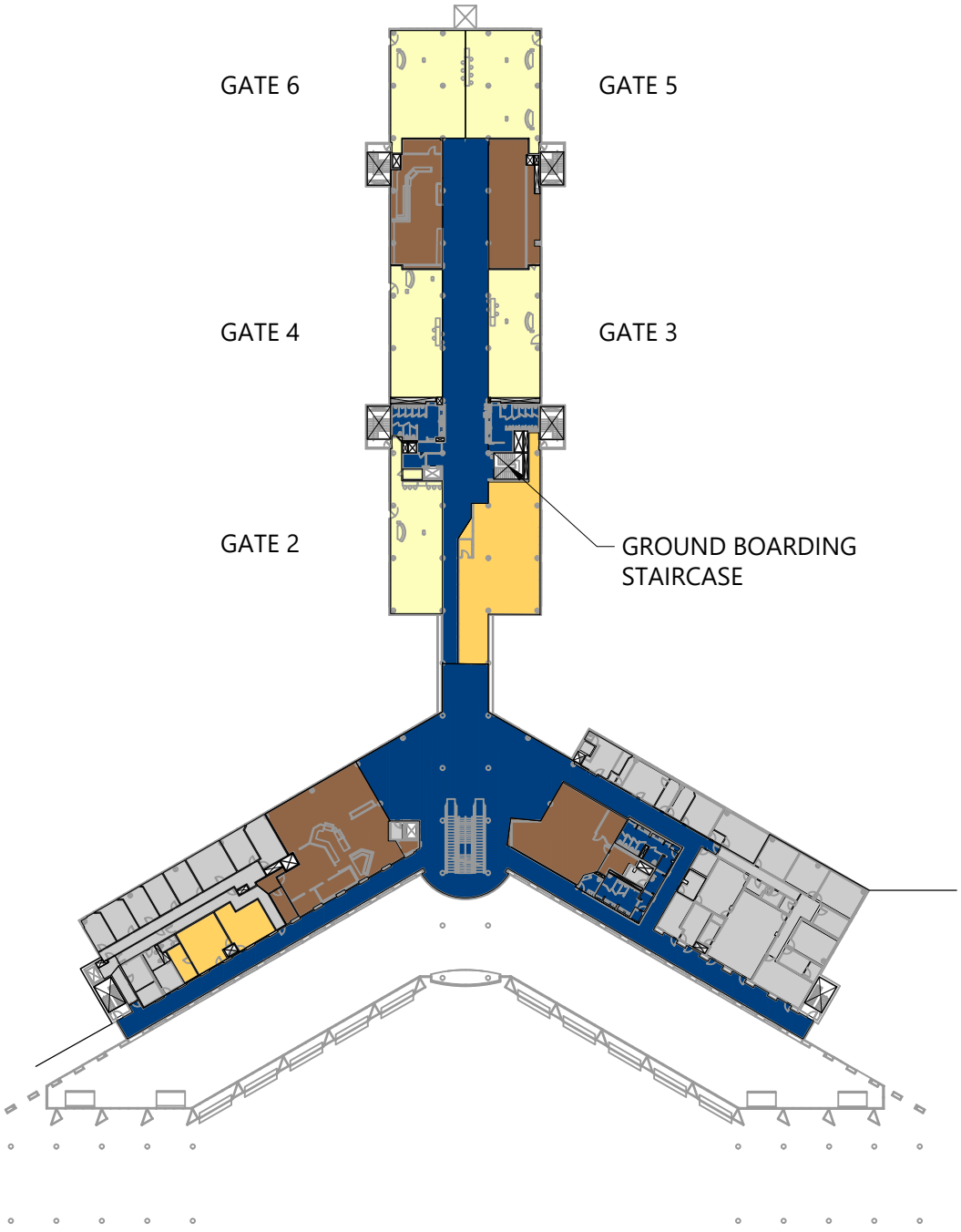
- CIRCULATION
- GROUND TRANSPORTATION
- AIRLINE TICKETING/OFFICES
- MECHANICAL
- TENANT STORAGE
- AIRLINE SUPPORT
- BAGGAGE CLAIM
- AIRPORT/RRAC OPERATIONS
- TSA
- BAGGAGE MAKE UP

N

0 40' 80'

Source: RS&H, 2019

PASSENGER TERMINAL BUILDING LOWER LEVEL



LEGEND

- CIRCULATION
- CONCESSIONS
- TSA
- GATE HOLDROOM
- AIRPORT/RRAC OPERATIONS

0 40' 80'

Source: RS&H, 2019

PASSENGER TERMINAL BUILDING UPPER LEVEL

TABLE 2-11
TERMINAL FUNCTIONAL AREAS

	Functional Area	Total Area (SF)
	Circulation	29,410
	Airport/RRAC Support	15,330
	Gate Holdroom	10,350
	Mechanical	6,480
	Baggage Claim	5,470
	TSA	5,390
	Airline Ticketing/Offices	4,460
	Concessions	4,190
	Baggage Make Up	4,090
	Ground Transportation	2,000
	Airline Support	1,380
	Tenant Storage	450
	Total	89,000

Source: RRAC, 2019; RS&H, 2019

2.4.1.1 Ticketing

The ticketing area is located on the east side of the lower level of the terminal building. The ticketing area supports four separate airlines each with dedicated counter space and offices.

- United – 4 positions
- Delta – 5 positions
- Allegiant – 3 positions
- American – 7 positions

On the lower level, directly behind the ticket counters are the airline ticket offices (ATO). There is space allocated to four of the five designated carriers that occupy positions along the ticket counter line. TSA space is located at each end of the ticket counters and enable checked bags to be screened on their way to the bag makeup area.

2.4.1.2 Outbound Baggage

Behind the ATOs is a joint use baggage make-up area with two carousel devices. Baggage is screened via a mini in-line Checked Baggage Inspection System[1]. Passengers take bags to the screening devices and drop them prior to continuing to the gates. The western bag screening location (closest to the center lobby) is the most frequently used. The eastern bag screening position is only used during peaks.

A project to relocate the outbound baggage screening process to the baggage make-up area was initiated in 2019. The concepts and ultimate design associated with this project will be incorporated into the facility requirements stage of this Master Plan.

[1] Mini in-line systems are those with a single (or possibly two) Explosives Detection System units on a feed conveyer from the ticket counter to the make-up area.

2.4.1.3 Security Screening Checkpoint

The TSA security screening checkpoint (SSCP) occupies the area that was designed to function as the holdroom for Gate 1. Pre-Check passengers are separated from standard passengers at the queue entrance. The checkpoint has a two-lane configuration. The outside (east) lane is for Pre-Check and Concessions Goods Screening. This lane accommodates about 30% of the passengers using a bag screening device and walk through metal detector. The inside (west) lane is for standard passengers and accommodates the remaining 70%. That lane is outfitted with a bag screening device and an Advanced Imaging Technology (AIT) machine. There is a small re-composure area post-security. TSA operates staff of 12 agents during peak months.

2.4.1.4 Terminal Concourse

The terminal building is configured as a double-loaded pier concourse beyond the SSCP, with a central circulation corridor. The central corridor is flanked on the east and west with space configured as follows:

- East side, past the SSCP, is Gate 3 departure lounge, followed by news and gift concession, and then by Gate 5 (American) at the end of the concourse.
- West side, opposite the SSCP is Gate 2 (United), followed by Gate 4 (Delta), followed by the airside food concession and then by Gate 6 (Allegiant)

Gates 5 and 6 use a shared holdroom.

Gate 1 is a ground boarding gate that is accessed via stairs and an elevator on the east side of the building, north of the SSCP.

There are restrooms just north of the stair and elevator that is immediately north of the SSCP. The restrooms flank the central circulation corridor.

2.4.1.5 Inbound Baggage

The baggage claim lobby has two "T" shaped through-the-wall flat plate devices along the northern side. There is approximately 435 linear feet of public frontage for each claim unit (870 linear feet total).

2.4.1.6 Rental Car Counters

There are four rental car counters located near the baggage claim area near the exterior wall and exits to the curb.

- Hertz/Dollar
- Enterprise
- Avis/Budget
- National/Alamo

Construction was started on a consolidated rental car center (CONRAC) east of the terminal building in 2019. The new rental car facility will accommodate rental car offices, counter and queuing space. The ultimate CONRAC characteristics will be incorporated into the facility requirements and alternatives stages of this Master Plan.

2.4.1.7 Concessions

The pre-security food and beverage concession opens onto the meeter/greeter area on the upper level. It has three points of sale (two at the main counter and one at the bar). The post-security food and beverage concession is located between the holdrooms for Gate 4 and Gate 6. All food preparation for the post-security food and beverage concession occurs at the pre-security location and is transported through the checkpoint up to six times daily.

There is a pre-security news and gift concession on the upper level, south of the SSCP. The post-security news and gifts concession is located on the terminal concourse, east of the food and beverage concession.

2.4.1.8 Circulation and Public Space

Located in the center of the building is the primary entry that is in line with the vertical circulation elements (stair, escalators, elevator) that connect the two-story volume to the meeter/greeter area on the upper level. There are public restrooms on the lower level behind and below the stair/escalator assembly.

There is an information booth centered in the bag claim lobby adjacent to the center lobby. A ground transportation counter is located at the west end of the lobby along the north wall.

2.4.1.9 Administrative and Support Spaces

On the west side of the upper level, there are two parallel corridors running east west. The north corridor provides access to a series of Airport Administrative Offices, Conference Room and a break area. The inner, southern corridor provides access to employee restrooms and concession back of house storage, kitchen and office.

At the far west of the lower level is the loading dock and service elevator. The dock and service elevator see significant food/supply activity on Tuesdays as there are up to three deliveries that day and they sometimes overlap.

Offices for the Terminal Manager and Assistant Manager are located along the west wall of the baggage claim lobby. Behind the ground transportation counter are airport maintenance, custodial offices, and the law enforcement locker room.

There are three support spaces on the lower level of the terminal building. The primary building systems are centered on the main entry, behind the vertical circulation and restrooms. Included are the main mechanical room, boiler room, electrical room and communications room (with telephone, paging, fiber optics). The mechanical air handler rooms are located north on the lower level, below the holdrooms for Gate 3 and Gate 4. Building maintenance and custodial storage, along with Airport Operations offices and support areas are located at the lower level, below the holdrooms for Gate 5 and Gate 6. This houses the mechanical air handler, operations space next to TSA training room, and the American ground operations offices and break room.

2.4.2 Terminal Apron

The passenger terminal apron occupies approximately 32,000 square yards around the terminal building. Five of the six terminal gates are equipped with passenger boarding bridges. Aircraft parked at Gate 1 are ground-loaded using an apron access doorway on the east side of the building, near Gate 3.

There is an open paved connection on apron-level below the SSCP and Gate 2 holdroom that connects the east and west sides of the apron. It is covered overhead by the bridge connector with the TSA Screening Checkpoint and the Gate 2 departure lounge on the upper level. This east-west connection provides flexibility in ground operations, allowing GSE access between inbound and outbound baggage areas without having to circulate around the north end of the concourse.

Aircraft are fueled by truck at the gate. When necessary, aircraft are deiced on the apron (typically away from the gate). Deicing trucks are stored in the southeast corner of the apron.

2.4.3 Terminal Utilities

This section provides a summary of the existing terminal utility infrastructure. Additional detail of the terminal utility infrastructure is provided in *Appendix A*.

2.4.3.1 Electrical

Power is distributed within the terminal facility from the switchboard via multiple sub-panels in various locations throughout the facility. A diesel engine generator provides emergency power to the terminal complex. The generator is located outside the terminal near the pad-mounted transformer and connects to an automatic transfer switch that will transfer power from the generator to the main emergency distribution panel if power from the primary service is lost.

2.4.3.2 HVAC

The Terminal heating/ventilation/air conditioning (HVAC) consist of chiller boiler hydronic system along with air handling units, ductwork, fan coil units, and variable air volume units. It serves the restrooms, ticketing, baggage claim, rental car, RRAC offices, and common areas on the lower level, and RRAC offices, restrooms, gift shop, restaurant, common areas, TSA, concourse and gate areas on the upper level. During an upgrade project in 2013/2014 the chillers, VAX box controls, and air handler computer were replaced.

2.4.3.3 Fire Protection

The terminal is equipped with a sprinkler system with heads located in key areas requiring coverage. Hose cabinets are spaced strategically throughout the terminal. The Fire Protection System was upgraded in 2013/2014.

2.4.3.4 Gas

Natural gas service to the Airport is provided by the Roanoke Gas Company, which provides natural gas service to the Airport via a 1-1⁄4-inch gas main that enters the Terminal near the boiler room. The principal use of gas in the facility is for heating, domestic water heating, and cooking in the food service areas. There are two gas meters; one serves the Terminal, and the other serves the restaurant.

2.5 Ground Access

2.5.1 Regional Access

Passengers from the south access the Airport via U.S. Route 220/Interstate 581, a six-lane north-south spur that connects downtown Roanoke to Interstate 81. Interstate 81, which runs east and west in the vicinity of the Airport, provides access to the Airport from the north, east, and west.

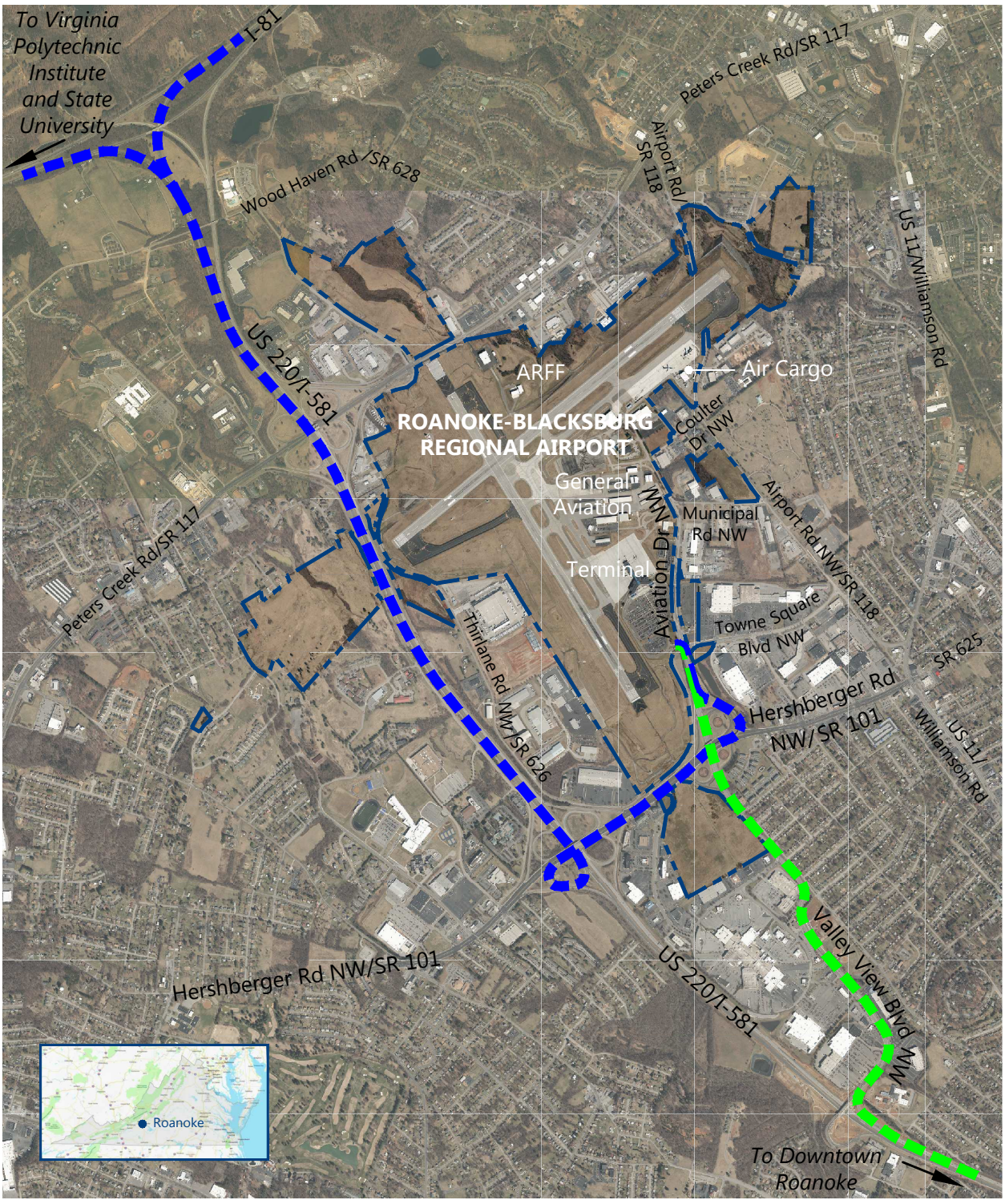
Local arterial roadways include Peters Creek Road/State Route 117 and Hershberger Road NW/State Route 101, which provide airport access from the east and west. Airport Road NW/State Route 118, Valley View Blvd NW, and U.S. Route 11/Williamson Road all provide airport access from the north and south.

The main terminal building at the Airport is accessed from Aviation Drive NW. Aviation Drive NW is a collector roadway accessed from the south using Interstate 581 or Valley View Blvd NW, and Hershberger Road NW/State Route 101. Aviation Drive NW can also be accessed from the north and east using Airport Road NW/State Route 118, Town Square Boulevard NW, and Municipal Road NW. Thirlane Road/State Route 626 provides access to the west side of the Airport. The regional airport access roadways are listed in *Table 2-12* and depicted in *Figure 2-7*.

TABLE 2-12
REGIONAL AIRPORT ACCESS ROADWAYS

Roadway	Direction	Total Lanes	Speed Limit	Classification
Aviation Dr NW	N-S	4	35	Collector
Thirlane Rd/State Route 626	N-S	2	25	Local
Town Square Blvd NW	E-W	4	25	Collector
Municipal Rd NW	E-W	2	25	Collector
Airport Rd NW/State Route 118	NW-SE	2	35	Collector
Hershberger Rd NW/State Route 101	NE-SW	6	35/40	Arterial
U.S. Route 220/Interstate 581	N-S	6	55	Freeway
Peters Creek Rd/State Route 628	NE-SW	6	45	Arterial

Source: VDOT, 2014; RS&H, 2019



Source: Roanoke-Blacksburg Regional Airport, 2019;
Aerial Imagery, 2015-Virginia Base Map Program; Bing, 2019

REGIONAL ACCESS

2.5.2 Airport Roadways and Circulation

Aviation Drive NW is the primary public Airport entry point to the passenger terminal. Upon entering the terminal loop roadway and prior to the terminal curbside, entrances are provided to the cell phone, long-term, and short-term parking lots. The terminal loop roadway has two one-way lanes approaching the terminal building where it splits to the inner and outer curbs with a total of four pass through lanes.

Following the terminal curbside, entrances are provided to the loading dock, short-term and rental car ready/return parking lots. At this point in the terminal loop roadway, the four lanes merge into two lanes, and another entrance to the long-term lot, the exit plaza for the short-term and long-term lots, and exit for the cell phone lot are provided. The terminal loop roadway remains two lanes to the Airport exit at Aviation Drive NW. Drivers can either exit the Airport or take the airport return road.

Access to rental car service and maintenance areas, general aviation and air cargo facilities are provided either via Aviation Drive NW or Airport Road NW/State Route 118. Airport Road NW also provides access from the east to north side of the Airport via a two-lane tunnel that traverses under Runway 6-24.

Thirlane Road NW/State Route 626 provides public perimeter access to the west side of the Airport. Although it is a two-way roadway, Thirlane Road NW terminates approximately 150 feet from the intersection of the terminal loop roadway and Aviation Drive NW, preventing the use of Thirlane Road from the main Airport entrance.

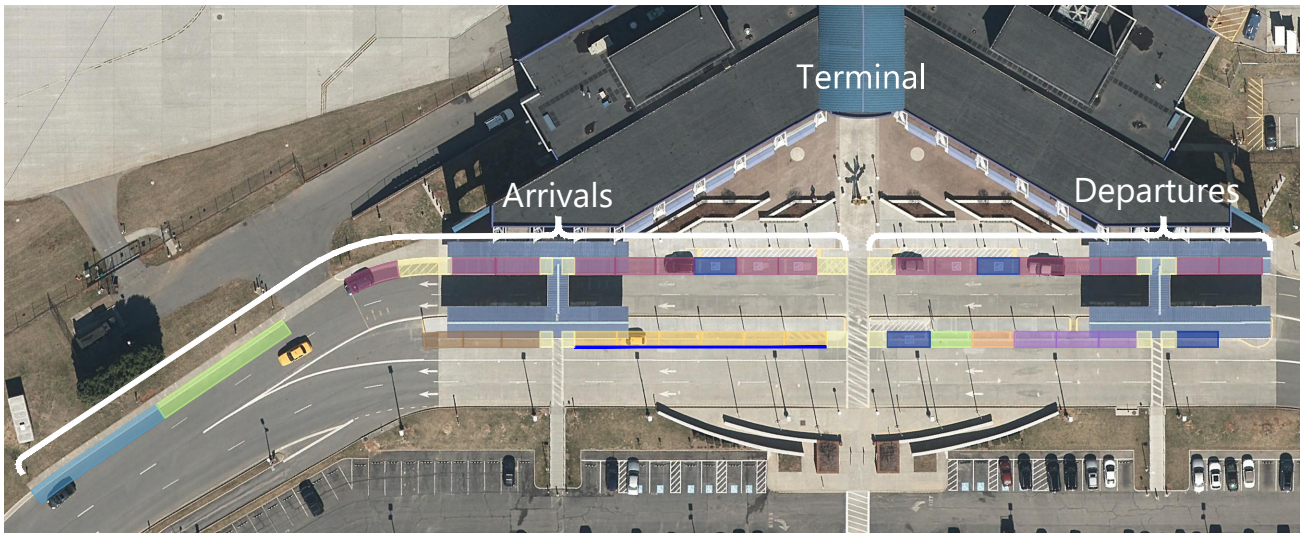
Public access to the north side of the Airport is provided by Peters Creek Road/State Route 117 and Barns Avenue NW. This is the route used to get to the Aircraft Rescue and Fire Fighting facility.

2.5.3 Terminal Curbside

The terminal curbside roadway includes an inner and outer curb for passenger pick-up and drop-off, two vehicle pass-through lanes per curb, and three crosswalks providing pedestrian pathways between public and rental car parking lots and the passenger terminal building.

Vehicles on the inner curb comprise mostly private vehicles with passenger drop-offs typically on the east or departures side, and passenger pick-ups typically on the west or arrivals side. Vehicles on the outer curb are designated for commercial and for-hire vehicles.

The terminal curbside roadway, showing curb lengths and designated drop-off/pick-up areas by user, is depicted in *Figure 2-8* and summarized in *Table 2-13*. Curb lengths shown are the effective curb length and exclude marked pedestrian crosswalks and cross-hatched areas that are not to be used for passenger drop-off/pick-up.



INNER CURB
- No Parking
- Public
- ADA Passenger
- Airport Commission
- Delivery

OUTER CURB
- No Parking
- Pre-Arranged Limo/Shuttle
- ADA Passenger
- Ground Transportation Concession
- Taxi
- TNC
- Delivery
- Raised Divider

N

0 50' 100'

Notes: ADA (Americans with Disabilities Act) Passenger references areas along the terminal curb dedicated for use by persons with disabilities. TNC (Transportation Network Carrier) references areas for use by ridesharing companies.

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

TERMINAL CURBSIDE

TABLE 2-13
TERMINAL CURBSIDE LENGTH

Users	Vehicle Positions[1]	Effective Curb Length (FT)[2]
Inner Curb		
Public	15	300
ADA Passenger[3]	2	40
Airport Commission	4	80
Delivery	4	80
	25	500
Outer Curb		
Pre-Arranged Limos, Shuttle	3	60
ADA Passenger[3]	2	40
Ground Transportation Concession	3	60
Taxi	6	120
TNC[4]	1	20
Delivery	1	20
Subtotal	16	320

Source: RS&H, 2019
Notes: 1 - Vehicle positions include marked and unmarked vehicle parking positions. 2 - Curb lengths shown exclude areas cross-hatched as not to be used for passenger drop-off/pick-up or the marked pedestrian crosswalks. 3 – ADA (Americans with Disabilities Act) Passenger references areas along the terminal curb dedicated for use by persons with disabilities. 4 – TNC (Transportation Network Carrier) references areas for use by ridesharing companies.

2.5.4 Parking

Public parking lots that serve the passenger terminal include the short-term, long-term, and overflow parking lots. An inventory of the existing public parking lots, including number of spaces, is presented in *Table 2-14*. Public parking rates are described in *Table 2-15*. The vehicle circulation roadways and the terminal parking lots are depicted *Figure 2-9*. Pedestrian walkways are depicted in *Figure 2-10*.

