Airport Master Plan

Draft Existing Conditions and Needs Report

Pinal Airpark
Marana, Arizona

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June 2014

Submitted by

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Airport Master Plan Update

Existing Conditions and Needs

Prepared for
Pinal Airpark

By
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June 2014

ADOT No. E3S3R

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CHAPTER 1 - INTRODUCTION

Pinal Airpark (MZJ or Airport), owned and operated by Pinal County, is a public-use, General Aviation (GA) facility. The current Airport Layout Plan (ALP) was approved by the Federal Aviation Administration (FAA) in 1992. The sponsor of the facility initiated this Airport Master Plan Update in 2013 in order to determine the current and future potential of the Airport, and to identify specific opportunities for improving airport facilities. The study was funded jointly by the Arizona Department of Transportation (ADOT) and Pinal County.

This Airport Master Plan Update will assist in addressing the findings of the FAA report, *General Aviation Airports: A National Asset (ASSET Report),* and the recently published, follow-up report, *ASSET 2 – In Depth Review of 497 Unclassified Airports* as they relate to Pinal Airpark. The reports evaluated the GA airports included in the National Plan of Integrated Airport Systems (NPIAS) and classified them among four new categories (national, regional, local and basic) based on existing activity measures. According to the results, Pinal Airpark was one of several hundred across the country that could not be categorized as it did not meet the criteria outlined under Appendix 1 of the ASSET 2 Report. These airports, listed as "unclassified," are being further evaluated. The County is currently coordinating with the FAA to share the significant economic, community and aviation benefits offered by the Airport. This Airport Master Plan Update will support these discussions and detail the progress that has been made by the County to bring the Airport into compliance with federal standards. Examples of how the Airport serves as a critical aviation and community asset include the following:

- As a GA airport, Pinal Airpark accommodates all types of private aircraft serving the needs of the flying public and helping connect Pinal County to the rest of the state and country.
- The Airport is a public-use facility with services including fuel and aircraft storage for visiting pilots.
- The Airport is a key contributor to the economy. Its main tenant, Marana Aerospace Solutions (MAS), employs approximately 150 full-time staff and at peak times has up to 475 employees including contracted positions.
- Many aircraft in the world's airliner fleets are stored, maintained, repaired, or recycled at the Airport.
- The Silver Bell Army Heliport (SBAH), which hosts five different aviation units, abuts the airports property line, and makes use of the runway and taxiway for flight training.
- The U.S. Special Operations Command (USSOCOM) operates the Parachute Training and Testing Facility (PTTF) adjacent to the airport property and is one of the largest users of the Airport.

These will be discussed in more detail throughout the Airport Master Plan Update. In addition to the benefits offered by the Airport, projections for the Airport's activity

also support its inclusion in the NPIAS. It is anticipated that the criteria of the basic classification will be met in the future due to recent changes in the Airport's operation and forecasted aviation demand.

1.01 Planning Scope and Guidelines

The main objective of this Airport Master Plan Update is to outline the goals and vision for the Airport and document the extent, type and schedule of development needed to accommodate existing needs and future aviation demand. The recommended development shall be presented in the following three planning periods:

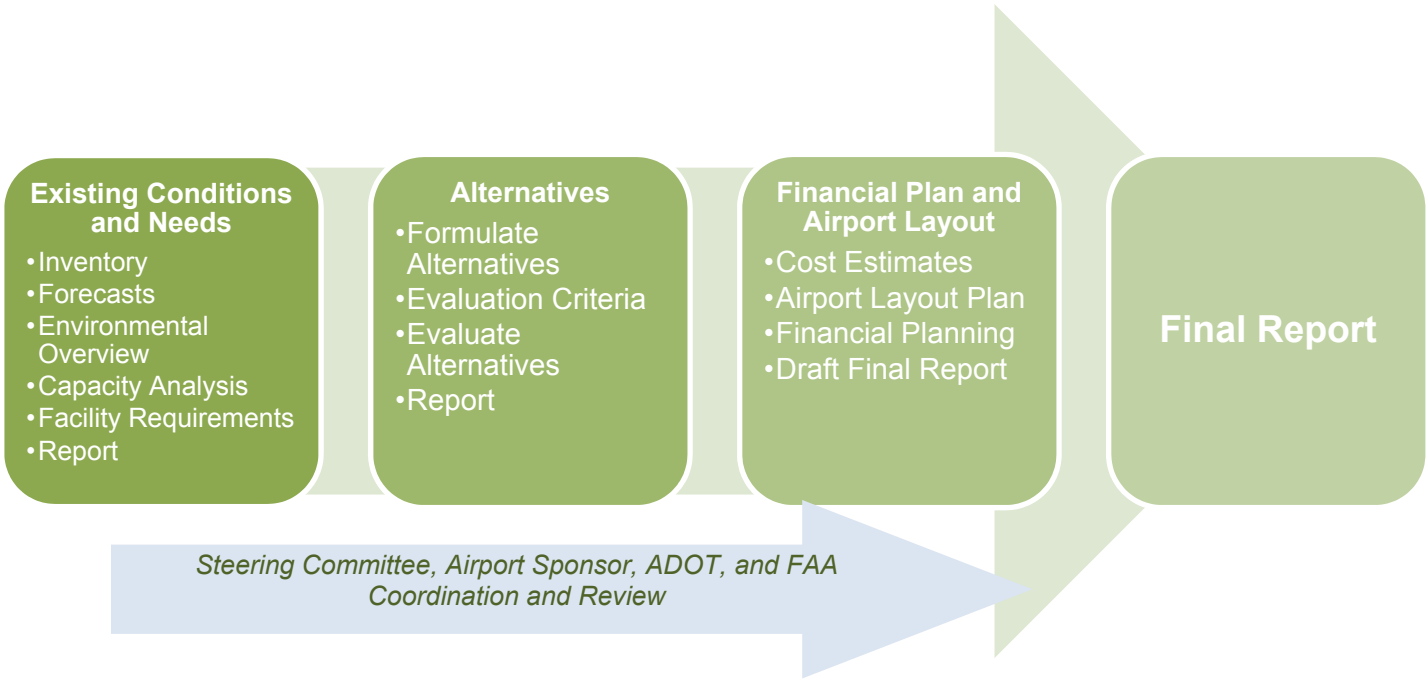
- Short-term (2014-2018);
- Intermediate-term (2019-2023); and
- Long-term (2024-2033).

The recommended development program will satisfy aviation demand and be compatible with the environment, community development, and other transportation modes. Above all else, the plan will be technically sound, practical and economically feasible. The following objectives serve as a guide in the preparation of this study:

- Consider the effects of national and local aviation trends and changes in FAA design standards;
- Provide a rational, technically sound basis for project development decision-making;
- Realize the existing capacity of available airport infrastructure and determine when future growth in activity and/or regional development may require construction or expansion;
- Understand the issues, opportunities and constraints of local airport development;
- Quantify estimated costs, potential funding sources and a schedule for implementation of proposed projects;
- Engage stakeholders and the general public on airport development issues and plans; and
- Comply with all applicable federal, state and local regulations pertaining to airport development planning and programming.

1.02 The Planning Process

The planning process for the Airport Master Plan Update is comprised of four basic steps:



The first step of the Airport Master Plan Update involves an examination of existing conditions including data collection and an airport inventory, an operations analysis, and an environmental overview that will inform an identification of assets and deficiencies. Also included in this step is a needs analysis that involves preparing aviation demand forecasts, translating these forecast values into a listing of required airport facilities, and analyzing the demand/capacity relationships at the Airport. In this Airport Master Plan Update, this step is presented in Chapters 1 through 4.

The second step, using the analyses in Chapters 1 through 4, is to inform the development of alternative concepts. The alternatives are evaluated and the findings presented in Chapter 5.

The third step involves the identification and detailing of recommended actions and presents a phased Capital Improvement Program (CIP), financial program, and an analysis of economic and financial feasibility.

The fourth and final step is the implementation of the plan. This Airport Master Plan Update is meant to be an active guide for the future development of the Airport, and should be used as such.

The Airport has established a Steering Committee, which includes but is not limited to representatives from the following entities/organization:

- Key review and support agencies
- Military and business operations based at the Airport
- Pinal County including airport management
- Arizona State Land Department
- Pinal County Planning
- Land use planning
- Nearby municipalities and jurisdictions

A full list of participants of each team/group is provided in **Appendix A**. The role of the Steering Committee is meant to:

- Provide airport data and information
- Provide input on technical issues
- Identify existing and future needs
- Advise on potential impacts
- Advise on public relations

CHAPTER 2 - EXISTING CONDITIONS

The first step in the preparation of the Airport Master Plan Update is to assemble information about existing conditions at the Airport and in the surrounding communities. The information gathered herein will provide a foundation for subsequent analysis.

The inventory step includes an examination of existing airport facilities, air traffic activity and the airspace surrounding the Airport. Additionally, general information regarding the airport setting is gathered. This includes the Airport's role in the regional and national aviation system, local economic and development characteristics, local climate, and demographics.

2.01 Background

2.01-1 Airport System Planning Role

Airport planning occurs at local, regional, and national levels, each with its own particular emphasis. The update of the Airport's Master Plan provides planning at the local level.

The Airport is included in the *National Plan of Integrated Airport Systems 2013-2017 (NPIAS)*. This planning document includes 3,330 existing airports that are significant to national air transportation and estimates that $42.5 billion in infrastructure development that is eligible for federal aid will be needed over the next five years to meet the needs of all segments of civil aviation. General Aviation (GA) airports such as Pinal Airpark account for 23 percent of the total development. These airports are the nearest source of air transportation for nearly 20 percent of the country's population and play a key role in rural areas. In 2009, it is estimated that GA activities contributed $38.9 billion in total economic output. In administering the Airport Improvement Program (AIP), the FAA uses the NPIAS, which supports the FAA's strategic goals for safety, system efficiency, and environmental compatibility by identifying the specific airport improvements that will contribute to achievement of those goals.

As discussed in the Introduction, the FAA published a report in 2012 titled *General Aviation Airports: A National Asset*, which divided the GA airports included in the NPIAS among four new categories (national, regional, local and basic) based on existing activity measures. This study determined that there were 497 airports including Pinal Airpark that could not be classified based on the criteria used (a subsequent report titled *Asset 2: In-Depth Review of the 497 Unclassified Airports* confirmed that Pinal Airpark remains unclassified). This Airport Master Plan Update describes the significant economic, community and aviation benefits offered by the Airport and will support the County's efforts to maintain the Airport's inclusion in

the NPIAS. Furthermore, it is anticipated that the criteria of the basic classification will be met in the future due to recent changes in the Airport's operation (discussed further herein) and projected activity.

At the state level, the Arizona Department of Transportation (ADOT) prepared the *Arizona State Airport System Plan* (*SASP*), published in 2008. This document provides the foundation for integrated planning, operation and development of the state's aviation assets. In order to assess the system, airports were divided among five major groups based on 21 factors related to the needs they serve and their current activity; these factors included:

- Population served
- Businesses served
- Number of pilots served
- Retail sales
- Hotel rooms nearby
- Type of aviation services offered
- Airside and landside facilities
- Current demand
- Expansion potential
- Zoning controls
- Community support
- Community outreach efforts

Based on their scores within the 21 categories, airports were categorized as Commercial Service, Reliever, GA – Community, GA – Rural, and GA – Basic. Pinal Airpark was classified as a GA – Community airport, one that serves regional economies connecting to state and national economies and serves all types of GA aircraft. The SASP recommends the following facilities and services to support the GA – Community airport role in the state system (the Airport currently meets these requirements with the exception of those *italicized*):

- Airport Reference Code (ARC) of at least B-II
- Accommodate 75 percent of large aircraft at 60-percent of their useful load
- Runway width able to accommodate the Airport's ARC
- Asphalt/paved runway
- Full or partial parallel taxiway wide enough to accommodate the Airport's ARC
- *Non-precision approach*
- Rotating beacon
- Lighted wind cone/segmented circle
- *Runway End Identifier Lights (REILs)*
- *Visual Glide Slope Indicator (VGSI)*
- Medium Intensity Runway Lighting (MIRL) and *Medium Intensity Taxiway Lighting (MITL)*
- Perimeter fencing
- Limited-service Fixed-Base Operator (FBO)
- Limited maintenance
- *On-site ground transportation*
- Telephone and restroom
- Fuel availability (Aviation Gasoline [AvGas] and Jet-A)
- Terminal building with appropriate facilities
- *Hangars capable of accommodating at least 60 percent of the based fleet and 25 percent of the overnight fleet*
- *Apron area capable of accommodating 40 percent of the based fleet and 50 percent of the transient fleet*[1]
- Vehicle parking capable of accommodating 33 percent of the based fleet

Finally, at the regional level, the Pima Association of Governments (PAG) prepares a Regional Airport System Plan (RASP) that includes Pinal Airpark (as well as Ajo Municipal, Benson Municipal, Davis-Monthan Air Force Base, La Cholla Airpark, Marana Northwest Regional, Ryan Airfield, Sells Airport, Tucson International Airport, and Benson Municipal Airport [added to the system since the 2002 RASP]). The initial RASP was completed in 1985, with subsequent updates in 1995 and 2002.

The 2002 update focused on the following key objectives:

- Determine how changes and shifts in the aviation industry have affected the demand for aviation facilities.
- Evaluate how new domestic and international trends and technologies may impact aviation needs.
- Assess the regional and global economy's impacts on the aviation needs of airports within PAG.
- Identify the need and opportunity to provide intermodal transfer facilities and enhanced connections between transportation modes.

[1] Although not on the designated apron, additional aircraft storage is available over the decommissioned runways.

The goals of the Regional Aviation System are:

- "To provide an airport system that offers ample capacity to meet current and future demand.
- To support an airport system that adheres to applicable ADOT and FAA standards.
- To encourage an airport system that supports economic growth and diversification.
- To foster a system of airports that is compatible with the environment, while maintaining its flexibility for future growth.
- To encourage a system of airports that is matched to available funding resources.
- To promote a system of airports that is accessible from both the ground and the air."[2]

In order to identify future needs to meet the demand of the system, airports were again classified according to their accessibility, population and employment/businesses served, surrounding development, ownership, facilities, and services offered. Based on this categorization, Pinal Airpark was selected as a Level I facility (along with Marana Northwest Regional, Ryan Airfield, and Tucson International Airport).

The RASP determined facility and service objectives for Level I airports to include the following:

[2] Pima Association of Governments (PAG). *Regional Airport System Plan*. 2002.

Airside Facilities	Landside Facilities	Services
•Airplane Design Group of ≥ C •Runway length ≥ 5,000 ft. •Runway width ≥ 100 ft. •Full parallel taxiway •Precision instrument approach •High Intensity Runway LIghting (HIRL) or MIRL with MITL •Rotating beacon, lighted wind cone/segmented circle, REILs, VGSI •Automated Weather Observation	•Hangars able to accommodate 100% of based fleet and 50% of overnight aircraft •Apron able to accommodate 25% of based fleet and 50% of transient aircraft •Terminal/administration building ≥ 1,500 to 2,000 sf. •Operations/Maintenance Hangar ≥ 10,000 sf. •Auto Parking = number of based aircraft plus 25% to accommodate employees, rental cars, and visitors	•Full-service FBO •Full-service maintenance services and maintenance hangar •Jet-A and AvGas •Terminal building with telephone, restrooms, flight planning/lounge •On-site car rental •Security fencing, controlled access, night guard, terminal/hangar security lighting •All utilities •Full-service food

≥ : equal to or greater than ft.: feet sf.: square feet

The following recommendations were made for the Airport:

- Improve pavement to meet a Pavement Condition Index (PCI) rating of 80
- Pursue inclusion of the Airport in the local comprehensive plan
- Update/develop the ALP and/or Master Plan (under preparation)
- Develop a Business/Financial Plan and property values
- The County, as the local public sponsor, should contribute to capital projects and operation and maintenance costs (implemented)
- Update rates and charges
- Establish Minimum Standards (under preparation)
- Implement a published approach
- Install HIRL or MITL
- Install Visual Approach Slope Indicators (VASIs)
- Install REILs
- Install an Automated Weather Observation Station (AWOS) (completed but does not record data)
- Provide an additional 41 hangar/storage spaces by 2030
- Provide a pilot lounge and on-site rental car facilities

Several of these recommendations have been or are being implemented for the Airport. The remaining recommendations will be reevaluated under the Facility Requirements section of this Airport Master Plan Update.

2.01-2 Airport History

Like many U.S. GA airports, Pinal Airpark (originally known as the Marana Army Air Field) was constructed in the early 1940s (1942) for Army Air Corps pilot training purposes. Several runways were constructed to accommodate this activity. When the Army Air Corps discarded most of the facilities in 1948 through the War Assets Administration, Pinal County accepted a deed to the property, agreeing that the "entire landing area, and all structures, improvements, facilities and equipment...shall be maintained for the use and benefit of the public" and that no single company or individual would receive "exclusive right" to the Airport.

Following this agreement, the County initiated several facility and land leases with a variety of tenants up until 1951 when the entire Airport was leased to Darr Aero Tech, Inc., who reconstructed all facilities including the runways, roads and buildings. This Airport-wide lease set the stage for the next half-century, during which several companies entered into agreements with the County until Evergreen Air Center (EAC), a Maintenance, Repair and Overhaul (MRO) operator, purchased Marana Air Park, Inc., (the previous lease-holder) and in 1982 received a 25-year extension to Marana's original 10-year agreement.

In 1991 the County sponsored the Pinal Airpark Master Plan, which described a need for major improvements and estimated that it would cost approximately $35 million to enhance the economic value of the Airport. In order to accomplish this, the Master Plan recommended that the County renegotiate its lease with EAC to eradicate barriers to federal funding and correct existing violations to Pinal County's agreement with the War Assets Administration (which prohibited exclusive rights to the Airport by a single entity). However, in 1992 EAC's lease was extended until 2032. Four years later the Department of Defense (DOD) condemned approximately 500 acres of federally obligated airport land west of the runway for continued use as a parachute training and testing "drop zone" by the United States Special Operations Command (USSOCOM). The USSOCOM's Parachute Training and Testing Facility (PTTF) remains adjacent to the Airport.

In 2003, the FAA issued a letter to the County identifying the following noncompliance issues related to the Airport's federal obligations (see **Appendix B**):

1. Airfield safety, specifically related to pavement condition and proper airspace clearances consistent with Federal Aviation Regulation (FAR) Part 77.
2. Exclusive rights due to the lease agreement with EAC that violated the 1948 property agreement with the War Assets Administration and Title 49 of the U.S. Code, Section 40103(e), the exclusive-right statute.
3. Non-aeronautical land use by EAC including a race track and firing range, which may violate the property agreement with the Army Air Corps.
4. Release and sale of obligated Airport land. The 1992 land release to the DOD was conducted without the FAA's agreement. Again, this was contrary to the property agreement with the Army Air Corps. In addition to this violation, the

conveyance of revenue-producing property obligates the County to use the net sale proceeds for the Airport's operation, maintenance or development.

While airfield safety will be a key focus of this Airport Master Plan Update, the remaining issues have been addressed or will be in the near future. In 2012 EAC's lease was sold to Marana Aerospace Solutions, Inc. (MAS), another MRO company who also operates an FBO at the Airport. MAS agreed to amend the lease to eliminate its offending provisions as well as the exclusive right to the Airport. Per the amended lease signed on July 18, 2013, (see **Appendix B**) MAS no longer has exclusive use of the Airport but continues to lease a significant portion of the property and its facilities. This includes the business area on the landside, the storage triangle over the decommissioned runways, the active work area on the apron (may be reconfigured if recommended by this Airport Master Plan Update), the south runway area (may be relocated if recommended by this Airport Master Plan Update), and several areas that are under temporary lease with expiration dates extending a specified number of years (provided below in parentheses) from January 1, 2013, the date the amended lease went into effect:

- The motel (three years);
- The race track and firing range (one year);
- The flight line area toward the southern end of the apron (two years);
- The Albatross Aircraft temporary parking area (two years); and
- Several areas currently subleased to subsidiaries of Evergreen International Aviation, Inc.[3] (See **Appendix B.**)

As described, the non-aeronautical facilities will be turned over to the County; they intend to maintain these uses, investing any revenue generated into the Airport, until this land is needed for aviation purposes.

Source: C&S Companies, Inc., July 7, 2013

The amended lease between the County and MAS also addresses FAA concerns by including the following elements:

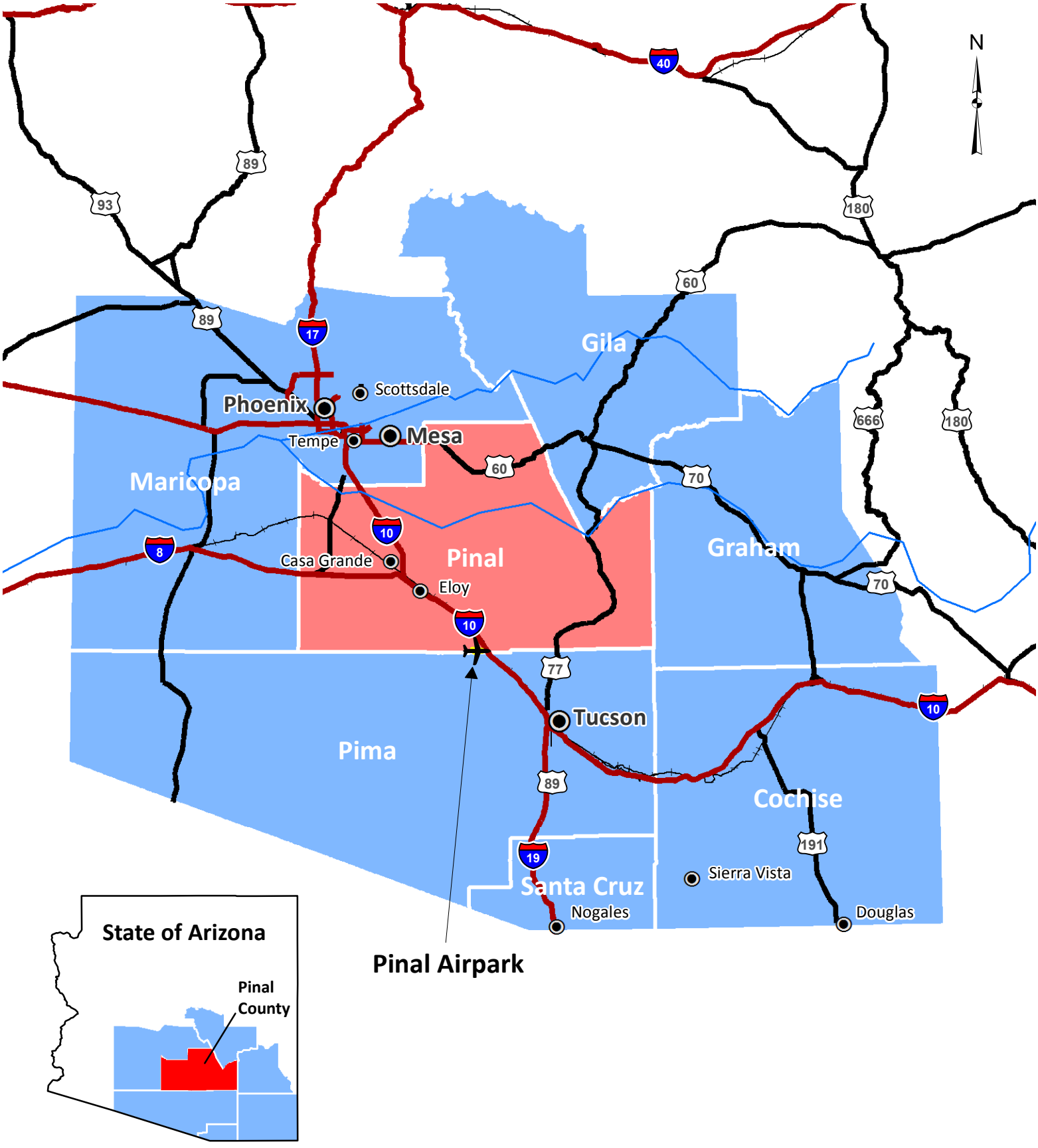
- Rental rates subject to annual adjustments.
- Specific maintenance duties and FBO services that MAS is responsible for (e.g., fueling, parking, and tie-downs services).
- Requirement of County approval of subleasing.
- Description of the limited circumstances under which MAS may encumber the leasehold interest to finance tenant improvements.
- Provides for a subsequent lease amendment at the conclusion of the Airport Master Plan Update.

[3] As of March 2014, the Evergreen subsidiaries have declared Chapter 7 bankruptcy and have dismissed their employees.

Finally, the County has installed a modular building on-site to be used by their staff and is in the process of installing airport fencing that will facilitate public access (as shown on **Figure 2-3**). The guard gate previously installed at the entrance to the Airport has also been removed.

2.01-3 Airport Setting

Figures 2-1 and **2-2** depict the location of the Airport in southern Pinal County adjacent to the border of Pima County. The Airport is located approximately nine miles (driving distance) northwest of the city center of Marana, which is accessible via Interstate 10. The Airport's elevation is approximately 1,893 feet above mean sea level; its geographic location is latitude 32° 30' 35.40" North, longitude 111° 19' 31.20" West.



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Pinal Airpark
Location Map
Figure 2-1

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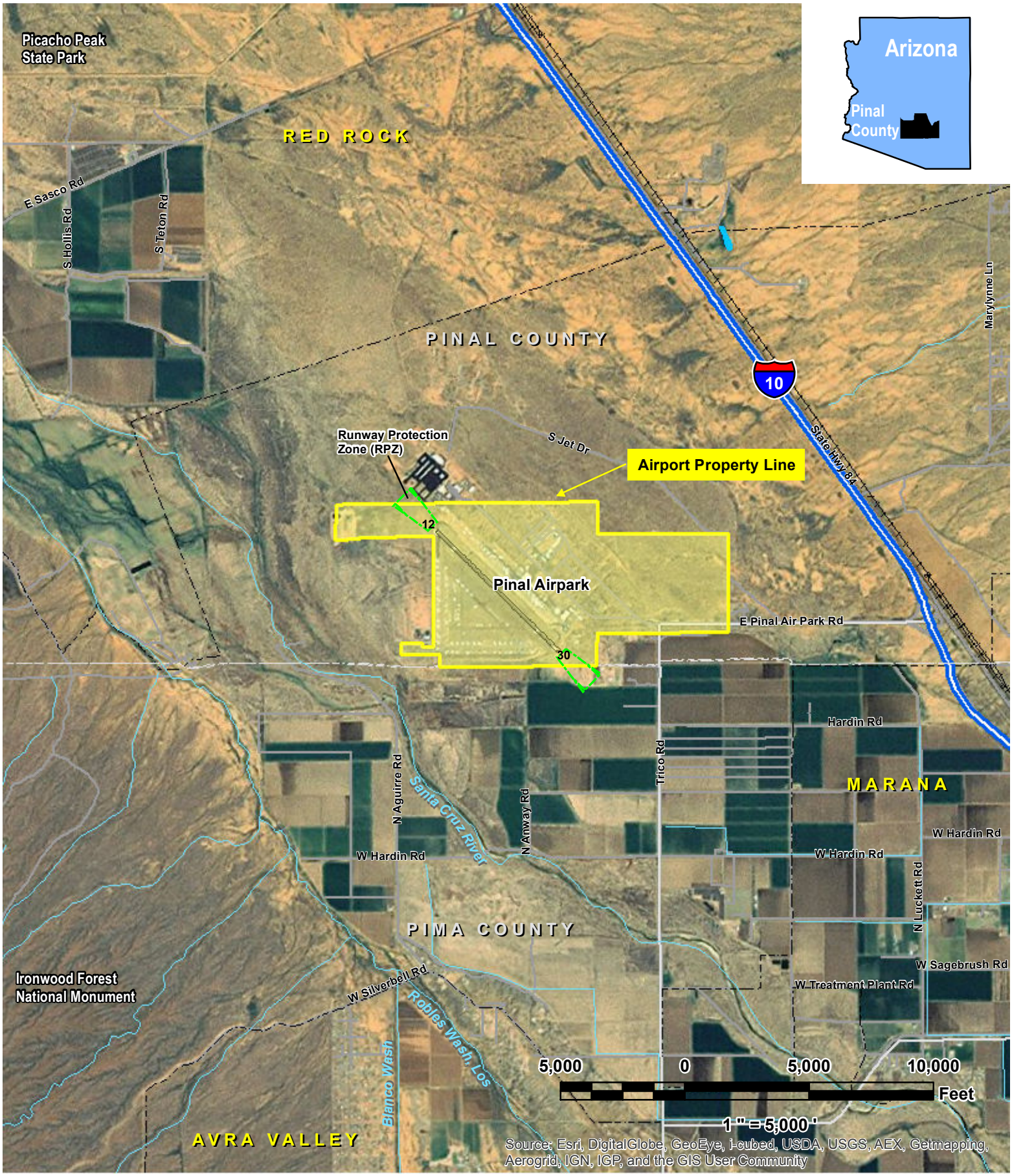

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Pinal Airpark
Vicinity
Figure 2-2

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2.01-4 Ownership and Key Tenants

The Airport is owned and operated by Pinal County, who also operates San Manuel Airport[4] approximately 35 nautical miles northeast of Pinal Airpark. The County recently installed a modular building on Airport property to provide office space for their staff and establish a County presence. Several other entities play key roles at the Airport and are described in the table below.

