# Gillespie County Airport

## Airport Layout Plan Narrative Report

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CHAPTER 1

# Introduction

# CHAPTER 1: INTRODUCTION

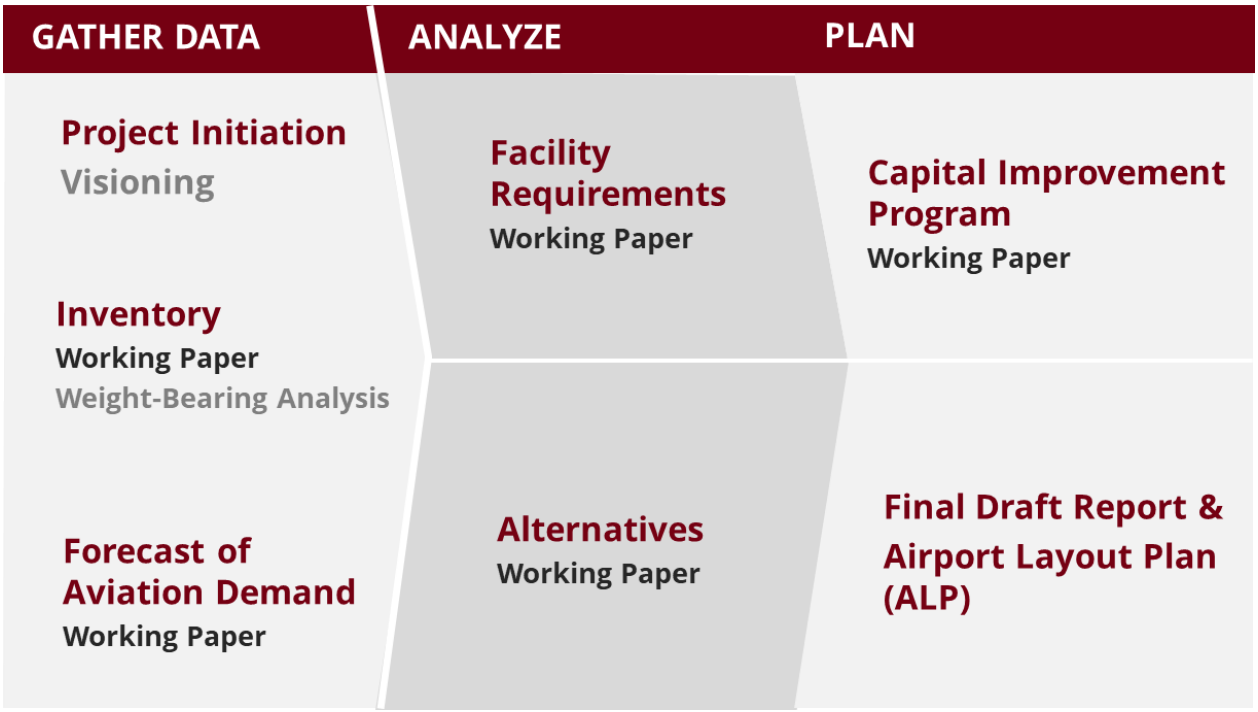
## INTRODUCTION AND PURPOSE

An Airport Layout Plan (ALP) with a Narrative Report evaluates an airport's physical facilities, management principles, planned development, and financial foundation for the future. Because the aviation industry is not static, periodic updates are needed to refresh this information and identify future plans and expectations. Gillespie County Airport (T82) has had some significant changes since the previous ALP was completed in 2011. These changes include changes in area economic conditions, increased based aircraft demand, and changes in the fleet mix.

This ALP narrative report will focus on examining existing facilities, forecasting future aviation demands, identifying the projects necessary to meet that demand, and examining the financial means to achieve the short- and long-term goals for T82. Additionally, the ALP will serve as a tool to aid County staff in their decision-making regarding T82's upkeep and future development.

An overview of the ALP process is provided in **Figure 1-1**.

**FIGURE 1-1**
**AIRPORT LAYOUT PLAN WITH NARRATIVE REPORT PROCESS**
**GILLESPIE COUNTY AIRPORT**




This document, referred to as the ALP narrative or technical report, provides a detailed overview of every element of the ALP for Gillespie County Airport (T82) located in Gillespie County, Texas.

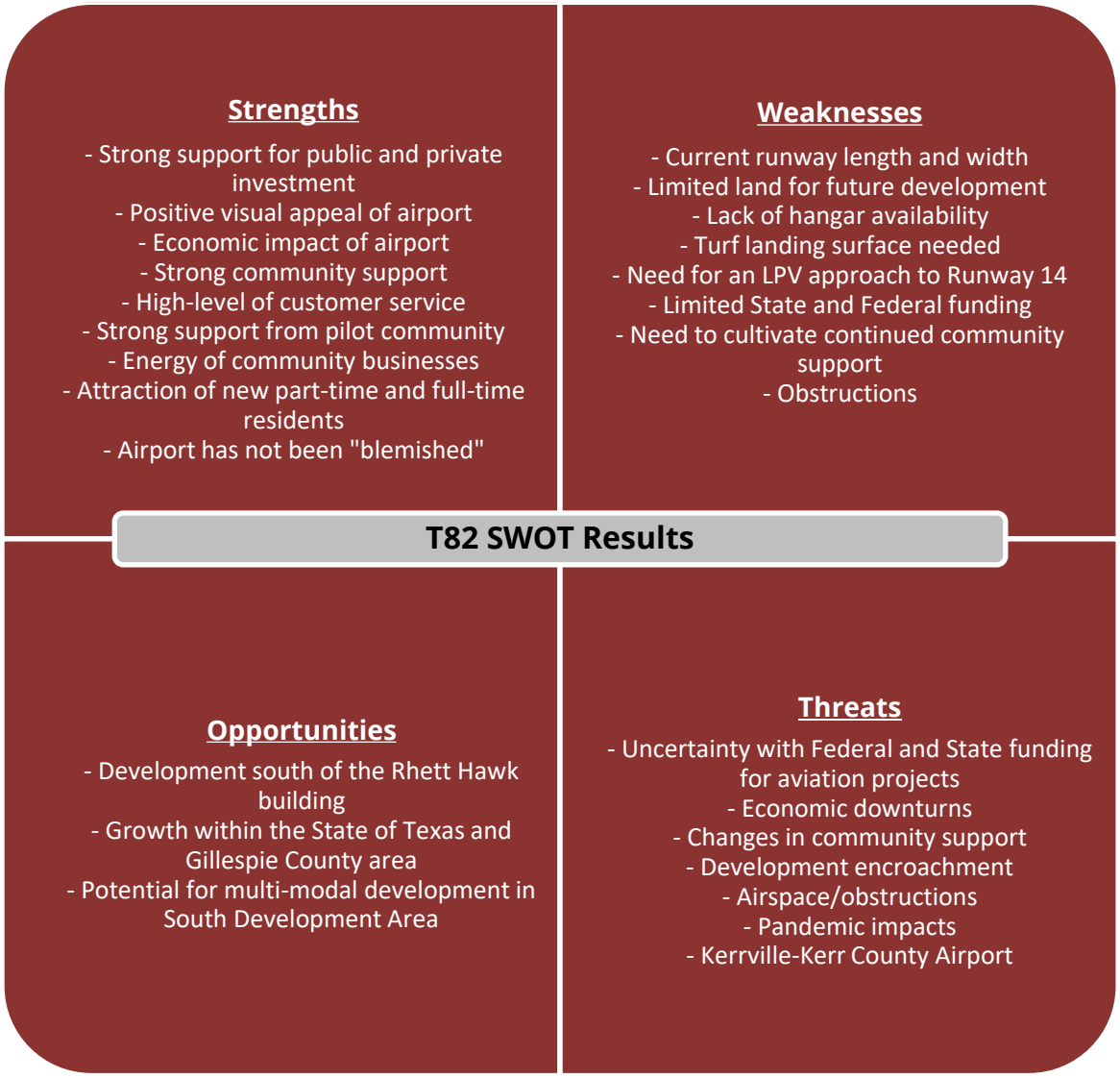
In addition to this narrative report, an ALP drawing set was developed. The ALP is a set of drawings that details the Airport's current infrastructure and proposed development plans as well as the airspace and properties surrounding the Airport. The ALP is reviewed and conditionally approved by the FAA and TxDOT Aviation. The ALP created as part of this project complies with FAA Standard Operating Procedures (SOP) 2.00 – *Standard Operating Procedure for FAA Review and Approval of Airport Layout Plans*.

## SWOT Analysis

At the beginning of the ALP process, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was completed to identify key items that needed to be considered during the ALP process. The SWOT analysis was completed with input from the Gillespie County Airport Advisory Board (AAB).

**Figure 1-2** below provides an overview of the items identified during the SWOT Analysis.

**FIGURE 1-2**
**SWOT ANALYSIS**
**GILLESPIE COUNTY AIRPORT**



CHAPTER 2

# Inventory

# CHAPTER 2: INVENTORY

## FACILITIES INVENTORY

As the initial step in the Airport Layout Plan (ALP) process, the inventory is a systematic data collection effort that provides an understanding of past and present aviation factors associated with the Gillespie County Airport (T82). A comprehensive inventory, including the following major inventory tasks, was completed to form the basis for airport development recommendations throughout the remainder of the Airport Layout Plan with Narrative Report project.

- An on-site inspection of existing facilities was conducted on August 19, 2021, to ensure an accurate inventory of airport facilities, equipment, and services.
- Interviews/discussions with the airport manager, airport advisory board, local officials, stakeholders, and airport tenants regarding airport infrastructure, trends, operations, and services.
- The collection of airport activity data and aeronautical background information including a review of historical airport information, construction plans, previous airport layout plans, maps, charts, and photographs of airport facilities.
- Review of current and planned on- and off-airport land use development and property information, including surrounding land use patterns, existing and proposed transportation developments, infrastructure, and utilities.
- The collection of environmental information related to the airport and future development.

## AIRPORT ROLE

T82's role is well documented in the FAA's National Plan of Integrated Airport Systems (NPIAS), the FAA's General Aviation Airports: A National Asset study, and the Texas Airport System Plan (TASP). T82 is classified as follows in each of the aforementioned documents:

- Designated as a "General Aviation – Business/Corporate" airport under the TASP. The Airport is also identified to be in the "Multipurpose" Functional Category.
- Designated as one of 2,535 "general aviation" airports in the NPIAS. The airport is further subcategorized as one of 482 "regional" airports in the NPIAS.
- Identified by the FAA's Asset study as a "regional" general aviation airport.

The TASP describes Business/Corporate airports as those providing access to turboprop and turbojet business aircraft and are located where there is sufficient population or economic activity to support a moderate to high level of business jet activity and/or to provide capacity in metropolitan areas. Business/Corporate airports generally meet the following criteria:

- Serve communities located more than 30 minutes from the nearest commercial service or reliever airport;
- Are located at least 25 miles from other business/cooperate airports and serve an area of concentrated population, purchasing power, or mineral production;
- Has or is forecasted to have 500 or more annual business/corporate aircraft operations within five years, or have two permanently based jets; and,
- Sometimes located within 25 miles of a significant national recreation or preservation area.

Under the TASP, airports with a Multipurpose functional classification are intended to support diversified operations, though some may have or require special features to support airport users.

Beyond the TASP, NPIAS, and FAA Asset study designations, the FAA identifies design standards for airports and their operating pavements based on FAA Advisory Circular (AC) 150/5300-13 (current edition), *Airport Design*. Pavement categorization is provided for runways through the Runway Design Code (RDC) classification system while taxiway pavements are designated separately through the Taxiway Design Group (TDG) classification system.

A runway's RDC is defined by two variables related to the designated critical design aircraft for the runway and the lowest approach visibility minimums for the runway. The critical design aircraft is the largest single aircraft or classification of aircraft the runway is expected to serve on a regular basis (500 operations per year or more).

The critical design aircraft variables used to establish a runway's RDC include:

- Aircraft Approach Category (AAC)
- Airplane Design Group (ADG)

The tables below further define the variables utilized to establish the RDC for a runway. **Table 2-1** defines the AAC categories. **Table 2-2** documents the ADG categories. **Table 2-3** describes the various visibility minimum categories.

**TABLE 2-1**
**AIRCRAFT APPROACH CATEGORY (AAC)**

| AAC | $V_{REF}$/Approach Speed [1] |
|---|---|
| A | Approach speed less than 91 knots |
| B | Approach speed 91 knots or more but less than 121 knots |
| C | Approach speed 121 knots or more but less than 141 knots |
| D | Approach speed 141 knots or more but less than 166 knots |
| E | Approach speed 166 knots or more |

**Source:** FAA Advisory Circular 150/5300-13 (current edition), *Airport Design*.
[1] $V_{REF}$ = Landing Reference Speed or Threshold Crossing Speed.

**TABLE 2-2**
**AIRPLANE DESIGN GROUP (ADG)**

| Group # | Tail Height (ft. [m]) | Wingspan (ft. [m]) |
|---|---|---|
| I | < 20' (< 6 m) | < 49' (< 15 m) |
| II | 20' - < 30' (6 m - < 9 m) | 49' - < 79' (15 m - < 24 m) |
| III | 30' - < 45' (9 m - < 13.5 m) | 79' - < 118' (24 m - < 36 m) |
| IV | 45' - < 60' (13.5 m - < 18.5 m) | 118' - < 171' (36 m - < 52 m) |
| V | 60' - < 66' (18.5 m - < 20 m) | 171' - < 214' (52 m - < 65 m) |
| VI | 66' - < 80' (20 m - < 24.5 m) | 214' - < 262' (65 m - < 80 m) |

**Source:** FAA Advisory Circular 150/5300-13 (current edition), *Airport Design*.

**TABLE 2-3**
**VISIBILITY MINIMUMS**

| RVR (ft.) * | Instrument Flight Visibility Category (statute mile) |
|---|---|
| 5000 | Not lower than 1 mile |
| 4000 | Lower than 1 mile but not lower than ¾ mile |
| 2400 | Lower than 3/4 mile but not lower than 1/2 mile |
| 1600 | Lower than 1/2 mile but not lower than 1/4 mile |
| 1200 | Lower than 1/4 mile |

**Source:** FAA Advisory Circular 150/5300-13 (current edition), *Airport Design*.
* RVR values are not exact equivalents.

The only existing runway at T82 is Runway 14/32. Based on the application of FAA airport design criteria, the TASP, a review of existing facilities/approaches, and a review of T82's current Airport Layout Drawing (ALD), Runway 14/32 has an RDC of B-II-5000. This designation is consistent with the types of aircraft currently using the airfield as shown in

the FAA's Traffic Flow Management System Counts (TFMSC) database and the Airport's established Instrument Approach Procedures (IAP).

An airport's Airport Reference Code (ARC) is based on the highest RDC of a runway at the Airport minus the RDC visibility component. Based on the RDC for Runway 14/32, the ARC for T82 is B-II.

## AIRFIELD FACILITIES AND CHARACTERISTICS

The Airport was started in 1948 and the original property included 351.07 acres. Lady Bird Johnson Municipal Park to the south was originally part of airport property. This property was developed into Oak Crest Park in 1957 by Gillespie County and eventually donated to the City of Fredericksburg who renamed it Lady Bird Johnson Municipal Park in 1969.

When the Airport was opened in 1948, it had one paved runway and two unpaved runways. The original paved runway was 3,000 feet long and 75 feet wide. In 1950, Gillespie County decided to close the two unpaved runways. In 1978, the paved runway was extended to 3,800 feet. The runway was further extended 1992 to 4,600 feet and again in 2003 to 5,001 feet. Today, as shown in **Figure 2-1**, *General Airport Layout*, T82 has a 5,001-foot runway, Runway 14/32, with a full-length parallel taxiway. **Table 2-4** provides a summary of the airfield components and data. The airside facilities consist of the runway, taxiways, airfield lighting, weather reporting systems, and other various components.

**FIGURE 2-1**
**GENERAL AIRPORT LAYOUT**
**GILLESPIE COUNTY AIRPORT**


**Source:** Garver, 2021.

**TABLE 2-4**
**AIRFIELD FACILITIES**
**GILLESPIE COUNTY AIRPORT**

| | Runway 14/32 |
|---|---|
| Length (feet) | 5,001 |
| Width (feet) | 75 |
| Surface Material/Treatment | Asphalt |
| Weight Bearing Capacity (pounds)<br>Single Wheel Gear (SWG) | 30,000 |
| Markings | Non-Precision Instrument |
| Runway Lighting | MIRL |
| Approach/Lighting Aids<br>Vertical Guidance Slope Indicators | 2- Light PAPI (P2L) both ends |
| Visual Aids | Two lighted windcones, one with segmented circle and traffic pattern indicators |
| Runway RSA | 150 ft. x 300 ft. |
| Runway OFA | 500 ft. x 300 ft. |
| Runway OFZ | 400 ft. x 200 ft. |
| Instrument Approach Aids | None on Airport (closest instrument approach aid is the Stonewall VORTAC 10.8 nautical miles off field) |
| Weather Reporting Aids | AWOS-3 |

**Source:** FAA Airport Facility Directory, FAA 5010 Data, T82 2011 Airport Layout Drawing (ALD).

## RUNWAY 14/32

According to current FAA documentation, Runway 14/32 is 5,001 feet in length and 75 feet in width. However, it should be noted that the 2011 ALD identified the length of the runway as 5,002 feet. At some point since 2011, the published length of the runway was reduced by 1 foot. A runway length calculation was performed by Garver using the existing runway end coordinates as published on the FAA's Aeronautical Information Services (AIS) website. The result of the calculation showed a runway length of 5,001 feet. The 1-foot reduction in the published runway length is likely due to the difference between the "rounded" latitudes and longitudes used for runway end points on the 2011 ALD compared to the more precise endpoints currently published in the FAA AIS system.

Runway 14/32 is constructed of asphalt. According to the Airport's 2011 ALD, the runway has a published gross weight bearing capacity of 30,000 pounds single wheel. The runway is equipped with Medium Intensity Runway Lights (MIRLs), as well as a two light Precision Approach Path Indicator (PAPI) system for each runway end. The MIRLS are all LED and are in good condition. The PAPI systems are old and in need of replacement. Both runway ends have non-precision instrument markings that are in fair to good condition. As previously discussed, Runway 14/32 is considered a B-II-5000 runway under current FAA runway design standards.

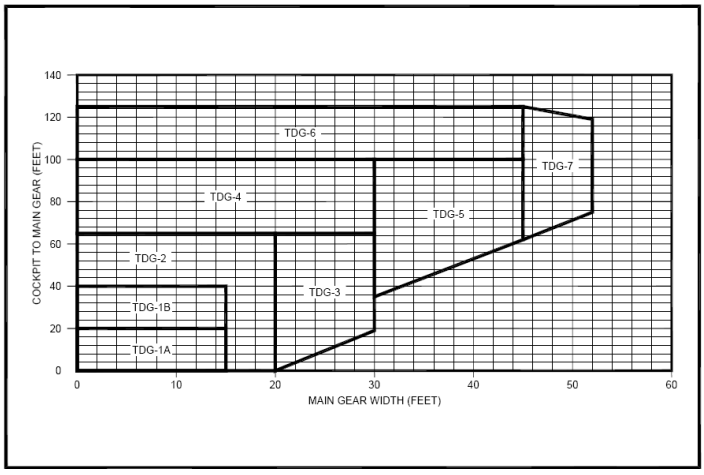
There are no current Runway Safety Area (RSA) discrepancies associated with the runway. However, several Runway Object Free Area (ROFA) discrepancies exist. At the approach end of Runway 14, the ROFA extends off airport property onto the adjacent golf course and the airport fence extends through the ROFA. However, the Airport does have an avigation easement for this property. The property is owned by the City of Fredericksburg and is identified as Tract K on the Airport's property map. The easement is dated March 31, 2010. Additionally, both windcones are located within the ROFA. Windcones should be located outside of the ROFA according to FAA standards.

The Runway Protection Zones (RPZ) associated with each runway end protrude off property and extend over roadways. However, the Airport does have easements associated with many of the land tracts outside of airport property. Tracts E, F, and K as shown on the airport property map provide avigation easements at the approach end of Runway 14. Tracts D, J, L, and M are avigation easements associated with the RPZ at the approach end of Runway 32. Several residential structures are also located within the Runway 14 RPZ. The ROFA and RPZ discrepancies will be key considerations during the remainder of the Airport Layout Plan process.

## *TAXIWAYS/TAXILANES*

Aircraft move from the runway to the businesses/hangars on the airfield via taxiways and taxilanes. Each taxiway/taxilane is typically designated with a unique name and designed to accommodate anticipated aircraft operations based on an established Taxiway Design Group (TDG). The TDG is a classification system for taxiways/taxilanes based on an airplane's landing gear dimensions. An aircraft's TDG is calculated based on its outer-to-outer main gear width and the cockpit to main gear distance. The wider the distance between the main gear struts and/or the greater the distance between the cockpit and main gear, the higher the TDG. The TDG for a given aircraft can be identified by the use of **Figure 2-2** and the application of the specific safety parameters outlined in AC 150/5300-13 (current edition).

**FIGURE 2-2**
**TAXIWAY DESIGN GROUPS**




**Source:** FAA AC 150/5300-13 (current edition), *Airport Design*.

As previously mentioned, T82 has a full-length parallel taxiway for Runway 14/32 and four perpendicular taxiway stubs connecting the runway to the parallel taxiway. There are three stub taxiways from the parallel taxiway that connect the parallel taxiway to aircraft

hangar/apron areas. The stub taxiways are identified, from north to south, as Taxiways A, B, C and D as shown in **Figure 2-1**. The parallel taxiway is currently unnamed. All the taxiways/taxilanes at T82 are constructed of asphalt. There is an aircraft run-up area located at the approach end of Runway 32 off Taxiway D. Aircraft run-ups at the approach end of Runway 14 are commonly conducted on the "coffee mug" taxilane that parallels the main taxilane at the far north end of the Airport.

The taxiway/taxilanes at T82 are 35 feet wide. In general, the taxiways/taxilanes follow TDG-2 design standards. However, an important aspect of taxiway design is the pavement layout where one taxiway curves to another taxiway, commonly referred to as a taxiway "fillet." The FAA changed the taxiway fillet design standards significantly in 2014. The taxiway system at T82 was designed prior to 2014 and consequently does not meet many of the current taxiway fillet design standards. Based on interviews with airport personnel and stakeholders there are concerns regarding the sufficiency of the existing taxiway fillets. Specifically, there have been occurrences where larger aircraft have accidentally placed one of their main gear struts in the grass when turning onto the FBO apron from Taxiway B.

Another aspect of taxiway layout and design is the establishment and protection of Taxiway Safety Areas (TSA) and Taxiway Object Free Areas (TOFA). The TSA is a defined surface alongside the taxiway that is prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway. The purpose of the TSA is to protect an aircraft from damage if the aircraft leaves the taxiway for any reason. The TOFA is an area centered on a taxiway or taxilane centerline that must be kept clear of objects except those objects that need to be located in the TOFA for air navigation or aircraft ground maneuvering purposes. The size of both the TSA and TOFA are based on the ADG (described in Table 2-2) of the critical design aircraft expected to use each taxiway. Currently, the TSA is 79 feet wide, and the TOFA is 131 feet wide for all the taxiways at T82. The Taxilane OFA is 115 feet wide.

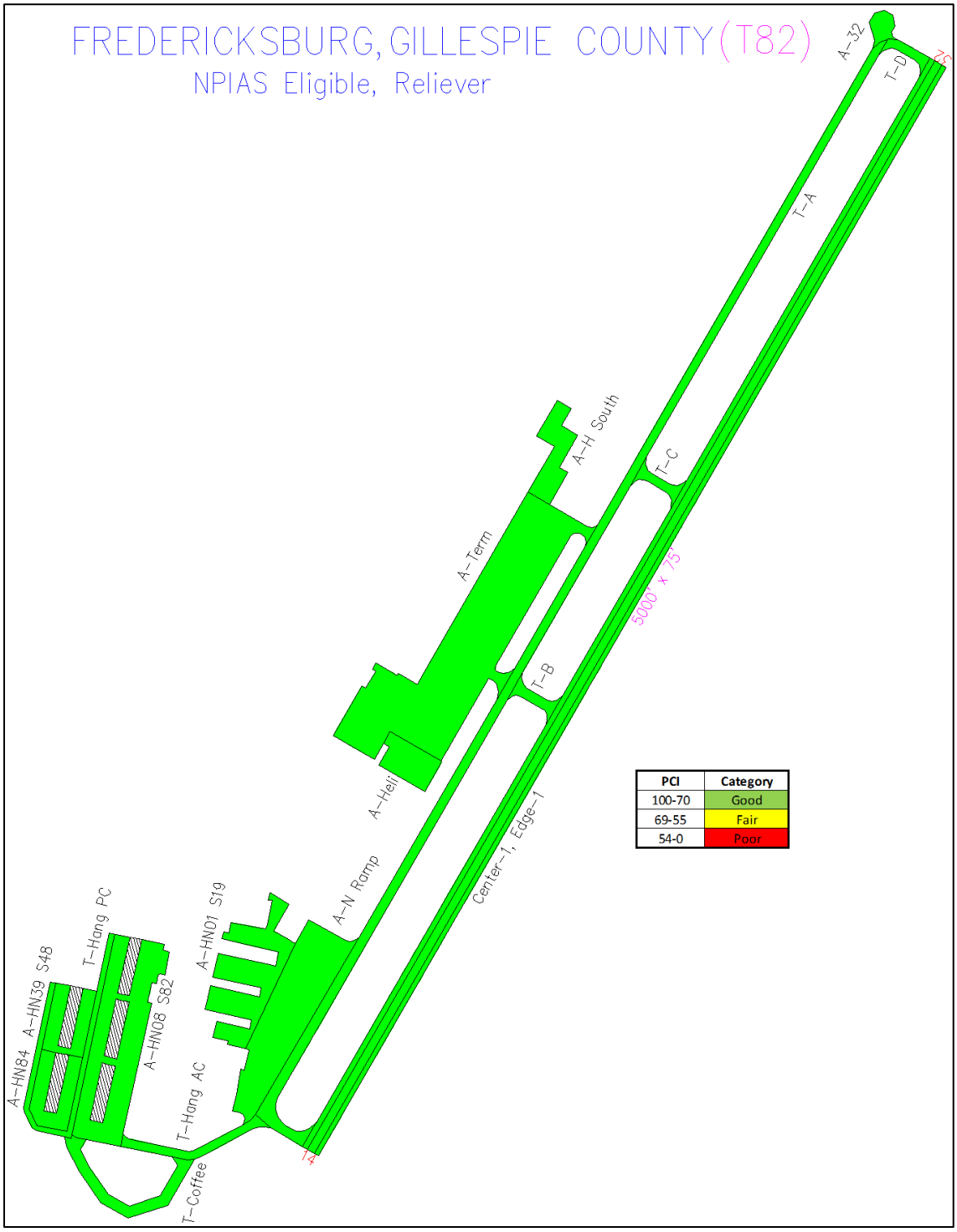
All taxiways/taxilanes at T82 have a taxiway centerline marking. The markings are generally in fair to good condition. Solar edge lighting buttons are located on taxiways at T82; however, the Airport has noted that the solar lights are prone to failure. Some taxiways also have centerline reflectors. There is taxiway signage present on the airfield including runway hold position signs at every runway/taxiway intersection. The airfield signage was installed in 2020.

## *AIRFIELD PAVEMENT*

The proper maintenance of airfield and terminal area pavements is critical to the safe operation of an airport. To properly maintain their pavements, airports are required to establishment and maintain a pavement maintenance-management program (PMMP). Pavement condition is typically classified using the Pavement Condition Index (PCI) method set forth in FAA Advisory Circular 150/5380-7B, *Airport Pavement Management Program (PMP)*. The Texas A&M Transportation Institute completed a pavement evaluation at T82 on January 10, 2019. **Figure 2-3** shows the results of the pavement inspection. In general, all pavements were shown to be in "good" condition.

As part of this ALP project, a pavement weight bearing capacity analysis was conducted. The findings of this analysis yielded a Pavement Classification Number (PCN) of 21/F/C/X/T for Runway 14/32. The maximum gross weight bearing capacity for the runway was determined to be 54,400 pounds Single Wheel (SW) and 73,300 pounds Double Wheel (DW). The full report for this pavement analysis is included in this ALP narrative report as **Appendix B**.

**FIGURE 2-3**
**PAVEMENT CONDITION**
**GILLESPIE COUNTY AIRPORT**




**Source:** Texas A&M Transportation Institute, T82 Pavement Report dated 1/10/2019.

## AIRFIELD LIGHTING

Sufficient airfield lighting is an important part of maintaining an airfield's operational status during night and inclement weather conditions. As previously discussed, T82 has MIRLs for Runway 14/32. The MIRLs are LED and were installed in 2012. They are in good condition.

At night or during poor weather conditions, pilots identify an airport by locating the rotating beacon, a lighting feature designed to provide alternating white and green lights that can be seen for up to 10 miles from the airfield. T82's beacon is located 2,215 feet southeast of the Runway 14 threshold adjacent the terminal building parking lot. The beacon was last replaced in 2002. The Airport plans to replace the beacon light with a new LED light to reduce maintenance costs.

The PAPI systems associated with Runway 14/32 will be discussed in the Navigational Aids (NAVAIDs) section.

## NAVIGATIONAL AIDS (NAVAID)

NAVAIDs, located on the field or at other locations in the region, are specialized equipment that provide pilots with electronic guidance and visual references in an effort to execute instrument approaches and point-to-point navigation. T82 has a two light PAPI system on each end of Runway 14/32. These systems provide pilots with a visual indication of whether they are above or below the established 3.0-degree glidepath to the runway end. The PAPIs at T82 are owned by the Airport and are in in need of replacement.

Additionally, a VORTAC (Stonewall VORTAC) is located 10.8 miles east-southeast of T82. A VORTAC is a VHF Omnidirectional Range Radio Beacon that emits a signal to aid aircraft in determining the location of the VOR station from the aircraft with respect to magnetic north. The co-located Tactical Air Navigation (TACAN) facility provides TACAN azimuth and Distance Measuring Equipment (DME) functionality that allows aircraft to measure the slant range distance from the VORTAC to the aircraft in nautical miles. The VORTAC is used for the VOR/DME-A approach for T82.

NAVAIDs and Global Positioning System (GPS) satellites are also critical to the development of Instrument Approach Procedures (IAPs) at an airport. Currently, there are three IAPs published for T82. Details for these approaches are in **Table 2-5**.

**TABLE 2-5**
**INSTRUMENT APPROACH PROCEDURES**
**GILLESPIE COUNTY AIRPORT**

| Runway End | Approach Type | Visibility Minimums | Ceiling Minimum |
|---|---|---|---|
| Runway 14 | RNAV/GPS | LP MDA: Categories A, B, and C – 1-mile<br>LP MDA: Category D – N/A<br>LNAV MDA: Categories A & B – 1-mile<br>LNAV MDA: Category C – 1 3/8-mile<br>LNAV MDA: Category D – N/A<br>Circling: Category A – 1-mile<br>Circling: Category B – 1-mile<br>Circling: Category C – 2 1/4- mile<br>Circling: Category D – N/A | 2060’ MSL/365’ AGL<br>N/A<br>2200’ MSL/505’ AGL<br>2200’ MSL/505’ AGL<br>N/A<br>2200’ MSL/505’ AGL<br>2340’ MSL/645’ AGL<br>2480’ MSL/785’ AGL<br>N/A |
| Runway 32 | RNAV/GPS | LPV DA: Categories A, B, and C – 1-mile<br>LPV DA: Category D – N/A<br>LNAV/VNAV DA: Categories A, B, and C – 1-mile<br>LNAV/VNAV DA: Category D – N/A<br>LNAV MDA: Categories A & B – 1-mile<br>LNAV MDA: Category C – 1 1/4-mile<br>LNAV MDA: Category D – N/A<br>Circling: Category A – 1-mile<br>Circling: Category B – 1-mile<br>Circling: Category C – 2 1/4- mile<br>Circling: Category D – N/A | 1935’ MSL/250’ AGL<br>N/A<br>1967’ MSL/282’ AGL<br>N/A<br>2100’ MSL/415’ AGL<br>2100’ MSL/415’ AGL<br>N/A<br>2200’ MSL/505’ AGL<br>2340’ MSL/645’ AGL<br>2480’ MSL/785’ AGL<br>N/A |
| Non-Directional | VOR/DME-A | Circling: Category A – 1–mile<br>Category B – 1 1/4–mile<br>Category C – 2 1/4–mile<br>Category D – N/A | 2440’ MSL/745’ AGL<br>2440’ MSL/745’ AGL<br>2480’ MSL/785’ AGL<br>N/A |

**Source:** FAA Digital – Terminal Procedures Publication (d-TPP) Website.

The airport currently has Localizer Performance with Vertical (LPV) guidance for the Runway 32 RNAV(GPS) approach. LPV nor LNAV/VNAV minimums exist for the RNAV(GPS) approach to Runway 14. The Airport has expressed a desire to add LPV minimums for Runway 14 which will require the mitigation of off airport obstructions.

## WEATHER REPORTING

T82 has an AWOS-3 that is the primary source of wind direction, velocity, and altimeter data for weather observation purposes for the Airport. The AWOS-3 is an automated sensor suite that reports weather conditions over a discrete radio frequency for pilots to receive real-time weather information. The T82 AWOS-3 information can be received by tuning to 120.0 MHz or by calling 830-990-2716. The Airport owns the AWOS-3 and has a contract for its maintenance.

## COMMUNICATION INFRASTRUCTURE

According to FAA documentation, T82 currently has a Ground Communications Outlet (GCO) which can be utilized on 121.725 MHz to contact the Houston Air Route Traffic Control Center (ARTCC) or a Flight Service Station (FSS). GCOs are only meant to be utilized while an aircraft is on the ground. To utilize a GCO, pilots initiate a series of clicks using their VHF radio to contact either the ARTCC or FSS. Based on the number of clicks (6 for ARTCC or 4 for FSS), the GCO will connect the pilot with the ARTCC/FSS through a VHF radio/telephone link. The remarks for T82 in the Airport/Facility Directory (A/FD) state that Houston ARTCC can also be contacted at 281-230-5622.

Additionally, the FAA Aeronautical Information Services (AIS) site indicates that T82 has a Remote Center Air/Ground (RCAG) communications site (called the Fredericksburg RCAG) that can be utilized to obtain approach/departure control services through the Houston ARTCC on frequencies 134.2 MHz or 307.7 MHz. According to airport staff, this service is typically only available while airborne. The Fredericksburg RCAG is located approximately 9 NM north of T82.

Delays commonly occur at T82, during IFR conditions as a result of IFR traffic separation standards and the limited connectivity aircraft have with Houston ARTCC while on the ground. Consequently, the Airport is interested in identifying ways to improve this connectivity including the establishment of a Remote Communications Outlet (RCO).

# LANDSIDE / TERMINAL AREA FACILITIES

The landside/terminal area facilities are those central to the business operations of an airfield. They support the transition from the airfield to aircraft storage areas/aeronautical businesses and then into the community infrastructure. Landside/terminal facilities typically include a terminal building, aircraft storage facilities of various types (e.g., T-hangars and box hangars), aircraft parking aprons and other support facilities like fuel storage and delivery. According to a recent based aircraft count, T82 currently has 117 total based aircraft (100 single engine, 8 multi engine, and 9 jet). The website www.basedaircraft.com shows 100 based aircraft as 17 of the aircraft can not be verified in the FAA's based aircraft database.

## *GENERAL AVIATION TERMINAL*

T82 has a GA terminal building located in the center of the main apron area. Access to the terminal building is via Crosswind Lane, which connects to Fair Drive. The GA terminal was built in the early 2000s and is operated by Gillespie County. The GA terminal has a small flight planning area, a conference room, a lobby area, the Airport Manager's office, and restrooms. The facility does not have a crew rest area. The terminal is approximately 3,000 square feet in size and is in good condition.

## *FIXED BASE OPERATOR (FBO)*

Fredericksburg FBO is the only FBO at T82 and operates a facility on the Airport just north of the GA terminal building. Airport customers are served by FBO staff between the hours of 8:00 a.m. – 6:00 p.m., seven days a week, with after-hours service available by request. Rental cars are available. The building includes office space, a lobby, a conference room, flight planning, and lounge areas. The FBO building is approximately 3,350 square feet in size. Discussions with the FBO indicated that additional building space is needed during peak hours. Additionally, more office space is needed to accommodate the FBO staff. Additional apron space is also needed during peak activity times.

## AIRCRAFT STORAGE/HANGAR FACILITIES

T82 supports the storage of aircraft in two primary hangar types: T-hangars and box/common hangars. Box/common hangars are generally stand-alone structures while T-hangars are individual aircraft storage units joined as one standing structure. At T82, there are 21 box/common hangars and eight T-hangar structures. In total, there is approximately 243,225 square feet of hangar space at T82.

All hangars at T82 are at capacity and a waiting list for hangar space does exist. There are twenty-eight aircraft on the county-owned T-hangar waiting list at this time (September 2021). Nineteen aircraft are on the waiting list for the Snowden T-hangars. **Figure 2-4** and **Table 2-6** provide a breakdown of hangar storage at T82.

**FIGURE 2-4**
**AIRPORT HANGAR LAYOUT**
**GILLESPIE COUNTY AIRPORT**


**Source:** Garver, 2021.

**TABLE 2-6**
**AIRCRAFT STORAGE HANGARS**
**GILLESPIE COUNTY AIRPORT**

| Building Number | Hangar Type | Area (sq. ft.) | Utilization |
|---|---|---|---|
| 01 | Box Hangar | 5,625 | Private Hangar |
| 02 | Box Hangar | 5,625 | Private Hangar |
| 03 | T-Hangars | 11,500 | Private 10 Bay T-Hangars |
| 04 | T-Hangars | 11,500 | Private 10 Bay T-Hangars |
| 05 | T-Hangars | 11,500 | Private 10 Bay T-Hangars |
| 06 | T-Hangars | 11,500 | Private 10 Bay T-Hangars |
| 07 | T-Hangars | 11,500 | Private 10 Bay T-Hangars |
| 08 | Box Hangar | 4,875 | Private Hangar |
| 09 | Box Hangar | 4,875 | Private Hangar |
| 10 | Box Hangar | 3,600 | Private Hangar |
| 11 | Box Hangar | 4,200 | Private Hangar |
| 12 | Box Hangar | 5,250 | Private Hangar |
| 13 | Box Hangar | 6,000 | Private Hangar |
| 14 | Box Hangar | 6,300 | Private Hangar |
| 15 | Box Hangar | 5,600 | Snowden Aviation Hangar |
| 16 | Box Hangar | 7,225 | Pippin-York (Avionics) Hangar |
| 17 | Box Hangar | 3,600 | Pippin-York (Avionics) Hangar |
| 18 | T-Hangars | 4,725 | County-Owned 4 Bay T-Hangars |
| 19 | T-Hangars | 8,000 | County-Owned 6 Bay T-Hangars |
| 20 | T-Hangars | 14,100 | County-Owned 10 Bay T-Hangars |
| 21 | Box Hangar | 3,000 | Private Hangar |
| 22 | Box Hangar | 5,700 | Private Hangar |
| 23 | Box Hangar | 9,000 | Fredericksburg Aviation (A&P) Hangar |
| 24 | Box Hangar | 10,000 | Fredericksburg FBO Hangar |
| 25 | Box Hangar | 12,000 | Fredericksburg FBO Hangar |
| 26 | Box Hangar | 12,000 | Fredericksburg FBO Hangar |
| 27 | Box Hangar | 12,000 | Fredericksburg FBO Hangar |
| 28 | Box Hangar | 12,000 | Fredericksburg FBO Hangar |
| 29 | Box Hangar | 20,425 | Rhett Hawk Hangar |

**Source:** Garver, 2021

## AIRCRAFT PARKING APRON

The Airport has approximately 798,000 square feet of apron space used for parking and maneuvering of aircraft. The majority of the apron is constructed of asphalt, with some concrete areas. The helicopter parking apron, located close to the FBO, is constructed entirely of concrete as well as the new apron (constructed in 2017/2018) on the northside of the Airport. The new northside apron is sometimes utilized for aerial firefighting operations. The main apron has centerline markings to support the safe and efficient movement of aircraft along the apron.

The majority of the main airport apron has lights that illuminate the ramp at night. However, a portion of the main apron south of the Hangar Hotel lacks apron lighting making the area very dark at night. The Airport is interested in potentially adding lighting in this area to improve safety.

Within the apron there are 53 designated aircraft tie-down spaces. Of the 53 tie-down spaces, only three of them are reserved for based aircraft. The remaining 50 are primarily used to accommodate itinerant aircraft operations. During peak periods, additional apron and tie-down space is needed. As part of the Phase II airfield improvements project that is expected to be completed in 2022, an additional 19 tie-down spots are expected to be added. Additional tie-down spots may be added as part of the project depending on funding.

During significant rain events, aprons can become unusable if they are not properly drained. Currently, several water "ponding" issues occur on the apron or adjacent to the apron during major rain events at T82. The locations where ponding occurs are:

- On the northeast and southwestern sides of the Fritz T-Hangar (Hangar 5 as shown on Figure 2-4); and,
- Between the Snowden Hangar (15) and Pippen-York Hangars (16 and 17).

Several drainage improvements are currently planned as part of the Phase II airfield improvements project including:

- Drainage improvements on the north end of Runway 14/32; and,
- Drainage improvements and detention pond north of the FBO hangars and east of Airport Road.

## *AIRCRAFT CIRCULATION*

The Airport has a single runway with a full-length parallel taxiway and a total of four stub taxiways, making aircraft circulation on the airfield relatively simple. When aircraft are landing on Runway 14, they turn off the runway at Taxiway B, C, or D and taxi to the terminal/hangar area via the parallel taxiway (currently unnamed) and the Airport's taxilane/apron infrastructure. Aircraft departing Runway 14 taxi to the approach end of Runway 14 via the parallel taxiway and depart from Taxiway A. When aircraft are landing on Runway 32, they turn off the runway at Taxiway A, B, or C and use the parallel taxiway and taxilane/apron infrastructure to taxi to the terminal/hangar area. When departing Runway 32, aircraft taxi to the approach end of Runway 32 via the parallel taxiway and depart from Taxiway D.

There are currently no aircraft circulation issues related to the runway and taxiway/taxilane configuration at T82. It should also be noted that T82 has direct apron to runway access in two locations (Taxiway A and B), which is a prohibited configuration under current FAA design standards. This will be assessed further later in the ALP project.

## *TERMINAL PARKING AND ROADWAY ACCESS*

The terminal facility has a small striped parking lot immediately behind it. There are 30 striped parking spaces, including two handicapped parking spaces. The parking lot is asphalt and is in good condition. There is additional vehicle parking north of the terminal lot for the FBO, which includes a covered parking area. This lot has a total of 69 parking spaces including 48 covered parking spaces and four handicapped spaces. Parking

shortages have been observed during special events and when the adjacent Hangar Hotel and conference center are busy. Airport staff have indicated the need for additional vehicle parking on the north side of the Airport near the existing T-hangars and small box hangars. The FBO has also indicated a need for additional parking spaces. Currently, the FBO leases 25 of its 69 total parking spaces for airport patrons to leave a vehicle at the Airport.

Roadway access to the Airport is provided via Airport Road, Crosswind Lane, and Fair Drive. The roadways are constructed of asphalt and are in fair to good condition.


In addition to a marquee sign located at the intersection of Crosswind Lane and Fair Drive, there are airport signs in both directions on Highway 16. There is also an airport sign on Tivydale Road.

## *SECURITY*

T82 has a game fence extending around the entire airport perimeter. The fence is eight feet tall. There are two vehicle access gates close to the terminal and FBO parking lots. A camera system exists and is currently being expanded.

## FUEL STORAGE FACILITY

The fuel storage facility at T82 is located in the center of the apron close to the terminal building. The facility is owned and operated by the FBO. It consists of two 12,000 gallon Above Ground Storage Tanks (ASTs), one for Jet A and one for 100LL. The main facility was constructed in 2004 and is in good condition.

Self-service fueling is provided on a continuous basis at the main fuel farm for both Jet A and 100LL. Full service fueling is also available during FBO business hours (8:00 a.m. – 6:00 p.m., seven days a week). Discussions with the FBO indicated that an additional 12,000-gallon AST for Jet-A is needed to support demand.

A separate 2,000-gallon AST for self-service 100LL fueling is located on the north apron between the Snowden (hangar 15) and Pippen-York (hangars 16 and 17) hangars. The self-service 100LL tank was recently installed and is in excellent condition.

# EXISTING ENVIRONMENTAL OVERVIEW

This section provides an overview of the known environmental factors that should be considered as part of the Airport Layout Plan process. There are no known previous major environmental studies (e.g., Environmental Assessments or Environmental Impact Statements) for T82.