TABLE 2-14
PUBLIC AND EMPLOYEE VEHICLE PARKING

Parking Lot	Standard	ADA	Unused	Total	Land Area (Acres)
Short-Term	204	10	-	224	1.48
Long-Term	940	20	15	960	6.24
Overflow	227	13	-	240	2.15
Employee	347	2	-	349	2.75
Cell Phone	22	-	-		0.24
Commercial Vehicle Staging (in Employee Lot)	5	-	-	5	0.02
Commercial Vehicle Staging (in Short-Term Lot)	5	-	-	5	0.03
Paved Lot (Old Employee Lot)	274	11	-	285	1.96

Source: VDOT, 2014; RS&H, 2019

TABLE 2-15
PUBLIC PARKING RATES

Parking Lot	<15 Min	15 min – 1 hour	Each additional ½ hour or portion thereof	Daily Maximum
Short-Term	No Charge	$1.00	$1.00	$16.00
Long-Term	No Charge	$1.00	$1.00	$9.00
Overflow (Economy)	No Charge	$1.00	$1.00	$9.00

Source: RRAC, 2019

The short-term public parking lot is situated directly in front of the passenger terminal building. The long-term public parking lot is adjacent to and south of the short-term public parking lot. The entrances to the short-term and long-term lot are separate and located just prior to and after the terminal curbside roadway. The exit for the short-term and long-term lots is shared. Vehicles exiting the short-term lot must pass through a gate located near the canopy walkway and rental car ready/return lot, enter the long-term lot, and drive to the southwest corner of the long-term lot.

Pedestrian access to the short-term and long-term public parking lots are provided by two uncovered walkways, but also a canopy walkway along the center of the parking lots and two ramps leading to the terminal curbside roadway. The crosswalks on the terminal curbside roadway leading to and from the parking lots are uncovered.

The overflow (economy) public parking lot is situated on the east side of Aviation Drive NW. Pedestrian access to the overflow public parking lot is provided by an uncovered pathway and crosswalk across Aviation Drive NW.

The parcel of land where the overflow public parking lot is situated is also used as parking for Airport and tenant employees working at the passenger terminal. The former employee parking lot is referred to as "paved lot" for the purposes of this Master Plan.

The cell phone lot is located at the south end of the long-term public parking.

Roanoke Airport Transportation Services is a ground transportation provider with check-in counters in baggage claim near the rental car customer service counters. Roanoke Airport Transportation Services uses the terminal curbside spaces designated as Ground Transportation Concession (outer curb) and they have a total of 10 designated commercial vehicle staging spaces in the short-term lot and employee parking lot.

VEHICLE CIRCULATION

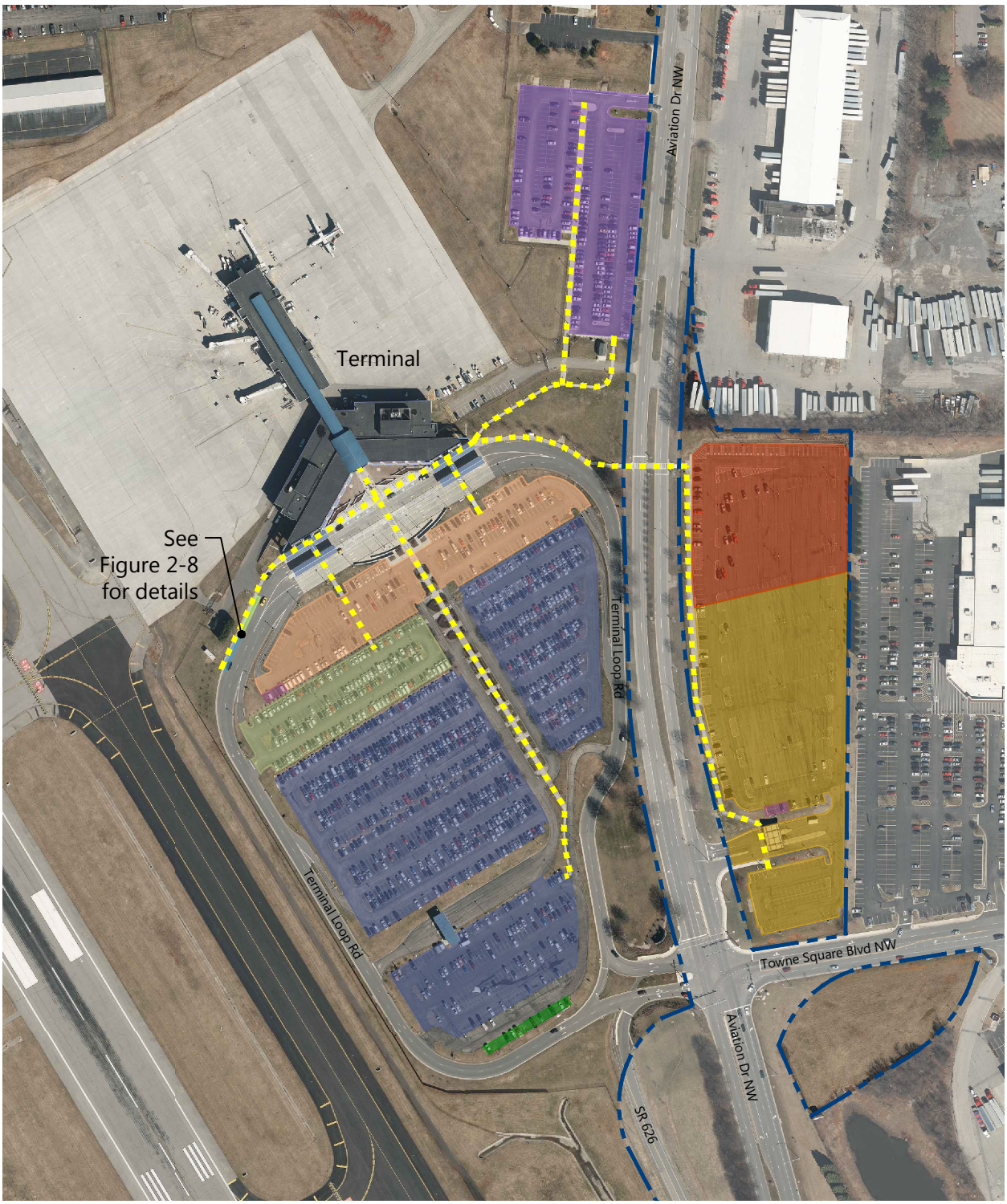
- Terminal Loop Roadway
- Parking Entrance
- Parking Exit

PARKING

- Airport Commission
- Cell Phone Lot
- Commercial Vehicle Staging
- Delivery Vehicles
- Employee
- Long-Term
- Overflow
- Paved Lot
- Rental Car
- Ready/Return
- Short-Term
- Airport Property Line

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

PASSENGER TERMINAL PARKING AND CIRCULATION ROADWAYS



LEGEND

- Airport Commission
- Cell Phone Lot
- Commercial Vehicle Staging
- Delivery Vehicles
- Employee
- Long-Term
- Overflow
- Paved Lot
- Rental Car Ready/Return
- Short-Term
- Pedestrian Walkway
- Airport Property Line

N

0 150' 300'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

PASSENGER TERMINAL PARKING AND PEDESTRIAN WALKWAYS

2.5.5 Rental Cars

Roanoke-Blacksburg Regional Airport currently has three main rental car operators – Hertz/Dollar, Enterprise/National/Alamo, and Avis/Budget. Each rental car operator leases customer service counter space within the west side of the passenger terminal building. The operators occupy a total of four customer service counters. Area for a fifth counter area is available, but currently used for storage.

The rental car ready/return lot is located between the short-term and long-term public parking lots in front of the passenger terminal. Each space is designated to a rental car operator and used for parking vehicles ready to be checked out by patrons and for returning vehicles.

Construction was started a consolidated rental car center (CONRAC) east of the terminal building in 2019. The new rental car facility is intended to accommodate rental car offices, counter, and queuing. The paved lot will be remodeled to accommodate a ready/return lot. The ultimate CONRAC characteristics will be incorporated into the facility requirements and alternatives stages of this Master Plan.

Each rental car operator has quick turn-around (QTA) and storage facilities, where vehicle fueling, washing, maintenance, and storage activities occur. The facilities are located off-airport property, northeast of the passenger terminal along Municipal Road NW and Coulter Drive NW. The lots are accessible via Aviation Drive NW and Airport Road NW. When returning vehicles to the ready/return lot, vehicles must drive travel the terminal curbside roadway. The rental car QTA and storage are described in *Table 2-16* and depicted in *Figure 2-11*.

TABLE 2-16
RENTAL CAR FACILITIES

	Hertz/Dollar	Enterprise/National/ Alamo	Avis/Budget
Customer Service Counters	1	2	1
Customer Service Counter Area (sf)	243	486	243
Ready/Return Lot Spaces	51	82	27
Customer Service Area and Offices (sf)	none	none	2,849
Local Customer Ready/Return Spaces	none	none	11
Visitor/Employee Parking	10	10	7
Number of Service Bays	1	1	2
Number of Wash Bays	1	1	1
Service Building (Service/Wash Bays) (sf)	3,630	3,884	4,375
Storage Area for Parked Cars (sf)	26,038	61,640	30,113
Approximate Storage Capacity (vehicles)	130	129	212
On-Site Fuel Capacity (gal)	4,000	10,000	2,500
Total Land Area (Parcel) (acres)	2.0	2.0	6.4

Source: RS&H, 2019; RRAC, 2019
Notes: The customer service counter area excludes the passenger queue area in front of the counters. Additional vacant land adjacent to Avis used for Hertz and Avis overflow.

LEGEND

- Parcel Boundary
- Vehicle Service Area (Quick Turn Around Area)
- Customer Service Area
- Rental Car Storage
- Visitor/Employee Parking
- Airport Property Line

N

0 150' 300'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019
Note: Rental Car Quick Turn Around and Storage Facilities are located off-airport.

RENTAL CAR QUICK TURN AROUND AND STORAGE FACILITIES

2.6 AIR CARGO

The existing air cargo facilities are located on a 13-acre site on the south side of Taxiway G and is used by FedEx and UPS. The cargo facilities are described in *Table 2-17* and depicted *Figure 2-12*.

TABLE 2-17
AIR CARGO FACILITIES

Map ID	Operator	Facility Type	Building Size (SF)	Apron Yards (SY)
1	FedEx	Office	1,400	n/a
2	FedEx	Maintenance Building	1,100	n/a
3	FedEx	Sortation Tent	14,700	n/a
n/a	FedEx	Apron	n/a	7,000
4	UPS	Office/Administrative	2,700	n/a
5	UPS	Sortation Building	800	n/a
n/a	UPS	Apron	n/a	8,400
n/a	Unleased	Apron	n/a	9,500

Source: RS&H, 2019
Note: Dimension values are rounded.

2.6.1 FedEx Air Cargo Facility

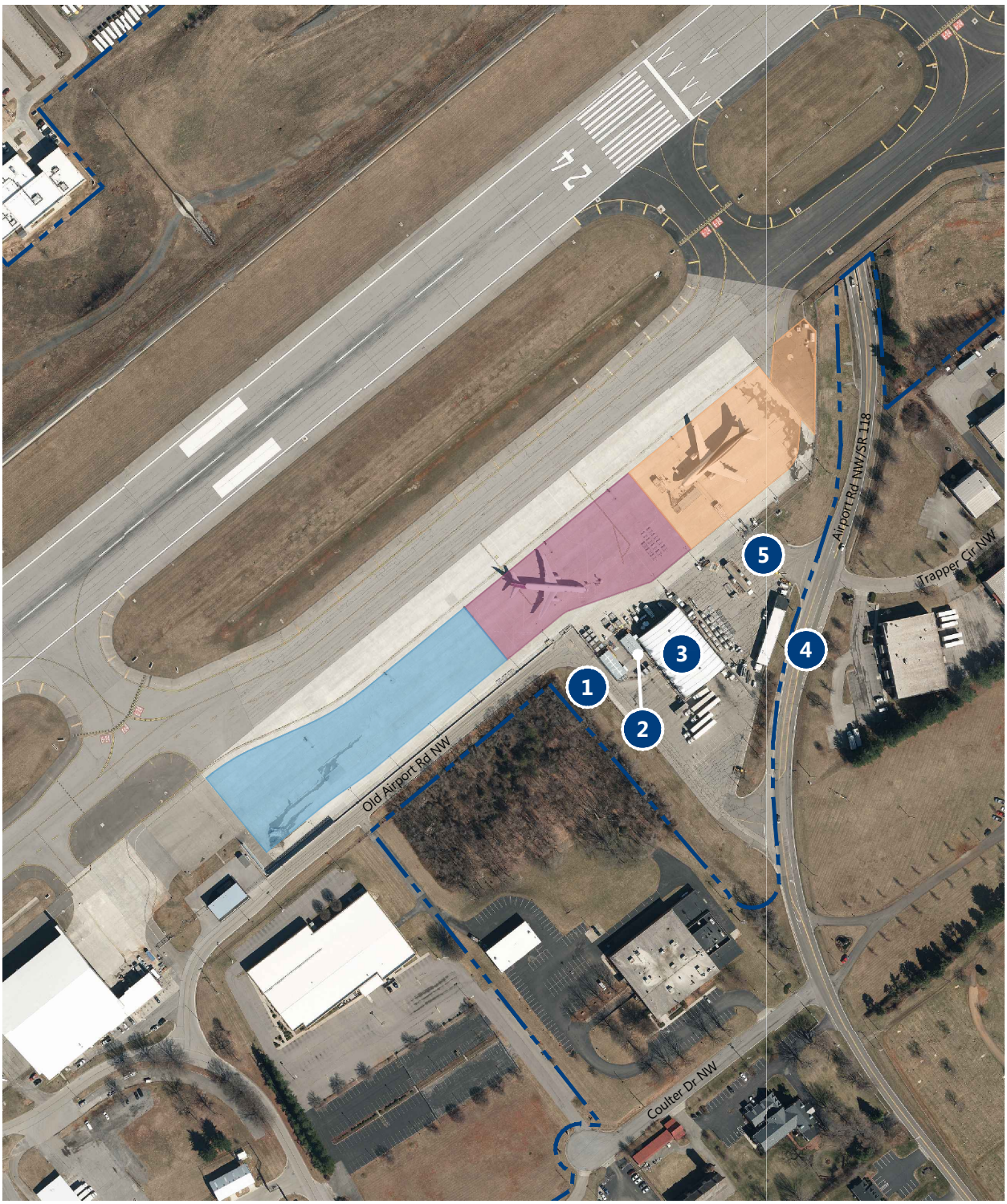
The FedEx Air Cargo Facility is located on the western side of the Air Cargo complex, adjacent to the air cargo aircraft apron. The FedEx Air Cargo Facility comprises of an office building, a maintenance building, and a sortation tent. FedEx leases approximately 7,000 square yards of air cargo apron area and owns their three buildings. There are two additional FedEx facilities in the vicinity that include a freight facility on Tom Andrews Road and a ship center on Thirlane Road. A daily flight arrives from Memphis International Airport (MEM) in the early morning where the aircraft remain all day prior to leaving for MEM in the evening.

2.6.2 UPS Air Cargo Facility

The UPS Air Cargo Facility is located on the eastern side of the Air Cargo complex. The UPS Air Cargo Facility comprises of one administrative building and a sort facility. UPS leases approximately 8,100 square yards of air cargo apron area and owns their own buildings. UPS operates flights to and from Piedmont Triad International Airport (Greensboro, North Carolina). During the peak season, flights proceed directly to Louisville International Airport.

2.6.3 Air Cargo Apron

The air cargo apron is adjoined to the south side of Taxiway G and is approximately 1,350 feet long and 225 feet deep from the edge of the Taxiway G Object Free Area (OFA). The Air Cargo Apron is roughly 24,600 square yards and includes both leased and unleased apron space. FedEx and UPS lease air cargo apron space. UPS stores its deicing fluid tank on the asphalt pad at the northeast end of the apron. UPS uses its two deicing trucks simultaneously to meet the maximum regulated deicing timeframe. GSE is also stored on the asphalt pad east of the cargo apron. FedEx has two Boeing 757 aircraft apron positions and UPS has one aircraft apron position that regularly stages an Airbus A300 or a regional turboprop on the weekends. The remaining portion of the apron is unleased and is used for overflow cargo aircraft parking during the peak season and other large aircraft that may occasionally arrive at ROA.



LEGEND

1 - FedEx Office
2 - FedEx Maintenance Building
3 - FedEx Sortation Tent
4 - UPS Office
5 - UPS Sortation Building

Unleased Apron
FedEx Apron
UPS Apron
Airport Property Line

N
0 150' 300'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

CARGO FACILITIES

2.6.4 Vehicle Parking

Landside access is provided via Airport Road NW. There are two entrances to the cargo area. The southern entrance provides access to FedEx Air Cargo Facility. The northern entrance services the UPS Air Cargo Facility. The two operators share the same parking lot for employees and visitors. The lot has approximately 30 marked spaces. There are also four marked spaces for staging semi-trucks to the southeast of the FedEx Air Cargo Facility. In addition, there are three loading positions attached to the FedEx Air Cargo Facility for loading and unloading cargo.

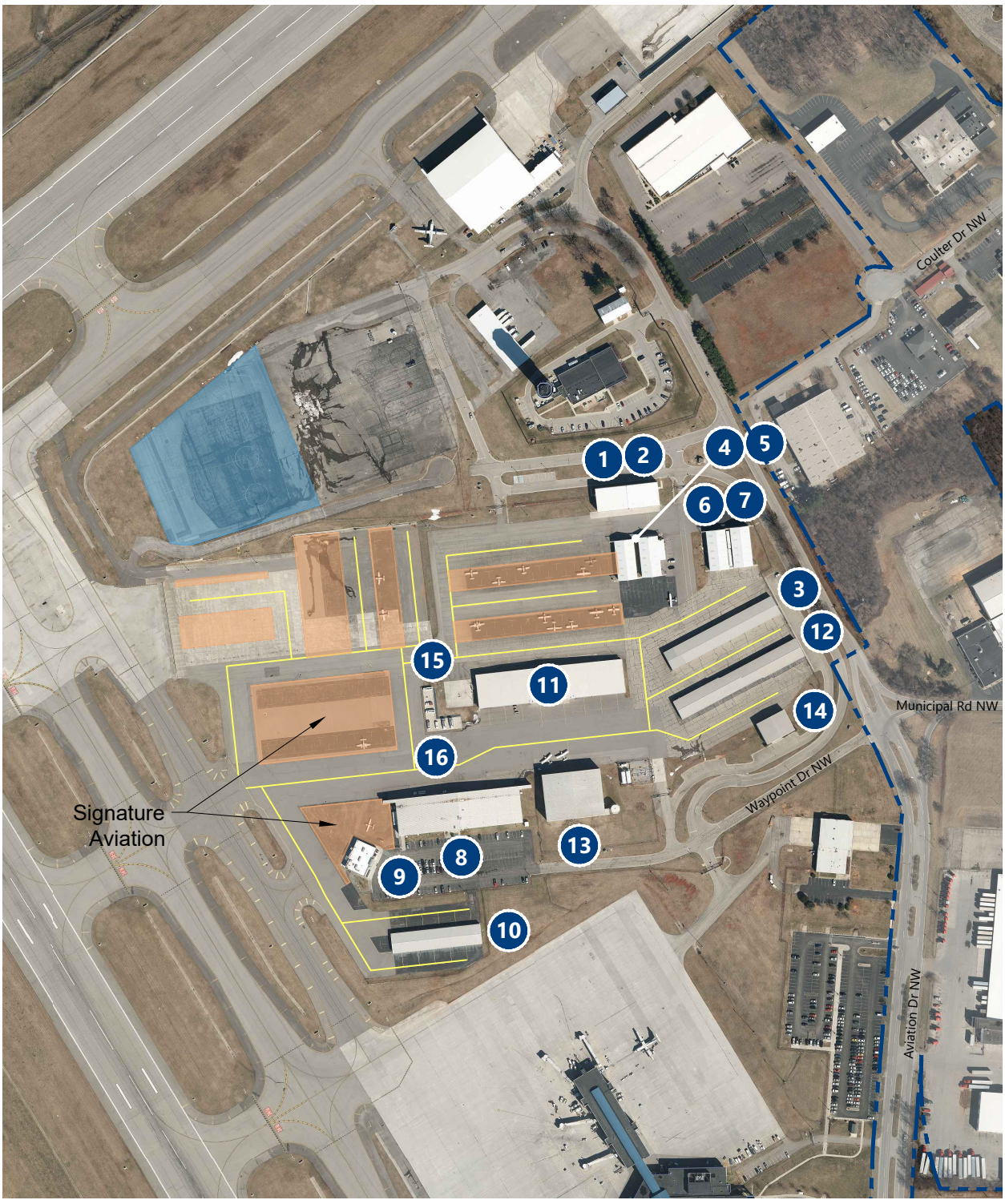
2.7 GENERAL AVIATION AREA

The Airport's general aviation (GA) facilities are located on a 30-acre site north of the passenger terminal apron. The GA area consists of approximately 75,000 square yards of apron area for itinerant aircraft and based aircraft tie-down areas, a terminal for a fixed base operator (FBO), T-hangars, and conventional hangars. There is an aircraft wash rack located to the west of Hangar 25. A designated fuel truck parking area (equipped with fuel spill containment measures) is located south of the aircraft wash rack. The general aviation area is described in *Table 2-18* and depicted in *Figure 2-13*.

TABLE 2-18
GENERAL AVIATION FACILITIES

Map ID	Name	Type	Size (SF)	Operator
1	Hangar 14	Conventional Hangar	4,800	RRAC
2	Hangar 15	Conventional Hangar	4,800	RRAC
3	Building 16	T-Hangar (14)	16,600	Midland Development Corporation
4	Hangar 17	Conventional Hangar	5,300	RRAC
5	Hangar 18	Conventional Hangar	6,600	RRAC
6	Hangar 19	Conventional Hangar	5,300	RRAC
7	Hangar 20	Conventional Hangar	5,300	RRAC
8	Hangar 22	Conventional Hangar	31,500	Signature
9	Signature Terminal	FBO/GA Terminal	4,500	Signature
10	Building 24	T-Hangar (10)	12,300	Signature
11	Hangar 25	Conventional Hangar	35,000	Signature
12	Building 26	T-Hangar (16)	19,100	Signature
13	Hangar 29	Conventional Hangar	15,600	Signature
14	Hangar 32	Conventional Hangar	5,000	RRAC

Source: RRAC, 2019; RS&H, 2019
Note: Dimension values are rounded to the nearest 100 SF.



LEGEND

1 - Hangar 14[1]
2 - Hangar 15[1]
3 - T-Hangar 16
4 - Hangar 17
5 - Hangar 18
6 - Hangar 19
7 - Hangar 20
8 - Hangar 22[1]
9 - GA Terminal Building[1]
10 - T-Hangar 24[1]
11 - Hangar 25[1]
12 - T-Hangar 26[1]
13 - Hangar 29[1]
14 - Hangar 32
15 - Wash Rack
16 - Fuel Truck Parking

Fixed-Wing Apron
Helicopter Apron
Airport Property Line

N
0 200' 400'

Note: 1) Facility operated by Signature Aviation

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

GENERAL AVIATION FACILITIES

2.7.1 GA Terminal & FBO Building

The general aviation terminal building is located to the north of T-hangar building 24. The building is approximately 4,500 square feet in size and includes a waiting area, pilot lounge, a conference room, and pilot preflight area, staff offices, and restrooms. Signature Flight Support leases and operates the facility. There is a dedicated apron area in front of the terminal building. It can accommodate approximately three small jets. Landside access is provided by Waypoint Drive NW which is from Aviation Drive NW to the north of the Airport terminal entrance. Airside access is provided by Taxiway D and Taxiway T.

2.7.2 Conventional Hangars

There are 10 conventional hangars used by the general aviation community. Each varies in size from approximately 4,800 square feet to over 30,000 square feet.

Hangars 14, 15, 22, 25 and 29 are leased and operated by Signature Aviation. Hangar 22 houses a flight school and charter operator. The remaining seven hangars are owned and operated by the Airport. Hangar 32 is in the southeast corner of the general aviation area. The other four hangars (17, 18, 19, and 20) are in the northeast section of the general aviation area.

2.7.3 T-Hangars

There are three T-hangar buildings located in the general aviation area for a total of 40 units. Building 24 is located to the south of the general aviation terminal building. It houses 14 units. Buildings 24 and 26 are located on the east side the general aviation area and are operated by Signature Aviation. Building 24 has 10 units and Building 26 has 16 units. Building 16 is operated by Midland Development Corporation.

2.7.4 GA Apron

The fixed wing aircraft apron is to the north of the GA terminal building. The helicopter apron is located to the north of the fixed wing apron. It has three marked positions approximately 60 feet in diameter. The aprons are described in *Table 2-19*.

