



GREENVILLE DOWNTOWN AIRPORT

RUNWAY 1-19 RSA IMPROVEMENTS
FINAL | ENVIRONMENTAL ASSESSMENT

MAY 2022

This Environmental Assessment becomes a Federal document when evaluated, signed, and dated by the responsible FAA Official.

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LIST OF ACRONYMS

<i>Acronyms</i>	<i>Names</i>
AADT	Average Annual Daily Traffic
AC	Advisory Circulars
ACP	Airport Compliance Program
AIP	Airport Improvement Program
ALP	Airport Layout Plan
APE	Area of Potential Effect
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Firefighting Facility
ARRA	American Recovery Act
ASDA	Accelerate Stop Distance Available
ATCT	Airport Traffic Control Tower
AEDT	Aviation Environmental Design Tool
APU	Auxiliary Power Unit
BMPs	Best Management Practices
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CCB	Center for Conservation Biology
CEQ	Council on Environmental Quality
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
dB	Decibel
DNL	Day/Night Average Sound Level
DOT	Department of Transportation
DEQ	Diesel Emission Quantifier
EIS	Environmental Impact Statement
EJSCREEN	Environmental Justice Screening and Mapping Tool
EMAS	Engineered Materials Arresting System
EJSCREEN	Environmental Justice Screening and Mapping Tool
EPA	U.S. Environmental Protection Agency
EWG	Environmental Working Group
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GA	General Aviation
GAC	Greenville Airport Commission
GHG	Greenhouse Gas
GIS	Geographic Information System



<i>Acronyms</i>	<i>Names</i>
GMU	Greenville Downtown Airport
GPS	Global Positioning System
GSE	Ground Support Equipment
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IPaC	Information for Planning and Conservation
JD	Jurisdictional Determination
LAWCON	Land and Water Conservation
LWCFA	Land and Water Conservation Fund Act
LDA	Landing Distance Available
MALSF	Medium-Intensity Approach Lighting System with Sequenced Flashers
MPU	Master Plan Update
MSL	Mean Sea Level
MSGP	Multi-Sector General Permit
NAAQS	National Ambient Air Quality Standards
NAVAIDs	Navigational Aids
NEPA	National Environmental Policy Act
NFIA	National Flood Insurance Act
NHPA	National Historic Preservation Act
NHSDA	National Highway System Designation Act
NOI	Notice of Intent
NOTAM	Notices to Airmen
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport Systems
NPL	National Priority List
NRHP	National Register of Historic Places
NLR	Noise Level Reduction
OSHA	Occupational Safety and Health Administration
PM	Particulate Matter
PAPI	Precision Approach Path Indicators
PFC	Passenger Facility Charge
PSA	Project Study Area
RCRA	Resource Conservation Recovery Act
ROFA	Runway Object Free Area
RSA	Runway Safety Area
SSA	Sole Source Aquifer
SC	South Carolina
SCAC	South Carolina Aeronautics Commission
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCDOT	South Carolina Department of Transportation
SCSHPO	South Carolina State Historic Preservation Office
SDWA	Safe Drinking Water Act



Acronyms	Names
SPCC	Spill Prevention Control and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
TODA	Take-off Distance Available
TORA	Take-off Runway Available
US	United States
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WOTUS	Waters of the United States
WQC	Water Quality Certification



1. INTRODUCTION

The Greenville Downtown Airport (GMU, or the “Airport”) is a public general aviation (GA) airport in the City of Greenville, Greenville County, South Carolina (SC) and is the busiest GA airports in the state. GMU serves 76,515 operations annually. According to the South Carolina Aeronautics Commission (SCAC), GMU makes important economic and tax contribution to the City of Greenville and the surrounding area (<https://scaeronautics.sc.gov/>) and plays a vital role in the regional transportation system for accommodating general aviation activity in South Carolina.

GMU opened in 1928 as Greenville Municipal Airport. The Federal Aviation Administration’s (FAA) National Plan of Integrated Airport Systems (NPIAS) for 2017–2021 categorized it as a national non-primary GA facility. GMU offers business and private aviation travelers’ convenient access to the City of Greenville. The level of service provided at GMU and the rapid growth of the Greenville area has made GMU the third busiest airport in the state of South Carolina, surpassing multiple commercial airports

GMU is owned and operated by the Greenville Airport Commission (GAC), servicing the GA needs of Greenville County and Upstate South Carolina. GMU is located approximately three (3) miles east of downtown Greenville, SC, in Greenville County, just south of I-385. The physical address of GMU is 100 Tower Dr # 2, Greenville, SC 29607. **Figure 1-1** includes a Location Map showing the general location of the GMU property on a U.S. Geological Survey (USGS) Topographic Map.

GMU supports the economic prosperity of the region by providing a safe, convenient, user-friendly and cost competitive air transportation system connecting the city of Greenville with the Eastern United States.

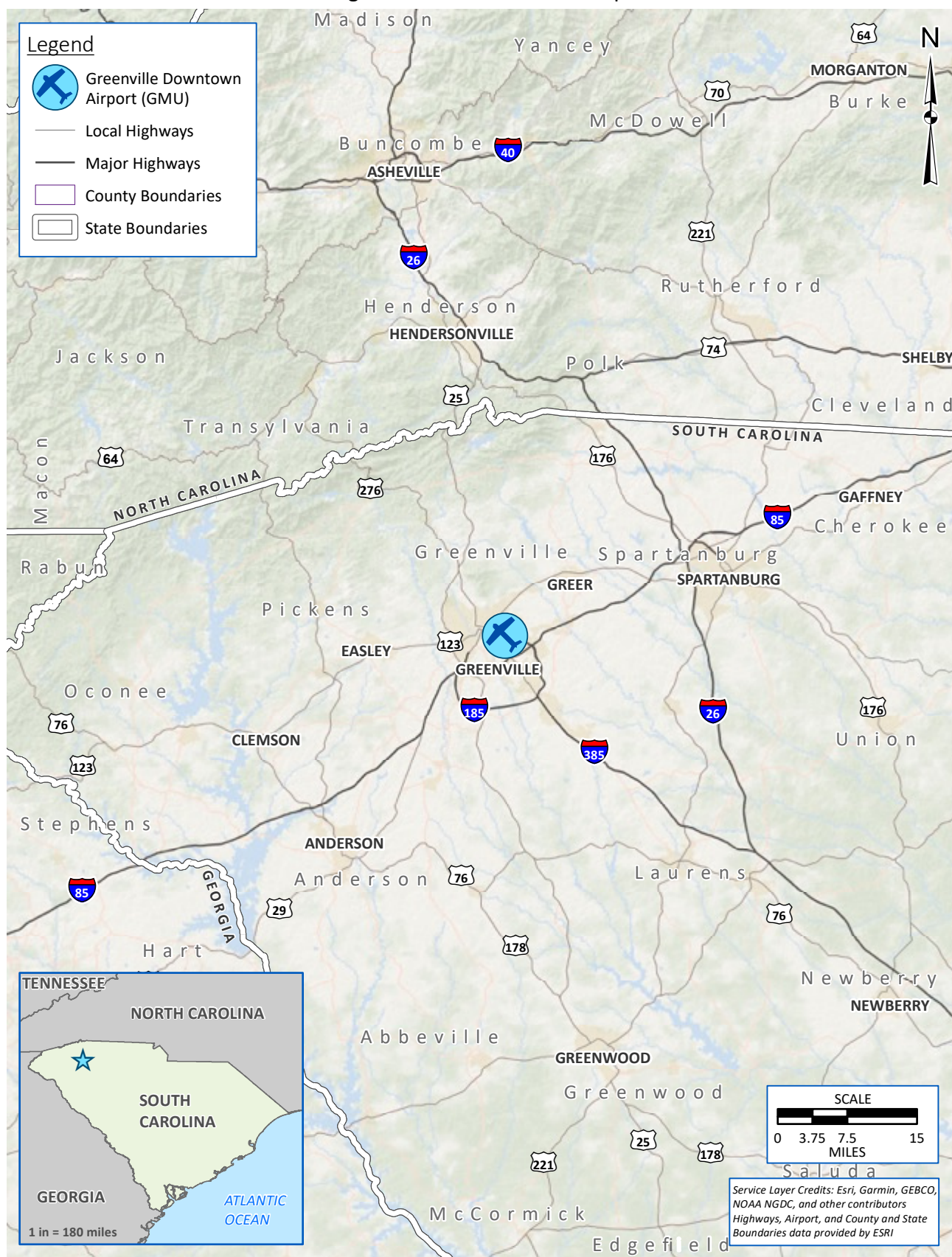
The GMU Flight Map demonstrates how the Airport connects the community to destinations across the United States. **Figure 1-2** shows an Aerial Image with the location of GMU. **Figure 1-3** depicts the existing GMU Layout.





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Figure 1-1: GMU Location Map

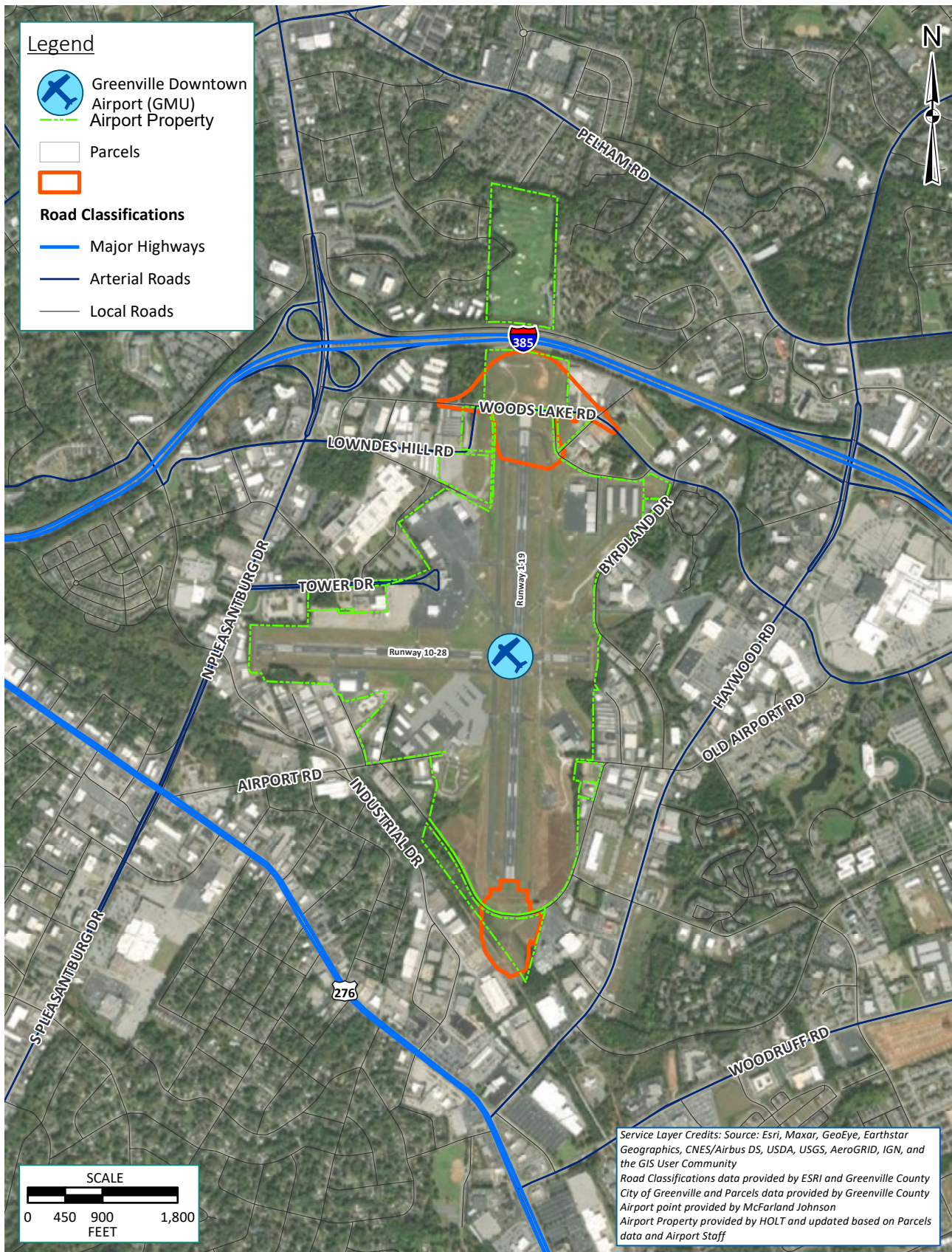


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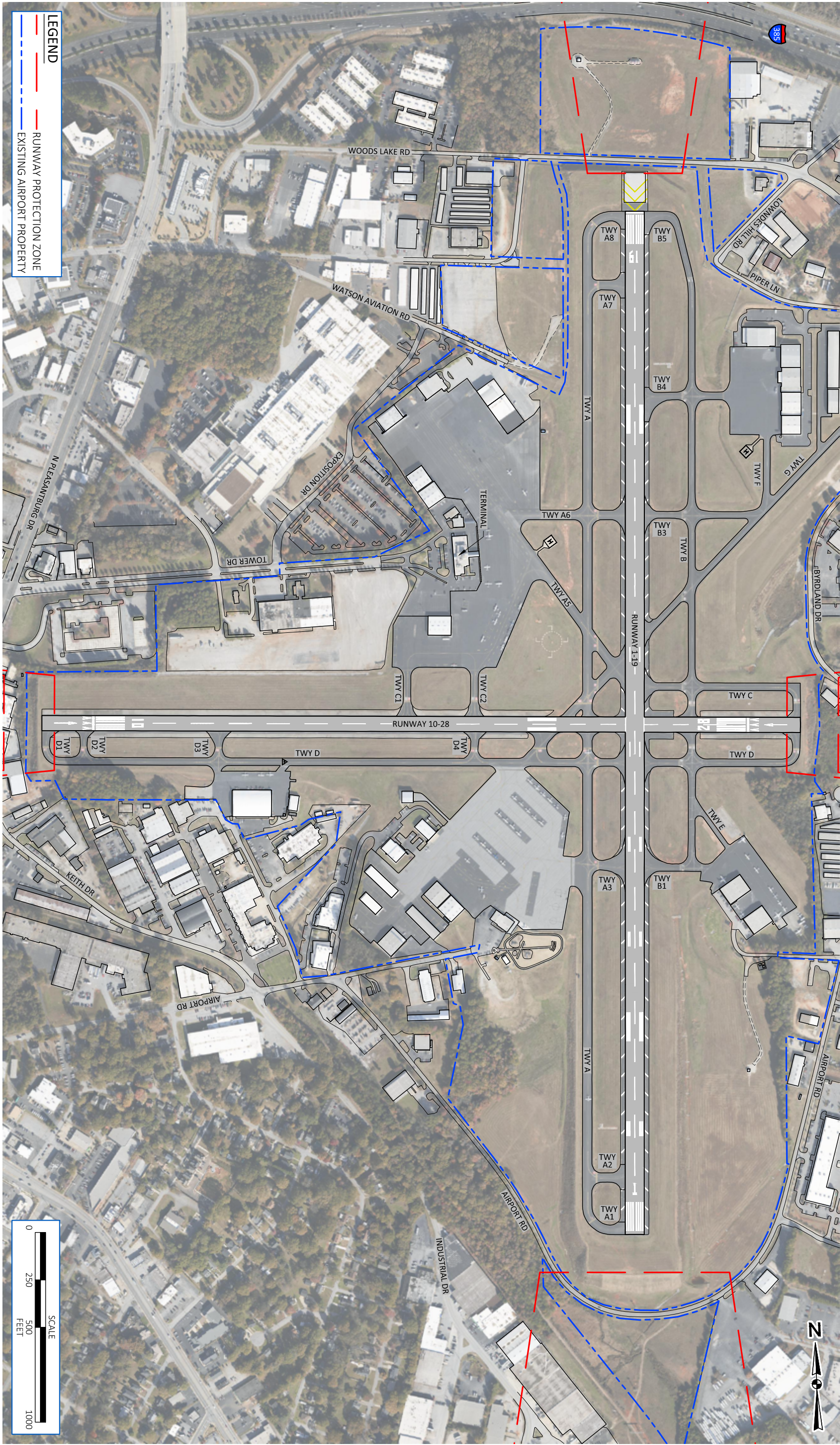
Figure 1-2: Aerial - Project Location





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Figure 1-3: Existing GMU Layout





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The Airport is situated at an elevation of approximately 1,048 feet above mean sea level (MSL) and occupies 385 acres. Existing facilities at the GMU include: two (2) runways, designated as 1-19 and 10-28; two (2) helipads, designated H1 and H2; a taxiway system (Taxiways A-G and taxilanes); five (5) aprons (Tower Ramp, South Ramp, Southeast Ramp, West Ramp, East Ramp); terminal building; hangar facilities (maintenance, conventional, and T-hangars); fuel farm; maintenance equipment storage facility; Air Traffic Control Tower (ATCT); navigational aids (NAVAIDs); vehicle parking; and associated infrastructure.

In order to continue promoting the economic growth of GMU, meet FAA standards, maintain revenue and improve airside and landside operations, specific opportunities and multiple necessary improvements have been identified in accordance with the 2021 Airport Layout Plan (ALP) Update prepared by McFarland-Johnson, Inc. The ALP Update has been submitted to the FAA and is currently under review, slated to be approved.

1.1 OVERVIEW OF PROPOSED ACTION

GMU’s airfield contains two (2) perpendicular runways, Runway 10-28 and Runway 1-19. Runway 10-28 measures approximately 4,000 feet long by 80 feet wide with 25-foot paved shoulders along the majority of its length. Runway 1-19 is the primary runway and measures approximately 5,393 feet long by 100 feet wide with 25-foot-wide paved shoulders along its entire length. The existing Runway Safety Area (RSA) for Runway 1-19 is approximately 400 feet wide and extends 207 feet past the departure end of Runway 1, 204 feet past the departure end of Runway 19, and does not meet FAA longitudinal standards for both undershoot and overruns.

The RSA is a defined surface surrounding the runway that provides a buffer (graded area) in the event that an aircraft overruns, undershoots or veers off the side of the runway (“runway excursion”). The RSA is considered a safety enhancement that is beneficial if something abnormal occurs during the takeoff or landing. It also provides greater flexibility and access for firefighting and rescue equipment during such incidents. RSAs extend along the sides and beyond the end of the runway and are capable, under normal (dry) conditions, of supporting airplanes without causing damage to the airplanes or injury to their occupants. In order to bring Runway 1-19 and RSA into compliance with FAA standards, GMU proposes a modification of the RSA to ensure the safety of aircraft, crew/passengers, and the surrounding community. The Proposed Action is required for the Airport to continue serving the needs of airport users, including business jets and similar aircraft which comprise a sizeable portion of GMU’s dependent users. **Chapter 2** (Project Description) provides a detailed explanation of the proposed project.

1.2 REGULATORY BASIS

Airport projects that include federal involvement (e.g., funding) require an environmental determination. Per statutory and regulatory requirements, the FAA must evaluate the environmental consequences of proposed developments shown on the approved ALP. This involves a systematic and multidisciplinary approach that verifies compliance with the requirements of the National Environmental Policy Act (NEPA). NEPA is a federal statute that requires federal agencies to use a systematic, interdisciplinary approach for considering the potential environmental impacts of a proposed action and factoring them into the decision-making process. The Council on Environmental Quality (CEQ) Regulations for implementing NEPA set the standards for NEPA compliance and direct federal agencies to develop their own procedures. FAA Order 1050.1F *Policies and Procedures for Considering Environmental Impacts*, provides the FAA’s agency-wide policies and procedures for ensuring compliance with NEPA and the CEQ Regulations.



This EA meets the requirements of the NEPA; CEQ regulations; FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*; FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and other FAA Orders, guidance, and Advisory Circulars (ACs). This document provides evidence and analysis for determining the Project does not require an Environmental Impact Statement (EIS), and a Finding of No Significant Impact (FONSI) can be issued as per 40 Code of Federal Regulations (CFR) 1508.9. The FONSI would be the final decision document that briefly presents the reasons why the Project is not expected to have a significant effect on the human environment (40 CFR 1508.13). As required by NEPA and the implementing regulations from CEQ and FAA, the alternative of taking no action is evaluated, providing a baseline for comparison of potential impacts from the action alternative (i.e., the Proposed Action).

1.2.1 FAA Reauthorization Act – Part 163 Applicability and NEPA

In general, Section 163(a) limits the FAA's authority to regulate an airport operator's transfer or disposal of certain types of airport land, with exceptions identified in Section 163(b). The FAA's ALP approval authority for portions of the Proposed Action and any other Federal approvals associated with the project (e.g., Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) Program) is a federal action subject to NEPA. All projects under the Proposed Action are presented in this EA for NEPA review to maintain ability to use future AIP and PFC's funding.

1.2.2 EA Outline

This document is structured to present an overview of the Introduction, Regulatory Basis and Decision-Making process ([Chapter 1](#)); discussion of the Project Description ([Chapter 2](#)); definition of Purpose and Need for the Project ([Chapter 3](#)); evaluation of the Affected Environment in the Project Area ([Chapter 4](#)); Alternatives Analysis for the Proposed Action ([Chapter 5](#)); and evaluation of the foreseeable Environmental Consequences ([Chapter 6](#)). The remainder of the EA provides a list of Anticipated Permits ([Chapter 7](#)), discussion of Mitigation Measures and Best Management Practices ([Chapter 8](#)); documentation of Agency Coordination and Public Involvement ([Chapter 9](#)); and appendices. The following appendices and studies are included as part of this EA:

- Appendix A: RSA Information
- Appendix B: Biological Evaluation Report
- Appendix C: Section 4(f) / Section 6(f) Evaluation
- Appendix D : NHPA Section 106 Review
- Appendix E: Wetland Delineation Report
- Appendix F: SCDOT Coordination Meeting Presentation
- Appendix G: Agencies Correspondence
- Appendix H: Public Involvement

1.3 SUMMARY

The Proposed Action described in the proceeding chapter is deemed necessary for the purpose of meeting FAA safety standards and addressing the insufficient RSA length, while maintaining the required runway length for GMU to serve its current users. GMU makes important economic and tax contribution to the state and plays a vital role in the regional transportation system for accommodating aviation activity in the upstate region of South Carolina. Without the ability for GMU to provide its current level of service, it can no longer support the economic prosperity of the region. A safe, convenient, user-friendly, and cost competitive air transportation system is needed for the continued economic growth of Greenville and the surrounding area.



2. PROJECT DESCRIPTION

Runway 1-19 at GMU does not currently meet RSA longitudinal dimensional criteria as defined by FAA AC 150-5300/13A, *Airport Design*. The GAC has taken measures for GMU to continue serving the needs of current airport dependent users. Consequently, based on the strategic recommendations outlined in the 2021 ALP Update and 2021 RSA Analysis, the GAC proposes the “Project” or “Proposed Action” consisting of improving the RSA for Runway 1-19. The Proposed Action is essential to provide a required measure of safety to airport users and public, ensure a full RSA capable of meeting minimum FAA safety requirements and pilots can continue using the maximum useable runway length possible. The Project is necessary for meeting current aviation needs and would not cause shifts or changes to airfield operations, flight patterns, or differ from typical and anticipated use patterns in any substantive way. The following provides a description of RSA standards, existing RSA conditions at GMU, and details on the Proposed Action.

2.1 RUNWAY SAFETY AREA PROGRAM

The *Runway Safety Area Program* became effective on October 1, 1999, through the United States Department of Transportation’s (US DOT) FAA Order 5200.8. The objective of the *Runway Safety Area Program* is that all RSAs at federally obligated airports conform to the standards contained in FAA AC 150/5300-13A. The RSA is intended to provide a measure of safety and significantly reduce the extent of personal injury and aircraft damage in the event of an overrun, undershoot or veer-off of the runway. The RSA is centered on the runway centerline with dimensional standards based on the most demanding aircraft design group as outlined in FAA AC 150/5300-13A that regularly utilizes the runway.

In addition to meeting the dimensional requirements, the RSA must be:

- Cleared and graded with no potentially hazardous surface variations
- Drained by grading or using storm sewers to prevent the accumulation of water
- Capable, under dry conditions, of supporting airport rescue and firefighting (ARFF) equipment and the occasional passage of aircraft without causing structural damage
- Free of objects, except those fixed by their function

2.2 RUNWAY SAFETY AREA STANDARDS

The variety of aircraft currently making significant use of the GMU facilities prescribes the Airport to conformance with airport reference code (ARC) C-II design criteria, as defined by FAA AC 1505300-13A. The FAA defines an aircraft operation as either a takeoff or landing. Specifically, over 700 operations occur each year by aircraft meeting or exceeding approach category C criteria and over 5,700 operations occur by aircraft requiring airfield design group II standards at the GMU airfield. A vast majority, though not all, of these aircraft are business jets employed as Part 135 charter aircraft, which is a trend anticipated to continue at GMU. Therefore, it justifiable and necessary to provide a safety buffer (RSA) to reduce the risk of damage in the event of an undershoot, overshoot or excursion from the runway by these types of aircraft. The dimensional criteria for RSAs associated with a runway serving C-II aircraft is defined in Table A7-8 of FAA AC 150/5300-13A (see **Appendix A**). The RSA standard for Runway 1-19 at GMU is 500 feet wide (a width of 400 feet is permissible), extending 1,000 feet beyond each runway end and existing at least 600 feet prior to the runway threshold.



2.2.1 Mitigation Alternatives for Non-Standard RSAs

FAA Order 5200.8 lists several alternatives to be considered for achieving RSA compliance. The first and most often preferred alternative to be considered is to construct the graded areas surrounding the runway to fully meet the FAA's design standards. Where it is not practical to facilitate the entire safety area in this manner, as much as possible should be obtained.