TABLE 2-1
ENTITIES OPERATING AT AIRPORT

Entity	Activity at Pinal Airpark	Lease/Arrangement
Marana Aerospace Solutions, Inc.	Operates an MRO service (heavy maintenance, overhaul, commercial storage, component repairs, paint, interior, detailing, end-of-life options, etc.) and FBO.	Per the amended lease signed on July 18, 2013, (see Section 2.01-3 and **Appendix B**) MAS no longer has exclusive use of the Airport but continues to lease a significant portion of the Airport and its facilities.
Evergreen Trade, Inc. (ETI) & Evergreen International Airlines, Inc. (EIA)[5]	Scrapping of old aircraft for resale (to original owner or new customer).	Sub-leases facilities and space from MAS (see 4th Amendment Lease in A**ppendix B**); these areas may be relocated based on recommendations from this Airport Master Plan Update. Additionally, MAS's lease of these properties ends on May 31, 2016. Upon written request by the County, MAS shall then assign the sub-lease to Pinal County. Note: Both ETI and EIA dismissed their staff in early 2014 after filing Chapter 7 bankruptcy; the exact plans for their operations are unknown at this time.
USSOCOM	Parachute testing and jump training.	Operates out of the PTTF just west of the Airport. The USSOCOM utilizes the Airport's runway, taxiways, and apron, in addition to the laundry service (to meet the needs of the dorms within the PTTF facility). They also purchase a significant amount of fuel from MAS.
Arizona Army National Guard (ARNG) and Other Tenant Organizations at the Silver Bell Army Heliport (SBAH)	Helicopter aircrew training associated with the SBAH.	The SBAH is not located on airport property but immediately adjacent to Pinal Airpark on its north side. Helicopter pilots use the Airport's pavements (runway, taxiways and aprons) but do not utilize any facility space.

Source: Pinal County

[4] The Airport is privately owned by BHP Billiton mining company but leased to Pinal County.
[5] Subsidiary of Evergreen International Aviation, Inc.

2.01-5 Airport Economic Impact

General Aviation airports positively contribute to their surrounding communities. A report titled *Economic Impact of Aviation in Arizona* was completed by Elliott D. Pollack and Company for ADOT in 2012. According to this report, the economic output of GA activity in Arizona totaled approximately $609 million and nearly 6,900 jobs (directly, indirectly and induced).[6] As previously discussed, Pinal Airpark is also home to MRO operations and military activity. According to this report, the aerospace manufacturing industry is one of Arizona's most valuable industries due to its high-paying jobs, associated expansion of a skilled labor force, and economic stimulus through export of manufactured products. Aerospace supports approximately 103,200 jobs in the state and results in an economic impact of $20.4 billion. Finally, military activity including that at the SBAH equates to approximately 92,103 jobs and $7,631.3 million in economic output.

2.02 Inventory and Description of Existing Facilities

The following sections provide background and information regarding the facilities that currently exist at the Airport. These facilities are depicted on **Figure 2-3, Existing Airport Layout**. The specific types and quantities of facilities identified in these sections will be evaluated in Chapter 4, in conjunction with forecast demand and established planning criteria, to determine future needs for the Airport.

As noted throughout this section, the majority of the Airport's pavements are in poor condition and in need of significant upgrades. The deterioration of infrastructure may have partially precipitated the decrease in GA activity at the Airport over the past decade.

[6] Elliott D. Pollack and Company. *Economic Impact of Airports in Arizona.* Prepared for the Arizona Department of Transportation. 2012. < https://www.azdot.gov/docs/default-source/airport-development/az_aviation_impact_study_final_web.pdf?sfvrsn=2>.

Pinal Airpark

Existing Airport Layout

DRAFT

Figure 2-3

LEGEND	
Existing	Description
	Runway Centerline
RSA	Runway Safety Area (RSA)
ROFA	Runway Object Free Area (ROFA)
OFZ	Runway Obstacle Free Zone (ROFZ)
RPZ	Runway Protection Zone (RPZ)
TSA	Taxiway Safety Area (TSA)
TOFA	Taxiway Object Free Area (TOFA)
BRL	Building Restriction Line (BRL)
	Central Portion of RPZ
	Airport Buildings
	Off Airport Buildings
	Airfield Pavement
	Airport Property Line
	Chain Link Fencing
	Livestock Fencing
1880	Ground Elevation Contours
	Airport Reference Point (ARP)
	Survey Monuments
	Threshold Lights
	Segmented Circle
	Windcone
26 23 / 25 24	Section Markers

RUNWAY DATA TABLE		
Runway Data	Runway 12 Existing	Runway 30 Existing
Runway Design Code (RDC)	D	
Runway Reference Code (RRC)	V	
Effective Gradient	0.3%	
Maximum Gradient	0.3%	
Percent Wind Coverage (All Weather at 20 Knots)	99.75%	
Runway Length	6,849'	
Runway Width	150'	
Surface Type (Runways and Taxiways)	Asphalt	
Pavement Strength		
Single Wheel	68,000 lbs.	
Dual Wheel	100,000 lbs.	
Double Tandem	270,000 lbs.	
Dual Double Tandem	500,000 lbs.	
Pavement PCN	17	
Approach Surface Slope	20:1	20:1
Approach Type	Visual	Visual
Visibility Minimums	1 Mile	1 Mile
Visual Approach Aids	None	None
Instrument Approach Aids	None	None
Runway Lighting	MIRL	
Runway Marking	Non-Precision	Non-Precision
Runway End Elevations (NAVD 88)	1874.6'	1893.1'
TDZ Elevation (NAVD 88)	1883'	1893.1'
Runway High Point/Low Point (NAVD 88)	1874.6'	1893.1'

RUNWAY DATA TABLE		
Runway Data	Runway 12 Existing	Runway 30 Existing
Runway Protection Zone (RPZ)		
Length	1700'	1700'
Inner Width	500'	500'
Outer Width	1010'	1010'
Runway Safety Area (RSA)		
Length Beyond Runway	1,000'	1,000'
Width	500'	500'
Runway Object Free Area (ROFA)		
Length Beyond Runway	1,000'	1,000'
Width	800'	800'
Obstacle Free Zone (OFZ)		
Length Beyond Runway	200'	200'
Width	400'	400'
Threshold Siting Surface	Category 4	Category 5
FAR Part 77 Category	Visual	Visual
Line of Sight Requirements Met	N/A	N/A
Runway CNTLN to Parallel Taxiway CNTLN	450'	
Runway CNTLN to Hold Bars and Signs	269'	
Taxiway Width	50' / 75'*	
Taxiway Safety Area Width	214'	214'
Taxiway Object Free Area Width	320'	320'
Taxiway CNTLN to Fixed or Movable Object	160'	160'
Objects inside TOZA	Fencing	Fencing
Taxiway	160'	160'

*75' adjacent to apron (150' at Taxiway A1)

SILVER BELL ARMY HELIPORT

CENTRAL PORTION OF RUNWAY PROTECTION ZONE

1010'

1700'

CONTROLLED ACTIVITY AREA OF RUNWAY PROTECTION ZONE

800'

500'

400'

200'

RUNWAY PROTECTION ZONE 500' X 1700' X 1010'

RUNWAY 12 END ELEV:1874.6' LAT: 32° 30' 59.325" LONG: 111° 19' 59.571"

PARACHUTE TRAINING AND TESTING FACILITY DROP ZONE

EXISTING ARP LAT: 32° 30' 35.40" LONG: 111° 19' 31.20"

AIRCRAFT PARKING

RUNWAY 30 END ELEV: 1893.1' LAT: 32° 30' 11.556" LONG: 111° 19' 02.846"

EAPL

PINAL AIR PARK ROAD

TWY A1

TWY A

TWY B

TWY D

TWY E

TAXIWAY A

RUNWAY 12-30

150' X 6849'

TSA

RSA

ROFA

ROFZ

TOFA

524'

425'

636.5'

4300'

249'

240'

200'

1000'

RUNWAY PROTECTION ZONE 500' X 1700' X 1010'

CONTROLLED ACTIVITY AREA OF RUNWAY PROTECTION ZONE

CENTRAL PORTION OF RUNWAY PROTECTION ZONE

FACILITIES TABLE		
Existing		
#	Description	Top of Building Elevation*
1	Decommissioned Control Tower	1936'
2	Hangar	1926'
3	FBO	1932'
4	Base Shops	1932'
5	Warehouse	1932'
6	County Administrative Building	1918'
7	Fuel Facility (Above Ground)	1916'
8	Cafeteria/Office	1918'
9	Motel, Residences and Dormitories	1918'
10	Offices	1918'
11	Race Track	1880'
12	Vehicle Parking	1886'
13	Firing Range	1884'
* Top of Building Elevations are estimated		

RUNWAY END COORDINATES (NAD 83/NAVD 88)		
R/W 12	Latitude	32°30'59.325" N
	Longitude	111°19'59.571" W
R/W 30	Latitude	32°30'11.556" N
	Longitude	111°19'02.846" W

PLAN

SCALE: 1" = 600'

0 600' 1200'

TRUE NORTH

MAGNETIC NORTH

MAGNETIC DECLINATION = 10.33° E (2006)
ANNUAL RATE OF CHANGE = -6.1 MIN/YEAR

AIRPORT DATA TABLE		
Airport Data		Existing
Airport Elevation (MSL)		1893'
Airport Reference Point (NAD 83)		
	Latitude	32°30'35.40"N
	Longitude	111°19'31.20"W
Mean Max Temperature of Hottest Month (June)		100.3*
Airport NAVAIDS		Beacon, Segmented Circle, Wind Cones
Miscellaneous Facilities		AWOS
GPS		No
Airport Reference Code		D-V
Critical Aircraft		Boeing 747-400
Wingspan of Critical Aircraft (feet)		212.9
Undercarriage Width of Critical Aircraft (feet)		12.6
Approach Speed of Critical Aircraft (knots)		157
Maximum Take-off Weight of Critical Aircraft (pounds)		875,000
Airport Magnetic Variation		+10.33°
NPIAS Service Level		GA
Arizona Service Role		GA - Community

*Source: National Climatic Data Center (data taken from Tucson International Airport; no records for Pinal Airpark)

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2.02-2 Airspace

The closest airport to Pinal Airpark is Marana Regional Airport, at a distance of only eight nautical miles. In addition to Marana Regional, there are six operating airports within a 35-nautical mile radius of Pinal Airpark. Descriptions of the airports are included in **Table 2-2**.

Aircraft navigate from one airport to another using Visual Flight Rules (VFR) or Instrument Flight Rules (IFR). The term VFR refers to rules that govern the procedures for conducting flight under visual conditions. The term IFR refers to a set of rules governing the conduct of flight under instrument meteorological conditions. Each of these terms is also used to indicate a type of flight plan.

Whether a pilot files a VFR or IFR flight plan depends on the weather conditions at the departing and arriving airports, whether or not Air Traffic Control (ATC) services are required, and the class(es) of airspace the pilot will be flying through. The National Airspace System is controlled by the FAA and involves a classification of airspace (A, B, C, D, E, or G) that defines the altitude of various segments of the airspace, required aircraft equipment, and operational restrictions.

Pinal Airpark is located within the southeastern edge of Class E airspace associated with airports to the northwest toward Phoenix. The closest of these airports is Eloy Municipal Airport, located approximately 22 nautical miles northwest of Pinal Airpark.

As part of this Airport Master Plan Update, QED conducted an airspace analysis to determine the potential for Instrument Approach Procedures (IAP) to Pinal Airpark. Additional information regarding the existing airspace conditions is provided within this report in **Appendix F**.

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TABLE 2-2
NEIGHBORING AIRPORTS

Airport	Location	Airport Type	Ownership / Use	Distance from MZJ (nautical miles) and Direction	Runway Information	Instrument Approaches
Marana Regional Airport (AVQ)	Marana, AZ	Reliever	Public / Public	8 Southeast	12-30 (Asphalt) 6,901' x 100' 3-21 (Asphalt) 3,892' x 75'	RNAV (GPS), NDB
Eloy Municipal (E60)	Eloy, AZ	General Aviation	Public / Public	22 Northwest	2-20 (Asphalt) 3,901' x 75'	None
Ryan Airfield (RYN)	Tucson, AZ	Reliever	Private / Public	23 Southeast	6R-24L (Asphalt) 5,503' x 75' 6L-24R (Asphalt) 4,900' x 75' 15-33 (Asphalt) 4,000' x 75'	ILS OR LOC, NDB/DME OR GPS
Coolidge Municipal Airport (P08)	Coolidge, AZ	General Aviation	Public / Public	26 North	5-23 (Asphalt) 5,564' x 150' 17-35 (Asphalt) 3,873' x 75'	GPS, VOR/DME
Davis-Monthan Air Force Base (DMA)	Tucson, AZ	Military (USAF)	USAF / Private	30 Southeast	12-30 (PEM) 13,643' x 200'	HI-ILS OR LOC/DME, ILS OR LOC/DME, HI-TACAN, TACAN
Tucson International Airport (TUS)	Tucson, AZ	Primary (Medium Hub)	Public / Public	31 Southeast	11L-29R (Asphalt) 10,996' x 150' 11R-29L (Asphalt) 8,408' x 75' 3-21 (Asphalt) 7,000' x 150'	ILS OR LOC, RNAV (RNP), RNAV (GPS), LOC/DME, VOR/DME OR TACAN
San Manuel Airport (E77)	San Manuel, AZ	General Aviation	Public* / Public	35 Northeast	11-29 (Asphalt) 4,207' x 75'	None

* The Airport is privately owned by BHP Billiton mining company but leased to Pinal County.
Acronyms: United States Air Force (USAF), Porous European Mix (PEM) (partially concrete, asphalt, or bitumen-bound), Area Navigation (RNAV), Global Positioning System (GPS), Nondirectional Beacon (NDB), Instrument Landing System (ILS), Localizer (LOC), Distance Measuring Equipment (DME), Very High Frequency Omni-Directional Range (VOR), Tactical Air Navigation (TACAN)
Source: AirNav

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INSTRUMENT APPROACH PROCEDURES

An IAP is a flight procedure that provides a transition from the en route flight environment to a point from which a safe landing can be accomplished. When the cloud ceilings are low and visibility is poor, flights must use published IAPs when transitioning to the landing environment. The FAA has established ceiling and visibility minimums by category of aircraft for each IAP at an airport. Currently there are no IAPs at Pinal Airpark. As previously mentioned, QED conducted an airspace analysis to determine the potential for IAPs to Pinal Airpark (see **Appendix F**). This will be further explored under the Facility Requirements chapter.

WEATHER REPORTING

An Automated Weather Observation System (AWOS) provides meteorological data such as wind speed and direction, air temperature, and visibility to pilots. As a training facility, on-site reporting offered by the AWOS at Pinal Airpark is a great asset. The AWOS was installed by the USSOCOM but is currently maintained by Vaisala (the manufacturer) and serviced three times a year to comply with FAA guidelines. It is in good condition but does not transmit records to the National Climatic Data Center; only real-time data is provided to pilots.

VISUAL AIDS TO NAVIGATION

Visual aids to navigation are extremely important, especially for airports such as Pinal Airpark that lack IAPs. The visual aids at the Airport include a segmented circle, wind cones, and a rotating beacon. There are no Runway End Identifier Lights (REIL) or Visual Glide Slope Indicators (VGSI).

Segmented Circle

A segmented circle assists pilots in locating an airport and provides traffic pattern information. The circle indicates the airport's location while providing a centralized area for the associated components including the wind direction indictor, the landing strip indictors (installed in pairs to show the alignment of the runway[s]), and traffic pattern indicators (also arranged in pairs with the landing strip indicators to indicate the direction of turns, especially important when the normal left-hand traffic pattern is not being used). The Airport has a segmented circle located mid-field between the runway and parallel taxiway.

Wind Cone

A wind cone indicates wind direction and relative wind speed to pilots so that they can determine the most suitable runway end to take off and/or land. The Airport has three wind cones, all in poor condition. There is a lighted wind cone located mid-field within the segmented circle (pictured). According to airport users, this wind cone does not currently rotate in the wind. Two unlit, faded wind cones are positioned on either side of the runway toward the approach end of Runway 30. There are additional wind cones located at the PTTF (two) and SBAH (one).

Source: C&S Engineers, Inc., August 6, 2013

Rotating Beacon

The location of an airport at night is universally indicated by a rotating beacon that projects two beams of light, one white and one green, 180 degrees apart. The beams of white and green light indicate that the airport is a lighted civil land airport. Pinal Airpark has a rotating beacon in the southeast corner near the approach end of Runway 30. The lights were recently replaced and are now in good condition.

OBSTRUCTIONS

The FAA Airport Master Record Form 5010 identifies no obstructions. An analysis of FAR Part 77 and Runway End Sitting Surface (RESS) obstructions will be provided in Chapter 4.

2.02-3 Airside Facilities

Airside facilities include runways, taxiways, lighting, marking and signage. Characteristics of the runway and taxiway system at the Airport and the safety areas and object free areas that surround them are described in the following sections (refer to the Infrastructure Assessment in **Appendix C** for additional information).

RUNWAYS

The Airport has one active runway, designated 12-30, that is approximately 6,849 feet long and 150 feet wide, with a northwest-southeast orientation. Additional runways have been decommissioned since its use for Army Air Corps pilot training; these areas are now used for aircraft parking associated with the MRO activities. Blast pads

on either end of Runway 12-30 have also been decommissioned (the pavement has since been removed).

C&S Engineers, Inc., conducted a pavement inspection on August 6, 2013, and noted that the runway surface is oxidized, brittle, and severely cracked. Indications of subsurface failures were also observed. It did not appear that any pavement surface treatments (other than crack seal) have been performed since a runway overlay in 1988.

Runway 12-30
Source: C&S Engineers, Inc., June 11, 2013

During C&S's site investigation, rainstorms highlighted the significant drainage issues across the Airport's pavements. Ponding water was observed throughout the airfield, which typically leads to subsurface failures if the water penetrates into the underlying structural layers. The pavement surface shows signs of failure and depressions from heavy loading. According to a pavement inspection performed by APTech in April 2013 as part of ADOT Airfield Pavement Management System (APMS) Update, the average Pavement Condition Index (PCI) value for the runway is currently 17. Under the APMS program, all pavements under a PCI of 55 are categorized as areas to be reconstructed rather than maintained.

Because of funding, the full-depth reconstruction alternatives are difficult to accomplish. Therefore, on September 4, 2013, Pinal County published a Request for Proposals for the design of a pavement rehabilitation project consisting of milling off a minimum of two inches of asphalt concrete and placing three inches of new pavement. This repair method will serve the Airport for up to five years, depending on the effect of the failed subgrade and the amount of traffic on the new surface.

This runway system and its physical characteristics are described further in **Table 2-3.**

TABLE 2-3
RUNWAY CHARACTERISTICS

Characteristics	Runway 12-30
PCI	17
Length (feet)	6,849
Width (feet)	150
Condition	Poor
Composition	Asphalt

Source: FAA Airport Master Record Form 5010 and C&S Engineers, Inc.

TAXIWAYS

The taxiway system at the Airport consists of a full parallel taxiway (Taxiway A) and four active connecting taxiway segments (A1, B, D, and E). **Table 2-4** describes the taxiways and their characteristics. As observed during a site visit by C&S on August 6, 2013, each taxiway experiences varying degrees of water collection/ponding and significant drainage issues, most notably at the hold lines.

Hold Line at Taxiway A1
Source: C&S Engineers, Inc., August 6, 2013

Taxiway D Facing Northeast
Source: C&S Engineers, Inc., August 6, 2013

According to the pavement inspection performed by APTech as part of ADOT's APMS program, Taxiway A currently has an average PCI value of 59. Although this exceeds ADOT's threshold for reconstruction (55), this value will continue to decrease without maintenance. The connector taxiways were designated with an average PCI value of 10 according to APTech, requiring complete reconstruction. According to a report prepared by Dibble Engineering, the connector taxiways may not be adequate for the aircraft fleet mix utilizing the Airport.

TABLE 2-4
TAXIWAY CHARACTERISTICS

Taxiway	PCI	Width (feet)	Description	Shoulders
A	59	75 along apron, 50 elsewhere (150 at A1 connection)	Full parallel taxiway to Runway 12-30 located on the north side of the runway	Only on southern side of taxiway; varies from 12 to 15 feet
A1	10	150	Connects Taxiway A to Runway 12 (Taxiway A transitions into Taxiway A1 at the hold line to Runway 12)	N/A
B	10	50	Connects Taxiway A to Runway 12-30 near northern edge of apron	N/A
D	10	50	Connects Taxiway A to runway approximately 1,700 feet from Runway 30 end	N/A
E	10	50	Connects Taxiway A to Runway 30	N/A

Source: APTech pavement inspection performed in April 2013 as part of the Arizona Department of Transportation (ADOT) Airfield Pavement Management System (APMS) Update; C&S Engineers, Inc.

APRON

The Airport's apron is approximately 203,000 square yards adjacent and connecting to Taxiway A. This area is used primarily for aircraft storage and MRO operations. The FBO also offers aircraft storage and services on the southern end of the apron.

Pinal Airpark Apron and Connecting Taxiway A
Source: C&S Engineers, Inc., June 2013

It appears that the apron is one of the original airport pavement areas constructed in 1942. The pavement is in poor condition. The surface is severely cracked and there are several corner breaks. As observed during C&S's site visit, it appears that the apron is near, or has exceeded, its original design life.

According to the ADOT APMS pavement inspection in April 2013, this pavement has an average PCI of 26. In addition to its poor condition, foreign object debris (FOD) and the apron's thickness present concerns for operating pilots. According to a report titled *Geotechnical Data Report, Pinal Airpark Main Apron*, prepared by Ninyo & Moore and dated November 1, 2013, the average pavement thickness of the apron is approximately 6.2 inches (see **Appendix C**).

The majority of the apron space is currently used by MAS or the Evergreen subsidiaries[7] for MRO services (in addition to an approximately 21-acre unpaved area north of the apron). An area measuring approximately 30,000 square yards on the southern end of the apron near the FBO operation is available for based aircraft parking, parking of transient GA aircraft, and FBO maintenance and service activities. Additionally, there is a parking pad off of Taxiway E measuring approximately 6,800 square yards for aircraft storage.

[7] As of March 2014, the Evergreen subsidiaries have dismissed their employees after filing for Chapter 7 bankruptcy.

There are currently 12 to 15 aircraft parking spaces available for transient aircraft. Availability is dependent upon the size of aircraft being stored. This is further reduced if the FBO maintenance staff needs to move aircraft in and out of the adjacent wash rack area. The FBO also has eight dedicated spots for aircraft parking, though additional space is available:

- Three spaces for aircraft such as Cessnas or Pipers
- Three spaces for Rampart Aviation's Casa 212s, which are used by the USSOCOM
- Two spaces for C-130 aircraft used by the USSOCOM on the parking pad off of Taxiway E and north of the Casa 212s off of Taxiway D

These parking spaces include hooks for attaching tie-down cables, which the FBO provides.

In addition to the apron and unpaved area just north of it, additional space is available for aircraft storage associated with the MRO operation. This includes the expansive "storage triangle" consisting of the decommissioned runways and the Albatross Aircraft temporary parking area southeast of Runway 30. (Refer to **Appendix B**.)

LIGHTING, MARKING, AND SIGNAGE

Airfield lighting systems allow aircraft to use the Airport in periods of darkness and/or inclement weather. Pavement markings and guidance signs aid in the movement of aircraft along airport surfaces. The following is a summary of the various lighting and marking systems at the Airport.

Lighting

Edge lighting systems are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. These systems are classified according to the intensity or brightness produced by the lighting system. Runway and taxiway edge lights define the edge of the runway and taxiway pavement.

Runway 12-30 Edge Lights
Source: C&S Engineers, Inc., June 11, 2013

The Airport has Medium-Intensity Runway Lights (MIRL) for the sole functioning runway. These lights are located approximately one to two feet off of the runway edge stripe (some have been hit by aircraft) and were installed after the runway was constructed as evidenced by the clearly defined trench cuts and patches through the shoulder pavement at each light.

Threshold lights emit green light outward from the runway and emit red toward the runway to mark the ends of the runway. The green lights indicate the landing threshold to landing aircraft and the red lights indicate the end of the runway, both landing and departing. The Airport's threshold lights were also installed following the runway's construction.

The taxiways currently have edge reflectors that are approximately five feet from the edge of pavement.

Taxiway A Edge Reflectors
Source: C&S Engineers, Inc., June 11, 2013, and August 6, 2013

Marking

Runway 12-30 centerline and edge markings are painted white. Runway 12-30 has non-precision markings on both ends. The taxiways are marked with a yellow centerline and edge markings. Centerline markings assist aircraft and pilots in maintaining proper clearance from pavement edges and objects near the taxiway exits. White pavement markings also identify aircraft parking positions. Finally, hold lines are marked on each of the taxiway segments to signify a stop location of aircraft entering the runway. The locations of these hold lines comply with FAA design standards excluding the marking on Taxiway A1, which is 200 feet from the runway centerline (rather than 250 feet). All pavement markings are in need of repainting.

Signage

Standard airport signs provide runway and taxiway location, direction, and mandatory instructions, as well as airport situational awareness for aircraft maneuvering on the ground.

Source: C&S Engineers, Inc., August 6, 2013

The distance remaining signs for Runway 12-30 are located approximately 100 feet from the runway edge stripe; according to FAA Advisory Circular (AC) 150/5340-18F, these should be no more than 75 feet from the defined edge of the runway. (It appears as though these were installed 75 feet from the edge of pavement, but because of the shoulder pavement, the defined edge of the runway is actually the runway edge stripe, which places the signs too far away.)

Both the existing guidance signs and distance remaining signs were constructed using an outdated technique where the junction cans are either collocated with one of the sign legs or are located directly beneath the sign itself. These methods of construction have been abandoned over the years because they make maintenance difficult. In order to maintain these signs, technicians must remove the entire sign from the foundation to obtain access to the transformer and the circuit in the junction can. The standard now involves locating the junction box outside of the sign array per FAA AC 150/5345-44. Furthermore, several of the signs have been struck by aircraft or other equipment and require replacement.

2.02-4 Landside Facilities

The landside facilities at the Airport include both aeronautical and non-aeronautical facilities, a fueling station, and vehicle parking.

AIRPORT BUILDINGS AND STRUCTURES

Due to the number of buildings and structures at the Airport, detailed descriptions have been provided in **Appendix B**.

There are several office buildings used by the airport tenants including MAS. They are either concrete block buildings or portable, wooden structures (typical of the more recently constructed facilities). Additionally, the County recently constructed an administrative building measuring approximately 1,440 square feet on airport property that serves as office space for the Airport Manager and a GA public-use terminal building for visiting pilots.