TABLE 2-19
GENERAL AVIATION APRON

Apron	Size (SY)
Fixed Wing	59,200
Helicopter	16,300

Source: RS&H, 2019
Note: Dimension values are rounded to the nearest 100 SF.

2.7.5 Vehicle Parking

The general aviation terminal building is accessed by Waypoint Drive NW which is off Aviation Drive NW. Parking for the GA terminal building is shared with Hangars 22 and 29. The parking lot is located east of the terminal building and south of each hangar. In total, the lot provides 131 spaces on 1.17 acres.

2.8 SUPPORT FACILITIES

Support facilities are generally categorized into two classifications – aeronautical and nonaeronautical. Aeronautical facilities and functions are integral to the safe and efficient operation of the Airport.

The support facility locations are described in *Table 2-20* and depicted in *Figure 2-14*.

2.8.1 Aircraft Maintenance

The Aircraft Maintenance hangar is located north of the ATCT and west of the Air Cargo Facility. The Aircraft Maintenance hangar was constructed in 1961, expanded in 1989, and refurbished in 2000. The hangar is owned and operated by Piedmont Airlines and is equipped to perform C Maintenance Checks. The hangar can accommodate up to a Boeing 737 aircraft. All American Airlines (dba American Eagle) branded aircraft are pulled off-gate and remain overnight at the hangar so maintenance can be performed.

TABLE 2-20
SUPPORT FACILITIES

Map ID	Facility Type	Building Size (SF)	Apron Area (SY)
1	Airport Field Maintenance	24,000	n/a
2	ARFF Station	15,700	n/a
3	Aircraft Maintenance Facility	43,000	3,100
4	ATCT/TRACON	14,500	n/a
5	Fuel Storage	1,900	n/a

Source: RS&H, 2019.
Note: Dimension values are rounded.

2.8.2 Airport Traffic Control Tower

The FAA's ATCT and TRACON is located on the eastern side of the side of the Airport in between the GA area and maintenance hangar area. The ATCT was commissioned in 2004 but dedicated in 2005. Employee and emergency access are via a gated entrance on Aviation Drive Northwest. The ATCT/TRACON is a Class X facility with 19 controllers. The ATCT/TRACON provides services to ROA and includes and administrative/TRACON building, support storage building, and control tower. The 3,100 square-foot support storage building stores materials and equipment and is northeast of the ATCT/TRACON. The floor elevation of the ATCT cab is 186 feet above ground level. Employee parking is located on-site.

2.8.3 Aircraft Rescue and Fire Fighting Station

The Aircraft Rescue and Fire Fighting (ARFF) facility at ROA is in the northeast quadrant of the Airport, just east of Taxiway A. ROA has an ARFF designation of Index B. Index B relates to the longest aircraft with at least five daily flights to the airport. The ROA ARFF facility was constructed in 2012 and houses two ARFF vehicles with 1,500-gallon water capacity and 200-gallon foam capacity, each. Both vehicles meet Index C requirements. Emergency response access is via Taxiway A2. The ARFF facility and vehicles are owned by the Airport Commission and is operated by RRAC public safety employees.

LEGEND

1 - Airport Field Maintenance
2 - ARFF Station
3 - Aircraft Maintenance Facility
4 - ATCT/TRACON
5 - Fuel Storage

Airport Property Line

N

0 250' 500'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

SUPPORT FACILITIES

2.8.4 Airport Field Maintenance

The Airport Field Maintenance facility is located northeast of the Runway 16 end, south of Peters Creek Road. The facility opened in 1997 and occupies approximately 2.5 acres. The Field Maintenance facility is publicly accessed via Peters Creek Road. Airside access to the facility is via the airside maintenance road to the west or to the south of the Facility. A 2,000-square-foot covered potassium acetate (E36) storage facility is also within the Field Maintenance facility. The facility also has a 2,000 gallon aboveground storage tank for diesel and 1,000 gallon aboveground storage tank for E36. The Field Maintenance facility serves the following functions: snow equipment storage, grass equipment storage, other outdoor maintenance vehicles and truck storage, deicing tanks, and vehicle fuel station.

2.8.5 Fuel Facilities

The Fuel Facilities at ROA are in the southeast portion of the general aviation apron and north of the air carrier passenger terminal apron. The fuel farm consists of four storage tanks that are described in *Table 2-21*. The fuel farm is owned and operated by the FBO, Signature Flight Support. Signature Flight Support handles the fueling for all aircraft at the Airport, including passenger airlines and air cargo carriers. Fuel is delivered to the fuel farm by truck and fuel is delivered to aircraft by truck. Delivery trucks access the fuel farm via Waypoint Drive Northwest. The fuel trucks are stored northeast of the FBO terminal building on a designated parking pad with spill containment. The do not have license plates and are limited to on-airport use only.

TABLE 2-21
FUEL STORAGE CAPACITY

Fuel Type	Capacity (gal)	Tank Location
Jet-A	20,000	Aboveground
Jet-A	20,000	Aboveground
Jet-A	12,000	Underground
Avgas	12,000	Underground

Source: RS&H, 2019

2.8.6 Airfield Electrical Vault

The Airfield Electrical Vault was built in 1994 and is located between the Aircraft Maintenance Hangar and Air Cargo Facility apron on Aviation Drive Northwest. The Airfield Electrical Vault provides power to the airfield lighting system and is approximately 2,400 square feet. This single-level structure stores circuit panels, high-voltage regulators and other electrical equipment.

2.9 OTHER AIRPORT FACILITIES

The Other Airport Facilities at ROA include three undeveloped land areas, a vacant building, and two buildings used for nonaeronautical purposes. The undeveloped land areas are specifically described in this section since they are not used to enhance the protection of airspace or property on the ground. The characteristics for each facility are described in *Table 2-22* and are depicted in *Figure 2-15*.

TABLE 2-22
OTHER AIRPORT FACILITIES

Map ID	Current Use	Former Use	Building Size (SF)	Lot Size (acres)
1	Vacant Building	Call Center	51,500	4.1
2	Freight Forwarder Building	n/a	10,500	3.0
3	Undeveloped Land	n/a	n/a	1.9
4	Undeveloped Land	n/a	n/a	11.9
5	Undeveloped Land	n/a	n/a	1.6
6	City Equipment/Vehicle Storage Building	ARFF	5,500	2.7

Source: RS&H, 2019.

The vacant two-story office building occupies over eight acres on the corner of Cargo Road and Aviation Drive NW. The facility also includes a 367-space parking lot. This former bank call center was constructed in 1981.

The building north of the ROA ATCT on Aviation Drive NW is leased by a freight forwarding company. The facility includes two vehicle parking lots and does not have airside access.

The old ARFF station is located on over 2.7 acres northeast of the passenger terminal. The single level facility comprises several offices and open space including four vehicle bays. It is currently used to store emergency vehicles and equipment for the City. The City leases the old ARFF station from the Airport until 2023.

LEGEND

1 - Vacant Office Building
2 - Freight Forwarder Building
3 - Undeveloped Land
4 - Undeveloped Land
5 - Undeveloped Land
6 - City Equipment/Vehicle Storage Building (Old ARFF Station)

Airport Property Line

N

0 400' 800'

Source: Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

OTHER AIRPORT FACILITIES

2.10 UTILITIES

This section provides a summary of the existing utility infrastructure for the Airport, which is depicted in *Figure 2-16*, *Figure 2-17*, and *Figure 2-18*. Additional detail is provided in *Appendix A*.

2.10.1 Electric

Power is supplied by American Electric Power (AEP). The electrical service originates from an overhead feeder east of Aviation Drive and descends underground into a five-inch duct bank. The Airport duct bank runs westward in the direction of the terminal building and terminates in an AEP-owned transformer set on a concrete pad. The transformer was replaced in 2018. The Mall Circuit serves the terminal and cargo areas south of Runway 6-24. The Peters Creek Circuit serves the Airport Field Maintenance facility, ARFF station, Airport Road tunnel, and ASR site north of Runway 6-24.

2.10.2 Water

Water service is provided to the Airport by Western Virginia Water Authority (WVWA). The water line travels north along Aviation Drive and the travels west into the general aviation area of the airfield where it serves the ARFF station, Electrical Vault building, ATCT, storage hangars, maintenance facilities, and other buildings. The water line travels south along Aviation Drive and then travels west into the Terminal building. The terminal has additional capacity remaining but the design of the new CONRAC facility includes a new sewage pumping station to handle the increased sewer needs.

2.10.3 Sanitary Sewer

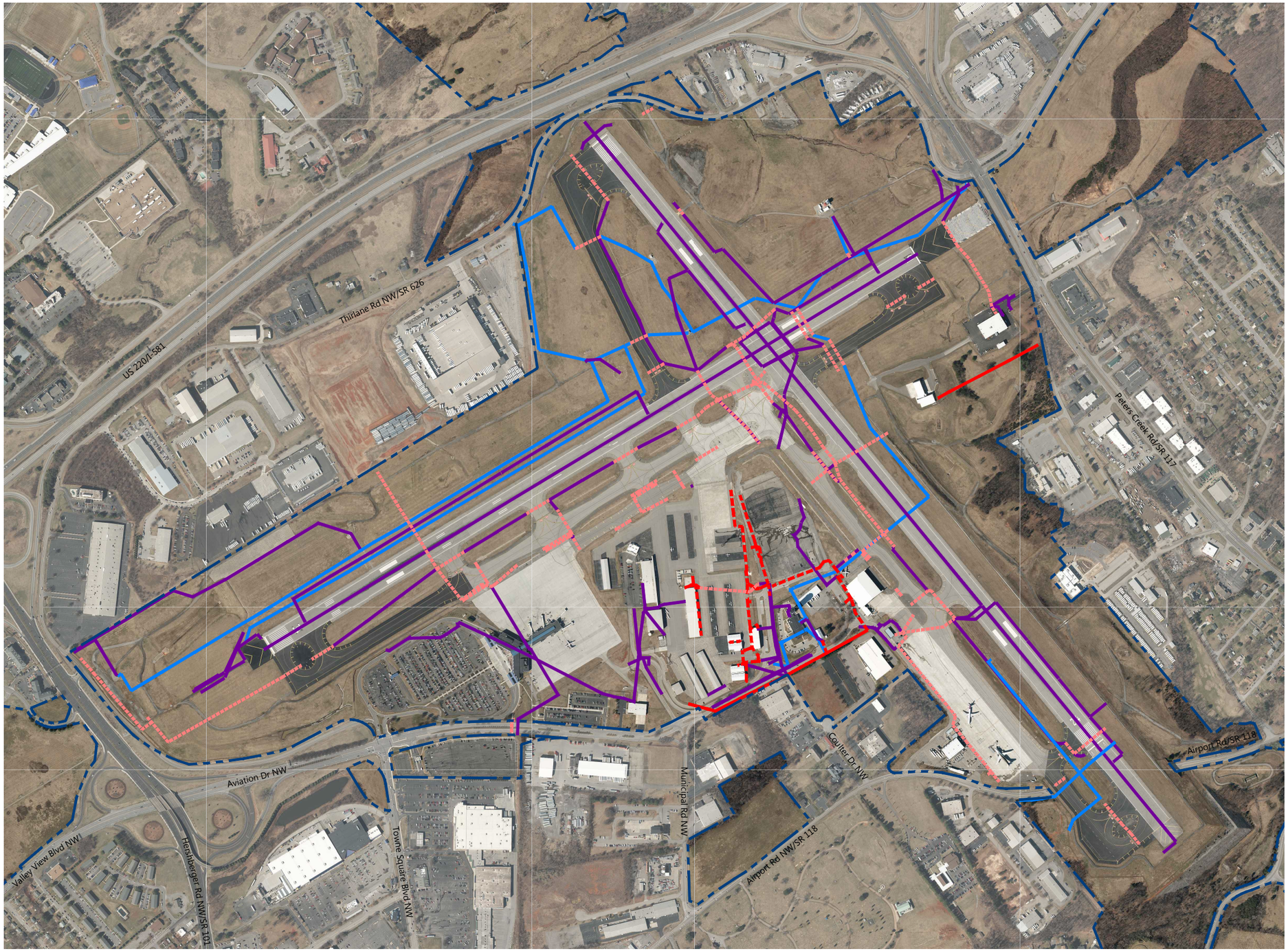
The sanitary sewer service for the airfield flows south and serves the old ARFF station, electrical vault building, ATCT, storage hangars, maintenance facilities, and other buildings. The sewer line in the midfield area was replaced in 2001, which included establishing a new utility corridor. The sewer serving the terminal building and concourse consists of a gravity fed piping and manhole system that flows to pump stations. The Terminal sewer flows south around the south end of Runway 16-34.

2.10.4 Stormwater

The stormwater from the midfield and Terminal areas flows south to the south detention basin. This basin handles runoff from areas east of Runway 16-34, and south of Taxiway G. In the areas north of Runway 6-24, stormwater is gathered in a system of channels and storm sewers that drain to a detention basin. Further, the stormwater runoff from areas west of Runway 16-34 flows to smaller basins that detain the airfield runoff prior to discharging into the City stormwater system. Fuel containment traps in detention basins and in-line fuel traps with the stormwater system have been installed to contain significant fuel spills, and to adhere to regulations and policies issued by the U.S. Environmental Protection Agency (USEPA).

2.10.5 Communication

Lumos has a fiber optic cable coming into the Terminal to serve RRAC and Verizon has a fiber optic cable serving some of the tenants, as well as various buildings on the airfield. Cameras along with additional fiber optic cable are being added to the airfield and terminal, along with upgrading the access control technology to proximity card readers across the entire airport as a part of the security upgrade projects.



LEGEND

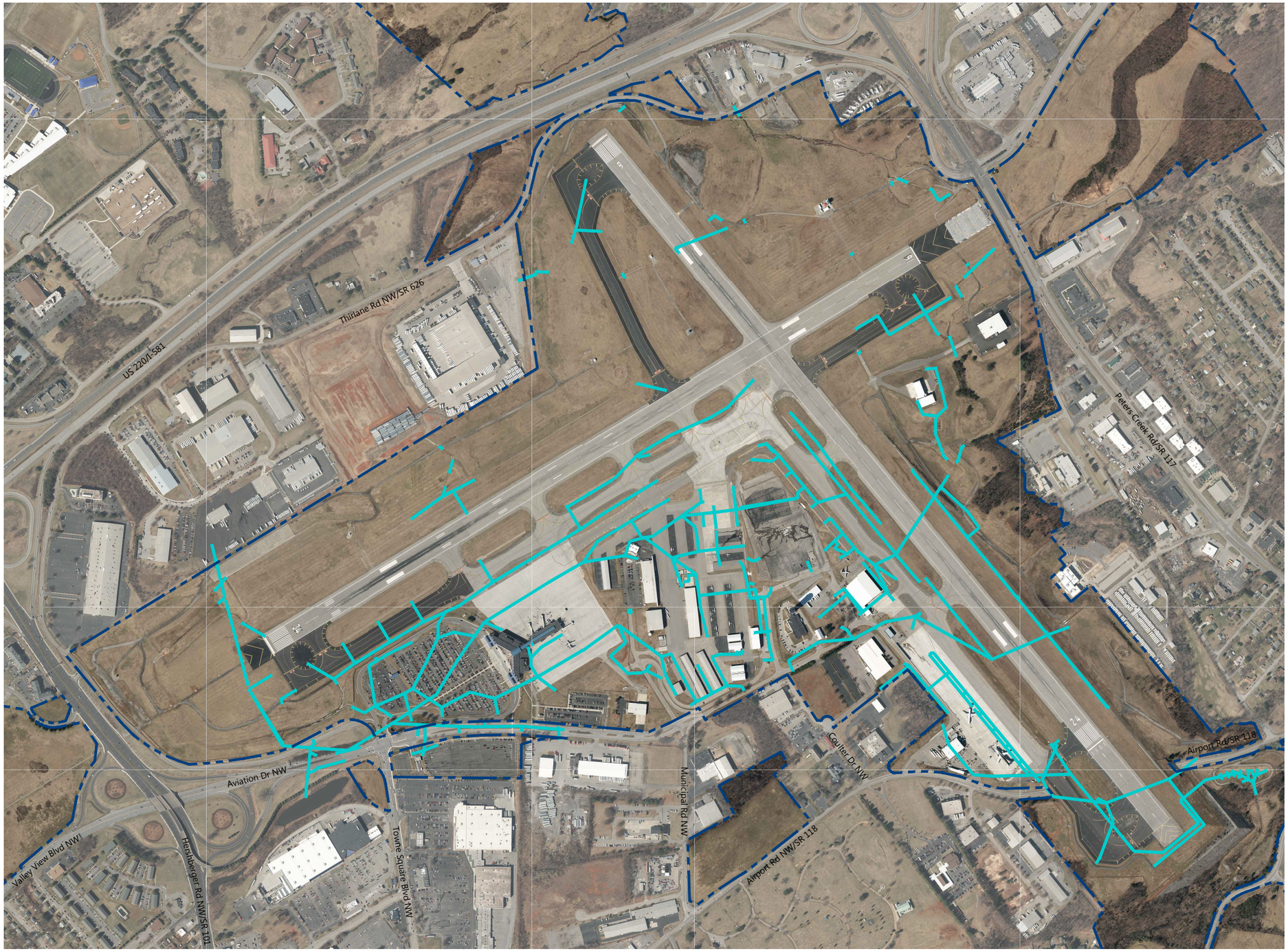
- Electrical Conduit
- FAA Electrical Line
- Miscellaneous Electric Line
- Overhead Electric Line
- Underground Electric Line
- Airport Property Line

N

0 400' 800'

Source: Utilities-Delta Airport Consultants, Inc.; Aerial Imagery, 2015-Virginia Base Map Program

UTILITIES - ELECTRIC



LEGEND

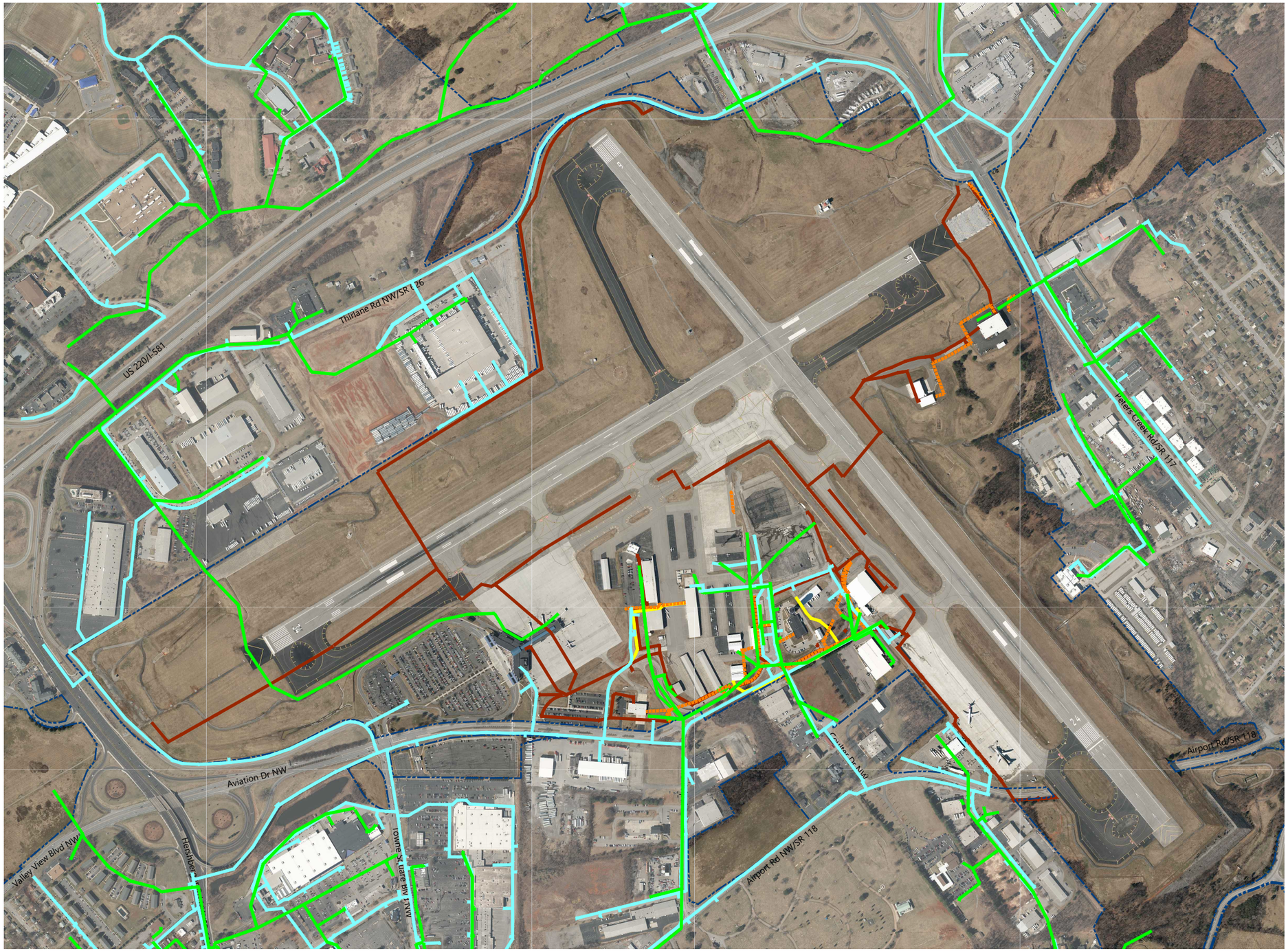
- Storm Drainage Line
- Airport Property Line

N

0 400' 800'

Source: Utilities-Delta Airport Consultants, Inc.; Aerial Imagery, 2015-Virginia Base Map Program

UTILITIES - STORMWATER



LEGEND

- Fiber Optic Line
- Gas Line
- Sanitary Sewer Line
- Telephone Line - Overhead
- Telephone Line - Underground
- Water Line
- Airport Property Line

N

0 400' 800'

Source: Utilities-Delta Airport Consultants, Inc.; Aerial Imagery, 2015-Virginia Base Map Program

UTILITIES - OTHER

FIGURE 2-18

2.11 REGIONAL SETTING AND LAND USE

The areas to the east and south of ROA are mostly developed with commercial and industrial uses. I-581 separates the Airport from commercial development to the west. Land use plans and zoning requirements are used by Roanoke and Roanoke County to promote compatible land uses around the Airport.

2.11.1 Local Comprehensive Plan Compatibility

Roanoke is preparing a new comprehensive plan (Roanoke City Plan 2040) that will guide long-term development until 2040. The current comprehensive plan (Vision 2001-2020) describes Roanoke's goals to maximize the Airport's role in the region and to attract businesses to the area. The following are two policies from the Roanoke Comprehensive Plan that support this initiative:

- Policy ED A15.
  "Increase efforts to provide tourist information for residents and visitors.
  - *Expand efforts to market attractions and programs at the airport and other key locations."*

- Policy IN P5.
  "Airport. The City will participate in the Roanoke Regional Airport Commission to support continuous improvement in air service and passenger and freight facilities in order to maintain its position as the region's major airport. Land use adjacent to the airport should be reserved for commercial and industrial development related to air transportation or those businesses needing easy access to airport facilities. Airport-related uses will be encouraged in the areas near the airport. Residential land uses will be discouraged in the areas where noise exceeds recommended land use standards."

Roanoke County's goals for the Airport are described in the County Comprehensive Plan. The County Comprehensive Plan[2] indicates that intergovernmental projects and coordination exist in order to shape transportation planning in Roanoke County. The County Comprehensive Plan continues to describe the County's willingness to coordinate with the localities within the region and the Airport to stimulate ROA as a catalyst in economic development.

2.11.2 Roanoke City Land Use and Zoning

Land use categories are not specifically defined by Roanoke. However, Roanoke depicts existing land use patterns found within the jurisdiction, including commercial, residential, institutional, infrastructure and open space. Commercial uses can be found in the downtown core and in nodes along major access roadways. Institutional uses such as hospitals and schools are mostly found in downtown and neighborhood centers with respect to function and accessibility. Infrastructure uses can be found along major highways and rail corridors. Recreational parks are considered open space uses and are found in areas that are undeveloped. Future land uses are dependent on the City's zoning ordinance and will determine future land use.

Roanoke has created an Airport Development Zoning District to encourage development that is compatible with the Airport. The immediate vicinity of the Airport is mostly surrounded by Commercial-

[2] Described in Chapter 4 of the Roanoke County Comprehensive Plan

Large Site, Commercial Neighborhood, Recreation and Open Space, Mixed Use, Commercial General, Industrial Planned Unit Development, and Light Industrial zoning districts. The Roanoke zoning districts surrounding the Airport are described in *Table 2-23* and depicted in *Figure 2-19*.