## *HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES*

The National Historic Preservation Act of 1966 requires that an initial review be made to determine if any properties in or eligible for inclusion in the National Register of Historic Places are within the area of a proposed action's potential environmental impact. The Archaeological and Historic Preservation Act of 1974 provides for the survey, recovery, and preservation of significant scientific, pre-historic, historical, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally funded, or federally licensed project. An online query through the National Registry of Historic Places revealed that there are no historic site locations in the immediate airport vicinity. A historic district encompasses much of the downtown Fredericksburg area. Currently, the Airport sits approximately 2.6 miles south of the southern border of the historical district.

## *FISH, WILDLIFE, AND PLANTS*

The Endangered Species Act requires each federal agency to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of a habitat of such species. An online query was completed utilizing the United States Fish and Wildlife Service (USFWS) Endangered Species database and the Texas Parks and Wildlife Department 's (TPWD) Rare, Threatened, and Endangered Species of Texas database for Gillespie County. **Table 2-7** lists the threatened and endangered species identified through the online queries using both databases. Future coordination with USFWS and TPWD may be necessary prior to commencing any major construction project at T82 to confirm that no hazard to an endangered or threatened species is being created.

**TABLE 2-7**
**GILLESPIE COUNTY THREATENED AND ENDANGERED SPECIES**

| Common Name | Genus/Species | Status |
|---|---|---|
| Whooping crane | Grus americana | LE |
| Golden-cheeked warbler | Setophaga chrysoparia | LE |
| Peck's cave amphipod | Stygobromus pecki | LE |
| Comal Springs riffle beetle | Heterelmis comalensis | LE |
| Comal Springs dryopid beetle | Stygoparnus comalensis | LE |
| Red knot | Calidris canutus rufa | LT |
| Tobusch fishhook cactus | Sclerocactus brevihamatus ssp. Tobuschii | LT |
| Texas salamander | Eurycea neotenes | State Listed |
| White-faced ibis | Plegadis chihi | State Listed |
| Zone-tailed hawk | Buteo albonotatus | State Listed |
| Tropical parula | Setophaga pitiayumi | State Listed |
| Black bear | Ursus americanus | State Listed |
| White-nosed coati | Nasua narica | State Listed |
| Texas tortoise | Gopherus berlandieri | State Listed |
| Texas horned lizard | Phrynosoma cornutum | State Listed |
| Texas Fatmucket | Lampsilis bracteata | State Listed |
| Texas Pimpleback | Cyclonaias petrina | State Listed |
| Small-headed pipewort | Eriocaulon koernickianum | State Listed |
| Rock quillwort | Isoetes lithophila | State Listed |

**Source:** U.S. Fish & Wildlife Service and Texas Department of Parks and Wildlife.
LE = Federally Listed Endangered; LT = Federally Listed Threatened

## *FEMA FLOODPLAIN MAP*

Flooding can hamper the safe operation of an airport and make it difficult to develop property on or around an airport. As part of this study, an online inquiry was completed through the FEMA Flood Map Service Center to identify areas on or around the Airport affected by the existing floodplain. According to the results of the query, no portion of airport property are within the 100 year or 500-year floodplain.

## WETLANDS

Several wetland areas are present on T82 property according to the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory. Two riverines exist at the southern end of the terminal area and are shown in blue in **Figure 2-5**. Additionally, two small freshwater/emergent wetland areas are present on airport property in the terminal area. These areas are shown in green in **Figure 2-5.**

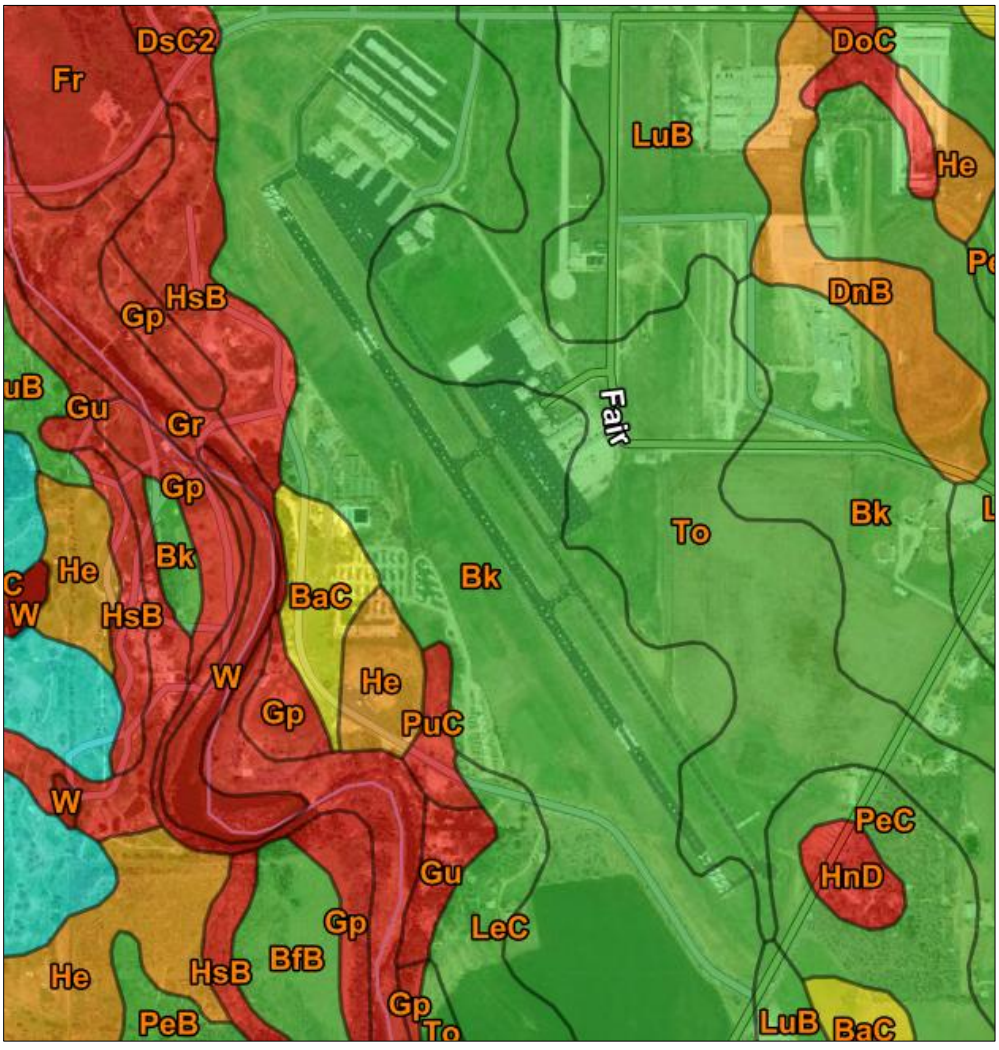
**FIGURE 2-5**
**USFWS NATIONAL WETLANDS INVENTORY MAP**
**GILLESPIE COUNTY AIRPORT**


**Source:** USFWS National Wetlands Inventory.

## *FARMLANDS*

The Farmland Protection Policy Act (FPPA) regulates federal actions with the potential to convert farmlands to non-agricultural uses. The FPPA is intended to minimize the impact that federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. According to the USDA Web Soil Survey System, all areas of T82 are considered prime farmland, as shown in **Figure 2-6**.

**FIGURE 2-6**
**USDA NATURAL RESOURCES CONSERVATION SERVICE FARMLAND CLASSIFICATIONS**
**GILLESPIE COUNTY AIRPORT**




**Source:** USDA Web Soil Survey System.

### HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION

Based on research completed as part of this project and discussions with airport stakeholders, there are no known hazardous materials, solid waste, or pollution hazards on or immediately adjacent to the Airport.

### NOISE

The Airport has received some noise complaints from residents to the south. This typically occurs when Runway 32 is the runway end in use.

## LAND USE AND CONTROLS

The land within the perimeter fence at T82 is considered aviation use. There are trees located under the approach to Runway 14 that require trimming to mitigate operational impacts. Currently, the trees at the approach end of Runway 14 must be trimmed for the Airport to obtain an LPV approach for Runway 14.

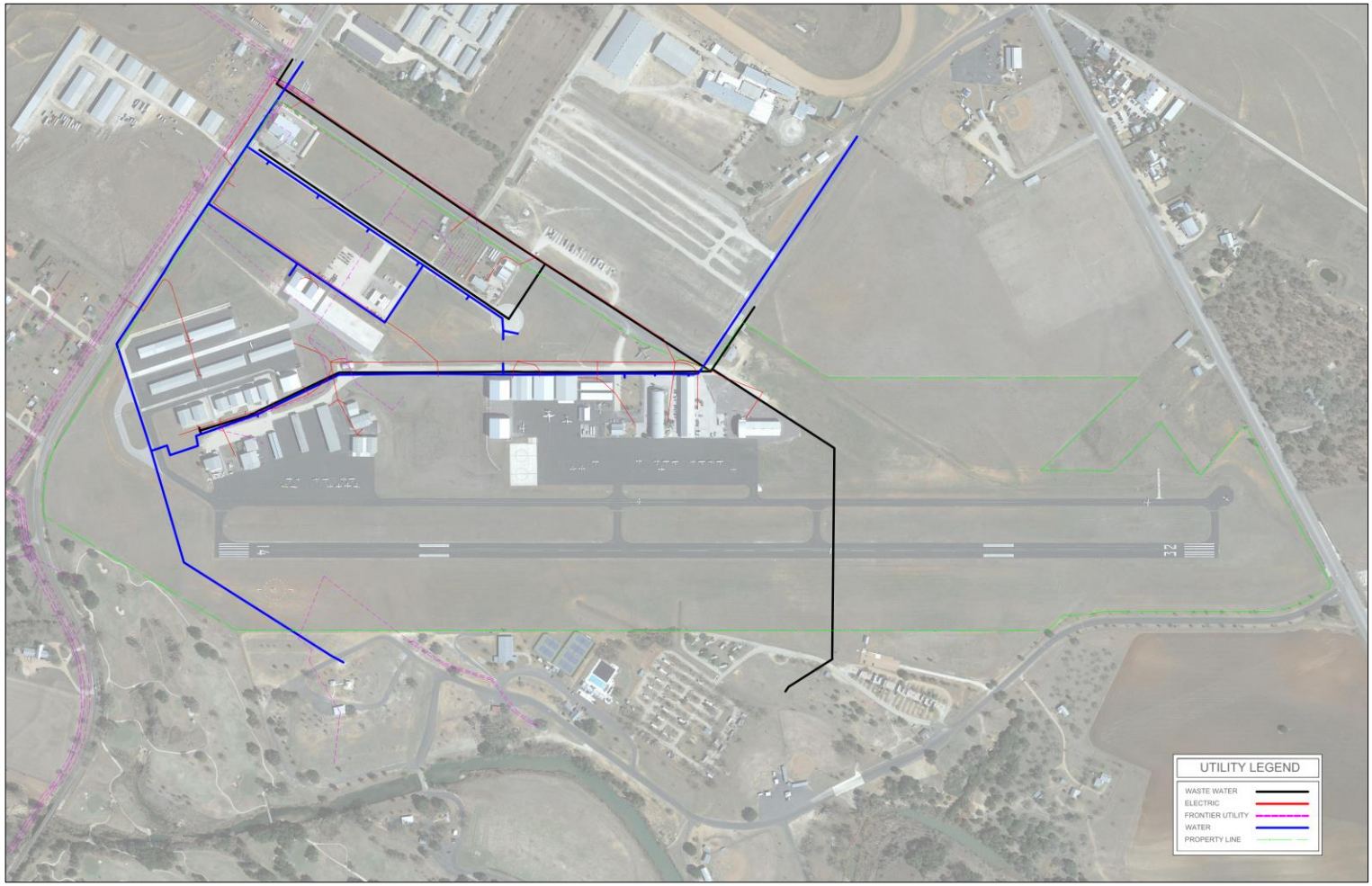
### ZONING

Gillespie County has a Height Hazard Zoning Ordinance in place, which protects the airspace around T82 from development that might impact airport operations. An updated Height Hazard Zoning Map has been created as part of this ALP project and provided to the Airport to update the existing zoning ordinance.

### UTILITIES

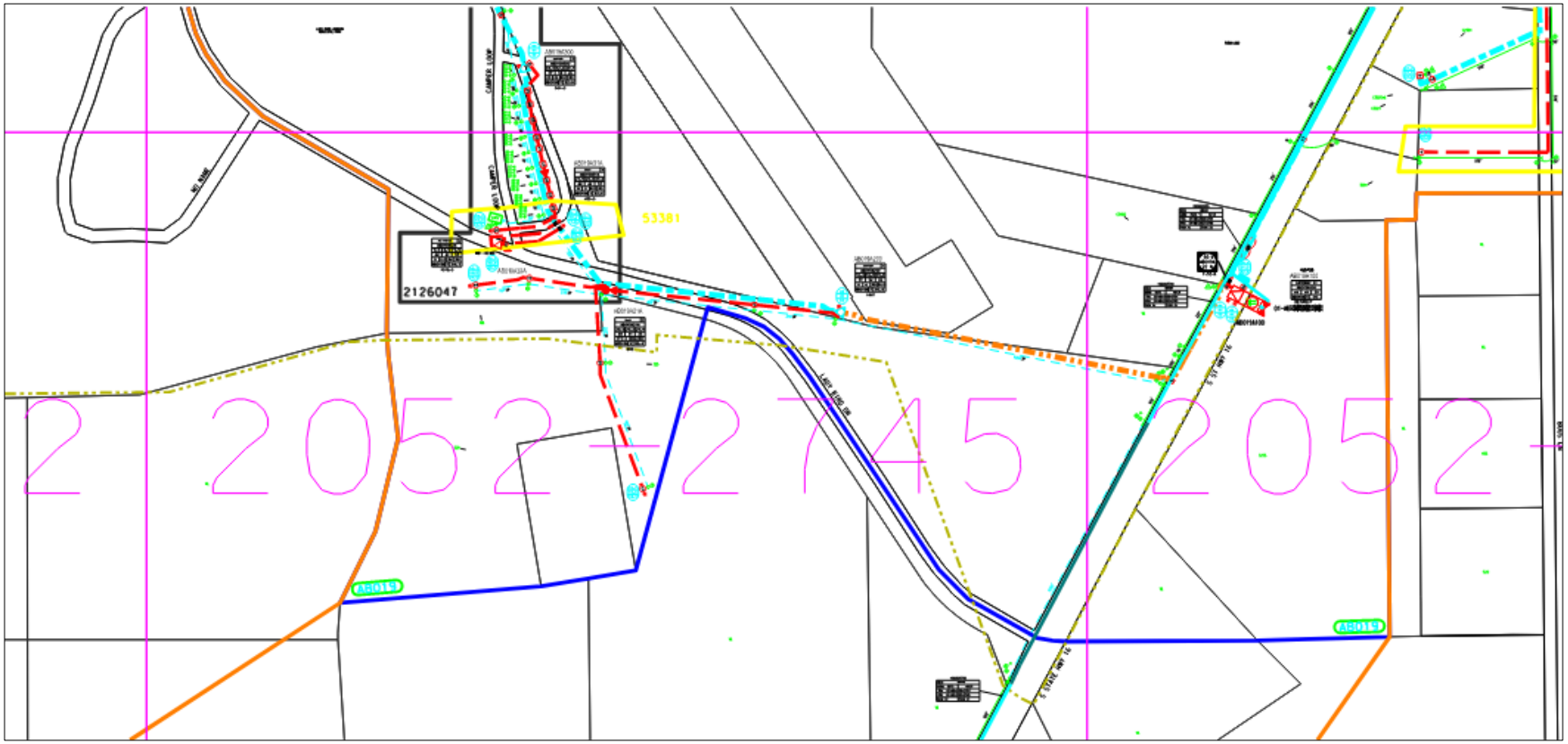
As part of the scope of this ALP project, research was conducted to document utility lines located within airport property. **Figure 2-7** depicts the utilities that were identified as part of this process. Additionally, Charter Spectrum provided an as-built drawing depicting their communications lines in the vicinity of the airport. This drawing is shown in **Figure 2-8**. Charter Spectrum did not provide notations regarding the types of communications lines on airport property.

**FIGURE 2-7**
**ON-AIRPORT UTILITY LOCATIONS**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2021.

**FIGURE 2-8**
**CHARTER SPECTRUM UTILITY LOCATIONS**
**GILLESPIE COUNTY AIRPORT**




**Source:** Charter Spectrum, 2021.

## ROADBLOCKS TO AIRPORT DEVELOPMENT

The primary roadblock to future airport growth and development is the limited undeveloped land around the Airport. This roadblock will be considered throughout the remainder of the planning process.

## AIRPORT POLICIES

As part of the scope of this ALP update, the airport's Rules and Regulations, Minimum Operating Standards, and Airport Development Process were reviewed. These documents were found to be generally in alignment with FAA standards. Updating these documents periodically is recommended to ensure their currency with established standards.

## HISTORICAL DEVELOPMENT

**Table 2-8** provides an overview of historical development projects completed at the Airport since 2000. This data only includes projects documented as part of TxDOT's state block grant program. Project funded by sources outside of the TxDOT state block grant program is not shown.

## TABLE 2-8
## HISTORICAL DEVELOPMENT
## GILLESPIE COUNTY AIRPORT

| Year | Local Dollars | State Dollars | Federal Dollars | Project Description |
|---|---|---|---|---|
| 2000 | $38,799.00 | $347,191.00 | - | Engineering/design for RW extension & acquire easement (25 ac) RW 32. |
| | $48,082.00 | $432,742.00 | - | Construct terminal apron (800 X 235). |
| 2001 | $2,473.00 | $22,261.00 | - | Prepare ALP to Change 6. |
| 2002 | $286,829.00 | $2,581,468.00 | - | Overlay & mark RW 14-32 (4600 x 75), partial parallel TW (2420 x 35); rehab aprons (32,000 sy); extend RW 32 (400 x 75), parallel TW to RW 32 (3185 x 35), MIRLs (400 lf); relocate segmented circle & windcone;relocate & refurbish rot. beacon & electrical vault; displace threshold RW 14; install game fencing (16, 000 lf); install security fencing (2000 lf); install PAPI-2 RW 14-32. |
| | $1,625.00 | $4,875.00 | - | Install NADIN. |
| 2003 | $2,386.00 | $2,386.00 | - | RAMP: TxDOT herbicide, County drianage ditch clearing, AWOS, NADIN fees. |
| 2004 | $3,488.00 | $3,488.00 | - | RAMP: TxDOT herbicide, drainage improvements, lighting repairs and supplies. |
| | $15,000.00 | $135,000.00 | - | Prepare Airport Master Plan. |
| 2005 | $7,447.00 | $7,447.00 | - | RAMP: TxDOT to contract for AWOS maintenance, City to contract NADIN fee, AWOS repairs, TxDOT to apply herbicide, erosion control, lighting repairs, security signs. |
| 2006 | $3,743.00 | $3,743.00 | - | RAMP: TxDOT to contract for AWOS maintenance, sponsor to contract for NADIN monthly fee, AWOS repairs. |
| 2007 | $3,340.00 | $3,340.00 | - | RAMP: TxDOT to contract for AWOS Maintenance, Sponsor to contract for NADIN, AWOS repairs. A#1 TxDOT to apply herbicide. A#2 Additional work for hangar access pavement CIP Project No. 0714FREDB. |
| | $32,825.00 | - | $295,424.00 | site prep for four new hangars; construct hangar apron; construction of apron around Snowden hangar; NPE 03-185,199; NPE 04-9,496; NPE 05-100,729. |
| 2008 | $19,698.00 | $19,698.00 | - | RAMP: TxDOT to contract for AWOS maintenance. Sponsor to contract for AWOS repairs/parts replacement, installation of underground electrical utilities. TxDOT to crack seal areas of the airport parking lot, runway, and taxiways. |
| 2009 | $7,182.00 | $7,182.00 | - | RAMP: TxDOT for AWOS maint. Sponsor for NADIN interface, AWOS repairs/parts replacement.PAVEMENTS-TxDOT to apply fog seal and crack seal.G.M.- TxDOT to apply herbicide. |
| 2010 | $6,929.00 | $6,929.00 | - | RAMP: MISC: TxDOT to contract for AWOS maintenance, Sponsor to contract for AWOS AviMet Data Link, AWOS repairs/parts replacement. A#1 TxDOT to improve drainage. A#2 Sponosr to contract for pavement maintenance, herbicide application, airfield lighting maintenance, professional services for drainage study, environmental compliance measures. |
| 2011 | $7,666.00 | $7,666.00 | - | RAMP: TxDOT Contract for AWOS Maintenance, Sponsor to perform airport general maintenance. |
| | $17,927.00 | $161,343.00 | - | Engineering/design to construct helicopter parking ramp (235 x 75); Contingency, admin. fees, RPR, etc.; Erosion control; Install game proof fencing (1652 lf) NE area; Relocate & upgrade AWOS to south end for apron expansion & access road; Rehabilitate RW 14-32 (5000 x 75); Bid Alternate (Contingency, AWOS access road, NE T-hangar apron, LED MIRLs) PER review; Mark RW 14-32 (29,700 sf); Replace MIRLs RW 14-32 (5000 lf); Rehabilitate/repair parallel TW (5960 x 35) & TW B, C & D (2158 sy); Rehabilitate terminal apron (1100 x 235); Rehabilitate hangar access TWs (28,430 sy); Rehabilitate north apron (17,230 sy). |

(Continued on next page)

(Continued from previous page)

| Year | Local Dollars | State Dollars | Federal Dollars | Project Description |
|---|---|---|---|---|
| 2012 | $20,000.00 | $180,000.00 | - | Reimburse easement RW 14 (4.61 ac) golf course. |
| | $151,948.00 | $1,187,602.00 | - | Construct helicopter parking ramp (235 x 75); Contingency, admin. fees, RPR, etc.; Erosion control; Install game proof fencing (1652 lf) NE area; Relocate & upgrade AWOS to south end for apron expansion & access road; Rehabilitate RW 14-32 (5000 x 75); Bid Alternate (Contingency, AWOS access road, NE T-hangar apron, LED MIRLs) PER review; Mark RW 14-32 (29,700 sf); Replace MIRLs RW 14-32 (5000 lf); Rehabilitate/repair parallel TW (5960 x 35) & TW B, C & D (2158 sy); Rehabilitate terminal apron (1100 x 235); Rehabilitate hangar access TWs (28,430 sy); Rehabilitate north apron (17,230 sy). |
| | $4,509.00 | $4,509.00 | - | RAMP: TxDOT to contract for AWOS Maintenance, Sponsor to contract for airport general maintenance projects. |
| | $9,782.00 | $88,035.00 | - | Prepare airport drainage study. |
| 2013 | $29,265.00 | $263,385.00 | - | Reimburse balance for easment RW 14 (4.61 ac) golf course. |
| | $13,388.00 | $13,388.00 | - | RAMP: TxDOT Contract for AWOS Maintenance, Sponsor to perform airport general maintenance. |
| 2014 | $18,396.00 | $18,396.00 | - | RAMP: TxDOT Contract for AWOS Maintenance, Sponsor to perform airport general maintenance. |
| 2015 | $11,446.00 | $11,446.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| | $26,908.00 | - | $185,681.00 | Design to Construct New Hangar Access Taxiway (1,000 LF) with Drainage Improvements; Mobilization, admin., testing, RPR, etc for Apron, TW and Drainage; Contingency; Construct New Hangar Access TW (1,550 LF) with Drainage Improvements; Construct 8' Game Fence (2000 LF) and 2 Cattle Guards SBGP-89-2015 $109,774.38; SBGP-095-2016 $10,366.20. |
| 2016 | $854.00 | $854.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| 2017 | $46,708.00 | $46,708.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| | $518,645.00 | - | $1,112,845.00 | Construct New Hangar Access Taxiway (1,000 LF) with Drainage Improvements; Mobilization, admin., testing, RPR, etc for Apron, TW and Drainage; Contingency; Construct New Hangar Access TW (1,550 LF) with Drainage Improvements; Construct 8' Game Fence (2000 LF) and 2 Cattle Guards SBGP-090-2015 $163,725.50; SBGP-091-2015 $150,000; SBGP-097-2016 $150,000; SBGP-102-2017 $649,119.50. |
| 2018 | $38,481.00 | $38,481.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| 2019 | $44,032.00 | $44,032.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| 2020 | $45,864.00 | $45,864.00 | - | RAMP: Sponsor to perform airport general maintenance. |
| 2021 | $31,376.00 | $31,376.00 | - | RAMP: Sponsor to perform airport general maintenance. |

**Source:** TxDOT Aviation Division, 2021.

CHAPTER 3

# Activity Forecasts

# CHAPTER 3: ACTIVITY FORECASTS

## INTRODUCTION

Forecasting aviation activity helps the local airport sponsor determine future airport facility and equipment needs. The preferred demand forecasts are used to identify the type, extent, and timing of aviation development. In addition, the forecasts are instrumental in identifying airport-related infrastructure and capacity needs and guiding the timing and financial feasibility of airport development alternatives.

Airport activity is often influenced by the types of aviation services offered to transient and based aircraft and by the general business environment at an airport and in the local/regional community. In addition, factors such as vigorous local airport marketing, increased industrialization, changes in transportation preferences, and fluctuations in the national, regional, and local economy all influence aviation demand.

Aviation activity forecasts are developed in accordance with national trends and regional/local influences and, in context with the inventory findings, are developed as a guide with the expectation that facilities needed to support the forecast will be available as demand dictates. This chapter examines aviation trends and the numerous factors that have influenced those trends in the United States, Texas, and the region the Gillespie County Airport (T82) serves.

## SOCIOECONOMIC DATA

An assessment of national, state, and local economic conditions must be conducted to gain a better understanding of the relationship between historic and future aviation activity levels within an airport's area of influence. This information is essential and directly influences an airport's activity forecast. Therefore, the following socioeconomic information – population, employment, and median household income – have been collected to understand current conditions and influence assumptions involved in the development of the aviation demand forecasts for T82.

### *POPULATION*

Population growth can be directly tied to the success and growth of an airport supporting a given population set. Consequently, population trends, and their expected rate of change, provide insight into an area's economic potential.

**Table 3-1** shows the breakdown of the actual population figures and estimates for Gillespie County, the State of Texas, and the United States between 2010 and 2019.

**TABLE 3-1**
**HISTORIC POPULATION**

| Year | United States | Texas | Gillespie County |
|---|---|---|---|
| 2010 | 309,321,666 | 25,241,971 | 24,874 |
| 2011 | 311,556,874 | 25,645,629 | 25,039 |
| 2012 | 313,830,990 | 26,084,481 | 25,175 |
| 2013 | 315,993,715 | 26,480,266 | 25,363 |
| 2014 | 318,301,008 | 26,964,333 | 25,473 |
| 2015 | 320,635,163 | 27,470,056 | 25,916 |
| 2016 | 322,941,311 | 27,914,410 | 26,206 |
| 2017 | 324,985,539 | 28,295,273 | 26,483 |
| 2018 | 326,687,501 | 28,628,666 | 26,702 |
| 2019 | 328,239,523 | 28,995,881 | 26,988 |
| AAGR | **0.68%** | **1.65%** | **0.94%** |

**Source:** US Census Bureau, Population Division – Annual Estimates of the Resident Population for Counties in Texas: April 1, 2010 to July 1, 2019; released March 2020.

Gillespie County's estimated population in 2019 was 2,114 people more than the population figure obtained from the 2010 U.S. Census. In 2010, Gillespie County had a population of 24,874 people. Since that time, the population has increased to an estimated 26,988 people in 2019. This total population growth yielded an Average Annual Growth Rate (AAGR) of 0.94% per year since 2010. During the same period, the State of Texas saw population increase at a rate of approximately 1.65% per year and the United States saw population increase at a rate of 0.68% per year. In conclusion, the population AAGR for Gillespie County represents steady growth over the last 10 years that exceeds the national average.

While historic population trends can provide an indication of future growth, it is also important to analyze population projections for the future. **Table 3-2** shows the breakdown of future population projections for Gillespie County, the State of Texas, and the United States between 2010 and 2040.

**TABLE 3-2**
**FUTURE POPULATION PROJECTIONS**

| Year | United States | Texas | Gillespie County |
|---|---|---|---|
| 2010 | 308,745,538 | 25,145,561 | 24,837 |
| 2015 | 320,742,673 | 27,326,193 | 25,393 |
| 2020 | 332,639,000 | 29,677,668 | 26,191 |
| 2025 | 344,234,000 | 32,204,920 | 27,061 |
| 2030 | 355,101,000 | 34,894,452 | 27,718 |
| 2035 | 364,862,000 | 37,176,495 | 28,055 |
| 2040 | 373,528,000 | 40,686,496 | 28,147 |
| AAGR | **0.70%** | **2.06%** | **0.44%** |

**Source:** US Census Bureau – 2017 National Population Projections Tables, Texas Demographic Center – 2018 Texas Population Projections.

Based on future population projections provided by the Texas Demographic Center, it is expected that the population of Gillespie County will grow through 2040. This growth averages approximately 0.44% annually. Meanwhile, the State of Texas and the United States are expected to grow at faster rates. It should be noted, however, that Gillespie County population projections for 2020 were exceeded according to the historic population data depicted in Table 3-1. Therefore, it is likely that population growth will occur at a rate higher than that assumed by the data in Table 3-2. In general, the population data reviewed indicates that Gillespie County has grown since 2010 and this growth is expected to continue during the 20-year planning horizon.

While the population of Gillespie County is expected to grow at a slow to moderate pace, it should be noted that Gillespie County has a significant amount of absentee home ownership (e.g., people who own homes in Gillespie County but don't live there full time). Currently, less than 50% of the homes in Gillespie County have a homestead property tax exemption. This indicates that over 50% of the homes are not someone's primary residence and the individual's owning those homes are likely not counted in the population figures provided above. Absentee home ownership is expected to continue to grow and be a significant contributor to the economic growth of the county and aeronautical activity at the airport.

## *EMPLOYMENT*

Another key socioeconomic factor that is vitally important to evaluating the potential for aeronautical activity at an airport is the employment data for the state and local area. A local area's employment characteristics typically serve as the primary basis for the health of the local economy and the health of the local economy is closely linked to aeronautical activity. **Table 3-3** provides employment information for Gillespie County, the State of Texas, and the United States between 2012 and 2019.

**TABLE 3-3**
**EMPLOYMENT DATA**

| Year | United States | | | Texas | | | Gillespie County | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Establishments | Paid Employees | Annual Payroll ($1,000) | Number of Establishments | Paid Employees | Annual Payroll ($1,000) | Number of Establishments | Paid Employees | Annual Payroll ($1,000) |
| 2012 | 7,431,808 | 115,938,468 | $5,414,255,995 | 537,839 | 9,350,829 | $446,679,425 | 904 | 8,055 | 241,302 |
| 2013 | 7,488,353 | 118,266,253 | $5,621,697,325 | 547,190 | 9,663,567 | $468,417,086 | 915 | 8,418 | 251,300 |
| 2014 | 7,563,084 | 121,069,944 | $5,940,186,911 | 557,721 | 9,920,214 | $501,456,595 | 929 | 8,552 | 265,267 |
| 2015 | 7,663,938 | 124,085,947 | $6,253,488,252 | 569,091 | 10,239,710 | $521,095,797 | 969 | 8,821 | 290,562 |
| 2016 | 7,757,807 | 126,752,238 | $6,435,142,055 | 579,168 | 10,429,924 | $526,782,643 | 977 | 9,262 | 309,632 |
| 2017 | 7,860,674 | 128,591,812 | $6,725,346,754 | 592,677 | 10,580,160 | $544,772,560 | 1,027 | 9,635 | 337,579 |
| 2018 | 7,912,405 | 130,881,471 | $7,097,310,272 | 600,747 | 10,794,596 | $577,914,267 | 1,049 | 9,822 | 362,888 |
| 2019 | 7,959,103 | 132,989,428 | $7,428,553,593 | 609,476 | 11,107,054 | $611,142,429 | 1,078 | 10,207 | 379,881 |
| **AAGR** | **1.01%** | **2.10%** | **5.31%** | **1.90%** | **2.68%** | **5.26%** | **2.75%** | **3.82%** | **8.20%** |

**Source:** US Census County Business Patterns Economic Annual Surveys – 2019.

Since 2012, the number of employment establishments, paid employees, and annual payroll in Gillespie County have all grown at a rate that is well over state and national averages. Additionally, data provided by the Gillespie County Economic Development Corporation indicates that Gillespie County is drawing employees from surrounding counties. In general, the employment information reviewed indicates that the local economy has grown significantly since 2012.

## *MEDIAN HOUSEHOLD INCOME*

In addition to general employment data, household income data provides insight into the local economy. Historically, higher levels of income have been associated with higher aeronautical activity levels.

**Table 3-4** provides the historic median household income for Gillespie County, the State of Texas, and the United States from 2010 through 2019.

**TABLE 3-4**
**MEDIAN HOUSEHOLD INCOME**

| Year | Median Household Income - United States | Median Household Income - Texas | Household Income - Gillespie County |
|---|---|---|---|
| 2010 | $51,914 | $49,646 | $52,682 |
| 2011 | $52,762 | $50,920 | $54,843 |
| 2012 | $53,046 | $51,563 | $55,017 |
| 2013 | $53,046 | $51,900 | $53,668 |
| 2014 | $53,482 | $52,576 | $52,414 |
| 2015 | $53,889 | $53,207 | $54,859 |
| 2016 | $55,322 | $54,727 | $55,850 |
| 2017 | $57,652 | $57,051 | $56,267 |
| 2018 | $60,293 | $59,570 | $58,325 |
| 2019 | $62,843 | $61,874 | $59,155 |
| AAGR | **2.34%** | **2.74%** | **1.37%** |

**Source:** US Census Bureau 2019 American Community Survey 5-year Estimates.

In general, median household income in Gillespie County has increased over the last ten years. Other than 2013 and 2014, median household income has increased steadily. The overall growth of median household income provides an indication that the local economy has grown and continues to grow at a significant rate.

As discussed earlier in this section, the high level of absentee homeownership in Gillespie County results in an incomplete socioeconomic dataset, as many wealthier individuals who have second homes in Gillespie County are not captured in the data presented in Table 3-4.

## TOURISM AND ECONOMIC DEVELOPMENT DATA

In addition, the socioeconomic data that was collected for this project, tourism and other economic development data provided by both the Fredericksburg Convention & Visitors Bureau (CVB) and the Gillespie County Economic Development Commission (EDC) was reviewed to better understand other economic trends in Gillespie County. In general, this data indicates significant economic growth that is expected to continue throughout the 20-year planning horizon.

### *TOURISM DATA*

Gillespie County has seen strong, ongoing growth in the tourism industry. This is evidenced by dramatic growth in wineries and wedding venues. In 1998, there were four wineries in the Fredericksburg area. Today there are over 50. There are also now more than 50 wedding venues available in the area. Since 2008, sales tax revenue in Gillespie County has experienced a 7.11% average annual growth rate, the growth of which continued during the COVID-19 pandemic. Lodging receipts have seen a 14.4% average annual growth rate during that same period, and also continued to grow during the COVID pandemic. There are also currently 45 lodging developments planned or underway in the area.

### *ECONOMIC DEVELOPMENT DATA*

In addition to the tourism data discussed in the previous section, several other metrics were reviewed that depict strong economic growth in Gillespie County. The area has seen significant and rapid growth in real estate. The average home price has risen from $232,683 in 2006 to $516,651 in 2021 to date. This increase in home prices has continued during the COVID pandemic. Additionally, the number of units sold annually has increased from 152 in 2006 to 328 in 2020. There are also 39 new commercial developments under way in the county.

### *SOCIOECONOMIC SUMMARY*

In general, the analysis of the socioeconomic factors for Gillespie County indicates that the local economy has grown significantly in recent years and continued growth is expected in the future.

## SUMMARY OF AIRPORT HISTORICAL OPERATIONS AND BASED AIRCRAFT

T82 is a non-towered airport and, as such, accurately tracking aircraft operations is a challenge. For this ALP project, Fredericksburg FBO at T82 provided airport operations data collected through FlightAware, a flight tracking service, for a 12-month period between September 2020 and August 2021. This data is mainly collected from aircraft equipped with Automatic Dependent Surveillance – Broadcast (ADS-B) technology. Since not all aircraft are currently equipped with ADS-B, nationwide ADS-B equipage rates published by the FAA were used to extrapolate an approximate total number of annual operations at T82. These calculations resulted in an estimated count of 21,581 annual operations (approximately 59 average operations per day) at T82, which is significantly higher than the current FAA 5010 and Terminal Area Forecast (TAF) listing of 14,808 annual operations, or approximately 41 average operations per day. Based on discussions with airport stakeholders, 21,581 is close to the actual number of operations.

**Table 3-5** summarizes the available historic based aircraft and annual operations data (local and itinerant) at T82 since 2000 as recorded through the TAF program.

**TABLE 3-5**
**HISTORICAL AVIATION ACTIVITY - TERMINAL AREA FORECASTS (TAF)**
**GILLESPIE COUNTY AIRPORT**

| Year | Total Itinerant Operations | Itinerant Air Taxi Operations | Itinerant General Aviation Operations | Itinerant Military Operations | Total Local Operations | Total Annual Operations | Based Aircraft |
|---|---|---|---|---|---|---|---|
| 2000 | 3,375 | 200 | 3,000 | 175 | 5,500 | 8,875 | 31 |
| 2001 | 3,375 | 200 | 3,000 | 175 | 5,500 | 8,875 | 31 |
| 2002 | 3,375 | 200 | 3,000 | 175 | 5,500 | 8,875 | 31 |
| 2003 | 3,375 | 200 | 3,000 | 175 | 5,500 | 8,875 | 31 |
| 2004 | 3,375 | 200 | 3,000 | 175 | 5,500 | 8,875 | 52 |
| 2005 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 52 |
| 2006 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 52 |
| 2007 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 52 |
| 2008 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 67 |
| 2009 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 67 |
| 2010 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 67 |
| 2011 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 61 |
| 2012 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 61 |
| 2013 | 5,475 | 200 | 5,100 | 175 | 10,200 | 15,675 | 61 |
| 2014 | 5,400 | 200 | 5,025 | 175 | 10,600 | 16,000 | 103 |
| 2015 | 5,400 | 200 | 5,025 | 175 | 10,600 | 16,000 | 101 |
| 2016 | 5,400 | 200 | 5,025 | 175 | 10,600 | 16,000 | 99 |
| 2017 | 7,508 | 0 | 7,300 | 208 | 7,300 | 14,808 | 87 |
| 2018 | 7,508 | 0 | 7,300 | 208 | 7,300 | 14,808 | 87 |
| 2019 | 7,508 | 0 | 7,300 | 208 | 7,300 | 14,808 | 86 |
| 2020 | 7,508 | 0 | 7,300 | 208 | 7,300 | 14,808 | 86 |

**Source:** 2019 FAA Terminal Area Forecasts, issued May 2021.

A based aircraft is defined as an actively registered airplane stationed at a specific airport that regularly uses the Airport as the primary "home base" for filing flight plans, frequently uses available airport amenities, and/or maintains a formal commitment for long-term aircraft parking/storage. An aircraft operation is one takeoff or landing of an aircraft. Aircraft operations are identified as either local or itinerant. Local operations consist of those within a 20-mile radius of the Airport, while itinerant operations include all operations other than local, having a terminus of flight or origination of flight at another airport at least 20 miles away.

The following observations were identified at T82 as part of the inventory of historic and current airport activity levels:

- Based Aircraft Summary – T82 has seen some fluctuations in based aircraft since 2000 but has generally seen steady growth. The lowest point was between 2000 and 2003, where the Airport was reported to have 31 based aircraft. However, based on the number of hangars located at the airport during this time period, this based aircraft number is likely inaccurate. The highest point recorded in the TAF has been 103 based aircraft, which was the number recorded in 2014, however the most recent (2019) TAF listing of 86 aircraft is known to be inaccurate. As part of this study, a count of based aircraft at T82 was provided by the Airport. The Airport currently has 117 based aircraft. The current number shown in the TAF for 2019 is lower than the number of aircraft currently based at the Airport.
- Operational Summary – The number of annual aircraft operations recorded in the TAF at T82 has also seen some fluctuations since 2000 but has generally seen steady growth. The lowest point was between 2000 and 2004, when the TAF showed 8,675 operations per year. The highest point was 16,000 operations, shown between 2014 and 2016. However, as mentioned in the previous paragraph, the most recent (2019) operations count of 14,808 is known to be inaccurate, based on the data discussed earlier in this chapter. Based on this data, the airport currently has approximately 21,581 operations per year. According to the TAF, the majority of these operations are itinerant operations. However, based on feedback provided by the airport and the previously discussed FlightAware dataset, the ratio of local vs. itinerant operations is believed to lean more heavily toward itinerant operations, with approximately 80% itinerant and 20% local operations.

## NATIONAL GENERAL AVIATION TRENDS

An understanding of recent and anticipated trends within the General Aviation (GA) industry is important when assessing aviation demand for T82. Some trends may affect aviation demand in the study area while others will have little or no appreciable impact on local/regional aviation demands.

Various data sources were examined and used to support the analysis of national GA trends. Those sources include:

- Federal Aviation Administration, FAA Aerospace Forecasts, Fiscal Years 2021 – 2041;
- National Business Aircraft Association (NBAA), Business Aviation Fact Book (current edition); and,
- General Aviation Manufacturers Association (GAMA), 2020 Annual Data.

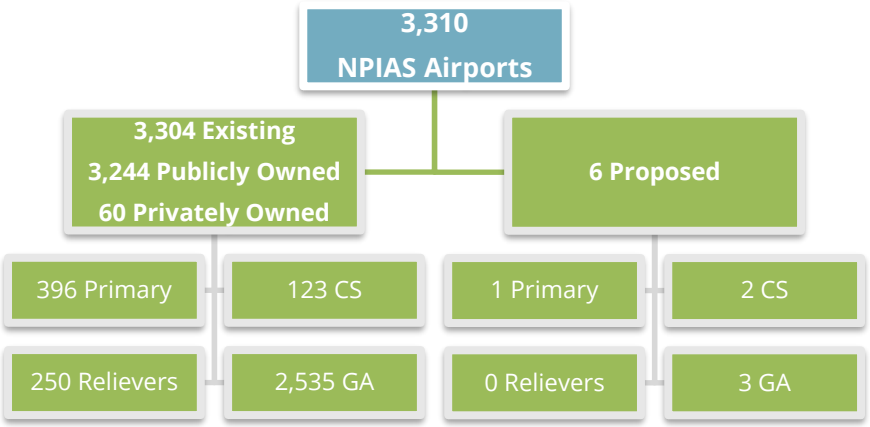
## GENERAL AVIATION AIRPORT OVERVIEW

GA aircraft are defined as all aircraft not flown by commercial airlines or the military. In the FAA's *General Aviation Airports: A National Asset* report, dated May 2012, the FAA stated that general aviation serves 5 primary functions:

- Emergency Preparedness and Response;
- Critical Community Access;
- Commercial, Industrial, and Economic Activities;
- Destination and Special Events; and
- Other Aviation Specific Functions (e.g., self-piloted business flights, corporate, flight instruction, personal flying, etc.).

According to the current National Plan of Integrated Airport System (NPIAS), there are 19,636 public and private airports located throughout the United States, and 5,080 of these are open to public use. **Figure 3-1** displays the breakdown of airports as described in the FAA's *2021 -2025 National Plan of Integrated Airport System* (NPIAS) that are part of the NPIAS. The number and distribution of public-use airports available to GA users provides a valuable transportation and economic resource to local communities, businesses, and individuals throughout the region, state, and nation.

**FIGURE 3-1**
**NPIAS AIRPORT BREAKDOWN**



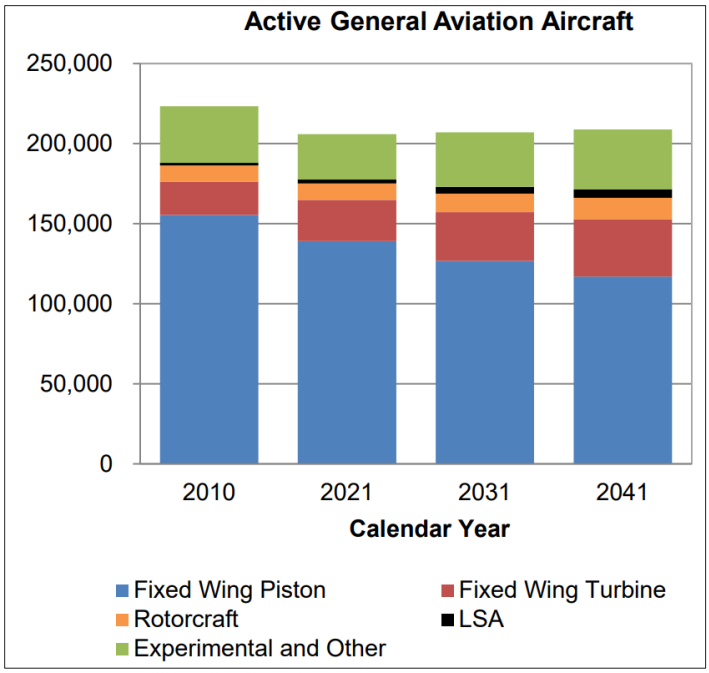

Primary – Commercial Service airports enplaning more than 10,000 passengers per year. CS – Non-Primary Commercial Service airports having more than 2,500 enplaned passengers per year but less than 10,000 passengers per year.