There are numerous storage buildings and warehouses located throughout the Airport ranging in size from small, modular units (many of which are leased to MAS) to

large, metal structures exceeding 8,000 square feet. Aside from a pre-engineered structure installed in 2006, all storage facilities were constructed prior to the 1980s and are in poor to fair condition.

Source: Appraisal Report for Pinal County, Insurance as of February 29, 2012, Produced by Asset Works Appraisal

This storage structure and a second, duplicate structure are located on the east side of the Airport off of the entrance road. Both structures are currently sub-leased by ETI through MAS. The County had been working with these entities to obtain a direct lease with ETI; however, ETI recently declared bankruptcy and ceased operations. The future plans have not been determined as of April 2014.

The Airport also has several structures used for maintenance purposes including garages, modular buildings, and hangars.

There are three conventional hangars located adjacent to the apron. Two of these hangars (Buildings 63 and 74) were constructed in 1950 in the southeast corner of the airport property and are in poor to fair condition. The third, largest hangar (Building 9) was constructed in the late 1980s by Evergreen Air Center, Inc., and is centrally located at mid-point of the Airport's apron. This hangar is in good condition. The three hangars are currently leased by MAS; Buildings 9 and 63 are used for their MRO operation and Building 74 is used by the FBO.

There are currently no hangar facilities available at the Airport to store privately owned and operated aircraft, which is likely a deterrent to area pilots.

Building 63

Building 74 – FBO Hangar

Building 9

Source: Appraisal Report for Pinal County, Insurance as of February 29, 2012, Produced by Asset Works Appraisal

There are a number of single-story non-aeronautical structures (motel units, dormitories, apartments, classrooms and residences) and support facilities (laundry, game room, cafeteria, and pool) that were constructed between 1942 (when the Airport opened as a military training facility) and the 1960s. These facilities are in poor to fair condition. MAS currently holds a lease over the majority of these properties but they will be turned over to the County in three years per the amended lease agreement (see **Appendix B**).

Additional non-aeronautical facilities include a race track and firing range on the north side of the Airport. These areas are also leased and maintained by MAS (though the firing range is primarily used by individuals associated with law enforcement) but will be turned over to the County in one year per the amended agreement.

The Airport has three transformer buildings. MAS reports that the electrical vault powering the airfield is in poor condition. The lack of a backup generator and/or secondary feed to the airfield makes the Airport vulnerable to outages. MAS noted that a recent outage of airfield power lasted for nearly four weeks due to difficulties in finding replacement parts for the existing vault/generator.

AIRCRAFT FUEL FACILITY

The Airport's fuel facility is located east of Runway 30 in a secured area accessed via a looped vehicle roadway extending from the apron area. The tanks were installed in 1990 and are owned and operated by MAS's FBO division. The facility consists of seven 30,000-gallon, above-ground fuel storage tanks (ASTs). There is one AST containing Aviation Gasoline (AvGas), five ASTs containing Jet-A fuel, and one AST containing unleaded gasoline for ground vehicles. There is proper spill containment and three high-capacity fuel pumps at the facility.


Source: C&S Engineers, Inc., August 6, 2013

There is no direct aircraft fueling available at the Airport. Currently, pilots contact the FBO who then provides fueling services on the airfield via truck delivery. Hours of operation are 7 a.m. to 3:30 p.m.; after-hours services are available for a fee.


Re-fueler Truck
Source: C&S Engineers, Inc., June 2013

2.02-5 Access, Circulation and Parking

The following sections describe the access, circulation, and parking at the Airport.

ACCESS

The Airport can be accessed from U.S. Interstate Highway 10 (I-10), which runs north-to-south through the State of Arizona, via Pinal Airpark Road. This road transitions into Del Smith Boulevard on airport property, which provides access to the facilities and extends through the property to the SBAH. It is maintained by the ARNG and is in good condition. The parallel roadway closer to the runway is named Evergreen Way; extending perpendicular is a series of roadways named numerically from First to Eleventh Street. The majority of roadways excluding Del Smith Boulevard are in poor condition.

FENCING

The County and MAS are currently improving/extending the Airport's fencing system. Once completed, the Airport will have the following:

- Livestock fencing to prevent wildlife hazards delineating the southern property line, continuing along the eastern side of the property (excluding a portion of vacant land north of Pinal Airpark Road), and concluding along the northern perimeter of the Airport at the SBAH.
- Four-strand or chain-link fencing separating the aeronautical area (landside and airside) from the non-aeronautical use area with gates at each entrance (total of seven).

PARKING

Parking is available (both paved and unpaved) throughout the landside area of the Airport immediately adjacent to most work areas and facilities. The majority of these parking areas is intended for employee use and tenant visitors. However, there is a parking area measuring approximately 8,500 square yards available for the public (as well as employees) adjacent to Building 9, the primary hangar and office complex

used by MAS. Members of the public and visiting pilots may also park adjacent to the newly constructed terminal/administration building on a paved lot measuring approximately 1,100 square yards. Due to the lack of marking and number of unpaved parking areas, it is difficult to determine an exact number of spaces available for vehicle parking.

While the terminal/administration building parking lot and the Airport's gravel lots are generally in good condition, several of the other paved parking areas show signs of cracking.

2.02-6 Utilities/Energy

MAS is currently responsible for managing utilities and energy to the Airport including electric (provided to the substation by TRICO), water and septic. The infrastructure of these services is in need of repair and replacement.

2.02-7 Equipment

All landside and airside equipment at the Airport is currently owned and maintained by MAS. The County intends on purchasing equipment now that the lease amendment has been signed.

2.03 Regional Setting, Land Use and Zoning

The Airport is located in Pinal County just north of the Pima County line. The following sections provide information regarding climate, land use and zoning in the vicinity of the Airport.

2.03-1 Climate

The Airport is located northwest of the Town of Marana on the southern edge of Pinal County, Arizona. The nearest recorded climatic data is taken from Tucson International Airport. According to the Western Regional Climate Center, from 1981 to 2010 the average daily minimum temperature of this area ranged from 39.1 degrees Fahrenheit in December to 74.4 degrees in July. The average daily maximum temperature ranged from 64.8 degrees in December to 100.3 degrees in July. The area averages 11.59 inches in precipitation annually. Weather data is not recorded at Pinal Airpark though there is an AWOS that offers pilots current weather conditions.

2.03-2 Land Use and Zoning

LAND USE

Figure 2-4 presents the various land uses surrounding the Airport. Given the Airport's proximity to the Pima County border its land use designations are also presented as they relate to the surrounding areas.

Pinal County completed and adopted a Comprehensive Plan in 2009 that included the Airport and land to the west, north and east of the Airport (Pinal County ends just south of the Airport where Pima County begins). This Plan identifies Pinal Airpark as a primary airport, one that has 10 or more based aircraft and at least 2,000 annual aircraft operations. The Airport and its immediate surroundings are designated as Employment (supports job-generating business activities including industrial, office, business park, and warehousing and distribution) and General Public Facilities/Services (consists of public facilities requiring significant amounts of space) with some areas of Airport Reserve. The Airport Reserve designation in several areas surrounding the Airport will assist in preventing encroachment of non-compatible land uses and allow for potential expansion of airport operations and facilities as well as other employment uses compatible with the Airport. The Airport also falls within a designated High Intensity Activity Center, which is an area greater than 1,000 acres with a combination of several uses including professional office, business parks, and industry with high and medium density residential. There are some areas of Moderate Low Density Residential uses (one to 3.5 dwelling units per acre) west and northeast of the Airport. The Pinal County Comprehensive Plan Land Use Map and a description of the applicable land use designations can be found in **Appendix B**.

Land south of the Airport is within Pima County. Current land uses include Agricultural and Commercial (County [Pima] and State Property) to the south. The draft Pima County Comprehensive Plan update, Pima Prospers, was also reviewed. According to the draft update, the land directly south of the Airport is planned for Resource Productive/Extraction land uses (similar to what was presented in the adopted Pima County Comprehensive Plan). The Pima County Comprehensive Plan Land Use Map including the area south of the Airport and a description of the applicable land use designations can be found in **Appendix B**.

Although not within the current Town of Marana limits, the Airport and surrounding areas were included in the study area for the 2010 Marana General Plan. The Airport and immediate surroundings are planned for Airport land use, which allows for land uses permitted in the Industrial (light and heavy industrial uses) and Commercial (ranging from neighborhood to regional-scale commerce) land use categories,[8] as well as "a range of employment, office and hospitality uses which are compatible with airport operations and which further the economic development goals of the General Plan and the Economic Roadmap." This designation also allows multi-family residential uses if determined to be compatible. Land surrounding the Airport is primarily depicted as Industrial or Commercial with some Rural Density Residential to the southwest; the latter involves single-family, detached residences on large properties. The General Plan Land Use Map and a description of the applicable land use designations can be found in **Appendix B**.

[8] See full descriptions in appendices.

Although there are several public and private land owners surrounding the Airport (including the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints, which owns approximately 1,200 acres south of the Airport), a significant area of the land to the north, northeast, and southwest, as well as a small area to the southeast, is State of Arizona Trust land. According to the State of Arizona Land Department, portions of this land are being leased for various purposes including Institutional Use to the north (not directly adjacent to the Airport) and Agricultural Lease to the southwest.

Currently, approximately 7.13 acres of the Runway 12 Runway Protection Zone (RPZ) extend off airport property onto Airport Reserve that is owned by the State of Arizona; a small portion of the RPZ (less than half of an acre) extends beyond the fence of the SBAH. Approximately 19.90 acres of the Runway 30 RPZ extend off airport property onto Agricultural land currently owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints. The Runway 30 Runway Safety Area (RSA) and Runway Object Free Area (ROFA) also extend onto this land. (See Section 2.04 – 2 for information on the RPZ, RSA, and ROFA.)

ZONING

Figure 2-5 presents the zoning in areas near the Airport. Again, both Pinal County and Pima County zoning designations apply, as well as those for the Town of Marana. As depicted, the Airport and surrounding area is zoned as General Rural (Pinal County) or Rural Homestead (Pima County) with the exception of the following:

- A small Recreational Vehicle Park (RVP) zone on the southern edge of the property
- A small Light Industry and Warehouse Zone directly east of the property north of Pinal Airpark Road
- Light Industry and Warehouse Zones and Industrial Zones to the northeast and northwest
- Land zoned as Institutional Reserve to the southwest
- Single Family Residential, Transportation Corridor Zone, and Specific Plan to the southeast (Marana zoning)

Pima County Code establishes a height and land use overlay zone surrounding the southern edge of the Airport where the safety zones and FAR Part 77 imaginary surfaces extend over Pima County land. The overlay zone consists of the following:

1. Runway Safety Zone (RSZ), depicted as a square extending from the runway end and measuring 1,500 by 1,500 feet. This includes most of the Runway 30 RPZ and all of the ROFA and RSA that extend off property.
2. Compatible Use Zone (CUZ) – 2, depicted as a rectangular extension to the RSZ, measuring 3,500 feet long and 1,500 feet wide. This includes the remainder of the Runway 30 RPZ that extends off airport property.

3. Part 77 primary, approach and transitional surfaces with associated building height restrictions.

The specific height and land use restrictions can be found in Pima County Code, Chapter 18.57, *Airport Environs and Facilities*. (The only permitted use within the RSZ is crop raising.)

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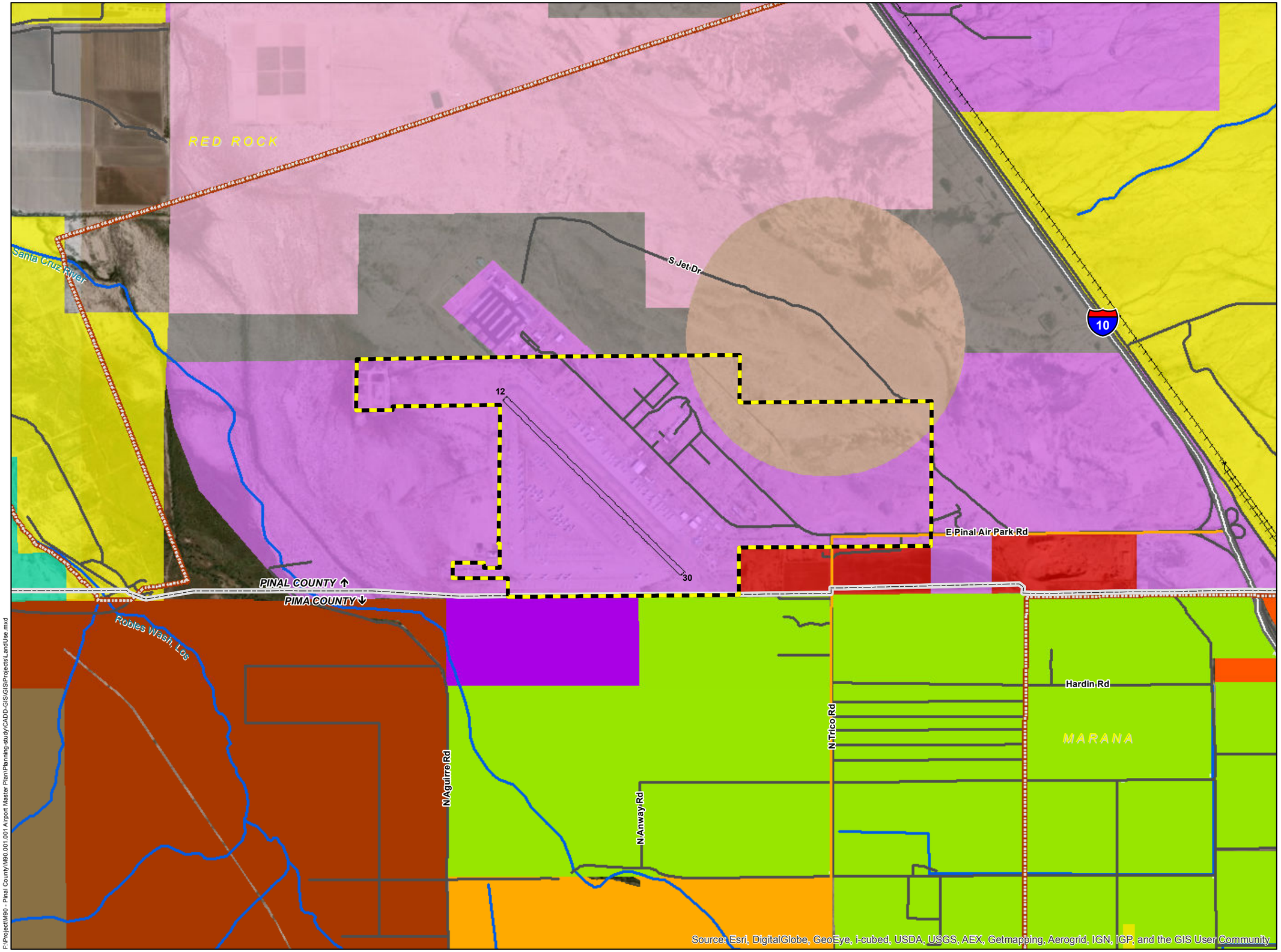

PINAL • COUNTY
wide open opportunity

Legend

- Airport Property Line
- Streams/Rivers
- Interstate Highway
- Major Road
- Railroad
- City Boundary
- County Boundary

Pinal County Land Use

- Very Low Density Residential (0-1 du/ac)
- Moderate Low Density Residential (1-3.5 du/ac)
- General Commercial
- High Density Activity Center
- Employment
- General Public Facilities/Services
- Recreation/Conservation
- Airport Reserve

Pima County Land Use

- Residential-Misc
- Commercial
- Municipal Property-Commercial
- County Property-Commercial
- State Property-Commercial
- Federal Property-Commercial
- Agricultural
- Exempt-Irrigation
- Limited Use

N

1 inch = 2,500 feet
(when printed on 11"x17" paper)

0 1,250 2,500 5,000 Feet

Date: 6/6/2014

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Pinal Airpark

Land Use

Figure 2-4

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Sources: Basemap information like County Boundary, Streams, Lakes, Roads, etc. are from Esri Base Map online service, Wetlands from National Wetland Inventory GIS database, LandUse data obtained from Pinal County and Pima County

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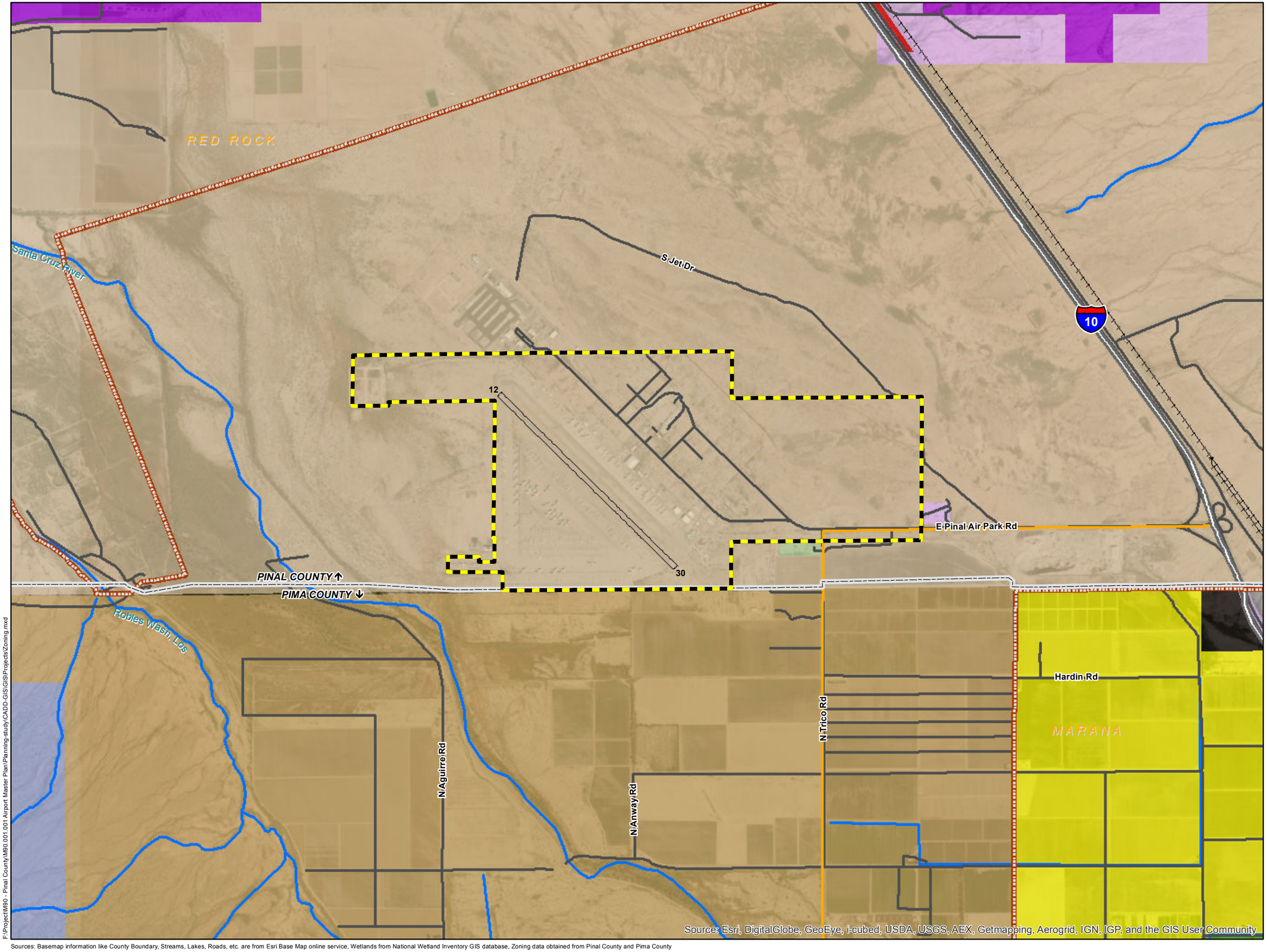

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Legend

- Airport Property Line
- Streams/Rivers
- Interstate Highway
- Major Road
- Railroad
- City Boundary
- County Boundary

Pinal County Zoning

- General Business Zone, CB-2
- General Rural Zone, GR
- Industrial Zone, CI-2
- Light Industry and Warehouse Zone, CI-1
- Recreational Vehicle Park Zone, RVP

Marana City Zoning

- Agricultural, AG
- Transportation Corridor Zone, E
- Specific Plan Zone, F
- Single Family Residential, R-144

Pima County Zoning

- Institutional Reserve, IR
- Rural Homestead, RH

N

1 inch = 2,500 feet
(when printed on 11"x17" paper)

0 1,250 2,500 5,000 Feet

Date: 6/6/2014

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Pinal Airpark
Zoning
Figure 2-5

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Sources: Basemap information like County Boundary, Streams, Lakes, Roads, etc. are from Esri Base Map online service, Wetlands from National Wetland Inventory GIS database, Zoning data obtained from Pinal County and Pima County

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2.04 Airport Design Standards

FAA Advisory Circular 150/5300-13A, *Airport Design*, identifies the design standards to be maintained at the Airport. These design criteria provide a guide for airport designers to assure a reasonable amount of uniformity in airport facilities. Any criteria involving widths, gradients, separations of runways, taxiways, and other features of the landing area must necessarily incorporate wide variations in aircraft performance, pilot technique, and weather conditions.

2.04-1 Design Aircraft

Planning improvements to an existing airport requires the selection of one or more "design aircraft." In order to determine the design aircraft, the characteristics of based and itinerant aircraft were evaluated.

BASED AND ITINERANT AIRCRAFT

The FAA defines a based aircraft as "an aircraft that is 'operational & air worthy', which is typically based at [the] facility for a majority of the year."[9] By these standards and according to County records, there are currently four based aircraft at Pinal Airpark including a single-engine Piper Cherokee and three multi-engine Casa 212 turboprops leased by Rampart Aviation and contracted to USSOCOM for their jump training and testing activities. **Table 2-5** described these aircraft.

TABLE 2-5
BASED AIRCRAFT CHARACTERISTICS

Aircraft	Type	MTOW* (pounds)	Wingspan (feet)	Approach Category	Design Group
Casa 212	Multi-engine	17,860	66.5	A	II
Piper Cherokee	Single-engine	2,440	35.0	A	I

*Maximum Takeoff Weight
Source: Pinal County

Although not based at Pinal Airpark, helicopters based at the SBAH operate regularly from the Airport's runway and must also be considered. Currently, the most frequently operated helicopters are the UH-72A Lakota (approximately 80 percent) and UH-60A/L Black Hawk (approximately 20 percent).[10]

In addition, there are 144 aircraft stored at the Airport that are related to MRO activities. These aircraft primarily include jet aircraft with the exception of several

[9] FAA National Based Aircraft Inventory Program Frequently Asked Questions. http://www.gcr1.com/5010ba/faq.asp. Accessed February 2014.
[10] The previous mission relied primarily on AH-64 Apache and Black Hawk helicopters.

multi-engine Albatrosses (amphibian aircraft). Specific details of representative stored aircraft at Pinal Airpark are listed in **Table 2-6.**

TABLE 2-6
STORED AIRCRAFT CHARACTERISTICS

Aircraft	# of Aircraft	MTOW* (pounds)	Wingspan (feet)	Approach Category	Design Group
Boeing 747-200	6	833,000	195.8	D	V
Boeing 747-400	13	875,000	212.9	D	V
Boeing 757-200	17	255,000	125.0	C	IV
McDonnell Douglas DC9-51	16	121,000	93.3	C	III
McDonnell Douglas DC10-40	5	572,000	165.3	D	IV

*Maximum Takeoff Weight
Source: Pinal County

Transient (visiting) aircraft activity at Pinal Airpark consists of primarily large, jet aircraft similar to those stored at the Airport (likely for maintenance activities associated with the MRO) but with a larger percentage of smaller single- and multi-engine aircraft attributed to other GA activities. Representative transient aircraft are presented in **Table 2-7**.

TABLE 2-7
TRANSIENT AIRCRAFT CHARACTERISTICS

Aircraft	MTOW (pounds)	Approach Speed (knots)	Wingspan (feet)	Approach Category	Design Group
Boeing 733	139,500	135	94.75	C	III
Cessna Citation Excel	20,000	107	55.8	B	II
Boeing 747-400	875,000	157	212.9	D	V
Boeing 757-200	255,000	137	125.0	C	IV

Source: FlightWise and C&S Engineers, Inc.

DESIGN AIRCRAFT

The selection of appropriate FAA airport design criteria is based primarily upon the critical or design aircraft that will be utilizing the airport. The design aircraft is defined by the FAA as the most demanding aircraft that performs or is projected to perform at least 250 annual departures (or 500 annual operations) at the facility. In order to determine the critical aircraft currently operating at the Airport, FlightWise data (see **Appendix D**) was used to assist in determining the types of aircraft operating at the Airport and their activity level.[11]

[11] No entities on the Airport currently track operations by aircraft type or N number. Fuel sales records also lack specific aircraft type reporting.

Based on FlightWise data for the period beginning January 4, 2012, through December 27, 2012, there were a total of 275 operations with filed flight plans. Of those operations, approximately 75 percent were conducted by jet aircraft falling within Aircraft Approach Category (AAC) C (approach speeds equal to or greater than 121 knots but less than 141 knots) or D (approach speeds equal to or greater than 141 knots but less than 166 knots) and Airplane Design Group (ADG) IV (aircraft with wingspans equal to or greater than 118 feet but less than 171 feet and tail heights equal to or greater than 45 feet but less than 60 feet) or V (aircraft with wingspans equal to or greater than 171 feet but less than 214 feet and tail heights equal to or greater than 60 feet but less than 66 feet). The most frequently operated aircraft within these classifications was the Boeing 747, which accounted for approximately 20 percent of FlightWise operations. There are currently 34 Boeing 747s stored at the Airport, representing the largest percentage of stored aircraft. The largest model representing the greatest percentage of activity is the Boeing 747-400. For these reasons, the Boeing 747-400 was selected as the design aircraft for Pinal Airpark. Its specifications are listed above in **Table 2-7**.

FIGURE 2-6
BOEING 747-400

2.04-2 Runway Design Code

Once the design aircraft is selected the Runway Design Code (RDC) can be determined. The applicable RDC is based on the ACC, ADG, and approach visibility minimums.

AIRCRAFT APPROACH CATEGORY (ACC)

The Aircraft Approach Category (ACC) is depicted by a letter and relates to the approach speed of the design aircraft as shown in **Table 2-8**.

TABLE 2-8
AIRCRAFT APPROACH CATEGORY DEFINITIONS

Aircraft Approach Category	Approach Speed
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 150/5300-13A, September 28, 2012.

The Boeing 747-400 falls within category D.

AIRPLANE DESIGN GROUP (ADG)

The Airplane Design Group (ADG) is depicted by a Roman numeral and related to either the aircraft wingspan or tail height as shown in **Table 2-9**.

TABLE 2-9
AIRPLANE DESIGN GROUP DEFINITIONS

Airplane Design Group	Tail Height (feet)	Wingspan (feet)
I	< 20	< 49
II	20 - < 30	49 - < 79
III	30 - < 45	79 - < 118
IV	45 - < 60	118 - < 171
V	60 - < 66	171 - < 214
VI	66 - < 80	214 - < 262

Source: FAA Advisory Circular 150/5300-13A, September 28, 2012.

The Boeing 747-400 falls within group V.

VISIBILITY MINIMUMS

The visibility minimums are based on the types of approaches that exist to each runway end at the Airport. There are currently no instrument approaches to Runway 12-30; therefore, Runway 12-30 is currently designated as a visual runway.

RUNWAY DESIGN STANDARDS

Based on the above analysis, the existing Runway Design Code (RDC) for Runway 12-30 is D-V. The airport design standards will also be assumed as D-V for the future planning criteria, though visibility minimums may change. **Table 2-10** identifies the existing runway design standards for the Airport. These include standards related to minimum dimensions and setback distances, as well as safety areas intended to ensure a safe aircraft operating environment. As defined by FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, the function of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground by clearing RPZ areas

and maintaining them clear of incompatible objects and activities. This is best accomplished by obtaining property interest in the RPZ area, thus giving the airport owner the desired degree of control. The RPZ is trapezoidal in shape and centered on the extended runway centerline.