FAA Order 5200.8 lists the following alternatives to be addressed after consideration has been given for constructing the standard graded RSA:

- Relocation, shifting, or realignment of the runway
- Reduction in runway length where the existing runway length exceeds that which is required for the existing or projected critical aircraft
- A combination of runway relocation, shifting, grading, realignment, or reduction
- Implementation of declared distances
- Implementation of engineered materials arresting system (EMAS)

Based on the most recent FAA approved ALP for GMU and its programmed future condition, the departure end of Runway 1 is already equipped with an EMAS installation which effectively mitigates the non-standard RSA dimensions for overruns beyond the end of Runway 1. This EMAS does not provide mitigation of the non-standard RSA conditions for landings on Runway 19. Additionally, the opposite end of the runway (Runway 19 departure end) does not meet RSA dimensional criteria and is not equipped with an EMAS system or otherwise mitigated through the implementation of declared distances.

2.2.2 Declared Distances

When a portion of the physical runway length at an airfield is not declared as useable for a specific type of operation in a specific direction, "declared distances" are used to express to pilots the useable runway lengths and ensure airfield and airspace safety requirements are met. Declared distances therefore represent the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distance performance requirements. Most often, declared distances are implemented at an airfield, as a mitigation option, to meet RSA and/or runway object free area (ROFA) requirements, or to meet runway approach and/or departure surface clearance requirements. However, declared distances have a negative impact to airports by limiting the overall utility of a runway and are generally not a preferred mitigation option as such action reduces useable runway length for aircraft operators, often to the point of requiring aircraft operators to incur weight penalties or otherwise not make full use of their aircraft performance characteristics.

The FAA defines four (4) declared distances:

- Take-off Runway Available (TORA) is defined as the distance to accelerate from brake release to lift off, plus safety factors. This distance defines the length of runway declared available and suitable to satisfy take-off run minimums.
- Take-off Distance Available (TODA) is the distance to accelerate from brake release past lift off to start the take-off climb, plus safety factors. This distance consists of the TORA plus any remaining



runway or clearway beyond the far end of the TORA available to satisfy take-off distance requirements.

- Accelerate Stop Distance Available (ASDA) is the distance to accelerate from brake release to aircraft take-off decision speed (V1) and then decelerate to a stop, plus safety factors. This distance defines the runway plus stopway declared available and suitable for satisfying ASDA requirements.
- Landing Distance Available (LDA) is the distance from threshold required to complete approach, touchdown, and deceleration to a stop, plus safety factors.

2.3 RUNWAY 1-19 RSA EXISTING CONDITIONS AT GMU

Runway 1-19 is the primary runway at GMU. The Airport operates approximately 39.7 percent of the time in a north flow pattern landing and departing at Runway 1, and 60.3 percent of the time in a south flow pattern landing and departing at Runway 19. Runway 1-19 measures 5,393 feet long by 100 feet wide, approximately. Runway 1-19 features an EMAS that is 157 feet long and 113 feet wide at the departure end of Runway 1.

The existing RSA for Runway 1-19 is approximately 400 feet wide and extends 207 feet past the departure end of Runway 1, and 204 feet past the departure end of Runway 19. Additionally, Runway 1 at GMU is equipped with an instrument landing system (ILS) and supports a large majority of aircraft arriving under instrument flight rules (IFR). Further, non-precision Global Positioning System (GPS) approaches and precision approach path indicators (PAPI) are available at both runway ends. The EMAS at the departure end of Runway 1 allows for non-standard RSA dimensions; however, the RSA past the departure end of Runway 19 does not meet FAA design standards.

Figure 2-1 depicts the existing RSA conditions for Runway 1-19. The figure includes the existing RSA dimensions on each runway as well as surface grading compared to standard. In order to meet FAA safety standards, the RSA for Runway 1-19 is required to extend 1,000 feet beyond each runway end and 600 feet prior to landing threshold.

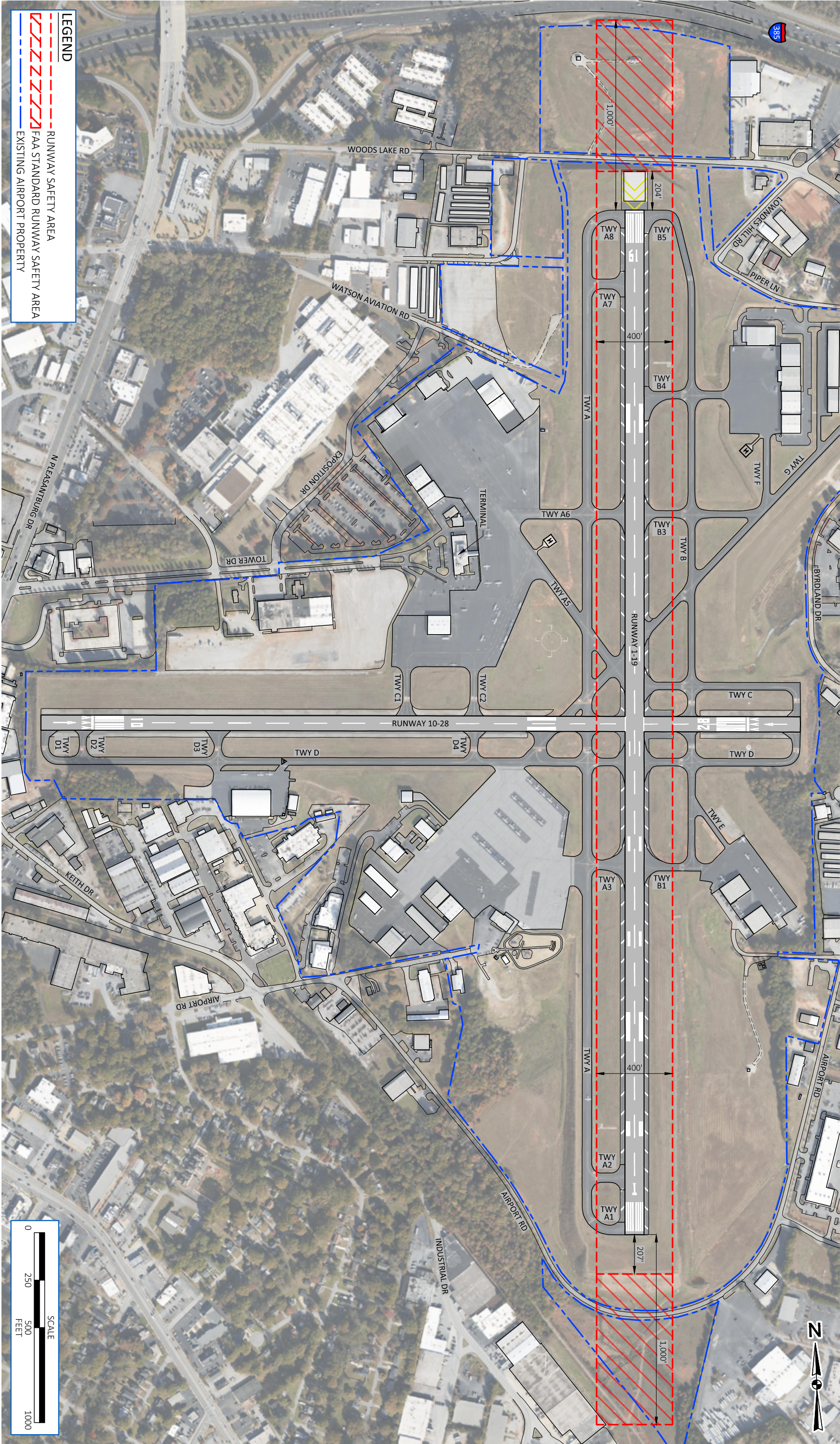
Topographic data identifies terrain and other site constraints that impacts the Airport's ability to currently provide a full standard RSA for Runway 1-19, within the proposed improvements described in **Section 2.4**. Specifically, the terrain roughly 210 feet beyond the Runway 19 departure end drops off approximately 45 vertical feet over a horizontal distance of 90 feet. Airport Road is located approximately 400 feet from the departure end of Runway 19 and is found roughly 50 feet below the runway end elevation. Furthermore, steeply falling terrain is found within the limits of the RSA adjacent to the existing runway pavement on both sides of the departure end of Runway 19.

Site constraints exist at the departure end of Runway 1 as well, including the location of Woods Lake Road situated just past the Airport perimeter fence approximately 260 horizontal feet from the Runway 19 threshold. Prior to the Airport perimeter fence and just past the end of the EMAS bed, the terrain drops off approximately 35 vertical feet over a horizontal distance of 20 feet. Beyond Woods Lake Road the terrain is relatively flat, but constraints still exist due to the location of the ILS localizer station situated approximately 780 feet from the Runway 19 threshold. Interstate 385 is approximately 1,050 feet from the Runway 19 threshold.



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Figure 2-1: Existing RSA Conditions - Runway 1-19





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	Greenville Downtown Airport Environmental Assessment	
	2.4 RUNWAY 1-19 RSA – EXISTING WIDTH The existing Runway 1-19 RSA at GMU is 400 feet wide (200 feet either side of the runway centerline). This longitudinal portion of the safety area adjacent to the Runway is primarily intended to provide an added measure of safety should an aircraft veer-off the runway. FAA design standards dictate that the RSA for Runway 1-19 should be 500 feet wide; however, 400 feet is permissible. Therefore, the existing Runway 1-19 RSA width meets standards. 2.5 PROPOSED RUNWAY 1-19 RSA IMPROVEMENTS As previously stated, the GMU Runway 1-19 RSA is required to extend 1,000 feet beyond each runway end and 600 feet prior to landing threshold. 2.6 RUNWAY 1 END RSA PROPOSED IMPROVEMENTS The existing RSA beyond the Runway 1 end of the runway is only 204 feet long which is 796 feet short of the required length. The proposed Runway 1 end RSA improvements would consist of work solely on Airport property; therefore, property acquisition would not be required. In addition, Airport Road would not be impacted for the Runway 1 end RSA improvements. Required improvements to the Runway 1 RSA include: • 340-foot displacement of the Runway 1 threshold to provide the standard 600-foot RSA prior to the landing threshold • Grading improvement of 260-feet from existing runway end, requiring fill to be placed to accomplish the mandated longitudinal grade • Replacement of existing EMAS • Newly placed fill material would be graded and would be turf, except for the EMAS • Proposed stormwater and drainage facilities to be constructed • Accomplishes the 600-foot RSA • TORA: 5,733 feet; TODA: 5,733 feet; ASDA: 5,733 feet; LDA: 5,393 feet 2.7 RUNWAY 19 END RSA PROPOSED IMPROVEMENTS The Runway 19 end features a non-standard EMAS installation that is in place to improve issues with non-standard RSA dimensions. Since the RSA at the Runway 19 end extends only 207 feet from the end of runway pavement (which is 793 feet short of the required length), the RSA does not conform to the standard 1,000 feet beyond pavement end or 600 feet prior to landing threshold.	
	McFarland Johnson Project Description	2-7



Required RSA improvements to the Runway 19 end include:

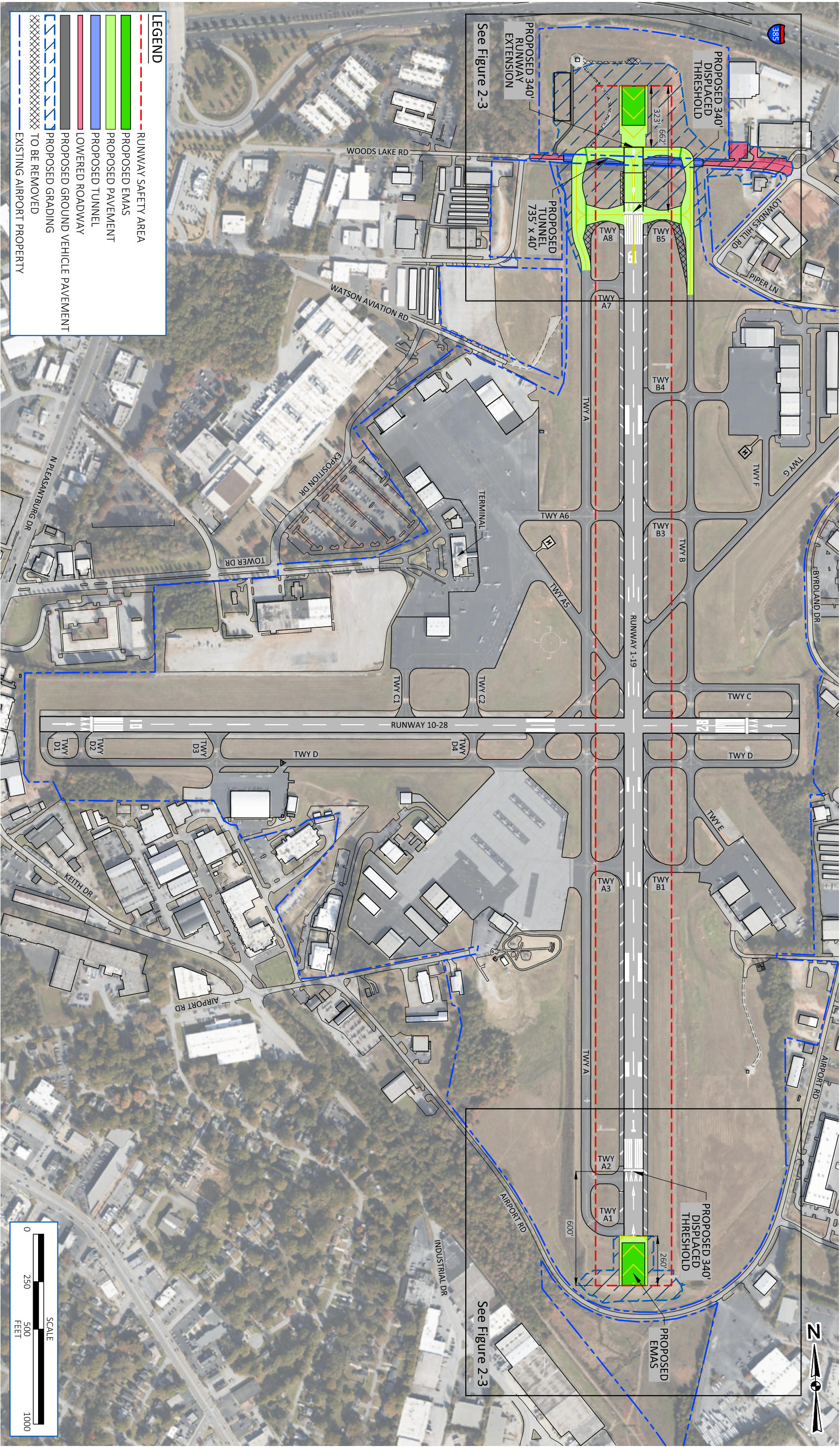
- Utilizes available land between the airfield and Interstate 385 to maximize the airport utility of the unused land
- 340-foot runway improvement (to compensate for 340-foot loss at the Runway 1 end)
- Runway 19 threshold would be displaced 340-feet to provide the necessary 600-foot of RSA prior to the landing threshold
- Taxiway A and B entrances would be reconfigured to the proposed Runway 19 improved threshold location
- Required earthwork to lower and tunnel approximately 735 feet of Woods Lake Road, along with relocation and installation of associated utilities and localizer
- Proposed grading and stormwater and drainage facilities to be constructed
- Accomplishes the 600-foot RSA
- TORA: 5,733 feet; TODA: 5,733 feet; ASDA: 5,733 feet; LDA: 5,393 feet

Figure 2-2 depicts the overall view of the Runway 1-19 RSA Length Improvements. **Figure 2-3** depicts the detailed view of the proposed RSA improvement Runway 1-19.

2.8 SUMMARY OF PROPOSED ACTION

The proposed Runway 1 RSA improvement has minimal site and operational impacts as it does not impact Airport Road. The proposed Runway 19 RSA improvement allows for no decrease in overall runway length or declared distances, while achieving 600 feet of RSA prior to the landing threshold. The combination Runway 1 and Runway 19 RSA Improvements would allow for standard EMAS installations with 600 feet prior to the Runway 1-19 thresholds, without severely impacting operations by reducing runway length and therefore declared distances. This option includes a 340-foot displaced threshold at the Runway 1 end, and a 277-foot displaced threshold with a 340-foot runway improvement at the Runway 19 end.

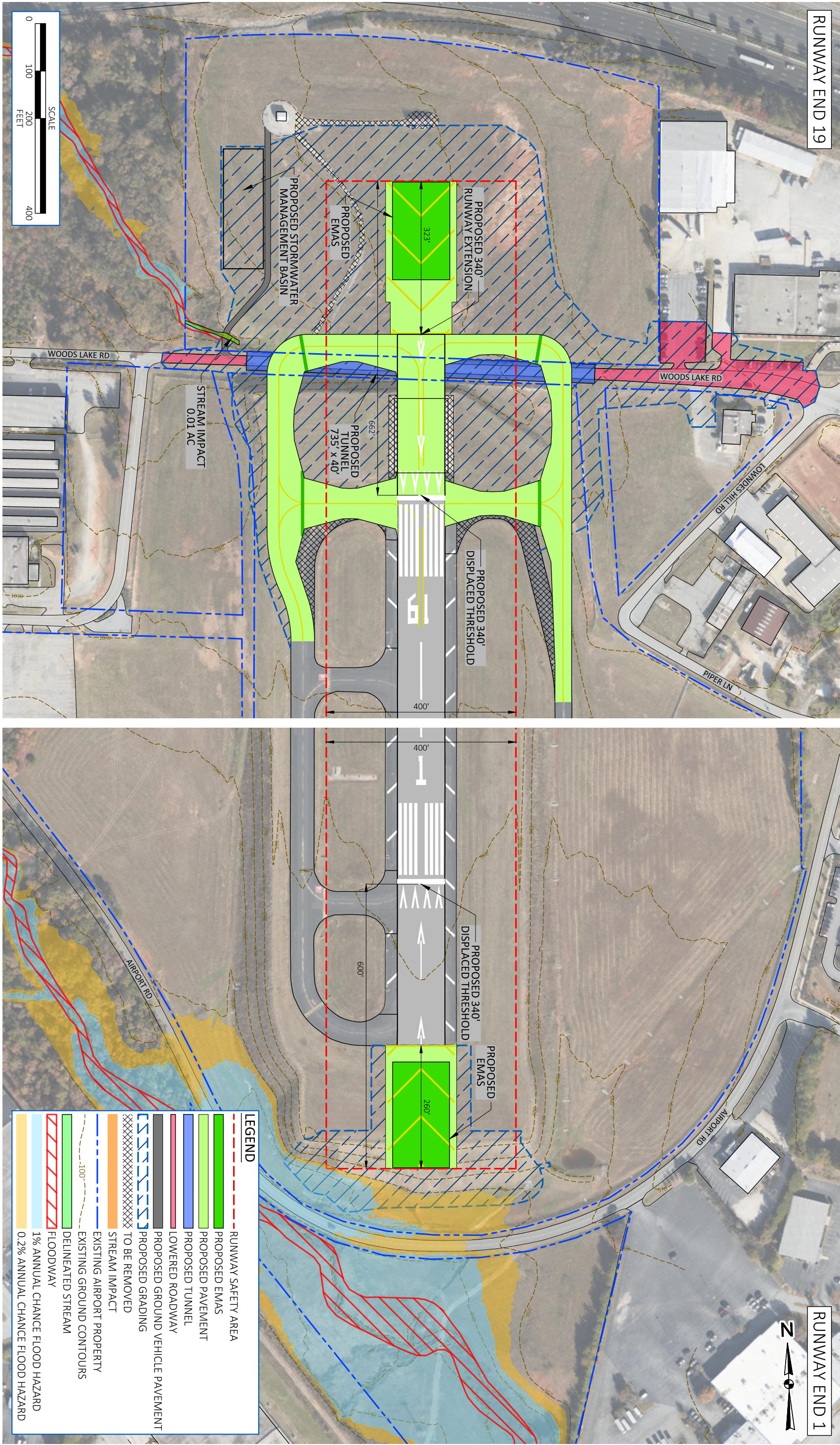
Figure 2-2: Runway 1-19 RSA Length Improvements





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Figure 2-3: Runway 1-19 RSA Length Improvements - Detail View





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3. PURPOSE AND NEED

The Purpose and Need statement describe the immediate needs from GMU and to be addressed by the Proposed Action. The objective of the Proposed Action is to ensure that Runway 1-19 can meet current FAA safety standards. The following sections document the justification for the Project and provides the basis for evaluating the effectiveness of alternatives.

3.1 PURPOSE

The purpose of the Proposed Action is to improve the existing RSA for both ends of Runway 1-19 and meet FAA's RSA standards. The Proposed Action would provide a full RSA in accordance with the minimum safety requirements, would maintain the current usable runway length. The purpose of the Proposed Action includes:

- Reduce the runway safety risk of injury to persons and damage to aircraft should the aircraft undershoot, overshoot, or veer off the runway
- Increase the safety for people and property on the ground near the runway environment
- Maintain an RSA cleared, graded, drained, and accessible by firefighting and rescue equipment in the event of an emergency
- Enhance safety during inclement weather conditions
- Correct the RSA design standard deficiencies to be consistent with FAA Order 5200.8, *Runway Safety Area Program*
- Remedy the existing Runway 1-19 RSA deficiencies and comply with RSA standards included in FAA AC 150/5300-13A, *Airport Design*
- Provide a plan to remedy the RSA deficiencies without significant environmental or socioeconomic impacts
- Achieve the required safety level

The Proposed Action would not create any additional capacity at GMU. The purpose of the Proposed Action is focused on safely serving airport dependent users, as well as the safety of the surrounding Greenville community.

3.2 NEED

Providing an RSA that meets the required safety dimension is needed to improve the safety for the existing airport dependent users of GMU as well as the surrounding community. GMU is a general aviation airport that accommodates both air carrier aircraft as well as GA activity and receives federal funding for AIP. The Proposed Action is to comply with federal mandates that Part 139 certified airports are required to meet as per FAA RSA design criteria contained in the FAA Airport Design AC, to the extent possible. The RSA project is necessary for GMU to meet operational runway safety standards required by FAA, improve the safety areas, and address the Runway 1-19 RSA deficiencies and constraints indicated in **Table 3-1**.



Table 3-1: Runway 1-19 RSA Deficiencies and Constraints

Runway 1	Runway 19
- Existing RSA Length- 207 feet long; required to extend 1,000 feet beyond the runway end and 600 feet prior to the landing threshold - Deficiency of 393 feet prior to landing threshold and 793 feet beyond the runway end - Site constraints (Woods Lake Road) at the Runway 1 end	- Existing RSA length- 204 feet long; required to extend 1,000 feet beyond each runway end and 600 feet prior to the landing threshold - Deficiency of 396 feet prior to landing threshold and 796 feet beyond the runway end - Topographic constraints (steep terrain) at the Runway 19 end

Source: McFarland-Johnson, Inc. 2021

3.3 SUMMARY

The project is needed because Runway 1-19 is:

- 1) Inadequate in meeting safety standards for the existing airport dependent users of GMU as well as the surrounding community
- 2) Does not meet current RSA standards

Supporting Facts are as follows:

Runway 1: The existing RSA Length of 207 feet long does not meet the RSA standards of 1,000 feet beyond the runway end and 600 feet prior to the landing threshold. The Runway 1 RSA has a deficiency of 393 feet prior to the landing threshold and 793 feet beyond the runway end.

Runway 19: The existing RSA Length of 204 feet long does not meet the RSA standards of 1,000 feet beyond the runway end and 600 feet prior to the landing threshold. The Runway 19 RSA has a deficiency of 396 feet prior to the landing threshold and 796 feet beyond the runway end.



4. AFFECTED ENVIRONMENT

This section describes the environmental conditions of the project area. The characterization of the site is based on the information gathered from technical studies, on-site investigations, a review of available and published scientific information, agency correspondence, and discussions with Airport personnel and public officials. Field investigations were conducted during December of 2021. Information presented herein serves as a basis for the assessment of environmental consequences (Chapter 6) associated with the Proposed Action.

4.1 GENERAL SITE DESCRIPTION

GMU is a general aviation facility located at 100 Tower Drive # 2, Greenville, SC 29607. The Airport property has an area of approximately 330 acres and is situated within Greenville County, in the City of Greenville. Refer to **Figure 1-1** for Location Map and **Figure 1-2** for Aerial Location in Chapter 1. The main access to the Airport is through North Pleasantburg Drive, Tower Drive, Airport Road Extension, Haywood Road and Opportunity Place. The Airport property is classified as “Government” land use according to Greenville County GIS. GMU is primarily surrounded by commercial developments with public roads and infrastructure.

The project site entails the northern section (Runway 19 end) and the southern section (Runway 1 end) of the existing runway and airfield. The following provides a description of the project area boundaries.

Table 4-1: GMU Project Area Boundaries

Boundary	Runway 19 Area (North)	Runway 1 Area (South)
North	• Airport property (vacant) • I-385 • 3's Greenville Golf Course (Property owned by GAC and leased to 3's Greenville)	• GMU airfield/property
South	• GMU property (airfield and existing Runway 1-19)	• Airport Road • Airport property (approach lighting)
East	• Canteen Vending Services	• Airport Road • Commercial development
West	• Vacant Land (Wooded) • Night club <i>La Taberna De Pancho</i>	• Airport Road (Undeveloped) • Wooded area (vacant)

The footprint of the Project at Runway 19 covers approximately 16.9 acres, and 2.7 acres at for Runway 1 end. Estimated total project area is approximately 19.6 acres, most of it owned by GAC, with the exception of public roads (e.g., Woods Lake Road).