2.11.3 Roanoke County Land Use and Zoning

The portion of the Airport located within Roanoke County is within the Principal Industrial land use designation. The Principal Industrial land use was established to allow a variety of industry types and employment centers to be located near transportation centers such as ROA. The Airport is surrounded by Heavy Industrial, Principal Industrial, Transition, Medium Density Residential, Development and Neighborhood Conservation land use designations. The industrial land uses surrounding the Airport encourage warehouse, storage yards and other industrial functions. The Neighborhood Conservation land use designation allows for single-family development. The Transition land use serves as a buffer between highway-oriented development and nearby lower intensity development.

TABLE 2-23
ROANOKE (CITY) ZONING DISTRICTS IN AIRPORT AREA

Zoning District	Zoning District Abbreviation
Airport Development	AD
Commercial Large Site	CLS
Commercial-General	CG
Commercial-General	CG
Commercial-General	CG
Commercial-General Conditional	CGC
Commercial-Neighborhood	CN
Institutional Planned Unit Development	INPUD
Light Industrial	LI
Light Industrial	LI
Mixed Use	MX
Mixed Use	MX
Recreation and Open Space	ROS
Recreation and Open Space	ROS
Residential Agricultural	RA

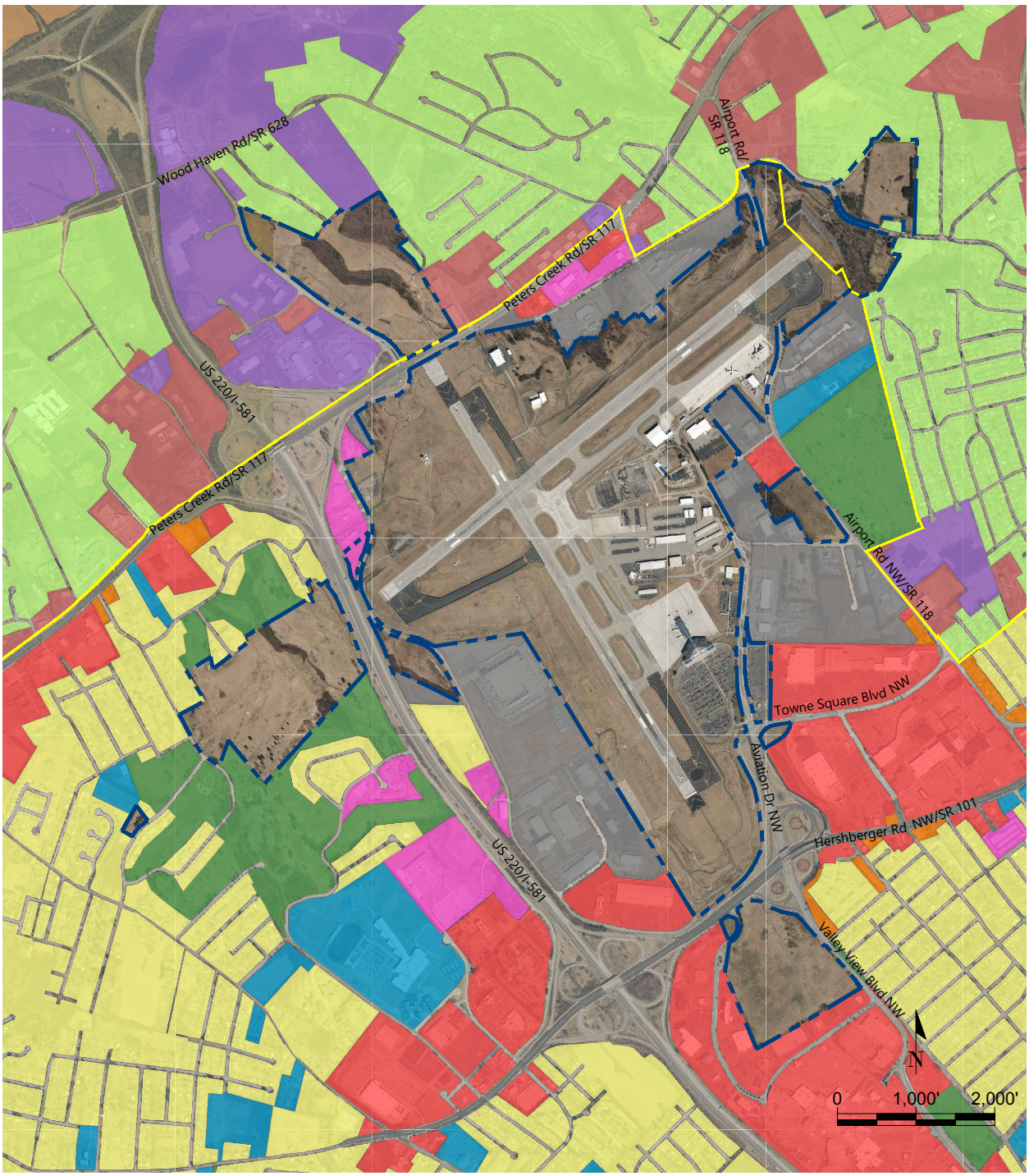
Source: City of Roanoke, 2019. Retrieved by RS&H August 2019.

The zoning districts and land use designations are summarized in *Table 2-24*. The County's zoning districts surrounding ROA are depicted in *Figure 2-19*. The County's future land use designations surrounding ROA are depicted in *Figure 2-20*. The Airport and surrounding area are also located within the Airport Overlay (AO) District. Overlay districts are applied to an area to establish stricter standards and criteria for the properties within the underlying zoning district. According to Section 30.72.1 of the Roanoke County Ordinance Code, the purpose of the Airport Overlay District is to regulate the use of property within the vicinity of ROA, including structure height limitations, regulation of obstructions, and the creation of zones in accordance to the landing areas. The AO District is depicted in *Figure 2-21*.

TABLE 2-24
ROANOKE COUNTY LAND USES AND ZONING IN AIRPORT AREA

Zoning District	Abbrv.	Future Land Use
High Intensity Commercial	C2	Transition
High Intensity Commercial, Industrial Heavy, Low Density Residential	C2, I2, and R1	Medium Density Residential
Industrial Light and Low Density Residential	I1 and R1	Heavy Industrial
Industrial Light, High Intensity Commercial	I1 and R1	Transition
Medium Density Residential	R3	Neighborhood Conservation
Medium Density Residential	R3	Development
Light Density Residential and High Intensity Commercial	R1 and C2	Core and Principal Industrial

Source: Roanoke County, 2019; Retrieved by RS&H August 2019.



City of Roanoke Zoning Districts

- Airport Development (AD)
- Commercial (CG, CLS, CN)
- Industrial (I-1)
- Institutional (IN, INPUD)
- Mixed Use (MX)
- Recreation (ROS)
- Residential (R5, R7, R12, RA, RM1, RM2, RMF)

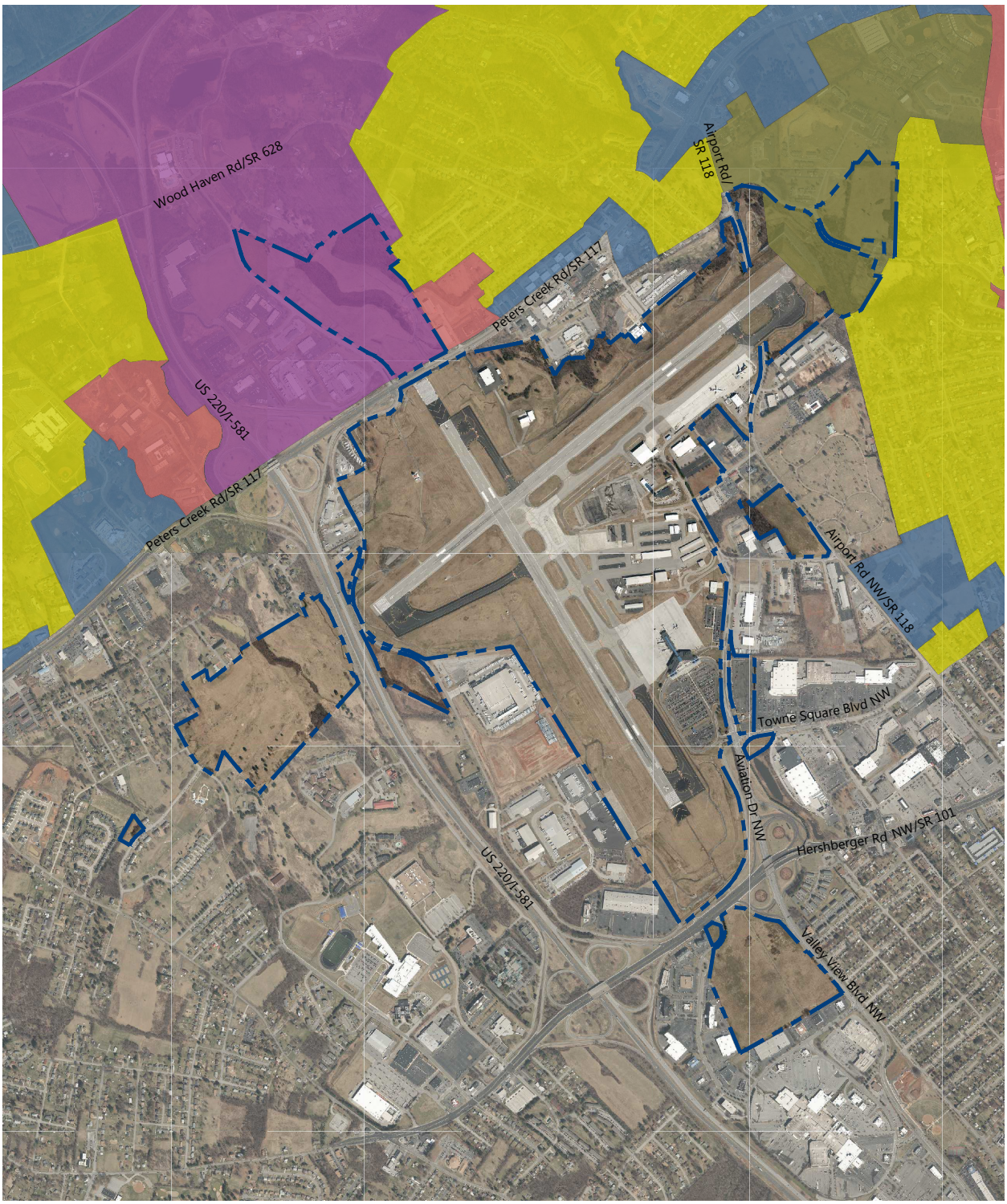
Roanoke County Zoning Districts

- Agricultural (AG-3, AR)
- Commercial (C-1, C-2)
- Industrial (I-1, I-2, PTD)
- Residential (R-1, R-2, R-3, R-4, PRD)

- Roanoke City Limits
- Airport Property Line

Source: City of Roanoke GIS; Roanoke County Open Data; Aerial Imagery, 2015-Virginia Base Map Program; RS&H, 2019

ZONING MAP



LEGEND

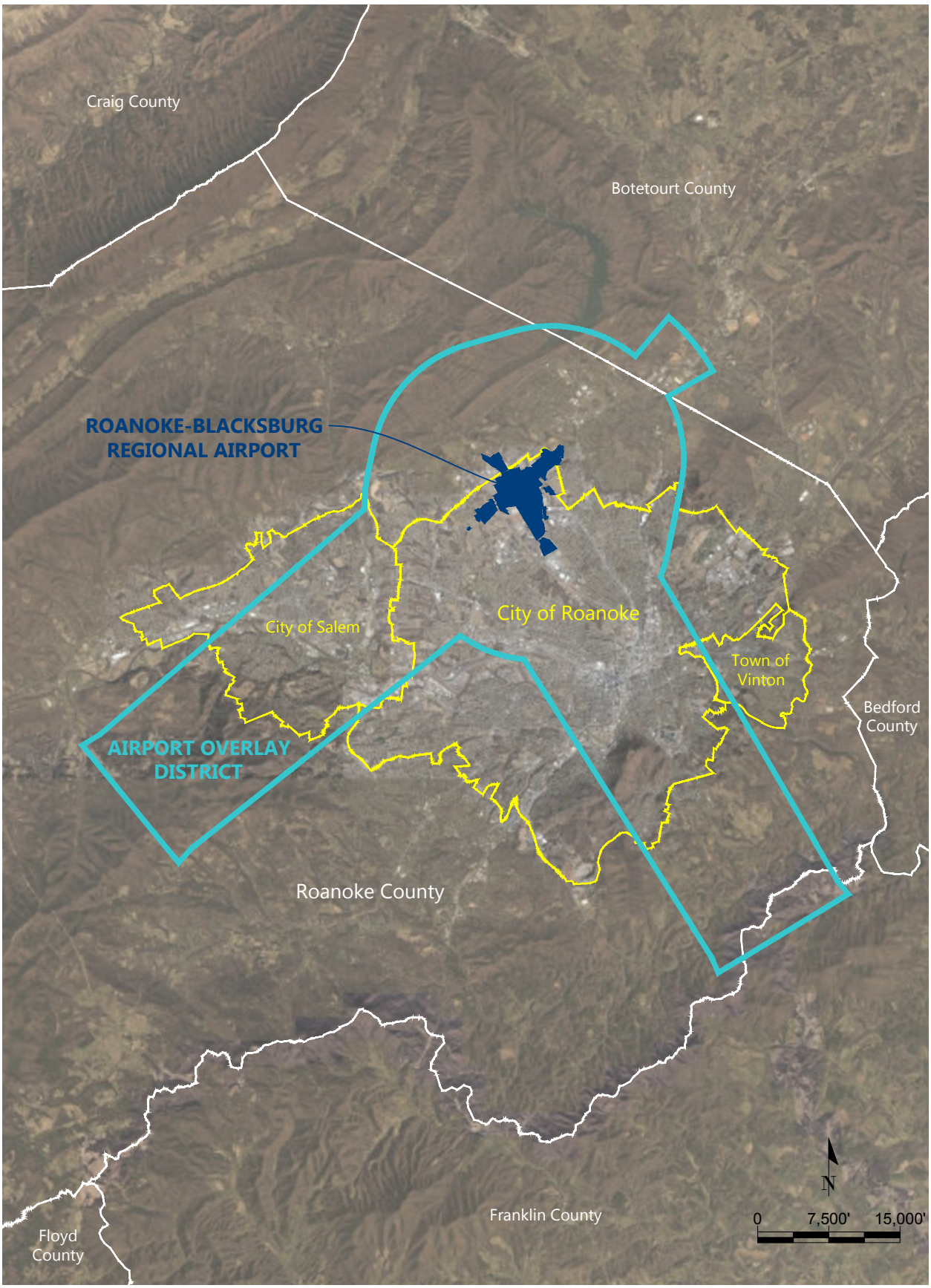
- Core (CO)
- Development (DE)
- Neighborhood Conservation (NC)
- Principal Industrial (PI)
- Transition (TR)
- Airport Property Line

N

0 1,000' 2,000'

Source: Roanoke County Open Data;
Aerial Imagery, 2015-Virginia Base Map Program;
RS&H, 2019

FUTURE COUNTY LAND USE MAP



Source: Roanoke County Open Data; ESRI

AIRPORT OVERLAY DISTRICT

2.12 KEY FINANCIAL DATA

The purpose of this section is to provide a general overview of ROA relevant activities and key financial information regarding past financial performance through an analysis of documents that regulate the financial operation of the Airport. These documents will provide the conditions and provisions for use in developing funding alternatives for the proposed Airport Capital Improvement Program (ACIP or CIP) in later chapters of the Master Plan. All data is reported in fiscal years (FY) according to the RRAC fiscal calendar which begins July 1st and ends June 30th the following year.

2.12.1 Airport Revenues and Capital Contributions

Airport revenues are generated from three distinct revenue sources as follows: 1.) the operation of the airport, 2.) non-operating sources, and 3.) contributions from grants from the Federal and State governments and other sources to be used for development of capital projects.

Table 2-25 shows ROA operating revenues, nonoperating revenues, and capital contributions for the past six fiscal years. Operating revenues at ROA are organized into four cost centers: airfield, general aviation, terminal, and other revenues. Historically, on average, operating revenue has accounted for 57 percent of total revenues. During FY 2014 to FY 2019, terminal revenue continuously made up roughly 75 percent of all operating revenue. Federal and state capital contributions average 37 percent of available capital revenues over the six-year period and nonoperating revenues averaged just 6 percent over the same period.

Table 2-26 shows historical revenues and capital contributions to ROA categorized by aeronautical and nonaeronautical activities, and airline passenger and non-passenger activities.

Figure 2-22 shows the percentage breakdown of FY 2019 FAA Certification Activity Tracking System (CATS) reported airport revenues by category at ROA. *Figure 2-23* shows a breakout of aeronautical revenues and nonaeronautical revenues for FY 2019.

TABLE 2-25
HISTORIC AIRPORT REVENUES AND CAPITAL CONTRIBUTIONS (FY14-FY19)

Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Operating revenues						
Airfield revenue	$1,166,358	$1,133,336	$1,180,369	$1,292,879	$1,391,696	$1,513,361
General aviation revenue	$450,967	$507,469	$500,853	$496,909	$509,049	$511,796
Terminal revenue	$5,190,759	$5,543,704	$6,248,431	$6,476,878	$6,677,852	$7,337,968
Other operating revenue	$385,956	$358,077	$359,773	$398,471	$466,461	$413,174
Total operating revenues	**$7,194,040**	**$7,542,586**	**$8,289,426**	**$8,665,137**	**$9,045,058**	**$9,776,299**
Percent of total revenues	*63.8%*	*68.1%*	*58.4%*	*45.9%*	*54.5%*	*53.7%*
Nonoperating revenues						
Customer facility charges	$0	$0	$0	$589,518	$759,210	$811,101
Noncapital grants, federal	$109,898	$111,574	$89,494	$110,162	$109,724	$112,536
Noncapital grants, state	$359,283	$393,210	$324,547	$153,835	$70,000	$260,788
Realized and unrealized gains on investments (losses)	($20,447)	($92,441)	($100,626)	($68,768)	($40,772)	$0
Realized and unrealized gains on disposal of capital assets (losses)	$500	$4,794	$11,253	$15,000	($308,083)	$13,419
Interest income	$249,898	$241,787	$211,213	$133,389	$223,226	$585,804
Interest expense*	($31,173)	($16,167)	$0	$0	$0	$0
Total nonoperating revenues	**$667,959**	**$642,757**	**$535,881**	**$933,136**	**$813,305**	**$1,783,648**
Percent of total revenues	*5.9%*	*5.8%*	*3.8%*	*4.9%*	*4.9%*	*9.8%*
Capital contributions						
Capital grants, federal	$433,817	$246,948	$2,426,542	$6,238,302	$3,470,345	$3,434,173
Capital grants, state	$1,723,644	$1,450,183	$1,720,888	$1,872,455	$2,000,000	$1,809,212
Passenger facility charges	$1,248,098	$1,197,854	$1,209,482	$1,185,417	$1,264,788	$1,409,273
Total capital contributions	**$3,405,559**	**$2,894,985**	**$5,356,912**	**$9,296,174**	**$6,735,133**	**$6,652,658**
Percent of total revenues	*30.2%*	*26.1%*	*37.8%*	*49.2%*	*40.6%*	*36.5%*
Total Revenues	**$11,267,558**	**$11,080,328**	**$14,182,219**	**$18,894,447**	**$16,593,496**	**$18,212,605**

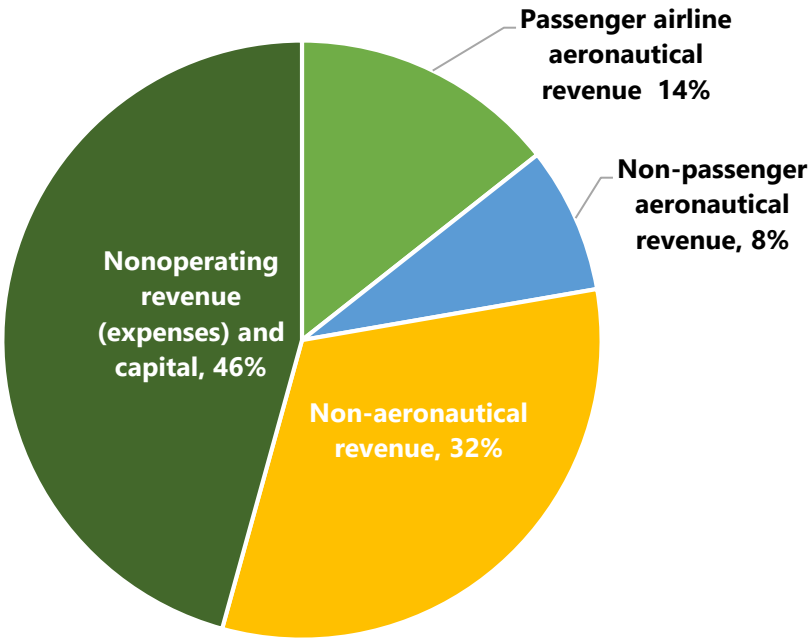
Notes: *Interest expense of approximately $1,000 was capitalized in FY 2018.
Sources: RRAC Financial Statements FY14-19.

TABLE 2-26
FAA REPORTED HISTORIC AIRPORT REVENUES AND CAPITAL CONTRIBUTIONS (FY14-FY19)

Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Passenger airline aeronautical revenue						
Passenger airline landing fees	$786,891	$743,344	$763,881	$837,238	$939,862	$1,032,646
Terminal arrival fees, rents, and utilities	$1,011,754	$1,040,228	$1,095,662	$1,151,672	$1,167,031	$1,350,792
Terminal area apron charges/tiedowns	$175,458	$169,478	$166,194	$185,318	$201,154	$235,791
Total passenger airline aeronautical revenue	**$1,974,103**	**$1,953,050**	**$2,025,737**	**$2,174,228**	**$2,308,047**	**$2,619,229**
Percent of total revenues	*17.5%*	*17.6%*	*14.3%*	*11.5%*	*14%*	*14%*
Non-passenger aeronautical revenue						
Landing fees from cargo	$260,939	$269,049	$289,905	$317,207	$310,064	$339,983
Landing fees from GA and military	$10,624	$19,827	$19,412	$16,150	$20,832	$17,573
FBO revenue, contract or sponsor-operated	$353,136	$341,215	$336,535	$351,730	$344,362	$337,425
Cargo and hangar rentals	$497,290	$542,866	$554,570	$559,843	$565,808	$575,918
Fuel sales net profit/loss or fuel flowage fees	$26,917	$25,461	$21,565	$21,710	$25,362	$29,824
Security reimbursement from Federal Government	$109,898	$111,574	$89,494	$110,162	$109,724	$112,536
Other non-passenger aeronautical revenue	$21,800	$22,388	$22,907	$23,095	$23,466	$23,466
Total non-passenger aeronautical revenue	**$1,280,604**	**$1,332,380**	**$1,334,388**	**$1,399,897**	**$1,399,618**	**$1,436,725**
Percent of total revenues	*11.4%*	*12.0%*	*9.4%*	*7.4%*	*8%*	*8%*
Non-aeronautical revenue						
Land and non-terminal facility leases and revenues	$5,354	$5,354	$5,354	$5,354	$7,754	$60,208
Terminal food and beverage	$70,701	$67,968	$82,352	$85,663	$84,935	$82,353
Terminal retail stores and duty free	$56,435	$82,893	$97,811	$89,538	$94,774	$118,875
Terminal services and other	$207,847	$206,978	$190,072	$210,851	$224,315	$209,252
Rental cars excluding CFCs	$1,337,280	$1,362,446	$1,377,531	$1,457,438	$1,536,519	$1,660,231
Parking and ground transportation	$2,367,462	$2,637,102	$3,262,774	$3,339,466	$3,403,705	$3,701,962
Other	$4,152	$5,990	$2,901	$12,864	$95,115	$0
Total non-aeronautical revenue	**$4,049,231**	**$4,368,731**	**$5,018,795**	**$5,201,174**	**$5,447,117**	**$5,832,881**
Percent of total revenues	*35.9%*	*39.4%*	*35.4%*	*27.5%*	*33%*	*32%*
Nonoperating revenue and capital						
Interest income	$249,898	$241,787	$211,213	$133,389	$223,226	$585,804
Interest expense*	($31,173)	($16,167)	$0	$0	$0	$0
Grant receipts	$2,516,744	$2,090,341	$4,471,977	$8,264,592	$5,540,345	$5,504,173
Passengers facility charges	$1,248,098	$1,197,854	$1,209,482	$1,185,417	$1,264,788	$1,409,273
Other	($19,947)	($87,648)	($89,373)	$535,750	$410,355	$824,520
Total nonoperating revenue	**$3,963,620**	**$3,426,167**	**$5,803,299**	**$10,119,148**	**$7,438,714**	**$8,323,770**
Percent of total revenues	*35.2%*	*30.9%*	*40.9%*	*53.6%*	*45%*	*46%*
Total Revenues	**$11,267,558**	**$11,080,328**	**$14,182,219**	**$18,894,447**	**$16,593,496**	**$18,212,605**

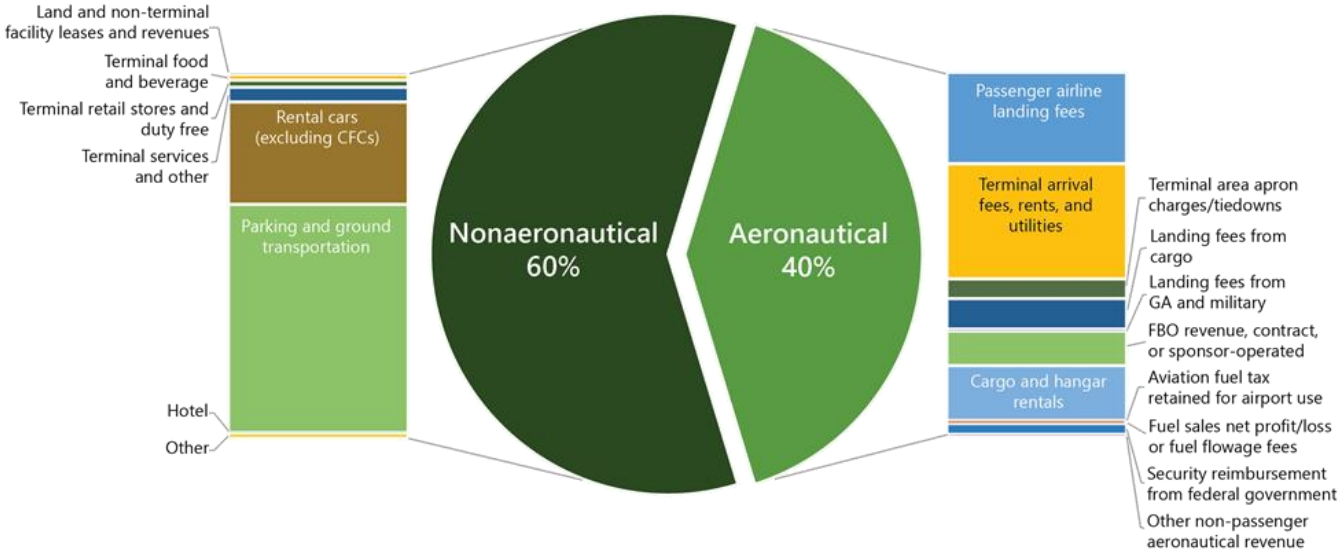
Notes: *Interest expense of approximately $1,000 was capitalized in FY 2018 per RRAC Financial Statements.
Sources: FAA CATS Form 127 for FY14-19 .