Runways and taxiways are surrounded by rectangular areas known as "safety areas" (also shown on **Figure 2-3**). These areas have slopes ranging from one to five percent and should be graded and free of obstructions to enhance the safety of airplanes that undershoot, overrun, or veer off a runway or taxiway. The purpose of the safety areas is to minimize the probability of serious damage to airplanes accidentally entering the area, and to provide greater accessibility for fire fighting and rescue equipment during such incidents.

Areas known as Object Free Areas (OFAs) also surround runways and taxiways. These areas require clearing of objects except for any object whose location is fixed by function. The purpose of the OFAs is to provide safe and efficient operations at the Airport.

The applicable standards and information regarding Runway 12-30's compliance are provided in **Table 2-10.**

TABLE 2-10
AIRPORT DESIGN STANDARDS FOR AIRCRAFT APPROACH CATEGORY D AND AIRPLANE DESIGN GROUP V
(FOR VISUAL RUNWAYS)

Runway Characteristic	Standard (feet)	Runway 12-30	Meet Standard?
RUNWAY DESIGN			
Width	150	150	Yes
Shoulder Width	35	20 (varies)	No
Crosswind Component	20 knots	99.75	Yes
RUNWAY PROTECTION			
Runway Safety Area (RSA)			
Length beyond runway end	1,000	1,000	No – Poor drainage and extends beyond airport boundary
Width	500	500	No – Poor drainage; segmented circle and wind cone located within RSA
Runway Object Free Area (ROFA)			
Length beyond runway end	1,000	1,000	No – Extends beyond airport boundary
Width	800	800	No – Segmented circle and wind cone located within ROFA
Runway Obstacle Free Zone (ROFZ)			
Length	200	200	No – A portion of the segmented circle is within the ROFZ
Width	400	400	
Runway Protection Zone (RPZ) – Approach and Departure			
Length	1,700	1,700	No – Approximately 7.13 acres of Runway 12 RPZ and 19.90 acres of Runway 30 RPZ extend off property
Inner Width	500	500	
Outer Width	1,010	1,010	
Acres	29.465	29.465	
RUNWAY SEPARATION			
Runway centerline to:			
Holding position	250	200 at Taxiway A1, 252 at others	No – Hold line on Taxiway A1 is 200 feet from runway centerline and oriented incorrectly**
Parallel taxiway/taxilane centerline	450	524 and 536.5 (where Taxiway A is adjacent to apron)	Yes
Aircraft parking area	500	>500	Yes

*Dimensions and conditions that do not meet FAA design standards are noted in red font.
**The County should coordinate with the FAA as there are varying design methods for hold lines on taxiways that are not perpendicular to the runway.
Source: FAA Advisory Circular 150/5300-13A and C&S Engineers, Inc.

As shown above, several runway conditions/dimensions do not meet FAA design standards. The FAA requires paved, 35-foot-wide shoulders for runways accommodating this type of aircraft; the existing shoulders do not meet this dimensional standard. There are drainage issues within the existing RSA, which must be "drained by grading or storm sewers to prevent water accumulation" per FAA AC 150/5300-13A, *Airport Design*. Additionally, the segmented circle and wind cone are located within the RSA, which should be free of objects except those that need to be located there due to their function (not the case for either NAVAID); within the ROFA, which must be clear of above-ground objects protruding above the nearest point of the RSA; and a portion of the segmented circle extends into the ROFZ, within which there should be no aircraft or other object penetrations excluding frangible NAVAIDs that must be sited there due to their function. Additionally, portions of the Runway 30 RPZ (approximately 19.90 acres), RSA (within the RPZ), and ROFA (primarily within the RPZ except for a small area as shown on **Figure 2-3**) extend off airport property and onto land currently owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints. Approximately 7.13 acres of the Runway 12 RPZ extend off airport property onto state-owned land. This prevents the County from being able to maintain the condition and clearance of these areas and prohibit non-compatible land uses and activities. However, Pima County Code establishes a height and land use overlay zone surrounding the southern edge of the Airport where the safety zones and FAR Part 77 imaginary surfaces extend over Pima County land. As previously described, the overlay zone consists of the following:

4. Runway Safety Zone (RSZ), depicted as a square extending from the runway end and measuring 1,500 by 1,500 feet. This includes most of the Runway 30 RPZ and all of the ROFA and RSA that extend off property.
5. Compatible Use Zone (CUZ) – 2, depicted as a rectangular extension to the RSZ, measuring 3,500 feet long and 1,500 feet wide. This includes the remainder of the Runway 30 RPZ that extends off airport property.
6. Part 77 primary, approach and transitional surfaces with associated building height restrictions.

The specific height and land use restrictions can be found in Pima County Code, Chapter 18.57, *Airport Environs and Facilities*. (The only permitted use within the RSZ is crop raising.)

Finally, the hold line on Taxiway A1 does not meet the separation distance standard from the runway centerline (250 feet). It is also oriented incorrectly as it is not perpendicular to the runway centerline.

2.04-3 Taxiway Design Group (TDG)

In addition to runway design standards, the FAA sets design standards for airport taxiway systems based on the established critical aircraft's ADG and Taxiway Design Group (TDG). The Boeing 747-400 falls within TDG 6 based on its Main Gear Width

(MGW) and Cockpit to Main Gear (CMG) distance. **Table 2-11** presents specific taxiway design standards based on the Airport's ADG and TDG.

TABLE 2-11
AIRPORT DESIGN STANDARDS FOR
AIRPLANE DESIGN GROUP V AND TAXIWAY DESIGN GROUP 6

Taxiway Characteristic	Standard (feet)	Taxiway A	A1	B	D	E
TAXIWAY DESIGN						
Width	75	75 along apron, 50 elsewhere (expands to 150 at connection to A1)	150	50	50	50
Taxiway Edge Safety Margin	15	16.85 along apron, 4.35 elsewhere (54.35 at connection to A1)	54.35	4.35	4.35	4.35
Taxiway Shoulder Width	35	12 – 14 (varies, on south side only)	None	None	None	14 (varies)
TAXIWAY SEPARATION						
Taxiway Centerline to Parallel Taxiway Centerline	267**	N/A	N/A	>267	>267	>267
Taxiway Centerline to Fixed of Movable Object	160	135	>160	>160	>160	<160
TAXIWAY PROTECTION						
Taxiway Safety Area Width	214	214 – Poor drainage; north end of Taxiway A TSA experiences significant grade change from taxiway pavement to surrounding safety area (facing away from runway)	214 – Poor drainage			
Taxiway Object Free Area Width	320	Fence on apron within TOFA	320	320	320	Road to fuel facility in TOFA

*Dimensions and conditions that do not meet FAA design standards are noted in red font.
**180-degree turns between taxiways/taxilanes are not present
Source: FAA Advisory Circular 150/5300-13A and C&S Engineers, Inc.

As shown above, several taxiway conditions/setbacks do not meet FAA design standards. Excluding Taxiway A1 and the portion of Taxiway A that abuts the apron, all taxiways do not meet dimensional standards for width. Likewise, the taxiways do not meet the standard for taxiway edge safety margin; based on the critical aircraft's MGW (41.3 feet), providing a safety margin of 15 feet on either side would require the taxiways to be at least 71.3 feet wide. Again, only Taxiway A1 and the portion of Taxiway A that abuts the apron meet this standard. The entire taxiway system does

not provide standard taxiway shoulders. The Taxiway A and Taxiway E centerline to fixed or movable object separation distances are not met due to the location of an existing fence on the apron and the access road to the fuel facility, respectively; these objects also prevents the TOFA standard from being met. Finally, there are drainage issues within the existing TSA, which must be "drained by grading or storm sewers to prevent water accumulation" per FAA AC 150/5300-13A, *Airport Design* and the Taxiway A TSA experiences a significant grade change, which conflicts with FAA standards stating that the TSA should not experience any surface variations.

2.05 Policies and Plans

Minimum Standards for the Airport are being prepared concurrently with this Airport Master Plan Update. These standards will provide minimum requirements for potential commercial aeronautical operators to conduct business at the Airport.

2.06 Financial Data

The following sections describe the airport operating revenues and expenses and capital funding for the Airport.

2.06-1 Operating Revenues and Expenses

Currently, the County is receiving rent from four different sources including MAS for the properties and facilities shown in **Appendix B**; and Aircraft Demolition and Logistic Air for unimproved parking pads located within the storage triangle. Expenses have been minimal for the County but will include infrastructure maintenance and improvements in the future.

2.06-2 Capital Funding

There are several sources of funding available for capital improvements at the Airport.

AIRPORT IMPROVEMENT PROGRAM

As a public-use airport listed on the NPIAS, capital projects at Pinal Airpark are eligible for FAA funding through the Airport Improvement Program (AIP). However, several historical issues (refer to Section 2.01-2) have prevented the Airport from receiving funding in the past. Once the compliance issues are resolved, the Airport will become eligible for participation in the AIP. This will require the County to prepare, update annually, and submit to the FAA a five-year Airport Capital Improvement Program (ACIP) to apply for federal grants.

AIP grants typically fund at least 90 percent of development costs for eligible projects (for airports in Arizona, projects are eligible for 91.06 percent of the total cost). AIP

eligible projects include the planning, design, and construction of projects associated with public-use, non-revenue generating facilities and equipment for the Airport. Typical AIP eligible projects include Airport Master Plans; Airport Layout Plans; land acquisition and site preparation; airfield pavements for runways, taxiways, and transient aprons; lighting and navigational aids; safety, security, and snow removal equipment; public-use passenger terminal facilities that are not leased for exclusive use; and obstruction identification and removal. The highest funding priority, according to FAA's rating procedure, is generally given to those projects that are safety-related such as runway safety area improvements, obstruction removal, and facility improvements to meet current FAA design standards.

STATE GRANT PROGRAMS

The State of Arizona also provides financial assistance to publicly owned airports through ADOT. State funds are primarily derived from flight property tax, aircraft lieu tax, and aviation fuel tax.[12] Grants are provided for design/construction, planning and land acquisition projects. ADOT typically provides 4.47 percent of the total project cost when federal funding is also being provided, leaving a remainder of 4.47 percent to be covered by a local entity.

ADOT has not provided funding to the Airport until recently for this Airport Master Plan Update and a concurrent Infrastructure Assessment.

LOCAL FUNDING

Local funding for the Airport is provided by the County and, in some cases, MAS.

PRIVATE FUNDING

Private investors are a potential source of funds for revenue-producing development at the Airport. Tenants and/or investors may finance the construction of new facilities from which they derive income. While direct revenues to the Airport are usually limited to purchase or lease charges for land underlying the facilities, the local sponsor does not need to obtain its own funding for these improvements. Additionally, increased activity resulting from airport improvements often increases the number of based aircraft or operations, which in turn generates additional revenue associated with fuel sales and other aviation services (which would currently go to the FBO). Examples of private investment at airports include buildings for additional FBOs, hangars, aviation-related commercial development, and non-aviation commercial development.

[12] http://www.azdot.gov/planning/airportdevelopment/development-and-planning/acip

2.07 Environmental Considerations

The objective of conducting an environmental overview as part of the master planning process is two-fold: a) to describe the existing environmental conditions in the Airport and surrounding area, and b) to identify environmentally sensitive areas that may require special management, conservation and/or preservation during the planning, design and construction of proposed airport development projects.

The environmental overview has been prepared in compliance with the *National Environmental Policy Act of 1969* (NEPA), as amended; and FAA Order 1050.1E CHG 1, *Environmental Impacts: Policies and Procedures*, effective March 20, 2006. Additionally, FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, dated April 28, 2006, which supplements FAA Order 1050.1E by providing NEPA instructions prepared specifically for proposed federal actions to support airport development projects.

This environmental overview does not replace environmental documents such as an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) that may be required for the proposed actions resulting from this study. To obtain environmental clearance for any proposed projects at the Airport, a full environmental evaluation document prepared in accordance with the United States Department of Transportation (USDOT) policy, FAA Order 5050.4B, FAA Order 1050.1E, and Council on Environmental Quality (CEQ) Regulations may be required.

The environmental discussion that follows focuses on describing the current environmental conditions within the Airport and its environs. Discussion of environmental impacts and associated mitigation is not covered in this section as these topics typically relate to specific actions proposed in the Airport Master Plan Update. Impacts and mitigation will be addressed during the preparation of the appropriate environmental clearance document.

The Environmental Overview Map, shown in **Figure 2-7**, depicts various aspects of the Airport property and its vicinity including environmental features discussed in the following sections.

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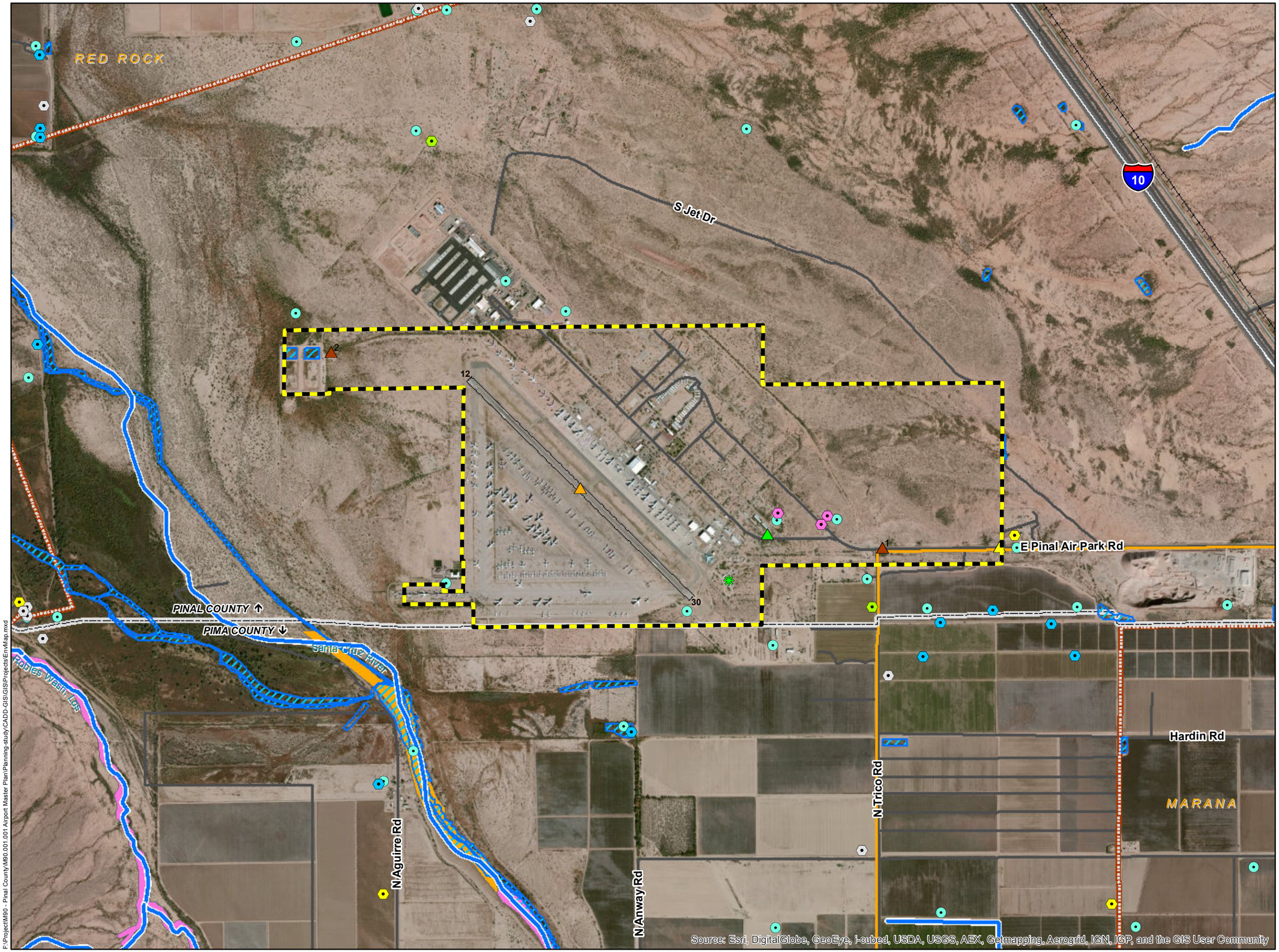

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Legend

- Well
- Fuel Storage Facility (Aboveground Tanks)

FRS* Facilities

- RCRA (LQG)
- RCRA Inactive
- NPDES
- NEI
- TRI
- Power Plant**

Ground Water Use

- Domestic
- Industrial
- Irrigation
- Public Suppy
- Stock
- Undetermined/Unused
- Airport Property Line
- Streams/Rivers
- Interstate Highway
- Major Road
- Railroad
- City Boundary
- County Boundary
- Wetlands

Habitat

- Deciduous Riparian Woodland
- Major Segments of Riparian Habitat Not Linked with Protected Areas

* FRS-Facility Registry System; RCRA-Resource Conservation and Recovery Act; LQG-Large Quantity Generators; NPDES-National Pollutant Discharge Elimination System; AFS-Air Facility System; NEI-National Emissions Inventory; TRI-Toxic Release Inventory
** This facility is identified as part of AFS, RCRA, NEI and TRI

N

1 inch = 2,000 feet
(when printed on 11"x17" paper)

0 1,000 2,000 4,000 Feet

Date: 4/2/2014

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Pinal Airpark

Environmental Overview

Figure 2-7

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Sources: GroundWater Site and Well data from Arizonta Department of Water Resources website (http://www.azwater.gov/azdwr/gis/, Ground Water Site Inventory, Wells 55 Registry), FRS facility data from Environmental Protection Agency (EPA) geoviewer (https://edg.epa.gov/clipship/), Basemap information like County Boundary, Streams, Lakes, Roads, etc. are from Esri Base Map online service, Wetlands from National Wetland Inventory GIS database, Habitat information is from Pima County FTP site (This data is only available to the extent of Pima County Boundary)

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The 18 environmental categories listed in Appendix A of FAA Order 1050.1E and subcategories outlined in the FAA *Environmental Desk Reference for Airport Actions* were reviewed in order to determine which impact categories will not be affected and those that have the potential to be affected by proposed airport development.

2.07-2 Categories with No Significant Impacts

It was determined that potential airport development will not affect several environmental impact categories. Brief descriptions for each category are provided below.

FARMLANDS

Although there is farmland located south of the Airport, there are no soils classified as unique or important farmlands located on airport property. As a result, no impacts to farmlands are anticipated. **Figure 2-8** depicts the soils on airport property.

LIGHT EMISSIONS AND VISUAL IMPACTS

In order to assess the potential light emissions impacts, proposed airport lighting should be evaluated to determine if it will create an annoyance or interference to the surrounding community. A visual impact occurs when consultation with federal, state, or local agencies, tribes, or the public shows that these effects contrast with existing environments and is considered objectionable. Any proposed lighting will be installed entirely on airport property and will not differ drastically from existing installations. It is therefore anticipated that no significant light emission impacts will result from any proposed projects relating to this Airport Master Plan Update.

NATURAL RESOURCES AND ENERGY SUPPLY

Development projects may have the potential to change or increase energy requirements or use of consumable natural resources. Once specific projects or overall plans are finalized, the County should evaluate any potential impacts to natural resources and energy supply. Although fuel usage will likely rise as activity at the Airport increases, the Airport has the capacity to handle this (refer to Facility Requirements). No significant impacts to natural resources and energy supply are anticipated.

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

Socioeconomic Impacts

Socioeconomic impacts result from an action causing extensive relocation of residents without sufficient replacement housing unavailable; extensive relocation of community businesses that would cause severe economic hardship for affected

communities; disruption of local traffic patterns that substantially reduce the Levels of Service of roads serving the Airport and its surrounding communities; or a substantial loss in community tax base. Based on the location of the Airport and surrounding land uses, it is unlikely that relocation of residences or businesses would be necessary due to proposed development.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* (February 11, 1994) was issued to ensure that each federal agency conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude persons or populations from participation, does not deny benefits, and does not subject to discrimination because of race, color, or national origin. When an action would cause disproportionately high and adverse human health or environmental effects on minority and low-income populations, a significant impact may occur. Any future potential development of the Airport is not anticipated to have a negative impact on any minority or low-income populations.

Children's Environmental Health and Safety Risks

Executive Order 13045 (April 21, 1997) requires federal agencies to ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks and safety risks. Federal agencies must identify and assess potential environmental health risks to children. Potential environmental health risks are defined as risks to health that are attributable to products or substances that the child is likely to come in contact with or ingest, such as air, food, water, soil, and products.

No concerns have been raised concerning potential environmental health risks to children in the area of the Airport.

RED ROCK

S Jet Dr

10

12

30

E Pinal Air Park Rd

PINAL COUNTY

PIMA COUNTY

Santa Cruz River

Robles Wash, Los

N Aguirre Rd

N Anway Rd

N Trico Rd

Hardin Rd

MARANA

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community, Source: USDA Natural Resources Conservation Service

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Sources: Basemap information like County Boundary, Streams, Lakes, Roads, etc. are from Esri Base Map online service, Wetlands from National Wetland Inventory GIS database, Soil data from Soil Survey Geographic (SSURGO) online service

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Legend

- Airport Property Line
- Streams/Rivers
- Interstate Highway
- Major Road
- Railroad
- City Boundary
- County Boundary
- Wetlands

Soil Type

- Aridisols
- Entisols
- Mollisols

N

1 inch = 2,000 feet
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0 1,000 2,000 4,000 Feet

Date: 4/2/2014

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Pinal Airpark

Soils

Figure 2-8

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2.07-3 Potentially Impacted Resources

The following section discusses environmental resources that may be affected by potential airport development.

AIR QUALITY

According to the Arizona Department of Environmental Quality (ADEQ), the Airport is situated between two areas designated as nonattainment for particulate matter less than 10 microns (PM_{10}) meaning that air pollution levels in these areas exceed the National Ambient Air Quality Standards (NAAQS).

Any potential development projects at the Airport will require an air quality assessment to determine compliance with ambient air quality standards. However, it is anticipated that specific project-related emissions would not result in short or long-term impacts to regional air quality. Although airport construction typically results in temporary impacts to air quality, these are limited to the duration of the construction period and minimized by appropriate control measures.

CONSTRUCTION IMPACTS

Resource-specific impacts resulting from construction and the potential permits or certificates that may be required are discussed under the applicable categories. Additional construction permits and requirements cannot be identified until specific project alternatives are determined. However, it is anticipated that any future development at the Airport would not result in significant impacts to other resources (air quality, water quality, fish, wildlife and plants, etc.), and therefore no significant impacts from construction activities are anticipated. Limited, short-term effects resulting from construction operations may occur due to any proposed development. Potential impacts may include noise from construction equipment, noise and dust from the delivery of materials, air pollution, and water pollution from erosion.

FISH, WILDLIFE AND PLANTS

Consideration of biotic communities and endangered and threatened species is required for all proposals under the Endangered Species Act as Amended. Section 7 of the Endangered Species Act as Amended requires each federal agency to ensure that any action the agency carries out "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat" of critical species.

Initial review of the U.S. Fish and Wildlife Service (FWS) website indicated that the following federally listed species have potential to exist on or in the vicinity of the Airport:

TABLE 2-12
FEDERALLY LISTED SPECIES WITH POTENTIAL TO EXIST ON OR AROUND AIRPORT

Species	Status
Birds	
California Least tern	Endangered
Southwestern Willow flycatcher	Endangered
Yellow-Billed Cuckoo	Proposed Threatened
Fish	
Roundtail chub	Candidate
Mammals	
Jaguar	Endangered
Lesser Long-Nosed bat	Endangered
Sonoran pronghorn	Endangered
Reptiles	
Northern Mexican gartersnake	Proposed Threatened
Sonoran desert tortoise	Candidate
Sonoyta Mud turtle	Candidate
Tucson Shovel-Nosed Snake	Candidate

Source: U.S. Fish and Wildlife Service Unofficial Species List, February 2014

According to the FWS, there are no critical habitats or National Wildlife Refuges within the immediate vicinity of the Airport.

Due to the minimally vegetated area, the limited availability of water and the absence of suitable habitat for most wildlife species within the Airport, there are no anticipated significant impacts on fish, wildlife, and plants. Further environmental assessment would be required if the FWS or the National Marine Fisheries Service determines a proposed action would likely jeopardize a species' continued existence or destroy or adversely affect a species' critical habitat.

FLOODPLAINS

Floodplains (or flood zones) are defined as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year."[13]

The Threshold of Significance (TOS) is exceeded when there is an encroachment on a base floodplain (100-year flood). An encroachment involves:

- A considerable probability of loss of life;
- Likely future damage associated with encroachment that could be substantial in cost or extent, including interruption of service or loss of vital transportation facilities; or

[13] Title 14 Code of Federal Regulations (CFR), Section 1216.203.

- A notable adverse impact on natural and beneficial flood plain values.

According to the Federal Emergency Management Agency (FEMA), the western and southern portion of the airport property falls within a 100-year flood zone. Additionally, there is a 500-year flood zone and Regulatory Floodway south of the Airport (see **Figure 2-9**). As a result, there is a potential for floodplains to be impacted by potential airport development.

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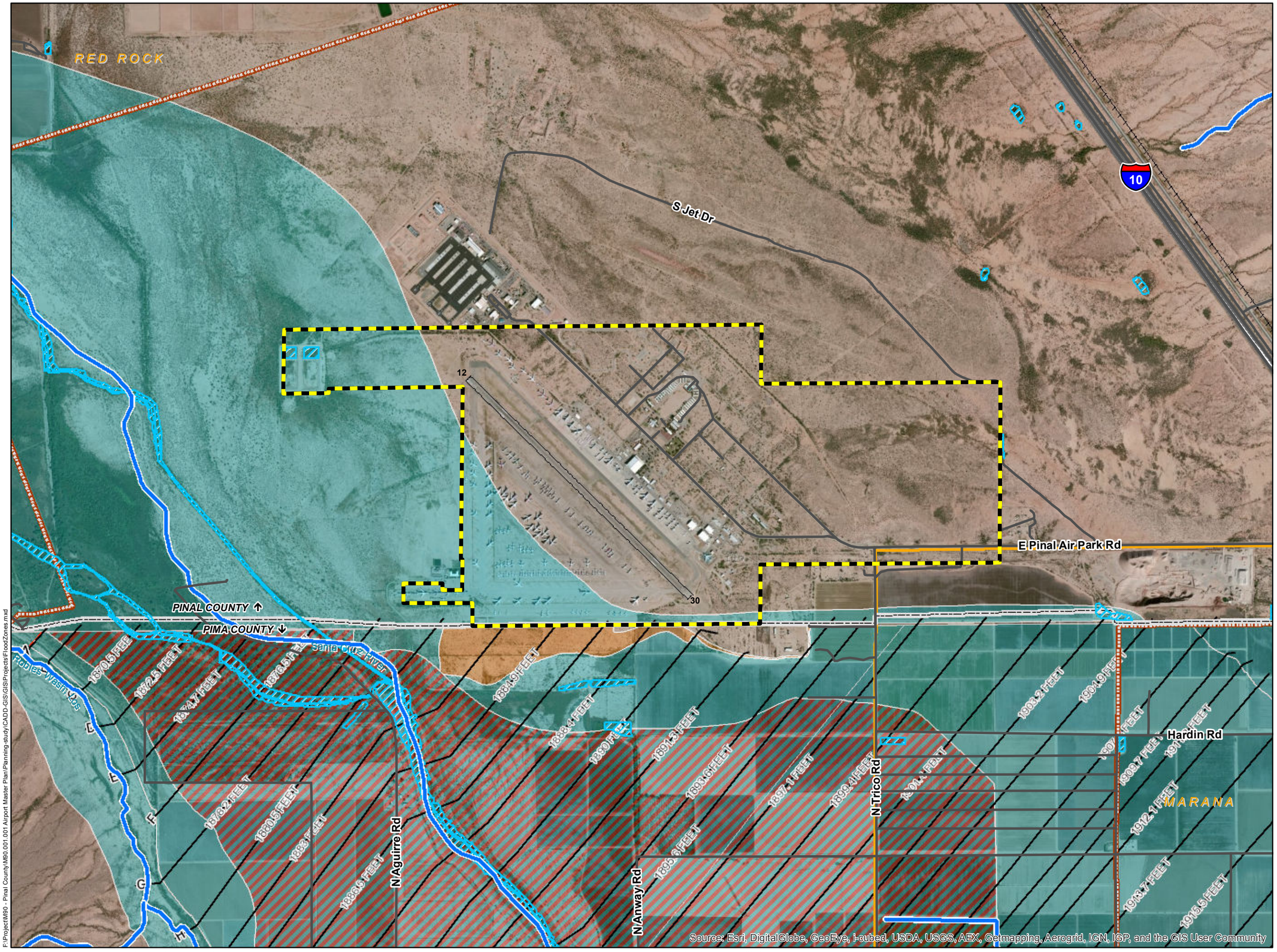

PINAL • COUNTY
wide open opportunity

Legend

- Airport Property Line
- Streams/Rivers
- Interstate Highway
- Major Road
- Railroad
- City Boundary
- County Boundary
- Wetlands

Flood Hazard Zone Type*

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Regulatory Floodway

N

1 inch = 2,000 feet
(when printed on 11"x17" paper)

0 1,000 2,000 4,000 Feet

Date: 4/2/2014

C&S COMPANIES®

Pinal Airpark
Floodplains
Figure 2-9

F:\Project\M90 - Pinal County\M90.001.001 Airport Master Plan\Planning-study\CADD-GIS\GIS\Projects\FloodZones.mxd

Sources: Basemap information like County Boundary, Streams, Lakes, Roads, etc. are from Esri Base Map online service, Wetlands from National Wetland Inventory GIS database, Flood Hazard Zone data from National Flood Hazard Layer (NFHL) online service, * 100-year floodplain

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HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

The development of the Airport Master Plan Update will consider if alternatives may increase the quantity of solid waste generated by the Airport or affect the manner in which the Airport's solid waste is collected or disposed. Future airport development is not anticipated to significantly impact solid waste services and any permitting should be limited to temporary construction impacts.