## *SUMMARY OF NATIONAL GENERAL AVIATION TRENDS*

According to the FAA's 2021 – 2041 Aerospace Forecast, the overall number of active GA aircraft is expected to grow at a rate of 0.1% between 2021 and 2041 and the number of hours flown is forecasted to grow at a rate of 1.0% annually during that same period. Slight declines are expected in the hours flown and number of active single engine piston and multi-engine piston aircraft. Growth is expected in the Light Sport Aircraft (LSA), rotorcraft, jet, turboprop, and experimental aircraft categories.

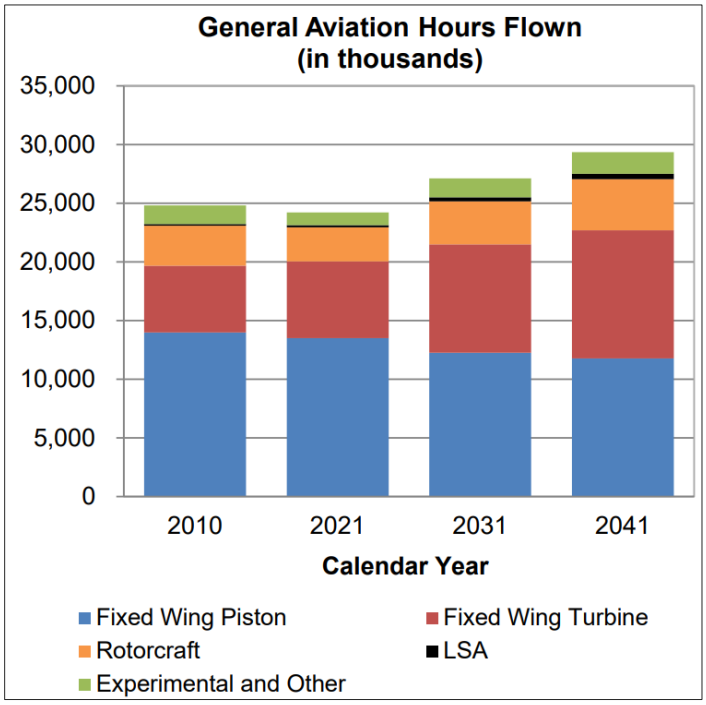
**Figure 3-2** and **Figure 3-3** depict these forecasted trends. Additionally, the total number of pilots (excluding student pilots) is expected to remain almost flat during the same period, with an average annual growth rate of 0.2% annually. A decline is expected in the recreational, private, and commercial pilot categories. An increase is expected in the sport pilot and Airline Transport Pilot (ATP) categories.

**FIGURE 3-2**
**FAA AEROSPACE FORECAST**




**Source:** FAA Aerospace Forecast, 2021-2041.

**FIGURE 3-3**
**FAA AEROSPACE FORECAST**



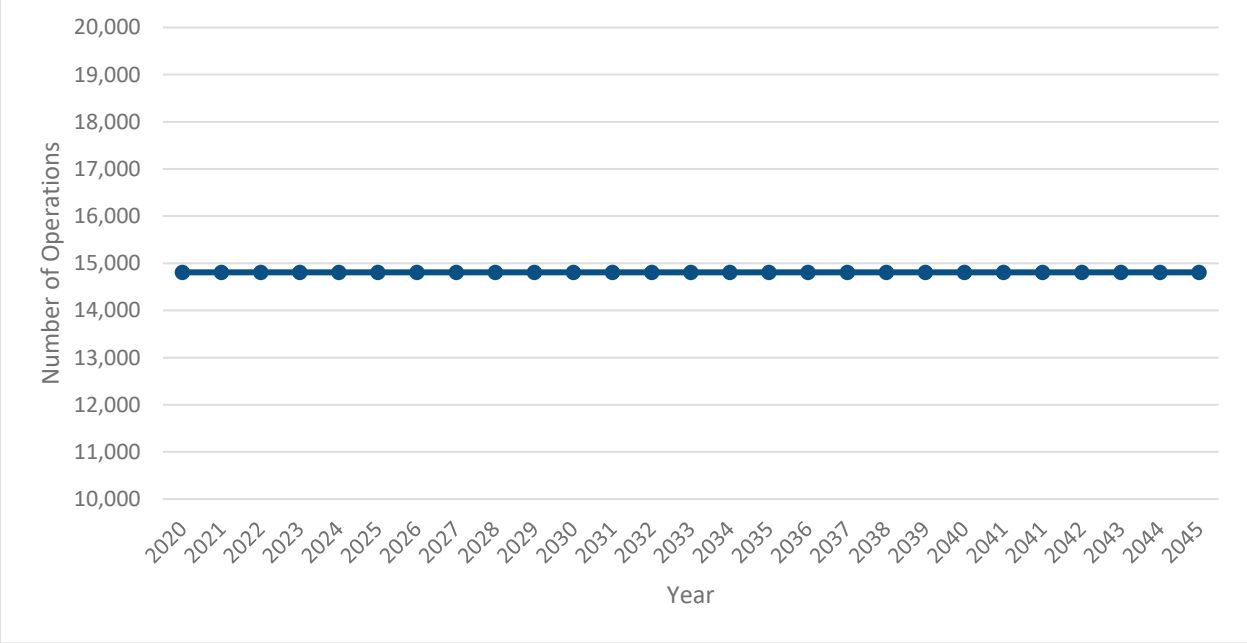

**Source:** FAA Aerospace Forecast, 2021-2041.

# FAA TERMINAL AREA FORECAST

The Terminal Area Forecast (TAF) is a detailed FAA forecast-planning database produced each year covering many airports that are part of the NPIAS. The TAF is prepared to assist the FAA in meeting its planning, budgeting, and staffing requirements. The TAF forecasts are made at the individual airport level and are based in part on the national FAA Aerospace Forecasts. The TAF contains historic and forecast data for enplanements, airport operations, TRACON operations, and based aircraft. TAF data is developed for 264 FAA towered airports, 256 contract-towered airports, 153 terminal radar approach control facilities, and 2,786 non-towered airports as of 2020. Data in the TAF is presented on a U.S. Governmental fiscal year basis, which runs from October through September.

Based aircraft and aircraft operations forecasts contained in the TAF for non-towered airports are primarily based on current and historic FAA Form 5010 data. For these airports, the TAF generally reflects a 0% growth rate. The TAF forecast for T82, presented in **Figure 3-4**, reflects a 0% growth rate and shows the same number of annual operations through 2045.

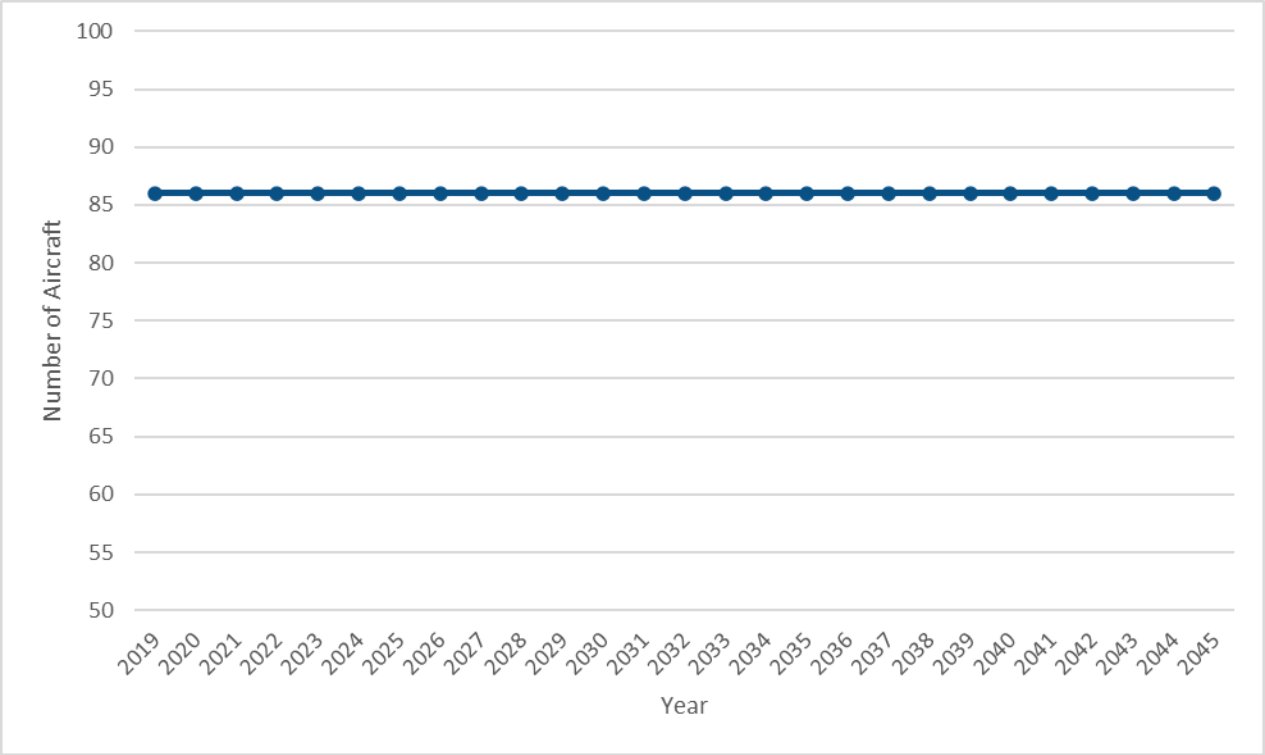
**FIGURE 3-4**
**TERMINAL AREA FORECAST – FUTURE OPERATIONS FORECAST**
**GILLESPIE COUNTY AIRPORT**




**Source:** FAA TAF.

The TAF also depicts a 0% growth rate for based aircraft at T82. The TAF forecast shows that based aircraft will remain flat at 86 based aircraft through 2045. **Figure 3-5** shows the TAF based aircraft forecast.

**FIGURE 3-5**
**TERMINAL AREA FORECAST – FUTURE BASED AIRCRAFT FORECAST**
**GILLESPIE COUNTY AIRPORT**




**Source:** FAA TAF.

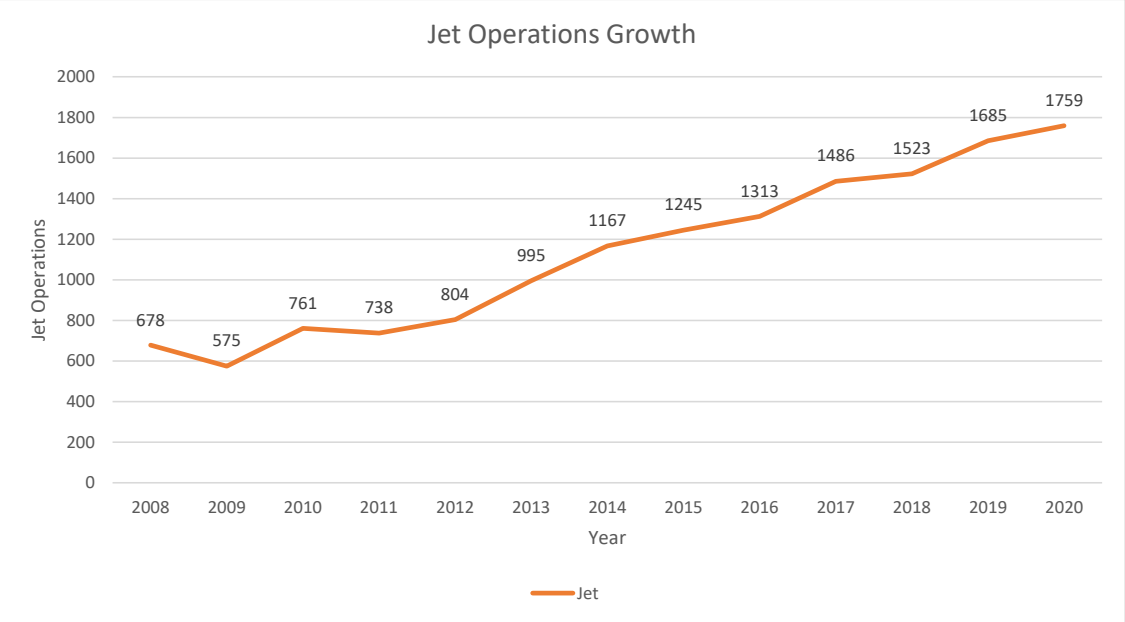
## JET TRAFFIC AND FUEL SALES GROWTH

T82 has seen dramatic increases in jet traffic over the past 10 years. **Figure 3-6** depicts jet operations growth at T82 since 2008.

Additionally, T82 has seen significant growth in both 100LL and Jet-A fuel sales during the same period. **Figure 3-7** depicts both 100LL and Jet-A fuel sales since 2008.

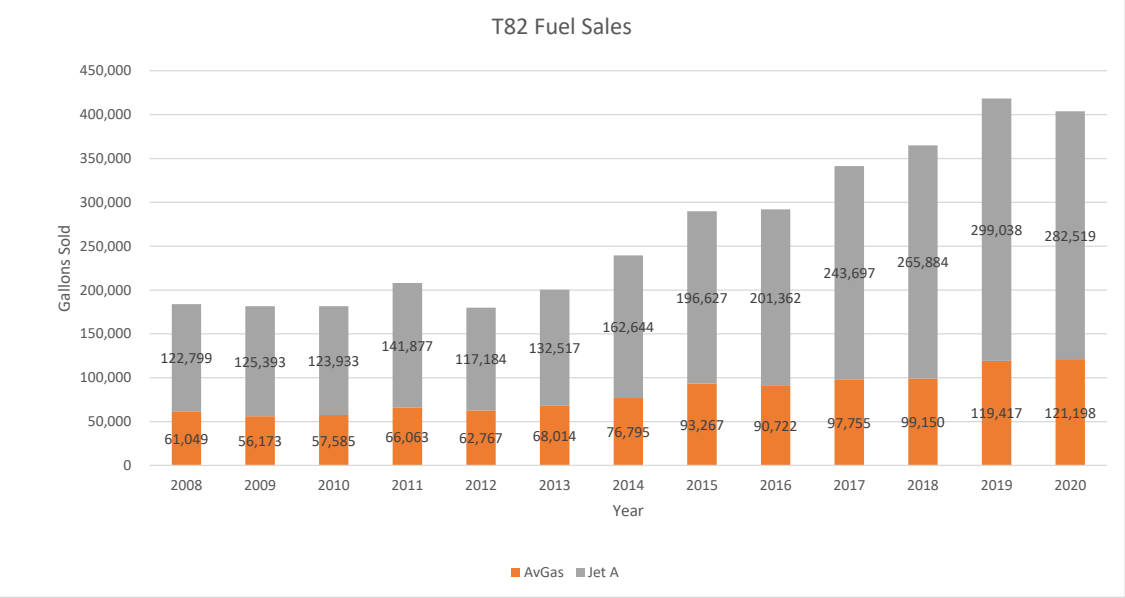
The growth in both jet traffic and fuel sales correlates to the recent economic growth in the area.

**FIGURE 3-6**
**JET OPERATIONS 2008-2020**
**GILLESPIE COUNTY AIRPORT**




**Source:** FAA TFMSC data, 2021.

**FIGURE 3-7**
**FUEL SALES 2008-2020**
**GILLESPIE COUNTY AIRPORT**




**Source:** T82 records, 2021.

# GENERAL AVIATION DEMAND FORECASTS

Based on information obtained in the inventory analysis, the economic, tourism, and socioeconomic data presented, and the aforementioned national aviation trends, the following factors and assumptions have been incorporated into the GA forecasts of based aircraft and annual operations for T82:

- Future airport facilities will continue to accommodate a broad array of GA aircraft including some business-type aircraft and helicopters.
- Changes in aeronautical activity levels and based aircraft will likely be tied to the local economy, population changes, and growth in absentee ownership and tourism.
- An "unconstrained" forecast of aviation demand assumes facility improvements will occur as demand increases.
- Greater aircraft utilization resulting from airfield and terminal area improvements can be both directly and indirectly linked to economic development activity.

## *FORECAST METHODOLOGIES*

The development of an aviation forecast involves analytical and judgmental assumptions to realize the highest level of forecast confidence. The aircraft operations and based aircraft forecasts are developed in accordance with national and regional trends, and in context with the inventory findings and socioeconomic trends. The forecasts developed here begin with baseline information from 2020 with 2021 as the first forecast year.

Various forecast techniques can be used to develop GA forecasts including:

- Trend Analysis – Trend analysis is the simplest and most familiar form of forecasting and is also one of the most widely used. This forecasting technique uses historic data as a basis to develop a forecast for the future. An assumption of this forecast method is that historic levels of aviation demands will continue and influence similar linear progressions in the future. Though this assumption seems broad in its application, it can serve as a reliable benchmark against other forecasting methods.
- Regression Analysis – In a regression model the forecasts of aviation demand (the dependent variable) are projected on the basis of one or more external indicators (the independent variables). Historical values for both the dependent and independent variables are analyzed to determine their relationships. Once defined, this relationship is used to project the dependent variable with a forecast or

projection of the independent variable(s). In aviation forecasting, an example of the dependent variable is based aircraft. Population or median household income levels are commonly used independent variables that aid in the projection of aviation growth.

- Forecast Utilizing National or Regional Projections – The FAA produces an annual aerospace forecast that includes projections regarding the growth of aviation throughout the United States. The FAA utilizes a variety of data sources to help formulate its forecast including aircraft sales/delivery data, the number of active pilots, economic growth protections, etc. The annual growth rates provided by the FAA may be utilized to formulate a growth forecast for an airport.
- Market Analysis – These aviation demand forecasts are developed based on a causal model technique in which independent variables statistically relate the relationship(s) between historical events and aviation demands. This forecast method typically uses an easily identifiable independent variable such as population, which has a high correlation or an indirect cause-and-effect relationship within certain segments of the GA industry. The market analysis technique often employs a static and dynamic variable relationship between community factors and GA trends that aids in predicting aviation growth based on forecast community indicators such as population.

## *FORECAST OF BASED AIRCRAFT*

Determining the number and type of aircraft anticipated to be based at an airport is a vital component in creating a development plan for the Airport. Depending on the potential market and forecast, the Airport should tailor the development plan to the unique characteristics of the anticipated demand.

The number and type of GA aircraft that can be expected to base at an airport is dependent on several factors, such as available facilities, airport operator services, airport proximity and accessibility, and the local economy. GA operators are particularly sensitive to both the quality and location of their basing facilities, with proximity of home and work often identified as the primary consideration in the selection of an aircraft-basing location.

One factor that should be considered to gauge the immediate potential for based aircraft growth is whether the Airport has an active hangar waiting list. Currently, T82's hangars are 100% leased and a waiting list exists for T-hangar space. As of August 2021, T82 has 117 total based aircraft (85 single engine, 8 multi engine, and 7 jets), with 28 aircraft on the waiting list for county owned T-hangar space. Additionally, 19 aircraft are on the waiting list for the Snowden T-hangars. Consequently, 117 based aircraft was the figure used for the

first year (2020) of the based aircraft forecast and it is expected that this number will grow if additional hangar space becomes available.

Numerous forecast methods were used to predict based aircraft growth for T82. Five are presented here:

- FAA Aerospace Forecast – Active GA and Air Taxi Aircraft Growth Rate (0.1%);
- FAA Aerospace Forecast – Total Turbines Growth Rate (1.6%);
- FAA Terminal Area Forecast – Texas Statewide Based Aircraft Growth Rate (1.1%);
- Texas Population Projections Average Annual Growth Rate (2.06%); and
- Texas Statewide Median Household Income Average Annual Growth Rate (2.74%).

In addition to these forecasts, the FAA's TAF forecast for based aircraft and an average of the aforementioned forecasts (excluding the TAF forecast) is presented.

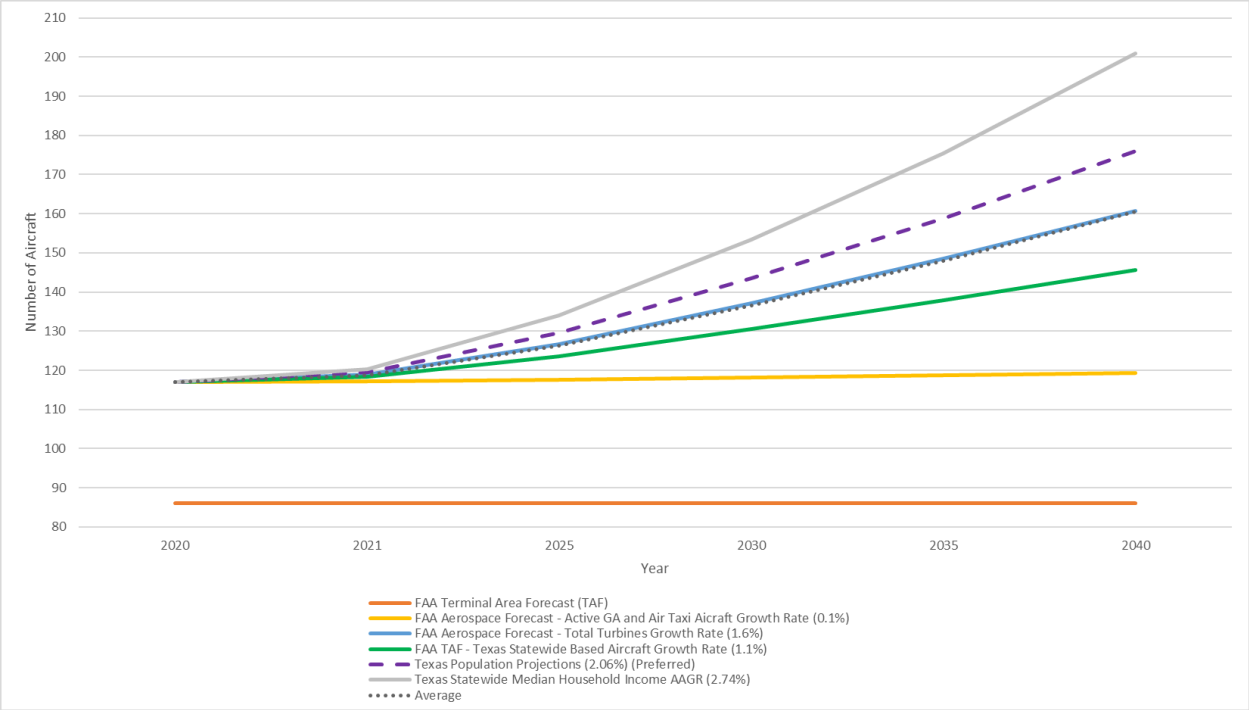
**Table 3-6** and **Figure 3-8** provide a summary of the forecast models for based aircraft anticipated at the Airport over the 20-year planning period.

**TABLE 3-6**
**SUMMARY OF BASED AIRCRAFT FORECASTS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | FAA Terminal Area Forecast (TAF) | FAA Aerospace Forecast - Active GA and Air Taxi Aicraft Growth Rate (0.1%) | FAA Aerospace Forecast - Total Turbines Growth Rate (1.6%) | FAA TAF - Texas Statewide Based Aircraft Growth Rate (1.1%) | Texas Population Projections (2.06%) (Preferred) | Texas Statewide Median Household Income AAGR (2.74%) | Average |
|---|---|---|---|---|---|---|---|
| 2020 | 86 | 117 | 117 | 117 | 117 | 117 | 117 |
| 2021 | 86 | 117 | 119 | 118 | 119 | 120 | 119 |
| 2025 | 86 | 118 | 127 | 124 | 130 | 134 | 126 |
| 2030 | 86 | 118 | 137 | 131 | 143 | 153 | 137 |
| 2035 | 86 | 119 | 148 | 138 | 159 | 176 | 148 |
| 2040 | 86 | 119 | 161 | 146 | 176 | 201 | 161 |

**Source:** Garver Forecast Data for T82, 2021 and FAA Aerospace Forecasts, Fiscal Years 2021-2041.

**FIGURE 3-8**
**SUMMARY OF BASED AIRCRAFT FORECASTS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver Forecast Data for T82, 2021 and FAA Aerospace Forecasts, Fiscal Years 2021-2041.

Several of the forecast models yielded very similar results, showing moderate growth throughout the forecast period. The Texas Statewide Median Household Income Average Annual Growth Rate (AAGR) model showed the strongest growth rate during the planning horizon, followed by the Texas Population Projections AAGR. All other models showed more moderate growth.

Based on the economic conditions of the region and the current based aircraft fleet mix, it is realistic for based aircraft at the Airport to grow significantly during the planning period. Consequently, the Texas Population Projections AAGR forecast was selected as the preferred based aircraft forecast.

## *FORECAST OF AIRCRAFT MIX FOR BASED AIRCRAFT*

The mix of based aircraft for incremental periods throughout the planning horizon is illustrated in **Table 3-7** and **Figure 3-9**. The additional new based aircraft shown in each forecast period are somewhat evenly distributed across all aircraft type categories. The increase in the number of aircraft forecasted in each of these categories generally

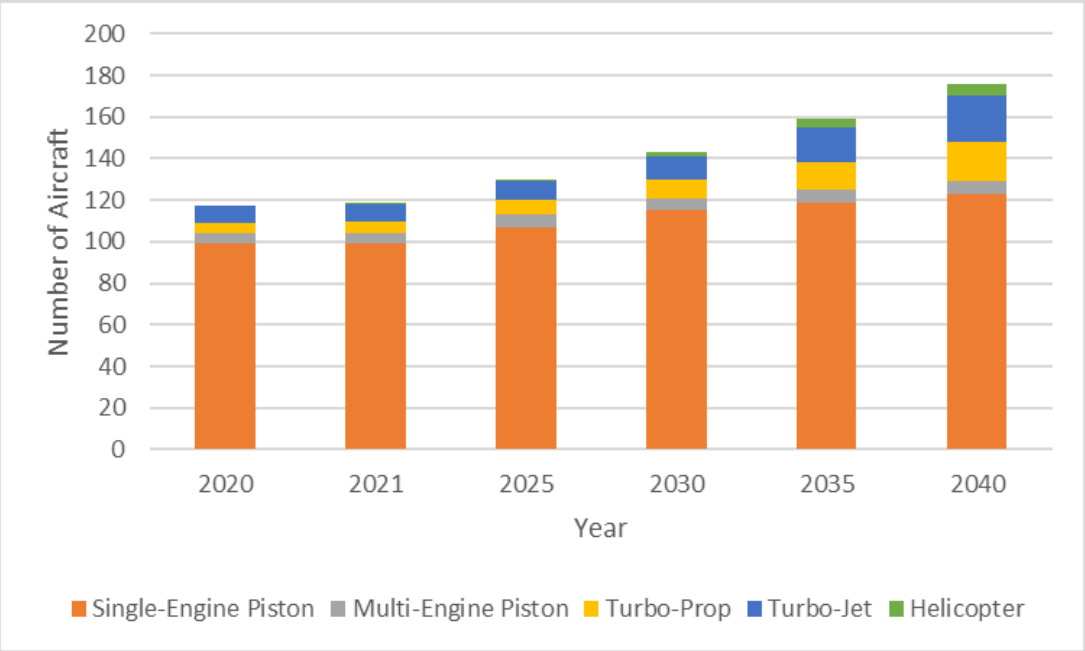
correlates with the trends set forth in FAA National Aerospace Forecast and the types of aircraft currently using and forecasted to use T82. However, it should be noted that the forecast shows that strong growth will continue to occur in the single-engine piston category which is contrary to national trends. This is expected to occur because of T82's strong existing demand for hangar space for single-engine piston aircraft as demonstrated through its hangar waiting list. Additionally, for the purposes of the based aircraft forecast, vertical takeoff and landing aircraft (VTOL) were integrated in the development of based aircraft forecast for helicopters. Due to the popularity of tourism in Gillespie County and its proximity to San Antonio and Austin, it is expected that VTOL aircraft could be used in the future to access T82 from these areas.

**TABLE 3-7**
**BASED AIRCRAFT FLEET MIX, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Single-Engine Piston | 99 | 99 | 107 | 115 | 119 | 123 |
| Multi-Engine Piston | 5 | 5 | 6 | 6 | 6 | 6 |
| Turbo-Prop | 5 | 6 | 7 | 9 | 13 | 19 |
| Turbo-Jet | 8 | 8 | 9 | 11 | 17 | 22 |
| Helicopter | 0 | 1 | 1 | 2 | 4 | 6 |
| Total | 117 | 119 | 130 | 143 | 159 | 176 |

**Source:** Garver Forecast Data for T82, 2021.

**FIGURE 3-9**
**BASED AIRCRAFT FLEET MIX, 2021-2041**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver Forecast Data for T82, 2021.

## *AIRCRAFT OPERATIONS FORECASTS*

Determining the projected number and mix of future aircraft operations at an airport is a vital component in developing future infrastructure plans. Aeronautical activity at an airport is typically closely linked to the number of aircraft based at the airport and the aeronautical needs of businesses, organizations, and individuals within the surrounding area.

Numerous forecast methods were used to predict aircraft operations growth for T82. Five are presented here:

- FAA Aerospace Forecast – Active GA and Air Taxi Fleet Hours Flown Growth Rate (1%);
- FAA Terminal Area Forecast – State of Texas OPS Growth Rate (1.35%);
- FAA Aerospace Forecast – Total Fuel Consumption Growth Rate (2.2%);
- FAA Aerospace Forecast – Total Turbine Hours Flown Growth Rate (2.5%); and
- Texas Statewide Median Household Income Average Annual Growth Rate (2.74%).

In addition to these forecasts, the FAA's TAF forecast for operations and an average of the aforementioned forecasts (excluding the TAF forecast) is presented.

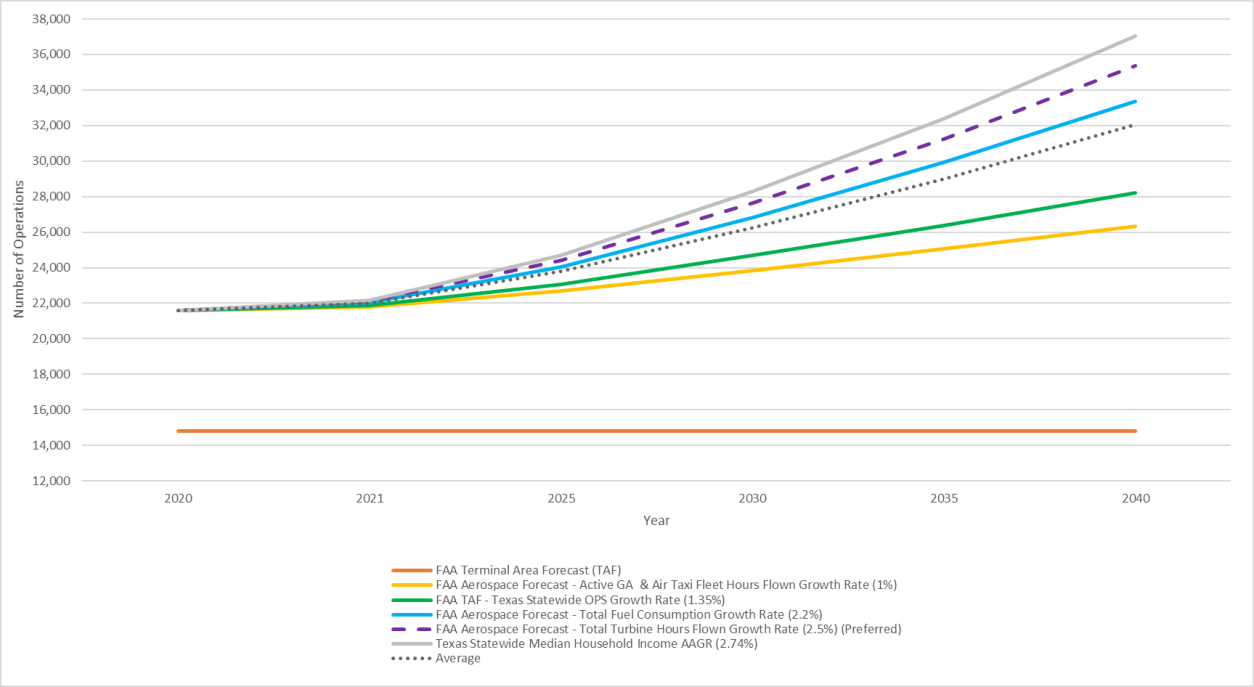
**Table 3-8** and **Figure 3-10** provide a summary of the forecast models for aircraft operations anticipated at the Airport over the 20-year planning period.

**TABLE 3-8**
**AIRCRAFT OPERATIONS FORECAST, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | FAA Terminal Area Forecast (TAF) | FAA Aerospace Forecast - Active GA & Air Taxi Fleet Hours Flown Growth Rate (1%) | FAA TAF - Texas Statewide OPS Growth Rate (1.35%) | FAA Aerospace Forecast - Total Fuel Consumption Growth Rate (2.2%) | FAA Aerospace Forecast - Total Turbine Hours Flown Growth Rate (2.5%) (Preferred) | Texas Statewide Median Household Income AAGR (2.74%) | Average |
|---|---|---|---|---|---|---|---|
| 2020 | 14,808 | 21,581 | 21,581 | 21,581 | 21,581 | 21,581 | 21,581 |
| 2021 | 14,808 | 21,797 | 21,872 | 22,056 | 22,121 | 22,172 | 22,004 |
| 2025 | 14,808 | 22,682 | 23,078 | 24,062 | 24,417 | 24,704 | 23,788 |
| 2030 | 14,808 | 23,839 | 24,678 | 26,828 | 27,626 | 28,279 | 26,250 |
| 2035 | 14,808 | 25,055 | 26,389 | 29,911 | 31,256 | 32,372 | 28,997 |
| 2040 | 14,808 | 26,333 | 28,219 | 33,350 | 35,363 | 37,056 | 32,064 |

**Source:** Garver Forecast Data for T82, 2021 and FAA Aerospace Forecasts, Fiscal Years 2021-2041.

**FIGURE 3-10**
**AIRCRAFT OPERATIONS FORECASTS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver Forecast Data for T82, 2021 and FAA Aerospace Forecasts, Fiscal Years 2021-2041.

Based on the forecasted growth of the local economy and in order to consider both national and local factors, the FAA Aerospace Forecast Total Turbine Hours Flown Growth Rate forecast was selected as the preferred aircraft operations forecast for T82.

## *AIRCRAFT OPERATIONS FLEET MIX FORECAST*

In addition to forecasting the total number of annual operations projected to occur at an airport during the forecast period, it is also critical to project the types of aircraft that will likely be operating at the Airport. **Table 3-9** and **Figure 3-11** display the aircraft operations fleet mix forecast for T82 for each phase throughout the 20-year planning period.

An examination of IFR operations at T82, through the FAA's Traffic Flow Management System Counts (TFMSC) database, provides some guidance towards developing an accurate fleet mix forecast. While these records account for only a fraction of the total operations that occur at T82, they do provide an indicator of the type of aircraft that use the airfield and their frequency. It can also be assumed that most aircraft not operating under IFR flight rules at the Airport are smaller single engine and light-twin engine aircraft that

typically fall in the A-I and B-I aircraft classifications. FAA TFMSC data from January 2011 to December 2020 was used for this analysis.

Based on a review of the Airport's IFR flight data, discussions with airport stakeholders, and the Airport's current mix of based aircraft, the following aircraft operations fleet mix ratios were established:

- Single Engine Piston Aircraft – 73%
- Multi Engine Piston Aircraft – 7%
- Turbo-Prop Aircraft – 7%
- Jet – 8%
- Helicopter – 5%

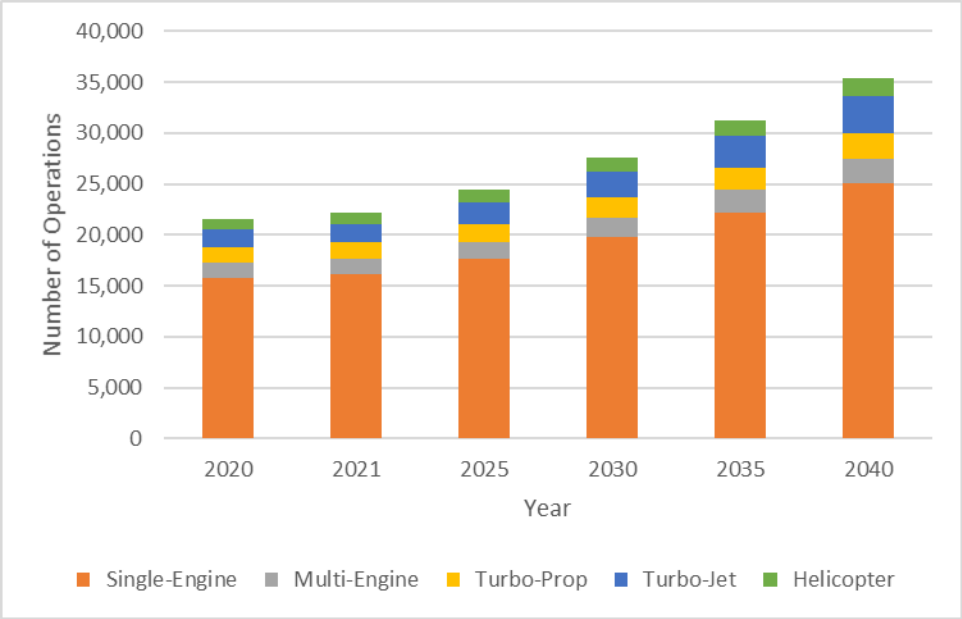
For the purposes of these calculations, light sport aircraft and experimental aircraft have been included in the single-engine piston aircraft category. VOTL aircraft have been included in the helicopter category.

**TABLE 3-9**
**SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Operations By Type | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Single-Engine | 15,754 | 16,148 | 17,624 | 19,767 | 22,217 | 25,015 |
| Multi-Engine | 1,511 | 1,548 | 1,709 | 1,934 | 2,188 | 2,475 |
| Turbo-Prop | 1,511 | 1,548 | 1,709 | 1,934 | 2,188 | 2,475 |
| Turbo-Jet | 1,726 | 1,770 | 2,153 | 2,610 | 3,100 | 3,629 |
| Helicopter | 1,079 | 1,106 | 1,221 | 1,381 | 1,563 | 1,768 |
| Total | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |

**Source:** Garver Forecast Data for T82, 2021.

**FIGURE 3-11**
**SUMMARY OF OPERATIONS BY AIRCRAFT TYPE, 2021-2041**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver Forecast Data for T82, 2021.

Utilizing the same IFR flight data, aircraft operations can be further broken down into Aircraft Approach Categories (AAC) and Airplane Design Groups (ADG). This helps to better define the types of aircraft that will operate at the Airport in the future. It also allows for better planning of future facilities and airside needs for the Airport and the ability to justify such facilities when the market demands their construction. As previously noted, the majority of the aircraft utilizing the Airport are single engine aircraft. However, the number of large aircraft operations is expected during the planning period. Based on this information and the TFMSC data, the following ratios were utilized for the forecasted fleet mix:

<u>Aircraft Approach Category (AAC):</u>

- A – 73.6%
- B – 20%
- C/D – 1.4%
- Helicopter – 5%

<u>Aircraft Design Group (ADG):</u>

- Group 1 – 69.9%
- Group 2 – 25%
- Group 3 – 0.1%
- Helicopter – 5%

These ratios are expected to remain relatively constant during the forecast period. **Table 3-10** displays this breakdown for the 20-year planning effort.

**TABLE 3-10**
**FLEET MIX OPERATIONS BY DESIGN GROUP, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Aircraft Approach Category | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Category A (Less Than 91 Knots) | 15,884 | 16,281 | 17,971 | 20,332 | 23,004 | 26,027 |
| Category B (92 – 120 Knots) | 4,316 | 4,424 | 4,883 | 5,525 | 6,251 | 7,073 |
| Category C/D (121 – 160 Knots) | 302 | 310 | 342 | 387 | 438 | 495 |
| Helicopter | 1,079 | 1,106 | 1,221 | 1,381 | 1,563 | 1,768 |
| Airplane Design Group | | | | | | |
| Group I (Less Than 49 Feet) | 15,085 | 15,462 | 17,067 | 19,310 | 21,848 | 24,719 |
| Group II (49 Feet To 78 Feet) | 5,395 | 5,530 | 6,104 | 6,906 | 7,814 | 8,841 |
| Group III (79 Feet To 118 Feet) | 22 | 22 | 24 | 28 | 31 | 35 |
| Helicopter | 1,079 | 1,106 | 1,221 | 1,381 | 1,563 | 1,768 |
| Total | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |

**Source:** Garver Forecast Data for T82, 2021.
Aircraft Approach Category is based on 1.3 times the stall speed of the aircraft at the maximum certified landing weight in the landing configuration Representative of the anticipated operations for each aircraft approach category and airplane design group. Totals may not equal due to rounding.

## *LOCAL AND ITINERANT OPERATIONS FORECAST*

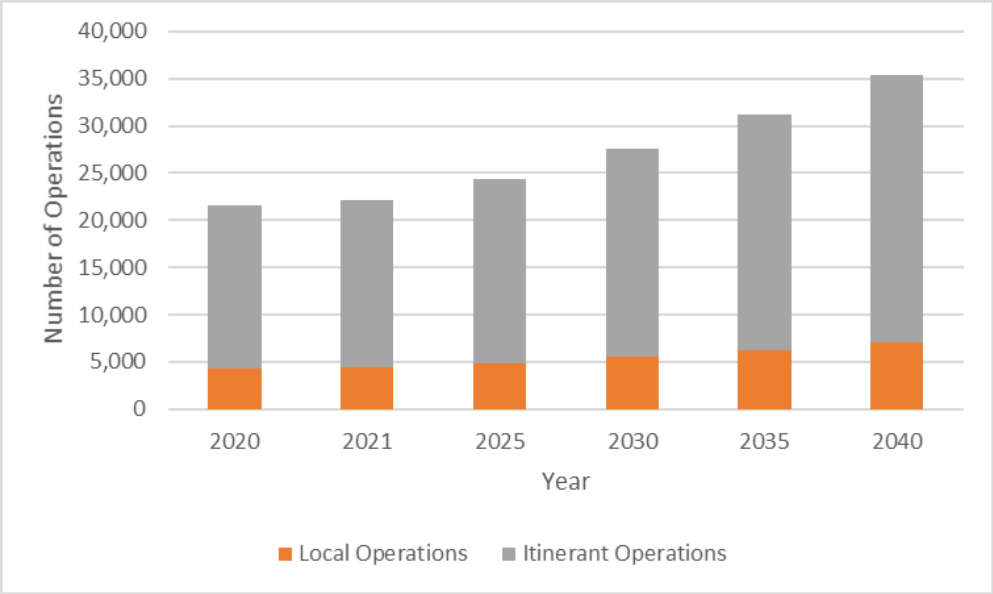
According to FAA Order JO 7210.3BB, *Facility Operation and Administration, June 20, 2019*, a local operation is any operation performed by an aircraft that remains in the local traffic pattern, performs a simulated instrument approach, or operates to or from the Airport and a practice area within a 20-mile radius of the field or tower. An itinerant operation is any operation that is not considered local. Based on an analysis of available operations data and discussions with airport stakeholders, it is estimated that 20% of the operations conducted at the Airport are local and 80% are itinerant. These percentages are expected to remain at or near these same levels throughout the forecast period. **Table 3-11** and **Figure 3-12** provides a summary of this information.

**TABLE 3-11**
**SUMMARY OF LOCAL AND ITINERANT OPERATIONS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Local Operations | 4,316 | 4,424 | 4,883 | 5,525 | 6,251 | 7,073 |
| Itinerant Operations | 17,265 | 17,696 | 19,534 | 22,100 | 25,005 | 28,290 |
| Total | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |

**Source:** Garver Forecast Data for T82, 2021.

**FIGURE 3-12**
**SUMMARY OF LOCAL AND ITINERANT OPERATIONS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver Forecast Data for T82, 2021.

## *ANNUAL INSTRUMENT APPROACH FORECAST*

**Table 3-12** summarizes the forecast of annual civilian instrument approaches at T82 throughout the planning period. The forecast of Annual Instrument Approaches (AIAs) provides further guidance in determining requirements for the type, extent, and timing of future navigational aid (NAVAID) equipment.

The forecast for instrument approaches is based on the IFR flight plan filings for the last three-year period. During the three-year period ending December 31, 2020, there were an average of 4,934 IFR operations (takeoffs/landings) at T82 each year. Dividing this number in half provides an estimate on the number of IFR approaches annually. The ratio of instrument operations is expected to remain relatively consistent during the forecast period.