4.1.1 Topography

Outside of the leveled portions of the airfield, the project site exhibits a rolling topography outward from the airfield, with steep drop-offs at the ends of both runways. The existing drainage system conveys stormwater runoff towards the north and south via manmade drainage channels. The topography at the



perimeter of the project area is influenced by the existing airport development. The project area lies within or immediately adjacent to the existing Runway 1-19 and associated existing RSA grading, and along existing drainage and roadway infrastructure.

4.2 CLIMATE AND AIR QUALITY

Greenville County exhibits a mild climate, commonly seen throughout the southeastern piedmont. Typical summer high temperatures are in the low to mid 90s degree Fahrenheit, and winter low temperatures are in the high 20s to low 30s degree Fahrenheit. Approximately 49 inches of rain fall annually, as well as approximately two (2) inches of snow.

The Airport is located in Greenville County, outside of nonattainment or maintenance areas. Greenville County has been designated by EPA as in attainment for all criteria pollutants according to the United States Environmental Protection Agency (EPA) Greenbook¹, dated August 31, 2021. This information is also confirmed through the EPA Counties Designated Nonattainment Map² for Clean Air Act (CAA) National Ambient Air Quality Standards (NAAQS).

4.3 BIOLOGICAL RESOURCES

Biotic resources refer to the various types of flora (i.e., plants) and fauna (e.g., fish, birds, reptiles, amphibians, mammals, etc.), including state and federally listed threatened and endangered species, in a particular area.

Much of the project area consists of maintained upland grasslands. Outside of the existing adjacent developed lands, additional nearby habitats include upland or wooded areas. See **Appendix B** for Biological Evaluation which provides information of the general habitat characteristics and species reported within the study areas or project area. In summary, the Biological Evaluation concluded the following:

- Suitable habitat for the federally or state protected species listed does not occur within project area
- Project areas do not entail critical habitat designated by the U.S. Fish & Wildlife Services (USFWS)
- Federal or state listed species do not occur within project area

4.3.1 Ecological Communities

The majority of the Airport and adjacent areas have been significantly mechanically disturbed by past construction and human activities, including the surrounding urban, commercial, and rural developments. Taking into consideration that the Project elements are proposed within previous disturbed areas and adjacent to the existing GMU landside and airside infrastructure, ecological communities within the project area are restricted and provide limited ecological value.

Most of the habitat at the Airport consists of maintained grassland. Scattered and isolated small herbaceous wetland patches occur, interspersed with managed grasslands. All habitats identified at the Airport are

¹ https://www3.epa.gov/airquality/greenbook/anayo_ny.html

² <https://www3.epa.gov/airquality/greenbook/map/mapnpoll.pdf>



common and are not considered sensitive ecosystems within the region. The following table includes a breakdown of the vegetation assemblage distribution within the study area.

Table 4-2: Vegetation Assemblage Distribution in Study Area and Proposed Action

Main Habitats	Study Area (Acreages)		Proposed Action (Footprint – Acreages)	
	Runway 1	Runway 19	Runway 1	Runway 19
Grassland (disturbed)	11.65	20.29	2.65	13.38
Hardwood	0.17	1.34	--	--
Stream / Wetland	1.10	0.11	--	0.01
Developed Area / Paved	0.38	5.87	--	3.55

Refer to **Figure 4-1**, for distribution of vegetation assemblages within the within the project area and its immediate vicinity. None of these vegetation assemblages self-sustain populations of threatened or endangered species of wildlife and have not been designated as critical habitats by the USFWS.

Following is provided a description of each project area that entails the Proposed Action.

Runway 1 End

A review of the U.S. Geological Survey, Mauldin, SC, 7.5 Minute Quadrangle topographic map indicates that the topography the RW 1 PSA terrain ranges from 951 feet above mean sea level (MSL) to 984 feet MSL and the habitats that make up the project area include disturbed upland areas. Disturbed uplands are those habitats that have been altered by humans. Within the project area, human alteration to uplands includes mowed/maintained RSA, asphalt runways and taxiways, paved roads, and maintained road rights-of-way. No wetlands or streams were identified within the project area, however non-jurisdictional ditches and a stormwater detention basin were observed. A Jurisdictional Determination (JD) Request was sent to the United States Army Corps of Engineers (USACE) on February 16, 2022.

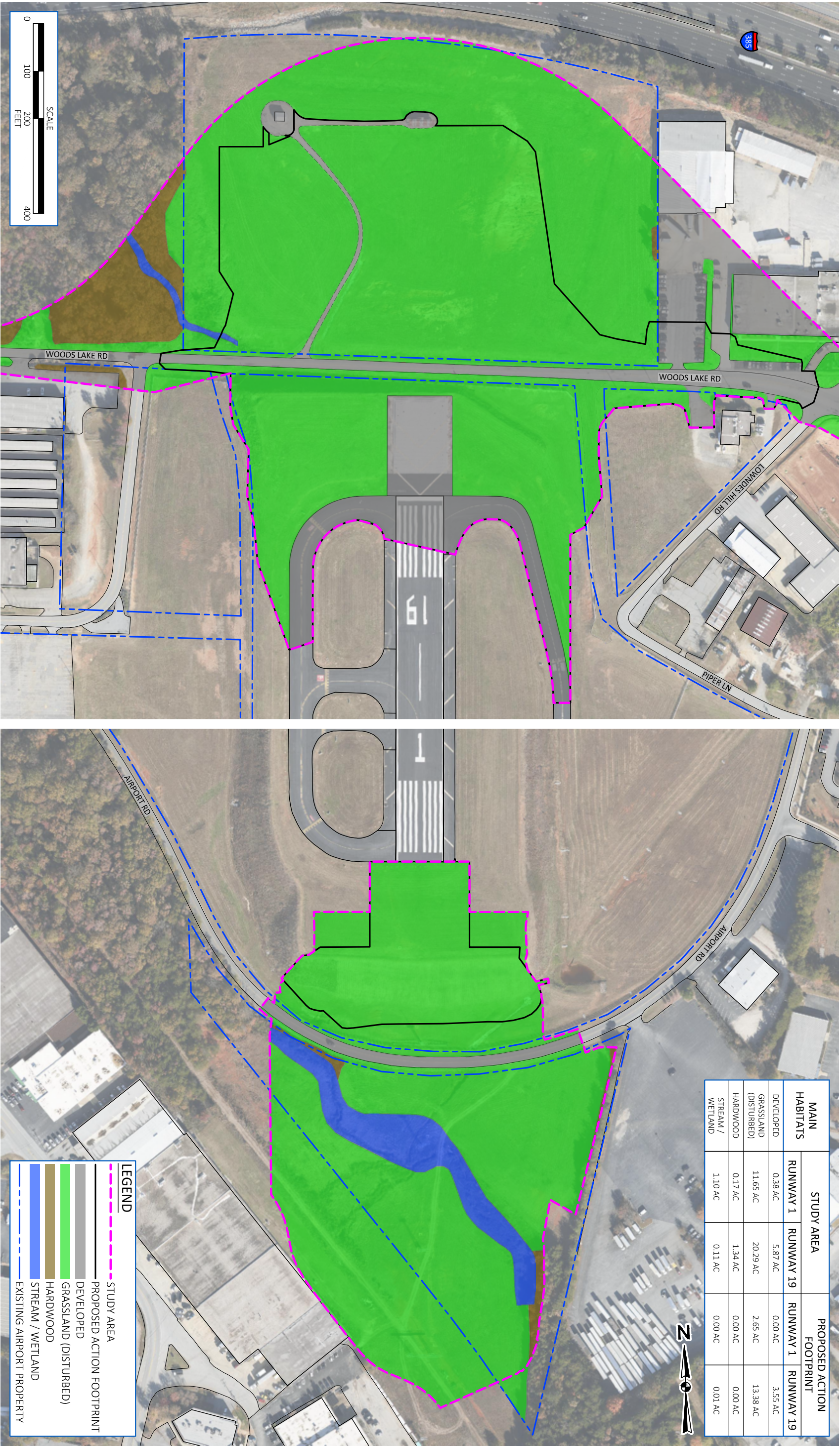
Runway 19 End

The topographic map indicates that the topography within the project area contains changes in elevation ranging from approximately 1,017 feet MSL to 1,082 feet MSL. Disturbed uplands constitute most of the project area. One short reach of an intermittent stream was identified during the Waters of the U.S. (WOTUS) delineation. It appears to be an unnamed tributary to an unnamed perennial tributary to Richland Creek, which is located west of the Airport. The intermittent stream is situated immediately north of Woods Lake Road at the western edge of the PSA. A Jurisdictional Determination (JD) Request was sent to USACE on February 16, 2022.



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Figure 4-1: Vegetation Assemblage Distribution





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	Greenville Downtown Airport	Environmental Assessment
	4.3.2 State and Federal Listed Threatened and Endangered Species 4.3.2.1 Federal GMU does not possess any critical habitat designations by the USFWS. A Biological Evaluation was conducted by Three Oaks Engineering to identify the presence, or potential presence of federally protected species known to occur in Greenville County, South Carolina, and to document potential project related effects (if any) to the protected species or their critical habitat within or adjacent to the project areas. For the Biological Evaluation, a list of protected species known to occur in Greenville County was obtained from the Charleston Field Office of the USFWS website (USFWS 2021a). The list was last updated by the USFWS on August 31, 2021. According to the USFWS’ Critical Habitat for Threatened & Endangered Species Mapper tool (USFWS 2022), there is no Critical Habitat designated in Greenville County. A literature review was completed for each of the listed species to determine their description and habitat requirements. The South Carolina Department of Natural Resources (SCDNR) and USFWS species descriptions and articles were referenced. SCDNR’s SC Natural Heritage Species Reviewer (SCDNR 2021) was utilized to determine previous observations of the listed species within a three-mile radius of the PSAs. The Biological Evaluation concluded that no evidence was found of any endangered species or critical habitats in the Project Area. Copy of the Biological Evaluation Report and protected species assessed are included in Appendix B. Additionally, according to the Center for Conservation Biology (CCB) database, there are no records of bald eagle nesting or communal roosting within GMU property or adjacent areas. 4.3.2.2 State According to the South Carolina Department of Natural Resources (SCDNR), protected species have not been reported within the project area or immediately adjacent. 4.4 COASTAL ZONES AND BARRIERS The federal Coastal Barrier Resources Act (CBRA) protects and improves the nation’s coastal barrier islands. Greenville County is not located in the coastal region of South Carolina. GMU is located approximately 200 miles away from the closest protected coastal resources areas. CBRA regulations do not apply to the Proposed Action. 4.5 SECTION 4(F) AND SECTION 6(F) RESOURCES No Section 4(f) and Section 6(f) resources occurs within the footprint of the proposed action, nor intended to be affected by the Proposed Action. Section 4(f) of the U.S. DOT Act of 1966 (now codified at 49 U.S.C. § 303) protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land off a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, State, or local significance, only if there is no feasible and prudent alternative to the using that land and the program or project includes all possible planning to minimize harm resulting from the use. Section 4(f) applies only to agencies within the U.S. Department of Transportation (USDOT). The FAA is the NEPA lead agency for this EA and therefore takes the lead on the Section 4(f) evaluation.	
	McFarland Johnson	Affected Environment 4-7



To determine the applicability of Section 4(f), a comprehensive inventory and evaluation was performed for the following resources in the vicinity of the Proposed Action:

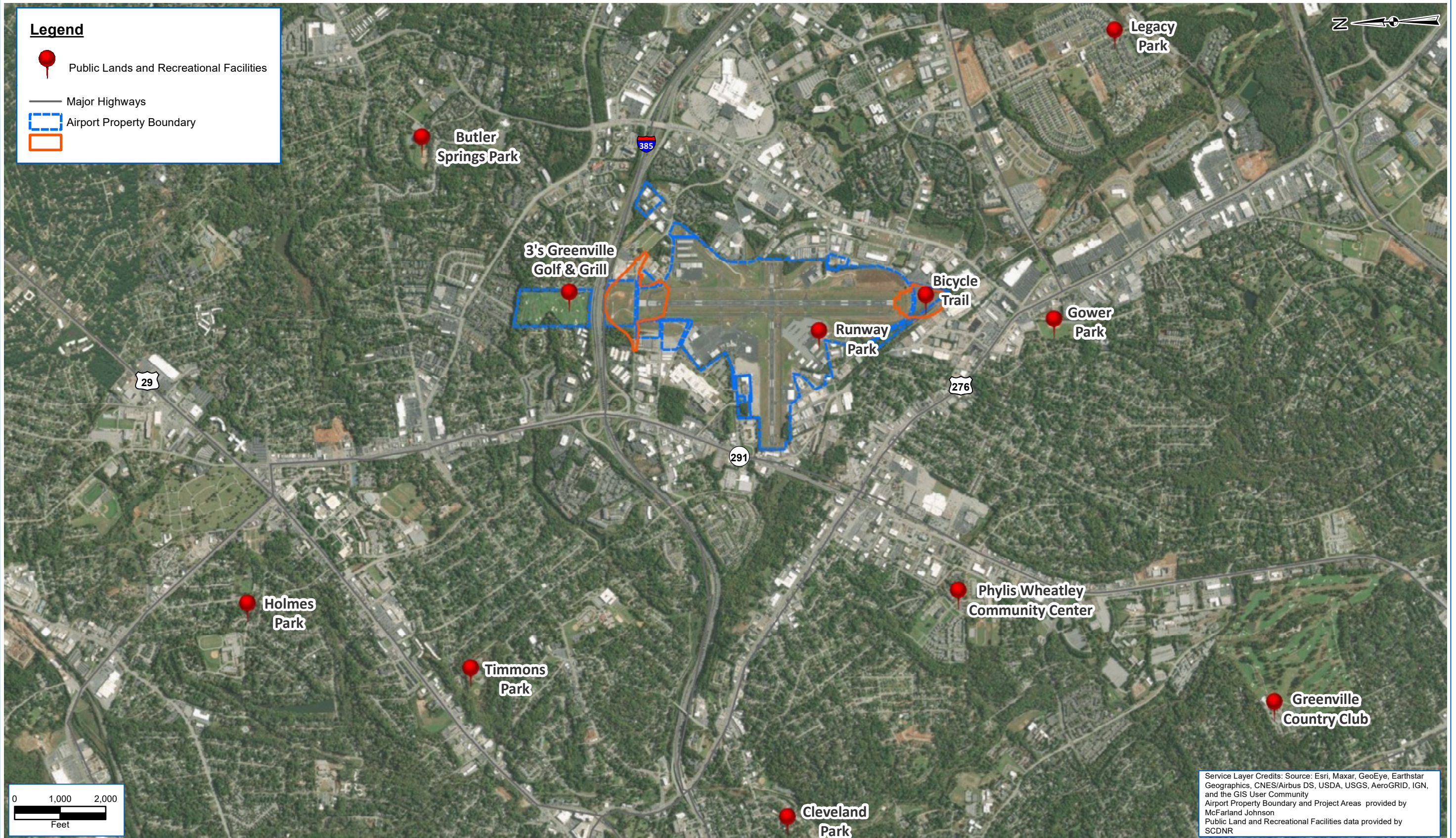
- Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public
- Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public
- Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public

The Section 4(f) / Section 6(f) evaluation was prepared taking into consideration FAA 1050.F Desk Reverence (February 2020). In correspondence with the FAA, it has been determined that no 4(f) resources are impacted. Copy of the evaluation is included in **Appendix C**. In summary, the Project does not involve the physical use or impacts of any Section 4(f) or Section 6(f) resources. According to the Section 4(f) evaluation, the nearest parks, public recreational facilities and public lands in the vicinity of GMU are:

- | | |
|---|---------------------|
| • Runway Park | On Airport Property |
| • 3's Greenville Golf Course
(property owned by GMU, leased to private entity) | 0.1-mile northwest |
| • Bicycle Trail | 0.1 mile southwest |
| • Gower Park | 0.6 mile south |
| • Legacy Park | 1.2 miles southeast |
| • Butler Springs Park | 1.3 miles northeast |
| • Timmons Park | 1.6 miles northwest |
| • Cleveland Park | 2.2 miles west |
| • Holmes Park | 2.0 miles northwest |
| • Greenville Country Club | 2.0 miles southwest |
| • Phylis Wheatley Community Center | 1.3 miles southwest |
| • Lake Conestee Nature Preserve and Park | 4.1 miles south |

See **Figure 4-2** for Section 4(f) / Section 6(f) Map. Section 6(f) of the federal Land and Water Conservation Fund (LWCF) Act of 1965 (54 United States Code 200305 et seq.) requires that recreational properties acquired or developed with grants from the LWCF be replaced in the event of permanent, non -recreation uses of those properties. The Proposed Action does not involve activities in public use recreational lands subject to Section 6(f) of the LWCF.

Figure 4-2: Section 4(f) Map





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4.6 FARMLANDS

There are no farming activities within the project area or on GMU property. The Farmland Protection Policy Act (FPPA), 7 C.F.R. § 658 1994, requires federal agencies to consider project alternatives only when unnecessary and irreversible conversion of farmland to nonagricultural uses. For the purposes of the FPPA, farmland refers to soils classified as prime farmland, unique farmland, and land of statewide or local importance. According to the U.S. Natural Resource Conservation Service (NRCS) Web Soil Survey, accessed in August 2021, various soils in the vicinity of the project area are characterized as prime farmlands or farmlands of statewide importance. However, none of these soils occur within the footprint of the Project. **Figure 4-3** depicts the soils within the project area. According to the NRCS, the soils in the project area characterized as Cecil – Urban land complex. Furthermore, the FPPA does not apply to land already committed to “urban development or water storage”. The Airport property has already been previously committed to current airport utilization and development; therefore, would not be subject to the FPPA.

4.7 HAZARDOUS MATERIALS AND SOLID WASTE

According to the EPA National Priority List (NPL), South Carolina Department of Health and Environmental Control (SCDHEC) State Superfund List and other data bases such as the Environmental Working Group (EWG) – PFAS Contamination Map, there are no records of the presence or reported contamination at the Project area. Based on the EPA NPL and Superfund Alternative Sites, no sites are present within one (1) mile of GMU. The nearest site listed in the SCDHEC Contaminated site records is the Industrial Coaters Inc., located at 1010 Lowndes Hill Road, Greenville, SC 29607, and approximately 0.25 mile away from the Runway 19 end project area. Furthermore, according to the EPA EnviroMapper database, there do not appear to be any Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites; Resource Conservation Recovery Act (RCRA) registered hazardous waste generation sites; recorded spills; or underground storage tanks (former or current) within or adjacent to the Project Area.

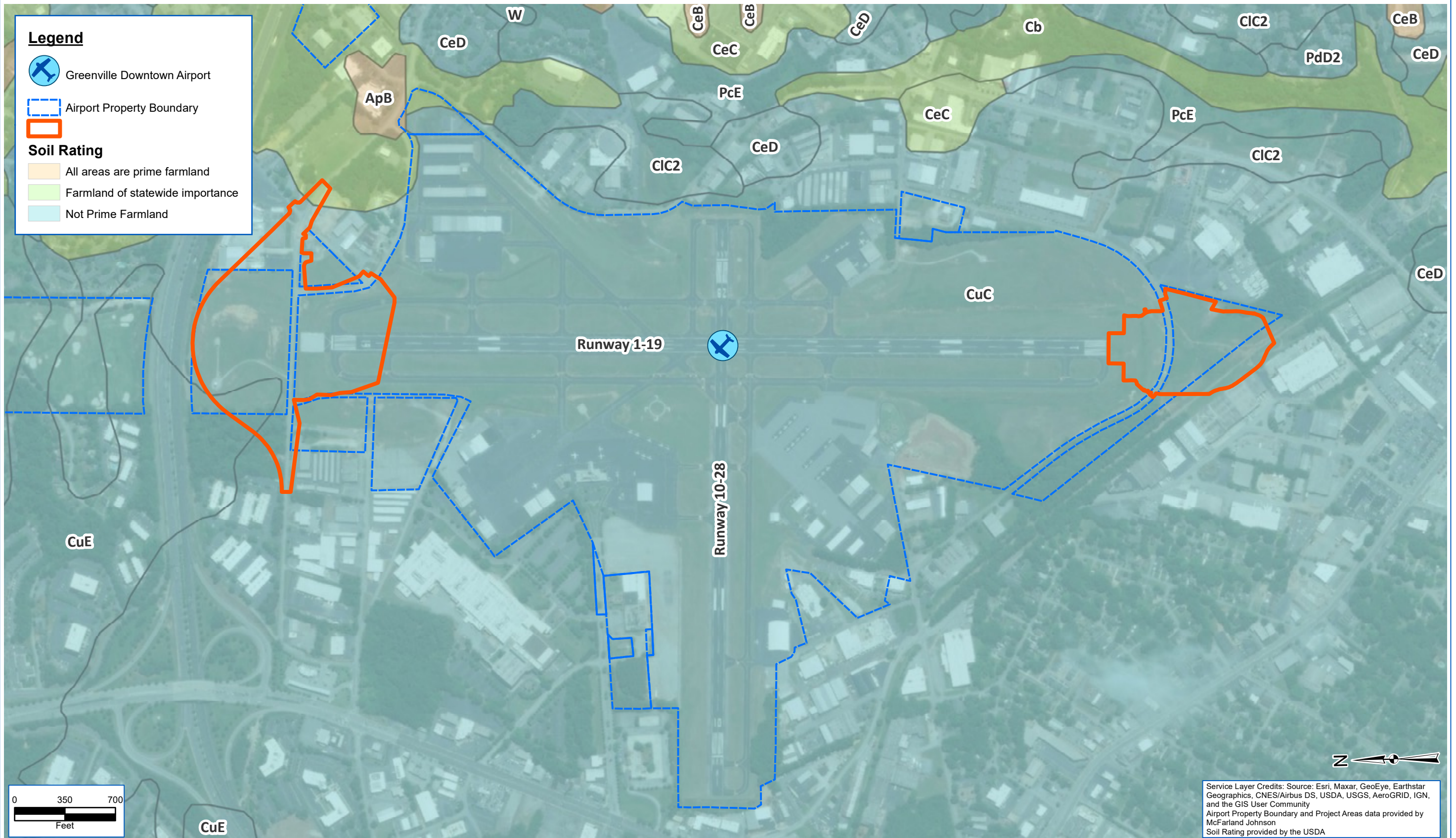
4.8 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

Historic building or cultural resources subject to the National Historic Preservation Act (NHPA) Section 106 do not occur within the footprint of the Project. The scope of the Proposed Action does not involve demolition, alteration, or destruction of any building structure. The project area has been subject to extensive ground disturbance (e.g., excavation, fill, compaction, etc.) which eliminates potential archeological integrity or sensitivity. The NHPA Section 106 requires that federal agencies such as the FAA consider the effects of their actions on historic properties via consultation with the State Historic Preservation Office (SHPO). According to 36 CFR Part 800, an historic property is “any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP).” A thorough review of relevant state, county, and city records was conducted to identify potentially historic properties in the 97-acre area of potential effect (APE). The APE was coordinated with the FAA and took into consideration project area, anticipated noise contours resulting from the Proposed Action, and areas immediately adjacent to the Project. Records reviewed included *The Historic Resources of Greenville, South Carolina*, *the City of Greenville, South Carolina Architectural Survey*, *Historical Resources Survey of Greenville, South Carolina*, and the SC ArchSite Public Web Map. Greenville County Real Property Services was contacted to determine the ages of structures in the APE. Properties with structures listed as 50 years old or older were visited and photographed to evaluate potential historic significance. These findings were submitted to the SHPO in January 2022 by the FAA, for concurrence. See **Appendix D** (NHPA Section 106 Review) for additional information and documentation.



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Figure 4-3: Soils Map





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4.9 LAND USE

According to Greenville County Property Report, the project land use is classified as “821 - Government”. As per the Greenville County Geographic Information System (GIS) the project area is zoned as “S-1: Services District”. Land uses immediately adjacent to the Airport property include I-385 to the north, with commercial and industrial land to the south, east, and west. There are limited residential areas in the immediate vicinity including Braxton at Woods Lake apartments to the east and the Sycamore Drive neighborhood to the southwest, and multiple residential developments north of I-385. Existing land use designations in the vicinity of the airport are shown in **Figure 4-4** (Land Use Map). During the preparation of the EA, no records were found regarding planned developments adjacent to the Airport. The City of Greenville has designated an airport protection district around the airport to ensure against safety hazards, noise, and obstruction problems associated with aircraft GMU aviation activities³. This Airport Protective designation coincides with the FAA Part 77 surfaces. Developments in this area are subject to review by GMU and the FAA to ensure that buildings, antennas, water towers, and other structures do not present hazards to aircraft or interfere with GMU operations and airspace.