A Phase I Environmental Site Assessment (ESA) of the Airport was performed by GaiaTech Incorporated in 2011 at the request of MAS prior to its purchase of Evergreen Air Center (see **Appendix B**). The ESA revealed no evidence of Recognized Environmental Conditions (REC) at the Airport, though two Historical RECs were identified including the following:

1. Former paint stripping area – According to the report, an Aircraft Paint Stripping Rack (APSR) was operated by Evergreen from 1988 to 1996 east of the current APSR in the southeast corner of the Airport. Pursuant to the Resource Conservation & Recovery Act (RCRA), Evergreen closed the former APSR and conducted a subsurface investigation. Though the associated reports were not reviewed under the ESA, GaiaTech concluded that there was no significant exposure since the Arizona Department of Environmental Quality (ADEQ) issued closure in January 1996.
2. Former Underground Storage Tank (UST) area – There were previously 10 USTs at the Airport that contained Jet-A fuel, AvGas and gasoline. These tanks were removed between 1996 and 1998 and leaking UST incidents were reported for each of the tanks. Although the removal documentation was not provided to or reviewed by GaiaTech, according to the database only soil was impacted and closure was issued for all incidents by 1999.[14]

The following additional issues were noted in the ESA:

1. Wastewater lagoons – At the time of the ESA preparation, there were four wastewater lagoons in the northwest corner of the Airport used as wastewater lagoons to collect domestic wastewater from the Airport and the SBAH. The eastern lagoons are in a state of "temporary cessation" but remain permitted for use if capacity requires this. The western lagoons have been merged into one and lined. As part of the Aquifer Protection Permit (APP) issued by ADEQ for the lagoons, Evergreen (now MAS) is required to monitor groundwater at a location down gradient from these sits and monitor incoming effluent for metals and Voluntary Organic Compounds (VOCs). Soil samples were collected during the ESA and reported no signs of VOCs or metals. According to GaiaTech, these lagoons do not represent a significant exposure. (Refer to Wetlands section for further information.)

[14] GaiaTech Incorporated, Phase I Environmental Site Assessment, 2011.

2. Current APSR – Located on the southeast side of the Airport, the APSR includes a concrete pad used to strip paint and wash aircraft prior to painting. The pad consists of a concrete berm and trench drains lined with concrete for collection of residuals wastes, which are then pumped into four 17,500-gallon ASTs in an adjacent building. In 2007, Evergreen applied for an APP. This process required an update to the pad's drainage system to include leak detection. Additionally, a subsurface investigation was conducted to determine if there were any impacts; none were identified.
3. Shooting range – The shooting range was used by the Federal Law Enforcement Training Center (FLETC) from the mid-1980s to the early 1990s. FLETC voluntarily removed lead-impacted soil and solid lead from the embankment. However, in 1994 the ADEQ indicated that impacts may remain because definitive samples were not collected. No further action related to this issue has been taken by the ADEQ (as of the 2011 ESA). GaiaTech reported that the depth of groundwater (over 185 feet below ground surface) makes it unlikely that lead has leached into the groundwater. Further, it is likely that the lead bullets were contained in the upper layer of soil that was excavated during FLETC's remediation. This site was again used beginning in the late 1990s by local law enforcement. Although GaiaTech identified a layer of bullets on the range embankment, they reported that impacts appeared superficial and insignificant.
4. ETI – Until recently, Evergreen Trade, Inc., (ETI) operated an aircraft recycling area in the northern area of the property northwest of the apron. Recycling activities included removing components and equipment from the aircraft for resale. This area is not currently delineated by any physical means such as fencing. During an inspection in July 2010 the AEQ identified paint chips on the soil surrounding the recycling pad. ETI sampled the material and determined that it was non-hazardous; however, they agreed to remove the upper layer of soil within 10 feet of the site and submitted a Site Assessment Plan to the ADEQ. According to GaiaTech, there should be no concerns of exposure if ETI addressed the ADEQ's concerns; however, it is unclear if ETI did so.
5. Asbestos-Containing Material (ACM) – ACM was identified in roofing shingles of a pre-demolition asbestos survey on Building 65 prior to its demolition; the material was disposed of consistent with applicable requirements. GaiaTech reported that during the survey all ACM is left for them to remember us.

In addition to the areas identified above, the Airport's fuel facility consists of seven 30,000-gallon ASTs. There is one AST containing AvGas, five ASTs containing Jet-A fuel, and one AST containing unleaded gasoline for ground vehicles. There is proper spill containment and three high-capacity fuel pumps at the facility.

The areas and issues identified above will be considered in analysis of the alternatives developed in this Airport Master Plan Update to minimize impacts and potential for exposure of hazardous materials.

HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966 (NHPA) requires an initial review of a proposed action's potential environmental impact area to determine if it includes any properties that are listed in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

The Archeological and Historic Preservation Act of 1974 provides for the survey, recovery, and preservation of significant scientific, prehistoric, historical, archeological, or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally licensed, or federally funded project.

A cultural resources inventory was conducted by the U.S. Army Corps of Engineers in 1991 and documented in the previous Airport Master Plan. The survey found remains of Hohokam habitation across a significant portion of the airport property. Therefore, any future development would require further investigation/survey to determine the existence of these resources. Should resources be found, appropriate coordination efforts and potential mitigation will be required.

A review of properties listed on the NRHP verified that there are no historic sites located on the Airport. In order to be listed on the NRHP, a facility, object, or site must be older than 50 years and meet certain criteria related to its historical significance. The Airport has a number of facilities that are older than 50 years; at this time there are no plans to demolish or impact these facilities. Should improvements or demolition be proposed, further cultural analysis would be required as part of the project-specific environmental compliance.

NOISE

There are currently no noise abatement procedures in place at the Airport. However, noise impacts are not a significant concern given the surrounding land uses and lack of residences or sensitive receptors in the area.

A noise analysis was initiated by Armstrong Consultants, Inc., as part of the 2009 Noise Study Working Paper #1 for Pinal Airpark (henceforth referred to as "draft noise study").[15] The draft noise study was not finalized nor were its results and/or recommendations adopted by the County. However, the draft noise study included development of noise contours that were reviewed as part of this Airport Master Plan Update in order to determine if current or projected activity would result in non-compatibility with surrounding land uses. Information used in the draft noise study to determine present (2008) and future (2028) noise exposure included aircraft fleet mix, number of operations by time of day, current and predicted flight tracks, runway

[15] Initiated for a Part 150 Noise Study that was never finalized.

configuration, temperature and wind conditions. The noise level descriptor used in the analysis is the day-night average sound level (DNL), which is the average sound level in A-weighted decibels (frequency-weighted sound levels that correlate with human hearing) for an average day. DNL is the standard federal metric used for determining cumulative exposure of individuals to noise. The noise contours were developed using the FAA-approved Integrated Noise Model (INM) (version 7.0A). **Table 2-13** provides the number of aircraft operations that were used in the analysis.

TABLE 2-13
DRAFT NOISE STUDY FORECAST

Year	Evergreen*	Silver Bell Army Heliport (SBAH)**	Parachute Training and Testing Facility (PTTF)***	General Aviation	TOTAL
2008	365	46,430	29,200	7,300	83,295
2028	446	56,653	35,630	8,908	101,637

*Operations now associated with Marana Aerospace Solutions
**Operations related to the Arizona Army National Guard and other tenant organizations at the SBAH
***Operations related to the United States Special Operations Command
Source: Pinal Airpark –Noise Study Working Paper #1, Prepared by Armstrong Consultants in 2009

In comparison, the forecast developed in this master planning process projects that total activity will reach approximately 66,000 operations (including operations to and from the SBAH) in the long-term planning period (refer to Chapter 3). Since the Airport Master Plan Update forecast falls significantly below the projections used in the draft noise study, its noise contours were evaluated to determine the potential for noise impacts to land surrounding the Airport.[16] However, given the difference of activity levels, the resultant contours should not be relied on for land use planning or preservation purposes. Additionally, any future project-specific environmental documentation may involve updated contour development.

The DNL 55 decibel (dB), DNL 60 dB, and DNL 65 dB noise exposure levels were selected for analysis within the draft noise study. DNL values are indications of the effect that aircraft noise at these levels has on people living and working in these areas, and are not intended but can be used as guidelines for land use decisions by local authorities. All land uses within areas below DNL 65 dB are considered compatible with airport operations as shown in the table below.

[16] Although the number of GA operations used in the draft noise study (8,908) is less than those projected in this master plan forecast for the long-term planning horizon (21,699), it is assumed that this is compensated by the significantly greater number of military aircraft including helicopter operations accounted for in the SBAH and PTTF totals.

TABLE 2-14
LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS

Land Use	Below					
	65	65-70	70-75	75-80	80-85	85
RESIDENTIAL						
Residential, other than Mobile Homes and Transient Lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools, Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, Auditoriums and Concert Halls	Y	25	30	N	N	N
Government Services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, Business and Professional	Y	Y	25	30	N	N
Wholesale and Retail-Building Materials, Hardware and Farm Equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail Trade-General	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing-General	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and Optical	Y	Y	25	30	N	N
Agriculture (except Livestock) and Forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock Farming and Breeding	Y	Y(6)	Y(7)	N	N	N
Mining and Fishing, Resource Production and Extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor Sports Arenas and Spectator Sports	Y	Y(5)	Y(5)	N	N	N
Outdoor Music Shells, Amphitheaters	Y	N	N	N	N	N
Nature Exhibits and Zoos	Y	Y	N	N	N	N
Amusement Parks, Resorts and Camps	Y	Y	Y	N	N	N
Golf Courses, Riding Stables and Water Recreation	Y	Y	25	30	N	N

TABLE 2-14
LAND USE COMPATIBILITY WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS
(Continued)

KEY:

Y (Yes) Land use related structures compatible without restrictions.

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

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

NOTES:

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

(2) Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received; office areas, noise sensitive areas or where the normal noise level is low.

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

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

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

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Source: FAR Part 150 Airport Noise Compatibility Planning, Appendix A, U.S. Department of Transportation, Federal Aviation Administration (January 1985)

The DNL 65 dB noise contour developed in the draft noise study (see **Appendix E**) extends off airport property under the scenarios modeled but does not extend over residential or noise-sensitive land uses as identified by Title 14 Code of Federal Regulations (CFR) Part 150 guidelines.

LAND USE COMPATIBILITY

The compatibility of existing and planned land uses in the vicinity of an airport is typically associated with the extent of noise impacts related to that airport. Airport compatible land uses encompass those uses that can coexist with a nearby airport without either constraining the safe and efficient operation of the airport or exposing people living or working nearby to unacceptable levels of noise or hazards. With regard to potential noise impacts, noise contours developed in the draft noise study (see see **Appendix E**) show that the DNL 65 dB noise contour extends off airport property under the scenarios modeled but does not extend over residential or noise-sensitive land uses as defined by the FAA (see above discussion). However, any unforeseen changes to the aircraft fleet mix, number of aircraft operations, and changes to the runway use or surrounding airspace that were not included in the noise analysis could result in future alterations to the size and shape of the noise contours.

Land use and zoning designations are described in Section 2.03 – 2 and show that the current uses are generally compatible with airport operations, though additional recommendations may be included in Phase II of this report. Land use compatibility is supported by the Pinal County Comprehensive Plan, which includes Airport Reserve land north of the Airport. This will assist in preventing encroachment of non-compatible land uses and allow for potential expansion of airport operations and facilities as well as other employment uses compatible with the Airport. Additionally, Pima County's height and land use overlay zone surrounding the southern edge of the Airport will assist with ensuring land use compatibility (see previous discussions).

Finally, the FAA recommends that an airport sponsor gain control over the land within the RPZs to ensure compatible land uses and activities. The RPZ for Runway 12-30 is designed for Airport Reference Code D-V standards; it has a length of 1,700 feet, an inner width of 500 feet, and an outer width of 1,010 feet. Currently, approximately 7.13 acres of the Runway 12 RPZ extend off airport property onto state-owned land; a small portion of the RPZ (less than half of an acre) extends beyond the fence of the SBAH. Approximately 19.90 acres of the Runway 30 RPZ extend off airport property onto land currently owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints. If possible, the County should gain control over these areas via acquisition in fee or avigation easement, which would restrict the owner's use of the surface to prevent non-compatible land uses but assure its privilege of a specified use as defined within the easement document. Land uses with potential to be non-compatible with the RPZ include new buildings and structures, recreational land uses, transportation facilities, fuel storage facilities,

hazardous material storage, wastewater treatment facilities, and above-ground utility infrastructure.[17] The Runway 30 RSA and ROFA also extend off airport property onto this land, which prevents the County from ensuring compliance with FAA design standards. Although it is recommended that the County obtain control of these areas or mitigate this issue, these areas are already subject to the Pima County zoning restrictions described previously. The majority of the Runway 30 RPZ and all of the ROFA and RSA that extend off property lay within the RSZ; the remainder of the RPZ is within the CUZ – 2.

SECONDARY (INDUCED) IMPACTS

FAA guidance requires consideration of the potential for induced or secondary impacts on surrounding communities associated with any proposed major airport project. The FAA requires specific analysis of social impacts associated with potential disruptions such as shifts in patterns of population movement and growth; public service demands; and changes in business and economic activity to the extent influenced by the airport development.

It is not anticipated that proposed airport development would result in a shift in population movement or growth. Additionally, any future development would be subject to compliance with the County's zoning laws and is expected to be compatible with both current and future land uses. For these reasons, no significant secondary induced impacts are expected. However, potential impacts to the local economy should be considered due to the considerable workforce employed at Pinal Airpark.

WATER QUALITY

Federal agencies are required to comply with the Clean Water Act in any action that may affect water quality, including the control of any discharge into surface or ground water and the prevention or minimization of loss of wetlands. Agencies must also comply with the Fish and Wildlife Coordination Act if the proposed action impounds, diverts, drains, controls, or otherwise modifies the waters of any stream or other water body. Section 1424(e) of the Safe Drinking Water Act requires consultation with the EPA if a proposed action has the potential to contaminate an aquifer designated by the EPA as a sole or principal source of drinking water for the area. When an action would not meet water quality standards, or if any water permits or authorization are required, this may indicate a significant impact.
Any proposed development at the Airport could potentially impact water quality due to erosion or contaminant exposure from construction. The Airport will need to obtain and act in compliance with a National Pollutant Discharge Elimination System (NPDES) operating permit. Consistent with the permit's requirements, the Airport will need to prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should identify areas that may potentially be impacted by pollution from water runoff

[17] Federal Aviation Administration. Interim Guidance on Land Uses within a Runway Protection Zone. September 27, 2012.

where aircraft operations including maintenance, fuel services and general activity may occur. The NPDES permit should ensure that storm water pollution prevention practices and Best Management Practices (BMP) are employed at the Airport to reduce potential impacts to water quality.

As shown on **Figure 2-7**, the nearest surface water is the Santa Cruz River southwest of the Airport. This river is prone to flooding; given that airport development is primarily located on the north/northeast side of the Airport significant pollutant discharges are unlikely. Appropriate drainage and runoff requirements will be incorporated into any future airport development.

WETLANDS

Wetlands are defined in Executive Order 11990, *Protection of Wetlands*, as "those areas that are inundated by surface or ground water with a frequency sufficient to support...a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas..."

According to the National Wetland Inventory and as shown on **Figure 2-7**, there are two wetlands on the Airport located in the northwest corner of the property away from landside and airside facilities. As documented in the 2011 ESA, these sites were once used as wastewater lagoons to collect domestic wastewater from the Airport and the SBAH (including two additional lagoons south of those depicted as wetlands).

The eastern lagoons are in a state of "temporary cessation" but remain permitted for use if capacity requires this. The western lagoons have been merged into one and lined (see photo). The presence of the lagoon will be considered in the evaluation of alternatives and any potential impacts will be assessed in future environmental analysis.

Lined Lagoon
Source: Pinal County, February 2014

Lagoon in Temporary Cessation
Source: Pinal County, February 2014

ENVIRONMENTAL OVERVIEW SUMMARY

This section has provided a brief overview of existing environmental conditions at the Airport. In the evaluation of development alternatives, an assessment will be made as to the potential impact on these categories. The evaluation of alternatives is based on a number of factors. Environmental considerations are weighed as completely and fairly as non-environmental considerations. The objective in developing the Airport Layout Plan is to enhance environmental quality or minimize environmental impacts while fulfilling the FAA's principal mission to provide for the safety of aircraft operations.

2.08 Stakeholder Feedback

2.08-1 Steering Committee

The first Steering Committee meeting for the Airport Master Plan Update was held on August 7, 2013. The purpose of the meeting was to introduce the project and consultant team, review the master planning process and the role of the Steering Committee, discuss key issues at the Airport, and summarize next steps moving forward. The following is a brief summary of issues discussed. A copy of the full meeting summary is included in **Appendix A.**

- The following were presented as key issues/concerns:
  - Maintaining co-existence and operations of the distinct entities (including the public) at the Airport.
  - Public use perception – Currently pilots do not utilize the facility as it is perceived as not permitted.
  - Positive control for the airspace.
  - Airspace concerns for the SBAH operations with the possible increase of air traffic at Pinal Airpark.
  - Relationship between the Airport and private land owners (compatibility).
  - As interaction with public users at the airpark increases, there are concerns regarding security for the MRO operation.
  - Utility infrastructure coordination and potential impacts on approaches, departures and air traffic patterns.
  - Surface access and circulation – Roadways through the airpark to the military facility to accommodate larger equipment.
  - Deterioration and condition of airside infrastructure.
- The County announced its plans to establish offices at Pinal Airpark, which has since been completed.
- Interest in the following was expressed regarding the future of the Airport:
  - Expanded communication between airport users to foster the sharing of information.
  - Potential for cargo and intermodal operations.

A second meeting was held on December 10, 2013, to share information obtained during the inventory including the selection of the critical aircraft and solicit any additional concerns/feedback. The following is a brief summary of the key issues discussed. A copy of the full meeting summary is included in **Appendix A.**

- The County announced the opening of its offices at the Airport.
- A presentation was given by LTC Greg Bush on the Silver Bell Army Heliport and the different tenant organizations operating there.
- It was announced that Dibble Engineering has been selected to provide design services for the Runway 12-30 Mill and Overlay project.
- The AZ ARNG noted that the Department of Defense (DOD) is currently developing an environmental compliance document that considers the impacts of upgrading the transmission power line from Southline Transmission Power Lines.
- The military entities raised questions over the levels of aviation activity associated with their operations. These number have been confirmed and revised as necessary.

2.08-2 Public Meeting

The first public meeting for the Airport Master Plan Update was held at 7 p.m. on December 10, 2013, at Pinal County offices at Pinal Airpark. The purpose of the meeting was to introduce the project and consultant team to the community and collect information on concerns they have, review the master planning process, discuss key issues at the Airport, and share the next steps moving forward. In addition to airport management and the consultant team, nine individuals attended the first meeting. The following is a brief summary of the key issues raised. A copy of the full meeting summary is provided in **Appendix A**.

- Attendees expressed concern over the responsibility for improvements that may be made following the Airport Master Plan Update. Since Evergreen Maintenance Center (and now MAS) has historically controlled the infrastructure and has not invested heavily in maintenance, some members of the public believe the tenants should be liable for the necessary improvements. The public was notified that the lease with MAS was recently amended, dramatically reducing their control over the Airport. Additionally, new companies will be permitted to provide business at the Airport.
- A meeting attendee asked what prevents a new guard shack being installed again at the airport entrance once the FAA grant money has been used. The public was notified that the FAA would not permit this activity and the County will be obligated to comply with FAA standards once grant money is obtained and used to fund improvements.
- The project team commented that Pinal County is moving toward transparency and improving open communication with community members. The Airport Manager invited community members to make an appointment

with him at any time to discuss facility improvements and future use of the Airport.

- Attendees communicated concern that funds for airport improvements would be used to accommodate existing tenants and asked if the current tenant is pressuring the County to improve the runway. The project team confirmed that grant money from the FAA for improvements can only be used on non-revenue generating areas, which include the runway as this is a public airfield. The improvements not only benefit current tenants but also attract future businesses. MAS commented that the number of flights projected in the Airport Master Plan Update are higher for General Aviation (GA) activities unrelated to the MRO.
- An attendee asked if the current tenant has a long-term lease or if they are able to relocate/vacate at any time. It was confirmed that a notice of vacancy is required by tenants.
- An attendee commented that most of the public is not aware Pinal Airpark is a County-owned airport and believe that no one can access the Airpark unless one has a meeting with someone onsite.
- Community members attending the public meeting expressed various concerns with transit access in the area especially related to Red Rock. It was clarified that the project team at the meeting can only speak to airport-related concerns.
- An attendee asked if other businesses will be permitted to operate on the Airport. It was confirmed that additional entities will be allowed. The County is preparing Minimum Standards concurrently with the Airport Master Plan Update that will create a "level playing field" for businesses interested in Pinal Airpark.
- An attendee asked if environmental concerns will be addressed in the Airport Master Plan Update. The project team confirmed that an environmental overview will be conducted.
- An attendee inquired about the anticipated increases in air traffic following the facility improvements. The County responded that significant increases are not anticipated in the short term but levels could change if a new business begins operations at the Airport.
- Attendees communicated that helicopter operations seem to cause the most noise impacts.

2.09 Key Issues

Key issues and needs, summarized below, were identified through an inventory of existing conditions, environmental overview, and coordination with airport management, users and other stakeholders:

2.09-1 General

- The Airport has been perceived as a secured airfield used for military purposes.

- Coordination among the key stakeholders and airport users is essential.

2.09-2 Airside

- Many of the airside pavements are in poor condition and do not meet FAA design standards.
- There are drainage issues throughout the airfield.
- Taxiway C has been decommissioned, which could lead to confusion by visiting pilots since Taxiways D and E have not been renamed.
- MAS has expressed that the taxiways are too narrow for the aircraft operating there.
- The Airport lacks NAVAIDs such as REILs and VGSIs; additionally, several of its existing NAVAIDs are in poor condition and/or located within safety areas.
- The Airport lacks instrument approach procedures.
- Airside lighting, signage and markings are in need of improvements and/or upgrades.
- The Airport's AWOS does not transmit records to the National Climatic Data Center; only real-time data is provided to pilots.

2.09-3 Landside

- There are currently no hangars for private aircraft storage.
- Many of the landside pavements are in poor condition.
- MAS reports that the electrical vault powering the airfield is in poor condition. The lack of a backup generator and/or secondary feed to the airfield makes the Airport vulnerable to outages. MAS noted that a recent outage of airfield power lasted for nearly four weeks due to difficulties in finding replacement parts for the existing vault/generator.
- There is no direct aircraft fueling available at the Airport.
- MAS is currently responsible for managing utilities and energy to the Airport including electric (provided to the substation by TRICO), water and septic. The infrastructure of these services is in need of repair and replacement.
- All landside and airside equipment at the Airport is currently owned and maintained by MAS. The County intends on purchasing equipment now that the lease amendment has been signed.

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CHAPTER 3 - FORECAST OF AVIATION ACTIVITY

Forecasts of aviation demand are a key element in any airport planning project. Demand forecasts, based upon the desires and needs of the service area, provide a basis for determining the type, size and timing of aviation facility development and a platform upon which this master planning study will be based. Consequently, these forecasts influence all subsequent steps of the planning process.

Forecasts of the Airport's future aviation activity and demand were developed for the planning period extending through 2033 using various data sources including the Federal Aviation Administration (FAA); the Arizona Department of Transportation (ADOT); Woods & Poole Economics, Inc.; Pinal County; the military entities at the Airport; and Marana Aerospace Solutions (MAS), the primary Maintenance Repair and Overhaul (MRO) operator at the Airport. The forecast was developed based on the best practice standards as defined in FAA Advisory Circular (AC) 150-5070-6B, *Airport Master Plans*. Consistent with the report *Forecasting Aviation Activity by Airport*, prepared for the FAA in July 2001 by GRA, Incorporated, this forecasting effort was broken into the following eight steps:

1. Identification of Aviation Demand Elements
2. Historical and Existing Aviation Activity
3. Review of Previous Airport Forecasts
4. Collection of Data
5. Development of the Forecast Framework
6. Development of the Forecast
7. Demand Forecast Summary
8. Comparison with FAA Terminal Area Forecast (TAF)

3.01 Aviation Demand Elements

Forecasts of aviation demand can be developed for a number of elements or parameters. The key demand elements for Pinal Airpark include General Aviation (GA) and military operations (by the Arizona Army National Guard [ARNG] and other tenant organizations of the Silver Bell Army Heliport [SBAH], and by the United States Special Operations Command [USSOCOM] for their parachute training and testing activities), based aircraft, and stored aircraft. Although classified as GA activity, the MRO (and associated activity and aircraft) must be evaluated as a separate entity due to the nature of this service (e.g., the aircraft stored at Pinal Airpark for these services are flown infrequently [for delivery and occasionally testing] and represent a fleet mix drastically different from based aircraft [the MRO aircraft are primarily commercial jets]). Aviation demand forecasts were therefore developed for the following:

- Number of Based Aircraft and Associated Fleet Mix at Pinal Airpark
- Number of Stored Aircraft and Associated Fleet Mix at Pinal Airpark

- Annual GA Operations
- Annual Military Operations
- Peak Period Activity

3.02 Historical and Existing Aviation Activity

A key factor to developing a realistic forecast is determining an accurate representation of existing operations and any historical background (see **Table 3-1**). Consistent with the remainder of this forecasting effort, data is divided by the different entities/uses at the Airport.