**TABLE 3-12**
**INSTRUMENT APPROACH FORECASTS, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Annual Operations | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |
| Forecasted Number of Instrument Approaches | 2,297 | 2,529 | 2,791 | 3,158 | 3,573 | 4,042 |

**Source:** Garver Forecast Data for T82, 2021.

## *CRITICAL AIRCRAFT*

The "critical" aircraft at an airport is the largest and most demanding aircraft or category of aircraft conducting at least 500 operations per year. Determining the critical aircraft is important for assessing airport design and layout and the structural and equipment needs for both the airfield and terminal area. It is evaluated with respect to aircraft size, speed, and weight. The aircraft operating at T82 vary from small piston aircraft to jets. Based on the types of aircraft utilizing the Airport and the forecasted growth in operations, the existing "critical" aircraft at T82 is in the B-II category and is expected to remain in that category during the forecast period. However, there is the potential for the critical aircraft for T82 to move into the C-II category. This is only expected to occur if multiple C-II aircraft base at the airport.

**Table 3-13** shows the most common aircraft operating at T82 that define its current critical aircraft category. The preferred forecasts confirm this aircraft category to be the critical aircraft during the short-term and maintain it as such throughout the 20-year planning period. The chart below shows the characteristics and operational frequency of some of these aircraft that operated at T82 recently according to the IFR flight data.

**TABLE 3-13**
**CRITICAL AIRCRAFT OPERATIONS**
**GILLESPIE COUNTY AIRPORT**

| Aircraft Type and ARC | Wingspan | Height | Max Gross Takeoff Weight | Approach Speed | # of Operations 2016-2020 | # of Operations 2020 |
|---|---|---|---|---|---|---|
| Beech 200 Super King Air ARC B-II | 57.92 ft | 14.33 ft | 12,500 lbs | 107 kts | 857 | 105 |
| Raytheon 350 Super King Air ARC B-II | 57.92 ft | 14.33 ft | 15,000 lbs | 107 kts | 975 | 157 |
| Embraer Phenom 300 ARC B-II | 52.17 ft | 16.75 ft | 17,968 lbs | 116 kts | 1,429 | 205 |
| Cessna Citation V ARC B-II | 52.17ft | 15.0 ft | 16,300 lbs | 107 kts | 445 | 159 |

**Source:** FAA TFMSC Database.

## *AIRCRAFT OPERATIONS PEAKING FORECAST*

A primary consideration for facility planning should be the peaking characteristics of T82's activity level. To the greatest extent possible, airport facilities should be designed to be able to effectively accommodate normal peaks in aircraft traffic. Since, T82 does not have an operating ATCT, IFR numbers and discussions with stakeholders were utilized to estimate peaks in operational activity. For the purposes of this study, it was estimated that the peak month would have approximately 10.9% of the total annual operations. The Peak Month Average Day (PMAD) forecasts were developed by dividing the peak month forecast levels by 30 days. For the purpose of the Peak Hour Operations forecast, it was assumed that 15% of total PMAD traffic would occur during the peak hour. **Table 3-14** depicts the forecasted peaking numbers for T82.

**TABLE 3-14**
**AIRCRAFT OPERATIONS PEAKING, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| Year | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| Peak Month | 2,352 | 2,411 | 2,661 | 3,011 | 3,407 | 3,855 |
| PMAD Operations | 78 | 80 | 89 | 100 | 114 | 128 |
| Peak Hour Operations | 12 | 12 | 13 | 15 | 17 | 19 |
| Total Annual Operations | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |

**Source:** Garver Forecast Data for T82, 2021.

## FORECAST SUMMARY

The various forecast elements are displayed in **Table 3-15**. The forecasts, combined with the inventory data, will be used to identify, and develop the facility requirements and the need for improved general aviation facilities to serve T82. The next chapter, Facility Requirements, identifies the types and extent of facilities needed to adequately accommodate the demand levels identified in this chapter.

**TABLE 3-15**
**AVIATION FORECAST SUMMARY, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| | Based Aircraft By Type | | | | | |
|---|---|---|---|---|---|---|
| Year | 2020 | 2021 | 2025 | 2030 | 2035 | 2040 |
| Single-Engine Piston | 99 | 99 | 107 | 115 | 119 | 123 |
| Multi-Engine Piston | 5 | 5 | 6 | 6 | 6 | 6 |
| Turbo-Prop | 5 | 6 | 7 | 9 | 13 | 19 |
| Turbo-Jet | 8 | 8 | 9 | 11 | 17 | 22 |
| Helicopter | 0 | 1 | 1 | 2 | 4 | 6 |
| Total | 117 | 119 | 130 | 143 | 159 | 176 |
| | Operations | | | | | |
| Year | **2020** | **2021** | **2025** | **2030** | **2035** | **2040** |
| Single-Engine Piston | 15,754 | 16,148 | 17,624 | 19,767 | 22,217 | 25,015 |
| Multi-Engine Piston | 1,511 | 1,548 | 1,709 | 1,934 | 2,188 | 2,475 |
| Turbo-Prop | 1,511 | 1,548 | 1,709 | 1,934 | 2,188 | 2,475 |
| Turbo-Jet | 1,726 | 1,770 | 2,153 | 2,610 | 3,100 | 3,629 |
| Helicopter | 1,079 | 1,106 | 1,221 | 1,381 | 1,563 | 1,768 |
| Local Operations | 4,316 | 4,424 | 4,883 | 5,525 | 6,251 | 7,073 |
| Itinerant Operations | 17,265 | 17,696 | 19,534 | 22,100 | 25,005 | 28,290 |
| Total | 21,581 | 22,121 | 24,417 | 27,626 | 31,256 | 35,363 |

**Source:** Garver Forecast Data for T82, 2021.

# TAF COMPARISON

Both the based aircraft and aircraft operations forecast provided in this chapter exceed the requirements stated in AC 150/5070-6 (current series) for generally being in compliance with the existing TAF for T82 (e.g., 10% or less difference in the 5-year forecast and 15% or less difference in the 10-year forecast). This is due to the fact that both the based aircraft and operations counts in the TAF are lower than what has been documented as actual current counts, as well as ongoing significant growth at the airport.

**Table 3-16** shows the baseline forecast comparison to the FAA's TAF.

**TABLE 3-16**
**TAF COMPARISON, 2021-2041**
**GILLESPIE COUNTY AIRPORT**

| | Based Aircraft | | |
|---|---|---|---|
| Year | **TAF Forecast** | **Preferred Forecast** | **% Difference** |
| Initial Forecast Year (2021) | 86 | 119 | 38.85% |
| Initial Forecast Year +5 (2025) | 86 | 130 | 50.65% |
| Initial Forecast Year +10 (2030) | 86 | 143 | 66.82% |
| Initial Forecast Year +15 (2035) | 86 | 159 | 84.72% |
| Initial Forecast Year +20 (2040) | 86 | 176 | 104.55% |
| | Aircraft Operations | | |
| Year | **TAF Forecast** | **Preferred Forecast** | **% Difference** |
| Initial Forecast Year (2021) | 14,808 | 22,121 | 49.38% |
| Initial Forecast Year +5 (2025) | 14,808 | 24,417 | 64.89% |
| Initial Forecast Year +10 (2030) | 14,808 | 27,626 | 86.56% |
| Initial Forecast Year +15 (2035) | 14,808 | 31,256 | 111.07% |
| Initial Forecast Year +20 (2040) | 14,808 | 35,363 | 138.81% |

**Source:** Garver Forecast Data for T82, 2021.

CHAPTER 4

# Facility Requirements

# CHAPTER 4: FACILITY REQUIREMENTS

## INTRODUCTION

This chapter evaluates the existing airport facilities and identifies improvements needed to effectively meet the forecasted demand discussed in the Forecast Chapter in a manner that complies with FAA standards and best practices. Identification of a needed facility or infrastructure improvement does not necessarily constitute a "requirement", but an "option" for facility development to accommodate future aviation activity. Market demand will ultimately drive the facility development requirements at Gillespie County Airport (T82) and the operational statistics discussed in the Forecast Chapter (e.g., aircraft operations, based aircraft, etc.) should be used to help guide the discussion.

Airport facilities can be divided into two areas: airside and terminal/landside. The airside facilities include the runways, taxiways, protected surfaces, airspace, navigational aids (NAVAIDs), airfield markings, signage, and lighting. Terminal/landside facilities include the hangars, terminal building, FBO facilities, apron, fuel storage and delivery, vehicular parking, and airport access roads.

Each of these facilities, including their current condition and forecasted demand, will be discussed in the remainder of this chapter. The results of this chapter will be utilized to drive the alternatives that are discussed in Chapter 5.

## AIRSIDE/AIRSPACE FACILITIES

### *RUNWAY LENGTH*

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidance to help determine the most appropriate recommended runway lengths for an airport, which is predicated upon the category of aircraft using or forecasted to use the Airport.

A significant factor to consider when analyzing the generalized runway length requirements for an airport is that the actual length necessary for an aircraft operation is a function of airport field elevation, temperature, weather conditions, and aircraft stage length (e.g., non-stop flight distance). As temperatures, density altitude, weather, and aircraft stage length change, the runway length requirements change accordingly. Consequently, if a runway is designed to accommodate 75% of the fleet at 60% useful load, this does not prevent larger aircraft at certain times and during specific conditions from

utilizing the runway. However, the amount of time such operations can safely occur is limited.

As **Table 4-1** indicates, Runway 14/32 currently meets the runway length requirements for 100% of the small GA aircraft fleet (under 12,500 lbs.).

**TABLE 4-1**
**RUNWAY LENGTH REQUIREMENTS**
**GILLESPIE COUNTY AIRPORT**

| Aircraft Category | Runway Designation | Current Runway Length | Runway Length Requirement | Deficiency |
|---|---|---|---|---|
| Small Aircraft: 12,500 pounds or less: | | | | |
| 95% GA Fleet | 14/32 | 5,001 | **3,700** | 1,301 |
| 100 % GA Fleet | 14/32 | 5,001 | **4,320** | 681 |
| 100 % GA Fleet with 10 or more passenger seats | 14/32 | 5,001 | **4,590** | 411 |
| Large Aircraft between 12,500 and 60,000 pounds: | | | | |
| 75% of fleet at 60% useful load | 14/32 | 5,001 | **5,165** | -164 |
| 75% of fleet at 90% useful load | 14/32 | 5,001 | **7,295** | -2,294 |
| 100% of fleet at 60% useful load | 14/32 | 5,001 | **6,275** | -1,274 |
| 100% of fleet at 90% useful load | 14/32 | 5,001 | **9,475** | -4,474 |

**Source:** AC 150/5325-4B, Runway Length Requirements for Airport Design, Figures 2-1, 2-2, 3-1 and 3-2. Generalized length only. Actual lengths should be calculated based on a specific aircraft's operational nomographs. Useful load refers to all usable fuel, passengers, and cargo. Calculations based on 1,694.7 feet airport elevation, mean maximum daily temperature of 93.6˚F and maximum difference in runway end elevation of 17.5 feet. For Large Aircraft, figures are increased 10 feet for each foot of elevation difference between the high and low points of the runway centerline.

As part of this ALP process, a range analysis was also conducted. This analysis used flight data captured by the Fredericksburg FBO over a one-year period ending in August 2021 to identify some of the larger aircraft operating out of T82 and the farthest destinations to which they flew during that period. Additionally, coordination was completed with a variety of jet aircraft manufacturers (e.g., Gulfstream, Bombardier, Dassault, and Cessna) to gather specific range estimates for their aircraft when departing T82 under a range of atmospheric conditions. For these range calculations, the manufacturers were asked to assume that the aircraft would depart at 80% of its useful payload. **Table 4-2** and **Figure 4-1** depict the findings of this analysis.

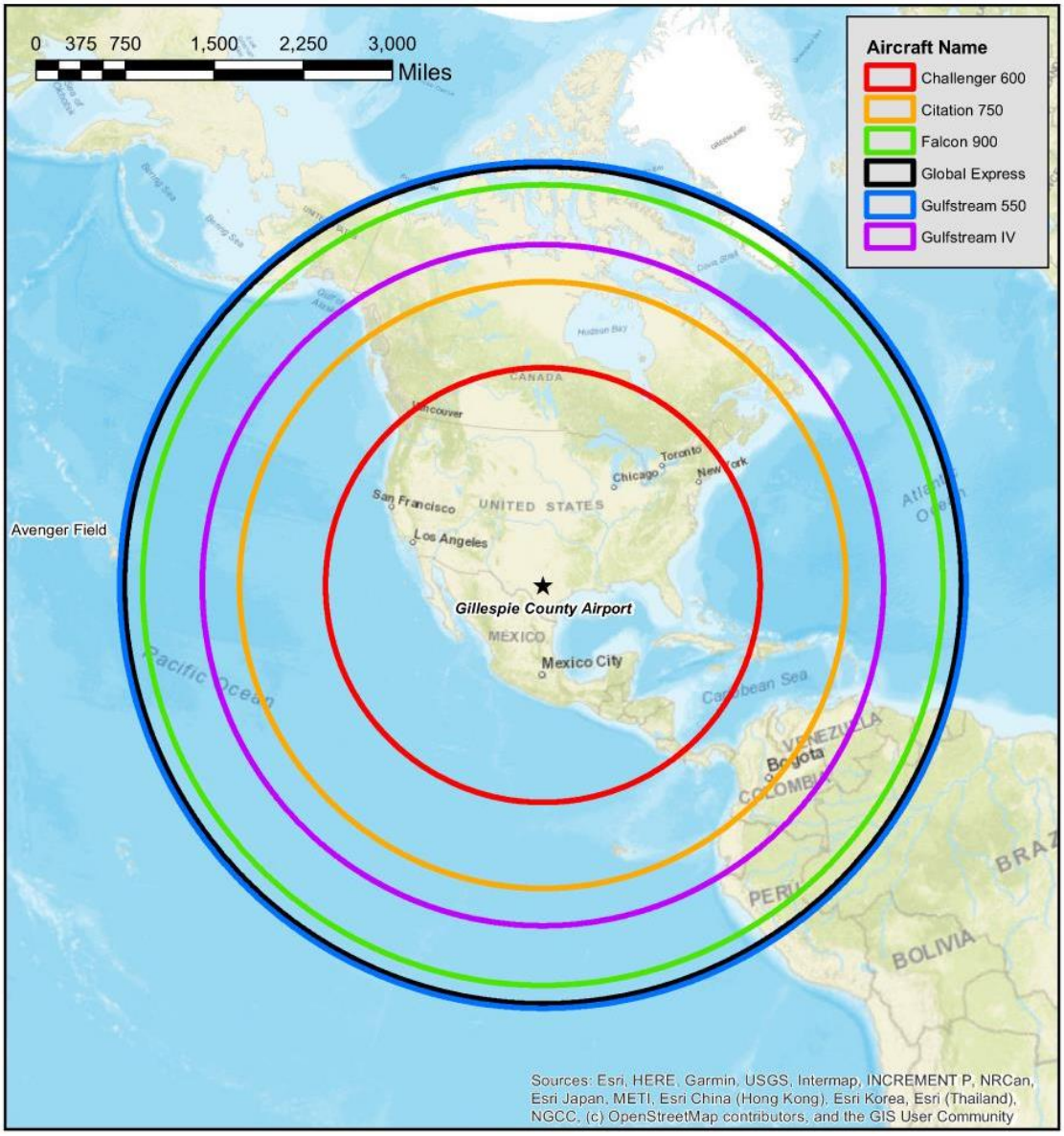
## TABLE 4-2
## AIRCRAFT RANGE CALCULATIONS
## GILLESPIE COUNTY AIRPORT

| Range Using Existing Runway 14/32 - 5,001 ft. Length (NM) | Range (NM) | | | | | |
|---|---|---|---|---|---|---|
| | Currently Operating at T82 | | | | Potential Future Operations at T82 | |
| | Citation 750 | Challenger 600 | Falcon 900 | Gulfstream IV | Global Express | Gulfstream 550 |
| ISA (59 degrees F) | 2,671 | 1,811 | 3,425 | 2,915 | 3,271 | 3,549 |
| ISA +15 (86 degrees F) | 2,220 | 1,591 | 2,930 | 2,493 | 3,064 | 3,098 |
| ISA +30 (113 degrees F) | 1,358 | 688 | 1,830 | 1,306 | 2,143 | 1,602 |
| Longest Distance Flown in 2021 | 1,636 NM (RKD - July 2021) | 692 NM (SDL - Apr. 2021) | 1,363 NM (TEB - July 2021) | 1,530 NM (BVY - Aug. 2021) | | |
| | Runway Length (ft) | | | | | |
| | Citation 750 | Challenger 600 | Falcon 900 | Gulfstream IV | Global Express | Gulfstream 550 |
| Total Runway Length Necessary to Depart T82 at MTOW (ft) in ISA +15 | 6,282 | 4,821 | 6,305 | 5,280* | 4,634 | 5,910* |

**Source:** Aircraft manufacturer data, 2022.

* - Gulfstream figures denoted with an "*" are based on sea level and not T82's field elevation. Gulfstream could not provide figures based on T82's field elevation.

**FIGURE 4-1**
**AIRCRAFT RANGE CALCULATIONS AT ISA +15°C (86°F)**
**GILLESPIE COUNTY AIRPORT**




**Source:** Aircraft manufacturer data, 2022.

In general, the analysis shows that the existing runway can accommodate the set of reviewed aircraft beyond the recently flown farthest distance (essentially anywhere within the continental United States) except in ISA +30°C conditions, which equates to 113°F.

Based on this analysis, the length of T82's existing runway is expected to be sufficient to meet the Airport's anticipated fleet mix unless international flights begin to regularly occur at the airport.

## *RUNWAY STRENGTH*

FAA AC 150/5320-6G, *Airport Pavement Design and Evaluation*, provides guidance on the structural design of airport pavements. The FAA requires the use of the pavement design program, FAARFIELD, to determine the pavement section that will support various aircraft gear loadings. The design is based on a 20-year life cycle. FAARFIELD analyzes the damage to the pavement done by each aircraft and determines the final pavement thickness/structure based on the total cumulative damage of all aircraft.

As part of this ALP project, a pavement strength analysis was conducted to document the weight-bearing capacities of runway, taxiway, and apron pavement sections at T82. This study found that the limiting factor in the weight-bearing capacity of Runway 14/32 is the north runway pavement section, where the single-wheel capacity is 54,400 pounds, and the double-wheel capacity is 73,000 pounds. This data is depicted in **Table 4-3.** The full pavement strength analysis report is included as Appendix A of this ALP narrative report.

**TABLE 4-3**
**MAXIMUM ALLOWABLE GROSS LOADS BASED ON ASSIGNED PCN**
**GILLESPIE COUNTY AIRPORT**

| Section | PCN | Subgrade Strength Category | Max Gross Weights, lbs | |
|---|---|---|---|---|
| | | | SW | DW |
| North Runway | 21 | C(6) | 54,400 | 73,000 |
| North Taxiway & Cross Taxiways A | 34 | B(10) | 90,200 | 144,000 |
| Cross Taxiway B | 31[1] | B(10) | 87,800 | 141,000 |
| South Runway | 61[1] | B(10) | 116,000 | 225,000 |
| South Taxiway & Cross Taxiway D | 55 | B(10) | 116,000 | 225,000 |
| Cross Taxiway C | 41[1] | B(10) | 112,000 | 177,000 |
| North Apron | 37 | B(10) | 98,000 | 160,000 |
| South Apron | 8.5 | C(6) | 23,250 | [2] |

[1]Recommended maximum is North Runway gross weights
[2]Not Recommended

**Source:** Gillespie County Airport Pavement Evaluation Report, 2021. Completed by HVJ Associates, Inc.

Based on this analysis and the forecasted fleet mix at T82, it is not expected that Runway 14/32 will need to be strengthened to accommodate forecasted operations within the planning horizon. However, if large business jet activity (e.g., Gulfstreams, Global Express,

etc.) increases significantly, additional pavement strengthening may be required. The south apron pavement section findings will be further discussed later in this chapter.

## RUNWAY ALIGNMENT

The evaluation of runway alignment is based on crosswind coverage and velocity. FAA Advisory Circular 150/5300-13 (current series), *Airport Design*, states that the allowable crosswind component for a runway with a B-II-5,000 Runway Design Code (RDC) is 13 knots at 95% wind coverage. Runway 14/32 is a B-II-5,000 runway.

**Table 4-4** shows the crosswind coverage percentages for Runway 14/32 at T82. Based on this analysis, Runway 14/32 currently provides sufficient wind coverage. However, there may be times during the year when small aircraft in the 10.5 crosswind category may experience crosswinds that exceed the aircraft's operational capabilities.

**TABLE 4-4**
**CROSSWIND COVERAGE**
**GILLESPIE COUNTY AIRPORT**

| | All Weather Wind Coverage % | | | IFR Wind Coverage % | | | VFR Wind Coverage % | | |
|---|---|---|---|---|---|---|---|---|---|
| Runway | 10.5 Knots | 13 Knots | 16 Knots | 10.5 Knots | 13 Knots | 16 Knots | 10.5 Knots | 13 Knots | 16 Knots |
| 14/32 | 94.58% | 97.79% | 99.72% | 96.31% | 98.58% | 99.89% | 94.37% | 97.68% | 99.70% |

**Source:** FAA Airports – GIS Wind Analysis Tool.

## MAGNETIC DECLINATION

The existing magnetic declination for T82 is 4° 5′ E with an annual rate of change of 0° 7′ W annually according to the National Oceanic and Atmospheric Administration (NOAA) Magnetic Declination Estimated Value Calculator (December 2021). The true bearing of Runway 14/32 is 146.7° and 326.7°. The current magnetic heading published on the instrument approach charts for Runway 14/32 is 141° and 321° respectively based on magnetic variation documented at 6° E from 2005. Based on the aforementioned rate of change it is not expected that Runway 14/32 will need to be redesignated during the planning horizon. The need for a runway redesignation will likely occur in 2043 or after.

## AIRPORT DESIGN CONSIDERATIONS

Compliance with airport design standards is vitally important because they aid an airport in maintaining a minimum level of operational safety. The major airport design elements are established by FAA AC 150/5300-13 (current series), *Airport Design.* In general, the design of an airport should conform with FAA airport design criteria without requiring a modification to standards.

**Table 4-5** provides an overview of the FAA design standards for a B-II-5,000 runway and their application to Runway 14/32 at T82.

**TABLE 4-5**
**RUNWAY DESIGN**
**GILLESPIE COUNTY AIRPORT**

| Item<br>Runway Design: | FAA Design Standard: B-II | Runway 14/32 |
|---|---|---|
| Width (ft) | 75 | 75 |
| RSA Width (ft) | 150 | 150 |
| RSA Length beyond R/W end (ft) | 300 | 300 |
| OFA Width (ft) | 500 | 405 |
| OFA Length beyond R/W end (ft) | 300 | 139 |
| ROFZ Width (ft) | 400 | 400 |
| ROFZ Length beyond R/W end (ft) | 200 | 200 |
| Runway Setbacks -Runway Centerline to: | | |
| Parallel Taxiway Centerline (ft) | 240 | 240 |
| Holdline (ft) | 200 | 200 |
| Aircraft Parking Area (ft) | 250 | 315 |

**Source:** FAA Advisory Circular 150/5300-13 (current series).

Currently, T82 has one deficiency related to its Runway Object Free Area (ROFA). This deficiency is discussed more in-depth in the ROFA section. An analysis of the Runway Protection Zones (RPZs) is provided later in this chapter.

## *RUNWAY WIDTH*

FAA AC 150/5300-13 (current series), *Airport Design*, delineates the requirements for runway width. At present, Runway 14/32 is 75 feet wide. This width meets the minimum runway width recommended for a runway with an RDC of B-II–5,000 which is 75 feet. T82's critical aircraft is forecasted to remain in the B-II category (e.g., Citation X, Falcon 2000, etc.) throughout the forecast period. Consequently, the existing runway width should be sufficient.

## RUNWAY SAFETY AREA

The Runway Safety Area (RSA) is a two-dimensional area surrounding and extending beyond the paved surface of the runway. The RSA is provided to reduce the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway pavement. In addition, it must be free of objects, except those required for air navigation, and be graded to transverse and longitudinal standards to prevent water accumulation. Objects located in the RSA that are over 3 inches above grade must be constructed, to the extent practical, on frangibly mounted structures with a frangible point no higher than 3 inches above grade. Under dry conditions, the RSA must support Aircraft Rescue and Fire Fighting (ARFF) equipment (if applicable), snow removal equipment (if applicable), and the occasional passage of aircraft without causing damage to the aircraft. The airport should own all the property inside the limits of the RSA.

Based on RDC B-II-5,000 design standards, the RSA at T82 should extend beyond the end of the runway for 300 feet and be 150 feet wide. No RSA deficiencies have been identified at T82.

## RUNWAY OBJECT FREE AREA

The Runway Object Free Area (ROFA) is a two-dimensional area surrounding runways. It must remain clear of objects except those used for air navigation or aircraft ground maneuvering purposes and requires clearing of above-ground objects protruding higher than the elevation of the RSA at the closest adjacent point. An object is considered any terrain, structure, navigational aid, person, equipment, or parked aircraft. The Airport should own or have easements for all the property inside the limits of the ROFA.

FAA Airport Design criteria for a RDC B-II-5,000 runway require the ROFA to be 500 feet wide and extend 300 feet beyond each runway end. Currently, the ROFA extends beyond airport property at the western corner of the approach end of Runway 14. Additionally, both windsocks for Runway 14/32 are located within the ROFA. Resolving these ROFA deficiencies will be a consideration during the alternatives process. **Figure 4-2** depicts these deficiencies.

**FIGURE 4-2**
**RUNWAY 14/32 ROFA DEFICIENCIES**
**GILLESPIE COUNTY AIRPORT**


**Source:** Garver, 2022.

## OBSTACLE FREE ZONE

The Obstacle Free Zone (OFZ) is a volume of airspace above and centered along the runway centerline. The OFZ precludes taxiing and parked airplanes and object penetrations except for objects required to be located in the OFZ due to their function. OFZs can have a number of different components including a Runway Obstacle Free Zone (ROFZ), inner-transitional OFZ, inner approach OFZ, and a Precision Obstacle Free Zone (POFZ). However, only the ROFZ is applicable at T82.

The length of the ROFZ is fixed at 200 feet beyond the associated runway end but the width is dependent upon the size of aircraft using the runway (e.g., small aircraft – less than 12,500 pounds, or large aircraft – greater than 12,500 pounds) and the visibility minimums for the lowest instrument approach to the runway. The ROFZ width at T82 is 400 feet wide and the elevation of the OFZ is equal to the closest point along the runway centerline. No ROFZ deficiencies have been identified at T82.

## PROTECTED SURFACE SUMMARY

The only identified runway design deficiencies are the ROFA penetrations that were previously noted. Since the Forecast Chapter identified that T82 is expected to remain in the B-II-5,000 RDC during the 20-year planning horizon, no other improvements to the RSA, ROFA, and ROFZ at T82 are expected.

## RUNWAY HOLD POSITION MARKINGS

The runway hold position markings (or holdlines) denote the entrance to the runway from a taxiway and the location where an aircraft is supposed to stop when approaching the runway. Their location is prescribed by FAA AC 150/5300-13 (current edition), *Airport Design*. They are generally located across the centerline of a given taxiway within 10 feet of an associated hold position sign. According to FAA standards, the holdlines for T82 should be located at least 200 feet from the runway centerline, and this standard is met for Runway 14/32.

## BUILDING RESTRICTION LINE

According to AC 150/5300-13 (current series), *Airport Design*, the Building Restriction Line (BRL) represents the boundary where it is suitable or unsuitable to develop buildings such as hangars, terminals, or other facilities. The BRL is established based on an airport's FAR Part 77 imaginary surfaces, Runway Protection Zones (RPZs), Obstacle Free Zones (OFZ),

Object Free Areas (OFA), runway visibility zones, NAVAID critical areas, and approach surfaces. Based on existing instrument approach procedures, the Runway 14/32 primary surface is 500 feet wide and extends 200 feet beyond each runway end. The transitional surfaces slope up at a 7:1 ratio from the primary surface to the horizontal surface which is 150 feet above airport elevation. Based on the activity at the field, instrument approach procedures, and the Runway 14/32 RDC, a BRL-0 feet is being used for T82, meaning that the BRL follows the edge of the primary surface laterally from the runway (250 feet from the runway centerline). A BRL-20 would place the BRL approximately 390 feet from the runway centerline.

## *RUNWAY CAPACITY*

Runway capacity at T82 was reviewed using AC 150/5060-5, *Airport Capacity and Delay*. Capacity is dictated primarily by aircraft weighing more than 12,500 pounds, due to the amount of wake turbulence generated by those aircraft, which in turn requires additional separation between aircraft departing and landing at the Airport. Based on the mix of aircraft weighing more than 12,500 pounds that have operated at T82 over the past three years, as recorded in TFMSC data, and the Airport's single-runway configuration, the estimated capacity of T82 per AC 150/5060-5 is provided below:

- 98 operations per hour capacity in VFR conditions.
- 59 operations per hour capacity in IFR conditions.
- 230,000 operations per year is the annual service volume.

As a result of these findings, no capacity concerns were identified at T82.

## *RUNWAY LINE-OF-SIGHT*

To ensure the safety of aircraft operations at an airport it is imperative that proper lines of sight exist along a single runway and amongst intersecting runways. These lines of sight facilitate coordination amongst aircraft and vehicles operating on a runway by allowing them to identify the position of other aircraft or vehicles operating on the same runway or on an intersecting runway.

On a single runway, an acceptable runway profile permits any two points, generally each runway end, five feet above the runway centerline, to be mutually visible for the entire runway length. If the runway offers a full-length parallel taxiway, an unobstructed line of sight should exist from any point five feet above the runway centerline to any other point

five feet above the runway centerline for one-half the runway length. There is no runway line of sight issues along Runway 14/32.

## *RUNWAY PROTECTION ZONE*

The purpose of a Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground and to prevent developments that are incompatible with aircraft operations. The FAA recommends that airports own the entire RPZ in "fee simple" title and that the RPZ be clear of any non-aeronautical structure or object that would interfere with the arrival and departure of aircraft. However, if “fee simple” interest is unachievable, the next option is controlling the height of objects through an avigation easement and keeping the area clear of any facilities that would support an incompatible activity (e.g., places of public assembly, etc.).

The RPZ is a two-dimensional trapezoidal area that normally begins 200 feet beyond the paved runway end and extends along the runway centerline. When it begins somewhere other than 200 feet from a runway end, there is a need for two RPZs, an approach RPZ and a departure RPZ. The approach RPZ begins 200 feet from the runway landing threshold. A departure RPZ begins 200 feet beyond the end of the runway pavement or 200 feet from the end of the Takeoff Runway Available (TORA), if established.

An FAA Interim Guidance Letter (IGL) (Sept 2012) addressed acceptable property uses within an RPZ. The IGL was released to specify and emphasize existing use standards and indicates that if any of the following parameters are met then the RPZ ownership must be reevaluated:

- An airfield project (e.g., a runway extension, runway shift)
- A change in the critical design aircraft that increases the RPZ size
- A new or revised instrument approach procedure that increases the RPZ dimensions
- A local development proposal in the RPZ (either new or reconfigured)

Land uses within an RPZ that require specific and direct coordination with the FAA include:

- Buildings and structures
- Recreational land uses
- Transportation facilities
- Rail facilities
- Public road/highways
- Vehicular parking facilities
- Fuel storage facilities
- Hazardous material storage
- Wastewater treatment facilities
- Above-ground utility infrastructure

RPZ dimensions are determined by the type/size of aircraft expected to operate at an airport and the type of approach, existing or planned, for each runway end (visual, precision, or non-precision). The recommended visibility minimums for the runway ends are determined with respect to published instrument approach procedures, the ultimate runway RDC, airfield design standards, instrument meteorological conditions, wind conditions, and physical constraints (approach slope clearance) along the extended runway centerline beyond the runway end. **Table 4-6**, *Runway Protection Zone Dimensions*, delineates the RPZ requirements for T82.

**TABLE 4-6**
**RUNWAY PROTECTION ZONE DIMENSIONS**
**GILLESPIE COUNTY AIRPORT**

| Runway End | Approach Visibility Minimums | Facilities Expected to Serve (AAC - ADG) | Length (ft) | Inner Width (ft) | Outer Width (ft) | Acres |
|---|---|---|---|---|---|---|
| Runway 14 | Not Lower Than 1 Mile | B-II | 1,000 | 500 | 700 | 13.770 |
| Runway 32 | Not Lower Than 1 Mile | B-II | 1,000 | 500 | 700 | 13.770 |

**Source:** FAA Advisory Circular 150/5300-13 (current series).

At the Runway 14 approach end, the RPZ is partially owned by the Airport. The remaining RPZ areas are controlled by easements, except where the RPZ extends across Tivydale Road and a portion of Upper Live Oak Road. At the Runway 32 approach end, the RPZ extends across Highway 16, as well as the intersection of Highway 16 and Lady Bird Drive. All remaining area within the RPZ are owned by Gillespie County. **Figure 4-3** depicts the RPZs and highlights the portions outside of airport property.

**FIGURE 4-3**
**RUNWAY PROTECTION ZONES**
**GILLESPIE COUNTY AIRPORT**


**Source:** Garver, 2022.

## OTHER AIRSIDE FACILITIES

### AIR TRAFFIC CONTROL TOWER CONSIDERATIONS

Based on the guidance set forth in FAA guidance document *FAA-APO-90-7: Establishment and Discontinuance Criteria for Airport Traffic Control Towers*, a high-level review was completed to assess the potential need for an Air Traffic Control Tower (ATCT) at T82. Airfield configuration (e.g., multiple runways, crossing runways, etc.) and airport activity levels are the primary drivers related to the need for an ATCT facility at an airport. T82 is expected to remain a single runway airport and annual aircraft operations are expected to remain below 36,000. Consequently, it is not expected that an ATCT facility will need to be established at T82 during the planning horizon.

A benchmarking analysis was also completed to compare T82 to other single runway airports in Texas both with and without ATCT facilities. Currently, the Sugarland Regional Airport (SGR) has the lowest number of aircraft operations (67,268 operations in 2021) of any single runway GA airport in Texas with an ATCT facility.

### ALTERNATE OPERATING AREA CONSIDERATIONS

As part of this ALP project, the requirements for an alternate operating area (AOA) (e.g., a turf landing surface adjacent to a paved runway) were considered utilizing previous FAA guidance set forth in *Interim Guidance Letter ANM Regional Guidance No. 2019-01 – Considerations for Alternate Operating Areas*. It is important to note that this guidance has been cancelled, and a national policy is forthcoming. In the absence of a national policy, however, the guidance document was used to identify potential FAA criteria for establishing an AOA.

An AOA is defined as a rectangular surface on an airport adjacent to a paved parallel runway. The AOA and the paved runway operate as a single runway "system," meaning that runway dimensional criteria must be met for the entire system. The AOA must have an associated RSA, and it is preferable for the AOA to have its own RSA adjacent to the RSA of the paved runway. Given these standards, an AOA could potentially be located parallel to Runway 14/32, west of the runway.

Additional requirements for an AOA may need to be considered when a national policy is formally published. The feasibility of establishing an AOA to the west of the existing runway will be analyzed as part of the alternatives phase.

### AIR TRAFFIC CONTROL COMMUNICATIONS

Currently, aircraft on the ground can contact the Houston Air Route Traffic Control Center (ARTCC) or the San Angelo Flight Service Station (FSS) using a Ground Communications Outlet (GCO) at T82. The GCO is activated via a specified number of clicks using an aircraft VHF radio to contact Houston Center or the FSS via telephone. The remarks for T82 in the Airport/Facility Directory (A/FD) state that Houston ARTCC can also be contacted at 281-230-5622.

Delays commonly occur at T82 during IFR conditions as a result of IFR traffic separation standards and the limited connectivity aircraft have with Houston ARTCC while on the ground. Consequently, the Airport is interested in identifying ways to improve this connectivity including the establishment of a Remote Communications Outlet (RCO). An RCO would allow pilots to communicate with the Houston ARTCC or San Antonio Approach Control (SAT TRACON) using a direct radio link, thereby streamlining the communication process, and removing the telephone component. This will be a consideration in the alternatives process.

## TAXIWAYS

Taxiways serve a critical function as they are the primary surface that aircraft utilize to transition to/from aircraft parking facilities (ramps, hangars, etc.) to runways. Taxiways that are properly laid out can provide a high-level of safety and efficiency for aircraft moving to/from the runway. By contrast, poorly laid out taxiways can increase the risk of an unintentional pavement excursion for a taxiing aircraft and cause congestion on the airfield.

### TAXIWAY PAVEMENT DESIGN

Taxiway design is complex because it is largely based on landing gear configurations which vary widely between different aircraft types. The FAA has classified the numerous variations of aircraft landing gear configurations into various Taxiway Design Groups (TDG) that now guide taxiway pavement design. All taxiways at T82 generally follow TDG-2 design standards, and forecasted aeronautical activity is expected to remain primarily in this category. **Table 4-7** depicts the operational statistics of some common TDG-2 aircraft that have frequently operated at T82 over the last five-year period.

**TABLE 4-7**
**TDG-2 AIRCRAFT OPERATIONS**
**GILLESPIE COUNTY AIRPORT**

| Aircraft | # of OPS (Jan 2016 - Dec 2020) |
|---|---|
| Beech Super King Air 350 (BE350) | 975 |
| Beech 200 Super King (BE20) | 857 |
| Cessna Citation V (C560) | 445 |
| Raytheon 300 Super King Air (BE30) | 356 |

**Source:** FAA TFMSC database, 2021.

All taxiways at T82 were designed and constructed prior to the establishment of the FAA's TDG based taxiway pavement design standards that were implemented in 2014. As a result, many of the existing taxiway fillets (e.g., pavement layout where taxiways curve) do not meet FAA design standards. These fillets should be expanded to meet current design standards as taxiways at T82 are reconstructed. This will be a consideration in the alternatives process.

## *TAXIWAY DESIGN STANDARDS BASED ON AIRPLANE DESIGN GROUP (ADG)*

While taxiway pavement design is based on an aircraft's TDG, Taxiway Safety Areas (TSA), Taxiway Object Free Areas (TOFAs), and taxiway separation standards are based on the Airplane Design Group (ADG) for a given taxiway. Unlike a taxiway's TDG, a taxiway's ADG is based on aircraft wingspan and tail height and not its landing gear configuration. All the taxiways at T82 currently fall into the ADG II category and are expected to remain in that category during the forecast period. **Table 4-8** provides an overview of the ADG requirements applicable to T82 and the dimensions that currently exist.

**TABLE 4-8**
**TAXIWAY STANDARDS BASED ON AIRPLANE DESIGN GROUP**
**GILLESPIE COUNTY AIRPORT**

| Taxiway | Applicable Taxiway ADG | TSA (feet) | | | TOFA (feet) | | |
|---|---|---|---|---|---|---|---|
| | | Current | FAA Standard | Standard Met (Y/N) | Current | FAA Standard | Standard Met (Y/N) |
| Taxiway A | II | 79 | 79 | Y | 131 | 131 | Y |
| Taxiway B | II | 79 | 79 | Y | 131 | 131 | Y |
| Taxiway C | II | 79 | 79 | Y | 131 | 131 | Y |
| Taxiway D | II | 79 | 79 | Y | 131 | 131 | Y |
| Parallel Taxiway (Unnamed) | II | 79 | 79 | Y | 131 | 131 | Y |

**Source:** Garver, 2022.

All taxiways at T82 meet current ADG based taxiway design standards.

## TAXIWAY CONFIGURATION ISSUES

Based on research, the FAA has identified a number of taxiway layout/configuration issues that have been shown to cause pilot confusion which can lead to safety issues such as runway incursions. As part of this Airport Layout Plan, an analysis was completed to review the existing taxiway system at T82 to identify any taxiway layout/configuration issues that need to be considered as part of the alternatives process. T82 currently has two locations, Taxiways A and B, that provide direct access between the apron and the runway. These locations are shown in **Figure 4-4** and **4-5**. To improve the safety and reduce the likelihood of runway incursions, these two taxiways should be reconfigured to meet current FAA standards. The Taxiway B direct apron to runway access is expected to be resolved as part of the upcoming Airfield Improvements Phase II project.

**FIGURE 4-4**
**TAXIWAY A DIRECT APRON TO RUNWAY ACCESS**
**GILLESPIE COUNTY AIRPORT**

**Source:** Google Earth, 2022.

**FIGURE 4-5**
**TAXIWAY B DIRECT APRON TO RUNWAY ACCESS**
**GILLESPIE COUNTY AIRPORT**

**Source:** Google Earth, 2022.

## AIRFIELD LIGHTING AND MARKING REQUIREMENTS

Sufficient airfield marking, lighting, and signage is essential to maintaining a high level of safety in an airport's daily operation. Airport lighting is used to help maximize the utility of the Airport during day, night, and adverse weather conditions. This section identifies facility requirements related to airfield marking and lighting at T82.

### RUNWAY LIGHTING/PAVEMENT MARKING

Currently, Runway 14/32 is equipped with LED Medium Intensity Runway Lights (MIRL) that were installed in 2012. The current MIRLs are pilot controlled through the Common Traffic Advisory Frequency (CTAF) at T82. Pilots can increase the brightness of the MIRLs through a series of microphone click transmissions on the CTAF. The lights are in good condition.

Runway pavement markings should follow the requirements prescribed in AC 150/5340-1 (current series), *Standards for Airport Markings*. Both ends of the runway have non-precision instrument markings. These markings are in fair to good condition.

### TAXIWAY LIGHTING/PAVEMENT MARKING

Effective taxiway lighting is imperative to maintain the safety of aircraft operations at night and during periods of poor visibility. Solar edge lighting buttons are currently located on taxiways at T82. However, the Airport has noted that the solar lights are prone to failure. Some taxiways also have centerline reflectors. Since T82 has over 100 based aircraft, adding reliable taxiway lighting will be considered as part of the alternatives process.

All paved taxiways should be painted with standard taxiway markings as prescribed in FAA Advisory Circular 150/5340-1 (current series), *Standards for Airport Markings*. All taxiways at T82 have standard taxiway centerline markings. These marking are in fair to good condition.

### APPROACH LIGHTING SYSTEM

An approach lighting system (ALS) provides the basic means to transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the ALS for a particular runway. Depending on the type of approach, certain ALS are required to aid pilots in the identification of the Airport environment during instrument meteorological conditions. ALS are a configuration of signal lights starting at the landing threshold and extending into the approach area for a distance of 2,400-3,000 feet for precision instrument runways and 1,400-1,500 feet for non-precision instrument runways. Some systems include sequenced flashing lights that appear to the pilot as a ball of light traveling towards the runway at high speed.

There are no approach lighting systems currently installed at T82. Future consideration for a new ALS will be predicated on user needs, instrument approach minimum requirements, and the restrictions of surrounding property and land use. Based on the aeronautical activity forecast and analysis of historical weather conditions at T82, it is not expected that an ALS will be needed.

### RUNWAY END IDENTIFIER LIGHTS

Runway End Identifier Lights (REILs) provide rapid and positive identification of the runway's approach end. REILs consist of a pair of synchronized (directional) flashing white strobes located laterally along the runway threshold. They are typically installed along with threshold lights at each runway end. REILs are not commonly needed unless an airport is situated within an area of heavy light pollution or adjacent to areas that would deem them necessary at specific times such as a lighted ball field, lighted rodeo grounds, etc. REILs can also be used in undeveloped areas to help pilots find and identify the runway. T82 does not

currently have any REIL systems, and these systems are not expected to be needed during the planning horizon.

### AIRPORT SIGNS

Airport sign systems provide pilots with a visual indication of runway and taxiway location, direction, and mandatory instructions that are essential to the safe and efficient operation of aircraft. T82 has taxiway signage on the airfield including runway hold position signs at every runway/taxiway intersection. This signage was installed in 2020.

## WIND CONE/SEGMENTED CIRCLE/AIRPORT BEACON

T82 has a primary wind cone and segmented circle west of Runway 14 near the approach end. There is also a supplemental wind cone for Runway 32 located in the infield between the runway and the parallel taxiway, north of Taxiway D. They both are in fair condition.

T82's beacon is located 2,215 feet southeast of the Runway 14 threshold adjacent the terminal building parking lot. The beacon was last replaced in 2002. The Airport plans to replace the beacon light with a new LED light to reduce maintenance costs.

## NAVIGATIONAL AIDS

Airport Navigational Aids (NAVAIDs) are installed on or near an airport to increase the Airport's reliability during night and inclement weather conditions and to provide electronic guidance and visual references for executing an approach to the Airport or runway.

FAA Order 7031.2C, *Airport Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services*, specifies minimum activity levels to qualify for instrument approach equipment and approach procedures. As forecast in the previous chapter, approximately 8,084 instrument operations (approaches and takeoffs) will be conducted annually under IFR flight rules by the end of the 20-year planning period. The following sections describe the status of existing and new NAVAIDs used at general aviation airports.