4.9.1 Industrial and Commercial Activities Characteristics

In the surrounding area there are numerous commercial and industrial activities. Directly west of the Runway 19 end project area is a Public Storage Facility as well as two (2) nightclubs, Blind Horse Saloon and La Taberna de Pancho. To the East, the nearest developments are Canteen Vending Services and Netlink Telecommunications. The area to the south of the Runway 1 End contains many industrial suppliers and warehouse operations including CMT Industrial Solutions, Americold Logistics. Other industrial and commercial properties within one (1) mile of GMU, include, but are not limited, to the following:

- Blind Horse Saloon
- La Taberna De Pancho
- Green Gate Office Park
- City Electric Supply
- Netlink Telecommunications
- Canteen Vending Services
- CMT Industrial Solutions
- IPA Fabric Services
- Fur Babies Pet Resort
- Americold Logistics
- PMC Commercial Interiors
- Prosource Plumbing Supply
- Raby Construction
- Greenville Office Supply

4.9.2 Residential Areas, Schools, Places of Worship, Outdoor Areas

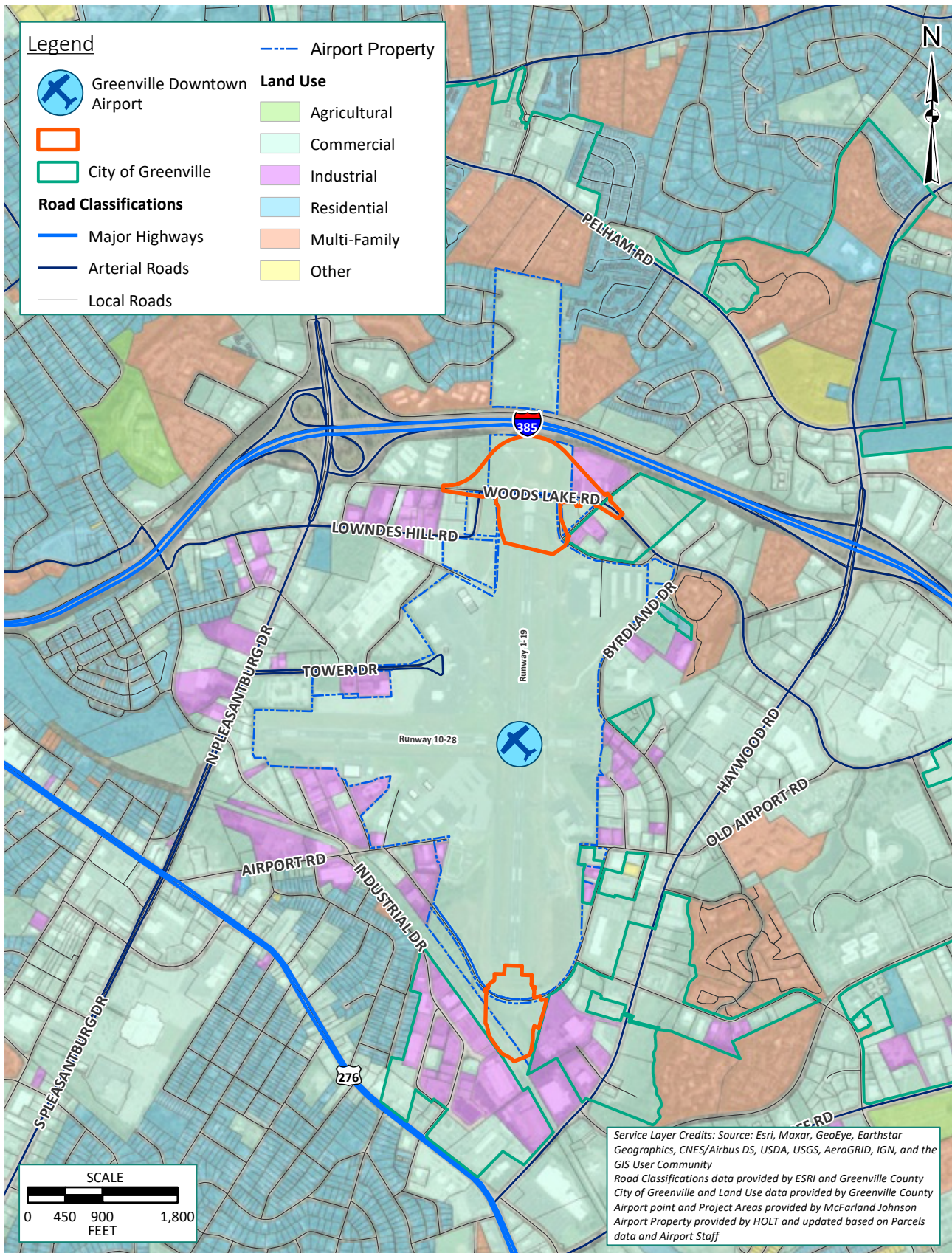
The residential areas around the Airport are predominantly apartment complexes, although single-family residential areas are found to the south and west of the Airport. The nearest school to the Airport is GREEN Charter Middle/High School, approximately 0.5 mile to the west of GMU. Other nearby schools include GREEN Charter Middle/High School, Greenville Middle Academy, Sterling School, Strayer University, East North Street Academy, and Upstate Christian Academy. The nearest cemeteries and worship are Laurel Creek Baptist Church Cemetery (approximately 0.15 mile east of Runway 1 end) and Lowndes Hill Baptist Church Cemetery (approximately 0.25 mile east-northeast of Runway 19 end). Also, the LifePoint Church is located approximately 0.25 mile northwest of Runway 19 end.

³ County of Greenville, SC Zoning Ordinances <https://www.greenvillecounty.org/Zoning/pdf/OfficialZoningOrdinance.pdf>



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Figure 4-4: Existing Land Use



Document Path: K:\Greenville Downtown Airport\T-18884.00 GMU EA\Draw\GIS\4-4 LandUse.mxd



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4.10 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN’S ENVIRONMENTAL HEALTH AND SAFETY RISKS

This section provides information on the socioeconomic characteristics of the area surrounding the Airport. The most recent statistics from the U.S. Census Bureau’s American Factfinder were used to examine the population profile, characteristics, and trends for the region.

The Environmental Justice Screening and Mapping Tool (EJSCREEN) generated by the EPA was accessed on December 2021. The EJSCREEN identified a low-income population in the 94th percentile approximately 0.35 mile west of GMU and identified the project as within the 62nd percentile zone. The EJSCREEN identified the project site as being within the 38th percentile zone of minority populations and indicated an area to the west of the Airport in the 81st percentile.

From 2010 to 2020, Greenville County’s population has grown by 16% from 451,225 to 523,542 according to the American Factfinder American Community Survey. More specifically, the population of the City of Greenville has grown by 21% over the same period, from approximately 58,409 to 70,720.

The tables below present a brief compilation of demographic profiles for the City of Greenville and Greenville County. The socioeconomic characteristics included are population, race and ethnic composition, median household income, travel time to work, and population in the labor force. A map highlighting low-income areas in the vicinity of GMU is provided in **Figure 4-5**.

Table 4-3: Demographics – Race Data

Ethnicity	City of Greenville	Greenville County
Population	70,720	525,534
White	45,504	353,260
Black or African American	16,017	88,181
Asian	1,528	12,981
Native Hawaiian or Pacific Islander	89	429
American Indian/Alaska	91	2,437
Other	7491	68,246
Minority Percentage	35.6%	32.78%

Sources: American Fact Finder 2020 Demographic Profile Data; 2019 American Community Survey 1-Year Estimates

Table 4-4: Demographics – Economic Data

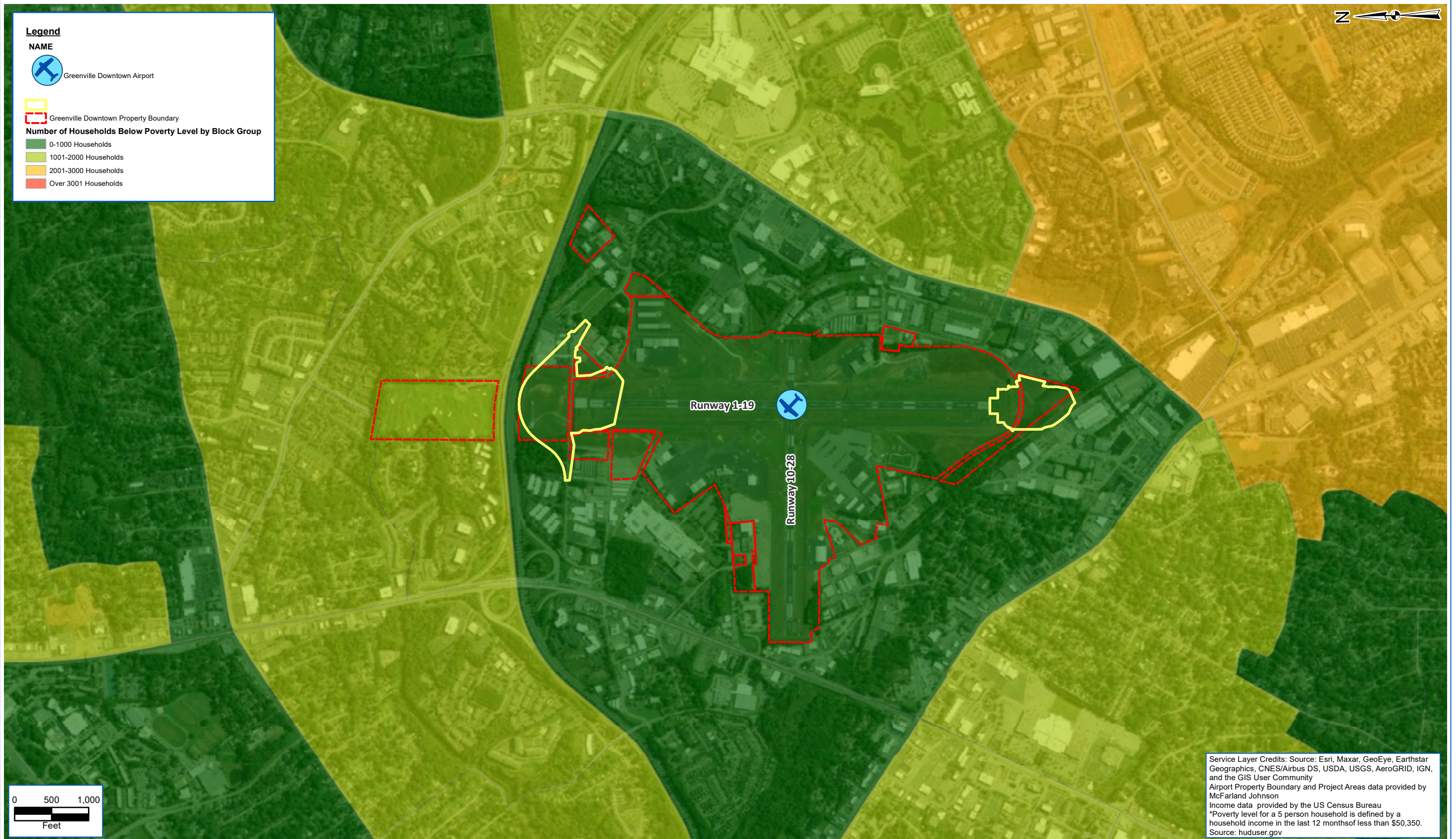
Ethnicity	City of Greenville	Greenville County
Population	70,720	525,534
Median Household Income	\$59,278	\$64,412
Mean Travel Time to Work (minutes)	20.7	24.4
In Labor Force	57.8%	64.9%

Sources: American Fact Finder 2020 Demographic Profile Data; 2019 American Community Survey 1-Year Estimates



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Figure 4-5: Environmental Justice Map





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4.11 NOISE

For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly Day-Night Average Sound Level (DNL) which is used as FAA’s primary metric. Title 14 CFR Part 150 (Appendix A, Table 1) provides Federal compatible land use guidelines for several land uses as a function of DNL⁴ values. Compatible or non-compatible land use is determined by comparing the predicted or measured DNL values at a site to the established thresholds.

The ranges of DNL values in FAA’s land use compatibility guidelines reflect the statistical variability for the responses of large groups of people to noise. FAA’s Land use compatibility with yearly DNL is shown in the following table. It should be noted that title 14 CFR part 150 land use compatibility guidelines shown do not constitute a federal determination that a specific land use is acceptable or unacceptable under Federal, state, or local laws. The responsibility for determining acceptable land uses rests with the local authorities through its zoning laws and ordinances.

The evaluation of the GMU noise environment, and land use compatibility associated with airport noise, was conducted using methodologies developed by the FAA and published in FAA Order 5050.4B, FAA Order 1050.1F. Since aircraft noise is a major factor influencing land use compatibility, FAA’s Aviation Environmental Design Tool (AEDT) was used to plot noise levels for baseline and proposed conditions. See **Section 6.11** for proposed conditions. For the baseline conditions in this EA, approximately 40,000 total operations were estimated for 2022.

The AEDT estimated aircraft noise levels (in decibels – dB) at ground level. Noise levels were quantified according to the A-weighted scale (which approximates the range of human hearing) using the DNL. A DNL of 65 dB is considered by the FAA to be the threshold of impact for noise sensitive areas. The AEDT output includes noise contours, which are lines of equal loudness, with higher levels centered on the runway and quieter levels expanding outward.

For the AEDT computer model, data was primarily collected from the most recent MPU and Terminal Study Plan, examined, and utilized to ensure that this noise analysis provides an accurate depiction of the existing noise environment at GMU. Other data sources for this analysis included:

- FAA GMU ALP Update (2021)
- FAA General Aviation Forecasts (2021 – 2026)
- GMU Airport Management
- Noise Land Use Compatibility

⁴ DNL is a 24-hour time-weighted-average noise metric expressed in dBA which accounts for the noise levels of all individual aircraft events, the number of times those events occur, and the time of day which they occur. DNL has two time periods: daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.). In order to represent the added intrusiveness of sounds occurring during nighttime hours, DNL penalizes or weights events occurring during the nighttime periods by 10 dBA.



Table 4-5: Title 14 CFR Part 150 - FAA Land Use Compatibility Guidelines as a Function of Yearly DNL

Land use	Yearly day-night average sound level (L_{dn}) in decibels					
	Below 65	65–70	70–75	75–80	80–85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings ...	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

Notes:

The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties remains with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally determined land use for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table

SLUCM Standard Land Use Coding Manual.

Y (Yes) Land Use and related structures are compatible without restrictions.

N (No) Land Use and related structures are not compatible and should be prohibited.

NLR Noise Level Reduction (outdoor to indoor) are to be achieved through incorporation of noise attenuation into the design and construction of structure.

25,30, or 35 Land use and related structures are generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated in design and construction of structure.

1 Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems 2 Measures to achieve NLR of 25 dB must be incorporated into the design and



construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

3 Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

4 Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of the buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low.

5 Land use compatible provided special sound reinforcement systems are installed.

6 Residential buildings require an NLR of 25 dB.

7 Residential buildings require an NLR of 30 dB.

8 Residential buildings not permitted.

Noncompatible land use.

Source: Title 14 CFR part 150, Appendix A, Table 1, January 1998.

Noise exposure resulting from airport operations (baseline conditions) in 2021 at GMU is depicted as DNL 65, 70, and 75 dBA contours in **Figure 4-6A** (Noise Contour Map – Existing Conditions), superimposed over an aerial image. **Figure 4-6B** shows the existing noise contours superimposed over the land use map.

As shown on **Figures 4-6A** and **4-6B**, the 65 dB noise contours do not extend off Airport property except for a few small areas. The areas outside of the airport include roadways, commercial, and light industrial zones bordering the Airport. The DNL 65+ dB contour for baseline conditions encompasses approximately 24.6 acres, with only 0.44 acres (1.8%) off-airport property.

4.11.1 Sensitive Noise Receptors

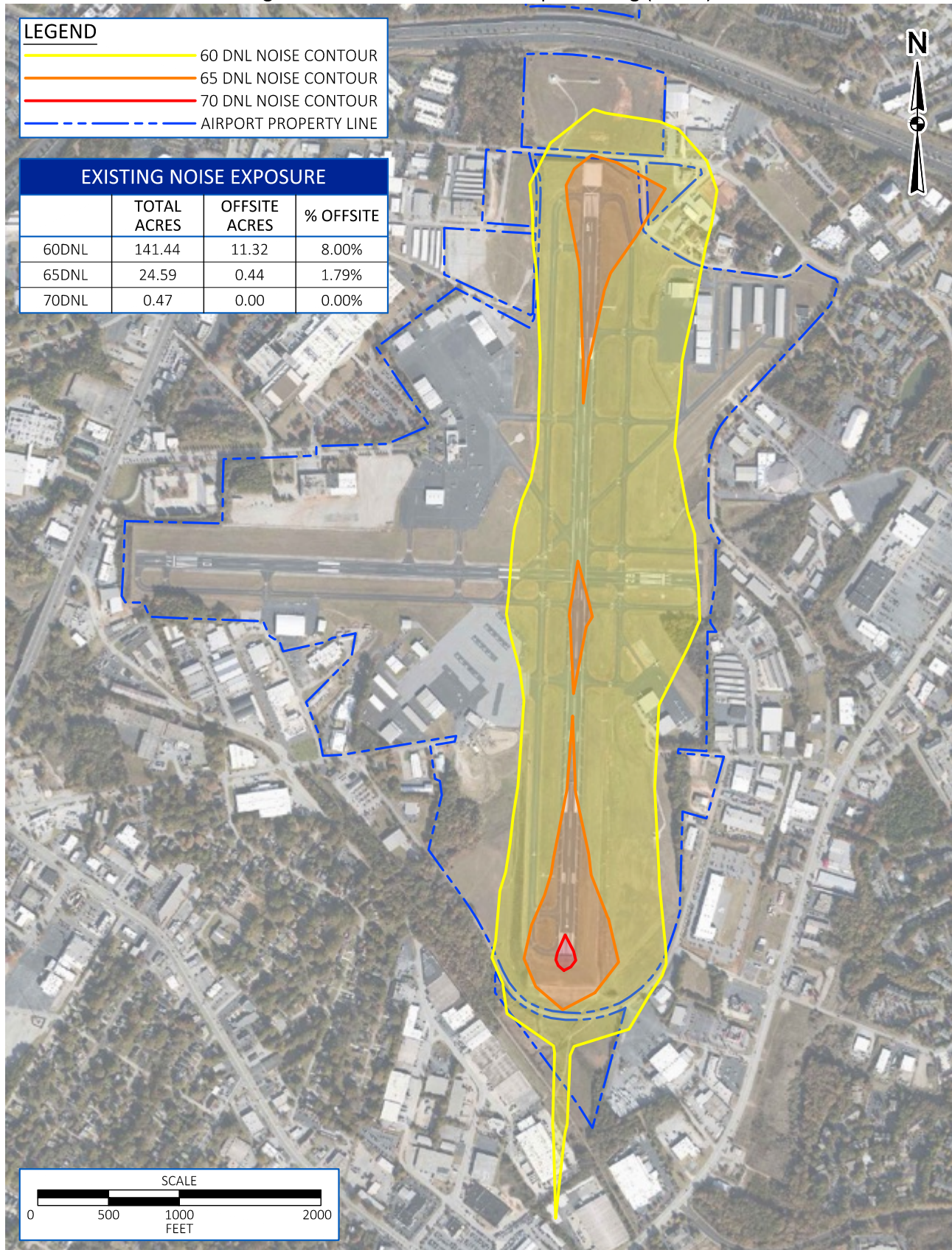
Table 4-6: Nearest Noise Receptors to Project Area

Receptors	Description
Residential	Residential area on Travis Street and Ridgeway Drive, Located approximately 1,200 feet southwest of the Runway 1 Project Area
Commercial	The nearest commercial property (La Taberna de Pancho) is located on Woods Lake Road, approximately 600 feet west of the Runway 19 Project Area
Institutional	- The Green Charter Middle/High School is the nearest school, located west of SC Highway 14, approximately 3,000 feet (west of the Runway 19 Project Area - Lowndes Hill Baptist Church is the nearest place of worship, adjacent to the east side of the Runway 19 Project Area.
Recreational	3's Greenville golf course is located approximately 700 feet north of the Runway 19 Project Area



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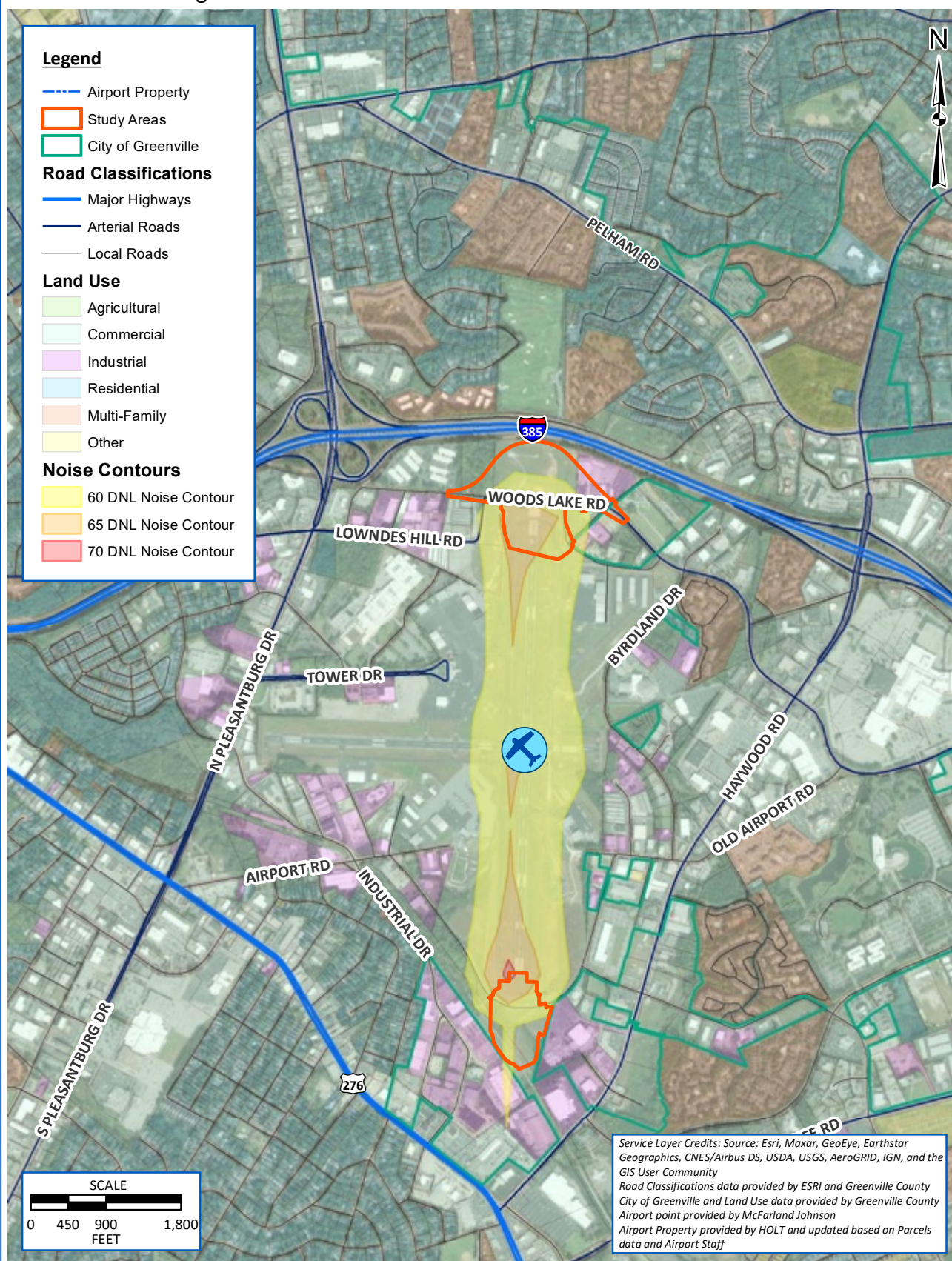
Figure 4-6A: Noise Contours Map - Existing (Aerial)





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Figure 4-6B: Noise Contours and Land Use - Baseline Conditions



Document Path: K:\Greenville Downtown Airport\T-18884.00 GMU EA\Draw\GIS\4-6B Existing Noise Contours with Land Use.mxd



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4.12 TRAFFIC

Woods Lake Road passes through the footprint of the Proposed Action on the Runway 19 end. Woods Lake Road is a state-maintained major collector road, classified by the South Carolina Department of Transportation (SCDOT) as a secondary route and is identified as a strategic connector by the City of Greenville. During times of high congestion on I-385, Woods Lake Road serves as an alternate route between the arterial roads and major commercial centers of North Pleasantburg Drive and Haywood Road. SCDOT traffic station data collected approximately 50 feet northwest the intersection of Woods Lake Road Piper Lane measured an annual average daily traffic count of 4,800 trips per day in 2020, down 20% from 6,000 in 2019. Approximately 2% of traffic of Woods Lake Road consists of heavy trucks. SCDOT currently has no planned improvements planned for Woods Lake Road following the recent resurfacing. No bicycle or pedestrian infrastructure is present along this portion of Woods Lake Road. On the southern portion of the project area, Airport Road curves around the GMU, bordering the project area to the east, west, and south. SCDOT traffic station data collected on Airport Road, approximately 660 feet southeast of the intersection with Miller Lane and Airport Road Extension, measured an annual average daily traffic count of 4,200 trips per day in 2020, down 30% from 6000 in 2019. Heavy trucks comprise approximately 2% of traffic on Airport Road. No bicycle or pedestrian infrastructure is present on Airport Road.

4.13 WATER RESOURCES

To assess the aquatic resources within the Study Area, maps the National Wetlands Inventory (NWI) were reviewed, and field data was collected on a site visit by Three Oaks Engineering on December 28, 2021. A Jurisdictional Determination (JD) verification request was submitted to the USACE on February 16, 2022. See **Appendix E** for the Wetland Delineation Report and Jurisdictional Determination Request.

4.13.1 Wetlands

The ecological environments encompassed by the project areas are primarily upland maintained grasslands. Some of the airport's stormwater retention ponds exhibit wetland characteristics, but these are outside of the project's disturbed area. These environments are considered to be of little ecological importance. NWI mapped wetland features in the vicinity of GMU can be found in **Figure 4-7** (Environmental Features). See **Appendix E** for the Wetland Delineation Report and JD verification request submitted to the USACE.