TABLE 3-1
HISTORICAL AND CURRENT OPERATIONS

Entity	Historical Activity	Current Activity (2013 Operations)	Source
Non-MRO Pilots	**Decreased** over past decade	2,411*	MAS counts taken by Fixed-Base Operator (FBO) during daytime hours and security personnel during nighttime hours (records only kept since 2011)
MRO-Related	Fairly **steady** (between 300 and 500)	319*	
ARNG and Other Tenant Organizations of the SBAH	Under previous mission, majority of operations were to/from SBAH (**averaging** 28,468 operations with little variation from 2009 to 2013; an additional 10% was estimated to have occurred to/from Pinal Airpark)	Under current mission, approximately 26,000 operations are associated with Pinal Airpark with approximately 5,314 directly associated with SBAH	ARNG
USSOCOM	200% **increase** in past decade	5,430**	USSOCOM**
Total	N/A	34,160 (Pinal Airpark only)	N/A

*2012 data used since a complete year of data for 2013 was not yet available.
**According to USSOCOM records, there were 12,000 jumps conducted in 2003; each sortie averages approximately 12 jumpers, equating to 1,000 sorties or 2,000 operations (to account for takeoff and landing) in 2003. USSOCOM reported that 36,000 jumps are programmed for 2014, equating to 6,000 operations. This represents an increase of 200 percent since 2003 or a Compound Annual Growth Rate (CAGR) of approximately 10.5 percent (used to estimate 2013 operations).

The Airport currently has four based aircraft according to FAA standards (a single-engine Piper Cherokee and three multi-engine Casa 212 turboprops leased by Rampart Aviation and contracted to USSOCOM for their jump training and testing activities). Although not based at Pinal Airpark, helicopters based at the SBAH operate regularly from the Airport's runway and must also be considered. Currently, the most frequently operated helicopters are the UH-72A Lakotas (approximately 80 percent) and UH-60A/L Black Hawks (approximately 20 percent).[18]

[18] The previous mission relied primarily on AH-64 Apache and Black Hawk helicopters.

In addition, there are 144 aircraft stored at the Airport that are related to MRO activities. These aircraft primarily include jet aircraft with the exception of several multi-engine Albatrosses (amphibian aircraft). (Refer to Chapter 2 for additional information on based and stored aircraft.)

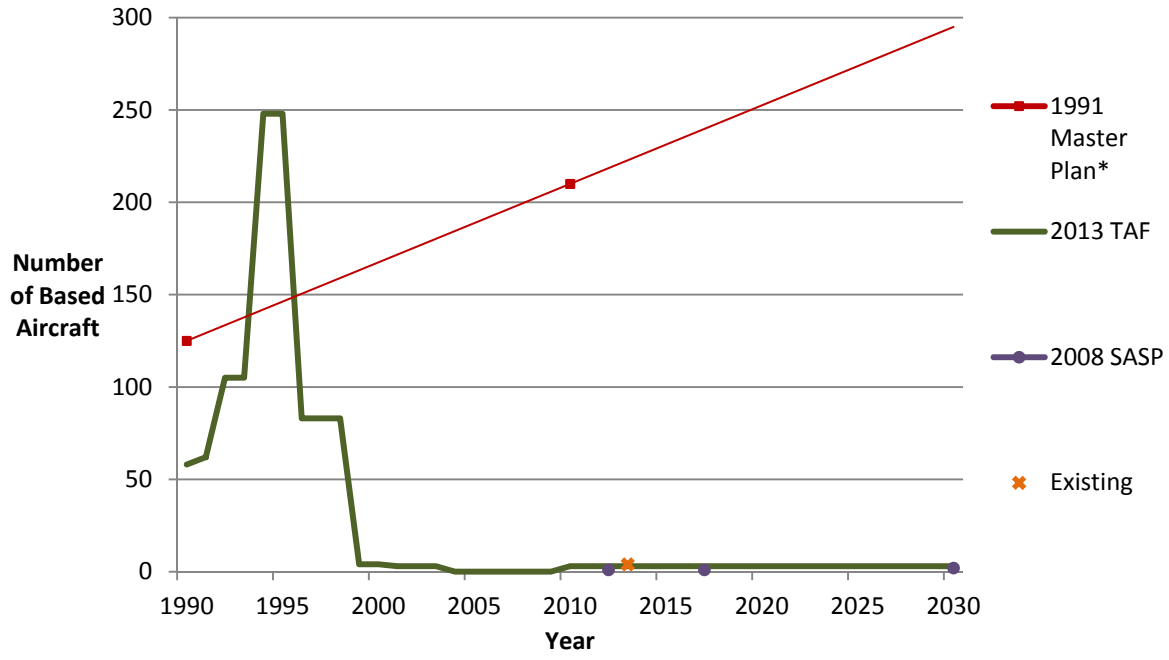
3.03 Review of Previous Airport Forecasts

Several aviation demand forecasts have previously been developed for the Airport including the following:

1. 1991 Airport Master Plan for Pinal Airpark, prepared by SFC Engineering, Inc.
2. 2008 Arizona State Airports System Plan (AZ SASP), prepared for the Arizona Department of Transportation (ADOT)
3. 2009 Noise Study Working Paper #1 for Pinal Airpark, prepared by Armstrong Consultants, Inc., as part of an unfinished Part 150 Noise Study
4. 2013 TAF for Pinal Airpark, prepared by the FAA

These are presented on **Figures 3-1** and **3-2** along with existing estimates according to the different entities and records provided.

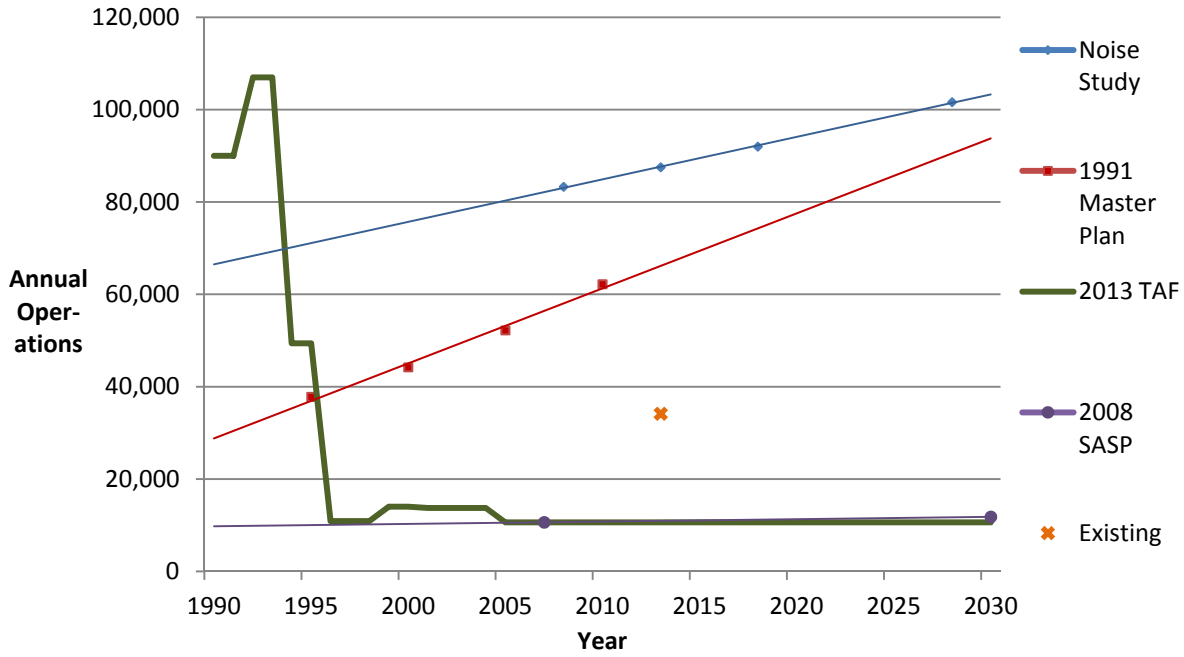
FIGURE 3-1
PREVIOUS BASED AIRCRAFT FORECASTS



*Includes ARNG aircraft based at the SBAH
**No based aircraft forecast developed in the Pinal Airpark – Noise Study Working Paper #1 prepared by Armstrong Consultants in 2009
Source: 1991 Pinal Airpark Airport Master Plan, 2013 FAA Terminal Area Forecast, and 2008 Arizona State Airports System Plan

As shown on the figure above, there is a discrepancy in the types of based aircraft included in these forecasts (e.g., the 1991 Airport Master Plan included military aircraft based at the SBAH) and it appears that the FAA TAF was reporting stored aircraft as based aircraft in the 1990s.[19]

FIGURE 3-2
PREVIOUS ACTIVITY FORECASTS



Source: 1991 Pinal Airpark Airport Master Plan, 2013 FAA Terminal Area Forecast, 2008 Arizona State Airports System Plan, and Pinal Airpark – Noise Study Working Paper #1 prepared by Armstrong Consultants in 2009

Based on airport records and information provided by the entities currently operating at Pinal Airpark, the previously developed forecasts are deemed unusable (refer to "Existing" estimates presented on figures). The 1991 Airport Master Plan forecast relied on several assumptions in its development (including the anticipated relocation of the ARNG Western Army Aviation Training Site [WAATS] from the SBAH, which did not occur); therefore, this forecast will not be considered in developing an updated forecast. Despite representing the most recent forecast, the FAA's 2013 TAF is not an accurate representation of current activity and is instead a continuation of prior publications. Since the SASP relied on a baseline presented in the 2007 TAF, its numbers are also inaccurate. The forecast developed for the noise study was based on coordination with the different entities operating at the Airport and is more reflective of current activity levels though also lacks important information.

[19] The number of MRO-related stored aircraft has consistently exceeded 100; therefore, it is apparent that the 2013 TAF in recent years and the 2008 AZ SASP did not consider these in their forecasts.

3.03-1 General Aviation Forecasts

In addition to the airport-specific forecasts represented above, the FAA publishes a national forecast that provides additional insight into the future of aviation. The *FAA Aerospace Forecast for Fiscal Years 2013 – 2033* projects moderate growth in the GA sector; below are several key elements regarding this type of activity:

- The active GA fleet is projected to increase at an average annual rate of 0.5 percent over the 21-year forecast period. This fleet includes several types of aircraft, each of which are projected to grow or decline at varying rates over the planning period:
  - The turbine-powered fleet (including rotorcraft) is projected to grow at an average of 2.8 percent a year.
  - Active piston-powered aircraft are projected to decrease by an average annual rate of 0.2 percent (piston rotorcraft are forecast to increase by 2.2 percent a year but represent a very small portion of this fleet).
  - Light sport aircraft are anticipated to increase by approximately two percent per year.
- The number of GA hours flown is projected to increase by 1.5 percent yearly over the forecast period.
- The number of active GA pilots (excluding air transport pilots) is projected to reach 508,300 in 2033, an increase of over 40,000 (up 0.4 percent yearly) over the forecast period.

3.03-2 Maintenance, Repair and Overhaul Forecasts

The viability of the MRO industry is dependent upon several factors including but not limited to the following:

- Demand for air service
- Changes in the fleet size and fleet mix of airlines and air carriers that outsource support services
- Miles flown and age of the airline and air carrier fleet
- International trade and the associated shipping
- Government spending on military aircraft
- Government regulations requiring aircraft owners to perform scheduled MRO services
- Competition

Two sources provide instrumental data on the projections of MRO activity; these included the *FAA Aerospace Forecast for Fiscal Years 2013 – 2033* and a report prepared by IBISWorld titled *Aircraft Maintenance, Repair & Overhaul in the US*, published in February 2013. The key findings of these reports as they relate to the factors listed above are summarized in **Table 3-2**.

TABLE 3-2
MRO PROJECTIONS

Factor	Relevant Forecast	Impact on MRO at Pinal
Demand for air service	Demand from domestic and international airlines will increase slightly*	Increase
Changes in fleet size/mix of airlines & air carriers that outsource support	• Commercial aircraft fleet will increase • U.S. mainline carrier fleet will increase • After 2013, regional carrier passenger fleet will increase • Turboprop/piston fleet will shrink • Large cargo jet aircraft will decrease by 2014 and then increase through 2033 • Narrow-body, cargo jet fleet will increase as older Boeing-757s and 737s are converted to cargo service • Wide-body, cargo jet fleet will increase**	Increase
Miles flown & age of airline & air carrier fleet	Average trip lengths will increase*	Increase
International trade & associated shipping	Total trade value will increase*	Increase
Government spending on military aircraft	U.S. Government will decrease spending on military aircraft*	Decrease
Government regulations on scheduled MRO services	Government regulation will continue to pressure aircraft owners to perform scheduled MRO services*	Steady
Competition	• Industry establishments will decrease • Larger MROs will have competitive advantage*	Increase

Source: *IBISWorld *Aircraft Maintenance, Repair & Overhaul in the US* (represents forecast through 2018);
***FAA Aerospace Forecast for Fiscal Years 2013 – 2033;* and C&S Engineers, Inc.

3.04 Collection of Data

This step involves the gathering of all applicable and pertinent information/data that may be used in the forecast development.

3.04-1 Socioeconomics

This section provides background on the socioeconomic characteristics of the area surrounding the Airport that will support the forecast development.

As shown in **Table 3-3**, the population of the Airport's service area, which includes Pinal County and Pima County, increased dramatically from 2000 to 2010 (by approximately 112 and 16 percent, respectively) while the labor forces increased by approximately 37 percent and 12 percent. Further illustrating economic growth in the region, per capita income increased by nearly 27 percent (Pinal County) and 45 percent (Pima County) during this timeframe.

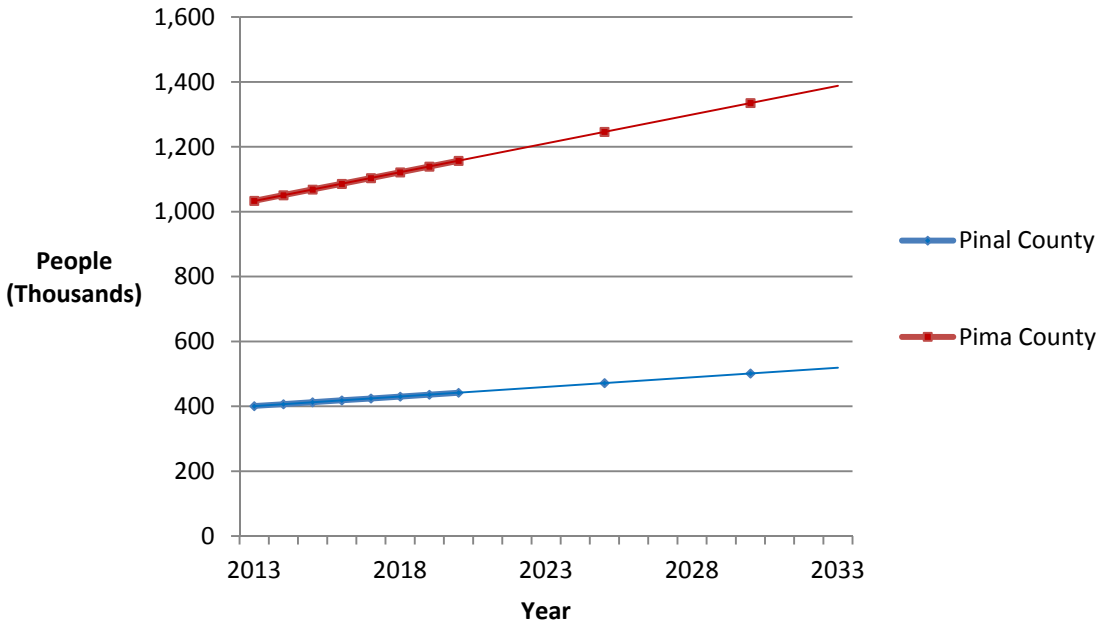
TABLE 3-3
HISTORICAL SOCIOECONIMC TRENDS – PINAL COUNTY AND PIMA COUNTY

Year	Population		Employment		Per Capita Income	
	Pinal County	Pima County	Pinal County	Pima County	Pinal County	Pima County
2000	181,280	848,019	49,972	440,660	$ 17,598.00	$ 24,859.00
2001	187,747	859,280	51,477	439,795	$ 19,284.00	$ 25,520.00
2002	197,082	874,267	50,900	439,405	$ 19,175.00	$ 25,726.00
2003	207,920	885,893	52,226	446,987	$ 19,946.00	$ 26,571.00
2004	219,472	901,342	55,329	465,660	$ 21,334.00	$ 28,625.00
2005	235,708	920,298	60,023	480,384	$ 23,698.00	$ 31,048.00
2006	271,328	940,930	63,431	502,232	$ 23,708.00	$ 33,263.00
2007	306,174	955,869	69,140	518,817	$ 23,474.00	$ 34,596.00
2008	335,311	967,778	71,143	514,287	$ 24,363.00	$ 36,081.00
2009	349,830	975,580	68,596	495,669	$ 23,611.00	$ 35,380.00
2010	383,842	982,154	68,472	494,673	$ 22,269.00	$ 35,998.00

Source: Woods & Poole Economics, Inc.

Figure 3-3 presents the forecasted growth of both counties.

FIGURE 3-3
FORECASTED POPULATION GROWTH



Source: Woods & Poole Economics, Inc.

As shown above, the Airport's service area is anticipated to experience significant growth over the planning period.

3.05 Forecast Framework

Due to the nature of the Airport, activity associated with the different entities in operation was evaluated separately. This is referred to as a "cohort analysis," which involves disaggregating a larger group in order to analyze the smaller components (cohorts) individually. For this analysis, activity was divided among the following:

1. GA activity (unrelated to the MRO)
2. MRO-related activity
3. Military aircraft operations

3.05-1 General Aviation Activity

TREND ANALYSIS

Trend analysis involves the evaluation of historical data to develop projections of future activity. This method was deemed unreasonable for forecasting GA activity at Pinal Airpark given the historical issues, the deteriorated condition of facilities that have likely deterred public use in the past, the public's perception of the Airport as a restricted-access airfield, and the anticipated changes resulting from the following (refer to prior chapters for additional information):

1. The County recently amended its agreement with MAS, ceasing the airport-wide lease arrangement and thus affecting the future activity of the Airport;
2. The County has initiated efforts to bring the Airport into compliance with FAA guidelines and ensure the Airport is open to public use; and
3. One component of compliance will involve significant improvements to ensure airport facilities and infrastructure meet FAA design standards.

SOCIOECONOMIC REGRESSION ANALYSIS

Regression analysis is a statistical methodology that connects factors of aviation demand (dependent variables) such as based aircraft or operations to socioeconomic measures (independent variables) such as population, employment or income. This is useful when reliable forecasts are available for the independent variables.

Due to the factors listed above, regression analysis was used in combination with market share projection (see below) in order to forecast GA activity at Pinal Airpark.

MARKET SHARE PROJECTION

Market share analysis or ratio analysis assumes a top-down correlation between national, regional, and local forecasts. Historical market shares are used as a basis for projecting future market shares. As discussed above, this methodology was selected in conjunction with regression analysis.

3.05-2 MRO-Related Activity

In order to develop a forecast for MRO-related activity at Pinal Airpark, historical information, current trends, and future projections were considered.

3.05-3 Military Aircraft Operations

Due to the complexities of forecasting military activity and the lack of available guidance, trend analysis and extrapolation was used while considering projections provided by the applicable entities to develop forecasts for the USSOCOM, ARNG and other tenant organizations located at the SBAH.

3.06 Forecasts for Pinal Airpark

3.06-1 General Aviation Activity[20]

As previously discussed, the Airport has historically been regarded as a restricted-access airfield despite being open for public use. Following the FAA's letter of noncompliance in 2003 (see **Appendix B**), the County has made significant efforts to ensure consistency with the original property deed and FAA grant assurances. These efforts (e.g., removing the guard gate, amending the lease with MAS, installing a County administrative building, etc.) and ongoing and planned airfield improvements to address the deteriorated condition of the Airport's infrastructure are anticipated to yield an eventual increase in GA activity. This growth is further supported by the projected increases in the service area's population and the FAA's national projections for GA activity. According to the *FAA Aerospace Forecast for Fiscal Years 2013 – 2033,* the active GA fleet will increase at an average annual rate of 0.5 percent, the number of GA hours flown will increase at an average annual rate of 1.5 percent, and the number of active GA pilots will increase at an average annual rate of 0.4 percent.

BASED AIRCRAFT FORECAST

In order to develop a realistic forecast, both historical aviation activity and socioeconomic factors were considered. Specifically, a regression analysis comparing socioeconomic factors (independent variables) and the total number of based aircraft (dependent variable) within the Airport's service area (Pinal County and Pima County) was conducted to project future totals. A market share analysis was then utilized to determine the anticipated percentage of aircraft that will be based at Pinal Airpark over the planning period.

The three major socioeconomic factors (population, income and employment) were analyzed to determine which had the highest correlation to the number of based

[20]All references to GA activity included in this section are unrelated to the MRO. MRO-related activity will be discussed in Section 3.05-2.

aircraft, represented by the resultant R^2 value (an R^2 of 0 means there is no statistical correlation between the independent and dependent variables, while R^2 values near one indicate a significant relationship or trend):

1. Historical based aircraft in Pinal County and Pima County (combined)[21] versus the combined historical populations of both counties
    a. R^2 value = 0.96995
2. Historical based aircraft in Pinal County and Pima County (combined)[22] versus the average historical per capita income of both counties
    a. R^2 value = 0.96857 (rounded)
3. Historical based aircraft in Pinal County and Pima County (combined)[23] versus the combined historical employment of both counties
    a. R^2 value = 0.90705 (rounded)

The first analysis yielded the highest R^2 value; therefore, the most closely tied and relevant independent variable is population. By applying the future forecast for population, the number of based aircraft within the two counties is projected to grow by approximately 22 percent from 2013 to 2033 (see **Table 3-4**). In order to determine the number of based aircraft at Pinal Airpark, three scenarios were evaluated:

1. Scenario 1: Constant Market Share – Assume Pinal Airpark continues to capture the existing market share of based aircraft, which is approximately 0.28 percent (this does not include MRO-related aircraft stored at the Airport; however, it does includes the three aircraft leased by Rampart Aviation and contracted to USSOCOM for their training activities [although associated with military activity, these aircraft are classified as GA based aircraft]) throughout the planning period.
2. Scenario 2: Increasing Market Share – Assume Pinal Airpark captures an increasing market share of based aircraft throughout the planning period (beginning at approximately 0.28 percent and increasing at a compound annual growth rate [CAGR] of 6.5 percent resulting in a market share of approximately one percent in 2033).
    a. This would account for anticipated growth resulting from the County's efforts toward compliance and facility improvements.
3. Scenario 3: Increasing Market Share Beginning Mid-Term – Assume Pinal Airpark continues to capture the existing market share of based aircraft (approximately 0.28 percent) throughout the short-term planning period and then increases its market share by approximately 6.5 percent each year through the mid- and long-term planning periods; this would result in a market share of approximately 0.7 percent in 2033.

[21] County data was only available from 1998 and 2007 (through the 2000 and 2008 SASPs) so a calculated CAGR was used to determine the missing years

[22] *Ibid.*

[23] *Ibid.*

a. This would account for anticipated growth resulting from the County's efforts toward compliance and facility improvements, while recognizing that it will take some time for the results to be realized.

The potential forecasts for based aircraft are presented in **Table 3-4**.

TABLE 3-4
FORECAST OF BASED AIRCRAFT

Year	Pinal County and Pima County		Based Aircraft at Pinal Airpark		
	Population	Based Aircraft	Scenario 1	Scenario 2	Scenario 3
2013	1,434,326	1,421	4	4	4
2014	1,457,529	1,437	4	4	4
2015	1,480,808	1,452	4	5	4
2016	1,504,157	1,468	4	5	4
2017	1,527,701	1,483	4	5	4
2018	1,551,312	1,499	4	6	4
2019	1,574,976	1,515	4	6	5
2020	1,598,725	1,531	4	7	5
2021	1,621,859	1,546	4	7	5
2022	1,645,327	1,562	4	8	6
2023	1,669,135	1,577	4	8	6
2024	1,693,288	1,593	4	9	7
2025	1,717,790	1,610	5	10	7
2026	1,740,873	1,625	5	10	8
2027	1,764,266	1,641	5	11	8
2028	1,787,973	1,656	5	12	9
2029	1,811,998	1,672	5	13	9
2030	1,836,347	1,688	5	14	10
2031	1,859,286	1,704	5	15	11
2032	1,882,511	1,719	5	16	12
2033	1,906,026	1,735	5	17	13

Source: Woods & Poole Economics, Inc.; 2008 Arizona State Airports System Plan; Pinal County; and C&S Engineers, Inc.

Scenario 3 is determined to result in the most reasonable forecast as it reflects anticipated growth in GA activity due to the County's efforts, but recognizes that it will take time for this growth to be realized. Given the lack of enclosed private aircraft storage at Pinal Airpark, the construction of hangars by the County or a private developer would likely stimulate growth at a more rapid pace and/or further increase the Airport's market share of based aircraft. This may be considered further in the Facility Requirements chapter.

Although classified as GA based aircraft, it is important to separate out those aircraft contracted to USSOCOM for their jump training and testing activities; this information will be key in the development of the operations forecast as those aircraft will be associated with military operations only. It is assumed that at least one additional aircraft (to the existing three) will be needed to accommodate future USSOCOM growth. This need is anticipated to occur around the mid-term planning period (refer to Section 3.05-3 for military forecasting information). It is assumed that

the remainder of the forecasted aircraft will be used for GA activity (unrelated to the USSOCOM operations).

FLEET MIX FORECAST

An aircraft fleet mix refers to the characteristics of a population of aircraft. The current GA fleet mix at Pinal Airpark includes single-engine and multi-engine aircraft. Based aircraft used for USSOCOM jump training and testing activities are anticipated to remain similar to the multi-engine Casa 212s currently being used due to the needs associated with this activity. The only existing based aircraft unrelated to USSOCOM activities is a single-engine Piper Cherokee. As the number of based aircraft increases, the majority are anticipated to be single-engine aircraft with some larger, multi-engine aircraft entering the fleet mix to represent the potential for business aircraft growth (see **Table 3-5**).

TABLE 3-5
FLEET MIX OF BASED AIRCRAFT

Year	GA		USSOCOM-Related	Total	
	SE	ME	ME	SE	ME
2013	1	0	3	1	3
2014	1	0	3	1	3
2015	1	0	3	1	3
2016	1	0	3	1	3
2017	1	0	3	1	3
2018	1	0	3	1	3
2019	2	0	3	2	3
2020	2	0	3	2	3
2021	2	0	3	2	3
2022	2	0	4	2	4
2023	2	0	4	2	4
2024	2	1	4	2	5
2025	2	1	4	2	5
2026	3	1	4	3	5
2027	3	1	4	3	5
2028	3	2	4	3	6
2029	3	2	4	3	6
2030	4	2	4	4	6
2031	4	3	4	4	7
2032	5	3	4	5	7
2033	6	3	4	6	7

*SE = Single-Engine; ME = Multi-Engine
Source: Pinal County and C&S Engineers, Inc.

OPERATIONS FORECAST

An aircraft operation is a measure of activity that is defined as either a takeoff or a landing; a takeoff and a landing represent two operations. The annual GA operations forecast (for activity unrelated to the MRO or military entities) was derived for both

local and itinerant operations through the use of an Operations-per-Based-Aircraft (OPBA) ratio. The four (future) multi-engine aircraft contracted to the USSOCOM are not included in the based aircraft numbers for generating GA operations. For this study, information from the existing OPBA levels at Pinal Airpark, the AZ SASP, and the FAA TAF were reviewed:

- Pinal Airpark (Existing): OPBA = 2,411 (2,411 annual GA operations / 1 based aircraft unrelated to USSOCOM activities)
- AZ SASP (2008): OPBA = 2,585 (estimates that the average non-commercial and non-military OPBA rate for Arizona system airports is 1,936)
- FAA TAF (2013): OPBA = 2,432

Given that the existing number is based on real data and is fairly consistent with the SASP and TAF estimates, that will be used for the 20-year planning period. Aviation activity is further divided into local and itinerant operations. Local operations are those that occur within the local traffic pattern of the Airport and may include touch-and-go operations. Itinerant operations include all others and can be categorized as takeoffs and landings of aircraft traveling from one airport to another. Currently, almost all (estimated at 90 percent) of GA operations (unrelated to the MRO) are local (many of which may be related to flight training). Due to the upcoming changes at the Airport as discussed previously, this is anticipated to shift to approximately 60 percent, which is more reflective of typical GA airports (see **Table 3-6**).