FIGURE 2-22
FAA REPORTED AIRPORT REVENUES BY CATEGORY (FY19)



Sources: FAA CATS Form 127 for FY19

FIGURE 2-23
AERONAUTICAL AND NONAERONAUTICAL REVENUES BREAKOUT (FY19)



Source: Data from FAA CATS Form 127; Prepared by RS&H, 2019

2.12.2 Airport Expenses

Operating expenses include salaries and fringe benefit costs, pension costs, aircraft rescue and firefighting services, other operating expenses, and depreciation. *Table 2-27* shows a historical breakdown of operation and maintenance expenses at ROA. As is common with most airports, depreciation of assets accounts for the highest expense at ROA and labor costs are the second highest expense.

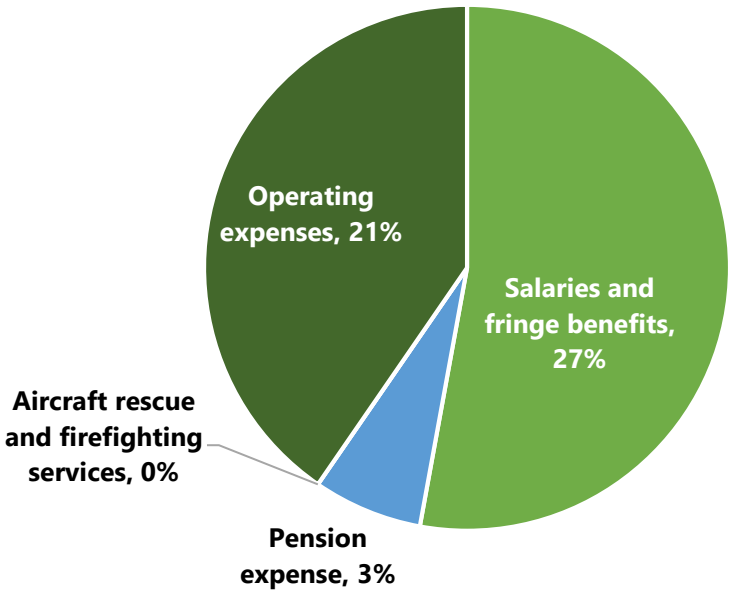
Figure 2-24 shows the percentage breakdown of FY 2019 airport operation and maintenance expenses (excluding depreciation) at ROA.

TABLE 2-27
HISTORIC AIRPORT OPERATING EXPENSES (FY14-FY19)

Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Salaries and fringe benefits	$4,305,903	$3,745,365	$3,741,706	$3,820,129	$3,924,759	$4,221,967
Pension expense	$0	$375,444	$678,866	$36,282	$647,353	$536,892
Aircraft rescue and firefighting services	$698,000	$721,000	$635,000	$656,194	$675,000	$0
Operating expenses	$2,678,431	$2,567,114	$3,281,514	$3,106,072	$3,192,631	$3,225,926
Depreciation	$8,179,266	$8,632,565	$7,743,023	$7,178,473	$7,059,299	$7,193,739
Total operation and maintenance	**$15,861,600**	**$16,041,488**	**$16,080,109**	**$14,797,150**	**$15,499,042**	**$15,178,524**

Sources: RRAC Financial Statements FY14-19.

FIGURE 2-24
AIRPORT OPERATION AND MAINTENANCE EXPENSES EXCLUDING DEPRECIATION (FY19)



Source: RRAC Financial Statements FY14-19

2.12.3 Airport Capital Expenditures

Capital investments are primarily funded by federal and state capital contributions and by the issuance of revenue bonds. Additional match requirements are met by the Airport through local funds. *Table 2-28* shows historic total Airport capital expenditures by fiscal year. Brief descriptions for major capital projects can be found within the RRAC annual financial statements.

TABLE 2-28
HISTORIC AIRPORT CAPITAL EXPENDITURES (FY14-FY19)

Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Capital Expenditures	$12,713,000	$2,164,000	$5,995,000	$7,464,000	$12,152,000	$279,000

Sources: RRAC Financial Statements FY14-19 and FAA CATS Form 127 FY14-19

2.12.4 Airport Long-Term Debt

Long-term debt is held by the RRAC on behalf of the Airport. ROA is presently carrying long-term debt issued in 2017 for the following two projects:

1. Airport Parking Lot
2. Consolidated Rental Car Facility

All long-term debt is currently held on the following revenue backed bond series:

- In October 2017, the Airport issued Airport Revenue Bonds, Series 2017 (the Revenue Bonds). The primary use of proceeds of the bond is for construction of a public parking lot. The Revenue Bonds are in the form of a draw note with a maximum of $4,700,000 with an interest rate of 2.25% at June 30, 2018. The interest rate is subject to adjustments per the bond agreement in years 2022, 2027, and 2032. Bond interest payments commenced April 5, 2018 with principal payments beginning October 5, 2019. Debt is repaid semiannually on April 5th and October 5th.
- In October 2017, the Airport issued Customer Facility Charge Revenue Bonds, Series 2017 (the CFC Bonds). The primary use of proceeds of the CFC Bonds is construction of rental car facilities. The CFC Bonds are in the form of a draw note with a maximum of $4,300,000 with an interest rate of 3.50% at June 30, 2018. The interest rate is subject to adjustments per the bond agreement in years 2022, 2027, and 2032. At June 30, 2018, total draws were approximately $21,000. The primary use of proceeds of the bond is for construction of a public parking lot. Bond interest payments commenced April 5, 2018 with principal payments beginning October 5, 2019. Debt is repaid semiannually on April 5th and October 5th.

Based on the above, the RRAC carries, as of the end of FY19, $9 million in long-term debt. *Table 2-29* shows historical long-term debt payments.

TABLE 2-29
HISTORIC AIRPORT DEBT PAYMENTS ON LONG-TERM DEBT (FY14-FY19)

Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Long-term debt						
Revenue bonds	$649,205	$0	$0	$0	$0	$0
Loans and interim financing	$0	$0	$0	$0	$151,060	$0
Debt Service						
Debt service, excluding coverage*	$128,139	$665,372	$0	$0	$0	$0

Notes: *Principle and interest paid for long-term bonds and indebtedness, excluding principal and interest on short-term interim financing and special facility bonds.
Sources: RRAC Financial Statements FY14-19 and FAA CATS Form 127 for FY14-19.

Table 2-30 shows the Airport's historic debt coverage ratio (DCR). The DCR measures the ratio between available cash and debt service payments and it is used as an element of determining creditworthiness by financial lenders. Throughout the six-year period, the DCR was 1.16 or higher indicating a positive cash flow and creditworthiness because it was above the typical minimum lending institution threshold of 1.0. The two revenue bonds issued in 2017 are not accounted for in the annual debt service because principal payments begin in 2019.

TABLE 2-30
HISTORIC AIRPORT DEBT COVERAGE (FY14-FY19)

Debt Coverage	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Revenues						
Operating revenues	$7,194,040	$7,542,586	$8,289,426	$8,665,137	$9,045,058	$9,776,299
Nonoperating revenues	$667,959	$642,757	$535,881	$933,136	$813,305	$1,783,648
Total revenues	**$7,861,999**	**$8,185,343**	**$8,825,307**	**$9,598,273**	**$9,858,363**	**$11,559,947**
Expenses						
Operating expenses, less depreciation	$7,682,334	$7,408,923	$8,337,086	$7,618,677	$8,439,743	$7,984,785
Nonoperating expenses, less interest	$31,173	$0	$0	$0	$0	$0
Total expenses, less depreciation and interest expenses	**$7,713,507**	**$7,408,923**	**$8,337,086**	**$7,618,677**	**$8,439,743**	**$7,984,785**
Net Revenues	**$148,492**	**$776,420**	**$488,221**	**$1,979,596**	**$1,418,620**	**$3,575,162**
Annual Debt Service	**$128,139**	**$665,372**	**$0**	**$0**	**$0**	**$0**
Debt Coverage Ratio	**1.16**	**1.17**	**-**	**-**	**-**	**-**

Sources: RRAC Financial Statements FY14-19 and FAA CATS Form 127 for FY14-19.

2.12.5 Federal and State Grants

The Airport receives grants from various sources primarily for the planning, design and construction of capital projects. The largest source of grants for all capital projects has been the Federal Government through the FAA Airport Improvement Program (AIP). Capital projects deemed eligible are 90 percent funded through FAA grants, with the remaining 10 percent funded either through grants from the DOAV or by airport funds. *Table 2-31* summarizes federal funding received for all major capital projects at ROA since 2009.

TABLE 2-31
11-YEAR FEDERAL GRANT AWARD HISTORY

Grant Year	Grant Seq #	Project Description	Federal AIP Entitlement	Federal AIP Discretionary	Total Federal AIP Funds
2009	45	Rehabilitate Taxiway T and General Aviation Taxilane	$2,239,499	$0	$2,239,499
2009	46	Rehabilitate Taxiway T and General Aviation Apron	$2,398,738	$0	$2,398,738
2009	47	Noise Mitigation Measures for Residences within 65 - 69 DNL	$997,500	$0	$997,500
2010	48	Acquire Snow Removal Equipment - Replacement Snow Broom	$370,826	$0	$370,826
2010	49	Construct Aircraft Rescue & Fire Fighting Building - Design	$608,105	$0	$608,105
2011	50	Construct Aircraft Rescue & Fire Fighting Building	$5,309,287	$0	$5,309,287
2012	51	Improve Runway Safety Area - Runway 15 EMAS Rehabilitation	$1,106,190	$0	$1,106,190
2014	52	Acquire Aircraft Rescue & Fire Fighting Vehicle	$537,741	$0	$537,741
2014	53	Improve Runway Safety Area - Modified EMAS Runway 06-24	$592,847	$0	$592,847
2015	54	Improve Terminal Building	$5,600,000	$0	$5,600,000
2016	55	Rehabilitate Taxiway	$270,330	$0	$270,330
2016	56	Rehabilitate Terminal Building	$4,242,708	$0	$4,242,708
2017	57	Aquire Snow Removal Equipment	$276,671	$0	$276,671
2017	58	Improve Terminal Building - Rehabilitate Runways 06-24 & 16-34	$3,080,551	$0	$3,080,551
2018	59	Rehabilitate Apron - GA Apron	$1,068,850	$0	$1,068,850
2018	60	Security Access Control System and CCTV Upgrades	$1,833,083	$0	$1,833,083
2018	61	Rehabilitate Apron - GA Apron (Phase 2)*	$0	$897,167	$897,167
2019	62	Reconstruct Runway Lighting	$114,750	$0	$114,750
2019	62	Reconstruct Taxiway Lighting	$57,375	$0	$57,375
2019	62	Reconstruct Airfield Guidance Signs	$57,375	$0	$57,375

Notes: FAA grant records do not differentiate entitlement and discretionary funding prior to 2010.
* Project funded by H.R. 1625 Consolidated Appropriations Act which awarded additional $1 billion in descretionary grants for select projects.
Source: FAA Grant History Lookup Tool, 2019

In addition to AIP, funds are available through the Commonwealth of Virginia which uses sales and use tax revenue created in the Department of the Treasury for a special non-reverting fund which is part of the Transportation Trust Fund known as the Commonwealth Airport Fund (CAF). The Commonwealth Transportation Board annually allocates 2.4 percent[3] of the Transportation Trust Fund for the CAF. These funds are allocated by the Commonwealth Transportation Board to the Virginia Aviation Board (VAB). Funds are then allocated by the VAB through the DOAV to any Virginia airport which is owned by the Commonwealth, a governmental subdivision thereof, or a private entity to which the public has access for the purposes enumerated in Code of Virginia §5.1-2.16 or is owned or leased by the Metropolitan Washington Airports Authority.[4]

The Airport Capital Improvement Program utilizes the CAF, through entitlement and discretionary funds, to provide funding for planning and engineering projects that focus on airport facility development. In general, these projects include master plan and airport layout plan studies, environmental studies, land acquisition, airside facility design and construction, and terminal building design and construction. *Table 2-32* and *Figure 2-25* show historic DOAV grants and total costs for associated projects.

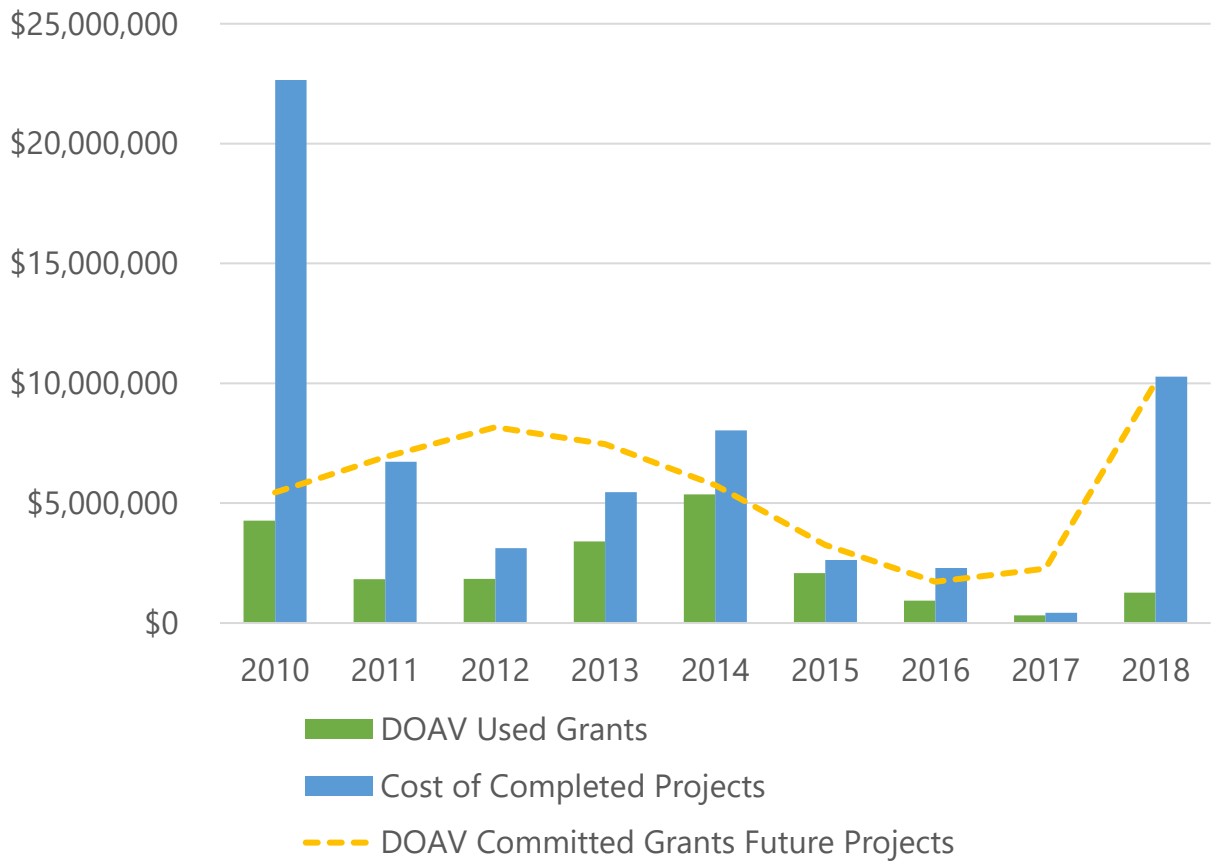
[3] Code of Virginia § 58.1-638 - *Disposition of state sales and use tax revenue*
[4] Virginia Department of Aviation, https://doav.virginia.gov/programs-and-services/airport-programs/airport-capital-program

TABLE 2-32
HISTORIC ANNUAL DOAV GRANT TOTALS AND PERCENT OF ASSOCIATED PROJECT COST (2010-2018)

Year	DOAV Used Grants	Cost of Completed Projects	DOAV Committed Grants Future Projects	% DOAV of Completed Projects
2010	$4,266,702	$22,658,462	$5,441,738	18.83%
2011	$1,828,371	$6,729,107	$6,922,192	27.17%
2012	$1,847,209	$3,118,022	$8,173,670	59.24%
2013	$3,410,512	$5,455,685	$7,460,656	62.51%
2014	$5,369,455	$8,037,792	$5,759,000	66.80%
2015	$2,085,918	$2,626,194	$3,254,303	79.43%
2016	$936,593	$2,300,450	$1,722,177	40.71%
2017	$325,535	$426,727	$2,262,781	76.29%
2018	$1,263,231	$10,279,178	$10,044,147	12.29%
Average	**$2,370,392**	**$6,847,958**	**$5,671,185**	**49.25%**

Source: Airport Records; Prepared by RS&H, 2019

FIGURE 2-25
HISTORIC ANNUAL DOAV GRANT TOTALS AND COMMITTED FUTURE PROJECT GRANTS (2010-2018)



Source: Airport Records; Prepared by RS&H, 2019

2.12.6 Passenger Facility Charges

The Passenger Facility Charge (PFC) Program is available to fund qualified capital development projects at publicly controlled commercial passenger service airports. This program allows FAA approved airports the ability to collect PFC's of up to $4.50 per enplaned passenger. PFC's are capped at a maximum of $4.50 per flight segment with a maximum of two PFC's charged on a one-way trip, or four PFC's charged on a round trip, for a maximum total of $18.00. Projects must be FAA-approved to qualify for using these funds. PFCs are collected by air carriers when tickets are sold and are then later remitted to the airport, less a handling fee of typically $0.11 per collected PFC. Eligible projects include those which enhance safety, security, or capacity; reduce noise; or increase air carrier competition.

Since the first PFC application submitted in 1998, ROA has applied for and had approved by FAA, six PFC applications totaling over $27 million. This money has been used to fund various airfield, terminal, security, and planning and environmental projects for the past 20 years. *Table 2-33* shows the history of PFC funding available to the Airport.

TABLE 2-33
HISTORIC AND CURRENT APPROVED PFC COLLECTIONS

PFC No.	PFC Application No.	Approved PFC Rate	FAA Approved For Collection and Use	Amended Collection and Use Total	Collection Date	End Date
1	98-01-C-00-ROA	$3.00	$7,237,454	-	September 1998	*
1	98-01-C-01-ROA	$4.50	($689,000)	$6,548,454	December 2001	January 2005
1	98-01-C-02-ROA	$4.50	($85,271)	$6,463,183	*	*
2	04-02-C-00-ROA	$4.50	$8,483,280	-	November 2004	November 2011
2	04-02-C-01-ROA	$4.50	($325,237)	$8,158,043	February 2005	November 2011
3	11-03-C-00-ROA	$4.50	$2,192,000	-	May 2011	January 2013
4	13-04-C-00-ROA	$4.50	$4,280,000	-	April 2013	September 2016
5	16-05-C-00-ROA	$4.50	$6,201,300	-	October 2016	June 2022
5	16-05-C-01-ROA	$4.50	($2,887,002)	$3,314,298	March 2018	January 2019
6	19-06-C-00-ROA	$4.50	$3,044,445	-	June 2019	June 2021

Notes: *Data unavailable.
Sources: Airport PFC records and RRAC Financial Statements FY14-19.

2.12.7 Customer Facility Charges

Collections from Customer Facility Charges (CFC) are another form of airport revenue that are generally limited to funding of rental car facilities, associated infrastructure, and their operating costs. A CFC is a charge paid by rental car customers generally per the number of contract days that a vehicle has been rented up to an allowed maximum. Unlike PFC's, CFC's do not require approval from the FAA or any other Federal agency. CFCs are generally negotiated and implemented contractually between the airport and the rental car companies and are collected under specific terms including use of the funds. CFC revenue is typically limited to funding rental car facilities and operating costs at the airport, rental car related capital expense (debt service), and rental car related operating and maintenance expenses.

ROA charges a $3.00 per rental car transaction per day for all rental car transactions originating at the Airport. The CFC was instituted in September 2017 and has collected over $1.3 million as of the end of

FY18. These funds are deposited into an account to be used exclusively to fund construction and operation of a new CONRAC.

2.12.8 ROA FY 2020 Budget

The FY20 RRAC budget was completed in March 2019 and is described in *Table 2-34*. Passenger enplanements are forecasted in the FY 2020 budget to increase by 2 percent from FY 2019. All airline passenger related areas of business are projected to increase due to continued growth in enplanements/deplanements including landed weight projections, parking revenues, rental car, and concessions. Additionally, parking operations are expected to increase efficiency and reduce costs due to a new parking management company that recently took over the management of the airport and is responsible for implementing new technology. Operating expenses are budgeted to decrease due to savings on professional services, IT costs, some maintenance costs, and the contract with the new parking management company, among various other reasons. The budget also estimates an increase of 5 percent in current airline rates and charges whereby additional operating income will go to pay for capital infrastructure improvements such as the CONRAC facility, parking lot rehabilitation, a tunnel lighting project, and certain terminal improvements.