4.13.2 Surface Waters

On the north end of the runway, small natural water bodies within the footprint of the Proposed Action. A stormwater outfall from the northern portion of the existing airfield flows into a culvert going under Woods Lake Road, and eventually into a small unnamed stream that begins on the western edge of the project area. The stream flows northwest through the adjacent wooded area, then flowing north under I-385, eventually entering Richland Creek, a tributary of the Reedy River. On the south end of the runway, outside of the proposed project area, another unnamed tributary of the Reedy River (via Laurel Creek) crosses through airport property. This stream receives stormwater from the southern portion of the airfield. The outfall is fed by manmade drainage structures on airport property. Stormwater is conveyed southward, away from the airfield, and flows through a culvert under Airport Road. Surface Water features in the vicinity of GMU can be found in **Figure 2-3** and **Figure 2-4**. See **Appendix E** for the Wetland Delineation Report and JD verification request submitted to the USACE.



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Figure 4-7: Environmental Features





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4.13.3 Groundwater

The Airport does not rest over an EPA designated Sole Source Aquifer (SSA), or otherwise protected aquifer. Groundwater serves as an important potable water supply for many individual households, small communities, and larger municipalities. However, residences and businesses in the area primarily receive their water from the local municipal water provider, Greenville Water. Potential impacts from airport development projects can include reduced ground water recharge and potential contamination through chemical, toxin, or other pollutant releases

The EPA SSA program was established under the Safe Drinking Water Act (SDWA). According to the EPA, an SSA is defined as one that supplies at least 50 percent of the drinking water for its service area, and wherein which there is no reasonably available alternative drinking water sources, should the aquifer become contaminated. The SSA program allows for EPA review of federally funded projects that have the potential to affect designated SSAs and their source areas. There are no designated SSA areas in South Carolina or any neighboring states.

4.13.4 Floodplains

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) under the National Flood Insurance Act of 1968 (NFIA), as well as overseeing the federal floodplain management programs and flood hazard mapping. Federal flood hazard areas are identified on community specific Flood Insurance Rate Maps (FIRM).

According to the FIRM, Panels 45045C0401E and 45045C0403E, most of the project area is located in an area subject to minimal flooding (i.e., Zone X). Flood Zone A extends into the project area on the 1 end of the runway. Floodplains in the vicinity of GMU can be found in **Figure 4-7** (Environmental Features).

4.14 NATIONAL AND STATE FORESTS, WILDERNESS AREAS, AND WILD AND SCENIC RIVERS

According to the U.S. National Wild and Scenic Rivers System, no designated wild and scenic rivers are present in the vicinity of GMU (Reference: <https://www.rivers.gov/documents/nwsrs-map.pdf>). Areas designated as national or state forest, wilderness areas, or wild and scenic rivers are not present on GMU property or immediately adjacent. The nearest protected areas are located over four (4) miles away from the project area and include:

- Lake Conastee Nature Preserve and Park 4.1 miles south
- Paris Mountain State Park 5.5 miles northwest
- Lake Cunningham Waterfowl Area 10.4 miles north

The urban makeup of the surrounding area precludes the presences of wilderness resources in the Project Area.



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5. ALTERNATIVES ANALYSIS

This chapter details the alternatives considered and the evaluation process to select the preferred alternative that appropriately addresses the purpose and need of the Proposed Action with the least environmental impact. Three (3) alternatives were considered along with a no-build alternative (“No Action”). The RSA analysis, performed as a part of GMU’s ALP Update in 2021, presented several alternatives for each end of Runway 1-19. However, only feasible alternatives that meet the purpose and need of the Project were considered for this analysis. Each alternative was similarly evaluated with the required degree of analysis to the Proposed Action and in accordance with the criteria described in the following section. The evaluated alternatives for each project include feasible modification that allow the Airport to maintain its current operations and maintain the level of service currently provided to its customer base:

- Alternative 1: No Action
- Alternative 2: Runway 1-19 RSA Improvements with the Relocation of Woods Lake Road
- Alternative 3: Runway 1-19 RSA Improvements with the Tunnelling of Woods Lake Road
- Alternative 4: Runway 1-19 RSA Improvements with the Tunnelling of Airport Road

The preferred alternative is selected based upon the evaluation of all the improvements that must be undertaken to address the immediate operational needs of GMU.

5.1 EVALUATION CRITERIA

The following factors were considered in the development and evaluation of the alternatives:

1. **Land Use Compatibility:** “Is the alternative compatible with on-airport and off-airport patterns of land use?” This criterion evaluates such things as access to the airside movement areas and the local road network, and the degree to which the alternative is compatible with activities occurring in surrounding on- and off-airport lands.
2. **Environmental Consequences:** “What are the potential environmental impacts associated with implementation of the alternative?” This criterion takes into consideration foreseen impacts over the human environment and natural features present within the project area.
3. **Flexibility to Accommodate Existing and Future Demand:** “Is the alternative flexible and dynamic in the sense that it could accommodate current need and potentially future changes in demand and additional expansion?” This criterion recognizes the fact that location decisions made today would influence future airport development for many years to come.
4. **Operational Safety and Efficiency:** “Would the alternative contribute to a smoothly functioning airport with efficient movement of aircraft?” This criterion considers whether the alternative makes the best, cost effective and most efficient use of Airport facilities and infrastructure, as well as meeting all applicable safety requirements.
5. **Cost and Revenue Generation Capability:** “Does the alternative take a strategic and capital-based approach that allows or creates opportunities for Airport management to increase revenue generation and/or diversify revenue sources, thereby improving the overall competitiveness and cost-effectiveness of the Airport?”



5.2 DESCRIPTION OF ALTERNATIVES

5.2.1 Alternative 1 – No Action

The No Action Alternative maintains existing conditions at the Airport, does not meet the purpose and need, nor address the deficiencies of the existing RSA. This alternative does not meet FAA safety standards. It is assumed that if no action is taken that Runway 1-19 would need to be shortened to meet FAA safety standards, which could severely hinder and/or prevent current aircraft operations from occurring at GMU. The existing conditions at GMU can be seen in **Figure 5-1, Alternative 1- No Action**.

Alternative 1 was assessed against the five evaluation factors; the results are below:

1. **Land Use Compatibility:** The No Action Alternative does not involve off-site locations and proposes no changes to the existing Airport layout. Land use in the area would remain unchanged. However, existing Airport property is not being utilized for the designated purposes of the mandated safety areas.
2. **Environmental Consequences:** This alternative does not involve construction impacts over natural or cultural resources.
3. **Flexibility to Accommodate Existing and Future Demand:** Current conditions of Runway 1-19 RSA does not meet FAA safety standards and affect existing aircraft operations. If the current Runway 1-19 RSAs are not improved to the recommended FAA safety requirements, GMU would have to shorten the Runway 1-19 length to provide the mandated RSA requirements. Therefore, with the shortened runway length, GMU would be unable to accommodate some of the existing aircraft activity or the future aircraft demand.
4. **Operational Safety and Efficiency:** The No Action Alternative does nothing to alleviate the current operational and safety issues at Runway 1-19. The existing RSA dimensions do not meet FAA design safety standards.
5. **Cost and Revenue Generation Capability:** This alternative does not immediately result in direct construction costs; however, shortening the runway length would have cost implications (expenditures), limits the Airport's ability to maintain revenues and could possibly jeopardizing future federal funding. Additionally, this alternative would not promote new jobs.

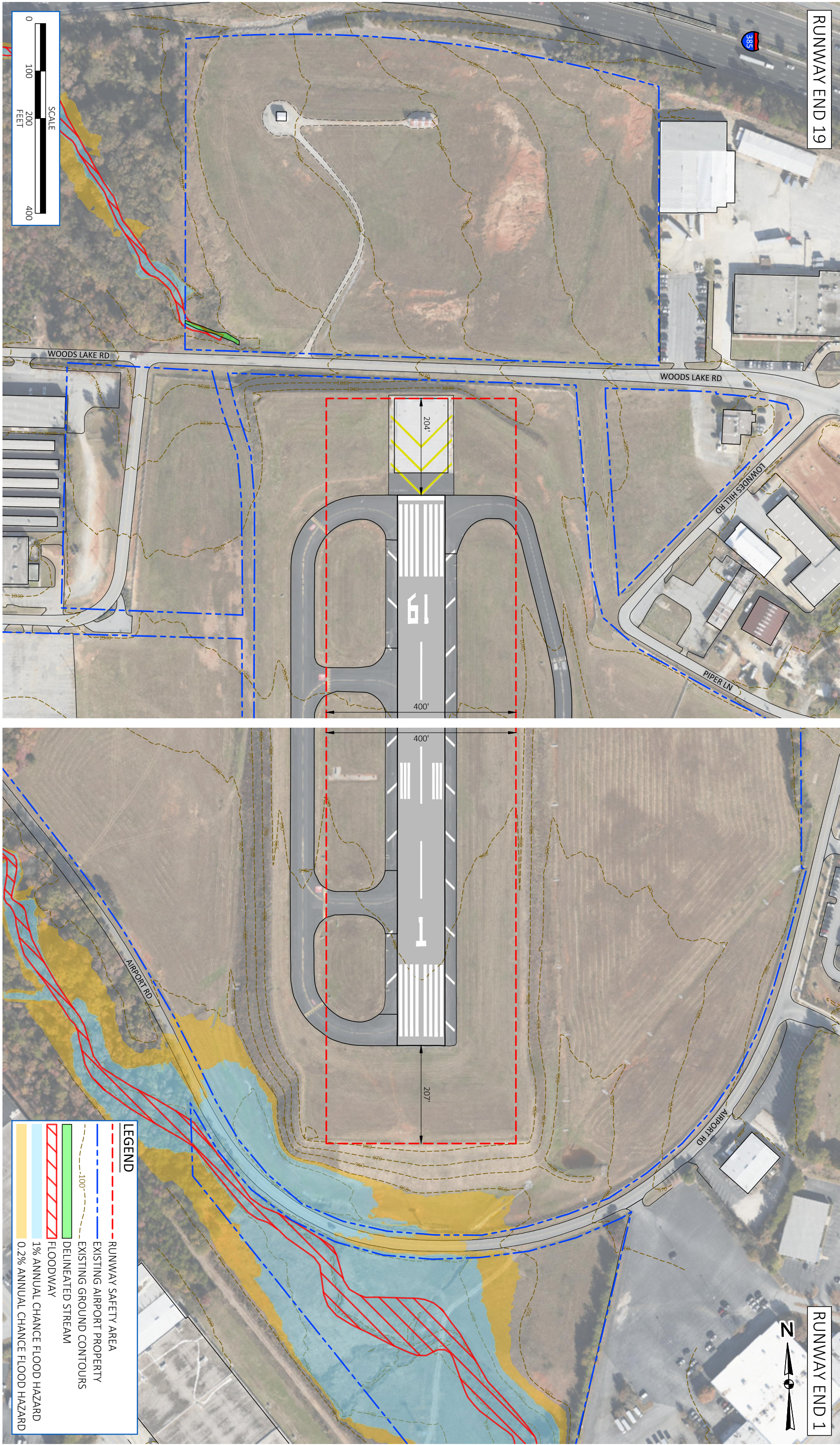
5.2.1.1 Advantages and Disadvantages

Advantages:

- No immediate construction costs required (short-term)
- No construction impacts

Disadvantages:

- Does not meet purpose and need of the Airport
- Compromised safety of passengers, crew, and the surrounding community
- Compromised existing runway length





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- Could potentially limit the ability and opportunity for GMU to continue serve many classes of aircraft and unable to accommodate future needs
- Incompatible land use of existing Airport property by not providing required FAA safety area dimensions

5.2.2 Alternative 2: Runway 1-19 RSA Improvements with the Relocation of Woods Lake Road

Alternative 2 considers the conversion of 340 feet of existing runway into proposed RSA, and the construction of an additional 260 feet of new RSA and proposed EMAS at the Runway 1 end within airport property. This alternative considers the replacement of approximately 340 feet of Runway 19 end, as well as adding 600 feet of new RSA and proposed EMAS bed within airport property. In conjunction with the RSA improvements, the Taxiway A and B entrances would be reconfigured to the proposed Runway 19 improved threshold location. Since the project area at Runway 19 end and airport property is divided by the Woods Lake Road (State Road), Alternative 2 would require permanent rerouting and relocation of the road around the proposed area for Runway 19 end RSA improvements. The roadway curves would be required to be designed for traffic travelling at 35-mph (as per SC DOT requirements). The 35-mph design of Woods Lake Road requires new intersections on both ends, turning lanes and the acquisition of neighboring commercial (private) properties along the north side of Woods Lake Road on both sides of the project area. Alternative 2 considers a full closure of approximately 2,191 feet of existing Woods Lake Road during the construction phase of Runway 19 RSA improvements and road relocation. Traffic would be temporarily detoured utilizing existing Airport Road. Additional actions associated with Alternative 2 would include: modifying the existing RSA profile to accommodate the proposed improvements; incidental grading and stormwater drainage; relocation and installation runway lighting, signage, and NAVAIDs; and relocation of the existing utilities along Woods Lake Road.

This alternative is depicted in **Figure 5-2, Alternative 2.**

Alternative 2 was assessed against the five evaluation factors; the results are below:

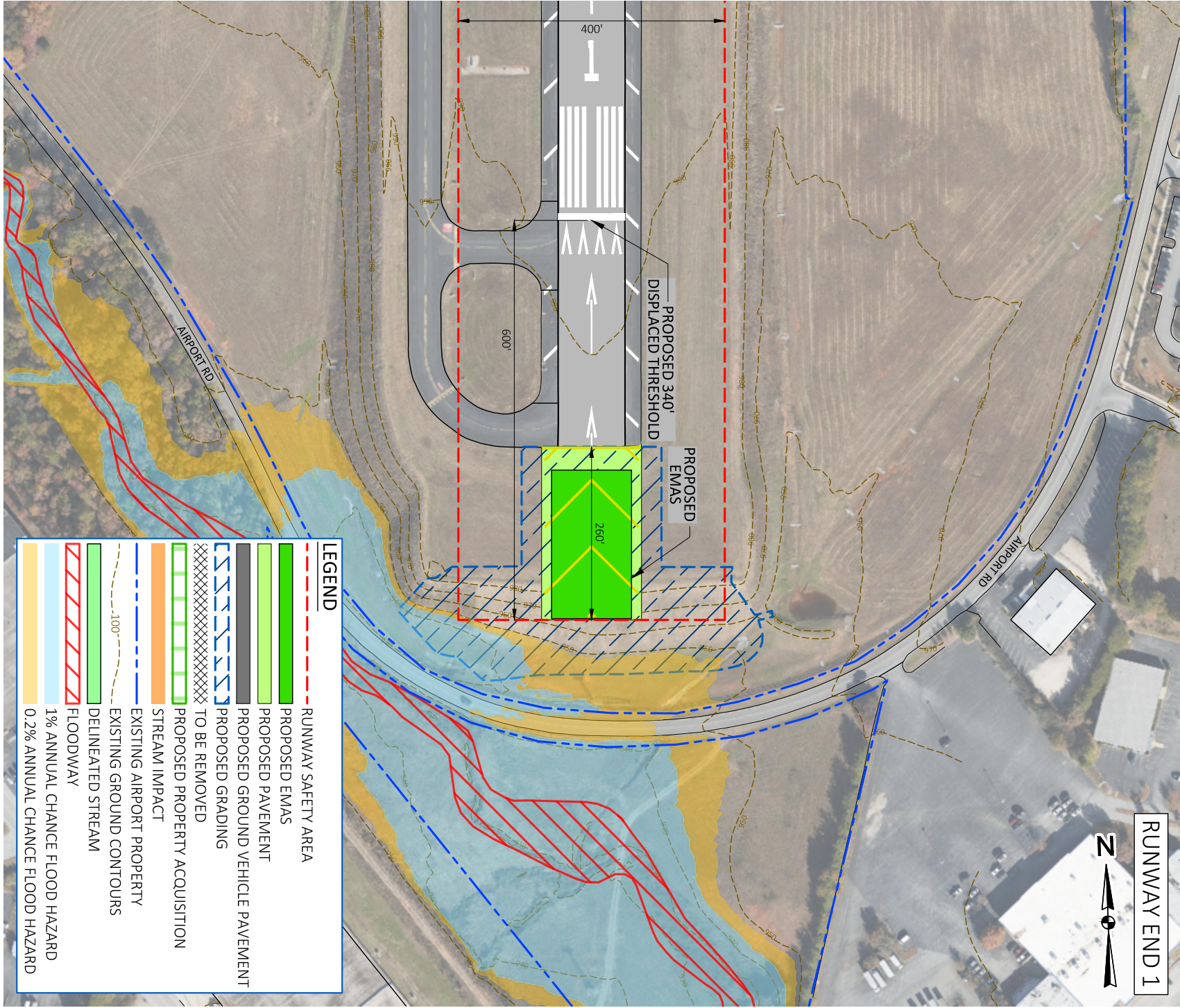
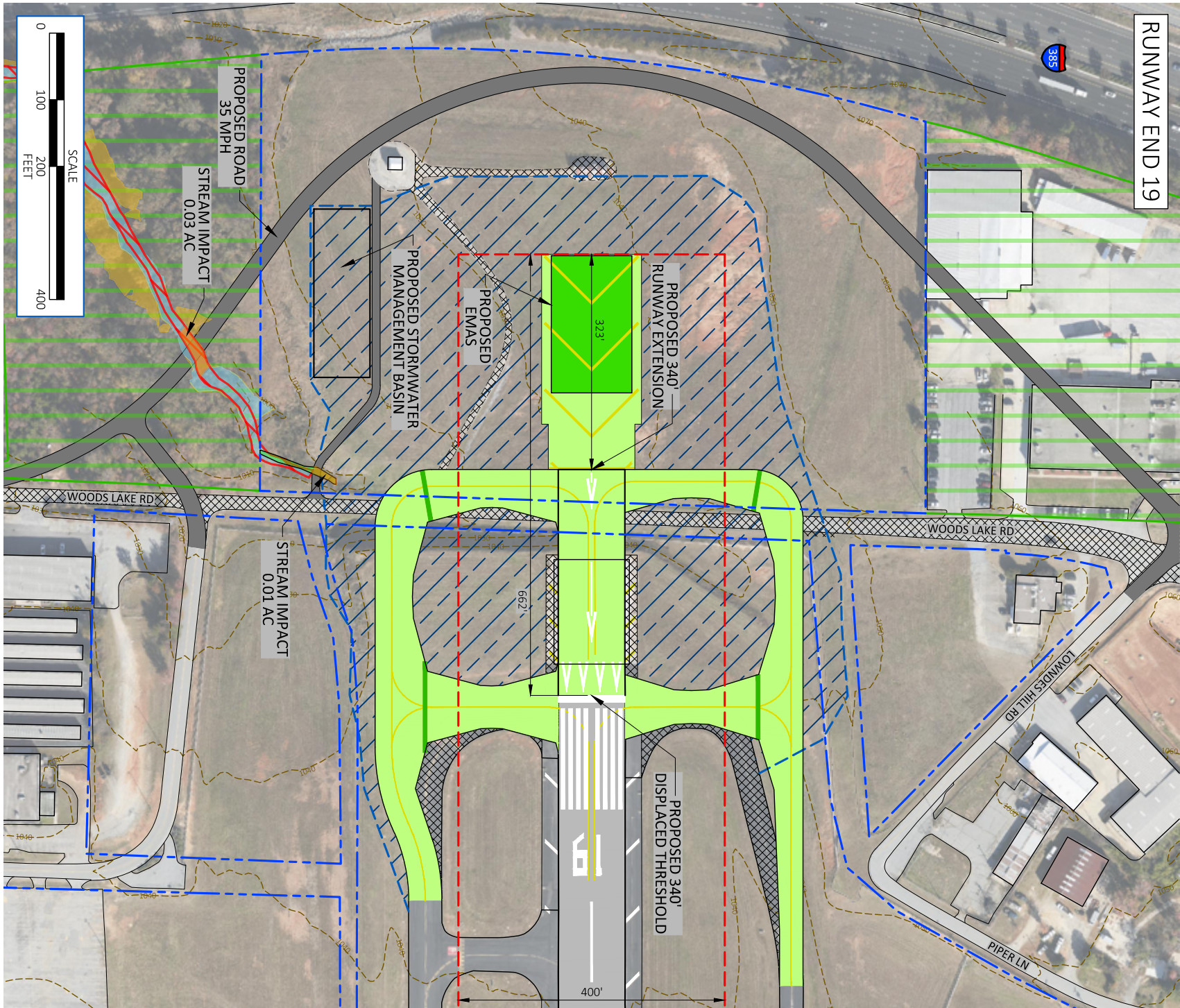
1. **Land Use Compatibility:** Alternative 2 would better utilize airport property, including tract of Airport-owned land north of Runway 19 end and Woods Lake Road. Alternative 2 would provide utilization of this land for aeronautical purposes, as intended. Due to relocation of Woods Lake Road, three (two entire parcels and a portion of the third) neighboring properties (12.54 acres) would be permanently impacted and subject to acquisition, including one business (Canteen Vending Services) requiring relocation.
2. **Environmental Impact:** Alternative 2 would necessitate the net addition of 3.86 acres (168,141 square feet) of impervious surfaces. Alternative 2 is anticipated to result in environmental impacts such as 0.04 ac (1,742.4 square feet) of stream and stream floodway, 0.53 ac (23,087 square feet) of floodplain and the removal of approximately 0.93 acre (40,510 square feet) (of wooded area. Mitigation would be required to offset impacts as per applicable regulation.
3. **Flexibility to Accommodate Existing and Future Demand:** Alternative 2 would bring the Runway 1-19 RSAs into FAA compliance for their current traffic levels and existing fleet mix, and the proposed improvements would allow GMU to meet associated operational needs.
4. **Operational Safety and Efficiency:** Alternative 2 would enhance the operational safety of the Airport and the proposed RSA improvements would meet FAA safety standards.



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RUNWAY END 19

RUNWAY END 1



LEGEND	
	RUNWAY SAFETY AREA
	PROPOSED EMAS
	PROPOSED PAVEMENT
	PROPOSED GROUND VEHICLE PAVEMENT
	PROPOSED GRADING
	TO BE REMOVED
	PROPOSED PROPERTY ACQUISITION
	STREAM IMPACT
	EXISTING AIRPORT PROPERTY
	EXISTING GROUND CONTOURS
	DELINEATED STREAM
	FLOODWAY
	1% ANNUAL CHANCE FLOOD HAZARD
	0.2% ANNUAL CHANCE FLOOD HAZARD



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5. **Cost and Revenue Generation Capability:** This alternative results in construction costs of approximately 15 million dollars. However, the Airport's ability to continue generating revenue is supported by this alternative.

5.2.2.1 Advantages and Disadvantages

Advantages:

- Satisfies FAA safety standards
- Meets the purpose and need of the Airport
- Supports GMU's continued service for GA operations
- Increases safety of the Airport and surrounding community

Disadvantages:

- Large environmental impacts on neighboring properties
- Immediate capital investment is required
- Relocated road would be in induced airspace
- Construction for relocated road would cause temporary traffic impacts
- Utilities services would have to be relocated, causing temporary outages
- Requires the acquisition of neighboring properties on Woods Lake Road to accommodate the 35-mph speed limit for the relocated proposed curved roadway
- Additional earth disturbance and impervious area from relocated road

5.2.3 Alternative 3: Runway 1-19 RSA Improvements with the Tunnelling of Woods Lake Road (Preferred)

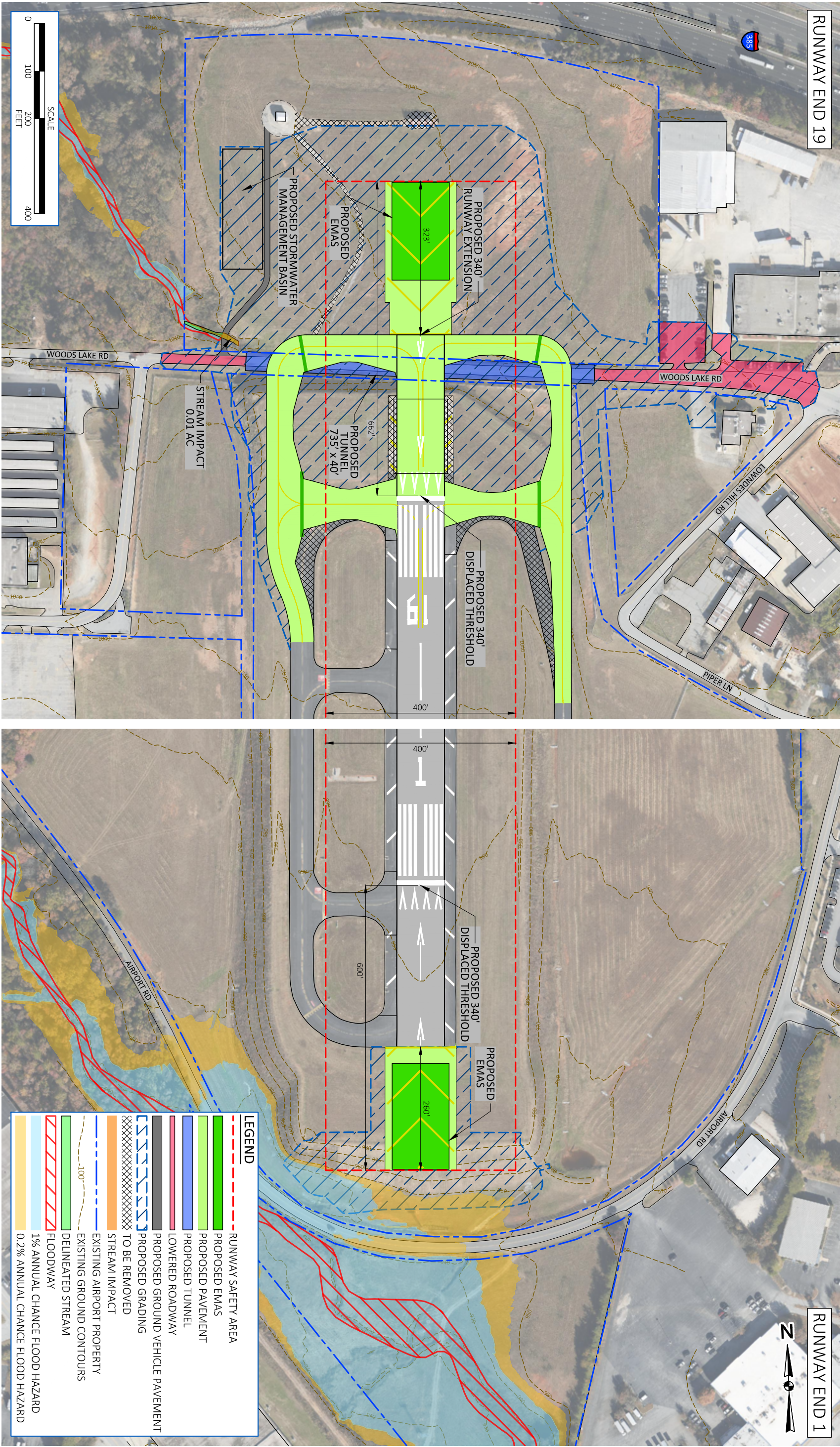
Alternative 3 includes the conversion of 340 feet of runway into proposed RSA and construction of an additional 260 feet of new RSA and proposed EMAS on the Runway 1 end, within airport property. This alternative considers the replacement of 340 feet of Runway 19 end, as well as 600 feet of new RSA and proposed EMAS bed constructed at the 19 end, similar to Alternative 2. The regulations of 14 CFR Part 135 govern commuter and on-demand aircraft charter operations. These operations account for a significant portion of GMU's overall operations. For Part 135 operators, landing distance is strictly limited by regulation. A typical Part 135 operator must plan to land on a maximum of 60 percent of the most likely runway. Part 135 operators represent a large portion of GMU's users, and their presence is critical to the Airport's economic viability. As such, no reduction in runway length is deemed feasible.