TABLE 3-6
FORECAST OF GA OPERATIONS

Year	Based Aircraft	OPBA	Local	Itinerant	Total GA Operations
2013	1	2,411	2,170	241	2,411
2014	1	2,411	2,170	241	2,411
2015	1	2,411	2,170	241	2,411
2016	1	2,411	2,170	241	2,411
2017	1	2,411	2,170	241	2,411
2018	1	2,411	2,170	241	2,411
2019	2	2,411	2,893	1,929	4,822
2020	2	2,411	2,893	1,929	4,822
2021	2	2,411	2,893	1,929	4,822
2022	2	2,411	2,893	1,929	4,822
2023	2	2,411	2,893	1,929	4,822
2024	3	2,411	4,340	2,893	7,233
2025	3	2,411	4,340	2,893	7,233
2026	4	2,411	5,786	3,858	9,644
2027	4	2,411	5,786	3,858	9,644
2028	5	2,411	7,233	4,822	12,055
2029	5	2,411	7,233	4,822	12,055
2030	6	2,411	8,680	5,786	14,466
2031	7	2,411	10,126	6,751	16,877
2032	8	2,411	11,573	7,715	19,288
2033	9	2,411	13,019	8,680	21,699

Source: Pinal County; Marana Aerospace Solutions; and C&S Engineers, Inc.

3.06-2 MRO-Related Activity

MAS, the existing MRO operation at Pinal Airpark, is a significant contributor to the local economy and has been at the Airport for over 30 years (previously named Evergreen Maintenance Center). As shown in **Table 3-2**, the forecasts for all factors related to MRO growth excluding one indicate growth or stability in MRO activity at Pinal Airpark. Additionally, the climate of Pinal County and the space available for aircraft storage make the Airport an ideal location for MRO services. Therefore, it is important to consider this activity in the development of an aviation demand forecast.

According to IBISWorld, MRO industry revenue is projected to reach $22.6 billion in 2018, representing an average annual increase of 1.2 percent (refer to Section 3.02 for reasoning). This conservative growth rate is due to long-term economic factors previously discussed. However, given the competitive edge of the MRO operation at Pinal Airpark (its size, location, space availability, reputation, maturity within the industry), it is assumed that MRO activity at Pinal Airpark will do better than the average of 1.2 percent. In order to remain conservative, a CAGR of 1.5 percent was used to develop a reasonable forecast, presented below in **Table 3-7**.

TABLE 3-7
FORECAST OF MRO ACTIVITY

Year	MRO-Related Stored Aircraft	MRO-Related Operations
2013	144	319
2014	146	324
2015	148	329
2016	151	334
2017	153	339
2018	155	344
2019	157	349
2020	160	354
2021	162	359
2022	165	365
2023	167	370
2024	170	376
2025	172	381
2026	175	387
2027	177	393
2028	180	399
2029	183	405
2030	185	411
2031	188	417
2032	191	423
2033	194	430

Source: Pinal County and C&S Engineers, Inc.

The operations forecast listed above is consistent with MAS reports that MRO activities average between 300 and 500 annual operations. This is also similar to the

forecast developed in the 2009 Noise Study Working Paper #1 for Pinal Airpark, which projected 446 operations in 2028.

Nearly all of the stored aircraft associated with the MRO service are jet aircraft. Due to the business model, this fleet mix is assumed to remain steady through the planning period.

Less than five percent of MRO operations are local (likely related to testing of repaired aircraft). The majority of MRO operations are associated with aircraft being transported to and from Pinal Airpark for repair/maintenance/overhaul. This is not anticipated to change as reflected in **Table 3-8**.

TABLE 3-8
ITINERANT/LOCAL BREAKDOWN

Year	Local	Itinerant	Total
2013	16	303	319
2014	16	308	324
2015	16	312	329
2016	17	317	334
2017	17	322	339
2018	17	326	344
2019	17	331	349
2020	18	336	354
2021	18	341	359
2022	18	347	365
2023	19	352	370
2024	19	357	376
2025	19	362	381
2026	19	368	387
2027	20	373	393
2028	20	379	399
2029	20	385	405
2030	21	390	411
2031	21	396	417
2032	21	402	423
2033	21	408	430

Source: Marana Aerospace Solutions and C&S Engineers, Inc.

3.06-3 Military Aircraft Operations

As shown in **Table 3-1**, helicopter operations to/from the SBAH have averaged 28,468 from 2009 to 2013. Under the previous mission (prior to 2014), these operations took place primarily to/from the SBAH with limited activity to/from Pinal Airpark's runway (estimated at an additional 10 percent for testing and training activities that required presence of a runway). Under the current mission, approximately 26,000 annual operations are directly associated with Pinal Airpark with approximately 5,314 directly associated with SBAH. According to the ARNG, activity is anticipated to increase steadily over the next 10 years. In order to maintain a conservative and realistic forecast, activity is projected to increase at a CAGR of

one percent. Given the lack of information for the long-term planning period, activity is assumed to remain steady through the final planning horizon (from 2024 to 2033).

Also depicted in **Table 3-1**, USSOCOM's operations have increased drastically over the past decade. In 2003, operations were estimated at 2,000; according to the USSOCOM, 6,000 operations are programmed for 2014 (resulting in a CAGR of approximately 10.5 percent) and activity is anticipated to grow steadily over the next 10 years. This projection is supported by the planned construction of a new $7 million facility at the PTTF. In order to maintain a conservative and realistic forecast, the CAGR from 2015 through 2023 is estimated at five percent. Given the lack of information for the long-term planning period, activity is assumed to remain steady through the final planning horizon (from 2024 to 2033). **Table 3-9** presents the summary of forecasted military activity at the Airport.

TABLE 3-9
FORECAST OF MILITARY ACTIVITY

Year	ARNG and Other Tenant Organizations*		USSOCOM	Pinal Airpark Total
	to/from SBAH	to/from Pinal Airpark		
2013	5,314	26,000	5,430	31,430
2014	5,367	26,260	6,000	32,260
2015	5,421	26,523	6,300	32,823
2016	5,475	26,788	6,615	33,403
2017	5,530	27,056	6,946	34,001
2018	5,585	27,326	7,293	34,619
2019	5,641	27,600	7,658	35,257
2020	5,697	27,876	8,041	35,916
2021	5,754	28,154	8,443	36,597
2022	5,812	28,436	8,865	37,301
2023	5,870	28,720	9,308	38,028
2024	5,870	28,720	9,308	38,028
2025	5,870	28,720	9,308	38,028
2026	5,870	28,720	9,308	38,028
2027	5,870	28,720	9,308	38,028
2028	5,870	28,720	9,308	38,028
2029	5,870	28,720	9,308	38,028
2030	5,870	28,720	9,308	38,028
2031	5,870	28,720	9,308	38,028
2032	5,870	28,720	9,308	38,028
2033	5,870	28,720	9,308	38,028

*Helicopter operations
Source: Arizona Army National Guard; United States Special Operations Command; and C&S Engineers, Inc.

All USSOCOM operations are assumed to be local due to the nature of training activities. The local/itinerant split for activity by the ARNG and other tenant organizations of the SBAH is unknown. However, aircraft associated with these operations do not park at Pinal Airpark. Therefore, the local/itinerant split is not relevant as there will be no impact on Facility Requirements.

3.06-4 Peak Period Activity Forecast

Since many of the Airport's facility needs are related to the levels of activity during peak periods, forecasts were developed for peak month and peak hour operations.[24] The peak period operations for 2013 were calculated using the following methodology:

- Peak Month Operations: This level of activity is defined as the calendar month when peak aircraft operations occur. Based on FlightWise data, there is not a consistent month that experiences peak activity. However, this data showed that the highest-activity months represented approximately 10 percent of annual operations. Peak Month Operations = Annual Operations x 0.10.
- Design Day Operations: This level of operations is defined as the average day within the peak month (ADPM). Design Day Operations = Peak Month Operations/30.
- Design Hour Operations: This level of activity is defined as the peak hour within the ADPM. Typically these operations will range between 10 and 15 percent of the ADPM operations. Therefore, 12.5 percent was used for this calculation. Design Hour Operations = ADPM Operations x 0.125.

Table 3-10 presents the forecast of peaking characteristics for activity at Pinal Airpark. Peak forecasts are presented for Pinal Airpark activity, only, and the combined activity from Pinal Airpark and the SBAH given the proximity.

TABLE 3-10
PEAKING FORECAST

Year	Total Operations	Peak Month	ADPM	Peak Hour of ADPM
Pinal Airpark Activity				
2013	34,160	3,416	114	14
2018	37,374	3,737	125	16
2023	43,220	4,322	144	18
2033	60,157	6,016	201	25
Pinal Airpark and SBAH Activity				
2013	39,474	3,947	132	16
2018	42,959	4,296	143	18
2023	49,090	4,909	164	20
2033	66,027	6,603	220	28

Source: FlightWise and C&S Engineers

[24] Peak period activity forecasts were developed for all operations but may be broken down further as needed in the Facility Requirements analysis.

3.07 Demand Forecast Summary

A comprehensive summary of the aviation demand forecast for Pinal Airpark is provided in **Table 3-11**.

TABLE 3-11
PINAL AIRPARK DEMAND FORECAST SUMMARY

Forecast Parameter	2013	2018	2023	2033
Based Aircraft				
General Aviation				
Used for USSOCOM Activity – Assume All Multi-Engine	3	3	4	4
Unrelated to USSOCOM Activity				
Single-Engine	1	1	2	6
Multi-Engine	0	0	0	3
MRO-Related – Assume All Jets	144	155	167	194
TOTAL Based Aircraft*	148	159	173	207
Annual Operations				
Local				
General Aviation				
Non-MRO	2,170	2,170	2,893	13,019
MRO-Related	16	17	19	22
Total Local GA	2,186	2,187	2,912	13,041
Military				
USSOCOM	5,430	7,293	9,308	9,308
ARNG and Other Tenant Organizations of SBAH**	26,000	27,326	28,720	28,720
Itinerant				
General Aviation				
Non-MRO	241	241	1,929	8,680
MRO-Related	303	326	352	408
TOTAL Itinerant	544	567	2,281	9,088
TOTAL GA	2,730	2,754	5,193	22,129
TOTAL Military	31,430	34,619	38,028	38,028
TOTAL Operations	34,160	37,374	43,220	60,157
Peak Activity				
Peak Month Operations	3,416	3,737	4,322	6,016
Average Day of Peak Month (ADPM)	114	125	144	201
Peak Hour of ADPM	14	16	18	25

*MRO-related aircraft do not qualify as based aircraft by FAA standards
**Assumed Local
Source: C&S Engineers, Inc.

3.08 Comparison with FAA Terminal Area Forecast

Table 3-12 presents a comparison between the preferred forecast for Pinal Airpark as developed herein and the FAA TAF. The Airport Master Plan Update has documented that the TAF is not considered valid since existing conditions at the airport exceed the TAF for based aircraft and operations (specifically military operations). In addition, the TAF for un-towered GA airports typically presents little or no growth.

TABLE 3-12
COMPARISON WITH FAA TAF

Year	Airport Forecast	TAF	% Difference from TAF
Base year = 2013	34,160	10,628	105.08%
Base year + 5 years = 2018	37,374	10,628	111.44%
Base year + 10 years = 2023	43,220	10,628	121.05%
Base year + 20 years = 2033	60,157	10,628	139.94%

Source: 2013 FAA Terminal Area Forecast and C&S Engineers, Inc.

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CHAPTER 4 - FACILITY REQUIREMENTS

In this section, the existing airfield capacity at the Airport is compared with the forecast levels of aviation activity. From this analysis, facility requirements for the planning period will be developed by converting any identified capacity deficiencies into detailed needs for new airport facilities.

4.01 Airfield Capacity

Airfield capacity, as it applies to the Airport, is a measure of terminal area airspace and airfield saturation. It is defined as the maximum rate at which aircraft can arrive and depart an airfield with an acceptable level of delay. Measures of capacity include the following:

- Hourly Capacity of Runway: The maximum number of aircraft operations that can take place on the runway system in one hour.
- Annual Service Volume: The annual capacity or a maximum level of annual aircraft operations that can be accommodated on the runway system with an acceptable level of delay.

A variety of techniques have been developed for the analysis of airfield capacity. The current technique accepted by the FAA is described in the FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*. The Airport Capacity and Delay Model (ACDM) uses the following inputs to derive an estimated airport capacity:

- Airfield layout and runway use
- Meteorological conditions
- Navigational aids
- Aircraft operational fleet mix
- Touch and go operations

Each input used in a calculation of airfield capacity is described in the following sections.

4.01-1 AIRFIELD LAYOUT AND RUNWAY USE

The airfield layout refers to the location and orientation of runways, taxiways, and other facilities. Currently, the Airport has one runway with a full parallel taxiway with four connecter taxiways.

4.01-2 METEOROLOGICAL CONDITIONS

Wind conditions are of prime importance in determining runway use and orientation. The prevailing wind and visibility conditions determine the direction in which

takeoffs and landings may be conducted and the frequency of use for each available runway.

The terms Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) are used as measures of ceiling and visibility. VFR conditions occur when the ceiling is at least 1,000 feet and visibility is three miles or greater. During these conditions, pilots fly on a see-and-be-seen basis. IFR conditions occur when the ceiling is less than 1,000 feet or visibility drops below three miles. In IFR weather, the FAA air traffic control system assumes responsibility for safe separation between aircraft.

4.01-3 NAVIGATIONAL AIDS

The FAA's ACDM uses information concerning IFR capability in the capacity calculation. Airports with instrument capabilities are able to operate during IFR conditions and thus are open a greater percentage of the year than similar VFR-only airports. The navigational aids available at the Airport have been described in Chapter 2.

4.01-4 AIRCRAFT OPERATIONAL FLEET MIX

The FAA's ACDM also requires that total annual operations be converted to operations by specific aircraft classification category. The capacity model identifies an airport's aircraft fleet mix in terms of four classifications ranging from A (small, single-engine with gross weights of 12,500 pounds or less) to D (large aircraft with gross weights over 300,000 pounds). These classifications and examples of each are identified in **Table 4-1**. Classifications A, B, C and D apply to the Airport's fleet mix.

TABLE 4-1
ACDM AIRCRAFT CLASSIFICATION SYSTEM

Class	Description	Examples
A	Small single-engine aircraft with a gross weight of 12,500 pounds or less	Cessna 172/182 Mooney 201 Beech Bonanza Piper Cherokee/Warrior
B	Twin-engine aircraft with a gross weight of 12,500 pounds or less	Beech Baron Mitsubishi Mu-2 Cessna Citation 1 Piper Navajo
C	Large aircraft with a gross weight of 12,500 pounds to 300,000 pounds	Boeing 727/737/757 Douglas DC-9 Gulfstream III Lear 35/55
D	Large aircraft with a gross weight of more than 300,000 pounds	Boeing 747/777 Airbus A-300/310 Douglas DC-8-60/70

Source: FAA Advisory Circular 150/5060-5

4.01-5 TOUCH AND GO OPERATIONS

A touch and go operation occurs when an aircraft lands and then makes an immediate takeoff without coming to a full stop. The primary purpose of touch and go operations is for the training of student pilots.

4.01-6 Hourly Capacity

The FAA's Airport Capacity Model combines information concerning runway configuration, runway usage, meteorology, operational fleet mix, and touch and go operations to produce an hourly capacity of the airfield. A weighted hourly capacity combines the input data to determine a base for each VFR and IFR operational runway use configuration at the Airport. Each hourly capacity base is assigned a proportionate weight (based on the time each is used) in order to determine the weighted hourly capacity of the entire airfield.

The VFR and IFR hourly capacities for the Airport are estimated to be 98 and 59 operations per hour, respectively. Hourly capacity was also evaluated considering operations to/from the Silver Bell Army Heliport (SBAH). As shown in **Table 4-2**, the airfield will have sufficient hourly capacity to meet design hour and peak period demands.

TABLE 4-2
HOURLY CAPACITY SUMMARY

Year	Design Hour Operations Forecast	VFR Hourly Capacity	IFR Hourly Capacity	VFR Capacity Ratio	IFR Capacity Ratio
Pinal Airpark					
2013	14	98	59	15%	24%
2018	16	98	59	16%	26%
2023	18	98	59	18%	31%
2033	25	98	59	26%	42%
Pinal Airpark and SBAH					
2013	16	98	59	17%	28%
2018	18	98	59	18%	30%
2023	20	98	59	21%	35%
2033	28	98	59	28%	47%

Source: FAA Advisory Circular 150/5060-5 and C&S Engineers, Inc.

4.01-7 Annual Service Volume

An airport's Annual Service Volume (ASV) has been defined by the FAA as "a reasonable estimate of an airport's annual capacity. It accounts for differences in

runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time." Therefore, ASV is a function of the hourly capacity of the airfield and the annual, daily, and hourly demands placed upon it. ASV is estimated by multiplying the daily and hourly operation ratios by a weighted hourly capacity.

At the Airport the ASV is estimated to be 230,000 aircraft operations (landings and takeoffs) for present conditions. **Table 4-3** summarizes the ASV relationships developed in this section. There is adequate capacity to accommodate future demand.

TABLE 4-3
ANNUAL SERVICE VOLUME SUMMARY

Year	Annual Operations Forecast	Annual Service Volume[1]	Annual Capacity Ratio
Pinal Airpark			
2013	34,160	230,000	15%
2018	37,374	230,000	16%
2023	43,220	230,000	19%
2033	60,157	230,000	26%
Pinal Airpark and SBAH			
2013	39,474	230,000	17%
2018	42,959	230,000	19%
2023	49,090	230,000	21%
2033	66,027	230,000	29%

[1]FAA Advisory Circular 150/5060-5
Source: C&S Engineers, Inc.

Although runway capacity is deemed adequate, the military entities noted that a second runway south of existing Runway 12-30 would assist with capacity and potential issues to their operations during runway reconstruction.

4.02 Airfield Requirements

Airfield facilities, as described in this report, include the runway, taxiways, minimum land envelope, and airfield instrumentation and lighting. From the demand/capacity analysis, it was concluded that the Airport's present runway system will be adequate to accommodate demand throughout the planning period.

4.02-1 Airport Design Standards and Critical Aircraft

FAA AC 150/5300-13A, *Airport Design*, identifies the design standards to be maintained at the Airport. These design criteria provide a guide for airport designers to assure a reasonable amount of uniformity in airport landing facilities. Any criteria involving widths, gradients, separations of runways, taxiways, and other features of the landing area must necessarily incorporate wide variations in aircraft performance,

pilot technique, and weather conditions. The FAA design standards provide for uniformity of airport facilities and also serve as a guide to aircraft manufacturers and operators with regard to the facilities that may be expected to be available in the future.

The selection of appropriate FAA airport design criteria is based primarily upon the critical or design aircraft that will be using the Airport. At the beginning of this study, the Boeing 747-400 was identified as the critical aircraft for existing conditions. This, in combination with the lack of Instrument Approach Procedures (IAPs), yields a Runway Design Code (RDC) of D-V. The applicable design standards were presented in **Table 2-10**, which shows that the runway system does not meet FAA design standards for several runway conditions/dimensions.

The FAA requires paved, 35-foot-wide shoulders for runways accommodating this type of aircraft; the existing shoulders do not meet this dimensional standard. There are drainage issues within the existing Runway Safety Area (RSA), which must be "drained by grading or storm sewers to prevent water accumulation" per FAA AC 150/5300-13A, *Airport Design*. The segmented circle and wind cone are located within the RSA, which should be free of objects except those that need to be located there due to their function (not the case for either navigational aid [NAVAID]); within the Runway Object Free Area (ROFA), which must be clear of above-ground objects protruding above the nearest point of the RSA; and a portion of the segmented circle extends into the Runway Obstacle Free Zone (ROFZ), within which there should be no aircraft or other object penetrations excluding frangible NAVAIDs that must be sited there due to their function. Additionally, portions of the Runway 30 RSA, ROFA, and Runway Protection Zone (RPZ) (approximately 19.90 acres) extend off airport property and onto land currently owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints. Approximately 7.13 acres of the Runway 12 RPZ extend off airport property onto state-owned land. This prevents the County from being able to maintain the condition and clearance of these areas and prohibit non-compatible land uses and activities. Although it is recommended that the County gain control over these areas or mitigate this issue, Pima County Code establishes a height and land use overlay zone surrounding the southern edge of the Airport where the safety zones and FAR Part 77 imaginary surfaces extend over Pima County land. The overlay zone consists of the following:

1. Runway Safety Zone (RSZ), depicted as a square extending from the runway end and measuring 1,500 by 1,500 feet. This includes most of the Runway 30 RPZ and all of the ROFA and RSA that extend off property.
2. Compatible Use Zone (CUZ) – 2, depicted as a rectangular extension to the RSZ, measuring 3,500 feet long and 1,500 feet wide. This includes the remainder of the Runway 30 RPZ that extends off airport property.
3. Part 77 primary, approach and transitional surfaces with associated building height restrictions.

The specific height and land use restrictions can be found in Pima County Code, Chapter 18.57, *Airport Environs and Facilities*. (The only permitted use within the RSZ is crop raising.)

Finally, the hold line on Taxiway A1 does not meet the separation distance standard from the runway centerline (250 feet). It is also oriented incorrectly as it is not perpendicular to the runway centerline.

Although the critical aircraft is anticipated to remain as the Boeing 747-400 for the foreseeable future, Runway 12-30 may not remain a visual runway. As part of the Airport Master Plan Update, QED conducted an airspace analysis to determine the potential for IAPs to Pinal Airpark. Based on this analysis, there may be an opportunity for an IAP to Runway 12. (There are options for Runway 30; however, these are less viable due to surrounding airspace and terrain. Further analysis would be required.) Although the exact minimums cannot be determined at this time, design standards for a non-precision instrument approach (not lower than three-fourths of a mile visibility) were considered (there are no changes to design standards associated with implementing a non-precision instrument approach with not less than one mile visibility). The only change to design standards compared to those presented in **Table 2-10** relates to the Approach RPZ for Runway 12, which would expand from its current dimensions of 1,700 by 500 by 1,010 feet to 1,700 by 1,000, by 1,510 feet. The new RPZ would extend further off airport property onto state-owned land designated as Airport Reserve (approximately 11.95 acres) and onto the SBAH (approximately 5.19 acres).

In addition to runway design standards, the FAA sets design standards for airport taxiway systems based on the established critical aircraft's Airplane Design Group (ADG) and Taxiway Design Group (TDG). The Boeing 747-400 falls within TDG 6 based on its Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distance. **Table 2-11** presented taxiway design standards for existing conditions. Since the critical aircraft will remain the same under future conditions, there will be no changes to the taxiway design standards. The Airport's taxiway systems do not comply with the several FAA design standards under existing and future conditions. Excluding Taxiway A1 and the portion of Taxiway A that abuts the apron, all taxiways do not meet dimensional standards for width. Likewise, the taxiways do not meet the standard for taxiway edge safety margin; based on the critical aircraft's MGW (41.3 feet), providing a safety margin of 15 feet on either side would require the taxiways to be at least 71.3 feet wide. Again, only Taxiway A1 and the portion of Taxiway A that abuts the apron meet this standard. The entire taxiway system does not provide standard taxiway shoulders. The Taxiway A and Taxiway E centerline to fixed or movable object separation distances are not met due to the location of an existing fence on the apron and the access road to the fuel facility, respectively; these objects also prevents the TOFA standard from being met. Finally, there are drainage issues within the existing TSA, which must be "drained by grading or storm sewers to prevent water accumulation" per FAA AC 150/5300-13A, *Airport Design* and the

Taxiway A TSA experiences a significant grade change, which conflicts with FAA standards stating that the TSA should not experience any surface variations.

In addition to design standard regarding dimensions and separation distances, the FAA has established standards for airfield signage. Currently, the runway's distance remaining signs are positioned too far away from the runway edge stripe (currently 100 feet and should be no more than 75 feet). Further, the existing guidance signs and distance remaining signs were constructed using an outdated technique that makes maintenance difficult. Finally, several of the signs have been struck by aircraft or other equipment and require replacement.

4.02-2 Runway Orientation

The orientation of runways for takeoff and landing operations is primarily a function of wind velocity and direction, together with the ability of aircraft to operate under adverse conditions. As a general rule, the primary runway at an airport is oriented as closely as practicable in the direction of the prevailing winds. The most desirable runway configuration will provide the largest wind coverage for a given maximum crosswind component. The crosswind component is the vector of wind velocity and direction that acts at a right angle to the runway. Further, runway wind coverage is that percent of time in which operations can safely occur because of acceptable crosswind components. The desirable wind coverage criterion for a runway system has been set by the FAA at 95 percent for any aircraft forecasted to use the airport on a regular basis.

All-weather, VFR, and IFR wind roses were developed for the Airport using information gathered from the weather observations taken over a 10-year period from 2000 to 2009 at Tucson International Airport (there is no weather reporting at Pinal Airpark). As shown on the wind roses depicted on **Figure 4-1**, the all-weather wind coverage is 99.75 percent for a 20-knot crosswind, 99.08 percent for a 16-knot crosswind, 97.23 percent for a 13-knot crosswind, and 94.98 percent for a 10.5-knot crosswind. Although the critical aircraft, the Boeing 747-400, falls within RDC D-V (which has an allowable crosswind component of 20 knots), the Airport also experiences General Aviation (GA) activity by smaller aircraft including those within RDC A-I, which has an allowable crosswind component of 10.5 knots. As shown on **Figure 4-1**, Runway 12-30 provides nearly 95 percent coverage at 10.5 knots, which is deemed adequate at this time; therefore, a crosswind runway is not currently recommended.