TABLE 2-34
RRAC FY20 BUDGET EXECUTIVE SUMMARY

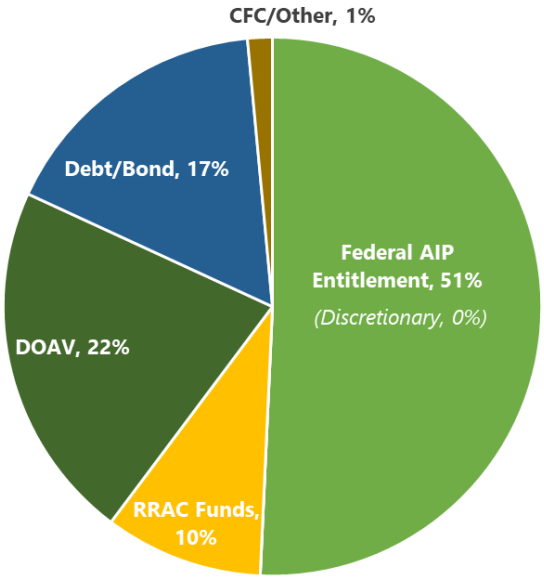
Source	FY 2020	FY 2019	$ Change	Percent Change
Operating revenues				
Airfield	$1,551,000	$1,441,000	$110,000	8%
General aviation	$516,000	$505,000	$11,000	2%
Terminal	$7,247,000	$6,704,000	$543,000	8%
Other revenues	$468,000	$361,000	$107,000	30%
Interest on investments	$224,000	$111,000	$113,000	102%
Gain (loss) on sale of investments	$0	$5,000	($5,000)	-100%
Gain (loss) on sale of assets	$5,000	$5,000	$0	0%
State funds	$235,000	$249,000	($14,000)	-6%
Federal reimburseable funds	$113,000	$111,000	$2,000	2%
Total operating revenues	**$10,359,000**	**$9,492,000**	**$867,000**	**9%**
Operations and Maintenance Expenses				
Salaries, wages, and benefits	$5,242,324	$5,293,855	($51,531)	-1%
Operating expenditures	$3,656,076	$3,955,689	($299,613)	-8%
Other maintenance and improvement projects	$204,000	$203,400	$600	0%
Debt service - Parking lot	$376,000	$3,000	$373,000	-100%
Total operations and maintenance expenses	**$9,478,400**	**$9,455,944**	**$22,456**	**0%**
Operating net income	**$880,600**	**$36,056**	**$844,544**	**2342%**
Capital revenues				
Federal AIP entitlements	$2,250,000	$2,944,638	($694,638)	-24%
State entitlements - Current	$1,800,000	$1,796,434	$3,566	0%
State entitlements - Prior year	$3,349,535	$2,617,528	$732,007	28%
Passenger facility charges	$1,215,000	$1,215,000	$0	0%
Other funds - Debt	$7,785,644	$650,000	$7,135,644	100%
Retained earnings	$1,144,884	$335,662	$809,222	0%
Total capital revenues	**$17,545,063**	**$9,559,262**	**$7,985,801**	**84%**
Capital expenses				
Capital projects	$17,545,063	$9,559,262	$7,985,801	84%
Total capital projects	**$17,545,063**	**$9,559,262**	**$7,985,801**	**84%**
Customer facility charges				
Revenues	$800,000	$750,000	$50,000	7%
Debt service - CONRAC	$310,000	$60,000	$250,000	417%
CFC net income	**$490,000**	**$690,000**	**($200,000)**	**-29%**

Sources: Roanoke Regional Airport FY20 staff budget proposal to RRAC dated March 26, 2019.

2.12.9 Existing Capital Improvement Program FY 2019- FY 2026

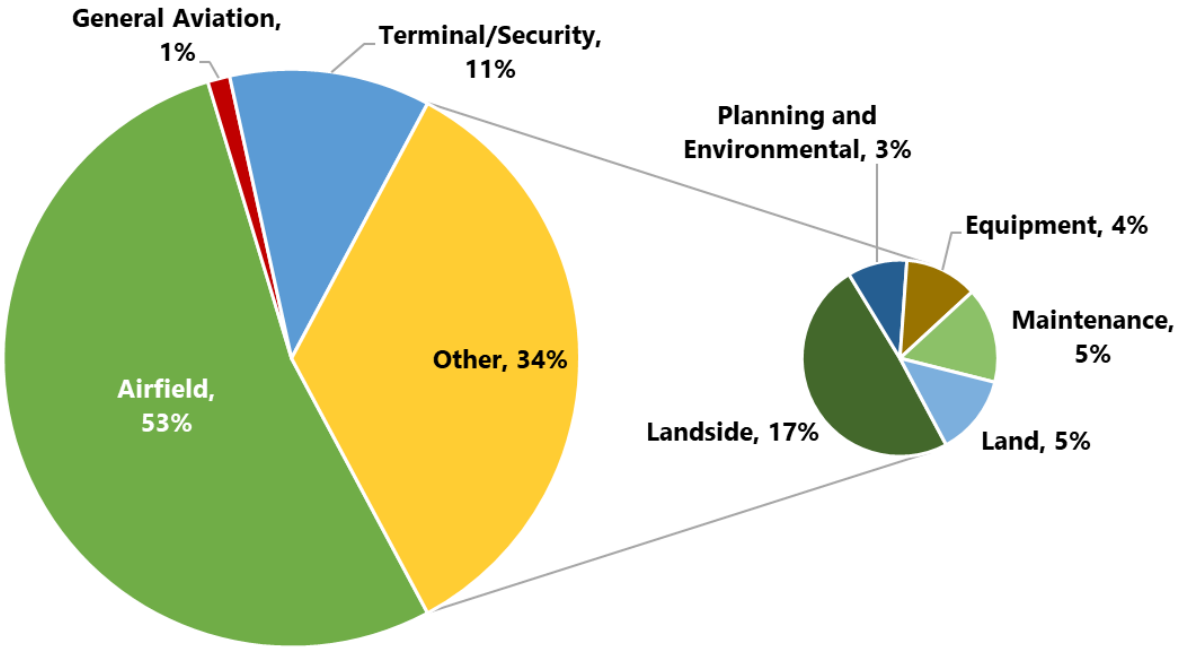
ROA issues its Airport Capital Improvement Program every year with the goal of meeting airport capital project needs. Total anticipated capital project funding over the FY 2019 to FY 2026 period is slightly over $100 million. *Figure 2-26* shows projected funding sources and *Figure 2-27* shows areas of investment allocations. *Table 2-35* depicts the CIP for FY 2019 – FY 2026.

FIGURE 2-26
AIRPORT PROJECTED FUNDING BY SOURCE CATEGORY



Source: Airport Records; RS&H Analysis, 2019

FIGURE 2-27
AIRPORT PROJECTED FUNDING BY AREA OF INVESTMENT



Source: Airport Records; RS&H Analysis, 2019

TABLE 2-35
EXISTING AIRPORT CIP (FY19-26)

Project Description	Total Federal AIP Funds	RRAC Funds	DOAV	Debt/Bond	CFC/Other	Total Funding
Airfield						
Sealcoat Runway 06-24 and Runway 16-34	$946,254	$0	$105,139	$0	$0	$1,051,393
Rehab GA Ramp East	$2,036,447	$176,774	$933,369	$0	$0	$3,146,590
Runway 24 Tunnel Lighting	$0	$0	$400,000	$0	$100,000	$500,000
Airfield Signs, Lights, and Circuit Replacement	$1,350,000	$0	$150,000	$0	$0	$1,500,000
Runway Approach Obstructions Removal	$0	$125,000	$500,000	$0	$0	$625,000
Replace Runway 34 - EMAS Design and Construction	$4,536,000	$0	$504,000	$0	$0	$5,040,000
Rehabilitate Taxiway G, G1, N, and Hold Apron	$2,162,835	$0	$240,315	$0	$0	$2,403,150
Runway 24 Tunnel Rehabilitation	$0	$40,000	$160,000	$0	$0	$200,000
Seal Coat and Crack Seal GA Ramp West	$0	$163,000	$652,000	$0	$0	$815,000
Improve Runway 06-24 Safety Areas - Year 1	$1,080,000	$0	$120,000	$0	$0	$1,200,000
Cargo Ramp Joint Seal	$0	$97,200	$388,800	$0	$0	$486,000
Improve Runway 06-24 Safety Areas - Year 2	$6,165,000	$0	$685,000	$0	$0	$6,850,000
Runway 24 Tunnel Rehabilitation	$0	$40,000	$160,000	$0	$0	$200,000
Improve Runway 06-24 Safety Areas - Year 3	$6,165,000	$0	$685,000	$0	$0	$6,850,000
Improve Runway 06-24 Safety Areas - Year 4	$1,080,000	$0	$120,000	$0	$0	$1,200,000
Rehabilitate Taxiway A	$3,633,156	$0	$403,684	$0	$0	$4,036,840
Rehabilitate Runway 06-24	$10,487,825	$0	$1,165,314	$0	$0	$11,653,139
Helo Parking Pavement Rehabilitation	$1,866,240	$0	$207,360	$0	$0	$2,073,600
Runway 24 Tunnel Rehabilitation	$0	$40,000	$160,000	$0	$0	$200,000
Improve Runway 06-24 Safety Areas - Year 5	$6,570,000	$0	$730,000	$0	$0	$7,300,000
Airfield Total	**$48,078,757**	**$681,974**	**$8,469,981**	**$0**	**$100,000**	**$57,330,712**
General Aviation						
Reconstruct Building 5 Pavement	$0	$503,820	$0	$0	$0	$503,820
Reconstruct Building 4 Pavement	$0	$157,000	$0	$0	$0	$157,000
Rehabilitate Cargo Road	$0	$63,103	$252,414	$0	$0	$315,517
Rehabilitate Bldg 31 and ARFF Pavement	$0	$50,058	$200,232	$0	$0	$250,290
Rehabilitate GA Loop Road	$0	$23,004	$92,016	$0	$0	$115,020
General Aviation Total	**$0**	**$796,985**	**$544,662**	**$0**	**$0**	**$1,341,647**
Terminal/Security						
Upgrade Sprinkler System in Terminal	$0	$30,000	$120,000	$0	$0	$150,000
Upgrade Security Access Control System	$1,938,622	$0	$215,402	$0	$0	$2,154,024
ATO Baggage Screening	$0	$507,200	$2,028,800	$0	$0	$2,536,000
Front Plaza Fin Rehabilitation	$0	$80,000	$320,000	$0	$0	$400,000
Terminal Roof Renovations	$0	$50,000	$200,000	$0	$0	$250,000
Terminal Improvements (Phase 3)	$0	$360,000	$1,440,000	$0	$0	$1,800,000
Pre- and Post- Customer Lounge	$0	$500,000	$0	$0	$0	$500,000
Terminal Improvements (Phase 4)	$0	$500,000	$2,000,000	$0	$0	$2,500,000
Security Screening Checkpoint Expansion	$0	$375,000	$1,500,000	$0	$0	$1,875,000
Terminal/Security Total	**$1,938,622**	**$2,402,200**	**$7,824,202**	**$0**	**$0**	**$12,165,024**
Other						
Landside	**$0**	**$985,002**	**$208,008**	**$15,500,000**	**$1,507,391**	**$18,200,401**
Planning and Environmental	**$3,150,000**	**$30,000**	**$470,000**	**$0**	**$0**	**$3,650,000**
Equipment	**$1,561,500**	**$1,747,600**	**$1,149,900**	**$0**	**$0**	**$4,459,000**
Maintenance	**$0**	**$2,862,050**	**$2,976,000**	**$0**	**$0**	**$5,838,050**
Land	**$0**	**$763,000**	**$1,688,000**	**$2,455,000**	**$0**	**$4,906,000**
Other Total	**$4,711,500**	**$6,387,652**	**$6,491,908**	**$17,955,000**	**$1,507,391**	**$37,053,451**
Total	**$54,728,879**	**$10,268,811**	**$23,330,753**	**$17,955,000**	**$1,607,391**	**$107,890,834**

Source: Airport Records, 2019

2.12.10 Key Financial Indicators

Table 2-36 shows airport financial metrics per annual passenger enplanement. These indicators help assess the financial condition of ROA. Total revenue per enplanement decreased slightly over the past five years and increased in FY 2019. However, operating expenses have decreased at a faster rate. Until the recent issuance of revenue backed bonds, ROA was debt-free. This is not reflected in *Table 2-36* as debt service began after FY 2018.

TABLE 2-36
KEY FINANCIAL INDICATORS

Metric Per Enplanement	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	CAGR
Total Revenue*	$31.85	$32.91	$33.19	$31.95	$30.95	$33.74	1.16%
PFC Revenue	$4.03	$4.00	$4.07	$3.84	$3.97	$4.42	1.87%
CFC Revenue	-	-	-	$1.91	$2.38	$2.37	-0.67%
Operating Expense	$51.24	$53.55	$54.14	$47.96	$48.66	$44.31	-2.87%
Outstanding Debt	$2.10	$0.00	$0.00	$0.00	$0.00	$0.00	-100.00%
Debt Service Expense	$0.41	$2.22	$0.00	$0.00	$0.00	$0.00	-100.00%

Notes: *Total revenue calculated per RRAC Financial Statements operating and nonoperating revenue total.
Sources: Airport Records; RRAC Financial Statements FY14-19; Bureau of Transportation Statistics, 2019

2.12.11 Airline and Concessionaire Rates and Charges

The RRAC rates and charges to air carriers that operate at ROA are set annually using a cost recovery basis methodology. The rates charged for signatory and non-signatory air carriers include terminal rental rates, landing fees and airline apron fees. Rates effective as of July 1, 2019 are shown in *Table 2-37*.

The rates charged to concessionaires and airport tenants include rental car fees and other terminal space rental fees. Rates effective as of July 1, 2019 are shown in *Table 2-38*.

TABLE 2-37
AIRLINE RATES AND CHARGES

Source	Signatory Rate/Charge	Non Signatory Rate/Charge
Aircraft landing fees (per 1,000 lbs)*	$2.55	$3.20
Terminal rental - Exclusive use		
Space (per sq. ft.)	$4.97	$6.21
Make up cage (each monthly)	$365.00	-
Terminal rental - Preferential use		
Passenger holdroom (per sq. ft.)	$4.97	$6.21
Aircraft loading bridge (monthy)	$1,541.00	$1,888.00
Aircraft parking position (per sq. ft.)	$0.09	$0.13
Terminal rental - Joint use		
Bag make up (monthly cost/carrier deplanements)	$19,547.00	$19,547.00
Bag claim (monthly cost/carrier enplanements)	$29,812.00	$29,812.00
Other terminal fees		
Per Turn Fee (per flight)	$113.38	$113.38
Ticket counter and gate use fee, 24 hr+ notice (per flight)	-	$365.00
Ticket counter and gate use fee, less than 24 hr notice (per fli	-	$455.00
Gate use only fee, 24 hr+ notice (per flight)	-	$259.00
Gate use only fee, less than 24 hr notice (per flight)	-	$326.00

Notes: *U.S. government owned aircraft exempt.

Source: Airport Records, 2019

TABLE 2-38
CONCESSIONAIRE AND OTHER TERMINAL RATES AND CHARGES

Source	Rate/Charge
Rental car facilities	
Rental car counters (per sq. ft.)	$4.97
Customer facility charge (per transaction)	$3.00
Other terminal rental and facility fees	
Assigned terminal space (per sq. ft.)	$6.33
Assigned concourse space (per sq. ft.)	$6.33
Concourse office space (per sq. ft.)	$7.59

Source: Airport Records, 2019

2.13 ENVIRONMENTAL SUMMARY

A summary of resource categories defined in FAA Order 1050.1F, Chapter 4, as they apply to the Airport environs is provide in *Table 2-39*. A more detailed overview of the environmental resource categories studied for this Master Plan Update is provided in *Appendix B*.

TABLE 2-39
SUMMARY OF ENVIRONMENTAL RESOURCE CATEGORIES STUDIED

Environmental Resource	Description
Air Quality	The Airport is in an attainment area for all National Ambient Air Quality Standards (NAAQS) pollutants. See *Section B.1* for details.
Biological Resources	There are federal-and state-listed threatened and endangered species, and migratory birds with the potential to be in Roanoke County. There is no critical habitat at the Airport property. See *Section B.2* for details.
Climate	Greenhouse gas (GHG) emissions from aircraft are produced at the Airport. ICAO estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally. See *Section B.3* for details.
Coastal Resources	The Airport is not within a coastal zone and there are no Coastal Barrier Resource System (CBRS) segments within the Airport property. See *Section B.4* for details.
Department of Transportation Act, Section 4(f)	There are no Section 4(f) properties on Airport property. See *Section B.5* for details.
Farmlands	The Airport contains farmland of statewide importance and prime farmland soil types. See *Section B.6* for details.
Hazardous Materials, Solid Waste and Pollution Prevention	There are 4 Resource Conservation and Recovery Act (RCRA) Hazardous Waste Generators on Airport property. The Airport is serviced by the Roanoke Valley Resource Authority, Solid Waste is disposed of at the Smith Gap Landfill. The Airport's Virginia Pollutant Discharge Elimination System (VPDES) Stormwater discharge permit (#VAR050272) was updated on June 30, 2019. See *Section B.7* for details.
Historical, Architectural, Archaeological and Cultural Resources	There are no historic resources located at the Airport. However, there are several other V-CRIS listed resources within 0.25-mile of the Airport boundary in Roanoke and Roanoke County See *Section B.8* for details.
Land Use	The immediate vicinity of the Airport consists of the following zoning districts: Residential, multi-family residential Recreation and Open Space, Mixed Use, Commercial General. See *Section B.9* for details
Natural Resources and Energy Supply	Electricity is supplied to the Airport by Appalachian Power and Roanoke Gas supplies natural gas to the Airport. Water is supplied by the Western Virginia Water Authority. See *Section B.10* for details.

Environmental Resource	Description
Noise and Noise-Compatible Land Use	The Roanoke Regional Airport Commission completed a full Noise Compatibility Program (NCP) for ROA and received a Record of Approval from the FAA in 1994. The approved measures were separated into aircraft operational/noise abatement, land use control, and management categories to reduce noise impacts in neighboring communities. See *Section B.11* for details.
Socioeconomics, Environmental Justice, Children's Environmental Health and Safety Risks	The Airport is Located within Roanoke and Roanoke County, as defined by the U.S. Census Bureau. About 43% of the population in Roanoke are minorities and about 19% are below the poverty level. About 23% of the population are children. About 15% and 40% of the population in Roanoke County and the Commonwealth of Virginia, respectively, are minorities. About 7% and 11% of the population in the County and State are below the poverty level. About 20% and 22% of the population in the County and State are children. See *Section B.12* for details.
Visual Effects	Light emissions at the Airport currently result from airfield, building, access roadway, parking, and apron area lighting fixtures required for the safe and secure movement of people, vehicles, and aircraft. The visual resources and visual character of the Airport currently includes fixed base operators, hangars, and maintenance buildings. See *Section B.13* for details.
Water Resources	The Airport property contains freshwater ponds & riverine wetlands. There is a portion of a regulatory floodway (Zone AE) in the 100-year floodplain located on Airport property. The Airport property does contain surface waters. The Airport property is within the Carvin Creek watershed. The Airport property does not contain any wild and scenic rivers. See *Section B.14* for all Water Resources details.

Source: As noted; RS&H, 2019

APPENDIX A

UTILITIES OVERVIEW

A.1 TERMINAL UTILITIES

A.1.1 Electrical

The electrical service extends from the transformer to the Airport's electrical switchboard that is rated at 2500 amperes, 480Y/277 VAC, 3-phase, 4 wire. A portion of the switchboard contains two 800A, 3P fused switches that serve Panels ILM and LDP; two 600A, 3P fused switches one serves Panel LNDP and the other is a spare; and one 1000A, 3p fused switch that serves Panel EDP.

The electrical switchboard has a circuit breaker section which comprises of five 400A, 3P breakers that serves both chillers, the Motor Control Center (MCC), Panel LDPA, and two spare breakers, 600A 3P and 400A 3P respectively.

Food service operations on the second floor are powered by a dedicated, separately metered 600A, 480Y/277 VAC, 3-phase, 4-wire service. The main electrical room cannot accommodate additional panels needed for new equipment.

The emergency generator is a 600 KW (750KVA), 480/277, 3-phase, 4-wire diesel engine generator. The generator connects to a 1000A automatic transfer switch that will transfer power from the generator to the main emergency distribution panel (EDP) if power from the primary service is lost. The EDP provides emergency power through a step-down transformer(s) to electrical panels for critical operational needs including emergency lighting, equipment, and receptacles loads in key areas such as Airport Security Operations, baggage handling and ticketing, Gate 5 & 6 Handicapped Elevator, Concourse areas, outdoor power distribution, parking toll plaza, and the Emergency Operations Center.

A.1.2 HVAC

The Terminal HVAC was reported in previous studies as designed for approximately 75% of its required capacity. It was noted that there was approximately 25% (100 Tons) of excess capacity available, but due to the system's age, and location within the building it was recommended not using this system for any future expansion.

A.1.3 Fire Protection

The Fire Protection System is equipped with a 1,000 gallons/minute fire pump, a dry system which serves the baggage makeup area, baggage claim, and the elevator located between Gates 5 and 6, and a wet system that covers all other areas.

A.1.4 Gas

It was previously noted in studies that the gas service valve assembly was located directly in front of the boiler's air intake louver. This valve is in the same place and is recommended that the valve be relocated in order to mitigate risk associated with a potential gas leak.

A.1.5 Water

The water service runs west into the Terminal building from Aviation Drive and is distributed through a network of piping to serve areas of the facility to include the restaurant, restrooms, drinking fountains, custodial closets, and boiler room. As a part of the Terminal Rehabilitation Project in 2013/2014 the

restroom lavatories, water closets, and urinals were upgraded. Further, additional piping and valves were installed to allow a small supply of non-potable water for emergencies which provides the availability of flush water for toilets and urinals in the Terminal. The source of this water would be a non-potable water tanker truck.

A.2 AIRPORT-WIDE UTILITIES

A.2.1 Water

The Airport is the last facility served on a single water line provided by Western Virginia Water Authority (WVWA). The Airport has previously experienced low water pressure periods, and to address this issue a small booster pump was installed in the fire pump room to service the Terminal. It was confirmed that the one-inch diameter single booster pump and the chosen piping system modifications installed are insufficient to resolve the low-pressure conditions. However, prior to the Airport making any additional adjustments, WVWA performed upgrades on parts of its system and significantly increased and stabilized the water pressure at the Airport.

A.2.2 Stormwater

The airfield stormwater infrastructure has been improved to meet current local and state requirements, and their current stormwater permit from Virginia Department of Environmental Quality (DEQ) expires in 2024. This infrastructure is designed to handle the peak flow of 10-year storm through a network of ditches, inlets, pipes, and boxes; while the detention basin and its infrastructure is designed to handle the peak flow of a 100-year storm. The existing infrastructure is appropriate to support the anticipate stormwater flows on site.

A.2.3 Communication

The communication for RRAC is provided by Lumos Networks via a 10/100 Ethernet connection to their network switch located in room C134, which is then connected directly to their fiber optic backbone. This connection only supports the RRAC and public internet access. The RRAC and public networks are separated logically into Virtual LANs at the firewall and are not accessible to one another. The Commission also maintains a cable internet connection that is programmed at the firewall as a fail over, meaning it will take over the traffic and become the primary network.

Individual tenants are responsible for their own Wide Area Network (WAN) connections such as T-1, Frame Relay, Plain Old Telephone Service (POTS) and digital voice circuits. Individual tenants are also responsible for providing their cabling connectivity throughout the facility for both voice and data networks. Most tenants rely on Verizon to support their connectivity utilizing the Verizon-maintained "house" cabling.

The Airport cabling system is a star configuration with the network administrator's office (T230B) serving as the Centralized Distribution Node where all cabling originates. From this area, multi-mode (MM) fiber-optic cabling is routed to C134 and to the field maintenance building (Building 31) located across the airfield. There is also a fiber optic connection at the ARFF station that connects to the Commission LAN in C134, as well as a fiber pair connected to the parking lot management facility. The fiber to Building 31 includes 18 strands of MM fiber with 12 strands available. The fiber to C134 includes 12 strands of MM

fiber with 4 strands available. The distribution system also includes a category 6E distribution system from the operations office to the west wing storage closet, to the boiler room, and to building maintenance. There is also a category 6E distribution system located in T238 which connects via MM fiber back to T230B to support the administration offices. The system adequately provides the required connectivity to support the Fast Ethernet Local Area Network (LAN) that sustains the administrative functions of the RRAC, Voice over IP, Access Control Systems, and security cameras systems.

The local LAN provides support for the administrative functions of the Airport including e-mail, finance, time keeping, file sharing, and general office functions such as word processing, spread sheets, etc. There is also a segregated VLAN which is used for network management. In addition, another segregated VLAN includes access points throughout the facility which allows the public to access the internet. The networks are segregated using interface connections on a pair of Watchguard M400 firewalls which are in T230B. The firewall also acts as a wireless controller which manages 12 access points (APs) located in the concourse and terminal areas, 2 APs at the ARFF station, and 2 APs at Building 31 providing open internet access as well as an encrypted channel for Commission use. Network routing is performed by an Extreme Networks X450G2-48p-10G4 layer 3 switch which resides in T230B. Connection from this core switch is then divided physically between 3 IDF locations: North (C132), East (T238), and West (T239A). Each of these IDFs house an X440G2-48p-10G4 layer 2 switch which provides connection to devices in their respective areas. All the IDFs have additional switches where extra port capacity is required. There is an X430-24p switch at Building 31, an X440G2-48p-10G4 switch at the ARFF, and an X440G2-48p-10G4 which all connect via fiber to C134 as described above. The connectivity to these switches is using a mixture of fiber-optic and copper cabling and is all Fast Ethernet (100 Mbps). These switches provide data connectivity and power-over-ethernet (PoE) and are programmed at the port level for network segmentation and security.

The communications infrastructure supports approximately 65 computer users with about 60 actual computers all running Windows 7 or Windows 10 operating system. All computers will be upgraded to Windows 10 prior to 1/20/2020. All the computers, VoIP phones, access control panels, and security cameras are connected to the LAN switches described in the active infrastructure section.