Instead of relocating Woods Lake Road (State Road) around the project area, Alternative 3 proposes lowering the road's and neighboring driveways' profiles and tunneling under the proposed Runway 19 end RSA area. The proposed tunnel dimensions would be approximately 735 feet long by 40 feet wide by 16 feet tall (as stated in page 14.3-7 of the *South Carolina Roadway Design Manual, February 2021*). In conjunction with the RSA improvements, the Taxiway A and B entrances would be reconfigured to the proposed Runway 19 improved threshold location. Alternative 3 considers a full closure of approximately 2,000 feet of Woods Lane Road during the construction phase of Runway 19 RSA improvements and tunnel construction. Traffic would be temporarily detoured utilizing existing Airport Road. Additional actions associated with Alternative 3 would include: modifying the existing RSA profile to accommodate the proposed improvements; incidental grading and stormwater drainage; relocation and installation runway lighting, signage, and NAVAIDs; and relocation of the existing utilities along Woods Lake Road and Piper Lane. This alternative is depicted in **Figure 5-3, Alternative 3 (Preferred)**.



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Figure 5-3: Alternative 3 - Runway 1-19 RSA Improvements with the Tunneling of Woods Lake Road (Preferred)





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Alternative 3 was assessed against the five evaluation factors with the following results:

1. **Land Use Compatibility:** Alternative 3 would better utilize this tract of Airport-owned land north of Runway 1-19. Alternative 3 would provide utilization of this land for aeronautical purposes, as intended, and this alternative does not involve land acquisition. No land acquisition is required.
2. **Environmental Impact:** Alternative 3 would necessitate the net addition of impervious surfaces of approximately and 3.61 acres (157,252 square feet) of RSA/runway/taxiway and roadway pavement. Alternative 3 would result in the following environmental impacts: 0.01 acre (436 square feet) of stream and floodway, 0.47 acre (20,473 square feet) of floodplain, and 0.14 acre (6,098 square feet) of wooded area. Proper permitting would be submitted and approved prior to construction.
3. **Flexibility to Accommodate Existing and Future Demand:** Alternative 3 would bring the Runway 1-19 RSAs into FAA compliance for their current traffic levels and existing fleet mix, and the proposed improvements would continue to allow GMU to meet associated operational needs.
4. **Operational Efficiency:** Alternative 3 would greatly enhance the operational safety of the Airport and the proposed RSA improvements would bring GMU into compliance with FAA safety standards. In addition, tunneling Woods like Road would provide the current level of service expected by the existing travelers. This alternative would not require permanent re-routing or additional travel distances.
5. **Cost and Revenue Generation Capability:** This alternative results in construction costs of approximately 28 million dollars. However, the Airport's ability to continue to generate revenue is maintained by this alternative.

5.2.3.1 Advantages and Disadvantages

Advantages:

- Satisfies FAA safety standards
- Meets the purpose and need of the Airport
- Supports GMU's continued service for GA operations
- Increases safety of the Airport and the surrounding community
- Minimizes environmental impacts when compared to Alternative 2 and Alternative 4
- Less earth disturbance than Alternative 2 and Alternative 4
- No induced airspace obstruction
- No land acquisition required

Disadvantages:

- Immediate capital investment is required
- Temporary construction impacts including traffic and utility disruption
- Requires grading for the proposed tunnel, but less earthwork than Alternative 2 and Alternative 4
- Requires modification of existing airport's stormwater management systems



5.2.4 Alternative 4: Runway 1-19 Full Dimensional RSA Improvements with the Tunnelling of Airport Road

Alternative 4 proposes a full dimensional RSA construction at the Runway 1 end, crossing over Airport Road thereby improving the runway safety standards and maintaining the runway operational lengths. This alternative proposes lowering the profile and tunneling the existing Airport Road (State Road) to allow for the RSA improvements. The Airport Road proposed tunnel would measure approximately 40 feet wide by 543 feet in length. The tunnel height or clearance is assumed to be 16 feet based on the SCDOT Roadway Design Manual. Alternative 4 proposes improvements to Airport property, but also requires property acquisition of approximately two (2) off-Airport properties. Large amounts of fill would be required to bring the existing grade up to the elevation of the airfield. In addition, to the RSA improvements at the Runway 1 end, a new EMAS would be constructed at the Runway 19 end under this alternative. Alternative 4 considers a full closure of at least 2,250 feet of Airport Road during the construction phase of Runway 1 RSA improvements, tunnel construction, and reconstruction of Airport Road. Traffic would be temporarily detoured utilizing Woods Lake Road. Alternative 4 associated actions would include the following: modifying the existing RSA profile to accommodate the proposed improvements; extensive grading and stormwater drainage and facilities; relocation and installation runway lighting, signage, and NAVAIDs; and relocation of the existing utilities along Airport Road. This alternative is depicted in **Figure 5-4, Alternative 4**.

Alternative 4 was assessed against the five evaluation factors with the following results:

- 1. Land Use Compatibility:** Alternative 4 would require the acquisition of off-airport land, approximately 4.5 acres, for the Runway 1 RSA improvements. This includes 2 acres to be purchased from Greenville County, and another commercial parcel of 2.5 acres (0.2 acres within RSA), owned by Americold Logistics. Americold Logistics would require relocation.
- 2. Environmental Impact:** Alternative 4 would create significant impacts on stream and floodway of approximately 1.10 acre (47,916 square feet), as well as 6.42 acres (279,655 square feet) of floodplain, and 0.38 acre of wooded area (165,543 square feet) south of the airport. The existing topography south of the airfield is not conducive to RSA construction due to an existing steep gradient, necessitating large amounts of fill to be added. In addition, portions of a bicycle trail (Section 4(f) resource) would have to be re-routed.
- 3. Flexibility to Accommodate Existing and Future Demand:** This alternative would bring the Runway 1-19 RSAs into FAA compliance for their current traffic levels and fleet mix. No additional capacity is created for current or future levels of operation. Alternative 4 would bring the Runway 1-19 RSAs into FAA compliance for their current traffic levels and existing fleet mix, and the proposed improvements would continue to allow GMU to operate. No additional capacity is created for current or future levels of operation.
- 4. Operational Efficiency:** Alternative 4 would greatly enhance the operational safety of the Airport and the proposed RSA improvements would bring GMU into compliance with FAA safety standards.
- 5. Cost and Revenue Generation Capability:** This alternative results in construction costs of approximately 34 million dollars. However, the Airport's ability to continue to generate revenue is maintained by this alternative.

RUNWAY END 19

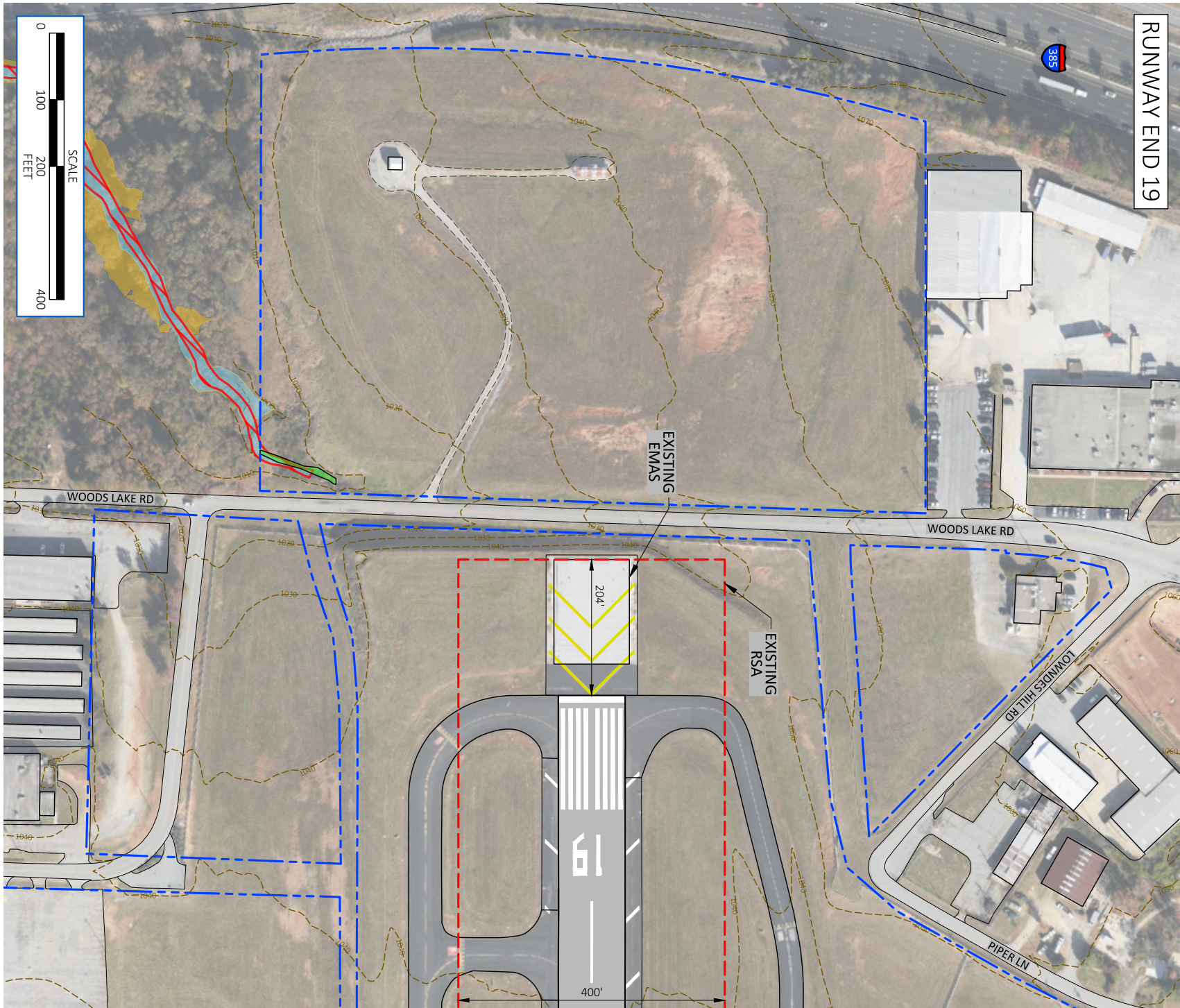
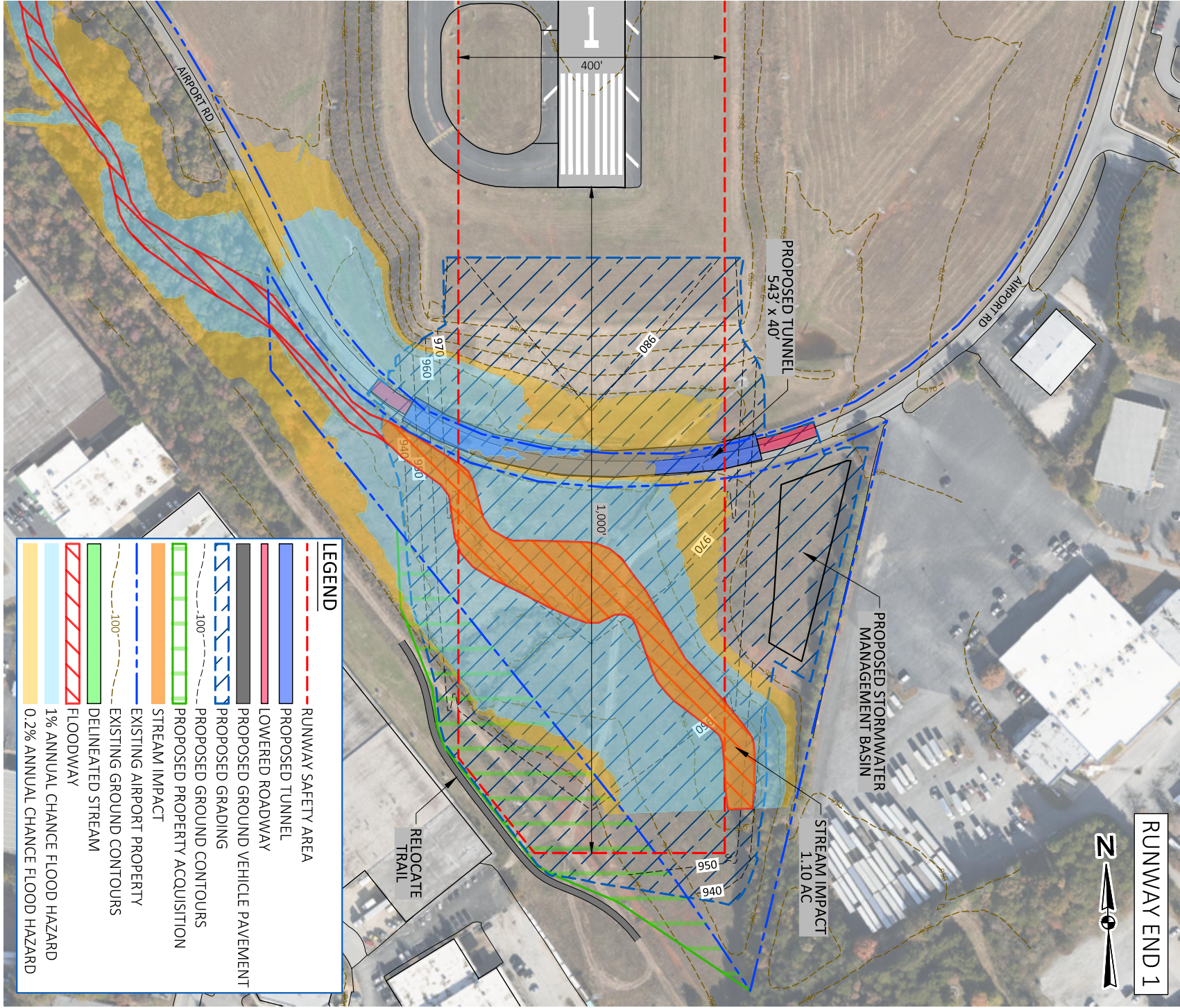


Figure 5-4: Alternative 4 - Runway 1-19 RSA Improvements with the Tunneling of Airport Road

RUNWAY END 1





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Advantages:

- Increase safety by meeting FAA safety standards
- Meets the purpose and need of the Airport
- Supports GMU's to continue servicing GA operations
- No induced airspace obstruction

Disadvantages:

- Immediate capital investment is required
- Construction impacts including traffic and utility disruption
- Extensive fill required, impacting streams, wetlands, floodplains and Section 4(f) resources
- Increased cost for the construction of a curved tunnel for Airport Road
- Increased cost due to new Airport infrastructure, lighting, and utilities due to the new grade
- Acquisition of adjacent property and relocation of existing business to accomplish Alternative 4

5.2.5 COMPARISON OF ALTERNATIVES

Table 5-1: Alternative Comparison

EVALUATED ALTERNATIVES	Project Footprint (Acres)	Approximate Cost (Millions)	Estimated Construction Duration (Months)	Environmental Impacts				Compatible with Purpose and Need
				Section 4(f)	Stream and Floodway Impacts (Acres)	Floodplain impacts (Acres)	Land Acquisition (Acres)	
Alternative 1 (No Action)	N/A	\$0	N/A	N/A	None	0	None	No
Alternative 2	19.6	\$15	18	Low	0.04	0.53	12.54	Yes
Alternative 3 (Preferred)	14.	\$28	18-24	None	0.01	0.47	None	Yes
Alternative 4	12.6	\$33.6	18-24	Moderate	1.10	6.42	4.5	Yes

Alternative 1 does not meet the purpose and need of the Proposed Action and would be detrimental to GMU's ability to continue serve airport dependent users; therefore, it is not considered the preferred alternative. While **Alternative 2** meets the purpose and need, it was deemed impractical due to land acquisition and the increased environmental impacts associated with the road relocation. Land acquisition would be required. **Alternative 3** satisfies the purpose and need of the Proposed Action and was selected as the preferred alternative since there is no need for land acquisition and it minimizes environmental impacts to the maximum extent possible. **Alternative 4** was deemed infeasible due to the cost and the large amounts of earthwork and tunnel complexity, as well as the Section 4(f) impacts, stream and floodplain impacts, and required property acquisition.



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6. ENVIRONMENTAL CONSEQUENCES

This chapter describes the anticipated environmental consequences of the Proposed Action. Information pertaining to the environmental consequences was obtained through an alternative analysis, evaluation of conceptual plan, on-site investigations, review of published information, agency correspondence, and discussions with the Airport personnel and public officials. The various developed alternatives and preferred conceptual design are the result of a cohesive and integrated planning effort, minimizing impacts of the post development condition. Environmental consequences of each alternative are summarized below

Table 6-1: Summary of Environmental Consequences

KEY CRITERIA - ENVIRONMENTAL CONSEQUENCES		Selection Matrix – Level of Direct Impacts			
		Alternative 1 (No Action)	Alternative 2 (Road Relocation)	Alternative 3 (Preferred)	Alternative 4 (Rwy 1 Improvements)
MEET PURPOSE AND NEED		NO	YES	YES	YES
CULTURAL RESOURCES	Archeological	No Impacts	No Impacts	No Impacts	No Impacts
	Historic Properties	No Impacts	No Impacts	No Impacts	No Impacts
	Section 4(f)	No Impacts	No Impacts	No Impacts	Moderate
	Section 6(f)	No Impacts	No Impacts	No Impacts	No Impacts
NATURAL ENVIRONMENT	Biological Resources (e.g., Flora and Fauna)	No Impacts	Moderate (Tree Clearing)	Low	Low
	Protected species	No Impacts	No Impacts	No Impacts	No Impacts
	Wetlands	No Impacts	No Impacts	No Impacts	No Impacts
	Surface Waters	No Impacts	Moderate	Low	Moderate
	Groundwater	No Impacts	No Impacts	No Impacts	No Impacts
	Floodplains	No Impacts	Low	Low	Moderate
	Coastal Resources, Barriers and Sanctuaries	No Impacts	No Impacts	No Impacts	No Impacts
	Wilderness Areas	No Impacts	No Impacts	No Impacts	No Impacts
	Wild and Scenic Rivers	No Impacts	No Impacts	No Impacts	No Impacts
	Natural Resources and Energy Supply	Low	Low	Low	Low
HUMAN ENVIRONMENT	Air Quality	No Impacts	Low (Temporary)	Low (Temporary)	Low (Temporary)
	Land use	No Impacts	No Impacts	No Impacts	No Impacts
	Farmlands	No Impacts	No Impacts	No Impacts	No Impacts
	Noise	No Impacts	Low	Low	Low
	Hazardous Materials (e.g., risk for spills)	No Impacts	No Impacts	No Impacts	No Impacts
	Socioeconomic, Environmental Justice, and Children's Health and Safety Risks	Moderate (socioeconomic)	No Impacts	No Impacts	No Impacts
	Traffic and Surface Transportation	No Impacts	Low (Temporary)	Low (Temporary)	Low (Temporary)
	Light Emission and Visual Impacts	No Impacts	No Impacts	No Impacts	No Impacts
	Solid Waste Management	No Impacts	No Impacts	No Impacts	No Impacts
	CUMULATIVE IMPACTS	Not significant	Not Significant	Not Significant	Not Significant



Alternative 1 (No Action) does not meet and address the needs of GMU. The No Action alternative assumes that the Proposed Action is not implemented and the conditions at the Airport would remain unchanged, including compromised safety and negative socioeconomic impacts limiting the ability of GMU to continue serving GMU's dependent users.

Despite that **Alternative 2** meets the purpose and need, it would be impractical due to increased environmental impacts and land acquisition associated with road relocation. Alternative 2 has been dismissed. Therefore, RSA Alternative 2 is not required to be further discussed in this chapter.

Alternative 3 incorporates the Proposed Action and minimizes environmental impacts creating a balance between pre-development (No Action) and post-development (accomplishing purpose and need) conditions, resulting in the similar level of long-term impact as the No Action alternative. Therefore, for the purpose of this chapter, the discussion of the environmental consequences and mitigation measures is focused on the Alternative 3 (Preferred Alternative) with proposed RSA improvements and associated Woods Lake Road tunnel construction combined as the Proposed Action. RSA Alternative 3, as the Proposed Action, is compared to the No Action (Alternative 1) throughout this chapter as per FAA Order 1050.1F, Section 6-2.1.f.

Alternative 4 was dismissed due to cost for the large amounts of earthwork and tunnel complexity that would be required, with impacts to water resources, floodplains, and Section 4(f) resources. In addition, this alternative would require property acquisition. Therefore, RSA Alternative 4 is not required to be further discussed in this chapter. For details of the evaluated alternatives refer to Chapter 5.

The potential impacts from the Proposed Action are discussed in the following sections and quantified to the maximum extent as possible. In areas where quantitative measures cannot be provided, qualitative assessments are provided. The following resources are not present within the project area of the Preferred Alternative and were not evaluated further:

- Cultural Resources
- Protected Species
- Section 4(f) and Section 6(f)
- Groundwater
- Coastal Resources, Barriers and Sanctuaries
- Wilderness Areas
- Wild and Scenic River
- Farmlands

After analyzing the results and data collected as part of the environmental planning process and compared to the No-Action, it is concluded that due to the nature and location of the Project and implementation of site-specific best management practices (BMPs), the Proposed Action would result in limited environmental impacts, not significant to the natural and human environment. Necessary measures and BMPs would be established to further minimize and mitigate any environmental impacts that the Proposed Action may have.

6.1 AIR QUALITY

Potential impacts on air quality from the Proposed Action is assessed by evaluating whether it would cause an exceedance over the NAAQS.



6.1.1 General Conformity Regulation

The Airport is located in Greenville County, outside of nonattainment or maintenance areas. Greenville County has been designated by EPA as in attainment for all criteria pollutants according to the EPA Greenbook⁵, dated August 31, 2021. This information is also confirmed through the EPA Counties Designated Nonattainment Map⁶ for CAA NAAQS.

The National Highway System Designation Act (NHSDA) of 1995 (Pub. L. 104-59) added section 176(c)(5) to the CAA to limit applicability of the conformity programs only to areas designated as nonattainment under section 107 of the CAA and maintenance areas established under section 175A of the CAA. Therefore, only actions which cause emissions in designated nonattainment and maintenance areas are subject to the regulations. In addition, the regulations recognize that the vast majority of federal actions do not result in a significant increase in emissions and, therefore, include a number of exemptions such as *de minimis* emission levels based on the type and severity of the nonattainment problem.

6.1.2 Proposed Action - Construction Phase – Air Quality

Construction of the Proposed Action would result in temporary and short-term changes in air emissions from sources such as exhaust emissions from non-road construction equipment, site clearing and grading. On-road vehicles include those associated with transport and delivery of supplies, materials, and equipment to and from the site, and construction worker trips. Additionally, fugitive dust emissions would occur from site preparation, land clearing, material handling, equipment movement on unpaved roads and evaporative emissions from the application of asphalt paving.

The Proposed Action is anticipated to result in short-term, non-significant impacts on air quality at GMU. This impact would occur intermittently during the approximately 18 - 24 months of construction activities involving earthwork associated with land clearing, excavation, grading and construction of buildings, drainage improvements, and other Project elements as described in Chapter 1. Particulates would be the main air pollutant of concern for the construction phase. Construction activities would generate both coarse and fine particulate emissions from land clearing, soil excavation, grading and sloping, and small-scale road crossing construction by the drainage improvement. However, the Project would be developed by phases and the amount of ground surface exposed at the same time would be limited. This would help to control and reduce the particulate emissions associated with exposed soil.