### VISUAL GUIDANCE SLOPE INDICATORS

Typically, Visual Guidance Slope Indicators (VGSI) provide a system of sequenced colored light beams providing continuous visual descent guidance information along the desired final approach descent path. The system normally consists of two Precision Approach Path Indicator lamp housings (PAPI-2), or four (PAPI-4) lamp housing units installed 600 to 800 feet from the runway threshold and offset 50 feet to the left of the runway edge. T82 has a

two light PAPI system on each end of Runway 14/32. The PAPIs at T82 are owned by the Airport and are in in need of replacement.

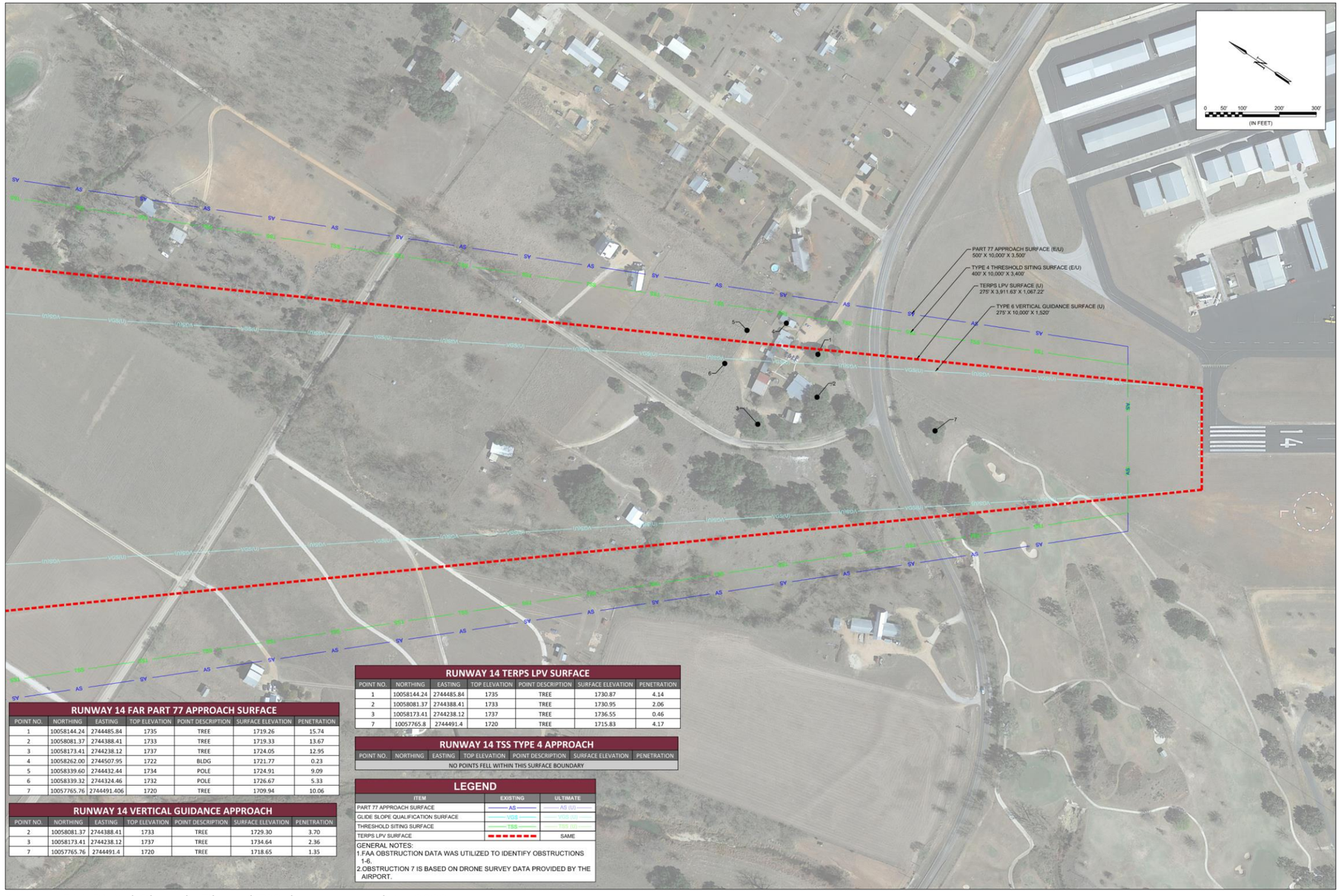
### VERY HIGH FREQUENCY OMNI-DIRECTIONAL RADIO RANGE

A Very High Frequency Omni-Directional Radio Range (VOR/VORTAC) system emits a very high frequency radio signal that can be utilized for both enroute navigation and non-precision approaches. It provides an instrument rated pilot with 360 degrees of azimuth information oriented to magnetic north. Due to the recent development of more precise navigational systems, it is planned to be phased-out by the FAA. T82 is served by the Stonewall VORTAC, located 10.8 miles east-southeast of T82. The VORTAC is used for the VOR/DME-A approach for T82. Additional VOR/VORTAC equipment is not expected to be needed in the area.

### GLOBAL POSITIONING SYSTEM

The Global Positioning System (GPS) is a highly accurate worldwide satellite navigational system that provides point-to-point navigation by encoding transmissions from multiple satellites and ground-based data-link stations using an airborne receiver. GPS is presently FAA-certified for enroute and instrument approaches into numerous airports. T82 currently has 1-mile GPS approaches to both ends of Runway 14/32. However, only Runway 32 has Localizer Performance with Vertical guidance (LPV) minimums. Runway 14 does not have LPV nor LNAV/VNAV minimums for the existing RNAV(GPS) approach. The Airport has expressed a desire to add LPV minimums for Runway 14, which will require the mitigation of off airport obstructions. Based on FAA obstacle data and airport survey data, **Figure 4-6** identifies the obstructions that will need to be remediated to enable LPV minimums for Runway 14. It is also recommended that T82 complete an 18B aeronautical survey to identify other potential obstructions for the approach.

**FIGURE 4-6**
**RUNWAY 14 LPV APPROACH OBSTRUCTIONS**
**GILLESPIE COUNTY AIRPORT**




**RUNWAY 14 FAR PART 77 APPROACH SURFACE**

| POINT NO. | NORTHING | EASTING | TOP ELEVATION | POINT DESCRIPTION | SURFACE ELEVATION | PENETRATION |
|---|---|---|---|---|---|---|
| 1 | 10058144.24 | 2744485.84 | 1735 | TREE | 1719.26 | 15.74 |
| 2 | 10058081.37 | 2744388.41 | 1733 | TREE | 1719.33 | 13.67 |
| 3 | 10058173.41 | 2744238.12 | 1737 | TREE | 1724.05 | 12.95 |
| 4 | 10058262.00 | 2744507.95 | 1722 | BLDG | 1721.77 | 0.23 |
| 5 | 10058339.60 | 2744432.44 | 1734 | POLE | 1724.91 | 9.09 |
| 6 | 10058339.32 | 2744324.46 | 1732 | POLE | 1726.67 | 5.33 |
| 7 | 10057765.76 | 2744491.406 | 1720 | TREE | 1709.94 | 10.06 |

**RUNWAY 14 VERTICAL GUIDANCE APPROACH**

| POINT NO. | NORTHING | EASTING | TOP ELEVATION | POINT DESCRIPTION | SURFACE ELEVATION | PENETRATION |
|---|---|---|---|---|---|---|
| 2 | 10058081.37 | 2744388.41 | 1733 | TREE | 1729.30 | 3.70 |
| 3 | 10058173.41 | 2744238.12 | 1737 | TREE | 1734.64 | 2.36 |
| 7 | 10057765.76 | 2744491.4 | 1720 | TREE | 1718.65 | 1.35 |

**RUNWAY 14 TERPS LPV SURFACE**

| POINT NO. | NORTHING | EASTING | TOP ELEVATION | POINT DESCRIPTION | SURFACE ELEVATION | PENETRATION |
|---|---|---|---|---|---|---|
| 1 | 10058144.24 | 2744485.84 | 1735 | TREE | 1730.87 | 4.14 |
| 2 | 10058081.37 | 2744388.41 | 1733 | TREE | 1730.95 | 2.06 |
| 3 | 10058173.41 | 2744238.12 | 1737 | TREE | 1736.55 | 0.46 |
| 7 | 10057765.8 | 2744491.4 | 1720 | TREE | 1715.83 | 4.17 |

**RUNWAY 14 TSS TYPE 4 APPROACH**

| POINT NO. | NORTHING | EASTING | TOP ELEVATION | POINT DESCRIPTION | SURFACE ELEVATION | PENETRATION |
|---|---|---|---|---|---|---|
| NO POINTS FELL WITHIN THIS SURFACE BOUNDARY | | | | | | |

**LEGEND**

| ITEM | EXISTING | ULTIMATE |
|---|---|---|
| PART 77 APPROACH SURFACE | AS | AS (U) |
| GLIDE SLOPE QUALIFICATION SURFACE | VGS | VGS (U) |
| THRESHOLD SITING SURFACE | TSS | TSS (U) |
| TERPS LPV SURFACE | | SAME |

GENERAL NOTES:
1.FAA OBSTRUCTION DATA WAS UTILIZED TO IDENTIFY OBSTRUCTIONS 1-6.
2.OBSTRUCTION 7 IS BASED ON DRONE SURVEY DATA PROVIDED BY THE AIRPORT.

**Source:** FAA Digital Obstacle File and T82 drone survey data, 2022.

### INSTRUMENT LANDING SYSTEM

An instrument landing system (ILS) provides precision instrument approaches for an airport at which they are installed. The system consists of several components that are installed adjacent to the runway. Precision instrument approaches are approaches where a pilot is provided with both vertical and horizontal guidance and the visibility minimums for the approach are below ¾ mile. Based on the current and anticipated needs of the aircraft based at T82 and other aircraft utilizing the Airport, an ILS is not expected to be needed during the planning period.

## WEATHER OBSERVING SYSTEM

Automated Weather Observation Systems (AWOS) and Automated Surface Observation Systems (ASOS) consist of various types of sensors, a processor, a computer-generated voice subsystem, and a transmitter to broadcast minute-by-minute weather data from a fixed location directly to pilots. The information is transmitted over the voice portion of a local NAVAID (VOR or DME) or a discrete VHF radio frequency.

AWOS/ASOS are significant for non-towered airports with instrument procedures to relay accurate and invaluable weather information to pilots. At airports with instrument approach procedures, an AWOS/ASOS weather report eliminates the remote altimeter setting penalty, thereby permitting lower minimum descent altitudes (lower approach minimums). These systems should be sited within 500 to 1,000 feet of the primary runway centerline. FAA Order 6560.20C, *Siting Criteria for Automated Weather Observing Systems*, assists in the site planning for AWOS/ASOS systems.

T82 is equipped with an AWOS-3 that meets all of the parameters of FAA Order 6560.20C. The T82 AWOS-3 information can be received by tuning to 120.0 MHz or by calling 830-990-2716. The Airport owns the AWOS-3 and has a contract for its maintenance.

## AIRSPACE

The current airspace surrounding T82 is classified as Class E airspace. This is not expected to change during the planning horizon since an ATCT facility is not expected to be needed at T82.

The current and future 14 CFR Part 77 Imaginary Surfaces for the Airport are defined below:

- Runway 14/32
  - Primary Surface – 500 feet wide x 200 feet past each runway end
  - Approach Surface – 34:1 slope for both runway ends for 10,000 feet
- Non-Runway Specific Surfaces
  - Horizontal Surface – Flat surface established at an elevation of 1,844.7 feet (150 feet above field elevation). Perimeter is based on 10,000 feet arcs from each end of Runway 14/32.
  - Conical Surface – Extends from the edges of the Horizontal surface for a horizontal distance of 4,000 feet at a 20:1 slope.
  - Transitional Surface – Extends from the edges of the primary surface at a 7:1 slope until it reaches the horizontal surface and from the edges of the approach surfaces at a 7:1 slope until it reaches the horizontal surface or for a horizontal distance of 5,000 feet

These surfaces are depicted in the Airspace Drawing that is included as part of the Airport Layout Plan.

## *AIRFIELD/AIRSPACE FACILITY REQUIREMENTS SUMMARY*

Based on the airfield and airspace facility requirements analysis, the following development objectives have been established for the T82 alternatives development process.

- Address ROFA discrepancy
- Develop Runway 14 LPV approach and remediate obstacles
- Evaluate feasibility of adding an Alternate Landing Area (AOA)
- Upgrade all taxiway fillets to TDG-2 standards
- Mitigate Taxiway A and B direct apron to runway access
- Install taxiway edge lighting
- Replace PAPIs
- Pursue Remote Communications Outlet (RCO)

# TERMINAL/LANDSIDE FACILITIES

Terminal area and landside area facilities play an important role in enabling the transition of pilots, passengers, and goods to and from the airside facilities at the airport. Terminal and landside area facilities include FBO/terminal building facilities, hangars, apron space, vehicle parking areas, and roadway access.

Key terminal/landside area facility requirements are developed in consideration of the following general planning concepts:

- Future terminal area development for general aviation airports serving utility and larger than utility aircraft should typically be centralized to minimize development cost and reduce wasted space;
- Future developments should be grouped based on the size of the aircraft expected to use the development to minimize wasted space;
- Planned development should allow for the incremental linear expansion of facilities and services in a modular fashion along an established flightline so development can easily scale to demand;
- Major design considerations involve minimizing earthwork/grading, avoiding flood-prone areas and integrating existing paved areas to reduce pavement (taxilane) costs;
- Future terminal expansion should allow sufficient maneuverability and accessibility for appropriate types (mix) of general aviation aircraft; and,
- Future terminal area development should enhance safety, visibility, and be aesthetically pleasing.

These general planning concepts are integrated into this terminal and landside facilities analysis.

## *TERMINAL BUILDING REQUIREMENTS*

The terminal building serves both a functional and social capacity central to the operation, promotion, and visible identity of an airport. T82 has both an FBO terminal building and an airport-owned terminal building. The FBO terminal is the primary GA terminal at T82.

The current FBO terminal building, operated by the Fredericksburg FBO, is approximately 3,350 square feet. Discussions with the FBO indicated that additional building space is needed during peak hours. Additionally, more office space is needed to accommodate the

FBO staff. The airport-owned terminal building is approximately 3,000 square feet and contains some additional pilot amenities as well as housing airport administrative functions. An estimate of building/space needs for the FBO terminal based on forecasted demand is outlined in **Table 4-9**.

**TABLE 4-9**
**TERMINAL BUILDING SPACE/NEED**
**GILLESPIE COUNTY AIRPORT**

| Facility | 2020 | PAL 1 | PAL 2 | PAL 3 | PAL 4 | PAL 5 |
|---|---|---|---|---|---|---|
| Formula Factors | | | | | | |
| - Peak Hour Operations | 12 | 12 | 13 | 15 | 17 | 19 |
| - % of Aircraft Using FBO Terminal Facilities | 80% | 80% | 80% | 80% | 80% | 80% |
| - Peak Hour Multiplier | 3 | 3 | 3 | 3 | 3 | 3 |
| - Sq. Ft. Per Person | 150 | 150 | 150 | 150 | 150 | 150 |
| Office Space | 400 | 400 | 400 | 400 | 400 | 400 |
| Total Terminal Sq. Ft. Requirement | 4,634 | 4,740 | 5,191 | 5,820 | 6,532 | 7,338 |
| Current Terminal Sq. Ft. | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 | 3,350 |
| Surplus/Deficiency (Sq. Ft.) | **-1,284** | **-1,390** | **-1,841** | **-2,470** | **-3,182** | **-3,988** |

**Source:** ACRP Guidebook for GA Facility Planning and Garver, 2022.

Additional terminal space will be a consideration in the alternatives process.

## *AIRCRAFT STORAGE*

Establishing requirements for future hangar space is a critical component of terminal/landside facility planning. In general, future hangar areas should achieve a balance between maintaining an unobstructed expansion area, minimizing pavement development, and allowing convenient airside and landside access.

To evaluate future hangar space requirements, generalized parking area needs must be established for different types of aircraft. For this analysis it was assumed that:

- A single-engine piston aircraft demands approximately 1,250 square feet of parking space;
- A twin engine propeller aircraft requires approximately 3,000 square feet of parking space;
- A business turboprop/jet aircraft requires approximately 3,000 to 5,000 square feet of parking space; and,
- A helicopter requires approximately 1,500 square feet.

General hangar planning considerations incorporated in this analysis include the following:

- Construction of aircraft hangars should be beyond an established building restriction line (BRL) surrounding the runway and taxiway areas, the runway OFZ, runway and taxiway OFAs, and remain clear of the FAR Part 77 Surfaces and Threshold Siting Surfaces.
- Maintaining the minimum recommended clearance between T-hangars of 79 feet for one-way traffic and 143 feet for two-way traffic. Taxilanes supporting T-hangars should be no less than 25 feet wide. Individual paved approaches to each hangar stall are typically less costly, but not preferred to paving the entire T-hangar access/ramp area.
- Box hangar areas should provide for ADG II clearances and should generally be constructed to TDG-2 pavement design standards.
- Segregate hangar development based on the hangar type and function. From a planning standpoint, hangars should be centralized in terms of auto access, and located along the established flight line to minimize costs associated with access, drainage, utilities, and auto parking expansion.

Today, T82 has box and T-hangar storage totaling 243,225 square feet. Currently, the hangars are at capacity and a waiting list exists. There are currently 117 based aircraft. Based on the forecast for based aircraft, it is presumed that hangar space at T82 will need to grow as described in **Table 4-10** to accommodate future demand.

**TABLE 4-10**
**AIRCRAFT HANGAR STORAGE DEMAND**
**GILLESPIE COUNTY AIRPORT**

| Facility | 2020 | PAL 1 | PAL 2 | PAL 3 | PAL 4 | PAL 5 |
|---|---|---|---|---|---|---|
| Based Aircraft - Single Engine Piston | 99 | 99 | 107 | 115 | 119 | 123 |
| % of Based SE Aircraft Utilizing Hangar Space | 97% | 97% | 97% | 97% | 97% | 97% |
| Total Based SE Aircraft Placed in Hangar | 96 | 96 | 104 | 112 | 115 | 119 |
| Estimated Hangar Space per Aircraft | 1,250 | 1,250 | 1,250 | 1,250 | 1,250 | 1,250 |
| Total Hangar Space Required (sq. ft.) | 120,038 | 120,038 | 129,738 | 139,438 | 144,288 | 149,138 |
| | | | | | | |
| Based Aircraft - Multi-Engine/Turboprop | 10 | 11 | 13 | 15 | 19 | 25 |
| % of Based ME/TP Aircraft Utilizing Hangar Space | 100% | 100% | 100% | 100% | 100% | 100% |
| Total Based ME/TP Aircraft Placed in Hangar | 10 | 11 | 13 | 15 | 19 | 25 |
| Estimated Hangar Space per Aircraft | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Total Hangar Space Required (sq. ft.) | 30,000 | 33,000 | 39,000 | 45,000 | 57,000 | 75,000 |
| | | | | | | |
| Based Aircraft - Turbo-Jet | 8 | 8 | 9 | 11 | 17 | 22 |
| % of Based Jet Aircraft Utilizing Hangar Space | 100% | 100% | 100% | 100% | 100% | 100% |
| Total Based Jet Aircraft Placed in Hangar | 8 | 8 | 9 | 11 | 17 | 22 |
| Estimated Hangar Space per Aircraft | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 |
| Total Hangar Space Required (sq. ft.) | 28,000 | 28,000 | 31,500 | 38,500 | 59,500 | 77,000 |
| | | | | | | |
| Based Aircraft - Helicopters | 0 | 1 | 1 | 2 | 4 | 6 |
| Estimated Hangar Space per Aircraft | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Total Hangar Space Required (sq. ft.) | 0 | 1,500 | 1,500 | 3,000 | 6,000 | 9,000 |
| | | | | | | |
| Annual Itinerant Aircraft Operations | 17,265 | 17,696 | 19,534 | 22,100 | 25,005 | 28,290 |
| Maintenance/Transient Hangar Area Demand ($ft^2$) | 34,530 | 35,393 | 39,067 | 44,201 | 50,009 | 56,581 |
| | | | | | | |
| Current Unmet Demand (e.g. Hangar Wait List) | 26,250 | 26,250 | 21,563 | 16,875 | 12,188 | 7,500 |
| | | | | | | |
| Total Based Aircraft | 117 | 119 | 130 | 143 | 159 | 176 |
| Total Hangar Space Required (sq. ft.) | 238,817 | 244,180 | 262,367 | 287,013 | 328,984 | 374,218 |
| Hangar Space Lost to Exclusive Use/Office Space (estimated at 15%) (sq. ft.) | 35,823 | 36,627 | 39,355 | 43,052 | 49,348 | 56,133 |
| Hangar Space Required + Space Lost to Exclusive Use/Office Space (sq. ft.) | 274,640 | 280,807 | 301,722 | 330,065 | 378,332 | 430,351 |
| Current Total Hangar Space (sq. ft.) | 243,225 | 243,225 | 243,225 | 243,225 | 243,225 | 243,225 |
| Surplus/Deficiency (sq. ft.) | **-31,415** | **-37,582** | **-58,497** | **-86,840** | **-135,107** | **-187,126** |

**Source:** Garver, 2022.

## AUTO PARKING, CIRCULATION, AND ACCESS REQUIREMENTS

### VEHICLE PARKING

General aviation airports are unique facilities with regard to vehicle parking requirements because they are used by a number of aeronautical and non-aeronautical users and for a variety of purposes. Consequently, a calculation on the number of required parking spaces was completed using the best practices established in Airport Cooperative Research Program's (ACRP) *Guidebook for General Aviation Facility Planning*. Under the best practices established in that document a total of 3 spaces should be allocated for each peak hour aircraft operation and an additional 1 space for every 1,000 square feet of hangar space. The Airport also allows for long-term parking of several vehicles, which is accounted for in the analysis. **Table 4-11** shows the number of required parking spots utilizing this methodology.

**TABLE 4-11**
**PARKING SPACE NUMBER REQUIREMENTS BASED ON ACRP GUIDEBOOK FOR GA FACILITY PLANNING**
**GILLESPIE COUNTY AIRPORT**

| Facility | 2020 | PAL 1 | PAL 2 | PAL 3 | PAL 4 | PAL 5 |
|---|---|---|---|---|---|---|
| FBO Terminal Parking | | | | | | |
| - Peak Hour Operations | 12 | 12 | 13 | 15 | 17 | 19 |
| - % of Aircraft Using FBO Terminal Facilities | 80% | 80% | 80% | 80% | 80% | 80% |
| - Peak Hour Multiplier | 3 | 3 | 3 | 3 | 3 | 3 |
| Parking Space Need for Passenger/Pilot | 28 | 29 | 32 | 36 | 41 | 46 |
| Hangar Space Parking | | | | | | |
| - Hangar Space Requirement | 238,817 | 244,180 | 262,367 | 287,013 | 328,984 | 374,218 |
| - Parking Alottment Based on Hangar Space (1 space per 1,000 sf) | 239 | 244 | 262 | 287 | 329 | 374 |
| - Reduction for Parking Inside Hangar | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% | 30.0% |
| Total Parking Needed for Hangar Space | 72 | 73 | 79 | 86 | 99 | 112 |
| Tie-Down Space Parking | | | | | | |
| - Tie-Down Space Requirements | 3 | 3 | 3 | 3 | 4 | 4 |
| - % of A/C in Use at One-Time | 10% | 10% | 10% | 10% | 10% | 10% |
| Total Parking Needed for Tie-Down Space | 0 | 0 | 0 | 0 | 0 | 0 |
| Long Term Parking | 25 | 25 | 30 | 35 | 40 | 45 |
| Total # of Spaces Currently | 99 | 99 | 99 | 99 | 99 | 99 |
| Total Number of Parking Spaces Needed | **125** | **127** | **141** | **158** | **180** | **204** |
| Total Deficiency/Surplus | **-26** | **-28** | **-42** | **-59** | **-81** | **-105** |

**Source:** Garver, 2022.

As mentioned in the Inventory Chapter, there are a total of 99 vehicle parking spaces in the vicinity of the FBO building and terminal building at the current T82 airport. Based on this analysis, additional vehicle parking is expected to be needed during the planning horizon. In the near-term, additional vehicle parking is needed on the north side of the airfield. This will be a consideration in the alternatives analysis.

### VEHICLE ACCESS

Roadway access to the Airport is provided via Airport Road, Crosswind Lane, and Fair Drive. The roadways are constructed of asphalt and are in fair to good condition. Discussions with airport staff have yielded an interest in creating a separate construction and maintenance access point to the airfield, and this will be a consideration in the alternatives process.

## AIRCRAFT APRON

### COMPOSITION, LAYOUT, AND CONDITION

Aircraft apron areas are provided for aircraft maneuvering and parking. Typically, aprons utilized for aircraft parking have a blend of based aircraft utilizing the apron as a permanent parking location and itinerant aircraft that are using the apron as a temporary parking location. Currently, the apron at T82 is used for a combination of tenant and itinerant aircraft parking. Within the apron there are 53 designated aircraft tie-down spaces. Of the 53 tie-down spaces, only three of them are reserved for based aircraft. The remaining 50 are primarily used to accommodate itinerant aircraft operations. During peak periods, additional apron and tie-down space is needed. As part of the Phase II airfield improvements project that is expected to be completed in 2022, an additional 19 tie-down spots are expected to be added. Additional tie-down spots may be added as part of the project depending on funding.

### SOUTH APRON

It should be noted that based on the pavement strength analysis discussed earlier in this chapter, it is recommended that operations on the south apron be limited to lighter aircraft due to the pavement section in the area. Additional study is needed to further assess the south apron pavement, and it is expected that the pavement will need to be strengthened to support larger aircraft.

### APRON SPACE REQUIREMENTS

Since the apron at T82 is used for a combination of tenant and itinerant aircraft parking, the calculations regarding the need for future ramp space consider both current and future based aircraft demand as well as the space needed to park itinerant aircraft and the space needed for general aircraft movement. These considerations are included in the calculations in **Table 4-12**. For the purposes of this analysis, it is assumed that aircraft will primarily park in a nested configuration, wing-to-wing, with pull-through or push-back parking as is common with itinerant aircraft.

To begin the analysis, a weighted average for the number of square feet of pavement needed to park an aircraft was calculated. Additionally, for these calculations considerations were made for the fleet mix at T82, the movement of the aircraft into and out of the parking area, and the movement of other aircraft around the parked aircraft. Required clearances on all sides of the aircraft were also taken into the consideration. **Table 4-12** provides a weighted average apron space requirement per aircraft.

**TABLE 4-12**
**AIRCRAFT APRON SPACE – WEIGHTED AVERAGE CALCULATION**
**GILLESPIE COUNTY AIRPORT**

| ADG | Average Length (ft) | Average Wingspan (ft) | Additional Clearance (ft) | TOFA Clearance (ft) | Average Parking Area Required ($ft^2$) | Fleet Mix | Weighted Average Parking Area ($ft^2$) |
|---|---|---|---|---|---|---|---|
| I | 26 | 35 | 7.50 | 79 | 6,000 | 69.90% | 4,194 |
| II | 55 | 60 | 9.00 | 115 | 14,664 | 25.00% | 3,666 |
| III | 100 | 100 | 11.00 | 162 | 34,648 | 0.10% | 35 |
| Helicopter | 35 | 30 | 12.00 | 0 | 3,186 | 5.00% | 159 |
| | | | | | | **Weighted Average:** | **8,054** |

**Source:** Garver, 2022.
Note: These calculations take into account the TOFA required for another aircraft to pass by the parked aircraft. The average parking area required was calculated by multiplying the average aircraft length plus 2 times the additional clearance margin by the average aircraft wingspan plus 2 times the additional clearance margin and then adding that number to the TOFA plus the aircraft's average wingspan plus 2 times the additional clearance margin.

Based on these calculations and the T82 peaking characteristics described in the Forecast Chapter, **Table 4-13** shows the estimated amount of apron space that will be required at T82 during the forecast period.

**TABLE 4-13**
**AIRCRAFT PARKING SPACE REQUIRED CALCULATION**
**GILLESPIE COUNTY AIRPORT**

| Year | Peak Month Average Day | Forecasted % of Itinerant Operations Parking on Apron | Estimated Percentage of Itinerant Ops on Apron at Same Time | Permanent Tie-Down Aircraft | Weighted Average Aircraft Parking Area ($ft^2$) | Estimated Parking Apron Required | Aircraft Circulation Factor | Total Apron Area Required ($ft^2$) | Current Apron Area ($ft^2$) | Surplus/ Deficiency Based on Current Apron Size ($ft^2$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 78 | 75% | 75% | 3 | 8,054 | 360,329 | 540,493 | 900,822 | 798,000 | **-102,822** |
| PAL 1 | 80 | 75% | 75% | 3 | 8,054 | 369,210 | 553,814 | 923,024 | 798,000 | **-125,024** |
| PAL 2 | 89 | 75% | 75% | 3 | 8,104 | 409,504 | 614,256 | 1,023,760 | 798,000 | **-225,760** |
| PAL 3 | 100 | 70% | 75% | 3 | 8,154 | 434,778 | 652,166 | 1,086,944 | 798,000 | **-288,944** |
| PAL 4 | 114 | 70% | 75% | 3 | 8,204 | 494,222 | 741,333 | 1,235,554 | 798,000 | **-437,554** |
| PAL 5 | 128 | 65% | 75% | 3 | 8,254 | 522,100 | 783,150 | 1,305,250 | 798,000 | **-507,250** |

**Source:** Garver, 2022.
**Note:** An assumption was made that the percentage of itinerant operations parking on the apron will decrease over the planning horizon as the fleet mix shifts more toward jet aircraft and additional hangar space becomes available. An assumption was also made that no more than 75% of the total number of estimated itinerant operations during the peak hour would be on the ramp at the same time. The estimated parking apron required was calculated by multiplying the peak hour by the forecasted % of itinerant operations, then multiplying that result by the estimated percentage of itinerant OPS on the apron at the same time, and then multiplying that result by the weighted average aircraft parking area. A factor of 1.5 was added to the apron space calculation to account for general aircraft circulation and movement and taxilanes on the apron. This factor was utilized to account for the apron space that is immediately in front of hangars making it only available for aircraft movement and not parking.

These calculations show that there is already pent-up demand for apron space, some of which will be addressed by the upcoming project discussed earlier in this section, and that the apron will likely need to be expanded in the mid-term and long-term portions of the forecast period as well, particularly as more hangars are developed. Additionally, T82 may experience increased helicopter activity and eventually electric vertical take-off and landing (eVTOL) aircraft operations due to its proximity to the Austin and San Antonio urban centers. These operations will also require additional designated apron space. These considerations will be incorporated in the alternatives process.

## *FUEL STORAGE REQUIREMENTS*

Fuel storage requirements are based on the forecast of annual operations, aircraft utilization, average fuel consumption rates, and the forecasted mix of aircraft anticipated at T82. Market conditions will determine the ultimate need for fuel tanks and their size. The following guidelines should be implemented when planning future airport fuel facilities:

- Aircraft fueling facilities should remain open continually (24-hour access), remain visible and be within close proximity to the terminal building or FBO to enhance security and convenience;
- Fuel storage capacity should be sufficient for average peak-hour activity;

- Fueling systems should permit adequate wing-tip clearance to other structures, designated aircraft parking areas (tie-downs), maneuvering areas, and OFAs associated with taxilane and taxiway centerlines;
- Fuel facilities should be located beyond the RSA and BRL;
- All fuel storage tanks should be equipped with monitors to meet current state and federal environmental regulations, and be sited in accordance with local fire codes;
- Have a dedicated fuel truck for Jet-A delivery to minimize the liability associated with towing and maneuvering expensive aircraft up to and in the vicinity of fueling facilities; and,
- Maintain adequate truck transport access to the fuel storage tanks for fuel delivery.

As reported in the Inventory Chapter, the primary fuel facility at T82 is owned and operated by the FBO. It consists of two 12,000 gallon Above Ground Storage Tanks (ASTs), one for Jet-A and one for 100LL. The main facility was constructed in 2004 and is in good condition. Self-service fueling is continuously available. A separate 2,000-gallon AST for self-service 100LL fueling is located on the north apron between the Snowden (hangar 15) and Pippen-York (hangars 16 and 17) hangars. The self-service 100LL tank was recently installed and is in excellent condition. Discussions with the FBO indicated that an additional 12,000-gallon AST for Jet-A is needed to support demand. Additional fuel trucks and parking for those trucks is also expected to be needed to support this demand. These factors will be a consideration in the alternatives process.

## *AIRPORT TERMINAL/LANDSIDE AREA FACILITY REQUIREMENTS SUMMARY*

Based on the terminal/landside area requirements analysis, the following development objectives have been established for the T82 alternatives development process.

- Strengthen the South Apron
- Additional box and T-hangar space will be needed
- Apron space will be needed to support hangars and itinerant aircraft activity
- Dedicated apron space should be allocated for future helicopter/eVTOL operations
- Additional FBO terminal space will be needed
- An additional 12,000-gallon Jet-A AST is needed to support demand
- Additional fuel trucks and truck parking is needed
- Additional vehicle parking space will be needed
- Vehicle parking for FBO should be increased
- Separate construction/maintenance access should be added

# FACILITY REQUIREMENTS – SUMMARY

Based on the analysis completed in this chapter, the primary development objectives for the Alternatives Chapter are the items defined below:

- Airside
  - Address ROFA discrepancy
  - Develop Runway 14 LPV approach and remediate obstacles
  - Evaluate feasibility of adding an Alternate Landing Area (AOA)
  - Upgrade all taxiway fillets to TDG-2 standards
  - Mitigate Taxiway A and B direct apron to runway access
  - Install taxiway edge lighting
  - Replace PAPIs
  - Pursue Remote Communications Outlet (RCO)

- Terminal/Landside
  - Strengthen the South Apron
  - Additional box and T-hangar space will be needed
  - Apron space will be needed to support hangars and itinerant aircraft activity
  - Dedicated apron space should be allocated for future helicopter/eVTOL operations
  - Additional FBO terminal space will be needed
  - An additional 12,000-gallon Jet-A AST is needed to support demand
  - Additional fuel trucks and truck parking is needed
  - Additional vehicle parking space will be needed
  - Vehicle parking for FBO should be increased
  - Separate construction/maintenance access should be added

CHAPTER 5

# Alternatives

# CHAPTER 5: ALTERNATIVES ANALYSIS

## INTRODUCTION

This chapter describes the various airside and terminal/landside area development alternatives that were created based on the needs defined in the Facility Requirements Chapter. This chapter also discusses the evaluation criteria used to select the preferred development alternative for each area (e.g., airside and terminal/landside), discusses the results of the evaluation process, and provides an overview of the anticipated environmental impacts of the preferred development alternative.

## ALTERNATIVES DEVELOPMENT PROCESS

The various alternatives described in this chapter were created by reviewing the facility requirements defined in Chapter 4 and devising numerous development options that could potentially satisfy those requirements at the Gillespie County Airport (T82). Those development options were then consolidated into two airside alternatives and the terminal/landside development alternatives were split into four development areas:

- Northern Development Area – Two alternatives
- Midfield Development Area – Five alternatives
- Southern Development Area – Four alternatives
- Existing Terminal Area – Three alternatives

These alternatives went through the formal evaluation process described herein to select the preferred alternative for each area.

Airside facilities are those that are used for supporting the active movement and circulation of aircraft on the airfield which includes the runways, taxiways, and approach facilities/equipment. Terminal/landside area facilities include the terminal building/FBO facilities, fuel storage/delivery systems, aircraft parking aprons, aircraft hangars, and automobile access and parking.

## EVALUATION OVERVIEW

As part of the formal evaluation process, the impact each alternative had in the following areas was considered:

- Ability to Satisfy Established Facility Requirements
- Environmental Impacts
- Residential and/or Business Impacts
- Road Relocation, Power Line, and Utility Impacts
- Geographical Constraints
- Development Cost/Ease of Implementation
- Limits Ultimate Development Potential
- Congruence with Preferred Airside Alternative (Terminal/Landside Alternatives only)

Since all airport functions relate to and revolve around the runway/taxiway system, airside development alternatives are evaluated before terminal/landside development alternatives. When terminal/landside development alternatives are evaluated, their compatibility with the preferred airside development alternative is also considered.

## AIRSIDE ALTERNATIVES

The existing Runway Design Code (RDC) for T82 is B-II-5,000, and the critical aircraft for T82 (e.g., currently B-II, an Embraer Phenom 300) is expected to remain in that category for the duration of the planning horizon. Several components of the existing airside facilities fail to meet the current and long-term needs of T82's users based on the facility requirements analysis. These deficiencies are the basis of the development objectives for T82 for the 20-year planning horizon. Each of these development objectives were identified through the facility requirements analysis and are discussed below:

- Address ROFA discrepancy
- Develop Runway 14 LPV approach and remediate obstacles
- Evaluate feasibility of adding an Alternate Operating Area (AOA)
- Upgrade all taxiway fillets to TDG-2 standards
- Mitigate Taxiway A and B direct apron to runway access
- Install taxiway edge lighting
- Replace PAPIs (accomplished in 2022)
- Pursue Remote Communications Outlet (RCO)

With these development objectives identified, the following alternatives were developed:

- **Airside Alternative #1**

  Airside Alternative #1 proposes to develop an AOA parallel to Runway 14/32. The west end of the AOA would be aligned with Taxiway B while the east end would extend 470 feet past Taxiway C. Alternative #1 includes the following additional improvements:

  - Runway
    - Reroute existing fence at the approach end of Runway 14 to protect the ROFA or obtain a Modification to Standards (MOS) from the FAA for the ROFA penetration
    - Relocate the windsocks outside of the ROFA
    - Add a parallel AOA south of Runway 14/32
    - Develop Runway 14 LPV approach and complete obstruction mitigation
  - Taxiway
    - Relocate Taxiway B (between the apron and parallel taxiway) to prevent direct apron to runway access (currently underway)
    - Add taxiway edge lighting
    - Upgrade taxiway fillets to TDG-2 standards
    - Install no-taxi island to prevent direct apron to runway access using Taxiway A
  - Relocate PAPIs for Runway 32
  - Construct a Remote Communications Outlet (RCO)
  - Strengthen the existing south apron

  Airside Alternative #1 is shown in **Figure 5-1**.

- **Airside Alternative #2**

  Airside Alternative #2 also proposes to develop an AOA parallel to Runway 14/32. However, the alignment of the AOA spaces the AOA end points equidistant from Taxiway B and C. Alternative #2 includes the following additional improvements:

  - Runway
    - Reroute existing fence at the approach end of Runway 14 to protect the ROFA or obtain a Modification to Standards (MOS) from the FAA for the ROFA penetration

- Relocate the windsocks outside of the ROFA
- Add a parallel AOA south of Runway 14/32
- Develop Runway 14 LPV approach and complete obstruction mitigation

- Taxiway
  - Relocate Taxiway B (between the apron and parallel taxiway) to prevent direct apron to runway access (currently underway)
  - Add taxiway edge lighting
  - Upgrade taxiway fillets to TDG-2 standards
  - Install no-taxi island to prevent direct apron to runway access using Taxiway A
- Relocate PAPIs for Runway 32
- Construct a Remote Communications Outlet (RCO)
- Strengthen the existing south apron

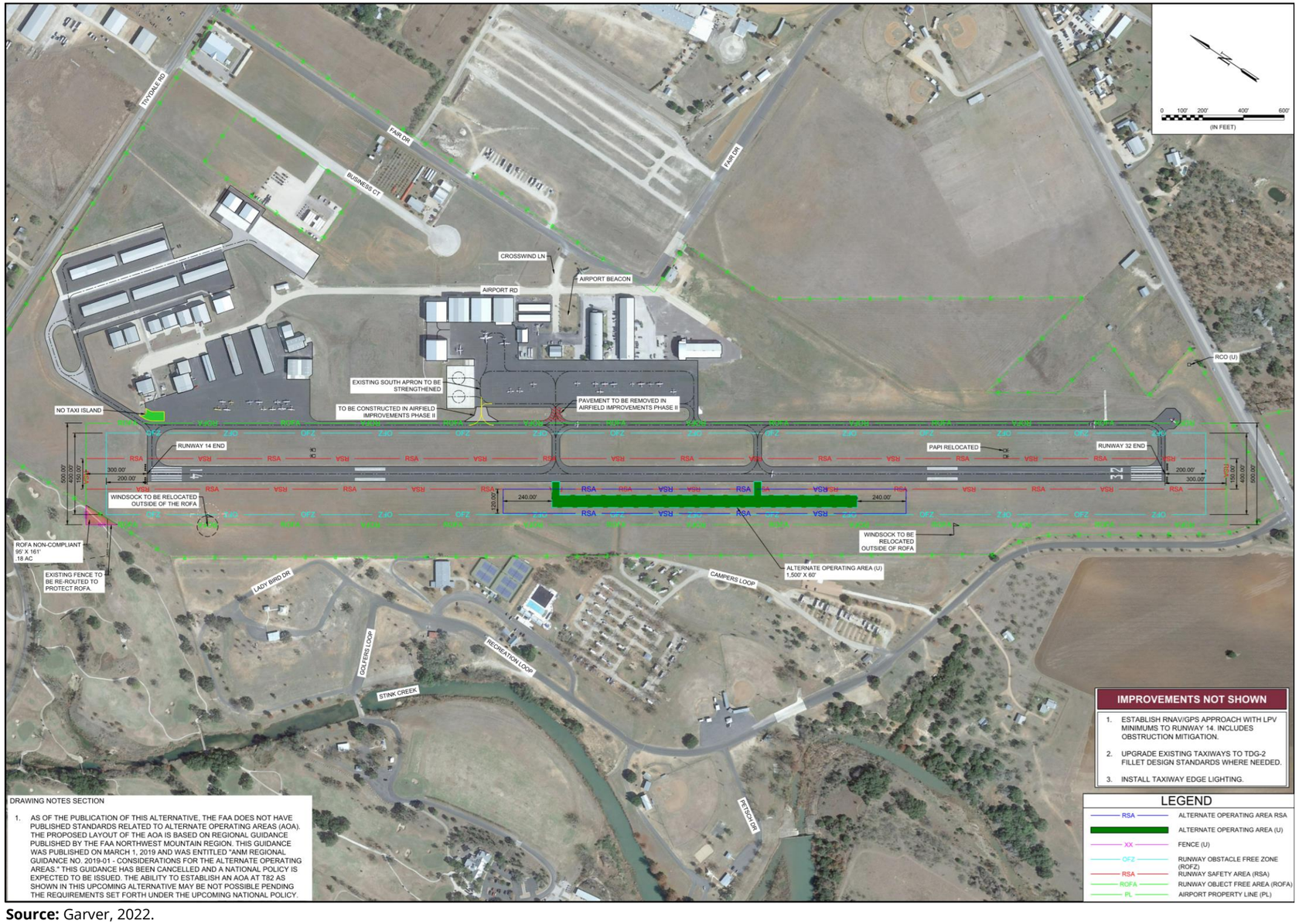
Airside Alternative #2 is shown in **Figure 5-2**.

## *PREFERRED AIRFIELD ALTERNATIVE*

Since both alternatives are very similar, there was little distinction between the alternatives relevant to the evaluation criteria. Both alternatives propose the same developments except when it comes to the AOA. Alternative #2 allows for better ingress/egress for aircraft using the AOA since the ends of the AOA are equidistant from Taxiway B and C. Alternative #1 could increase potential runway occupancy times because of its alignment. As a result, Alternative #2 was selected as the preferred airside development alternative for T82.