The Commission's data infrastructure is managed by 2 Dell PowerEdge R630 host controllers running VMWare ESXi and connected via iSCSI to a Dell MD3220i Modular Storage Array. There are currently 12 virtual servers providing digital services to the Commission including directory services, file management, email, access control, security management, and telephone service utilizing Microsoft's Server 2016 operating system.

The VoIP phone system supports 73 phone users. The system runs on Mitel Small Business Edition with voice switches located in C132 and at the ARFF station. Connection to the Public Switched Telephone Network (PSTN) is through the Lumos switch and utilizes SIP trunking. All Commission phones are connected to the same network switches as described before. All fire alarm panels are connected to dedicated Verizon copper POTS lines.

The FAA emergency phone system in the ATCT is scheduled to be replaced by the end of 2019 and will likely be connected to the Commission's VoIP system.

APPENDIX B

ENVIRONMENTAL OVERVIEW

FAA Advisory Circular 150/5070-6B Change 2, *Airport Master Plans*, provides guidance for the preparation of master plans for airports. The purpose of considering environmental factors in airport master planning is to help the Airport Sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. For a comprehensive description of the existing environmental conditions at the Airport, environmental resource categories described in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures,* were used to identify and describe potential environmental effects during the master planning process. Future development plans at the Airport should take into consideration environmental resources that are known to exist at, and in the vicinity of, the Airport. Early identification of these environmental resources helps to avoid impeding development plans in the future. This section provides an overview of resource categories defined in FAA Order 1050.1F, Chapter 4, as they apply to the Airport environs.

B.1 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for specific air pollutants to protect public health and welfare through Section 109 of the Clean Air Act (CAA). The U.S. EPA identifies the following six criteria air pollutants and has set NAAQS for each: Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), 8-Hour Ozone (O_3), Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2).

Areas found to be in violation of one or more NAAQS of these pollutants are classified as "nonattainment areas." States with nonattainment areas must develop a State Implementation Plan demonstrating how the areas will be brought back into attainment of the NAAQS within designated timeframes. Areas where concentrations of the criteria pollutants are below (i.e., within) these threshold levels are classified as "attainment areas." Areas with prior nonattainment status that have since transitioned to attainment are known as "maintenance areas."

According the U.S. EPA the Airport, located in the Independent City of Roanoke and Roanoke County , in an attainment area for all National Ambient Air Quality Standards. (EPA, 2019)

B.2 BIOLOGICAL RESOURCES

Biological resources include terrestrial and aquatic plant and animal species; game and non-game species; special status species; and environmentally sensitive or critical habitats. The following are federal laws, regulations, Executive Orders (EOs), and guidance[5] that protect biotic communities:

- Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544);
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668 et seq.);
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d);
- Executive Order (EO) 13112, *Invasive Species* (64 FR 6183);
- Marine Mammal Protection Act (16 U.S.C. § 1361 et seq.);

[5] Due to the number of federal laws and EOs applicable to the future development plans, this section presents only the legal citations or references for those requirements in lieu of summarizing their requirements. See FAA Order 1050.1F Desk Reference for more information.

- Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703 et seq.);
- EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (66 FR 3853);
- Council on Environmental Quality (CEQ) Guidance on Incorporating Biodiversity Considerations into Environmental Impact Analysis under National Environmental Policy Act (NEPA); and
- Memorandum of Understanding to Foster the Ecosystem Approach.

Table B-1 lists the federally- and state-threatened and- endangered species that have the potential to be found in Roanoke and Roanoke County. According to the U.S. Fish and Wildlife Service, there is no designated critical habitat at the Airport.

TABLE B-1
FEDERALLY AND STATE LISTED SPECIES

Species Common Name	Species Scientific Name	Listing Status[/a/]
Mammals		
Indiana Bat	*Myotis sodalis*	FE, SE
Northern Long-eared Bat	*Myotis septentrionalis*	FT, ST

Source: (U.S. Fish and Wildlife Service, 2019), (Virginia Department of Game and Inland Fisheries, 2018) Prepared by: RS&H, 2019
Note: /a/- FE- Federally Endangered, FT- Federally Threatened, SE- State Endangered, ST- State Threatened.

The MBTA prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. *Table B-2* lists the 15 migratory bird species that have the potential to be found at the Airport. According to the Virginia Center for Conservation Biology, there are no known Bald Eagle nests located on Airport property, the closest known Bald Eagle nest (ID Number: RO1301) is 8.75 miles southeast from Airport property (Eagle Nest Locator, 2019).

TABLE B-2
POTENTIAL MIGRATORY BIRDS IN AIRPORT AREA

Species Common Name	Species Scientific Name
Bald Eagle	*Haliaeetus leucocphalus*
Black-billed Cucoo	*Coccyzus erythropthalmus*
Black-capped Chickadee	*Poecile atricapillus practicus*
Bobolink	*Dolichonyx oryzivorus*
Canadian Warbler	*Cardellina canadensis*
Cerulean Warbler	*Dendroica cerulea*
Eastern Whip-poor-will	*Antrostomus vociferous*
Golden Eagle	*Aquila chrysaetos*
Golden-winged Warbler	*Vermivora chrysoptera*
Kentucky Warbler	*Oporonis formosus*
Prairie Warbler	*Dendroica discolor*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
Rusty Blackbird	*Euphagus carolinus*
Wood Thrush	*Hylocichla mustelina*
Yellow-bellied Sapsucker	*Sphyrapicus varius*

Source: U.S. Fish and Wildlife Service, 2019; Prepared By: RS&H, 2019

Essential Fish Habitat (EFH) are those waters and substrate necessary for fish spawning, breeding, feeding, and growth to maturity as defined under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA also requires federal agencies to consult with the National Oceanic and Atmospheric Administration (NOAA) Fisheries about actions that could damage EFH. There are no fish species currently protected under the MSA in Roanoke or Roanoke County. (NOAA, 2019).

B.3 CLIMATE

Relevant federal laws, regulations, and EOs that relate to climate include:

- CAA (42 U.S.C. §§ 7408, 7521, 7571, 7661 et seq.);
- EO 13514, *Federal Leadership in Environment Energy and Economic Performance* (74 FR 52117);
- EO 13653, *Preparing the United States for the Impacts of Climate Change* (78 FR 66817); and
- EO 13693, *Planning for Federal Sustainability* (80 FR 15869).

Greenhouse Gases (GHG) are gases that trap heat in the earth's atmosphere. Both naturally occurring and man-made GHGs primarily include water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Activities that require fuel or power are the primary stationary sources of GHGs at airports. Aircraft and ground access vehicles that are not under the control of an airport, typically generate more GHG emissions than airport-controlled sources.

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the Government Accountability Office (USGAO) reports that "domestic aviation contributes about three percent of total carbon dioxide emissions, according to U.S. EPA data, "compared with other industrial sources, including the remainder of the transportation sector (20%) and power generation (41%) (USGAO, 2009). The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for roughly three percent of all anthropogenic GHG emissions globally (Melrose, 2010).

B.4 COASTAL RESOURCES

The primary statutes, regulations, and EOs that protect coastal resources include:

- Coastal Barrier Resources Act (16 U.S.C. § 3501 et seq.);
- Coastal Zone Management Act (16 U.S.C. § 1451-1466);
- National Marine Sanctuaries Act (16 U.S.C. §1431 et seq.);
- EO 13089, *Coral Reef Protection* (63 FR 32701); and
- EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (75 FR 43021-43027).

The Virginia Coastal Zone Management Program includes 29 counties, 17 cities, and 42 incorporated towns in 'Tidewater Virginia', as defined in the Code of Virginia 28.2-100 (DEQ, 2019). The Airport is not located in an area defined as a coastal zone. The closest Coastal Barrier Resource System segment is over 200 miles east of the Airport (CBRS, 2019).

B.5 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F) RESOURCES

Relevant federal laws, regulations, and Eos that protect Section 4(f) resources include:

- U.S. Department of Transportation (USDOT) Act, Section 4(f) (49 U.S.C. § 303.);
- Land and Water Conservation Fund Act of 1965 (16 U.S.C. §§ 4601-4604 et seq.);
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) – Section 6009 (49 U.S.C. § 303.); and
- U.S. Department of Defense Reauthorization (Public Law (P.L.) 105-185, Division A, Title X, Section 1079, November 18, 1997, 111 Stat. 1916).

The USDOT Act, Section 4(f) provides that Secretary of Transportation may not approve any project that requires the use of any land from a public park or recreational area, wildlife and waterfowl refuge, or historic site unless there is no feasible and prudent alternative, and provisions to minimize any possible harm are included in the planning. Similarly, the Land and Water Conservation Fund (LWCF) Act prevents the conversion of lands purchased or developed with Land and Water Conservation funds to non-recreation uses, unless the Secretary of the Interior, through the National Park Service, approves the conversion. Conversion may only be approved if it is consistent with the comprehensive statewide outdoor recreation plan when the approval occurs. Additionally, the converted property must be replaced with other recreation property of reasonably equivalent usefulness and location, and at least equal fair market value.

The closest Section 4(f) property to the Airport is Brookside Park, located about 1.5 miles east of the Airport (Roanoke County Parks, 2019). The closest LWCF site to the Airport is the Booker T. Washington National Monument, located about 20 miles southeast of the Airport (LWCF, 2019)

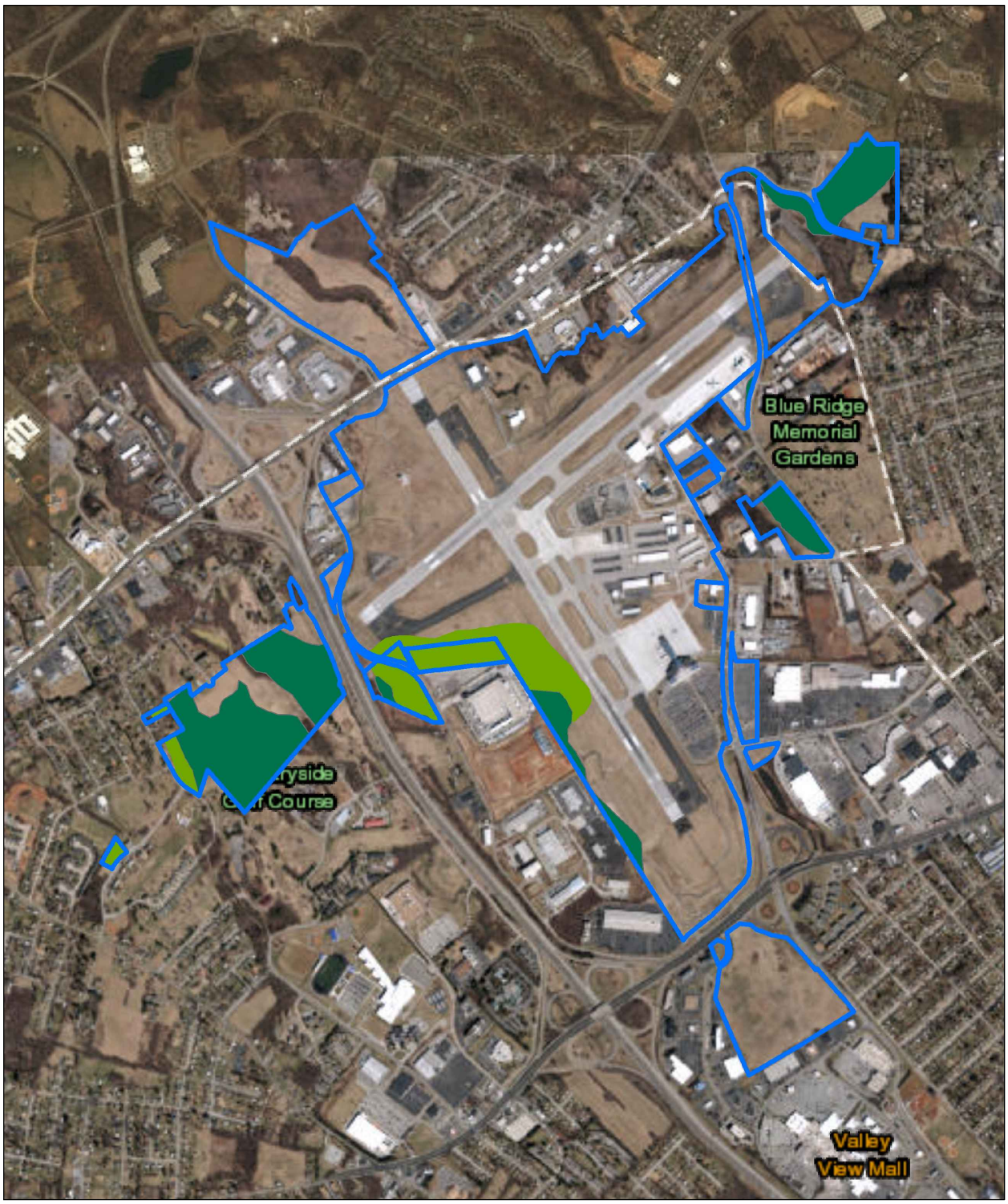
B.6 FARMLANDS

The following statutes, regulations, and guidance pertain to farmlands:

- Farmland Protection Policy Act (FPPA) (7 U.S.C. §§ 4201-4209); and
- CEQ Memorandum on the Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act (45 FR 59189).

The FPPA of 1981 regulates federal actions that have the potential to convert farmland to non-agricultural uses. The FAA requires consideration of "important farmlands," which it defines to include "all pasturelands, croplands, and forests considered to be prime, unique, or statewide or local important lands." (FAA, July 2015)

According to the Natural Resource Conservation Service (NRCS), portions of the Airport property contain farmland of statewide importance and prime farmland, as defined above (see *Figure B-1*) (Natural Resources Conservation Service, 2019). According to the 2010 U.S. Census, Roanoke is classified as an Urbanized Area (U.S. Census Bureau Urban Area Reference Maps, 2010). The NRCS provides a list of the activities that are not subject to the FPPA. The list includes land located in urban development or designated urban areas. Therefore, the Airport property that contains farmland soil types would be exempt under the FPPA (Natual Resource Conservation Service Farmland Protection Policy Act, 2019)



LEGEND

- Prime Farmlands
- Farmlands of Statewide Importance
- Airport Boundary

N
NTS

Source: Natural Resource Conservation Service (NRCS), 2019; ESRI, 2019; RS&H, 2019

FARMLANDS

B.7 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal laws, regulations, and EOs that relate to hazardous materials, solid waste, and pollution prevention include:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. §§ 9601-9765);
- Emergency Planning and Community Right to Know Act (42 U.S.C. §§ 11001-11050);
- Federal Facilities Compliance Act (42 U.S.C. § 6961);
- Hazardous Materials Transportation Act (49 U.S.C. §§ 5101-5128);
- Oil Pollution Prevention Act of 1990 (33 U.S.C. §§ 2701-2762);
- Pollution Prevention Act (42 U.S.C. §§ 13101-13109);
- Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601-2697);
- Resource Conservation and Recovery Act (RCRA) (42 U.S.C. §§ 6901-6992k);
- EO 12088, *Federal Compliance with Pollution Control Standards* (43 FR 47707);
- EO 12580, *Superfund Implementation* (52 FR 2923), (63 CFR 45871), and (68 CFR 37691);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and
- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

B.7.1 Hazardous Materials

In a regulatory context, the terms "hazardous wastes," "hazardous substances," and "hazardous materials" have very precise and technical meanings:

Hazardous Wastes. Subpart C of the RCRA defines hazardous wastes (sometimes called characteristic wastes) as solid wastes that are ignitable, corrosive, reactive, or toxic. Examples include waste oil, mercury, lead or battery acid. In addition, Subpart D of the RCRA contains a list of specific types of solid wastes that the U.S. EPA has deemed hazardous (sometimes called listed wastes). Examples include degreasing solvents, petroleum refining waste, or pharmaceutical waste.

Hazardous Substances. Section 101(14) of the CERCLA defines hazardous substances broadly and includes hazardous wastes, hazardous air pollutants, or hazardous substances designated as such under the Clean Water Act and TSCA and elements, compounds, mixtures, solutions, or substances listed in 40 Code of Federal Regulations (CFR) Part 302 that pose substantial harm to human health or environmental resources. Pursuant to the CERCLA, hazardous substances do not include any petroleum or natural gas substances and materials. Examples include ammonia, bromine, chlorine, or sodium cyanide.

Hazardous Materials. According to 49 CFR Part 172, hazardous materials are any substances commercially transported that pose unreasonable risk to public health, safety, and property. These substances include hazardous wastes and hazardous substances, as well as petroleum and natural gas substances and materials. As a result, hazardous materials represent hazardous wastes and substances. Examples include household batteries, gasoline, or fertilizers.

Aircraft fuel constitutes the largest quantity of hazardous substances stored and consumed at the Airport. Fuel is stored throughout Airport property in above and below ground storage tanks.

The U.S. EPA identifies the following RCRA hazardous waste generators on Airport property: (U.S. Environmental Protection Agency, 2019)

- John C. Nordt Corporation (Handler ID: VAD988202073);
- ETS Analytical Services (Handler ID: VAD988200333);
- Transportation Security Administration. TSA at Roanoke Regional (Handler ID: VAR000519835);
- Clement Brothers Trucking Inc. (Handler ID: VAD004830360).

There are no CERCLA superfund sites on Airport property. The closest superfund site to Airport property, Matthews Electroplating (Site EPA ID: VAD980712970), is located nine miles southwest of the Airport.

B.7.2 Solid Waste

Solid waste generated at the Airport is disposed of at the Smith Gap Landfill in Roanoke County which is located fourteen miles west of the Airport (Roanoke Valley Resource Authority, 2019). The landfill is currently only using one of its three available sites for disposal of collected waste; this in-use site has a remaining capacity of eight million tons. The remaining two, not yet designed, sites have a combined capacity of over 150 acres, with an expected lifespan of 50-75 years (Roanoke Valley Resource Authority-Comprehensive Report, 2018).

B.7.3 Pollution Prevention

The Airport is required under the Airport's VPDES stormwater discharge permit (VPDES Permit #VAR050272, updated on June 30, 2019) (Virginia Department of Environmental Quality, 2019) to have a Stormwater Management Plan (SWMP), which is the Municipal Separate Storm Sewer System (MS4) Permit (MS4 Permit #VAR 040004) (Virginia DEQ MS4 Permits, 2019). Future development will be reflected in an updated VPDES permit and Stormwater Pollution Prevention Plan (SWPPP) to minimize potential pollution in receiving waters.

B.8 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) (54 U.S.C. §§300101 et seq.) establishes the Advisory Council on Historic Preservation (ACHP). The ACHP oversees federal agency compliance with the NHPA. The NHPA also established the National Register of Historic Places (NRHP) that the National Park Service oversees. Other applicable statues and EOs include:

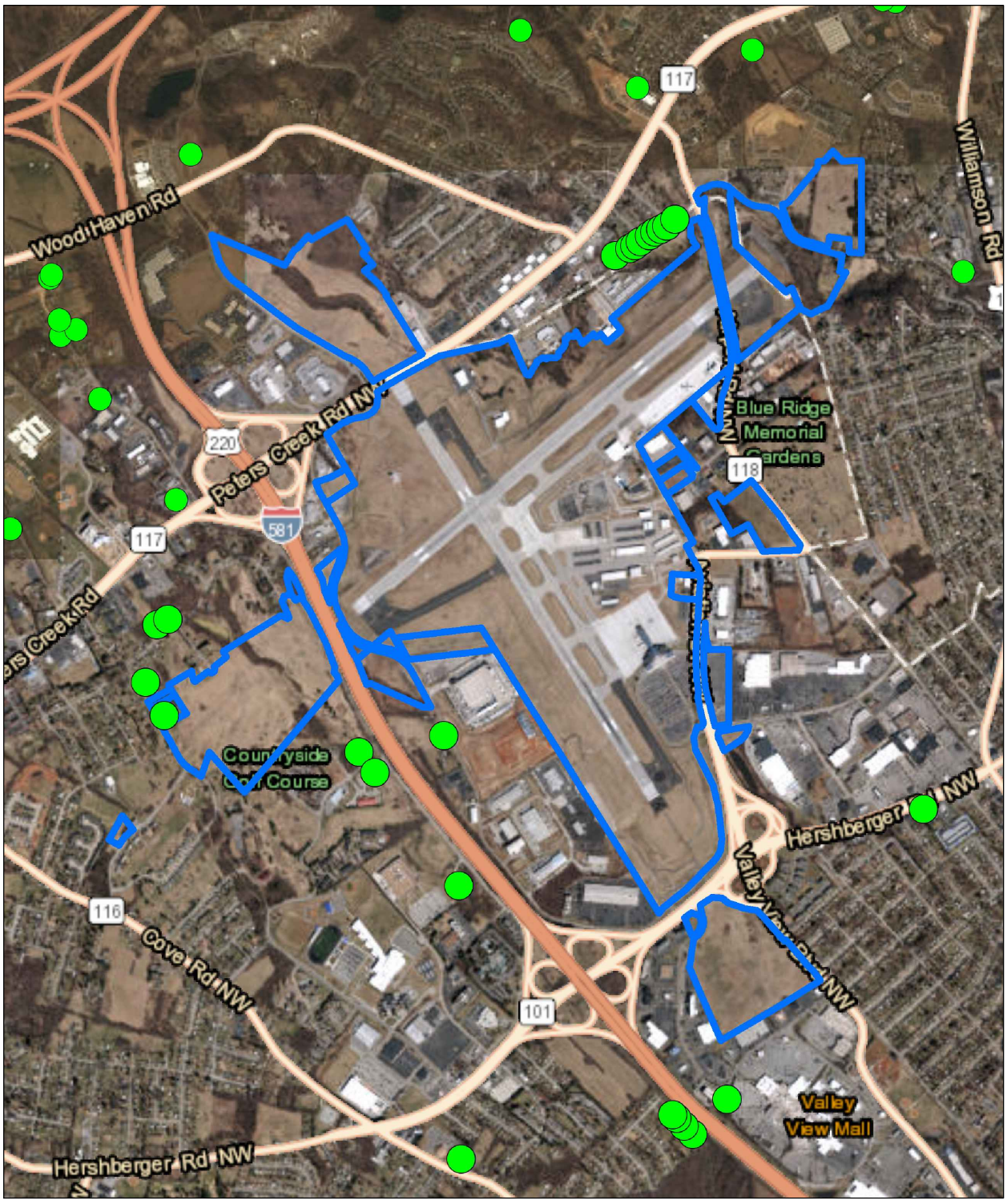
- American Indian Religious Freedom Act (42 U.S.C. § 1996);
- Antiquities Act of 1906 (54 U.S.C. §§320301-320303);
- Archeological and Historic Preservation Act (54 U.S.C. §§ 312501-312508);
- Archeological Resources Act (16 U.S.C. §§ 470aa-470mm);
- USDOT Act, Section 4(f) (49 U.S.C. § 303);
- Historic Sites Act of 1935 (16 U.S.C. §§ 461-467);

- Native American Graves Protection and Repatriation Act (25 U.S.C. §§ 3001-3013);
- Public Building Cooperative Use Act (40 U.S.C. §§ 601a, 601a1, 606, 611c, and 612a4);
- EO 11593, *Protection and Enhancement of the Cultural Environment* (36 FR 8921);
- EO 13006, *Locating Federal Facilities on Historic Properties in Our Nation's Central Cities* (61 FR 26071);
- EO 13007, *Indian Sacred Sites* (61 FR 26771);
- EO 13175, *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249);
- Executive Memorandum, Government-to-Government Relations with Native American Tribal Governments (April 29, 1994);
- Executive Memorandum on Tribal Consultation (Nov. 5, 2009) (65 FR 67249); and
- USDOT Order 5650.1, *Protection and Enhancement of the Cultural Environment*.

The Virginia Department of Historic Resources (DHR) Cultural Resource Information Service (V-CRIS) shows that there are no historic resources at the Airport. The closest V-CRIS listed resource is a Colonial Revival home located at 4437 Lewiston Street (DHR ID# 128-6453) about 300 feet northwest of the Airport property line (Virginia Cultural Resource Information System, 2019) (See *Figure B-2*). There are several other V-CRIS listed resources within 0.25mile of the Airport boundary in Roanoke and Roanoke County, they are as follows:

- 4467 Lewiston Street (DHR ID# 128-6454)
- 3542 Laurel Ridge Road (DHR ID# 128-6455)
- 3556 Laurel Ride Road (DHR ID# 1285-6456)
- The Bushong Farmhouse- 5606 Barns Ave. (DHR ID# 080-0018)
- 5612 Barns Avenue (DHR ID# 080-5712)
- 85620 Barns Avenue (DHR ID# 080-5713)
- 5626 Barns Avenue (DHR ID# 080-5714)
- 5702 Barns Avenue (DHR ID# 080-5715)
- 5708 Barns Avenue (DHR ID# 080-5716)
- 5712 Barns Avenue (DHR ID# 080-5717)
- 5720 Barns Avenue (DHR ID# 088-5718)
- 5804 Barns Avenue (DHR ID# 080-5719)
- 515 Dent Road (DHR ID# 080-5722)
- 516 Dent Road (DHR ID# 080-5723)
- The Hershberger House-1422 Hershberger Road (DHR ID# 128-5078)
- 3942 Thirlane Road (DHR ID# 128-6457)
- The Frantz-Kinsey House- 2343 Highland Farm Road NW (DHR ID# 128-6122)
- The Bank Barn- Highlands Farms Road (DHR ID# 128-6452)

In March 2017 a Phase 1 Cultural Resources survey was conducted as part of an Environmental Assessment for EMAS project at the Airport. This survey concluded that twenty-five newly recorded architectural resources, two archaeological sites, and one isolated find were recorded. The survey determined that none of the recorded resources were eligible for listing on the NRHP.