To provide a conservative estimate of particulate matter (PM) emissions potentially emitted during the construction phase, the annual emissions of total suspended particulates generated from construction activities were calculated using the emission factor as per the EPA final report "Estimating Particulate Matter Emissions from Construction Operations" (USEPA, 1995).

⁵ https://www3.epa.gov/airquality/greenbook/anayo_ny.html

⁶ <https://www3.epa.gov/airquality/greenbook/map/mapnpoll.pdf>



Table 6-1: Estimate of Annual Particulate Emissions from Construction

Total Project Area (acres)	Temporary Exposed Area (acres)	Estimated Construction Duration (months)	Emission Factor (tons/acre/month) ⁷	Control Efficiency (%)	Total Suspended Particulate Emissions (tons/year)
19.6	19.6	24	1.2	80%	56.5

Non-road construction vehicles would temporarily emit pollutants during construction of the Project. Pollution emissions from construction vehicle or equipment were calculated using the EPA Diesel Emission Quantifier (DEQ). The DEQ is an interactive, web-based tool that is used to evaluate clean diesel projects for medium – heavy and heavy-heavy duty diesel engines and estimates potential baseline emissions for NO_x (nitrogen oxides), PM_{2.5} (particulate matter two- and one-half micros or less in width), HC (hydrocarbons) and CO (carbon monoxide). CO, NO_x and PM_{2.5} are considered “criteria” air pollutant under the CAA. The EPA has set NAAQS for these pollutants (<https://www.epa.gov/criteria-air-pollutants/naaqs-table>). As presented in the following table, NO_x, PM_{2.5} and CO does not exceed the NAAQS levels established by EPA.

Table 6-2: Estimate of Annual Non-Road Emissions of Pollutants During Construction⁸

Class / Equipment / Engine Type	Pre-Estimated No of Vehicles / Engines	Horsepower (HP)	Fuel Type	Estimated Fuel Volume	Estimated Annual Usage Hours	Approximate Annual Baseline of Construction Vehicles			
						NO _x	PM _{2.5}	HC	CO
Excavators	4	175	Diesel	3,032	546	0.3	--	--	0.15
Off-highway Trucks	6	750	Diesel	14,474	547	2.1	0.17	0.13	1.7
Paving Equipment	2	175	Diesel	1,473	622	0.2	--	--	0.1
Trenchers	2	750	Diesel	1,463	593	0.8	0.1	0.1	0.6
Cranes	1	175	Diesel	4,403	990	0.2	--	--	0.1
Other Const. Equipment	2	300	Diesel	3,006	303	0.3	0.05	--	0.2
Tractors/ Loaders / Backhoes	2	100	Diesel	1,472	1,135	0.1	--	--	0.1
Cement & Mortar Mixers	2	75	Diesel	137	275	0	--	--	--
Plate Compactors	2	6	Diesel	82	815	0	--	--	--
Rollers	2	100	Diesel	2,216	760	0.1	--	--	0.1
Signal Boards	4	25	Diesel	133	268	0.05	--	--	--
Sweepers / Scrubbers	1	300	Diesel	1,500	1,220	0.4	--	--	0.1
Total (tons)						4.5	0.32	0.23	3.15

⁷ Estimating Particulate Matter Emissions from Construction Operations (USEPA, 1999)

⁸ <https://cfpub.epa.gov/quantifier/index.cfm?action=main.home>



According to the EPA-DEQ, pollutant emissions are below the *de-minimis* thresholds, and therefore, no significant impacts to air quality are expected to result from the Proposed Action.

The emissions during construction would be below the established *de-minimis*. A general conformity determination is not required for the Proposed Action and no adverse air quality impacts would be expected from implementation of the Proposed Action.

6.1.3 Proposed Action - Operation Phase – Air Quality

No changes to local air quality are expected during the operational phase. Since the Proposed Action would not alter aircraft operations, enplanement, or induce the need to change the aircraft fleet, Aircraft emissions would continue as existing and similar to the No Action alternative.

In addition, the Proposed Action has been considered within the context of greenhouse gas emissions. See **Section 6.3** for further discussion of greenhouse gases (GHGs) and climate.

6.1.4 No Action - Air Quality

The No Action alternative assumes that the Proposed Action is not implemented, therefore temporary emissions associated to construction activities would not occur. In regard to operational phase, overall air quality and emissions would remain unchanged and continue as to-date.

6.1.5 Significant Impact Threshold – Air Quality

Taking into consideration the scope of work and associated air emissions, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F and does not have the potential to exceed the NAAQS established by the EPA.

6.2 BIOLOGICAL RESOURCES

The project areas are almost entirely on land designated for airport use. Overall, this area has been historically subject to airport operations; therefore, no significant impacts are anticipated to sensitive natural resources or habitats with high ecological value.

Biological resources within the Project footprint are limited. The following table presents the main vegetation assemblage to be impacted by the Project footprint.

Table 6-3: Vegetation Assemblage Distribution in Project Area

Main Habitats	Study Area (Acreages)		Proposed Action (Footprint - Acreages)	
	Runway 1	Runway 19	Runway 1	Runway 19
Grassland (disturbed)	11.65	20.29	2.65	13.38
Hardwood	0.17	1.34	--	--
Stream / Wetland	1.10	0.11	--	0.01
Developed Area / Paved	0.38	5.87	--	3.55



These areas have low and limited ecological function and value; therefore, substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations is not anticipated.

Based on the above and measures to be implemented to avoid, minimize, and mitigate impacts, it is anticipated that the Proposed Action would not adversely affect biological resources of high ecological value.

6.2.1 State and Federal Listed Threatened and Endangered Species

According to Biological Evaluation Report (**Appendix B**), protected species are not present and therefore would not be affected.

6.2.2 Proposed Action - Construction Phase – Biological Resources

The construction of the Project would require minimal and incidental land clearing for the construction of the Proposed Action. As shown in **Table 6-3**, most of the land to be disturbed consist of mowed grassland that is part of the existing GMU airfield. Refer to **Section 6.11** for wetland impacts.

6.2.3 Proposed Action - Operational Phase – Biological Resources

No additional impacts are anticipated during this phase. The Proposed Action does not contemplate changes in current GMU operations.

6.2.4 Significant Impact Threshold – Biological Resources

Taking into consideration the scope of the Project, its location and the limited biological resources present, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential for:

- Long-term or permanent loss of unlisted plant or wildlife species from a large project area
- Adverse impacts to special status species, such as state species of concern, species proposed for listing, migratory birds, bald and golden eagles, or their habitats
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations
- Adverse impacts on a species' reproductive success rates, natural mortality rates non-natural mortality rates (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance

6.2.5 No Action – Biological Resources

The No Action alternative does not meet the purpose and need of the Project. The No Action assumes that the existing Airport footprint and the Runway 1-19 RSA would remain unchanged. The No Action would likely have no effect on biological resources beyond the current operation of airport activities.

	Greenville Downtown Airport Environmental Assessment	
	6.3 CLIMATE Current GHG emissions are typically caused by the combustion of fossil fuels, such as gasoline and diesel fuel, by airport vehicles and ground support equipment (GSE), electricity and heating, and jet fuel for auxiliary power units (APUs). Carbon dioxide (CO₂) and other GHGs are released into the air when fossil fuels are used to generate electricity, in furnaces and to power vehicles at the Airport. The design of the proposed RSA improvements would utilize the efficient power systems for runway/RSA lighting and instrumentation, with the integration of low-cost energy efficiency systems. The number of flights, fuel composition and consumption or type of aircraft using the airfield would continue as to-date and no changes are assumed. Therefore, any GHG emission as the result of the Project would be considered negligible or less than significant. Since the Proposed Action involves no expansion to Airport facilities, no increase in energy demand or GHG is expected. 6.3.1 Proposed Action – Construction Phase - Climate Construction activities have the potential to generated temporary GHGs resulting from the operation of construction equipment and possible idling of vehicles on Woods Lake Road due to construction delays. Any construction emissions would be temporary and insignificant. 6.3.2 Proposed Action – Operational Phase - Climate The purpose of the Proposed Action is to allow GMU to maintain current operations; therefore, there would be no additional impacts during the operational phase. 6.3.3 No Action – Climate The No Action alternative does not meet the purpose and need of the Project. This scenario assumes that the existing Airport footprint would remain unchanged without addressing existing RSA deficiencies. 6.4 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION 6.4.1 Proposed Action - Construction Phase – Hazardous Materials / Solid Waste Construction-related activities under the Proposed Action have the potential to generate non-hazardous solid waste on site. However, solid waste generated during construction is anticipated to be temporary and a minor contributor to overall solid waste generated in the region and would not result in adverse impacts. Excavated soils would be reutilized on-site to the maximum extent possible and in accordance with site-specific design specifications. Excess clean soils may also be reutilized at other areas within GMU, if warranted. Staging, operation and maintenance of construction equipment always have the potential for accidental releases of vehicle fluids. Proper vehicle maintenance and inspection would reduce this potential, and adverse impacts are not anticipated. Construction waste and debris would be disposed of in accordance with state and local regulations. Vegetative debris would be generated from the land clearing associated with construction of the RSA improvements. The contractor would be responsible for chipping vegetative debris (if needed). Unsuitable and non-recyclable / re-usable material would be disposed at an	
	Environmental Consequences	6-7



appropriately licensed landfill according to current regulations. Following construction, the proposed improvements are expected to result in less than significant increase in solid waste.

6.4.2 Proposed Action - Operational Phase – Hazardous Materials / Solid Waste

No changes in airport operations would result from the Proposed action, as such, there would be no additional impacts pertaining to the generation, storage, transport, or disposal of hazardous or solid waste.

6.4.3 Significant Impact Threshold – Hazardous Materials / Solid Waste

Taking into consideration the scope of work, potential effects regarding hazardous materials/solid waste would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to:

- Violate applicable federal, state, tribal, or local laws or regulations regarding hazardous materials and/or solid waste management
- Involve a contaminated site (including, but not limited to, a site listed on the NPL)
- Produce an appreciably different quantity or type of hazardous waste
- Generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity
- Adversely affect human health and the environment

6.4.4 No Action – Hazardous Materials / Solid Waste

The No Action alternative does not meet the purpose and need of the Project. The No Action assumes that the existing Airport footprint and RSA would remain unchanged. With the No Action alternative similar direct, long-term and less-than-significant adverse impact on solid waste and hazardous materials would remain unchanged.

6.5 LAND USE

All development of the Proposed Action is within the boundaries of GMU, with the exception of the right of way along Woods Lake Road. Proposed drainage (off-site) improvements would not require the modification of existing drainage easements or public right-of ways. Therefore, the Proposed Action is compatible with current land uses. Also, implementation of the Proposed Action would not disrupt established communities or induce negative socioeconomic impacts. The Proposed Action would have no impact or promote changes in land use designations, nor prevent use at adjacent areas. Consequently, no significant impact to land use compatibility is anticipated with implementation of the Proposed Action. Furthermore, the Proposed Action is in accordance with and follows the Planning Commission rules and regulations of Greenville County. Greenville County has a Commercial Plan Review process in place that is required for land development projects.

6.5.1 Significant Impact Threshold – Land Use

Taking into consideration the scope of work and the absence of parcel acquisition, potential effects over land use would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F.

	Greenville Downtown Airport Environmental Assessment	
	6.5.2 No Action – Land Use The No Action alternative does not meet the purpose and need of the Project. The No Action assumes that the existing Airport footprint and RSA would also remain unchanged. Neither the No Action or the Proposed Action promote changes in regard to land use designations, nor prevent use at adjacent areas. 6.6 NATURAL RESOURCES AND ENERGY SUPPLY Duke Energy provides electric service to the area. Greenville Water provides water (directly) and sewer (through Renewable Water Resources), and natural gas service to the City of Greenville, as well as some unincorporated areas. Natural gas is provided by Piedmont Natural Gas. The Proposed Action would use readily available natural resources for construction of the Proposed Action. The Project would use a relatively small amount of readily available natural resources for the proposed improvements. Overall, use of natural resources and energy supply used by the Proposed Action would be less than significant. 6.6.1 Proposed Phase - Construction Phase – Natural Resources and Energy Supply Construction activities would not require a significant use of natural resources or significant demand of energy supply. Most of the construction equipment to be used is self-powered and not depending on local public infrastructure. However, if additional sources of power or electricity are needed, it would be provided by the existing GMU infrastructure and through portable power generators. Fuel demands of construction equipment are considered an insignificant part of the region’s fuel usage. 6.6.2 Proposed Phase - Operational Phase - Natural Resources and Energy Supply Since the Project is a safety improvement project and would not alter airport operations, no significant changes in natural resources and energy supply are expected between pre-development and post-development conditions. 6.6.3 Significant Impact Threshold – Natural Resources and Energy Supply Taking into consideration the scope of work, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F and does not have the potential to cause demand to exceed available or future supplies of natural resources and energy supply capacity. 6.6.4 No Action – Natural Resources and Energy Supply The No Action alternative does not meet the purpose and need of the Project. The No Action assumes that the existing Airport footprint remains unchanged without addressing the deficiencies of the RSA at GMU. This alternative does not promote the integration or adoption of more efficient lighting to reduce energy losses or consumption. 6.7 NOISE This section includes the analysis of the potential noise impacts by the Proposed Action. The Proposed Action would not increase aircraft operations, as the Project does not involve an increase in runway length,	



instrument procedures, navigational equipment, or other factors that affect airfield capacity and alter current noise levels. Therefore, noise generated by the Proposed Action and the continuing operation of the Airport would not result in significant impacts. The Proposed Action does not result in a significant change to the current noise contours for GMU as shown in **Figure 6-1** (Noise Contour Maps – Proposed Conditions). **Table 6-4** below describes the nearest noise receptors to the project area at GMU. **Figure 6-1** also shows nearest noise receptors.

Table 6-4: Nearest Noise Receptors to Project Area

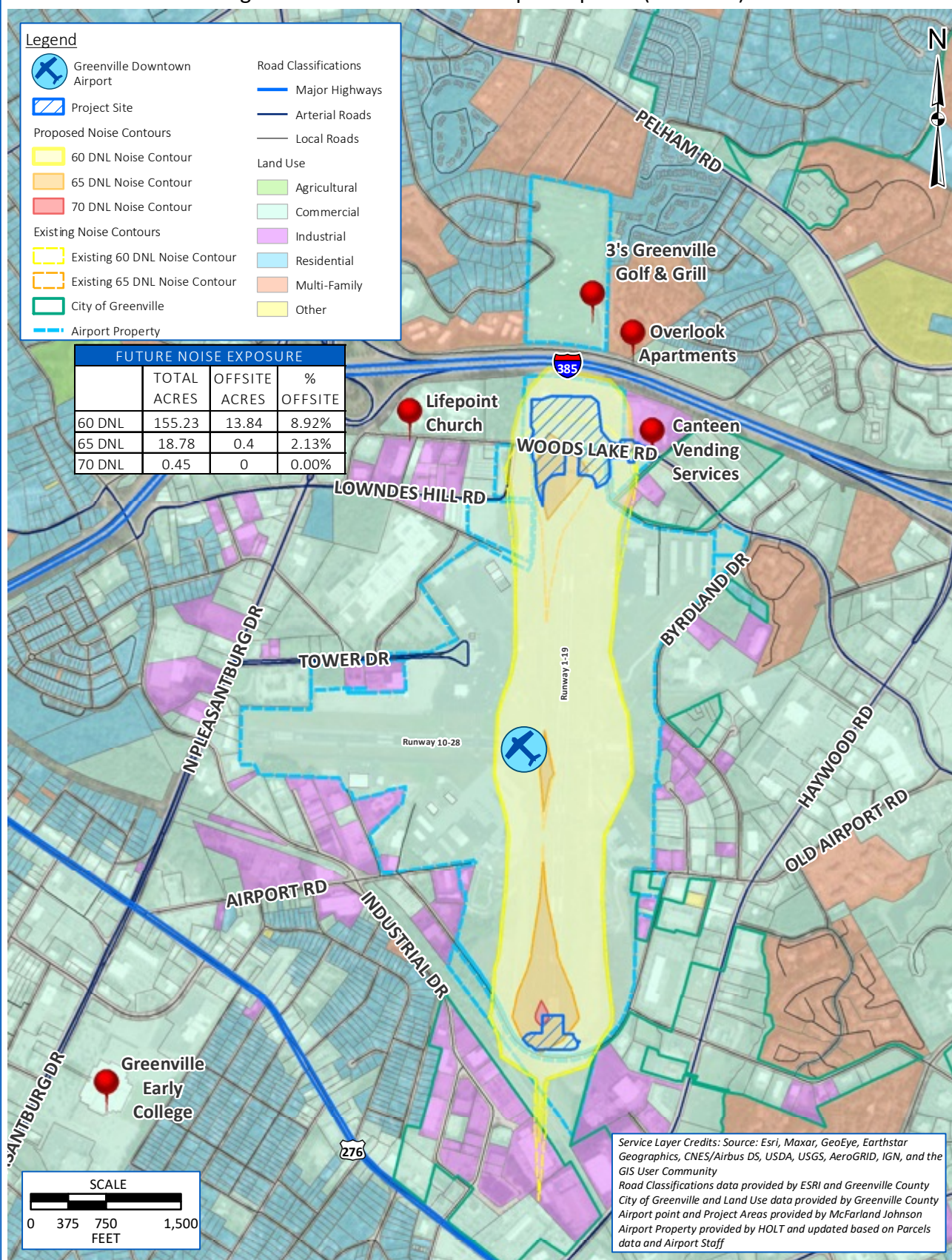
<i>Receptors</i>	<i>Description</i>
<i>Residential</i>	The Overlook Apartments are located approximately 600 feet (0.1 miles) northeast of the Air across I-385.
<i>Commercial</i>	The nearest commercial property (Canteen Vending Services) is located on Woods Lake Road approximately 500 feet (0.1 mile) east of the project area.
<i>Institutional</i>	- Greenville Early College is the nearest school, located on South Pleasantburg Drive, approximately 4200 feet (0.8 mile) southwest of the project area. - Lowndes Hill Baptist Church is the nearest place of worship, adjacent to the east side of the Runway 19 Project Area.
<i>Recreational</i>	3's Greenville is located north of I-385 at approximately 550 feet (0.1 miles) from the project area.

6.7.1 Proposed Action - Construction Phase - Noise

Temporary increase in levels of background noise would result from construction activities, particularly from the operation of heavy equipment, truck traffic, and other construction activity. Temporary increase in noise levels may be noted in areas immediately adjacent to the Project. Permits would be obtained from the City of Greenville if noise in the surrounding areas exceeds the 60 dB general noise ordinance. As a result of the proposed construction activities, minimal closures of developed areas are anticipated at GMU, which would lead to limited variations in operations and resulting noise contours.

The GMU would remain operational throughout the duration of the construction phase. Construction activities may be audible from nearby residences and businesses. However, the effects are considered to be short-term, temporary, intermittent and depend upon the nature of the activities occurring at a particular moment. Construction noise would be also dependent on the location and functions of the equipment. Noise levels from typical construction equipment are included in the following table.

Figure 6-1: Noise Contours Map - Proposed (Land Use)



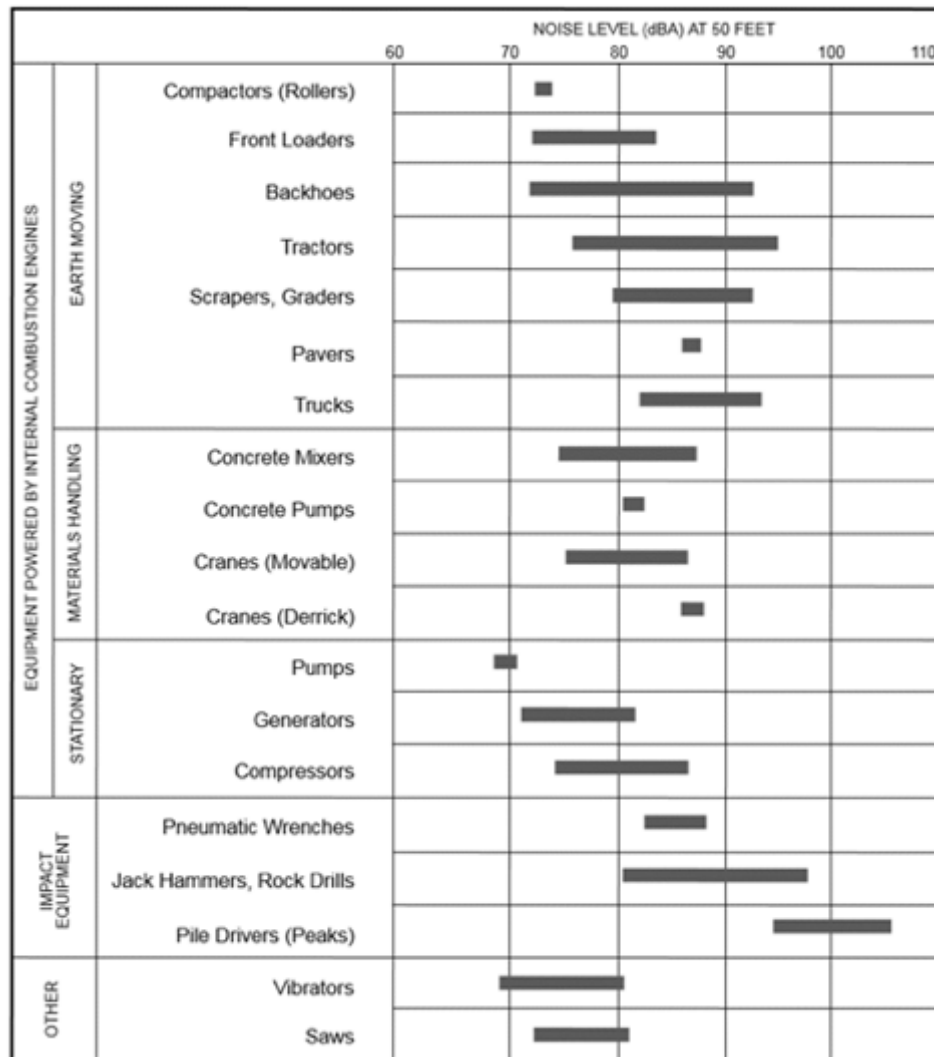
Document Path: K:\Greenville Downtown Airport\T-18884.00 GMU EA\Draw\GIS\6-1 Noise Contours Proposed Conditions Land Use.mxd



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Table 6-5: Noise levels of Typical Construction Equipment



Source: EPA "Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances," NTID 300-1.

Based on the lands adjoining the GMU, the setbacks from the Project and distance from the potential sources of sound (e.g., construction equipment), the temporary noise to be generated by the construction of the Project would not result in significant adverse noise impacts to nearest receptors.

Construction activities would be carried out during normal daylight hours. Night work could occur for short periods. Additionally, construction equipment would be operated in compliance with Occupational Safety and Health Administration (OSHA) standards. Construction contract documents would require construction equipment to be properly equipped and maintained in order to minimize off-site construction noise. Construction activities would be performed in compliance with Greenville County Noise ordinances (Chapter 16, Article 2, *Code of Ordinances City of Greenville, South Carolina*).

6.7.2 Proposed Action - Operation Phase - Noise

The Proposed Action would not lead to changes in the number of operations or the fleet mix utilizing GMU. The reconfiguration of the RSA shifts the runway approximately 340 feet north of its current configuration,



but this would have negligible offsite noise impacts. As seen in **Figure 4-6A** and **Figure 6-1**, an additional 0.04 acres of offsite area would be within the 65 dB DNL area.

6.7.3 Significant Impact Threshold – Noise

Taking into consideration the scope of work, its location, distance from sensitive receptors and no changes in airport capacity or aircraft fleet, potential effects would be less than significant. The Proposed Action does not cross the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to increase noise by Day / Night Noise Levels (DNL₇) 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that would be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the No Action alternative.

6.7.4 No Action - Noise

The No Action alternative does not meet the purpose and need of the Project. The No Action assumes that the no construction activities would be performed; therefore, related temporary increase in noise level would not be generated. Noise contours for GMU would remain as shown in **Figures 4-6A** and **Figure 4-6B**.

6.8 SOCIOECONOMIC, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY RISKS

The Project does not have the potential to adversely affect socioeconomic conditions in surrounding communities and maintain a balance between the natural and physical environments. On the contrary, GMU plays a vital role in the transportation and economic needs of the City of Greenville and the Upstate Region of South Carolina, providing private, corporate, and other general aviation operations a facility near the growing business centers of Greenville.

The scope of the Project does not have a regional impact and would not promote shifts in populations, incomes, and growth patterns; public service demands; or negative pressure over business and economic activity, disruption to established neighborhoods, urban proliferation, or significant changes in transportation patterns. The Proposed Action does not require alterations to public services including fire and police protection, education and utility services or businesses.

6.8.1 Proposed Action - Industry, Employment and Income

The Proposed Action would result in positive socioeconomic impact. During the construction phase temporary jobs would be created, supporting the local economy. With the Proposed Action, GMU would continue to support existing jobs, local economy and accessibility of low-cost fares. The Proposed Action would not require alterations to public services including fire and police protection, education and utility services, businesses, or employment opportunities.