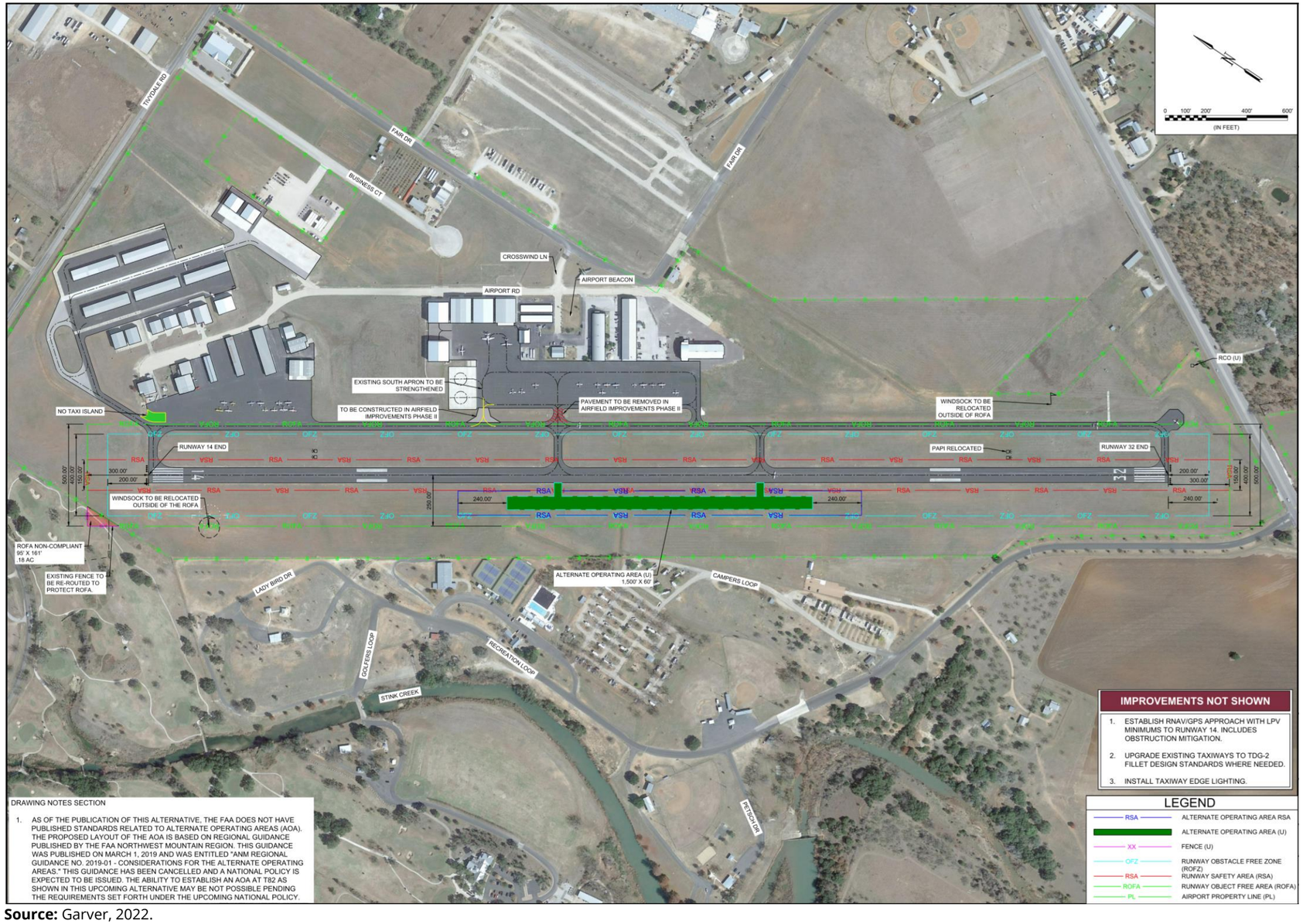
Gillespie County intends to pursue a MOS related to the fence that penetrates the ROFA at the approach end of Runway 14.

**FIGURE 5-1**
**AIRSIDE ALTERNATIVE #1**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

**FIGURE 5-2**
**AIRSIDE ALTERNATIVE #2**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

# TERMINAL/LANDSIDE DEVELOPMENT CONCEPTS

With the framework of the Airport's ultimate airside development plan identified, concepts involving the placement of terminal/landside facilities were prepared and analyzed. The overall objective of terminal/landside development is to identify and illustrate the highest and best use of existing land holdings and surrounding land for new development or redevelopment.

The primary objectives that were considered during the development of the terminal/landside alternatives were:

- Strengthen the South Apron (addressed in airside alternatives)
- Additional box and T-hangar space will be needed
- Apron space will be needed to support hangars and itinerant aircraft activity
- Dedicated apron space should be allocated for future helicopter/eVTOL operations
- Additional FBO terminal space will be needed
- An additional 12,000-gallon Jet-A AST is needed to support demand
- Additional fuel trucks and truck parking is needed
- Additional vehicle parking space will be needed
- Vehicle parking for FBO should be increased
- Separate construction/maintenance access should be added

These items were identified and discussed in-depth in the Facility Requirements Chapter.

The Terminal/Landside alternatives are segmented into four properties. The Northern, Midfield, Southern, and Existing Terminal development areas. Two alternatives were developed for the Northern area. Five alternatives were developed for the Midfield area. The Southern development area had four alternatives. The Existing Terminal development area had three alternatives.

## NORTHERN DEVELOPMENT AREA ALTERNATIVES

The following northern development area alternatives were established based on the development objectives:

- **Alternative #1**
  - 4 – 10 bay nested T-hangars
  - 1 – 8 bay nested T-hangar
  - 1 – 6 bay nested T-hangar
  - Develop vehicle parking on the northwestern and southeastern portions of the proposed area
  - Improve the existing concrete drainage area

  Northern Development Area – Alternative #1 is shown in **Figure 5-3**.

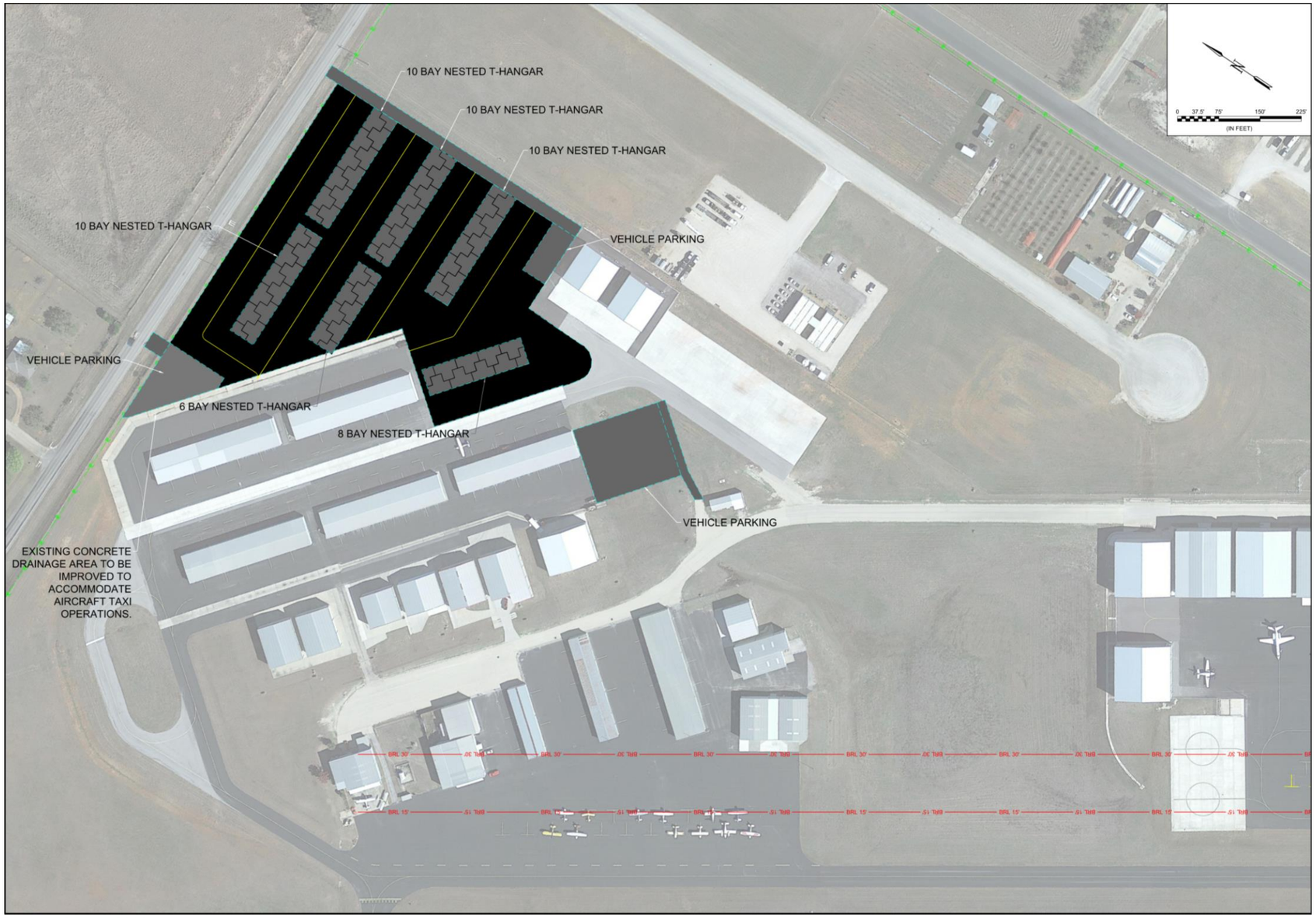
- **Alternative #2**
  - 3 – 10 bay nested T-hangars
  - 2 – 8 bay nested T-hangars
  - 2 – 4 bay common wall small box hangars
  - Develop vehicle parking on the northwestern and southeastern portions of the proposed area
  - Improve the existing concrete drainage area

  Northern Development Area – Alternative #2 is shown in **Figure 5-4.**

## PREFERRED TERMINAL/LANDSIDE NORTHERN DEVELOPMENT ALTERNATIVE

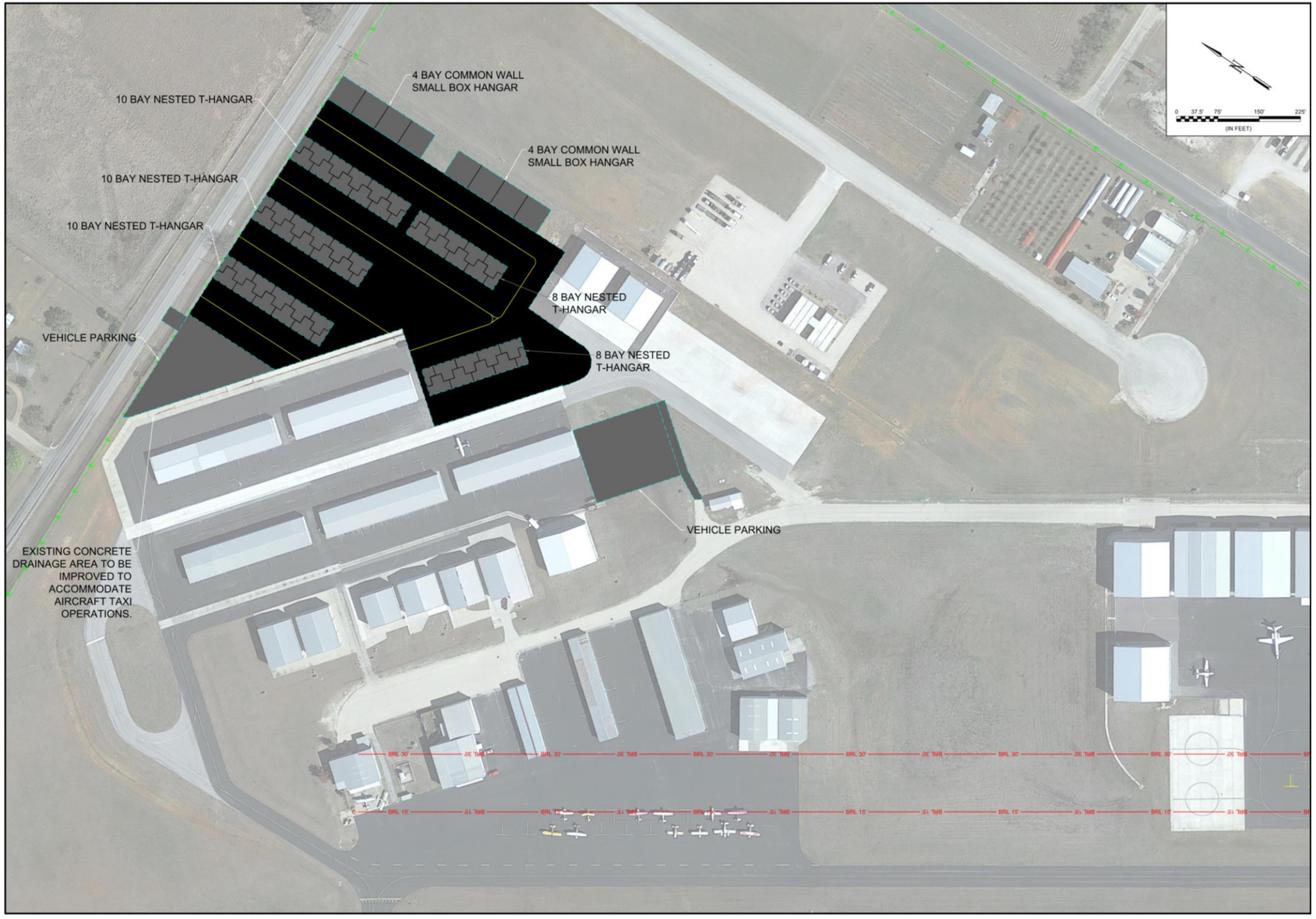
Since both alternatives are very similar, there was little distinction between the alternatives relevant to the evaluation criteria. Alternative #2 is the preferred alternative for the Northern Development Area. Both alternatives propose the addition of 54 hangars but Alternative #2 includes eight common wall small box hangars. The small common wall box hangars are desirable for potential tenants seeking hangar space that is larger than a T-hangar.

**FIGURE 5-3**
**TERMINAL/LANDSIDE NORTHERN DEVELOPMENT AREA – ALTERNATIVE #1**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

**FIGURE 5-4**
**TERMINAL/LANDSIDE NOTHERN DEVELOPMENT AREA - ALTERNATIVE #2**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

## *MIDFIELD DEVELOPMENT AREA ALTERNATIVES*

The following midfield development area alternatives were established based on the development objectives:

- **Alternative #1**
  - 4 – 100-feet x 100-feet box hangars
  - 2 – 110-feet x 110-feet box hangars
  - 2 helipads/vertiports
  - Vehicle parking
  - Vehicle access
  - Taxilane relocation to accommodate ADG II operations

  Midfield Development Area – Alternative #1 is shown in **Figure 5-5**.

- **Alternative #2**
  - 2 – 100-feet x 100-feet box hangars
  - 2 – 110-feet x 110-feet box hangars
  - 1 – 150-feet x 100-feet box hangar
  - 2 helipads/vertiports
  - Vehicle parking
  - Vehicle access
  - Taxilane relocation to accommodate ADG II operations

  Midfield Development Area – Alternative #2 is shown in **Figure 5-6.**

- **Alternative #3**
  - 4 – 100-feet x 100-feet box hangars
  - 2 – 110-feet x 110-feet box hangars
  - 2 helipads/vertiports
  - Vehicle parking
  - Vehicle access
  - Taxilane relocation to accommodate ADG II operations

  Midfield Development Area – Alternative #3 is shown in **Figure 5-7.**

- **Alternative #4**
  - 4 – 100-feet x 100-feet box hangars
  - 2 – 110-feet x 110-feet box hangars
  - 2 helipads/vertiports
  - Vehicle parking
  - Vehicle access
  - Taxilane relocation to accommodate ADG II operations

  Midfield Development Area – Alternative #4 is shown in **Figure 5-8.**

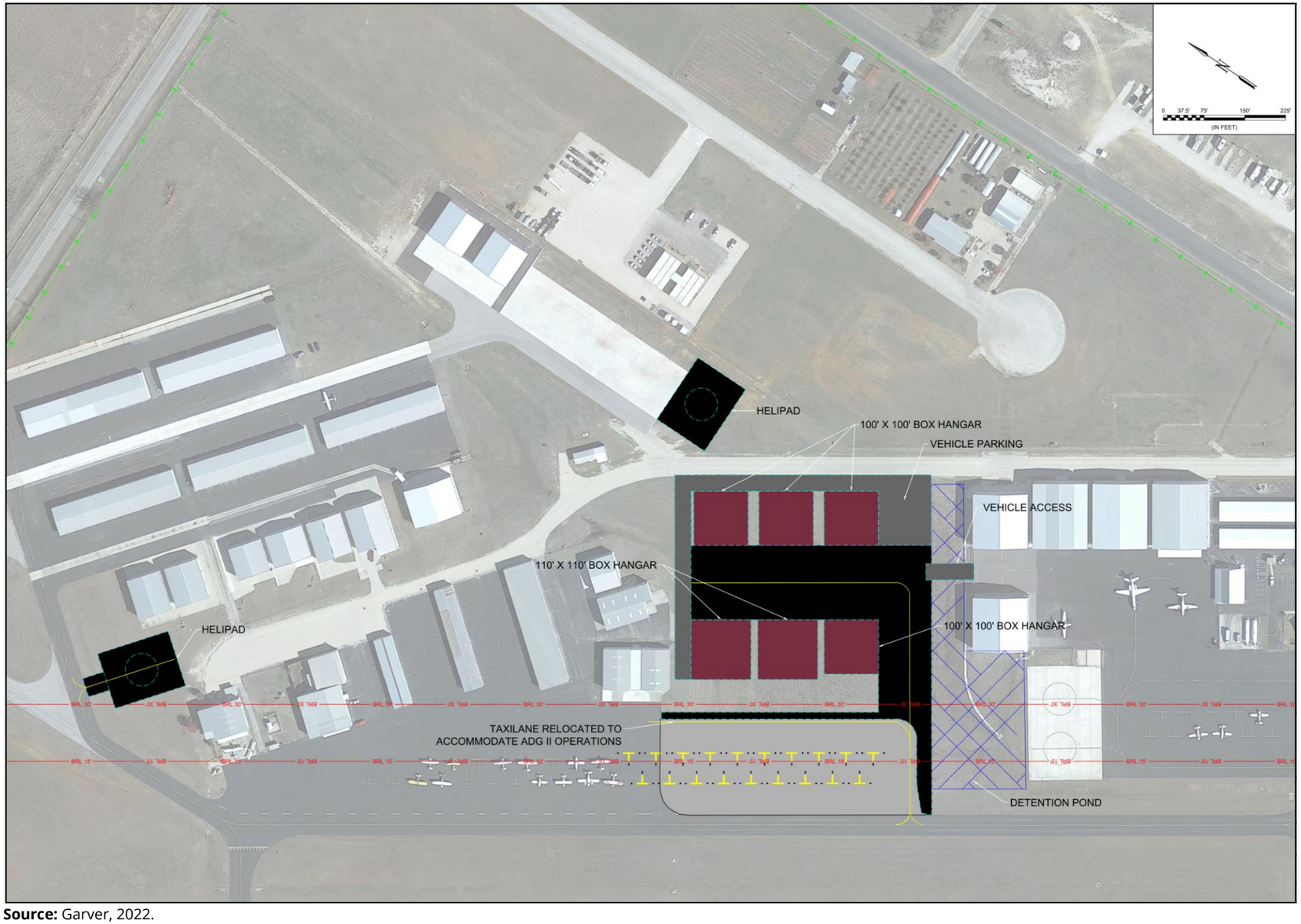
- **Alternative #5**
  - 5 – 100-feet x 100-feet box hangars
  - 2 – 110-feet x 110-feet box hangars
  - 1 – 120-feet x 100-feet box hangar
  - 1 helipad/vertiport
  - Vehicle parking
  - Vehicle access
  - Taxilane spacing to accommodate ADG III operations

  Midfield Development Area – Alternative #5 is shown in **Figure 5-9.**

## *PREFERRED TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT ALTERNATIVE*

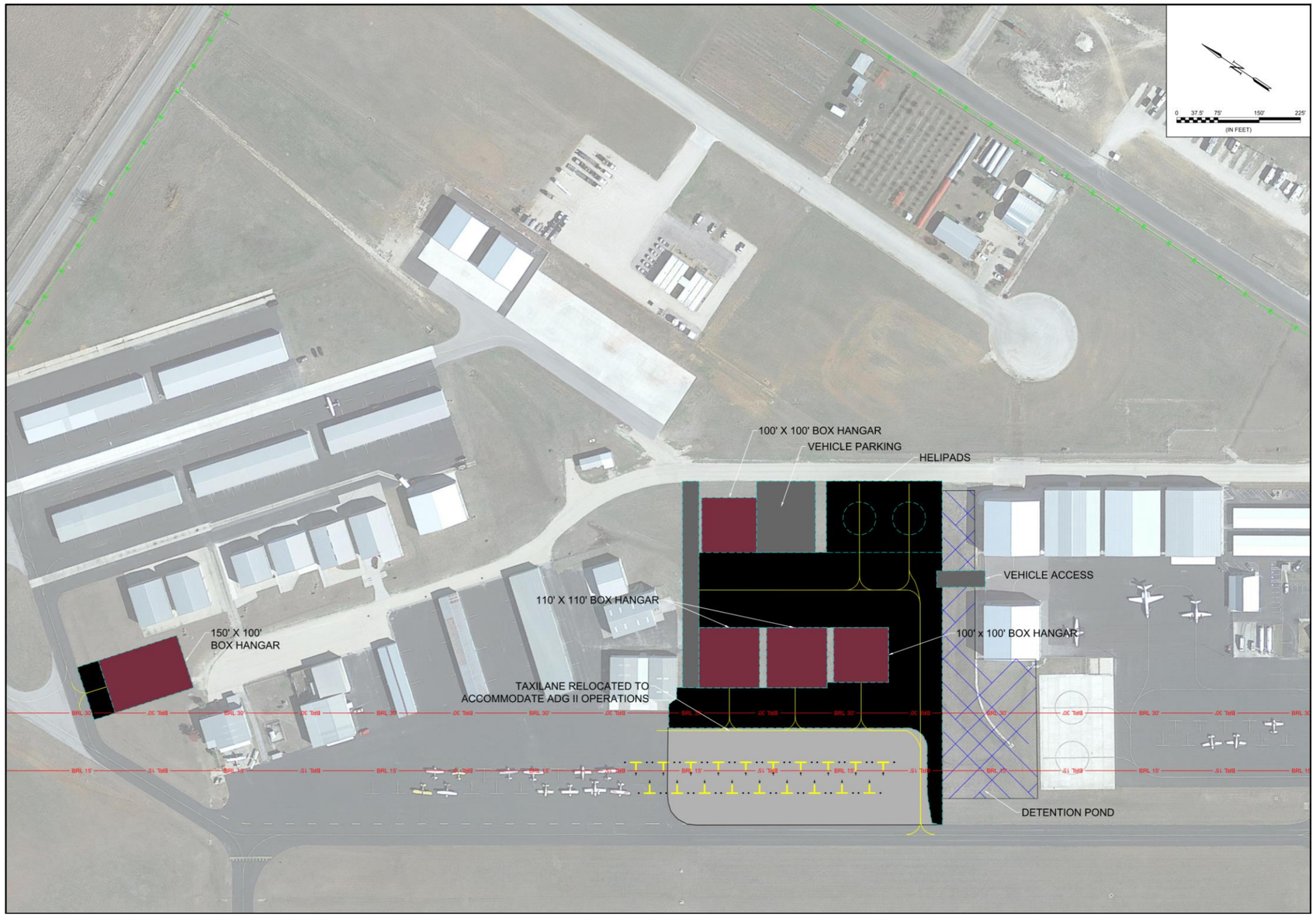
Alternative #5 is the preferred alternative for the Midfield Development Area. This alternative provides the most hangar space of any alternative and requires less apron development than most others. Alternative #5 also accommodates the potential for ADG III aircraft. With this alternative, there will be some loss of tie-downs to facilitate ADG III traffic on the parallel taxiway and to ingress/egress from the hangar development.

**FIGURE 5-5**
**TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT- ALTERNATIVE #1**
**GILLESPIE COUNTY AIRPORT**



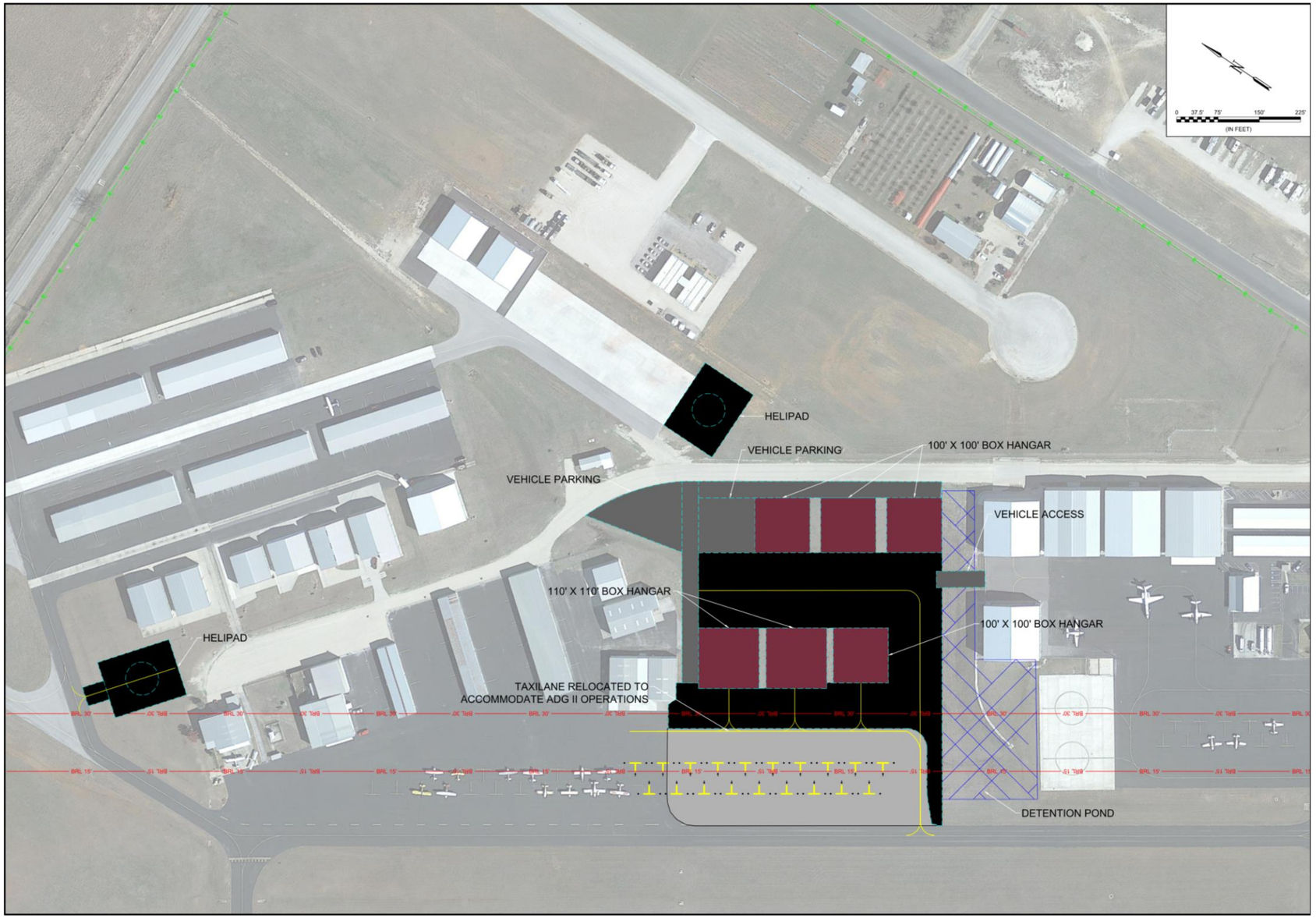

**Source:** Garver, 2022.

**FIGURE 5-6**
**TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT AREA – ALTERNATIVE #2**
**GILLESPIE COUNTY AIRPORT**



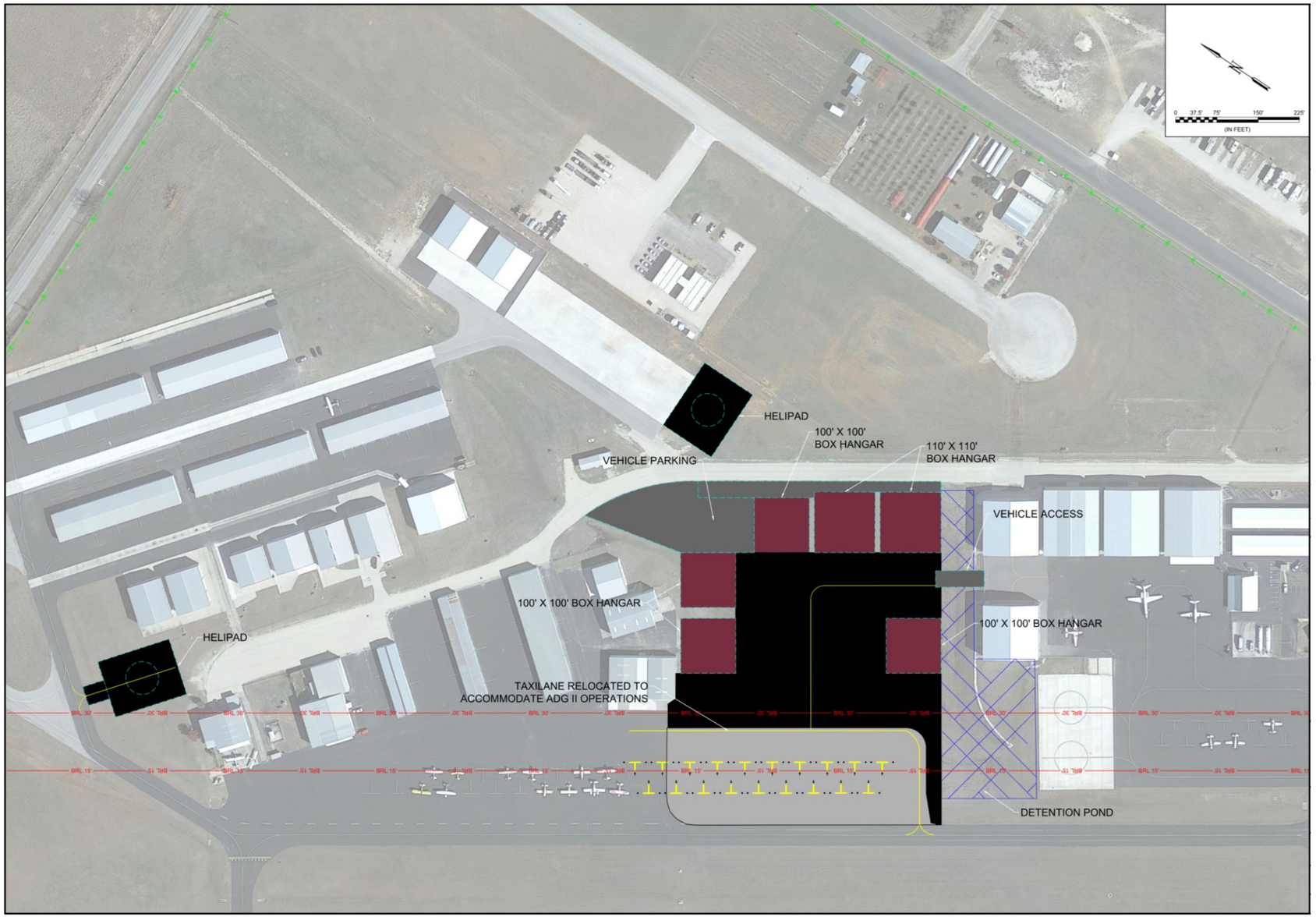

**Source:** Garver, 2022.

**FIGURE 5-7**
**TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT AREA – ALTERNATIVE #3**
**GILLESPIE COUNTY AIRPORT**



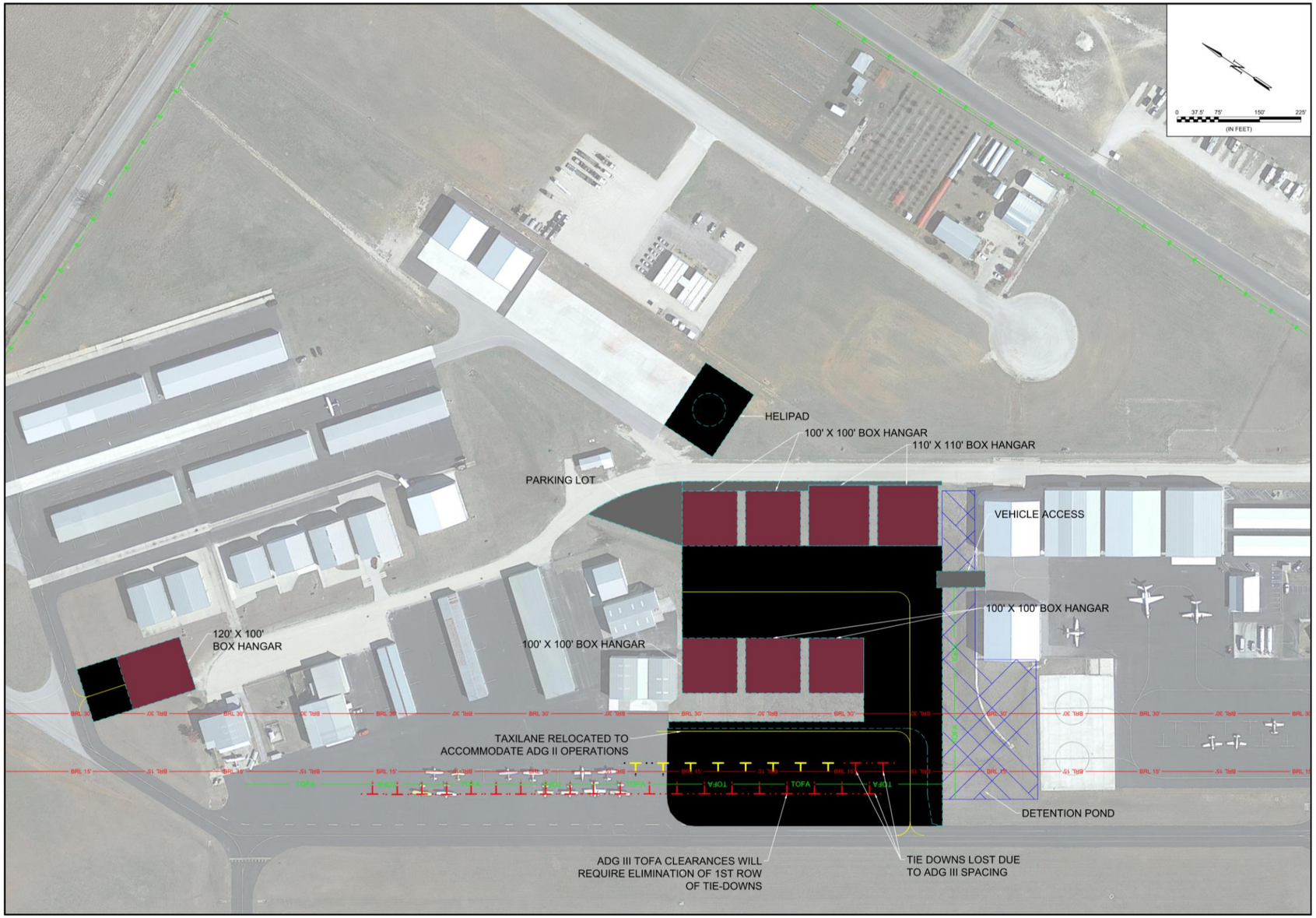

**Source:** Garver, 2022.

**FIGURE 5-8**
**TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT AREA – ALTERNATIVE #4**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

**FIGURE 5-9**
**TERMINAL/LANDSIDE MIDFIELD DEVELOPMENT AREA – ALTERNATIVE #5**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

## SOUTHERN DEVELOPMENT AREA ALTERNATIVES

The following southern development area alternatives were established based on the development objectives:

- **Alternative #1**
  - 2 – 100-feet x 100-feet hangars
  - 1 – 150-feet x 150-feet hangar
  - 1 – 150-feet x 200-feet hangar
  - 5 – 10 bay nested T-hangars
  - 1 – 7 bay nested T-hangars
  - Tie-downs
  - Vehicle parking
  - Drainage ravine to be rerouted and encased

  Southern Development Area – Alternative #1 is shown in **Figure 5-10.**

- **Alternative #2**
  - 17 – 100-feet x 100-feet box hangars
  - 1 – 100-feet x 300-feet box hangar
  - 10 tie-downs
  - Vehicle parking
  - Drainage ravine to be rerouted and encased

  Southern Development Area – Alternative #2 is shown in **Figure 5-11.**

- **Alternative #3**
  - 5 – 80-feet x 80-feet box hangars
  - 1 – 12 bay nested T-hangar
  - 1 – 11 bay nested T-hangar
  - 1 – 9 bay nested T-hangar
  - 1 – 8 bay nested T-hangar
  - 2 – 7 bay nested T-hangar
  - 1 – 6 bay nested T-hangar
  - 18 tie-downs
  - Vehicle parking
  - Existing drainage ravine remains in place

Southern Development Area – Alternative #3 is shown in **Figure 5-12.**

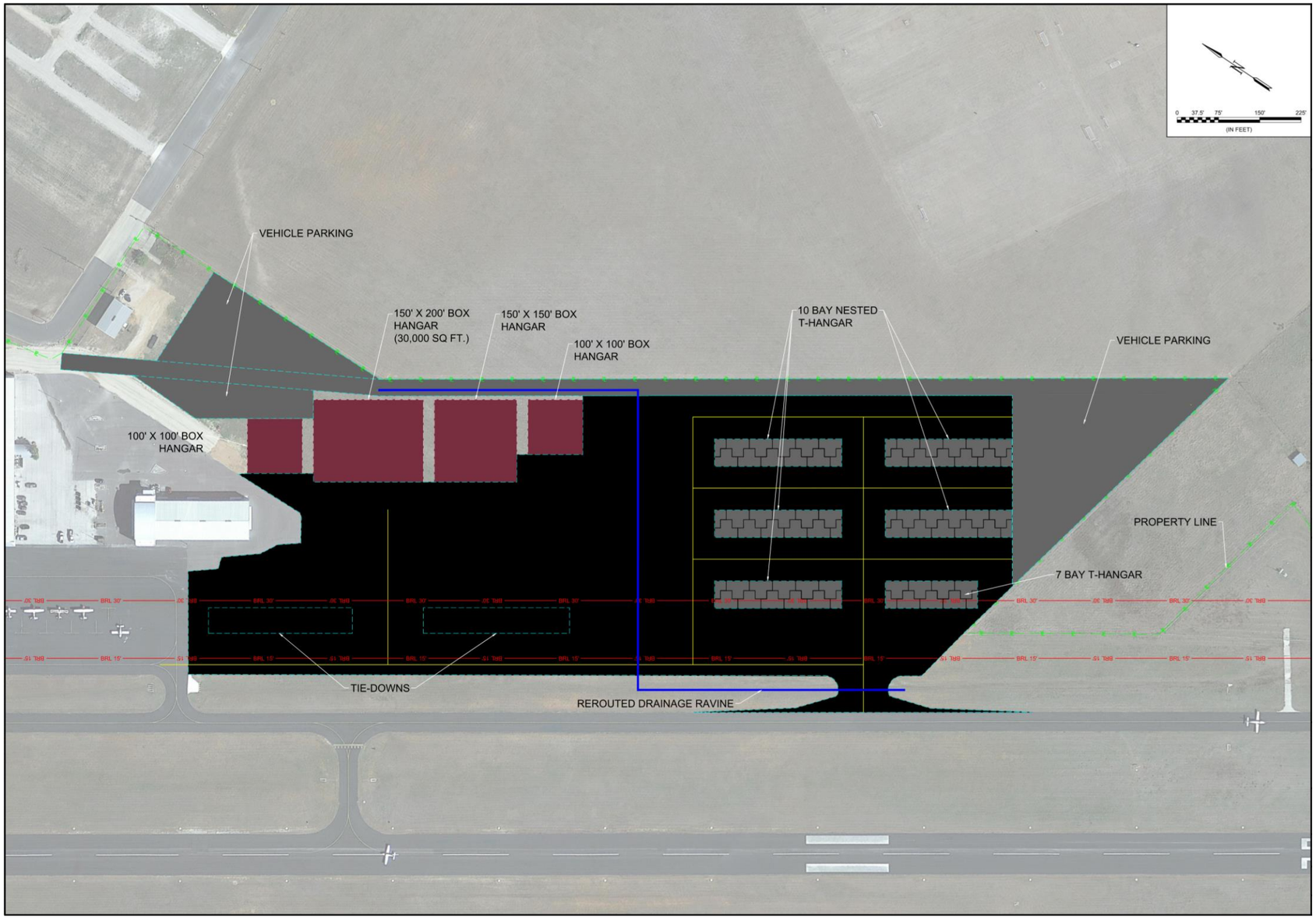
- **Alternative #4**
  - 6 – 100-feet x 100-feet box hangars
  - 5 – 80-feet x 80-feet box hangars
  - 24 tie-downs
  - Vehicle parking
  - Existing drainage ravine remains in place

Southern Development Area – Alternative #4 is shown in **Figure 5-13.**

## *PREFERRED TERMINAL/LANDSIDE SOUTHERN DEVELOPMENT ALTERNATIVE*

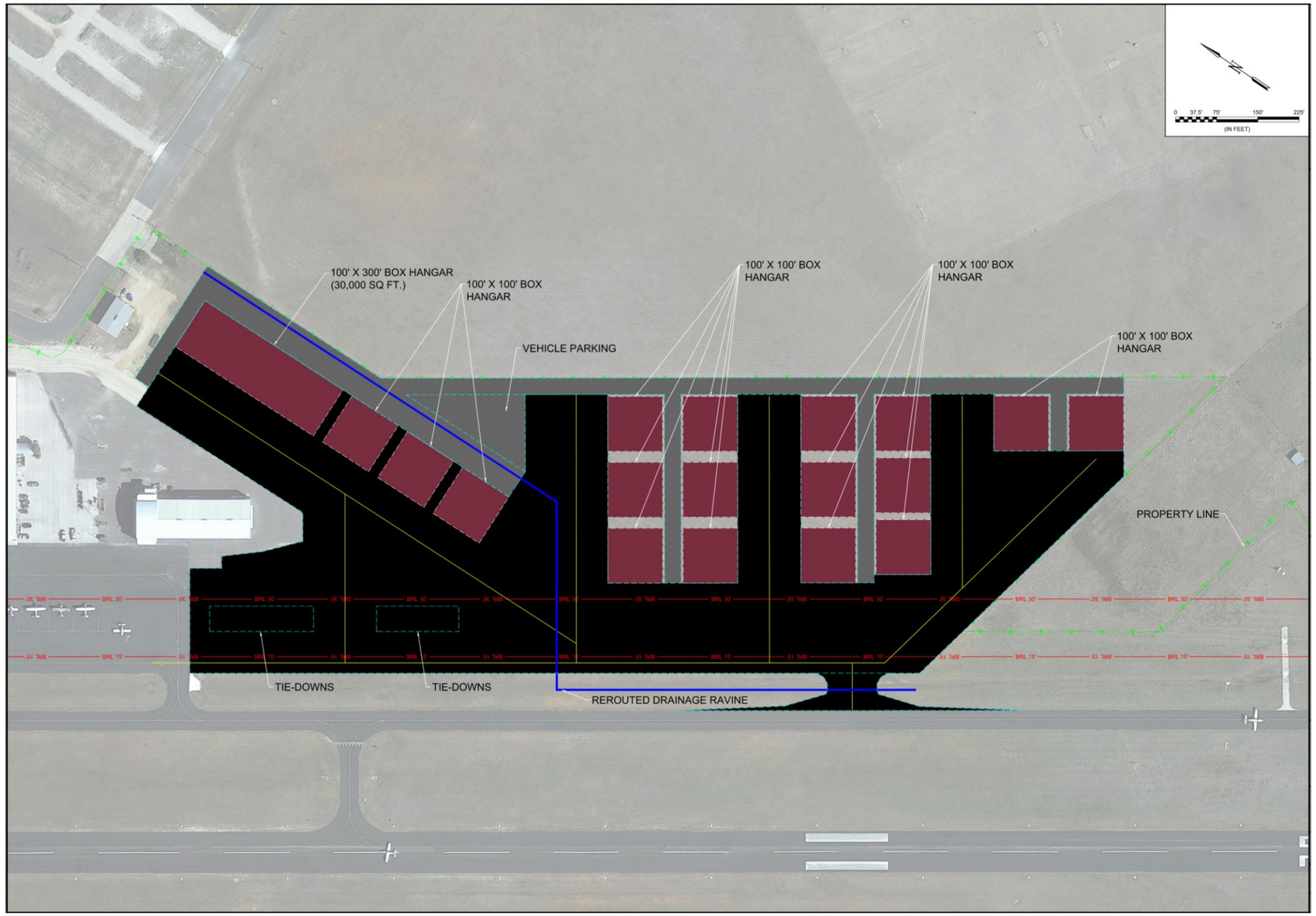
Alternative #2 is the preferred alternative for the Southern Development Area. While this alternative is expected to be the most expensive, it maximizes the limited land holding available for development.