LEGEND

- Historic Resource
- Airport Boundary

N
NTS

Source: Virginia Department of Historic Resources (VDHR) Cultural Resource Information Service (V-CRIS), 2019; ESRI, 2019; RS&H, 2019

HISTORIC RESOURCES

B.9 LAND USE

Various statutes, regulations, and EOs relevant to land use include:

- Airport and Airway Improvement Act of 1982, and subsequent amendments (49 U.S.C. 47107(a)(10));
- Airport Improvement Program (49 U.S.C. 47106(a)(1);
- Airport Safety, Protection of Environment, Criteria for Municipal Solid Waste Landfills (40 CFR § 258.10); and
- state and local regulations.

The Airport is located primarily within Roanoke; however, the northeast and northwest portions of Airport property extend into Roanoke County.

Land uses in the immediate vicinity of the Airport include residential, commercial, multi-family residential, open space, and recreational. Immediately south of the Airport is a mall surrounded by various commercial developments. There are various residential developments west of the Airport, as well as open space. North and east of the Airport is primarily residential, commercial use, and a public park. The closest residential area is 0.50-mile southeast of the Runway 24 end centerline. There are also dense residential areas about 0.50-mile northeast of Runway 16, and 0.50-mile south of the Runway 34 end centerline (Roanoke County Comprehensive Plan, 2005) (City of Roanoke Comprehensive Plan, 2001-2020).

The Airport property lies within the boundaries of Roanoke and Roanoke County. Although Roanoke is within the boundaries of Roanoke County, it is not part of the County. The Airport occupies approximately 912 acres and is bounded by Interstate 581 to the west, Hershberger Road North West to the south, and Peters Creek Road to the north.

The areas to the east and south surrounding the Airport is mostly developed with commercial and industrial uses. I-581 separates the Airport from commercial development to the west. The Valley View Mall, Roanoke's largest regional shopping center is near the Airport, just south of Runway end 34. This area is quickly becoming a destination for many residents with additional mixed-use development and interstate connectivity expected near the Valley View Mall area. The Airport is within the Airport Development (AD) Zoning District. The purpose of the AD district is to encourage the development of uses that are compatible with the functions of the Airport. The immediate vicinity of the Airport is mostly surrounded by Commercial-Large Site, Commercial Neighborhood, Recreation and Open Space, Mixed Use, Commercial General, Industrial Planned Unit Development, and Light Industrial zoning districts. Zoning is shown in *Figure 2-19*. Land use is shown in *Figure 2-20*.

B.10 NATURAL RESOURCES AND ENERGY SUPPLY

Statutes and EOs that are relevant to natural resources and energy supply include:

- Energy Independence and Security Act (42 U.S.C. § 17001 et seq.);
- Energy Policy Act (42 U.S.C. § 15801 et seq.);
- EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (72 FR 3919); and
- EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (74 FR 52117).

Natural resources (e.g., water, asphalt, aggregate, etc.) and energy use (e.g., fuel, electricity, etc.) at an airport are functions of the needs of aircraft, support vehicles, airport facilities, support structures, and terminal facilities.

Water is the primary natural resource used at the Airport daily. The Western Virginia Water Authority provides water to the Airport. Asphalt, aggregate, and other natural resources have also been used in various construction projects at the Airport. None of the natural resources that the Airport uses, or has used, are in rare or short supply.

Energy use at the Airport is primarily in the form of electricity required for the operation of Airport-related facilities (e.g., terminal building, hangars, airfield lighting) and fuel for aircraft, aircraft support vehicles/equipment, and Airport maintenance vehicles/equipment. Appalachian Power supplies electricity and Roanoke Gas supplies natural gas to the Airport.

B.11 NOISE AND NOISE-COMPATIBLE LAND USE

Statutes and EOs relevant to noise and noise-compatible land use include:

- The Control and Abatement of Aircraft Noise and Sonic Boom Act of 1968 (49 U.S.C. § 44715);
- The Noise Control Act of 1972 (42 U.S.C. §§ 4901-4918);
- Aviation Safety and Noise Abatement Act of 1979 (49 U.S.C. § 47501 et seq.);
- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 47101 et seq.);
- Airport Noise and Capacity Act of 1990 (49 U.S.C. §§ 47521-47534, §§ 106(g);
- Section 506 of the FAA Modernization and Reform Act of 2012, *Prohibition on Operating Certain Aircraft Weighting 75,000 Pounds of Less Not Complying with Stage 3 Noise Levels* (49 U.S.C. §§ 47534); and
- State and local noise laws and ordinances.

Day-Night Sound Level (DNL) is based on sound levels measured in relative intensity of sound, (decibels or dB) on the "A-weighted scale" or dBA over a time-weighted average normalized to a 24-hour period. (Federal Aviation Administration, 2011). DNL has been widely accepted as the best available method to describe aircraft noise exposure. The U.S. EPA identifies the DNL as the principal metric for aircraft noise analysis. The FAA requires DNL as the noise descriptor for use in aircraft noise exposure analysis and noise compatibility planning. DNL levels are commonly shown as lines of equal noise exposure, like terrain contour maps, referred to as noise contours. All residential areas are considered compatible with cumulative noise level below DNL 65 dBA.

As Section 2.11describes, residential land uses are near the Airport. These areas are sensitive to aircraft noise associated with the Airport.

B.11.1 Noise Compatibility Program

The RRAC completed a full NCP for ROA and received a Record of Approval from the FAA in 1994. The approved measures were separated into aircraft operational/noise abatement, land use control, and management categories. The Airport also completed a Noise Exposure Map Update in 2001 to continue to address noncompatible land uses with the 65 DNL.

B.11.1.1 Land Use Measures

The FAA Record of Approval approved seven land use measures as proposed by the Roanoke Regional Airport Commission for implementation at ROA. Four measures were remedial actions to promote compatibility in already developed areas, and one was a preventive measure to maintain compatibility in the undeveloped areas. The land use category of NCP measures is not directly relevant to airport layout and planning concerns to be addressed in the Master Plan update, because the measures relate to off-airport land use controls. However, the measures do relate to establishing and maintaining noise-related environmental compatibility between the airports and surrounding land uses.

B.11.1.2 Program Management Measures

The FAA Record of Approval approved six Management Techniques proposed by the Roanoke Regional Airport Commission to assist in the implementation and management of the noise abatement and land use control measures. Provide a liaison between the Airport and the community for all noise-related matters and between the Airport and consultants involved in noise abatement program that will be implemented as a part of this study.

B.12 SOCIOECONOMICS, ENV. JUSTICE, AND CHILDREN'S ENV. HEALTH AND SAFETY RISKS

The primary considerations of socioeconomics analysis are the economic activity, employment, income, population, housing, public services, and social conditions of the area. The Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (42 U.S.C. § 61 et seq.), implemented by 49 CFR Part 24, is the primary statute related to socioeconomic impacts. Statutes, EOs, memorandums, and guidance that are relevant to environmental justice and children's environmental health and safety risks include:

- Title VI of the Civil Rights Act, as amended (42 U.S.C. §§ 2000d-2000d-7);
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629);
- Memorandum of Understanding on Environmental Justice and EO 12898;
- USDOT Order 5610.2(a), Environmental Justice in Minority and Low-Income Populations (77 FR 27534);
- CEQ Guidance: *Environmental Justice: Guidance Under the National Environmental Policy Act*;
- Revised USDOT Environmental Justice Strategy (77 FR 18879); and
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885).

The Airport is located within Roanoke U.S. Census Tract 3005, Block Group 3, and U.S. Census Tract 3005, Block Group 23. A portion of Airport Property also extends into Roanoke County, U.S. Census Tract 302.04, and U.S. Census Tract 302.05 (US Census Bureau, 2016-2018). This area was used to describe the socioeconomic and environmental justice characteristics in the Airport area compared to the Commonwealth of Virginia (see *Table B-3*). Census data were obtained from the U.S. Census Bureau 2016-2018 American Community Survey.

TABLE B-3
SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE CHARACTERISTICS

Characteristic	Roanoke	Roanoke County	Virginia
Total Population	99,920	94,073	8,517,685
Percent Minority	43.1%	14.9%	40.1%
Percent Living Below the Poverty Level	19.3%	7.3%	10.6%
Percent of the Population below 18 Years of Age	22.6%	19.8%	22.0%

Source: (US Census Bureau, 2016-2018); Prepared by: RS&H, 2019

The Airport is in the City of Roanoke and Roanoke County, The City of Roanoke has a population of 99,920, compared to the 94,073-total population for the County and 8,517,685 total population in the Commonwealth of Virginia. About 43% of the population in Roanoke are minorities and about 19% are below the poverty level. About 23% of the population are children. Comparatively, about 15% and 40% of the population in Roanoke County and the Commonwealth of Virginia, respectively, are minorities. About 7% and 11% of the population in the County and State are below the poverty level. About 20% and 22% of the population in the County and State are children.

With regards to children's environmental health and safety risks, the closest private school to the Airport is the New Life Christian Academy, 0.75-mile northeast of the Airport (NEPAssist, 2019). The closest public school is Northside High School, located about 1.12 miles northwest, Northside Middle School, located about 1.25 miles northwest, both in Roanoke County and William Fleming High School, located about 1.10 mile southwest of the Airport in Roanoke. (Roanoke City Public Schools, 2019) (Roanoke County Public Schools, 2019) The closest childcare center to the Airport is North Star Childcare, located approximately 0.75-mile of the Airport (North Star Childcare, 2019). The closest recreational area is Brookside Park, a city park with multi-use fields, picnic tables, and playground equipment, located about 1.5 miles east of the Airport (Roanoke County Parks, 2019). The closest children's health clinic is the Carilion Wellness Clinic for Adolescent & Students Health Services, located approximately 1.25 miles southwest of the Airport (Carilion Clinic, 2019).

The US EPA Environmental Justice (EJ) Screener and Mapping Tool's Demographic Index is an averaged combination of low-income and percent minority for each census block group as it was explicitly named in Executive Order 12899 on Environmental Justice. The EJ Mapper shows that the Airport property and area immediately to the west and south are within the 86th percentile for the demographic index (See *Figure B-3*). While the area immediately north and east of the Airport are in the 17 percentile and 50 percentiles for demographic index respectively. Therefore, the areas west and south of the Airport have a larger concentration of minority and low-income population compared to the areas north and east of the Airport.

LEGEND

- Less than 50 percentile
- 50 - 60 percentile
- 80 - 90 percentile

N
NTS

Source: EPA EJScreener, 2019; RS&H, 2019

DEMOGRAPHIC INDEX

B.13 VISUAL EFFECTS

There is no federal statutory or regulatory requirement for adverse effects resulting from light emissions or visual impacts. FAA Order 1050.1F describes factors to consider within light emissions and visual resources/visual character.

B.13.1 Light Emissions

Various lighting features currently illuminate Airport facilities, such as the airfield (e.g., runways and taxiways), buildings, access roadways, automobile parking areas, and apron areas for the safe and secure movement of people and vehicles (e.g., aircraft, passenger cars, etc.). The closest residential area is 0.50-mile southeast of the Runway 24 end centerline. There are also dense residential areas about 0.50-mile northeast of Runway 16, and 0.50-mile south of the Runway 34 end centerline. These areas would be sensitive to light emissions from the Airport.

B.13.2 Visual Resources and Visual Character

Structures at the Airport include, but are not limited to, a terminal, hangars and maintenance buildings. As previously mentioned, the Airport is developed with visual character that is consistent with its zoning.

B.14 WATER RESOURCES

Water resources include wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers. These resources typically function as a single, integrated natural system that is important in providing drinking water in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. The Airport's Stormwater Pollution Prevention Plan (SWPPP) was written and approved in May of 2014 and is in conformance with the General VPDES Permit for Discharges of Stormwater Associated with Industrial Activity. The Airport also has a Spill Prevention, Control, and Countermeasure Plan effective since December 2013 that addresses the containers, equipment, facilities, and associated infrastructure regulated or required under Title 40 CFR Part 112.

B.14.1 Wetlands

Statutes and EOs that are relevant to wetlands include:

- EO 11990, *Protection of Wetlands* (42 FR 26961);
- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d); and
- USDOT Order 6660.1A, *Preservation of the Nation's Wetlands*.

The Clean Water Act defines wetlands as "…those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." (U.S. Environmental Protection Agency, 2019) Wetlands have three necessary characteristics:

- Water: presence of water at or near the ground surface for a part of the year;
- Hydrophytic Plants: a preponderance of plants adapted to wet conditions; and
- Hydric Soils: soil developed under wet conditions.

In 2015, for the Airports EMAS Environmental Assessment, a wetland and stream delineation study was conducted within the study areas at the ends of Runway 6/24. On the end of Runway 6, no wetlands were identified, and two streams that are portions of Lick Run were identified and delineated, located on the east side of the former golf course. On the end of Runway 24, one discrete nontidal palustrine wetland was identified. There are two separate small Freshwater ponds to the east and northeast of Runway 16. (See *Figure B-4*) (U.S. Fish and Wildlife Service National Wetlands Inventory Mapper, 2019) (Delta Airport Consultants, 2018)

B.14.2 Floodplains

Statues and EOs that are relevant to floodplains include:

- EO 11988, *Floodplain Management* (42 FR 26951);
- National Flood Insurance Act (42 U.S.C. § 4001 et seq.); and
- USDOT Order 5650.2, *Floodplain Management and Protection*.

Floodplains are "…lowland areas adjoining inland and coastal water which are periodically inundated by flood waters, including flood-prone area of offshore islands." Floodplains are often referred to in terms of the 100-year floodplain, rather, the one percent chance of a flood occurring in any given year. The USDOT Order 5650.2 outlines the policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests. Therefore, the objective is to avoid, to the extent practicable, any impacts within the 100-year floodplain.

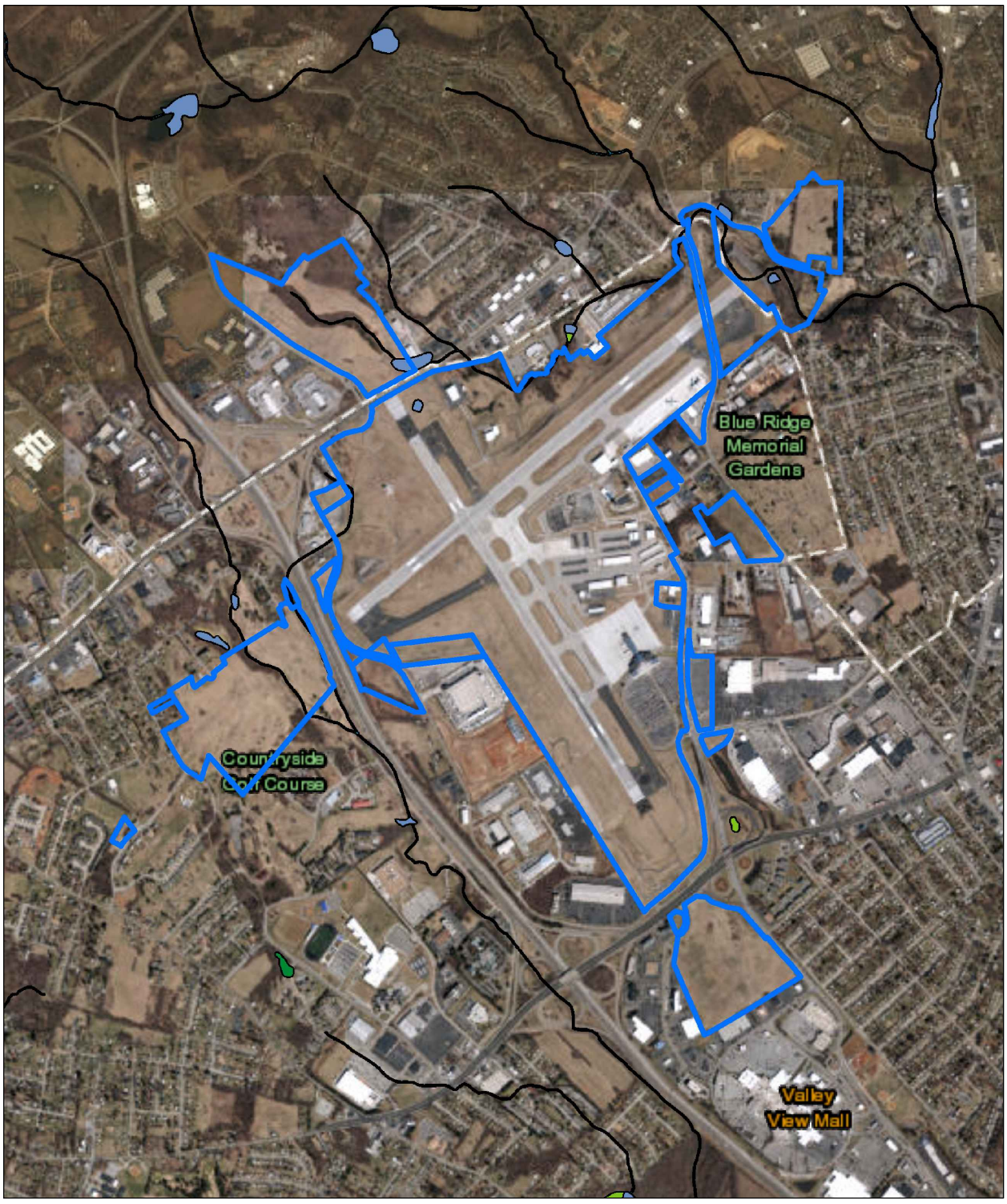
According to the Federal Emergency Management Agency Flood Insurance Rate Maps encompassing the Airport, there is a portion of a regulatory floodway within the 100- year floodplain (Zone AE)(Flood Hazard Zone 51161C) on Airport property (See *Figure B-5*) (Federal Emergency Management Agency, 2019).

B.14.3 Surface Waters

Statues that are relevant to surface water include:

- Clean Water Act (33 U.S.C. §§ 1251-1387);
- Fish and Wildlife Coordination Act (16 U.S.C. § 661-667d); and
- Rivers and Harbors Act (33 U.S.C. § 401 and 403).

Surface waters include areas where water collects on the surface of the ground, such as streams, rivers, lakes, ponds, estuaries, and oceans. There are portions of two surface water features present on Airport property, Lick Run, and an unnamed riverine section (National Wetlands Inventory, 2019).



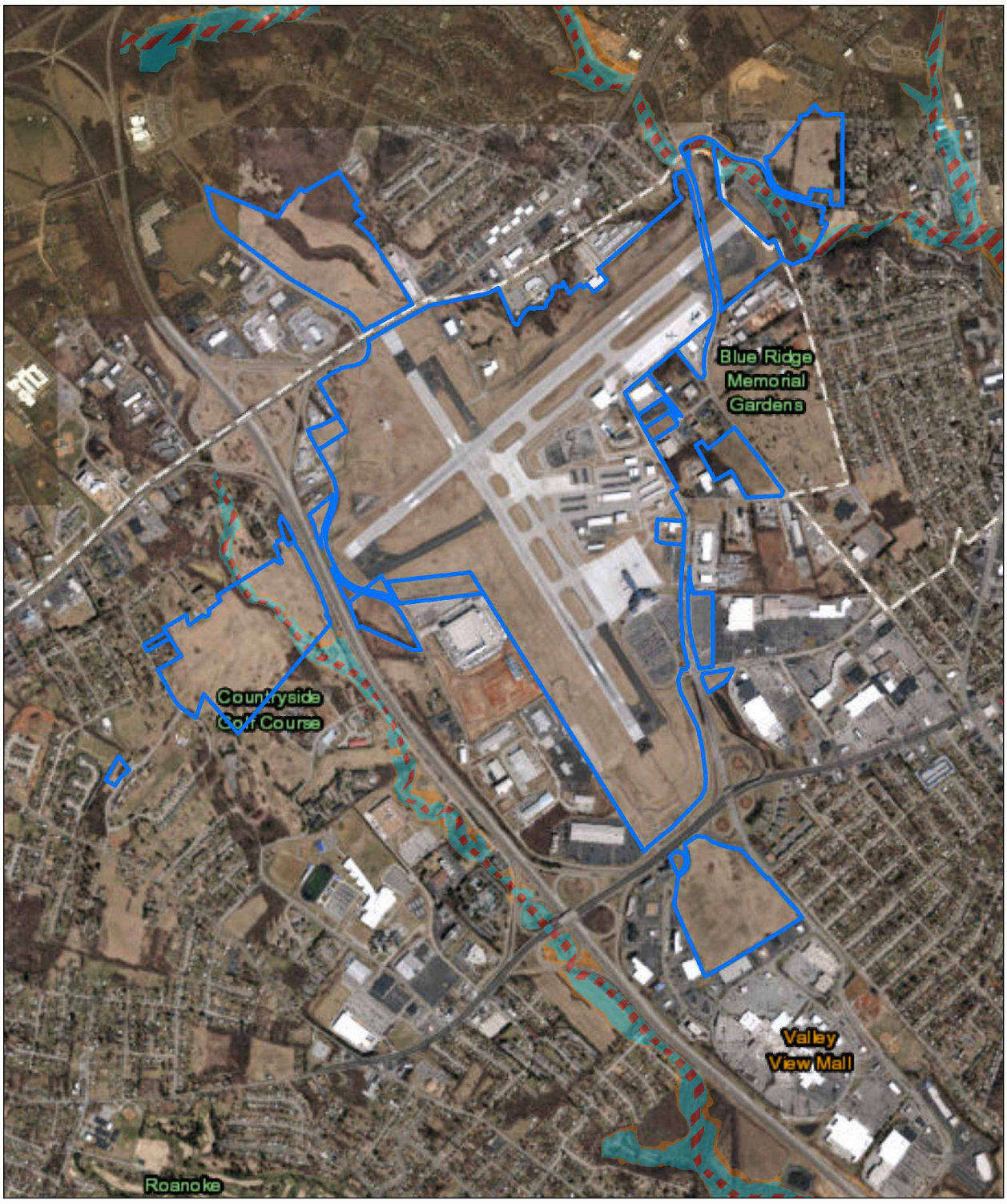
LEGEND

- Freshwater Emergent Wetlands
- Freshwater Pond
- Riverine
- Airport Boundary

N
NTS

Source: National Wetlands Inventory, 2019; ESRI, 2019; RS&H, 2019

NATIONAL WETLAND INVENTORY



LEGEND

- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard
- 1.0 % Annual Chance Flood Hazard
- Airport Boundary

N
NTS

Source: NEPAssist, 2019; National Register of Historic Places, 2019; RS&H, 2019

FLOODPLAINS

B.14.4 Groundwater

The Safe Drinking Water Act (42 U.S.C. §§ 300(f)-300j-26) is the primary statute related groundwater.

Groundwater is described as the "subsurface water that occupies the space between sand, clay, and rock formations." (FAA 1050.1F Desk Reference, Section 14.4 Groundwater). The Airport is located within the Carvin Creek Watershed (HUC 12 ID: 030101010402) (U.S. EPA NEPAssist, 2019).

B.14.5 Wild and Scenic Rivers

The Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1278) is the primary statue relevant to wild and scenic rivers.

Wild and scenic rivers are defined as "outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations" (National Wild and Scenic Rivers System, 2019). There are no wild and scenic rivers or river segments within Airport property. The closest wild and scenic river, the Bluestone River, is over 56 miles northwest of the Airport (U.S. National Park Service, 2019).

The Nationwide Rivers Inventory (Wild and Scenic Rivers Act section 5(d)(1)) is the primary statue relevant to nationwide rivers.

The Nationwide Rivers Inventory is a listing of more than 3,200 free flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be at least regionally significant (National Parks Service, 2018). There are no Nationwide Rivers Inventory rivers or river segments on or surrounding Airport property. The closest Nationwide Rivers Inventory segments are the Little River, 20 miles Southwest of Airport property, the Big Otter River, 23.33 miles Northeast of Airport property, and Craig Creek, 14.5 miles Northwest of Airport property.