According to the job creation formula provided by the U.S. White House under the American Recovery Act (ARRA), the following is used to estimate potential jobs that may be created as result of the Proposed Action:

- \$92,000 of government spending creates one (1) job year
 - 64 percent of the job-years represent direct and indirect effects
 - 36 percent of the job years are induced effect



Applying the ARRA formula to the estimated construction cost (\$28 million), the Proposed Action has the potential to create the following job estimates (cumulative):

- Up to 304 job years
 - Approximate Direct and Indirect: 195
 - Approximate Induced effect: 109

6.8.2 Proposed Action - Community Tax Base

No significant changes are expected between pre-development and post-development conditions. The Project is located mostly on Airport property, and within the existing Woods Lake Road and right-of-way and is not anticipated to negatively affect landowners, and therefore would not produce a substantial change in the community tax base.

6.8.3 Proposed Action - Environmental Justice

No changes are expected between pre-development and post-development conditions. Environmental justice information is provided in **Section 4.10**. No adverse effects are anticipated by the Proposed Action. The Proposed Action would not disrupt or divide the physical arrangement of an established community and would not force the relocation of any community businesses. Therefore, it can be concluded that disproportionately high and adverse human health or environmental effects are not expected to occur among minority or low-income populations as a result of the Proposed Action.

6.8.4 Proposed Action - Local Transportation

No changes are expected between pre-development and post-development conditions. The Proposed Action would create temporary and short-term traffic impact during the construction phase due to construction of the tunnel, construction traffic and the temporary rerouting or detour of Woods Lake Road. There are many available alternative routes to Woods Lake Road, including I-385, Airport Road, and Laurens Road. This impact would only be during construction and no long-term impact is anticipated. More details on the traffic specifics are discussed in **Section 4.12**.

6.8.5 Proposed Action - Children’s Health and Safety Risks

No changes are expected between pre-development and post-development conditions. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, defines the risks to children’s safety that are attributable to products or substances that the child is likely to touch or ingest including the air we breathe, the food we eat, the water we drink or use for recreation, and the soil we use to grow food.

The Proposed Action has been evaluated for their potential to have a disproportionate effect on children's environmental health or safety, including, but not limited to, water quality, air quality, and noise. It has been concluded that the Proposed Action is not of the nature or magnitude to have an adverse effect upon the health and safety of children.



6.8.6 Significant Impact Threshold

In accordance with the FAA Order 1050.1F, potential effects would be less than significant, and the Proposed Action does not cross the Significant Impact Threshold. The Proposed Action does not involve or would not have the potential to:

- Induce offsite developments through establishing projects in undeveloped area
- Disrupt or divide the physical arrangement of an established community
- Cause housing relocation
- Cause relocation of community businesses that would cause severe economic hardship for the community
- Permanent disruption of local traffic patterns and substantially reduce the levels of service of roads serving the airport and its surrounding community
- Produce a substantial change in the community tax base

The Proposed Action promotes positive socioeconomic benefits and allows economic growth of Greenville to continue, and the ability for GMU to continue fulfilling the GA needs of Greenville. The projects serve to remedy the substandard safety areas currently in place at GMU.

6.8.7 No Action - Socioeconomic

The No Action alternative does not meet the purpose and need of the Project. The No Action alternative assumes that the Proposed Action is not implemented, and existing conditions would remain unchanged. The No Action has the potential to result in negative socioeconomic impacts, limiting the ability of GMU to provide GA services in the Upstate Region. The alternative does not promote the economic stability of GMU and restricts the ability to maintain revenue and improve airport operations.

In addition, No Action does not support current jobs associated with the GMU, operations, nor promote temporary construction jobs within the community. The No-Action alternative would be highly detrimental to the Airport's ability to serve the City of Greenville.

6.9 TRAFFIC

The Proposed Action involves the tunneling of approximately 735 feet of Woods Lake Road to accomplish the RSA improvements at the Runway 19 end. The impacts from the construction of the tunnel and RSA improvements would temporarily disrupt local traffic patterns. Once completed, traffic patterns would return to their previous conditions. Project coordination meeting was held on January 26, 2022, between SCDOT and the GMU Team (including McFarland-Johnson, Inc., and Three Oaks Engineering). During this project coordination meeting the SCDOT expressed no concern or objection to the Proposed Action. Copy of the PowerPoint Presentation from the SCDOT Coordination Meeting is included as **Appendix F**.

6.9.1 Proposed Action – Construction Phase – Traffic

The construction of the Woods Lake Road tunnel would require the temporary closure of Woods Lake Road between its two westernmost intersections with Lowndes Hill Road (near La Taberna de Pancho and near Lowndes Hill Baptist Church) until the road has been lowered, the tunnel has been completed, and



sufficient earthwork has been completed so that work would be taking place out of the Woods Lake Road right of way. This is anticipated to take six (6) to 12 months. The primary detour routes would primarily serve to maintain the connection of North Pleasantburg Road and Haywood Road. The main detour routes include I-385, Keith Drive/Airport Road, and Laurens Road. Businesses and residences along Woods Lake Road would be notified of the closure ahead of construction to allow time for alternate routes to be found and operational adjustments to be made. The rerouted traffic would represent a small percentage of the traffic on I-385 and Laurens Road and would not cause significant impacts. During tunnel construction, rerouted traffic has the potential to temporarily increase traffic on Airport Road.

A limited portion of the parking area at 205 Woods Lake Road (Canteen Vending Services) would be temporarily unavailable during roadway reconstruction. Based on recent site visits, it appears that Canteen Vending Service's parking lot on Lowndes Hill Road (across from Lowndes Hill Baptist Church) is large enough to accommodate additional vehicles. If necessary, GMU would coordinate with Canteen Vending Services for temporary parking. Also available vacant land across Woods Lake Road (behind the 206 Woods Lake Road Building) would be available for limited temporary parking.

6.9.2 Proposed Action – Operation Phase - Traffic

Once the construction phase is finalized, the traffic pattern would return to normal conditions and no changes are expected between pre-development and post-development conditions. Although no pedestrian or bicycle infrastructure is present in the project area, the potential for such projects in the future would be considered in the design process.

6.9.3 Significant Impact Threshold - Traffic

Taking into consideration the scope of the Project, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F and does not have the potential to decrease the level of services.

6.9.4 No Action – Traffic

The No Action alternative does not meet the purpose and need of the Project. The No Action alternative assumes that the Proposed Action is not implemented, and existing conditions would remain unchanged. Airport access and internal circulation would not be improved.

6.10 LIGHT EMISSIONS AND VISUAL EFFECTS

Runway and RSA lighting would be constructed within GMU boundaries in areas away from neighboring developments. It is not considered to produce adverse light emission impacts. Lighting associated with the projects would incorporate energy efficient technologies, and wherever feasible. The lighting design would follow GMU and FAA safety / security standards.

The Proposed Action would not introduce any new lighting elements; however, existing lighting elements would be replaced. The proposed action is not expected to alter the visual environment of the surrounding area.

Lighting for the Proposed Action would lie within the developed footprint of the existing airfield and approach lighting. Should nighttime construction occur, the temporary use of portable work lights or light towers would be necessary to light the construction work zone.



6.10.1 Significant Impact Threshold – Light Emission and Visual Effects

Taking into consideration the scope of the Project and its location, light emissions and visual effects would be less than significant by the Proposed Action. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential to:

- Create annoyance or interfere with normal activities from light emissions
- Affect the visual character of the area due to the light emissions
- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources
- Block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations

6.10.2 No Action – Light Emissions / Visual Effects

The No Action alternative does not meet the purpose and need of the Project. Light emissions would remain unchanged for the No Action alternative. Similar to the Proposed Action, the No Action Alternative it is not considered to produce adverse light emission impacts or visual effects. However, the No Action does not incorporate the latest energy efficient technologies.

6.11 WATER RESOURCES

Overall, the Proposed Action avoids and minimizes impacts to water resources and is not expected to cause significant impacts. Design considerations, controls during construction, and other mitigation measures would be implemented to further minimize significant impacts to water resources and water quality.

6.11.1 Wetlands

Wetlands are not found in the project area. The regulated water resources in the project areas are classified as streams.

6.11.2 Surface Waters

A small, unnamed stream has approximately 40 lineal feet within the project area. The delineated stream can be seen in **Figure 2-3**. The stream is largely fed stormwater from the maintained airfield. This stormwater outfall, as well as the culvert conveying its flow under Woods Lake Road would be modified as necessary to handle their current capacity, as well as any additional stormwater from the tunnel, RSA improvements, taxiways, and other impervious surfaces. The stream provides limited ecological functions other than flood flow control and nutrient / sediment removal. Therefore, the function, value, amount, and quality of the surface waters subject to project impacts is low.

6.11.3 Proposed Action - Construction Phase – Water Resources

Construction of the Proposed Action is anticipated to have limited direct impacts, less than significant to low quality wetlands. The Project would involve disturbance of approximately 0.01 acre of jurisdictional (regulated) water resource impacts within GMU. During the design and permitting phase, impacts would be further evaluated and coordinated.



The anticipated impacts (0.01 acre) over regulated streams would be less-than-significant. During construction, short- impact would result from increased soil erosion and sedimentation from earthwork activities. All wetland impacts are mitigable achieving the overall policy goal of “no net loss”. Compensatory mitigation would be satisfied through a federally approved In-Lieu Fee Mitigation Program or off-site mitigation bank.

Furthermore, as described under **Sections 7 and 8.5**, mitigation measures would be implemented to further compensate for impacts. Additionally, prior to construction, the GMU would submit applications to SCDHEC to obtain stormwater permits under the National Pollutant Discharge Elimination System (NPDES).

6.11.4 Proposed Action - Operational Phase – Water Resources

No additional impacts are expected to occur during this phase. GMU would continue maintaining the airfield and landside areas under its Stormwater Pollution Prevention Plan (SWPPP) to ensure any potential or unanticipated impacts remain below significant levels.

6.11.5 Significant Impact Threshold – Water Resources

Taking into consideration the scope of work, its location, the limited impacts (low quality) and compensatory mitigation to be implemented, potential effects would be less than significant. The Proposed Action does not exceed the Significant Impact Threshold as per the FAA Order 1050.1F, and does not have the potential for:

- Adversely affect a wetland’s function to protect the quality or quantity of municipal water supplies, including surface waters and sole source and other aquifers
- Substantially alter the hydrology needed to sustain the affected wetland system’s values and functions or those of a wetland to which it is connected
- Substantially reduce the affected wetland’s ability to retain floodwaters or storm runoff, thereby threatening public health, safety, or welfare (the term welfare includes cultural, recreational, and scientific resources or property important to the public)
- Adversely affect the maintenance of natural systems supporting wildlife and fish habitat or economically important timber, food, or fiber resources of the affected or surrounding wetlands
- Promote development of secondary activities or services that would cause the circumstances listed above to occur
- Be inconsistent with applicable state wetland strategies

6.11.6 No Action – Water Resources

The No Action alternative does not meet the purpose and need of the Project. The No Action alternative assumes that existing conditions would remain unchanged; therefore, 0.01 acres of direct impacts over low quality wetland areas would not occur, and compensatory mitigation is not required.

6.12 CUMULATIVE IMPACTS

Based on the above information, it is not anticipated that implementation of the Proposed Action contributes significantly to cumulative impacts. In determining the significance of the impacts associated with the Proposed Action, it was considered the overall impact of project components detailed in the EA



and the consequences of other related projects. CEQ regulations, at 40 CFR § 1508.7, define cumulative effects as the impact on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. According to the FAA, cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions”.

In general, the geographic area of concern for this analysis is the Airport property. For some resources, such as socioeconomics, consideration may extend further, and the geographic area of concern is larger. The time period for cumulative effects analysis is the cycle during which a project is expected to affect a resource, ecosystem, or human community, if that is the case. The evaluation of cumulative impacts considered impacts from reasonably foreseeable future projects proposed in combination with past and present actions at the Airport. These actions have been implemented, are under current planning, or are anticipated in the near future to bring the Airport into compliance with federal design standards, improve safety of Airport operations, and improve the facility’s infrastructure. Previous projects within the past three (3) years include:

- Taxiway B Construction
- Taxiway Rehabilitation

GMU is contemplating, various small-scale rehabilitations and improvements to existing facilities. All are small scale, considered single and complete actions, and not expected to entail significant nor cumulative impacts. No other significant improvements are currently expected to occur within the next five (5) years.

Due to the lack of environmental resources present within the project area at GMU and the limited impacts to the natural and human environment, cumulative impacts are not a significant issue for the Proposed Action. All the previously discussed impacts associated with the Proposed Action are considered less than significant. It should be noted that the Proposed Action would minimize and lower the risk of potential long-term direct and indirect impacts, and would result in cumulative environmental benefits (positive impacts) such as:

- Increased safety for passengers, crews, and the surrounding community
- Reducing the probability of accidents and resulting spills
- Maintaining current employment and continued economic growth in the area

Temporary and short-term impacts to air quality, noise, traffic, and solid waste may occur during project construction. All these impacts are temporary during construction, and would not result in any long-term, permanent impacts to the environment or surrounding land. As discussed in previous sections, BMPs would be implemented to further minimize temporary and control the risk of unanticipated and unforeseen incidental impacts. Unavoidable wetland impacts have been minimized as the result of the Proposed Action. The wetland impacts can be appropriately mitigated to ensure “no-net-loss” of Federally regulated wetlands. Proper permitting would be obtained in accordance with State and Federal regulations.

The Proposed Action must meet NPDES permit requirements, protecting water quality in the vicinity of the Airport. Additionally, appropriate State and Federal permits would be required prior to construction. The permit applications review process would include an evaluation of the permit history and would assure that cumulative impacts would be avoided. In the event of changes in the design and construction process, projects elements would be further analyzed, and environmental impacts would be evaluated in more detail and in coordination with mitigation actions.



7. PERMITS

Following is presented the anticipated permit that may be required for the Project. Other permits would be required depending on final design.

7.1 FEDERAL

Under Section 404 of the Clean Water Act (CWA), activities that impact Waters of the United States (WOTUS) must be authorized under the Department of the Army Permit from the U.S. Army Corps of Engineers (USACE). Due to the minimal impacts to Waters of the U.S., the Proposed Action is expected to be eligible for coverage under the Nationwide Permit.

Under Section 401 of the CWA, a Water Quality Certification (WQC) must be obtained concurrently when applying for USACE permit. This is obtained through a joint application process between SCDHEC and USACE. The permitting process consists of a number of steps and consultations involving the applicant, the USACE, and other federal, state and local agencies.

7.2 STATE

Following is presented key permits that may be required for the Proposed Action. During the design phase pre-application meetings with state regulatory agencies would be conducted for discussion about permits need and requirements.

- SCDHEC WQC
- SCDHEC Demolition License
- SCDHEC Air Permit - Construction
- SCDHEC Start of Construction Notification
- SCDOT Encroachment Permit (“Right-of Way Permit”)
- SCDOT Temporary Road Closure Permit
- NPDES General Permit for Construction Activities
 - SCDHEC Comprehensive Stormwater Pollution Prevention Plan (C-SWPPP)
 - SCDHEC Notice of Intent (NOI)
- NPDES Multi-Sector General Permit (MSGP)
 - SWPPP (update)
 - Spill Prevention Control and Countermeasure (SPCC) Plan (update)

For construction activities disturbing greater than two acres, the SC DHEC requires a NOI form (<https://scdhec.gov/sites/default/files/Library/D-2617.pdf>) be submitted along with a C-SWPPP for coverage under the NPDES General Permit for Construction Activities. The C-SWPPP would be prepared by a licensed engineer or other certified stormwater profession. For projects with a footprint larger than ten (10) acres, an Erosion Prevention and Sediment Control Report would be submitted monthly. Upon completion of construction activities, a Notice of Termination (NOT) would be sent to SC DHEC to notify that permit coverage is no longer needed and reporting associated with construction activities would cease. If necessary, before the project is completed GMU’s existing SWPPP and SPCC Plan would be updated in accordance with the Proposed Action and ultimate site conditions.



7.3 LOCAL

As applicable, Greenville County building and land development permits would be acquired through the Online Permit Development Center (<https://www.greenvillegov.org/permitting/>), and plans would be provided to for review. During the design phase pre-application meetings would be conducted with the Building Department for discussion about local permits need and requirements. Anticipated permits include:

- Site Development Permit
- Land Disturbance Permit



8. MITIGATION AND BMPs

8.1 AIR QUALITY AND CLIMATE

To ensure impacts remain at or below less-than-significant adverse levels, emissions would be controlled through the implementation of reasonably BMPs, such as:

- Construction sequencing or phasing
- Minimization of the amount of exposed soils at any given time during construction activities
- Water spray for dust suppression and prevent fugitive dust from becoming airborne
- Suspend or adjust intensity of earthwork during periods of sustained high wind speeds (e.g., 30 mph and over), as defined by the OSHA
- Maintaining vehicles in good working conditions
- Limit engine idling by turning off engines after three (3) to five (5) minutes of inactivity
- Decreasing vehicle speed limits while onsite to reduce fugitive dust generation and obeying posted vehicle speed limits while off-site
- Construction contractors would be required to use properly maintained and operated construction equipment
- Truck would not be loaded with fill borrow material or construction debris to their maximum hauling capacity
- Use tarp covers on trucks transporting construction materials and construction debris to and from the site
- Re-vegetate or permanently stabilized exposed soils following completion of construction activities in designated areas

These BMPs would minimize any air quality effects associated with construction of the Project.

8.2 BIOLOGICAL RESOURCES

BMPs to be followed include:

- Maintain a buffer between the regulated wetland areas or natural water bodies not to be impacted
- Land clearing and grubbing would be performed in such a manner as to minimize damage outside the project footprint
- Maintain construction activities within authorized project boundaries
- A SWPPP would be developed and implemented for this project



8.3 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

To further avoid and minimize the risk of unanticipated incidental impacts the following pollution prevention and mitigation measures would be implemented:

- Implement SWPPP and SPPC Plan
- Dispose of debris and solid waste generated by the Project according to applicable federal, state and local regulations
- Re-use excess soils on-site to the maximum extent possible
- Stage and operate construction equipment in designated areas
- Perform construction vehicle maintenance and inspections to reduce the risk for accidental spills
- Perform proper vehicle maintenance and routine inspections to reduce the risk for incidental releases of vehicle fluids
- Follow manufacturer's specifications when maintenance equipment or storing hazardous material (e.g., batteries, fluids, lubricants, solvents, paints, etc.)
- Implement spill and leak prevention and response procedures for construction equipment
- Maintain spill kits to rapidly respond to and limit impacts from accidental releases of vehicle fluids
- Report releases of regulated quantities and perform cleanup according to applicable regulatory requirements
- Manage solid wastes in designated areas and establish routine pickup for disposal according to applicable regulations

8.4 NOISE

To further minimize and limit possible impacts, various BMPs would be put in place such as:

- Use of noise attenuation devices in construction equipment
- Heavy machinery to be used would be maintained in optimal operating conditions to control noise
- Maintain mufflers and sound shielding on construction equipment
- Provide routine maintenance to equipment according to the manufacturer's specifications
- Minimize equipment idling and shut down construction equipment when not in use
- Operate construction equipment according to the manufacturer's specifications
- Construction activities would be carefully coordinated with Airport FBO and the contractor(s)
- Notices to Airmen (NOTAM's) would be issued by Airport management as needed
- The construction sites would be marked and barricaded in accordance with current FAA standards

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	8.5 WATER RESOURCES In order to offset unavoidable impacts to WOTUS, GMU would strive to achieve a goal of no overall net loss of values and functions through the implementation of compensatory stream mitigation. Impacts to WOTUS are expected to be mitigated proportionally to its functional value. Due to the site constraints, in-situ / in-kind mitigation may not be feasible. Mitigating WOTUS on Airport property is discouraged as to not create a wildlife hazard. WOTUS mitigation would be satisfied during the USACE permitting process, through a federally approved In-Lieu Fee Mitigation Program or off-site mitigation bank. This would be further coordinated and implemented during the final design and permitting stage. In order to further avoid or minimize the possibility of incidental impacts during construction (e.g., erosion and sedimentation), a site specific SWPPP and SPCC would be implemented and BMPs to be followed. Stormwater and erosion impacts during the construction phase would be mitigated by BMPs including, but not limited to, silt fencing, filtering booms, temporary detention basins, temporary vegetative cover, and limiting the amount of exposed soil. During the permitting phase potential impacts would continue being further evaluated and detailed mitigation actions would continue to be developed to satisfy applicable regulations from USACE and SCDHEC, as applicable. However, this is not anticipated to change findings and conclusions presented in the EA. The Project is committed to maintain collaborative actions with USACE in finding the mitigation action to offset WOTUS impacts, as per current regulation.	
	McFarland Johnson	Mitigation and BMPs 8-3



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9. AGENCY COORDINATION & PUBLIC INVOLVEMENT

The CEQ gives Federal agencies instructions on NEPA's public involvement process at 40 CFR 1506.6. In addition, FAA Order 5050.4B requires notice and opportunity for public involvement under the NEPA process. To meet the requirements, GSAD announced its intent to present an EA pursuant to the NEPA by issuing and publishing a Notice of Availability (NOA) on GMU's website and local newspaper (*Greenville News*) during March 18, 2020 and March 20, 2022. The Public comment period ended on April 30, 2022. GMU made the Draft EA, notices and public information meeting readily accessible to the public. Overall, the following actions were conducted by the GMU as part of their public participation approach:

- Project information accessible to the public on GMU website
- Established a project specific email (GMU-EA@mjinc.com) and postal address (330 East Coffee Street Greenville, SC 29601) for the public to submit written comments
- Publication of the Draft EA (electronic version and hardcopies) and NOA/Notice of Public Meeting
- Provided email and phone number in NOA for administrative and logistical questions about the public information meeting

During the public comment period the Draft EA was available for public review at the following locations:

- <https://www.greenvilledowntownairport.com/announcements> (digital version)
- GMU offices: 100 Tower Dr Unit 2, Greenville, SC 29607
- Hughes Main Library – Public Files: 25 Heritage Green Place, Greenville, SC 29601)

Throughout the NEPA review process, GMU and the FAA sought input in writing from the public and federal, tribal, state and local agencies. A total of 40 calendar days were given to the public to provide input and comments to the Proposed Action. Copies of the notices and affidavit of publication are included in **Appendix H**.

9.1 Agency, Tribal and Local Government Coordination

As part of the agency review and public comment process, this EA was made available to federal, state, and local agencies, and interested tribal groups, as applicable. No response or requests from Tribal nations were received. Also, public or regulatory agencies did not provide written comments during the public comment period.

9.2 Public Involvement and Public Comments

Despite a public hearing was not requested by the public or any interested party, GMU voluntarily held a Public Information Meeting on April 07, 2022, at Runway Café Hangar (GMU, 21 Airport Road Ext., Greenville, SC 29607). This event was advertised on March 18, 2022, and March 20, 2022, with the NOA and publication of the Draft EA. No comments were received during Public Information Meeting. Copy of the PowerPoint presentation and signing sheet is included in **Appendix H**.



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10. LIST OF PREPARERS

This EA was prepared by McFarland-Johnson, Inc., with support from Three Oaks Engineering. The following professionals were involved in preparation of the document:

McFarland-Johnson, Inc.

Zach Nelson– Aviation Planning Manager / Project Manager, M.P.A., Public Administration (2012): University of Nebraska at Omaha. Project Involvement: Project Management, Proposed Action, Purpose and Need, Alternative Analysis, Conceptual Designs and Environmental Consequences.

Daniel Good, PE – Environmental Engineer, B.S., Environmental Engineering (2015): Clemson University. Project Involvement: Data collection, regulatory point of contact, technical writer, and EA document preparation.

Uriah Hunt – Planner, M.A. Geography, Urban and Regional Planning (2019) University of Binghamton Project Involvement: GIS and EA figures.

John Mafera – Program Manager, B.S. Aviation Management (1998) Florida Institute of Technology. Project Involvement: Proposed Action, Purpose and Need and Alternative Analysis.

Adam Nicholas Aviation Planner, B.S., Aviation Management (2019) Florida Institute of Technology. Project Involvement: Noise Analysis and Modeling

Robert Toomey – Designer, AAS, Civil Engineering (2001): Broome Community College. Project Involvement: Conceptual Designs, Environmental Impacts and EA figures.

David Rosa – Sr. Environmental Scientist / NEPA Lead, B.S., Natural Sciences (2000): University of Sagrado Corazon. Project Involvement: EA document preparation and technical writer.

Jason Hignite – Environmental Manager; M.A., Natural Resource and Environmental Management (1998): Ball State University. Project Involvement: Section 4(f), NHPA Section 106, and Technical Assistance Support, and EA Quality Control.

Maresa Miller – Environmental Analyst, B.S., Environmental Studies and Biology (2001): Slippery Rock University. Project Involvement: Technical writer and EA document preparation.

Three Oaks Engineering

Mark Mohr – Sr. Environmental Planner / South Carolina Practice Lead; Natural Resources Management and Policy (2000): Central Carolina, B.A Business and Organizational Leadership (2021) University of South Carolina. Project Involvement: Biological Evaluation, Flora and Fauna, Wetland Delineation, Agency Coordination and EA Technical Support.

Gordon Murphy – Sr. Environmental Scientist; B.S., Biology (1986): University of South Carolina. Project Involvement: Biological Evaluation, Flora and Fauna, Wetland Delineation, Agency Coordination and EA Technical Support.



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APPENDICES

- Appendix A: RSA Information
- Appendix B: Biological Evaluation Report
- Appendix C: Section 4(f) / Section 6(f) Evaluation
- Appendix D: NHPA Section 106 Review
- Appendix E: Wetland Delineation Report
- Appendix F: SCDOT Coordination Meeting Presentation
- Appendix G: Agencies Correspondence
- Appendix H: Public Involvement



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