**FIGURE 5-10**
**TERMINAL/LANDSIDE SOUTHERN DEVELOPMENT AREA – ALTERNATIVE #1**
**GILLESPIE COUNTY AIRPORT**



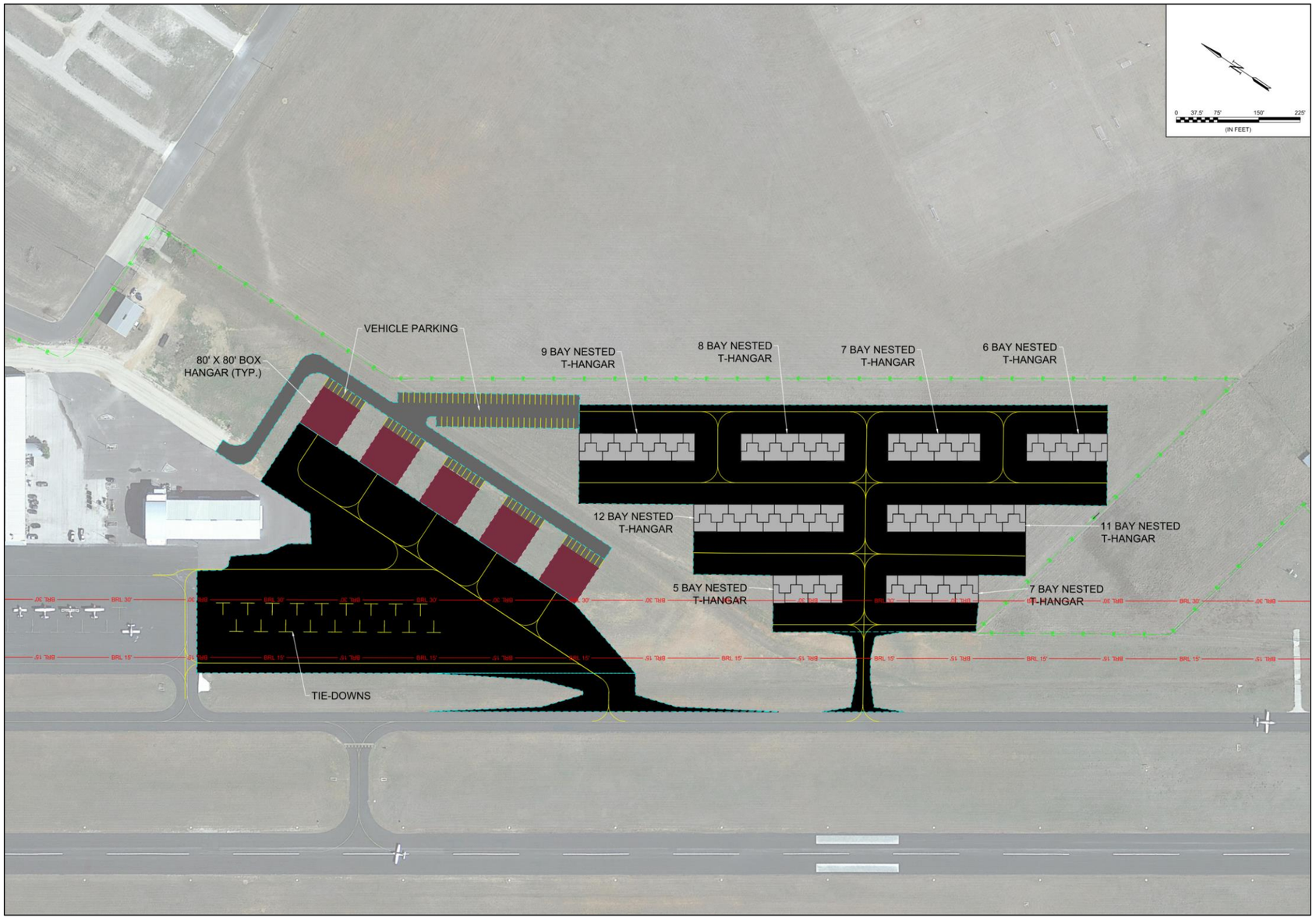

**Source:** Garver, 2022.

**FIGURE 5-11**
**TERMINAL/LANDSIDE SOUTHERN DEVELOPMENT AREA – ALTERNATIVE #2**
**GILLESPIE COUNTY AIRPORT**



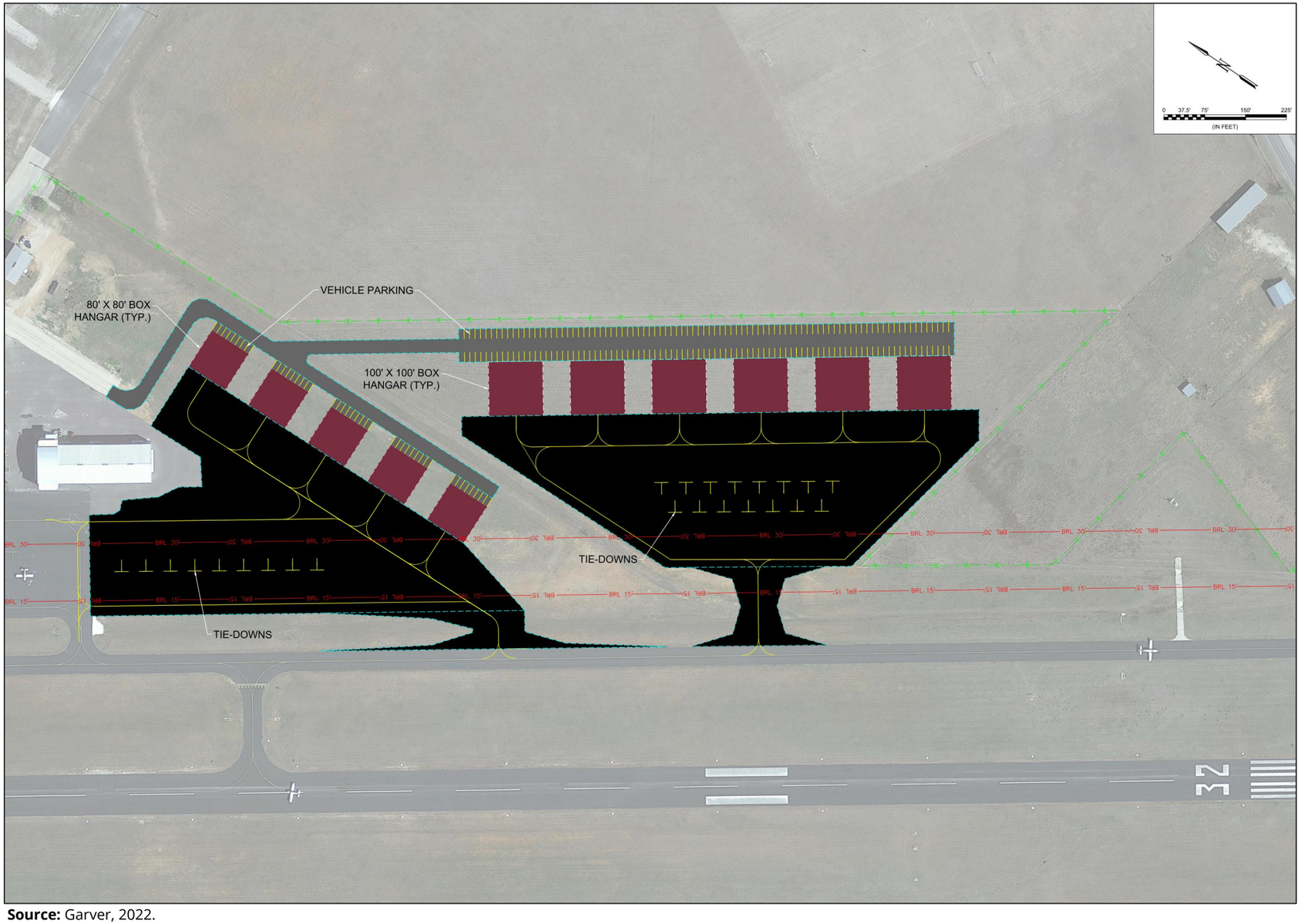

**Source:** Garver, 2022.

**FIGURE 5-12**
**TERMINAL/LANDSIDE SOUTHERN DEVELOPMENT AREA – ALTERNATIVE #3**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

**FIGURE 5-13**
**TERMINAL/LANDSIDE SOUTHERN DEVELOPMENT AREA – ALTERNATIVE #4**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

## EXISTING TERMINAL DEVELOPMENT AREA

The following existing terminal development area alternatives were established based on the development objectives:

- **Alternative #1**
  - Airport terminal building expansion
    - Approximately 2,000 square feet with some vertical expansion
  - FBO terminal building expansion
    - Approximately 4,000 square feet with some vertical expansion
  - Additional fuel truck parking
  - Replacement of a 100LL tank
    - Replaced with a Jet-A tank
    - 100LL tank expected to be relocated to be adjacent to the northern self-service 100LL fuel farm
  - Additional vehicle parking

  Existing Terminal Development Area – Alternative #1 is shown in **Figure 5-14.**

- **Alternative #2**
  - Airport terminal building expansion
    - Approximately 2,000 square feet with all horizontal expansion
  - FBO terminal building expansion
    - Approximately 4,000 square feet with all horizontal expansion
  - Relocation of the airport beacon
  - Additional fuel truck parking
  - Replacement of a 100LL tank
    - Replaced with a Jet-A tank
    - 100LL tank expected to be relocated to be adjacent to the northern self-service 100LL fuel far
  - Additional vehicle parking

  Existing Terminal Development Area – Alternative #2 is shown in **Figure 5-15.**

- **Alternative #3**
  - Airport terminal building expansion
    - Approximately 2,000 to 3,000 square feet with all vertical expansion
  - FBO terminal building expansion
    - Approximately 4,000 square feet with all horizontal expansion
  - Relocation of the airport beacon
  - Additional fuel truck parking

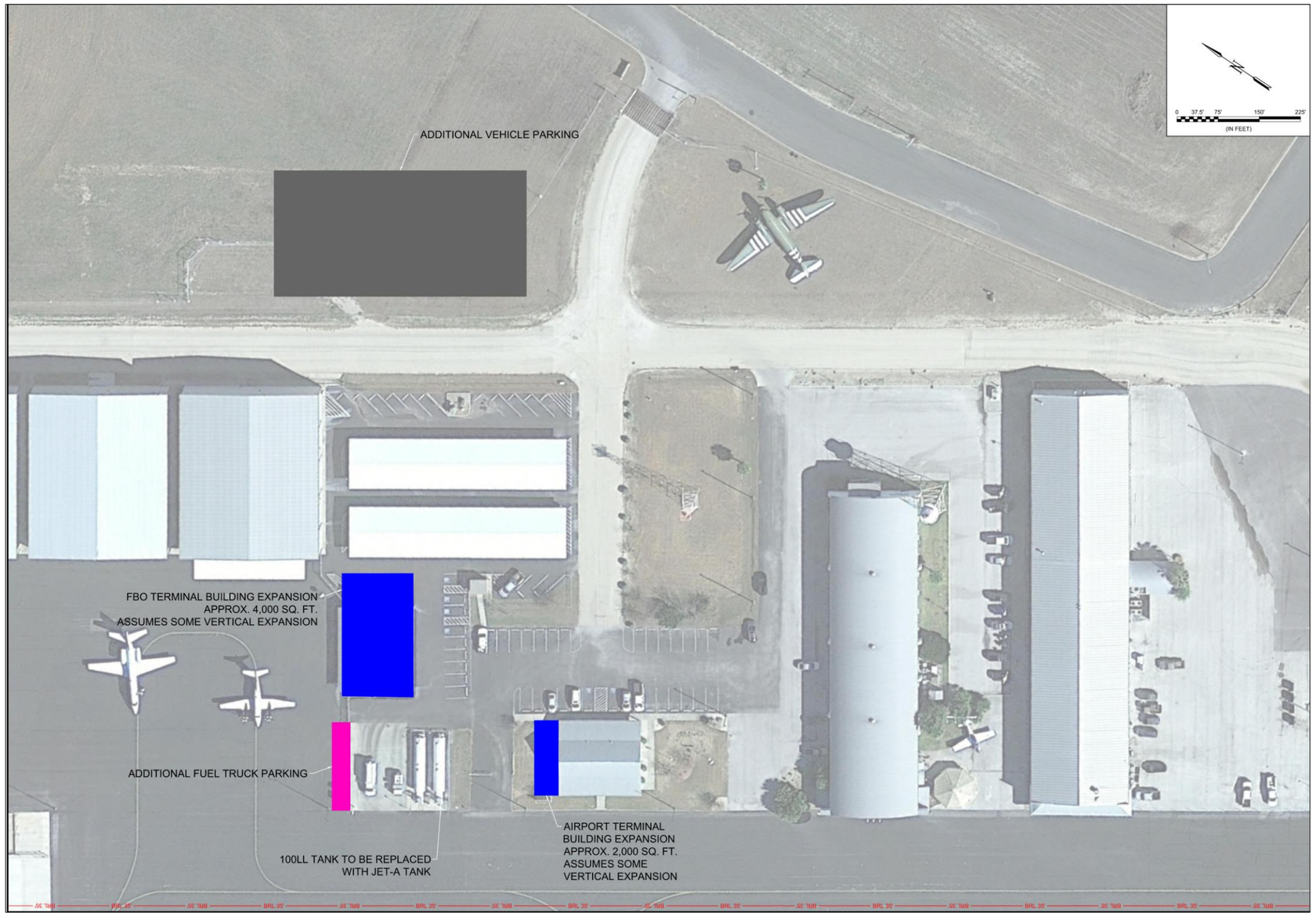
- Replacement of a 100LL tank
  - Replaced with a Jet-A tank
  - 100LL tank expected to be relocated to be adjacent to the northern self-service 100LL fuel farm
- Additional vehicle parking

Existing Terminal Development Area – Alternative #3 is shown in **Figure 5-16.**

## *PREFERRED EXISTING TERMINAL DEVELOPMENT ALTERNATIVE*

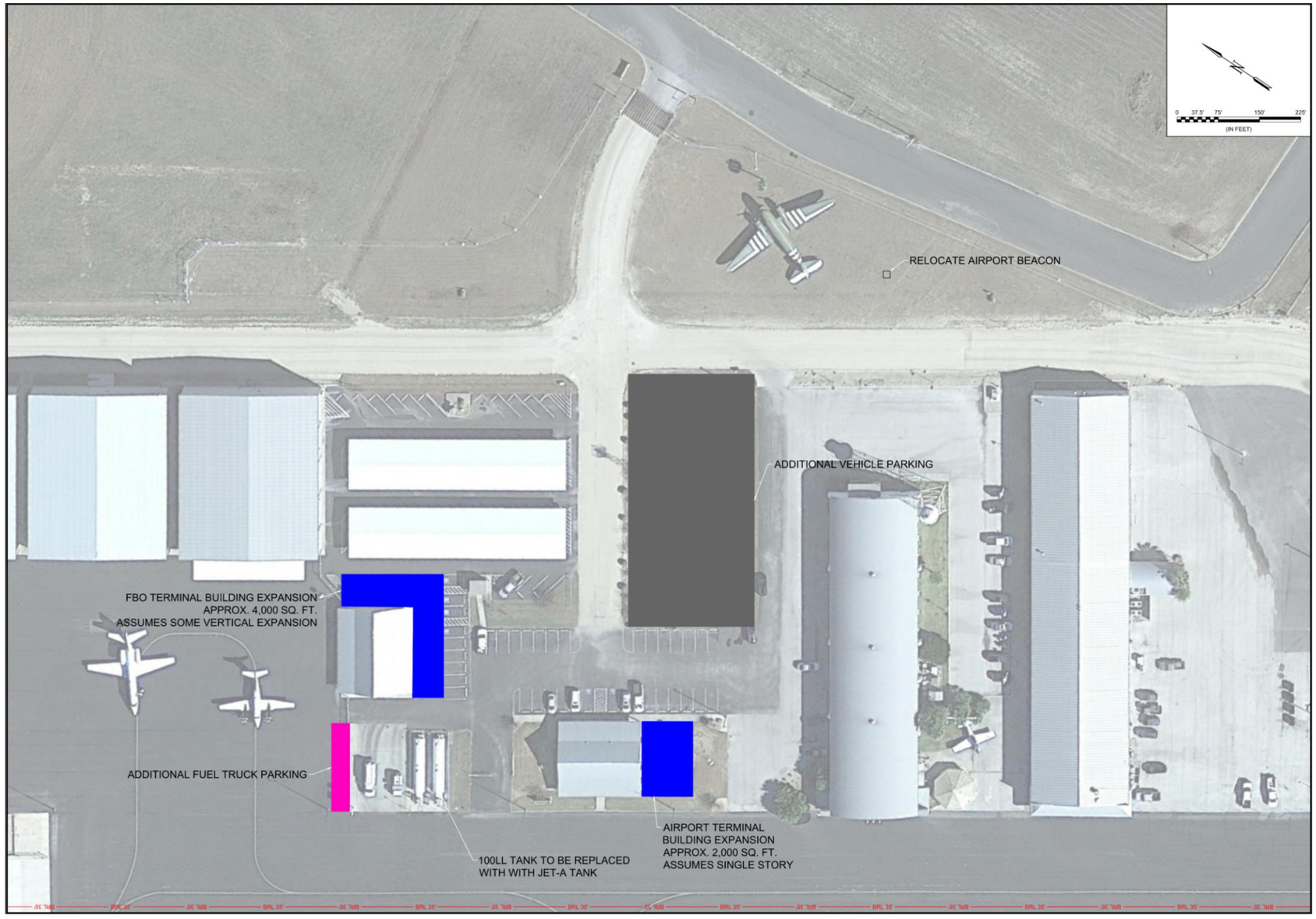
Alternative #1 is the preferred alternative for the Existing Terminal Development Area. Alternative #1 allows for expansion of the terminal building with the least impact on the remaining green space in the area. The FBO terminal is constrained for space as well and expanding vertically is the best solution. This alternative also places the additional parking in a spot that does not require the airport beacon to be moved to a new location and maintains more green space in the area adjacent the hotel and terminal building.

**FIGURE 5-14**
**TERMINAL/LANDSIDE EXISTING TERMINAL DEVELOPMENT AREA – ALTERNATIVE #1**
**GILLESPIE COUNTY AIRPORT**



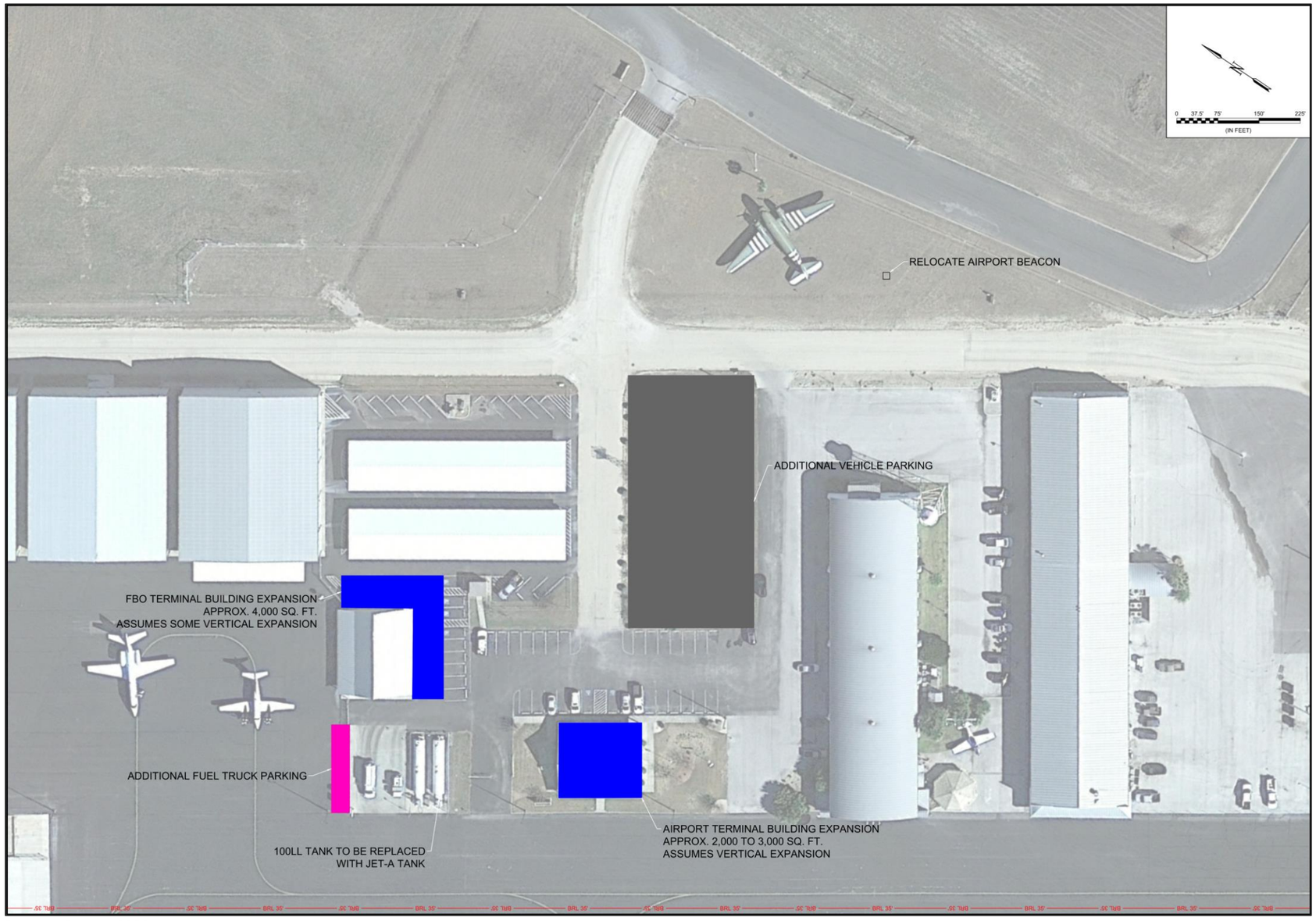

**Source:** Garver, 2022.

**FIGURE 5-15**
**TERMINAL/LANDSIDE EXISTING TERMINAL DEVELOPMENT AREA – ALTERNATIVE #2**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

**FIGURE 5-16**
**TERMINAL/LANDSIDE EXISTING TERMINAL DEVELOPMENT AREA – ALTERNATIVE #3**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

# PREFERRED DEVELOPMENT CONCEPT – ENVIRONMENTAL OVERVIEW

The preferred development concepts as outlined in **Figures 5-1** (preferred airside), **5-4** (preferred terminal/landside – Northern Development), **5-9** (preferred terminal/landside – Midfield Development), **5-11** (preferred terminal/landside – Southern Development), and **5-14** (preferred terminal/landside – Existing Terminal Development) have been reviewed to identify as early as possible any potential environmental issues. FAA orders and SOPs related to environmental clearances were used to conduct the analysis described below.

The environmental resources evaluated are grouped into the following three categories: 1) No Impact or Minor/Temporary Impact, 2) Moderate Impacts, and 3) Moderate/High Impact potential.

## *NO IMPACT OR MINOR/TEMPORARY*

- Air Quality – Temporary impacts during construction are expected. An air emissions inventory may be required by the Texas Commission on Environmental Quality (TCEQ) and, if necessary, will be completed as part of the preliminary engineering/design processes prior to construction activities taking place.
- Coastal Barriers & Coastal Zone Barriers – The coast is approximately 175 miles from the Airport; therefore, these resources are not affected.
- Department of Transportation Act, Section 4(f) – Lady Bird Johnson Municipal Park is located immediately adjacent to the Airport. However, since none of the preferred alternatives expand the Airport's footprint, no section 4(f) impacts are expected.
- Federally Listed Endangered and Threatened Species – There are no known protected species at the Airport. However, future coordination may be required with the U.S. Fish and Wildlife Service (USFWS) and the Texas Parks and Wildlife Department (TPWD) to confirm this as part of future projects.
- Energy Supplies, Natural Resources and Sustainable Design – The project is anticipated to have minimal impacts on the area's natural resources and energy supplies.
- Light Emissions and Visual Effects – The future development of T82 is not expected to have a significant impact on light emissions or other visual effects in the area.
- Historical and Archeological – No previously recorded historical or archeological sites were found to be located within the project area during a file search for cultural, historical, and archeological sites. The closest historical site that was

identified through an online query utilizing the National Archives Catalog website is located 2.6 miles north of the Airport.

- Wild and Scenic Rivers – There are no wild and scenic rivers in the project area.
- Hazardous Materials – There are no known hazardous materials sites in the area.
- Solid Waste – There are no known locations involved in the preferred development alternative where solid waste is present.
- Water Quality – Water quality is not expected to be impacted by the development. However, a more in-depth review will be necessary for specific development projects.
- Compatible Land Use – None of the area impacted by development is expected to have any land use compatibility issues.
- Induced Socioeconomic – Since all development will take place on existing airport property; minimal socioeconomic impacts are anticipated.
- Biotic Resources – No new impacts to biotic resources are anticipated, however additional review may be necessary prior to project design.
- Social Impacts – No social impacts are expected as part of the preferred development plan.
- Farmlands – Parts of existing T82 property are considered prime farmland or prime farmland if drained based on the USDA Natural Resource Conservation Service – Web Soil Survey. However, since these areas are already allocated for airport use there are no expected impacts to prime farmland.
- Environmental Justice – No direct impacts to businesses or residences are anticipated.
- Floodplains – No floodplains are located within current airport property or in the area to be acquired for development of the alternative.

## *MODERATE PROBABILITY FOR IMPACT*

- Noise – Residences located north of the Airport may experience elevated noise levels related to the development of hangars in the vicinity.
- Wetlands – According to the US Wetland Mapper, there are two freshwater ponds and two freshwater emergent wetland habitats potentially on airport property. These will need to be considered as part of future development

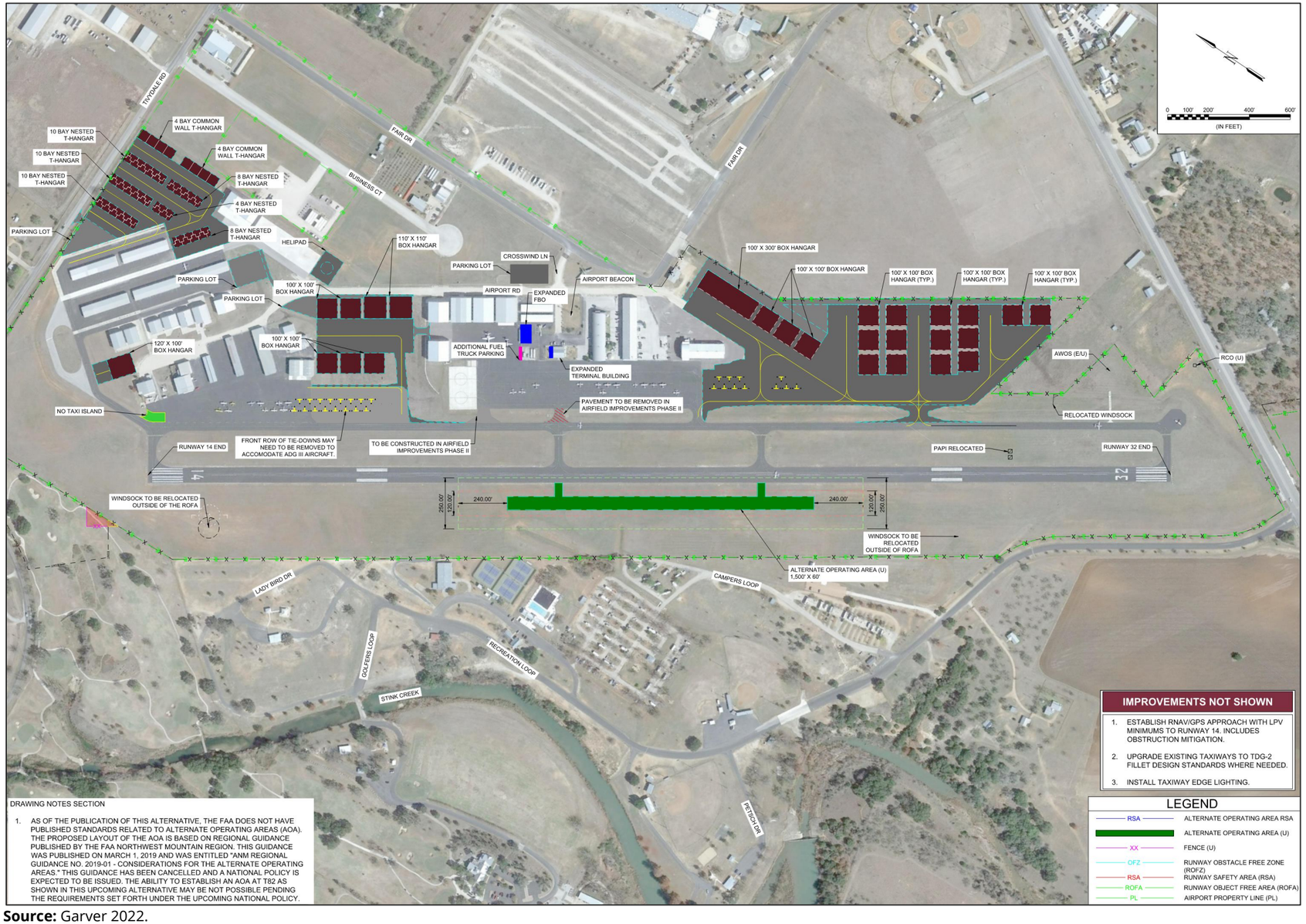
### *MODERATE TO HIGH POTENTIAL FOR IMPACT*

- ✈ None Anticipated.

A composite showing the combined preferred development alternative is shown in **Figure 5-17**.

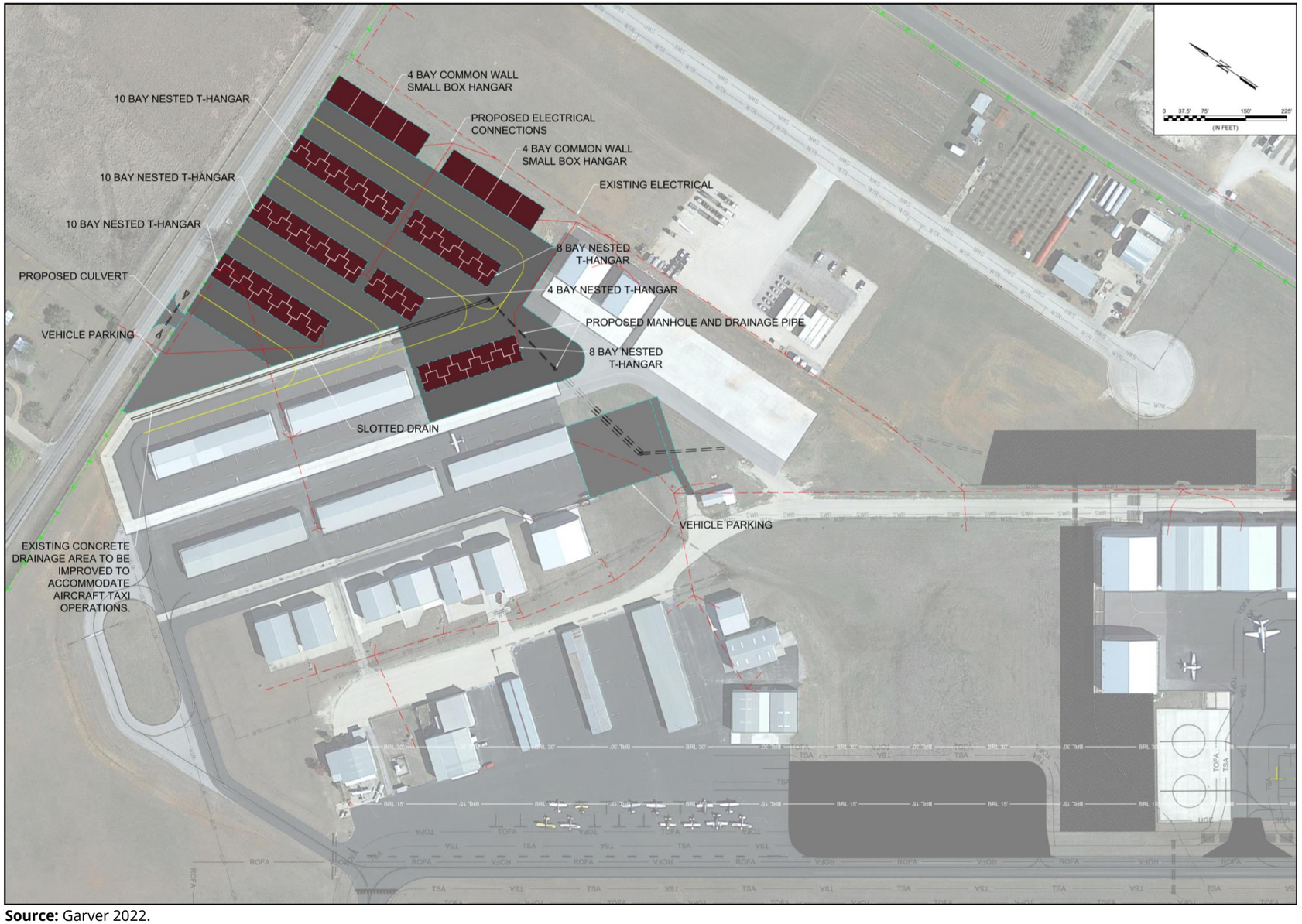
Additionally, more detailed drawings showing the proposed north, south, and midfield development areas are shown in **Figures 5-18 – 5-20.** These drawings show potential utility and drainage alignments. A new proposed maintenance entrance is shown in **Figure 5-20**. It should also be noted that Figure 5-18 adds a set of 4 nested T-hangars that were not originally shown in Figure 5-4.

**FIGURE 5-17**
**PREFERRED COMBINED ALTERNATIVE**
**GILLESPIE COUNTY AIRPORT**



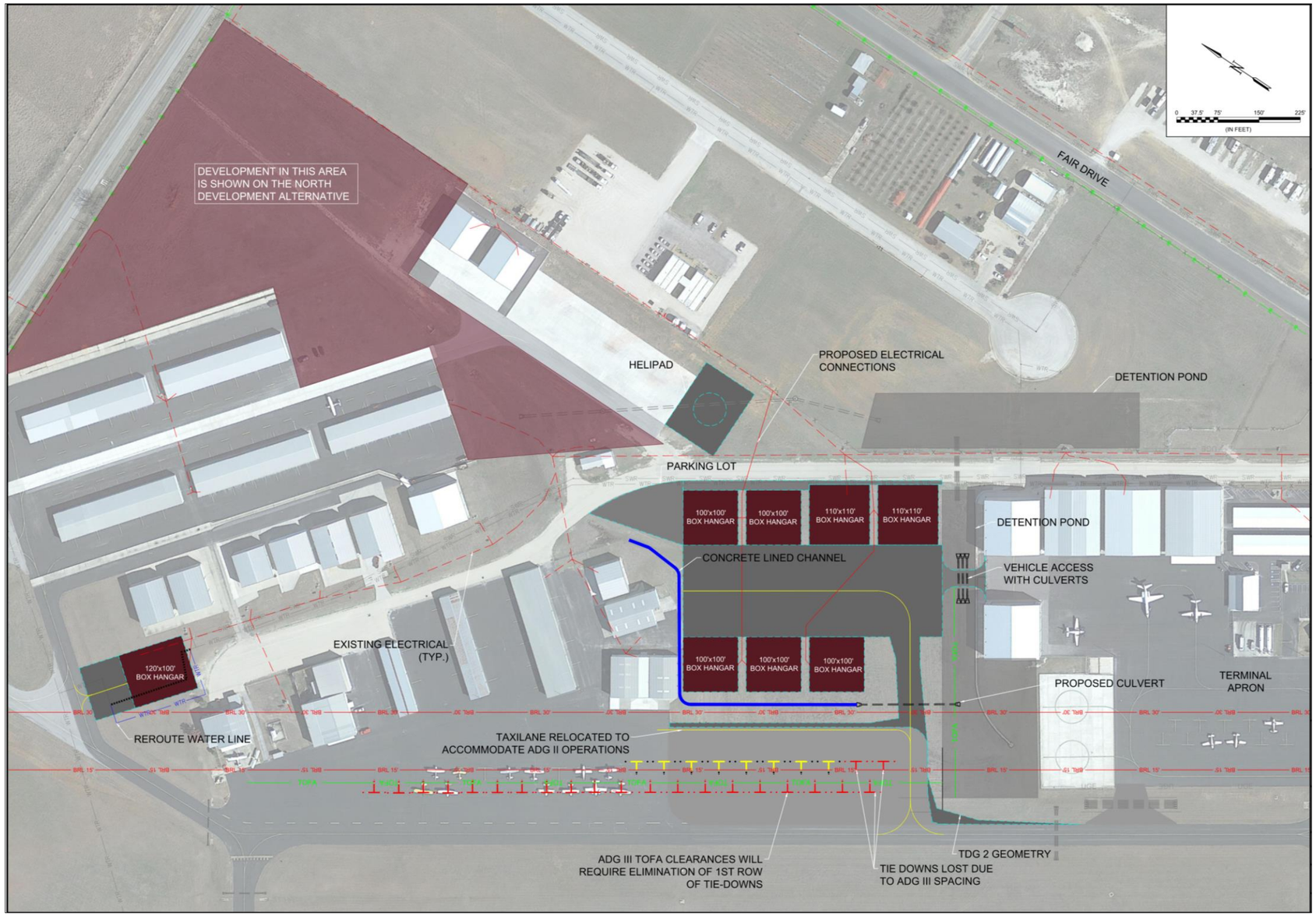

**Source:** Garver 2022.

**FIGURE 5-18**
**PREFERRED TERMINAL/LANDSIDE ALTERNATIVE – NORTHERN DEVELOPMENT AREA (UTILITIES)**
**GILLESPIE COUNTY AIRPORT**



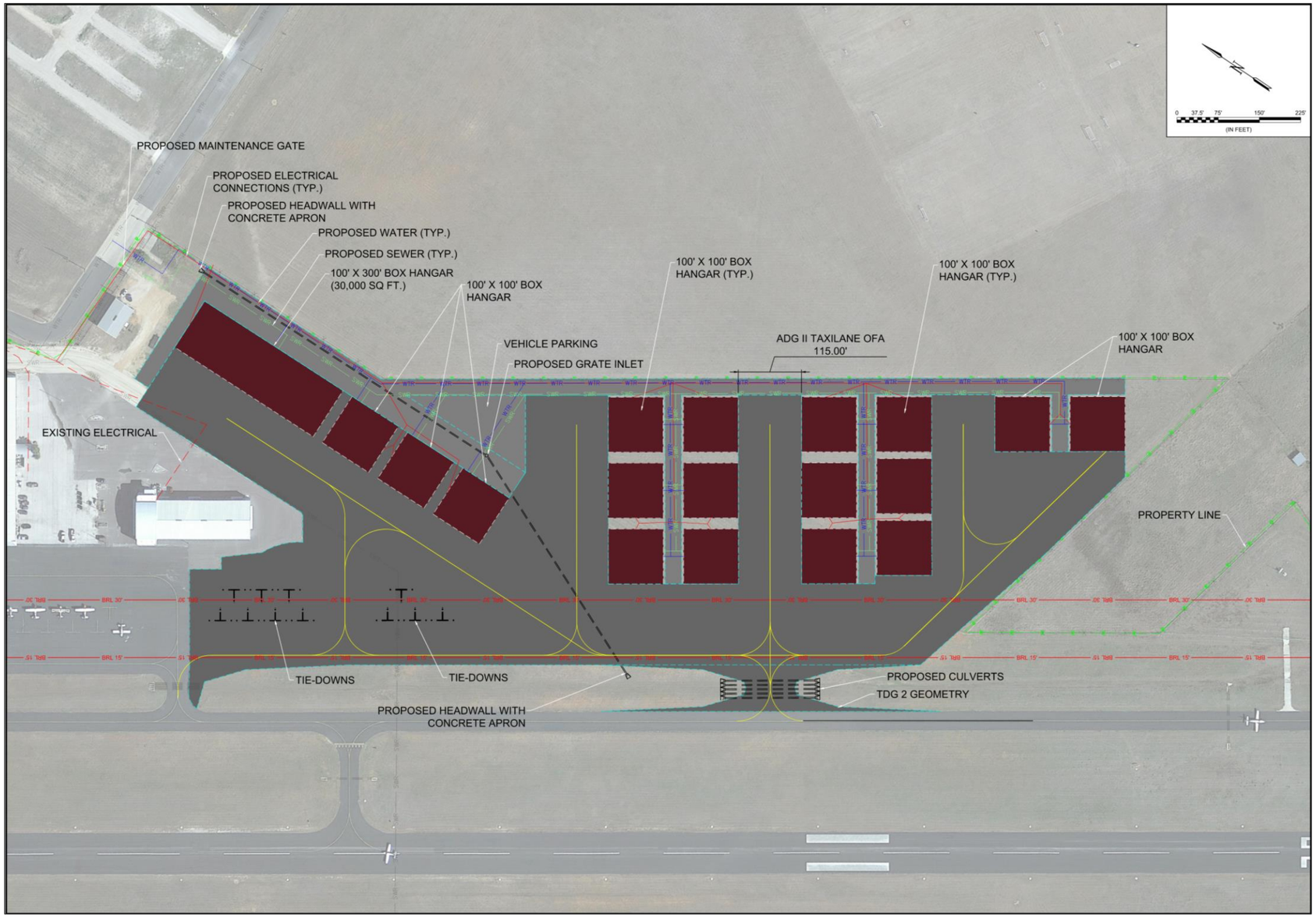

**Source:** Garver 2022.

**FIGURE 5-19**
**PREFERRED TERMINAL/LANDSIDE ALTERNATIVE – MIDFIELD DEVELOPMENT AREA (UTILITIES)**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver 2022.

**FIGURE 5-20**
**PREFERRED TERMINAL/LANDSIDE ALTERNATIVE – SOUTHERN DEVELOPMENT AREA (UTILITIES)**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver 2022.

CHAPTER 6

# Capital Improvement Program and Financial Plan

# CHAPTER 6: CAPITAL IMPROVEMENT PROGRAM AND FINANCIAL PLAN

The Capital Improvement Program (CIP) and Financial Plan Chapter breaks down the preferred development alternative into a series of capital projects for implementation and funding purposes. As a result, the chapter describes the phasing, planning level cost estimates, and trigger mechanisms associated with each capital project needed to achieve the preferred development concept and a proposed funding strategy for each project.

## CAPITAL FUNDING SOURCES

Airport capital projects can be funded by several sources. These sources include Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grants, Bi-Partisan Infrastructure Law (BIL) grants, state aviation grants, private/third party financing, local funding, and economic/community development grants. Each of these capital funding sources is described in the following sections.

### *FAA AIRPORT IMPROVEMENT PROGRAM*

The FAA's grant funding program for improving, maintaining, and developing airport infrastructure is commonly referred to as the Airport Improvement Program (AIP). The program was originally established in the early 1980s when Congress passed the Airport and Airway Improvement Act of 1982. Under the AIP Program, the FAA provides grant funds to airports based on numerous factors including the Airport's size, activity level, and development needs. The FAA typically provides 90% of the funding for AIP projects with the remainder of the funds supplied by the state aviation agency and the Airport's sponsor.

Texas is a block grant state under the FAA's AIP program. As a block grant state, the Texas Department of Transportation - Aviation Division (TxDOT) is responsible for administering AIP grants to general aviation airports within the State of Texas. In Texas, AIP grant-funded capital projects at general aviation airports that are part of the National Plan of Integrated Airport Systems (NPIAS) are generally eligible for 90% federal funding with a 10% local match provided by the Airport sponsor.

The FAA classifies airports with annual passenger enplanements of 10,000 or less as Non-Primary Airports for funding purposes. Currently, Gillespie County Airport (T82) qualifies as a Non-Primary Airport. As a Non-Primary Airport, T82 is eligible to receive Non-Primary Entitlement (NPE) funds that are appropriated on an annual basis. NPEs were originally

created as part of the Aviation Investment and Reform Act (AIR-21) which was passed by Congress in April 2000. The NPE program was revised in 2018 as part of the FAA Reauthorization Act. Under the NPE Program, Non-Primary Airports with less than 8,000 enplanements receive NPE funding equal to 20% of the eligible cost of their five-year capital improvement program up to a maximum of $150,000 per year. NPEs are available in the year granted and can be carried over for up to three additional years (e.g., four years of funding in total). Currently, T82 receives $150,000 annually in NPE funds. Unless modified by Congress, it is expected that T82 will continue to accrue NPE funds at a rate of $150,000 per year throughout the planning horizon.

In addition to NPEs, T82 is eligible to receive AIP discretionary grants. AIP discretionary funds are distributed based on a project prioritization process developed by the FAA. It is reasonable to assume that T82 will receive discretionary funding during the planning period for higher priority, eligible projects, such as runway, taxiway, safety, and security improvements. However, since the future availability of AIP discretionary grants is not certain until an actual grant is awarded, it should be noted that any future capital projects requiring AIP discretionary funds may need to be delayed until the funds become available.

## *BI-PARTISAN INFRASTRUCTURE LAW PROGRAM*

In 2021, Congress passed the Bi-Partisan Infrastructure Law (BIL) which supplies additional capital funding opportunities for airports. The BIL will provide Airport Infrastructure Grants (AIG) for the next five years to airports listed in the National Plan of Integrated Airport System (NPIAS). This money can be used for runways, taxiways, safety, and sustainability projects, as well as terminal, airport-transit connections, and roadway projects. T82 is classified as a “regional” airport in the NPIAS and therefore it is expected to receive $295,000 per year for the next five years including this year (2022). The BIL also provides additional funding opportunities for the development of airport terminal building projects which may be a potential funding source for terminal building improvement projects at T82. These additional grants are similar to AIP discretionary grants, in that airports must compete for them.

The CIP assumes the Airport will receive a combination of AIP/BIL grants in the amount of $23.99 million in Phase I (0-5 years), $10.19 million in Phase II (6-10 years), and $18.03 million in Phase III (11+ years). The CIP further assumes that the current AIP funding levels will continue to be extended during the planning horizon and that future program authorizations will provide similar funding levels. BIL funding is assumed to only be available for the next five years including this year.

## TxDOT Aviation Division Grants

TxDOT sponsors the Routine Airport Maintenance Program (RAMP) which provides partial funding for lower-cost projects and airport maintenance activities. RAMP funding is limited to $50,000 per year per airport. The Airport sponsor is required to match the RAMP grant funds dollar for dollar up to a total of $50,000. The CIP assumes that the TxDOT RAMP grant program will continue during the planning horizon.

TxDOT also provides partial funding for general aviation terminal building improvements and parking lots. The maximum grant available is $600,000 ($500,000 for the terminal building and $100,000 for the parking lot). Grants are limited to 50% of total project costs up to $1.2 million with costs over $1.2 million remaining the responsibility of the sponsor.

Additionally, TxDOT provides state grants, that are separate from the FAA AIP program, to support other aeronautical development needs at the Airport including items that may have limited eligibility under the FAA AIP Program (e.g., revenue-producing facilities).

The CIP assumes that most RAMP grant funds will be utilized for airport maintenance activities and will not be utilized for the development of new infrastructure. The TxDOT terminal building program is assumed to be used for the terminal building expansion project shown in Phase II of the CIP. State grants may be received for non-AIP eligible developments, but this is expected to be limited.

## Private/Third Party Financing

Many airports use private/third-party financing when the planned improvements will be primarily used by a private business and/or are not grant eligible. Projects of this kind typically include private hangars, FBO facilities, exclusive use aircraft parking aprons, industrial development areas, non-aviation-related commercial areas, and various other projects.

The AIP eligibility of revenue-producing projects is very limited and sometimes comes with future funding restrictions. Consequently, the use of federal funds for revenue-producing projects should only be considered under special circumstances.

The CIP assumes private/third parties will provide $34.97 million in funding to support private aircraft hangar/apron developments and related projects in Phase I, $30.90 million in Phase II, and $38.73 million in Phase III. The availability of private/third-party funds is highly dependent on the type of development being pursued and the availability of a private equity source interested in financing the project. As a result, some of the projects

identified for private/third-party funding may require other funding sources (e.g., other grants, local funds, etc.) if private equity is not available.

## *OTHER GRANTS*

Sometimes airports are eligible to apply for economic development grants that can be used to improve various airside and landside aspects of the Airport. However, since airports commonly compete with other non-aviation agencies for these grants, they are typically difficult to obtain. Consequently, the CIP assumes no grant funds will be received from non-aviation agencies. However, it is highly recommended that the Airport pursue non-aviation-specific grants because, if successful, these grants will reduce the airport's dependence on aviation grant funds. One such program is the Texas Rural Community Development Block Grant Program (TxDBGP) which is funded by the state's Community Development Fund and administered by the Department of Agriculture for the State of Texas. Funds from this program could potentially be used to fund landside or drainage improvement projects.

## *LOCAL FUNDING*

As previously discussed, airport capital projects funded under the FAA's AIP and BIL grant programs typically require a local match that is funded by the Airport's revenues or by the municipality that owns the Airport. For projects that are not funded under the FAA's AIP or BIL grant programs, airports are typically required to bear the full cost of the capital project unless another source of financing (e.g., state grant funding, private/third party financing, or other non-aviation grant funds) can be secured. Since local funding is often constrained, it is generally recommended that other non-local funding sources should be pursued to the greatest extent possible for capital projects that are not eligible under the AIP or BIL programs. As a result, the 20-year CIP set forth in this Airport Layout Plan Narrative Report focuses on the use of local funds for AIP and BIL grant matches and uses other funding sources for non-AIP/BIL eligible projects. However, during the implementation of this CIP, it may become necessary to fund some non-AIP/BIL eligible projects with local funds if other funding mechanisms are not available at the time the facility is needed.

# CAPITAL IMPROVEMENT PLAN (CIP)

The CIP and phased development plan establish an orderly series of improvements intended to support the growth and development of T82 in alignment with the preferred development alternative defined in the Alternatives Chapter.

It is important to note market demand, instead of the passage of time, should be the driver for when facilities are constructed, making this CIP flexible to changes that may occur during the 20-year planning horizon. Consequently, "trigger mechanisms" have been established to help guide T82 on when they should consider implementing the various improvement projects set forth in the CIP. These "trigger mechanisms" should be reviewed annually by TxDOT Aviation and Gillespie County to determine if any of the project "triggers" could feasibly be reached in the next 1-5 years. If it is expected that a project trigger could be reached within the next 5 years, the project should be included in the Airport's 5-year CIP. This exercise will aid TxDOT Aviation and Gillespie County in building and updating the rolling 5-year CIP for T82 based on market demand.

In developing the Gillespie County Airport's CIP and phased development plan, the following guidelines were followed:

- The scheduling of projects is prioritized to permit improvements in a coordinated approach. The phasing and priority of each project have been determined with respect to airport safety, demand, compatibility with other airport projects, and FAA programming schedules.
- Overall, the CIP has been structured to provide the flexibility to meet short and long-range goals.
- The development plan does not represent an obligation of any funds, nor does it imply a funding commitment without justification of sufficient demand or need.

The Phased Development Plan is divided into the following phases:

- Phase I – 2023-2027
- Phase II – 2028-2032
- Phase III – 2033-2042

Each phase consists of projects and improvements categorized by the following areas: 1) airside improvements and 2) terminal/landside improvements. The airside and terminal/landside development projects within each phase and their associated trigger mechanisms are shown in **Table 6-1** through **Table 6-6**. The airside projects within Phase I

of the CIP have also been segmented into separate "Design" and "Construction" projects to make them easier to use for future CIP planning.

It should be noted that each project has a unique identifier that consists of the phase the project is associated with and a project identification number. The identifiers are S (Short-term), M (Mid-term), and L (Long-term) followed by a project number (e.g., 1, 2, 3, etc.). These project identifiers have been established to make it easier for users to reference specific projects. The project numbers do not provide an indication of a project's prioritization within the CIP.

## TABLE 6-1
## AIRSIDE PROJECTS - PHASE I
## GILLESPIE COUNTY AIRPORT

| Project Reference # | Design/Construction | Airside or Terminal/Landside | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|---|
| S1 | DESIGN | Airside | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | PCI for parallel taxiway and/or runway has been categorized as "fair." | Yes |
| S2 | CONSTRUCTION | Airside | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | PCI for parallel taxiway and/or runway has been categorized as "fair." | Yes |
| S3 | DESIGN | Airside | 18B Aerial Survey and Mitigation of Obstructions at the Approach End of Runway 14 to Obtain LPV Minimums for Runway 14 | Runway 14 currently does not have LPV minimums and there are known obstructions at the approach end of Runway 14. Four trees are known obstructions. | Yes |
| S4 | DESIGN | Airside | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | Multiple aircraft using the airport have requested a turf surface for takeoffs and landings. | Yes |
| S5 | CONSTRUCTION | Airside | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | Multiple aircraft using the airport have requested a turf surface for takeoffs and landings. | Yes |
| S6 | DESIGN | Airside | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. | Yes - Current pavement has cracking and water is coming up through the pavement. |
| S7 | CONSTRUCTION | Airside | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. | Yes - Current pavement has cracking and water is coming up through the pavement. |
| S8 | DESIGN | Airside | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. Project to also include painting the no-taxi island at the approach end of Runway 14. | PCI for north apron is shown to be in fair condition or pavement is showing signs of degradation. | Yes - Current pavement has cracking and water is coming up through the pavement. |
| S9 | CONSTRUCTION | Airside | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2 | PCI for north apron is shown to be in fair condition or pavement is showing signs of degradation. | Yes - Current pavement has cracking and water is coming up through the pavement. |
| S18 | DESIGN | Airside | South Apron Expansion - Phase 1 | Additional apron space required for transient aircraft and airside access to South Hangar Development Phase 1. | No |
| S19 | CONSTRUCTION | Airside | South Apron Expansion - Phase 1 | Additional apron space required for transient aircraft and airside access to South Hangar Development Phase 1. | No |

**Source:** Garver, 2022.

The airside projects within this phase of the CIP primarily focus on pavement rehabilitation, the establishment of an LPV approach to Runway 14, pavement expansion, and the establishment of an Alternate Operating Area (AOA). Currently, all the projects listed in **Table 6-1** have hit their implementation triggers besides the South Apron expansion.

**TABLE 6-2**
**TERMINAL/LANDSIDE PROJECTS - PHASE I**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Design/Construction | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|
| **S10** | **DESIGN/CONSTRUCTION** | FBO Building Expansion (Second Story and Lateral Expansion Toward Parking Lot - 4,000 sq. ft.) and Additional Fuel Truck Parking by Fuel Farm | Peak hour passenger/pilot activity in terminal building and staffing space requirements exceed existing building capacity. | Yes |
| **S11** | **DESIGN/CONSTRUCTION** | Midfield Hangar Development Phase 1 - Two 110"x110" Hangars, Apron, and Utilities | Additional box hangar capacity needed beyond the capacity currently available. | Yes |
| **S12** | **DESIGN/CONSTRUCTION** | Midfield Hangar Development Phase 2 - Two 100" x 100" Hangars, Apron, and Utilities | Additional box hangar capacity needed beyond the capacity currently available. | Yes |
| **S13** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Phase 1 - 2 Small 4 Bay Common Wall Box Hangars, Apron, and Utilities | Additional small box hangar capacity needed beyond the capacity currently available. | Yes |
| **S14** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Phase 2 - Single 8 Bay Nested T-Hangar, Apron, and Utilities | Additional T-hangar capacity needed beyond the capacity currently available. | Yes |
| **S15** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | Demand for vehicle parking in the north development area exceeds existing capacity. | Yes |
| **S16** | **DESIGN/CONSTRUCTION** | 120' x 100' Box Hangar Development on North Side of Airfield (Includes Relocation of Water Line and Fire Hydrant) | Additional box hangar capacity needed beyond the capacity currently available. | Yes |
| **S17** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 1 - A single 100' x 300' Box Hangar, Apron, Utilities, Drainage and Roadway | Additional box hangar capacity needed beyond the capacity currently available. | Yes |

**Source:** Garver, 2022.

The terminal/landside projects identified in Phase I focus on addressing aircraft storage demand and expanding the FBO building. All the projects in **Table 6-2** have hit their implementation triggers.

**TABLE 6-3**
**AIRSIDE PROJECTS - PHASE II**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Design/Construction | Airside or Terminal/Landside | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|---|
| **M1** | **DESIGN/CONSTRUCTION** | **Airside** | Establish a Remote Communications Outlet (RCO) for the Airport | Aircraft have trouble contacting Houston ARTCC while on the ground at T82. | Yes |
| **M10** | **DESIGN/CONSTRUCTION** | **Airside** | Install Taxiway Edge Lighting | Over 100 Based Aircraft | Yes |

**Source:** Garver, 2022.

The airside projects identified in Phase II focus on building a Remote Communications Outlet (ROC) and installing taxiway edge lighting. Both the projects in **Table 6-3** have hit their implementation triggers.

**TABLE 6-4**
**TERMINAL/LANDSIDE PROJECTS - PHASE II**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Design/Construction | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|
| **M2** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Phase 3 - 2 T-Hangars (One 10 Bay and One 8 Bay), Apron, and Utilities | Additional T-hangar capacity needed beyond the capacity avalible at the conclusion of Phase 2. | No |
| **M3** | **DESIGN/CONSTRUCTION** | Establish Helidpad/Vertiport | Additional helipad/vertiport capacity is needed. | No |
| **M4** | **DESIGN/CONSTRUCTION** | Midfield Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | Demand for vehicle parking in the midfield development area exceeds existing capacity. | No |
| **M5** | **DESIGN/CONSTRUCTION** | Midfield Hangar Development Phase 3 - Three 100" x 100" Hangars, Apron, Drainage, and Utilities | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 2. | No |
| **M6** | **DESIGN/CONSTRUCTION** | Primary Roadway and Utility Layout for Southside Development Area | Demand for additional hangar development in the southern development area. | No |
| **M7** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 2 - 3 - 100' x 100' Box Hangars, Apron, Utilities, Drainage, and Parking | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 1. | No |
| **M8** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 3 - Apron Development (Includes Drainage Modifications) | Additional apron space required for airside access to South Hangar Development Phase 3A. | No |
| **M9** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 3A - 3 - 100' x 100' Box Hangars, Apron, Utilities, Parking, and Roadway | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 2. | No |
| **M11** | **DESIGN/CONSTRUCTION** | Terminal Building Expansion (Approximately 2,000 sq. ft. with Some Vertical Development) | Peak hour utilization of terminal building exceeds building capacity. | Yes |
| **M12** | **DESIGN/CONSTRUCTION** | Existing Terminal/FBO Parking Lot (Includes Drainage and Utility Modifications) | Demand for vehicle parking in the terminal area exceeds existing capacity. | Yes |
| **M13** | **DESIGN/CONSTRUCTION** | Northside Taxilane/Apron Rehabilitation (Coffee Mug Handle Area) | Pavement is not draining properly and pavement cracking is presistent. | Yes |
| **M14** | **DESIGN/CONSTRUCTION** | Reconstruction of Apron Leading to Midfield Hangar Development Area to ADG III Aircraft (Includes Pavement Strengthening and Relocation/Removal of Tie-Down Spots on Phase II Apron Constructed in 2022) | Regular use of the midfield development area by large aircraft. | No |

**Source:** Garver, 2022.

The terminal/landside projects identified in Phase II focus on addressing aircraft storage demand, expanding the terminal, expanding the terminal/FBO shared parking lot, the development of a helipad/vertiport, and pavement rehabilitation/expansion. Currently, the terminal expansion, shared parking lot, and northside taxilane rehabilitation project have hit their implementation triggers.

**TABLE 6-5**
**AIRSIDE PROJECTS – PHASE III**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Design/Construction | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|
| **L1** | **DESIGN/CONSTRUCTION** | Runway and Parallel Taxiway Pavement Reconstruction and Strengthening (Includes Upgrading Pavement Fillets to TDG 2 Standards, Strengthening Pavements to 141,000 DW) | Runway PCI identifies pavement to be in fair condition. Runway requires strengthening due to regular use of large aircraft. | No |
| **L2** | **DESIGN/CONSTRUCTION** | Northside T-Hangar Area Pavement Rehabilitation (All Remaining Area Not Rehabed in M13) | Apron PCI identifies pavement to be in fiar condition. | No |
| **L3** | **DESIGN/CONSTRUCTION** | Runway Lighting Rehabilitation | Runway lighting exceeds its useful life. | No |

**Source:** Garver, 2022.

None of the airside projects identified in Phase III have hit their implementation triggers.

**TABLE 6-6**
**TERMINAL/LANDSIDE PROJECTS – PHASE III**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Design/Construction | Project Name/Description | Trigger Mechanism | Has Trigger Already Been Reached? |
|---|---|---|---|---|
| **L4** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Phase 4 - 2 T-Hangars (One 10 Bay and One 4 Bay), Apron, and Utilities | Additional T-hangar capacity needed beyond the capacity avalible at the conclusion of Phase 3. | No |
| **L5** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Phase 5 - 1 T-Hangars (10 bay), Apron, and Utilities | Additional T-hangar capacity needed beyond the capacity avalible at the conclusion of Phase 4. | No |
| **L6** | **DESIGN/CONSTRUCTION** | Northside Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | Demand for vehicle parking in the north development area exceeds capacity. | No |
| **L7** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 4 - Apron Development (Includes Drainage Modifications) | Additional apron space required for airside access to South Hangar Development Phase 4A and 4B. | No |
| **L8** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 4A - 3 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 3A. | No |
| **L9** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 4B - 3 - 100' x 100' Box Hangars, Apron, Utilities, Parking, and Roadway | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 4A. | No |
| **L10** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 5 - Apron Development (Includes Drainage Modifications) | Additional apron space required for airside access to South Hangar Development Phase 5A. | No |
| **L11** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 5A - 3 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 4B. | No |
| **L12** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 6 - Apron Development (Includes Drainage Modifications) | Additional apron space required for airside access to South Hangar Development Phase 6A. | No |
| **L13** | **DESIGN/CONSTRUCTION** | South Hangar Development Phase 6A - 2 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | Additional box hangar capacity needed beyond the capacity avalible at the conclusion of Phase 5A. | No |

**Source:** Garver, 2022.

None of the terminal/landside projects identified in Phase III have hit their implementation triggers.

## *PROJECT COST ESTIMATES AND FUNDING SOURCES*

Rough Order of Magnitude (ROM) cost estimates for each individual project identified in **Tables 6-1** through **6-6** were prepared as part of the development of the 20-year T82 CIP. These cost estimates are based on current year (2022) dollars and are intended for planning purposes only and should not be used or construed as formal construction cost estimates.

Formalized opinions of the probable cost will be developed as part of each project's scoping process during the design and engineering phase.

## PHASE I

Phase I cost estimates are shown in **Table 6-7** and a funding breakdown is shown in **Figure 6-1**. A breakdown of these costs indicates a need for approximately $23.99 million in capital funding assistance from state/federal aviation grants. The matching share for these grants from the Airport sponsor totals $2.67 million. The grant funding in Phase I is used primarily for pavement rehabilitation/expansions and the establishment of an Alternate Operating Area. Projects with significant associated costs include the South Apron Expansion (Projects S18, 19), the rehabilitation and strengthening of the existing Terminal Apron, (Projects S6, 7), and the rehabilitation of the Existing North Apron (Projects S8, 9).

Private funding for the six hangar developments and the FBO expansion project in Phase I totals $34.97 million.

## PHASE II

Phase II cost estimates are shown in **Table 6-8** and a funding breakdown is shown in **Figure 6-2**. A breakdown of these costs indicates a need for approximately $10.19 million in capital funding assistance from state/federal aviation sources. The matching share for these grants from the Airport sponsor totals $1.28 million. Grant funding in this phase supports the construction of a Remote Communications Outlet, the establishment of a helipad/vertiport, the installation of taxiway edge lighting, and pavement expansion. Additionally, a $1.51 million locally funded project is included to establish the utility and roadway infrastructure needed to facilitate development in the south development area.

Private funding for four hangar developments totals $30.90 million in this phase.

## PHASE III

Phase III cost estimates are shown in **Table 6-9** and a funding breakdown is shown in **Figure 6-3**. A breakdown of these costs indicates a need for approximately $18.03 million in capital funding assistance from state/federal aviation sources. The matching share for these grants from the Airport sponsor total $2.00 million. Grant funding in this phase supports the reconstruction/strengthening of runway and parallel taxiway pavement, runway lighting rehabilitation, and pavement development.

Private funding for six hangar developments totals $38.73 million in this phase.

## TABLE 6-7
## PHASE I DEVELOPMENT COSTS
## GILLESPIE COUNTY AIRPORT

| Project Reference # | Project Name/Description | Estimated Cost | State/Federal Grant Funding | Local Funding | Private Funding |
|---|---|---|---|---|---|
| S1 | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | $347,000.00 | $312,300.00 | $34,700.00 | - |
| S2 | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | $4,279,860.00 | $3,851,874.00 | $427,986.00 | - |
| S3 | 18B Aerial Survey and Mitigation of Obstructions at the Approach End of Runway 14 to Obtain LPV Minimums for Runway 14 | $80,000.00 | $72,000.00 | $8,000.00 | |
| S4 | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | $117,000.00 | $105,300.00 | $11,700.00 | - |
| S5 | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | $826,980.00 | $744,282.00 | $82,698.00 | - |
| S6 | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | $484,000.00 | $435,600.00 | $48,400.00 | - |
| S7 | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | $5,942,300.00 | $5,348,070.00 | $594,230.00 | - |
| S8 | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. Project to also include painting the no-taxi island at the approach end of Runway 14. | $412,000.00 | $370,800.00 | $41,200.00 | - |
| S9 | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2 | $5,106,230.00 | $4,595,607.00 | $510,623.00 | - |
| S10 | FBO Building Expansion (Second Story and Lateral Expansion Toward Parking Lot - 4,000 sq. ft.) and Additional Fuel Truck Parking by Fuel Farm | $2,134,710.00 | - | - | $2,134,710.00 |
| S11 | Midfield Hangar Development Phase 1 - Two 110"x110" Hangars, Apron, and Utilities | $7,171,294.00 | - | - | $7,171,294.00 |
| S12 | Midfield Hangar Development Phase 2 - Two 100" x 100" Hangars, Apron, and Utilities | $5,472,617.75 | - | - | $5,472,617.75 |
| S13 | Northside Hangar Development Phase 1 - 2 Small 4 Bay Common Wall Box Hangars, Apron, and Utilities | $5,583,313.25 | - | - | $5,583,313.25 |

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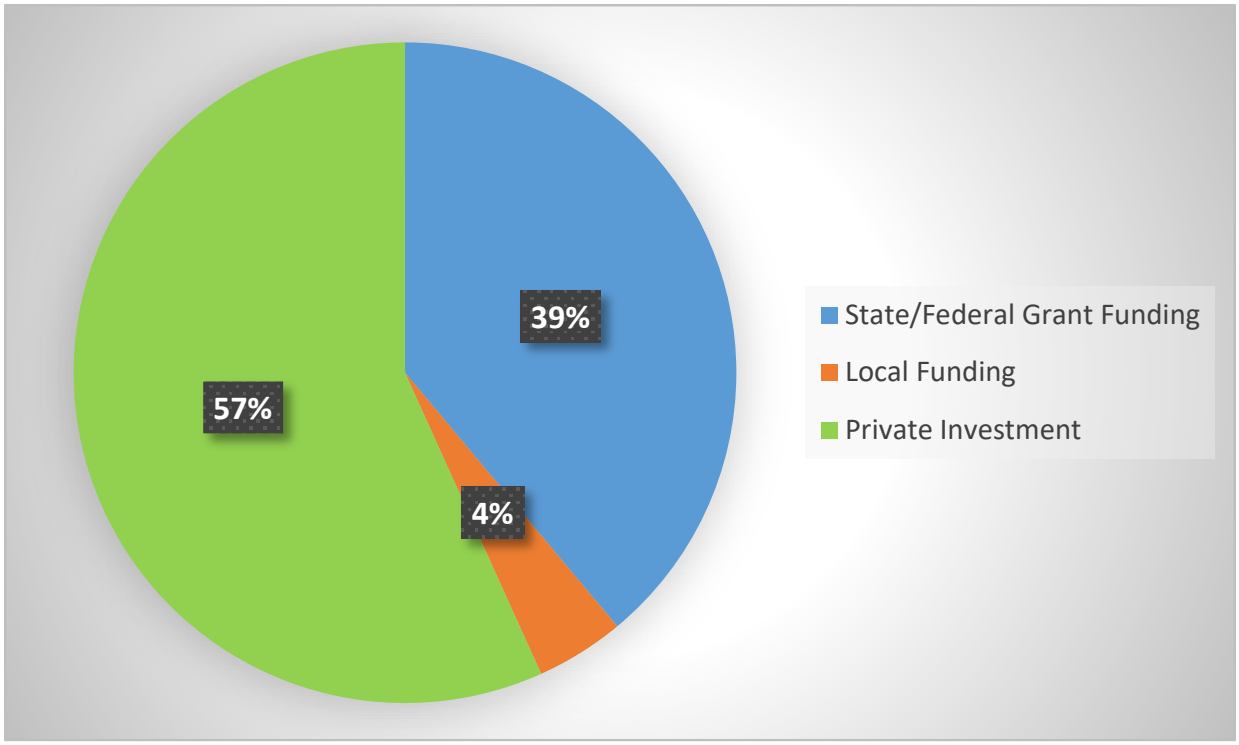
| Project Reference # | Project Name/Description | Estimated Cost | State/Federal Grant Funding | Local Funding | Private Funding |
|---|---|---|---|---|---|
| S14 | Northside Hangar Development Phase 2 - Single 8 Bay Nested T-Hangar, Apron, and Utilities | $3,423,594.75 | - | - | $3,423,594.75 |
| S15 | Northside Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | $760,060.00 | $684,054.00 | $76,006.00 | - |
| S16 | 120' x 100' Box Hangar Development on North Side of Airfield (Includes Relocation of Water Line and Fire Hydrant) | $3,133,337.95 | - | - | $3,133,337.95 |
| S17 | South Hangar Development Phase 1 - A single 100' x 300' Box Hangar, Apron, Utilities, Drainage and Roadway | $8,046,577.50 | - | - | $8,046,577.50 |
| S18 | South Apron Expansion - Phase 1 | $642,000.00 | $577,800.00 | $64,200.00 | - |
| S19 | South Apron Expansion - Phase 1 | $7,661,664.25 | $6,895,497.83 | $766,166.43 | - |

**Source:** Garver, 2022. Costs reflect current 2022 dollars without any inflation factor applied for out years and should be used for planning purposes only. Engineering/design and construction costs are inclusive. All hangar development is shown as being privately financed. However, the Airport may choose to utilize NPE funds if all other aeronautical needs are met.

**FIGURE 6-1**
**PHASE I DEVELOPMENT COSTS**
**GILLESPIE COUNTY AIRPORT**



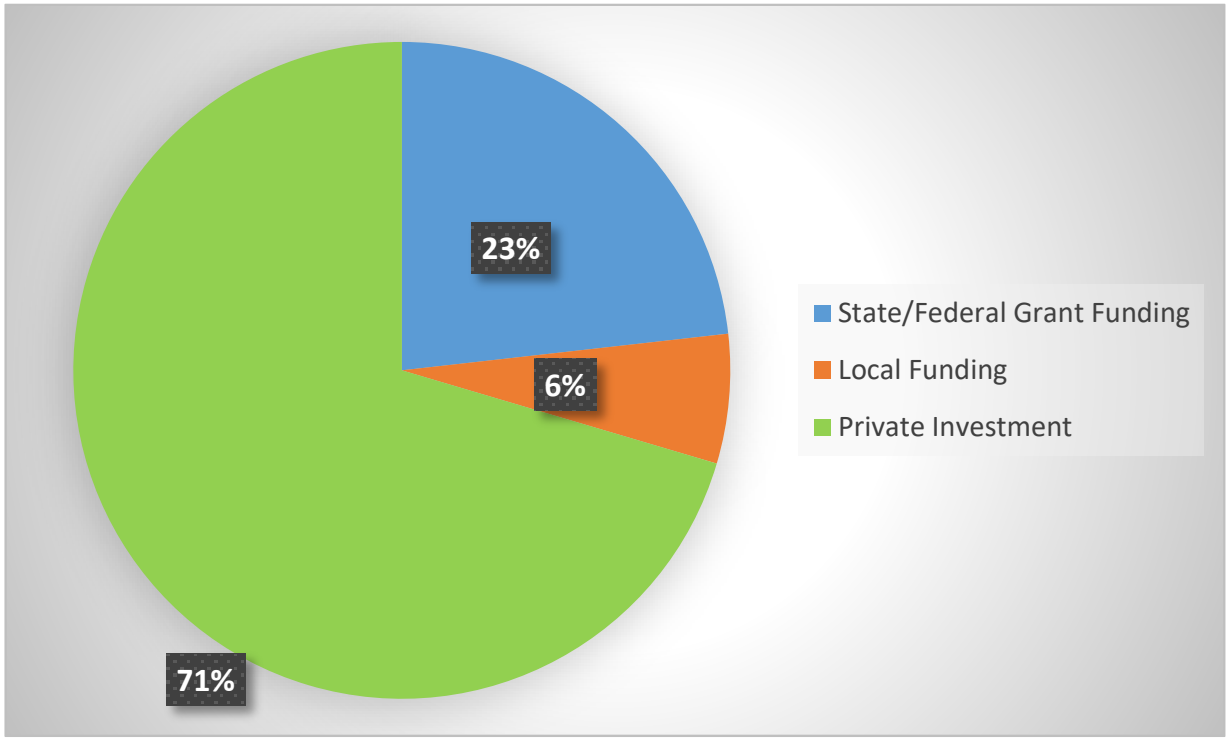

**Source:** Garver, 2022.

**TABLE 6-8**
**PHASE II DEVELOPMENT COSTS**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Project Name/Description | Estimated Cost | State/Federal Grant Funding | Local Funding | Private Funding |
|---|---|---|---|---|---|
| **M1** | Establish a Remote Communications Outlet (RCO) for the Airport | $1,168,000.00 | $1,168,000.00 | - | - |
| **M2** | Northside Hangar Development Phase 3 - 2 T-Hangars (One 10 Bay and One 8 Bay), Apron, and Utilities | $5,733,074.75 | - | - | $5,733,074.75 |
| **M3** | Establish Helidpad/Vertiport | $2,000,816.00 | $1,800,734.40 | $200,081.60 | - |
| **M4** | Midfield Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | $794,053.90 | $714,648.51 | $79,405.39 | - |
| **M5** | Midfield Hangar Development Phase 3 - Three 100" x 100" Hangars, Apron, Drainage, and Utilities | $7,932,028.75 | - | - | $7,932,028.75 |
| **M6** | Primary Roadway and Utility Layout for Southside Development Area | $1,511,896.50 | - | $1,511,896.50 | - |
| **M7** | South Hangar Development Phase 2 - 3 - 100' x 100' Box Hangars, Apron, Utilities, Drainage, and Parking | $8,835,583.00 | - | - | $8,835,583.00 |
| **M8** | South Hangar Development Phase 3 - Apron Development (Includes Drainage Modifications) | $2,905,171.25 | $2,614,654.13 | $290,517.13 | - |
| **M9** | South Hangar Development Phase 3A - 3 - 100' x 100' Box Hangars, Apron, Utilities, Parking, and Roadway | $8,394,378.75 | - | - | $8,394,378.75 |
| **M10** | Install Taxiway Edge Lighting | $830,880.00 | $747,792.00 | $83,088.00 | - |
| **M11** | Terminal Building Expansion (Approximately 2,000 sq. ft. with Some Vertical Development) | $624,681.00 | $312,340.50 | $312,340.50 | - |
| **M12** | Existing Terminal/FBO Parking Lot (Includes Drainage and Utility Modifications) | $1,001,494.88 | $901,345.39 | $100,149.49 | - |
| **M13** | Northside Taxilane/Apron Rehabilitation (Coffee Mug Handle Area) | $736,940.00 | $663,246.00 | $73,694.00 | - |
| **M14** | Reconstruction of Apron Leading to Midfield Hangar Development Area to ADG III Aircraft (Includes Pavement Strengthening and Relocation/Removal of Tie-Down Spots on Phase II Apron Constructed in 2022) | $1,404,952.00 | $1,264,456.80 | $140,495.20 | - |

**Source:** Garver, 2022. Costs reflect current 2022 dollars without any inflation factor applied for out years and should be used for planning purposes only. Engineering/design and construction costs are inclusive. All hangar development is shown as being privately financed. However, the Airport may choose to utilize NPE funds if all other aeronautical needs are met. The RCO is expected to be funded through the FAA Air Traffic Organization.

**FIGURE 6-2**
**PHASE II DEVELOPMENT COSTS**
**GILLESPIE COUNTY AIRPORT**



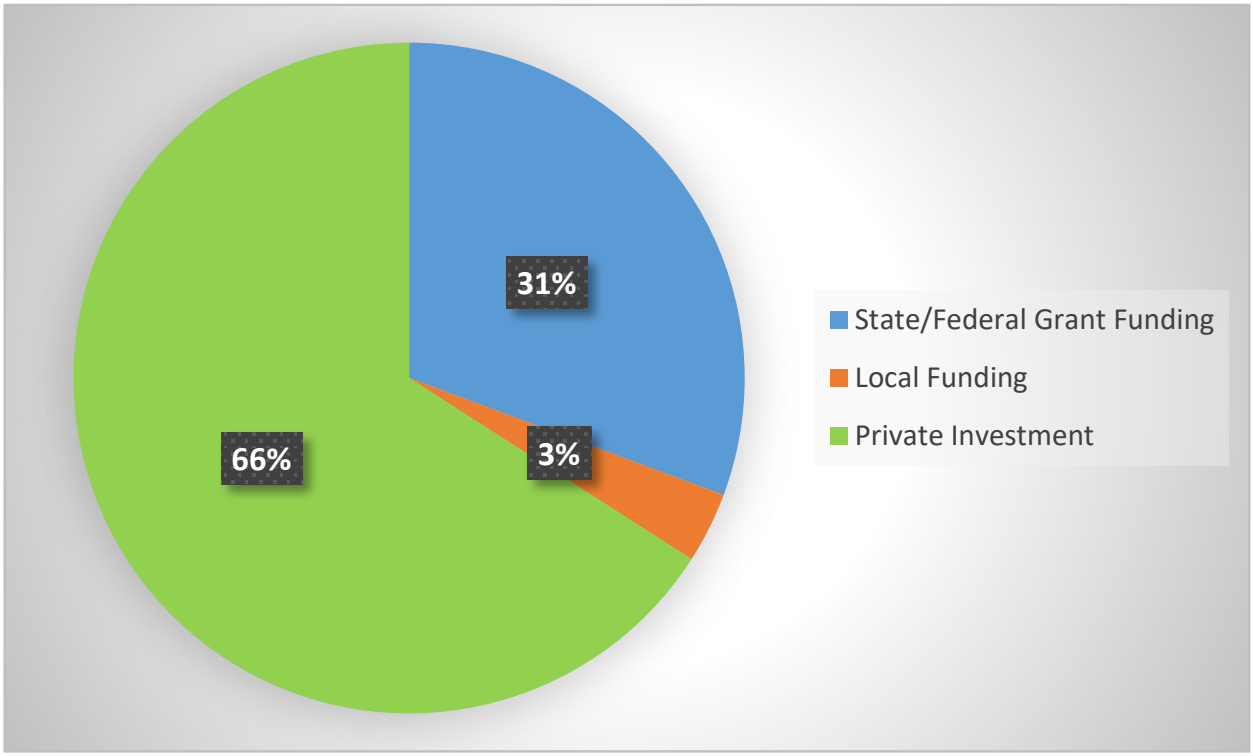

**Source:** Garver, 2022.

**TABLE 6-9**
**PHASE III DEVELOPMENT COSTS**
**GILLESPIE COUNTY AIRPORT**

| Project Reference # | Project Name/Description | Estimated Cost | State/Federal Grant Funding | Local Funding | Private Funding |
|---|---|---|---|---|---|
| L1 | Runway and Parallel Taxiway Pavement Reconstruction and Strengthening (Includes Upgrading Pavement Fillets to TDG 2 Standards, Strengthening Pavements to 141,000 DW) | $10,304,400.00 | $9,273,960.00 | $1,030,440.00 | - |
| L2 | Northside T-Hangar Area Pavement Rehabilitation (All Remaining Area Not Rehabed in M13) | $1,324,660.00 | $1,192,194.00 | $132,466.00 | - |
| L3 | Runway Lighting Rehabilitation | $680,600.00 | $612,540.00 | $68,060.00 | - |
| L4 | Northside Hangar Development Phase 4 - 2 T-Hangars (One 10 Bay and One 4 Bay), Apron, and Utilities | $4,956,088.50 | - | - | $4,956,088.50 |
| L5 | Northside Hangar Development Phase 5 - 1 T-Hangars (10 bay), Apron, and Utilities | $3,756,237.75 | - | - | $3,756,237.75 |
| L6 | Northside Hangar Development Parking Lot (Includes Drainage and Utility Modifications) | $1,135,400.00 | $1,021,860.00 | $113,540.00 | - |
| L7 | South Hangar Development Phase 4 - Apron Development (Includes Drainage Modifications) | $3,397,481.75 | $3,057,733.58 | $339,748.18 | - |
| L8 | South Hangar Development Phase 4A - 3 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | $8,325,225.75 | - | - | $8,325,225.75 |
| L9 | South Hangar Development Phase 4B - 3 - 100' x 100' Box Hangars, Apron, Utilities, Parking, and Roadway | $8,086,804.00 | - | - | $8,086,804.00 |
| L10 | South Hangar Development Phase 5 - Apron Development (Includes Drainage Modifications) | $1,819,107.75 | $1,637,196.98 | $181,910.78 | - |
| L11 | South Hangar Development Phase 5A - 3 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | $8,184,167.75 | - | - | $8,184,167.75 |
| L12 | South Hangar Development Phase 6 - Apron Development (Includes Drainage Modifications) | $1,366,542.80 | $1,229,888.52 | $136,654.28 | - |
| L13 | South Hangar Development Phase 6A - 2 - 100' x 100' Box Hangars, Apron, Utilities, and Parking | $5,424,174.25 | - | - | $5,424,174.25 |

**Source:** Garver, 2022. Costs reflect current 2022 dollars without any inflation factor applied for out years and should be used for planning purposes only. Engineering/design and construction costs are inclusive. All hangar development is shown as being privately financed. However, the Airport may choose to utilize NPE funds if all other aeronautical needs are met.

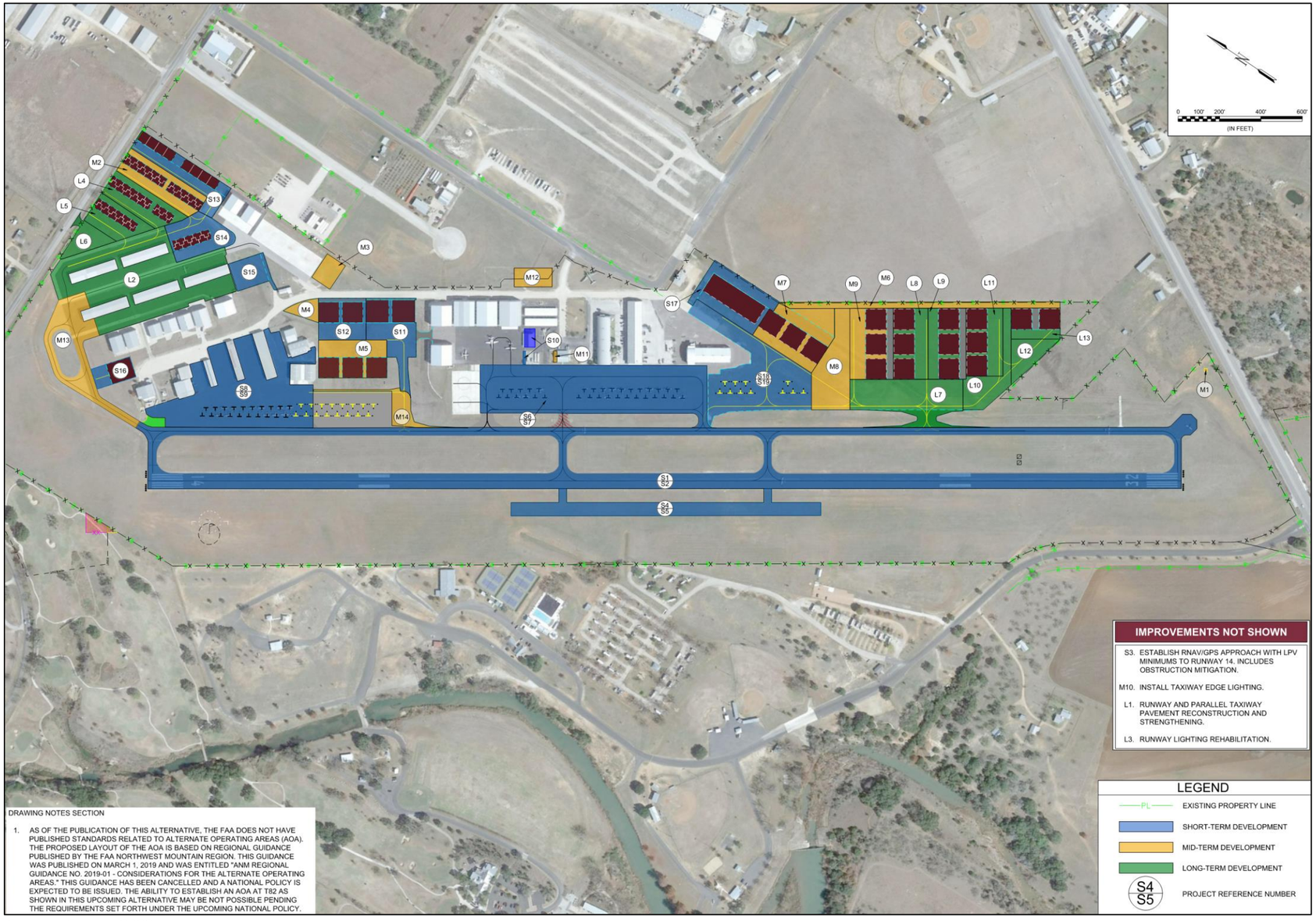
**FIGURE 6-3**
**PHASE III DEVELOPMENT COSTS**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

To supplement the information provided by the phased project list and development cost estimates, a composite CIP graphic has been created that depicts the development projects shown in the CIP (**Figure 6-4**).

**FIGURE 6-4**
**CIP COMPOSITE DRAWING**
**GILLESPIE COUNTY AIRPORT**




**Source:** Garver, 2022.

## CIP 2023-2027

**Table 6-10** provides a year-by-year CIP for T82 from 2023–2027. The trigger point for all these projects has already been achieved. These projects primarily focus on pavement rehabilitation (e.g., runway, taxiway, and apron rehabilitation). Based on funding availability, some of these projects may be pushed into Phase II of the CIP.

If additional hangar development interest is shown in the south development area, the first phase of the south apron expansion (projects S18 and S19) may need to be moved into the 5-year CIP. Additionally, the need for the AOA project may be eliminated if T82 is able to obtain approval from the FAA and TxDOT Aviation to use the existing Runway Safety Area (RSA) for Runway 14/32 to support aircraft desiring to utilize turf instead of asphalt for takeoffs/landings.

## TABLE 6-10
## 5 YEAR CIP
## GILLESPIE COUNTY AIRPORT

| CIP Year | Project Type | Project Name | Total Cost | Federal/ State Grants | Local Funding | Private Funding | Trigger |
|---|---|---|---|---|---|---|---|
| FY 23 | Design | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | $347,000 | $312,300 | $34,700 | $0 | PCI for parallel taxiway and/or runway has been categorized as "fair." |
| | Construction | Runway and Parallel Taxiway Pavement Rehabilitation (Currently in TxDOT CIP for FY 2023) Includes Geotech to Investigate Pavement Deficiencies on the Terminal and North Aprons | $4,279,860 | $3,851,874 | $427,986 | $0 | PCI for parallel taxiway and/or runway has been categorized as "fair." |
| FY 24 | Design | 18B Aerial Survey and Mitigation of Obstructions at the Approach End of Runway 14 to Obtain LPV Minimums for Runway 14 | $80,000 | $72,000 | $8,000 | $0 | Runway 14 currently does not have LPV minimums and there are known obstructions at the approach end of Runway 14. Four trees are known obstructions. |
| | Design | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | $484,000 | $435,600 | $48,400 | $0 | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. |
| FY 25 | Construction | Rehabilitation and Strengthening of Existing Terminal Apron to Accommodate Larger Aircraft (Includes Strengthening of Taxilanes Used by Large Aircraft). Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2. | $5,942,300 | $5,348,070 | $594,230 | $0 | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. |
| FY 26 | Design | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2 | $412,000 | $370,800 | $41,200 | $0 | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. |
| FY 27 | Construction | Rehabilitation of the Existing North Apron. Rehabilitation Strategy to be Informed by Geotech Investigation Completed in Projects S1/S2 | $5,106,230 | $4,595,607 | $510,623 | $0 | PCI for terminal apron is shown to be in fair condition or pavement is showing signs of degradation. |
| | Design | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | $117,000 | $105,300 | $11,700 | $0 | Multiple aircraft using the airport have requested a turf surface for takeoffs and landings. |
| | Construction | Establishment of Alternate Operating Area (AOA). Includes relocation of PAPIs at approach end of Runway 32 and Relocation of Both Windsocks to Being Outside of the ROFA for the Runway | $826,980 | $744,282 | $82,698 | $0 | Multiple aircraft using the airport have requested a turf surface for takeoffs and landings. |
| | | **Totals:** | **$17,595,370** | **$15,835,833** | **$1,759,537** | **$0** | |

**Source:** Garver, 2022.

APPENDIX A

# Airport Layout Plan

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