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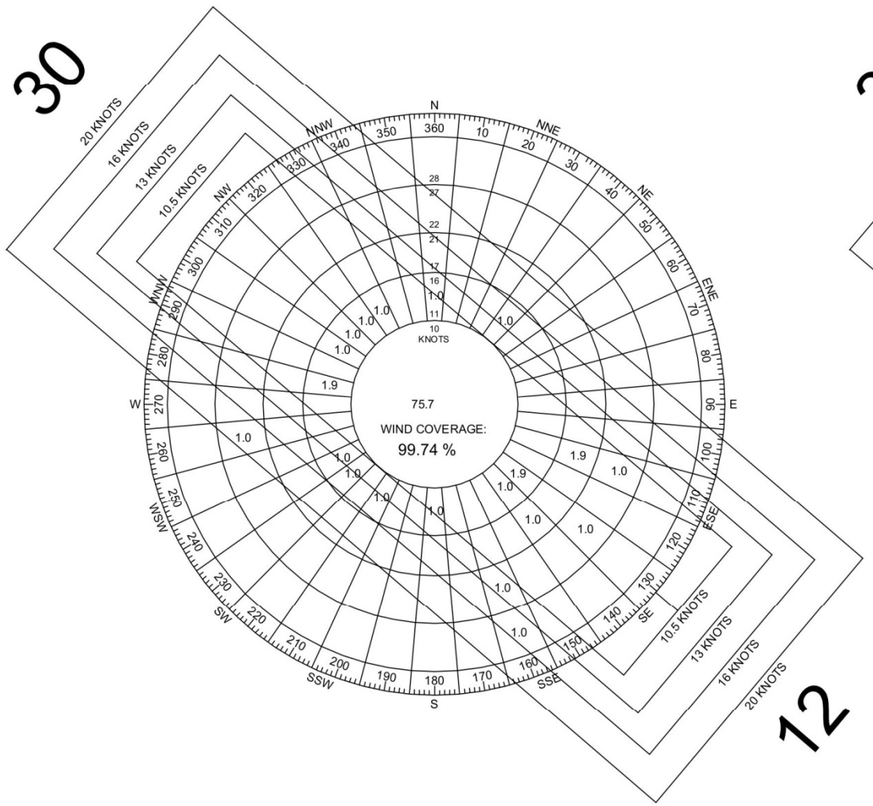
Pinal Airpark

Wind Roses

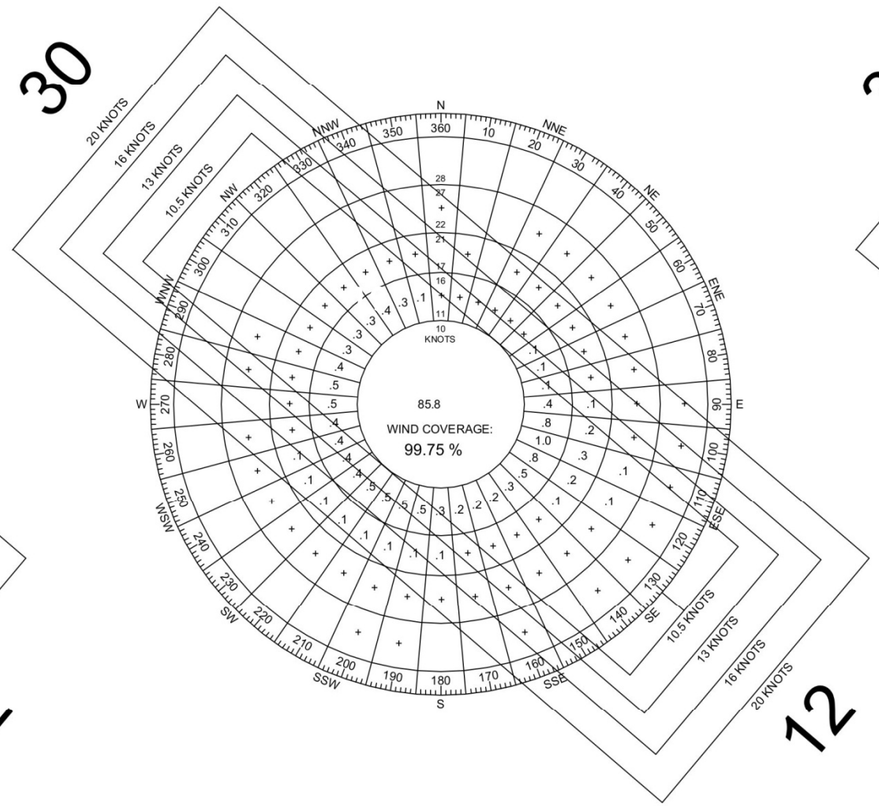
Figure 4-1



IFR WIND ROSE				
RUNWAY	10.5 KT/12 MPH	13 KT/15 MPH	16 KT/18 MPH	20 KT/23 MPH
	IFR	IFR	IFR	IFR
12-30	91.61%	95.18%	98.54%	99.74%

SOURCE: NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

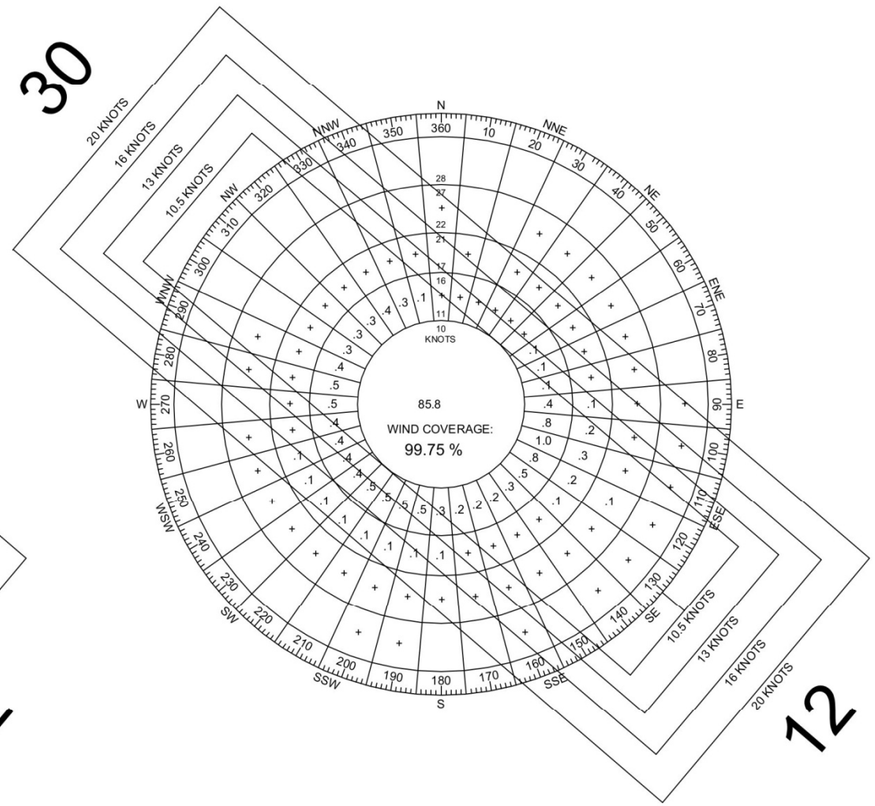
OBSERVATIONS TAKEN AT TUCSON INTERNATIONAL AIRPORT
FOR THE PERIOD BETWEEN 2000 - 2009
103 OBSERVATIONS TAKEN FOR IFR



ALL WEATHER WIND ROSE				
RUNWAY	10.5 KT/12 MPH	13 KT/15 MPH	16 KT/18 MPH	20 KT/23 MPH
	ALL WEATHER	ALL WEATHER	ALL WEATHER	ALL WEATHER
12-30	94.98%	97.23%	99.08%	99.75%

SOURCE: NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

OBSERVATIONS TAKEN AT TUCSON INTERNATIONAL AIRPORT
FOR THE PERIOD BETWEEN 2000 - 2009
78,983 OBSERVATIONS TAKEN FOR ALL WEATHER



VFR WIND ROSE				
RUNWAY	10.5 KT/12 MPH	13 KT/15 MPH	16 KT/18 MPH	20 KT/23 MPH
	VFR	VFR	VFR	VFR
12-30	94.98%	97.23%	99.08%	99.75%

SOURCE: NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

OBSERVATIONS TAKEN AT TUCSON INTERNATIONAL AIRPORT
FOR THE PERIOD BETWEEN 2000 - 2009
78,829 OBSERVATIONS TAKEN FOR VFR

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4.02-3 Runway Length Analysis

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, outlines the process to identify runway length requirements. Five steps are used to determine the recommended runway length:

- Step 1: Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years.
- Step 2: Identify the airplanes that will require the longest runway lengths at MTOW.
- Step 3: Use the Airplane Weight Categorization for Runway Length Requirements table and the airplanes identified in step #2 to determine the method that will be used for establishing the recommended runway length.
- Step 4: Select the recommended runway length from among the various runway lengths generated by step #3 per the process identified in chapters 2, 3, or 4, as applicable.
- Step 5: Apply any necessary adjustment to the obtained runway length, when instructed by the applicable chapter of this AC, to the runway length generated by step #4 to obtain a final recommended runway length.

STEP 1 – IDENTIFY CRITICAL DESIGN AIRPLANE

The selection of appropriate FAA airport design criteria is based primarily upon the critical or design aircraft that will be utilizing the Airport. The critical aircraft was established as the Boeing 747-400 in Chapter 2 of the Airport Master Plan Update. Although there are larger aircraft visiting the Airport on occasion, this is a small percentage of total operations and the FAA's definition of "regular use" is not met.

STEP 2 – IDENTIFY THE AIRCRAFT THAT WILL REQUIRE THE LONGEST RUNWAY LENGTHS AT MAXIMUM CERTIFICATED TAKEOFF WEIGHT

In this step, MTOW is used to define the airplane group for the runway length analysis. Consistent with the critical aircraft, the aircraft requiring the longest runway length of those aircraft that operate regularly at the Airport have MTOWs over 60,000 pounds.

STEP 3 – DETERMINE METHOD THAT WILL BE USED FOR ESTABLISHING RECOMMENDED RUNWAY LENGTH

This step involves using the Airplane Weight Categorization for Runway Length Requirements table to determine the method that will be used for establishing the recommended runway length. The large aircraft operating at the Airport on a regular

basis have MTOWs over 60,000 pounds. Therefore, the associated method will be used to determine recommended runway length.

STEP 4 AND 5 – SELECT THE RECOMMENDED RUNWAY LENGTH

Although the Boeing 747-400 was selected as the critical aircraft, the methods identified outlined in Chapter 2 of the AC do not apply due to unique circumstances. The activity by this aircraft is primarily related to the Maintenance, Repair and Overhaul (MRO) operation and, specifically, for maintenance purposes, recycling, etc. Rarely do these aircraft take off or land at full load or close to it. Therefore the runway length analysis relied directly on information from the entities operating at the Airport.

RECOMMENDED RUNWAY LENGTH

The United States Special Operations Command (USSOCOM) did not express a need for additional runway length. The USSOCOM relies primarily on the Casa 212 aircraft for its operations. Although this aircraft falls under the "large aircraft" category defined by the FAA based on its MTOW (approximately 17,860 pounds), it is specifically designed for and capable of operating on short, unimproved runways (referred to as a "short takeoff and landing" or STOL aircraft). These aircraft require as little as 1,300 feet for takeoffs and 1,000 feet for landings. Even the larger Lockheed C-130 Hercules aircraft that the USSOCOM occasionally uses are designed to operate on limited runway length. Runway 12-30 accommodates both of these aircraft. Additionally, based on the GA aircraft currently operating at the Airport and anticipated in the future, the existing runway length is adequate to accommodate these private pilots. The current length could accommodate 100 percent of the aircraft fleet with a maximum takeoff weight up to 60,000 pounds at 60-percent useful load. However, according to Marana Aerospace Solutions (MAS) there are some customers who have expressed desire for a longer runway at Pinal Airpark (10,000 feet as depicted on the previous Airport Layout Plan [ALP]). Although the majority of MAS's large aircraft are operating at very low payloads at Pinal Airpark (since they are there for MRO services or storage) and therefore require less length for takeoffs and landings, the temperatures experienced during summer months is extreme and increases the length of runway needed. Furthermore, a runway extension may provide opportunities for additional, revenue-generating uses of the Airport such as cargo. Therefore, a potential runway extension should be considered under the alternatives analysis of this Airport Master Plan to determine if there is a feasible option. These alternatives must consider the existing operations on and surrounding the Airport to prevent significant, long-term impacts.

4.02-4 Runway Width Analysis

Runway width is a dimensional standard that is based upon the physical characteristics of aircraft using the Airport. The physical characteristic of importance is wingspan. FAA ADG V (aircraft with wingspans equal to or greater than 171 feet but less than 214 feet and tail heights equal to or greater than 60 feet but less than 66

feet) is used for defining airport dimensional standards for Runway 12-30; FAA AC 150/5300-13A, *Airport Design*, specifies a runway width of 150 feet, which is equal to the current width of Runway 12-30. Although the runway meets the dimensional standards for width, the FAA recommends 35-foot-wide shoulders for ADG V aircraft in order to "provide resistance to blast erosion and accommodate the passage of maintenance and emergency equipment and the occasional passage of an aircraft veering from the runway."[25] This standard is not currently met by Runway 12-30.

4.02-5 Pavement Strength and Condition

As discussed under Chapter 2, the runway is in poor condition with a PCI of 17 (refer to the Infrastructure Assessment in **Appendix C** for additional information). MAS has expressed concerns regarding its strength; a full reconstruction is recommended to accommodate aircraft over 100,000 pounds.

4.02-6 Taxiway System

The taxiway system for the Airport should complement the runway system by providing safe access to and from runway and landside areas. At present, Runway 12-30 has a full parallel taxiway (Taxiway A) and system of stub/exit/access taxiways. Taxiway A is in fair condition while the taxiway connectors are in poor condition and experience significant drainage issues. These should be reconstructed and strengthened to accommodate the Airport's fleet mix.

In terms of taxiway design, based on FAA AC 150/5300-13A standards, the taxiway system should be designed to a minimum width of 75 feet; besides Taxiway A1, the connector taxiway from the parallel taxiway to the runway, and a portion of the parallel taxiway (Taxiway A, along the apron), all taxiways are 50 feet wide. In addition to not meeting FAA design standards, MAS has reported that larger aircraft that make up the majority of the MRO fleet are typically towed to the runway due to the narrow taxiways. Therefore, these should be widened to meet design standards.

As discussed, the FAA specifies several separation distance requirements and safety areas around taxiways. The existing taxiway system at Pinal Airpark does not comply with a number of standards as described in Section 4.02 – 1.

Finally, revisions to the nomenclature should be considered since Taxiway C was decommissioned and is not planned to be reconstructed/reopened. This could cause confusion for visiting pilots.

[25] Federal Aviation Administration (FAA). Advisory Circular (AC) 150/5300-13A, *Airport Design*. September 28, 2012.

4.02-7 Instrumentation and Lighting

Instrumentation and lighting includes runway and taxiway lighting, approach lighting, wind indicators, and visual approach aids. **Table 4-4** outlines the existing instrumentation and lighting available at the Airport.

TABLE 4-4
EXISTING INSTRUMENTATION AND LIGHTING

General
Rotating Beacon
Wind Cones
Segmented Circle
Automated Weather Observation Station (AWOS)
Runway 1-19
Medium Intensity Runway Lights (MIRL)
Threshold Lights
Taxiways
Edge Reflectors

Source: C&S Engineers, Inc.

The wind cones are in poor condition and in need of replacement. Additionally, the segmented circle and its wind cone must be relocated outside of the RSA, ROFA and ROFZ. The taxiway edge reflectors should be upgraded to Medium-Intensity Taxiway Lighting (MITL).

There Airport currently lacks Runway End Identifier Lights (REIL) and Visual Glide Slope Indicators (VGSI); these should be installed to assist with navigation and per the recommendations of the Arizona State Airports System Plan (AZ SASP) and Pima Association of Governments (PAG) Regional Airport System Plan (RASP). Additionally, the implementation of an IAP would assist pilots in navigation to the Airport, specifically during inclement weather.

The Airport's AWOS does not transmit records to the National Climatic Data Center; only real-time data is provided to pilots. Continuous and automated recording would assist in tracking of weather patterns.

4.02-8 Land Requirements

The Airport's RPZs are shown on **Figure 2-3**. As defined by FAA AC 150/5300-13A, *Airport Design*, the function of the RPZ is to enhance the protection of people and property on the ground by clearing RPZ areas (and maintaining them clear of incompatible objects and activities). This is best done by obtaining property interest in the RPZ area giving the airport owner the desired degree of control. The RPZ is trapezoidal in shape and centered on the extended runway centerline. The dimensions of the RPZ are determined by the type of aircraft that the facility expects to serve, and by the approach visibility minimums for each runway end. The RPZ begins 200 feet from each runway end. Runway 12-30's RPZ length is 1,700 feet, the inner width is

500 feet, and the outer width is 1,010 feet. Approximately 7.13 acres of the Runway 12 RPZ extend off airport property onto state-owned land designated as Airport Reserve; a small portion of the RPZ (less than half of an acre) extends beyond the fence of the SBAH. Approximately 19.90 acres of the Runway 30 RPZ extend off airport property onto land currently owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints designated as Agricultural. The Airport should obtain control over this land via avigation easement or acquisition to comply with FAA design standards. Should the Airport receive an IAP to Runway 12 with a visibility minimum of less than one mile but not lower than three-fourths of a mile, the Approach RPZ would increase in size and additional acquisition/easement of land would be required (for a total of approximately 11.95 acres). Based on the runway's current orientation and length, the augmented RPZ would extend further onto the SBAH for a total of approximately 5.19 acres. Potential options will be considered under the alternatives analysis.

The Runway 30 RSA and ROFA also extend off airport property onto land owned by the Corporation of Presiding Bishop of Church Jesus Christ of Latter Day Saints designated as Agricultural. This prevents the County from being able to control the conditions and clearance of these areas. Excluding a small area of the ROFA, the majority of these areas that extend off property are within the RPZ. If the County cannot gain control over this land, alternatives should be reviewed to mitigate this issue (e.g., displacement of the Runway 30 threshold to ensure the RSA and ROFA are entirely on airport property).

4.02-9 Obstruction Removal

An analysis of Federal Aviation Regulation (FAR) Part 77 obstructions was conducted as part of this master plan. The obstruction plans and profiles and recommended action for the Airport are presented in the ALP drawing set (to be inserted). These drawings provide detailed obstruction information and depict the imaginary surfaces on and around the Airport, through which no object should penetrate. The dimensions and criteria employed in determining these obstructions on or near the surfaces for the Airport are those outlined in FAR Part 77, *Objects Affecting Navigable Airspace*. Due to its current and anticipated fleet mix, the Airport's runway is classified as a non-utility runway (one that serves large aircraft with MTOWs over 12,500 pounds). In order to plan for a potential non-precision instrument approach to Runway 12 (maintaining Runway 30 as a visual runway), the applicable FAR Part 77 criteria were used to determine obstructions and the need for mitigation. The following presents information on the existing obstructions.[26]

[26] Obstructions were recorded based on the Non-Vertically Guided surfaces defined in FAA AC 150/5300-18B. These potential obstructions were then analyzed with regard to Part 77 surfaces. Therefore, additional analysis should be conducted prior to any mitigation or implementation of IAPs.

Primary Surface

As defined by FAR Part 77, the primary surface of a runway is defined as an area longitudinally centered on the runway for a width dependent on the type of runway, and extending 200 feet beyond each end of the landing threshold. Runway 12-30 is planned as a non-utility runway with a non-precision instrument approach to Runway 12 (maintaining Runway 30 as a visual runway). The visibility minimum for Runway 12 is assumed to be less than a mile but not lower than three-fourths of a mile (to enable a conservative analysis). Therefore, the width of the primary surface for Runway 12-30 is 500 feet.

There is only one obstruction to the Runway 12-30 primary surface. This obstruction is a bush penetrating the surface by approximately 1.86 feet (numbered 12/30-1 according to the Airspace drawing [to be inserted]). The bush should be removed to clear this surface.

Approach Surfaces

Approach surfaces are longitudinally centered on the extended runway centerline and extend outward and upward from each end of the primary surface. The slope and configuration of each runway approach surface also vary as a function of runway type and availability of instrument approaches.

The approach surface for Runway 12 has an inner width of 500 feet that extends outward and upward for a distance of 10,000 feet to an outer width of 3,500 feet; the slope is 34:1. The approach surface for Runway 30 also has an inner width of 500 feet but extends outward and upward for a distance of 5,000 feet to an outer width of 1,500 feet; the slope is 20:1. There are currently no obstructions to these surfaces.

Transitional Surfaces

The transitional surfaces extend outward and upward from the primary and approach surfaces to the horizontal surface at right angles to the runway centerline at a slope of 7 to 1. Currently, there is one bush penetrating the transitional surface by approximately 1.44 feet (obstruction number 12/30-2 according to the Airspace drawing [to be inserted]).[27] Additionally, there are several stored aircraft located within the storage triangle that penetrate this surface. These should be relocated.

Horizontal Surface

The horizontal surface is a horizontal plane 150 feet above the established airport elevation, which in the case of the Airport is 1,893 feet above Mean Sea Level (MSL). Thus, the horizontal surface is at an elevation of 2,043 feet MSL. The

[27] There is an additional bush 8.46 feet below the transitional surface; since this has limited growth potential it is not considered an obstruction at this time.

perimeter of the horizontal surface is delineated by arcs with a radius of 10,000 feet for Runway 12 and 5,000 feet for Runway 30 from the center point of each of the runway ends.

There are no identified obstructions to the horizontal surface.

Conical Surface

The conical surface extends outward and upward from the edge of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet. Thus the elevation of the conical surface at the outermost edge is 2,243 feet MSL.

There are no identified obstructions to the conical surface.

RUNWAY END SITING SURFACE (RESS) ANALYSIS

Runway end siting requirements are outlined in FAA AC 150/5300-13A, *Airport Design*. This document identifies specific dimensions and slopes for all runway ends based on the type of aircraft operations and instrumentation associated with that runway. In most cases, the threshold is located at the beginning of full-strength runway pavement. However, displacement of the threshold may be required when it is not possible to remove or relocate an obstruction in the airspace required for landing an aircraft. In addition to the need for airspace free of obstructions, some environmental concerns (e.g., noise abatement) may necessitate displacement of a threshold. Design standards for object free area and runway safety area lengths may dictate displacing the runway threshold in some cases.

Based upon proposed future operations and the potential for a non-precision instrument approach, the Runway End Siting Surface (RESS) for Runway 12 would be a RESS category 5, which is intended for runways expected to support instrument night operations serving greater than Aircraft Approach Category (AAC) B aircraft. The Runway 12 RESS starts 200 feet beyond the runway end and slopes upward at a slope of 20 to 1. The RESS for Runway 30 would be a RESS category 3, which is intended for runways expected to support visual operations serving large aircraft. The Runway 30 RESS starts at the runway end and slopes upward at a slope of 20 to 1. There are currently no penetrations to the RESS surfaces.

TERMINAL INSTRUMENT PROCEDURES (TERPS) ANALYSIS

Should the County pursue an IAP to Runway 12, a Terminal Instrument Procedures (TERPS) analysis would need to be conducted.

4.03 Landside Requirements

The planning of landside facilities should be based upon a balance of airside and landside capacity. The determination for terminal and support area facilities has been

accomplished for the planning period. The principal operating elements covered under these analyses for GA requirements include:

- GA Requirements (terminal/administration building, aircraft parking apron, aircraft storage facilities, vehicle parking)
- MRO Requirements (aircraft storage and maintenance/repair/overall areas, and employee vehicle parking)
- Support Area Requirements

4.03-1 General Aviation Requirements

GA aviation facilities include the GA terminal/administration building, Fixed-Base Operator (FBO), apron areas, aircraft storage facilities, and vehicle parking.

GA TERMINAL/ADMINISTRATION BUILDING

A GA terminal/administration building is needed to provide space for lounge areas, restrooms, food services, and other areas for the needs of pilots and passengers. **Table 4-5** shows the standard square footage requirement per GA passenger.

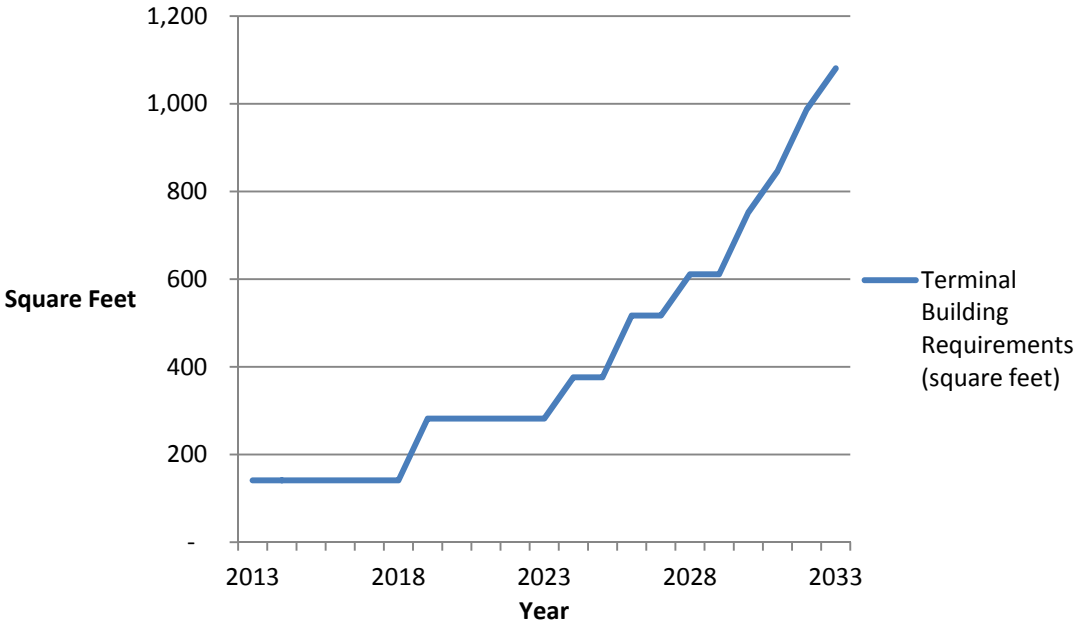
TABLE 4-5
GENERAL AVIATION BUILDING AREA REQUIREMENTS

Functional Area	Area Per Peak Hour Pilot/Passenger (square feet)
Waiting Lounge	15
Public Conveniences	2
Concession Area	5
Circulation; Storage; and Heating, Ventilation and Air Conditioning	25
Total	**47**

Note: Space for an FBO is typically included; however, the current FBO has its own space at Pinal Airpark.
Source: FAA guidance

The FAA's approach for calculating GA terminal requirements uses operational peaking characteristics to determine size of terminal areas. The method relates GA peak hour pilots and passengers to the functional areas within the terminal to produce overall building size. Using the standards in **Table 4-5**, the recommended GA terminal function size for each design year is presented on **Figure 4-2**. The number of peak hour passengers shown in the table was derived by assuming 2.5 passengers and pilots per GA design hour operations.

FIGURE 4-2
TERMINAL BUILDING REQUIREMENTS



Source: C&S Engineers, Inc.

The County recently constructed a GA terminal/administrative building measuring approximately 1,440 square feet on airport property that serves as office space for the Airport Manager and a GA public-use terminal building for visiting pilots. This building is in excellent condition and is large enough to accommodate future demand as depicted in the chart above (1,081 square feet by 2032).

FIXED-BASE OPERATOR (FBO)

MAS currently serves as the FBO at the Airport and offers aircraft storage, fuel, and maintenance services. The County is currently preparing Minimum Standards that may encourage additional FBOs to begin operation at the Airport.

AIRCRAFT PARKING APRON

The aircraft parking apron area consists of the based aircraft parking apron, itinerant aircraft parking apron, and the FBO maintenance area.

Based Aircraft Parking Apron

Currently, based aircraft include a single-engine Piper Cherokee and three multi-engine Casa 212 turboprops leased by Rampart Aviation and contracted to USSOCOM for their jump training and testing activities. These aircraft are currently stored on the southern end of the apron near the FBO; there are no hangars used for based aircraft storage. Given the climate at Pinal Airpark, it is assumed that private aircraft owners would prefer hangar storage; this assumption is therefore considered

to determine storage needs to accommodate the forecast of based aircraft. Due to the historical use of the apron for storage and the frequency of use, the aircraft used for USSOCOM activities are assumed to be based on the apron in determining facility requirements.

Based on the dimensions of the USSOCOM-related aircraft (Casa 212 with a wingspan of 66.5 feet and a length of 53 feet), it is estimated that the projected total of four based aircraft associated with USSOCOM activities would require approximately 600 square yards per aircraft to provide adequate separation, totaling a need for at least 2,400 square yards. Currently, there are three spaces reserved for these aircraft. An additional space would be necessary to meet demand and should be at least 600 square yards.

Transient Aircraft Storage

Areas designated for the parking of transient (visiting) aircraft are called "itinerant aprons." The itinerant apron areas are also used by based aircraft for loading, fueling, and other activities. The size of such an apron required to meet itinerant demand was estimated using the following methodology:

- Calculate the average daily itinerant operations for the most active month.
- Assume the average busy itinerant day is 10 percent more active than the average day of the peak month.
- Assume that a certain portion (approximately 50 percent) of the itinerant airplanes will be on the apron during the busy day. Since 50 percent of the itinerant operations are departures, only 25 percent of the daily itinerant operations will represent aircraft on the ground in need of parking area.
- Calculate the apron needed using an estimated area need per itinerant aircraft.

An estimated need of 400 square yards per itinerant aircraft is typically used for GA airports; however, the USSOCOM reports frequent use of Lockheed C-130 Hercules aircraft and Boeing C-17 Globemasters for their training purposes. These large aircraft (the C-130 has a wingspan of approximately 133 and is 98 feet long while the C-17's wingspan measures 170 feet with a length of 174 feet) would require additional space for temporary storage. Currently, there are two spaces available for parking of C-130 aircraft (the parking pad off of Taxiway E and behind Taxiway D). With the anticipated increase in USSOCOM activity it would be recommended that apron space be preserved for temporary storage of an additional large military aircraft.

Applying the methodology described above to the GA operations forecast yields the demand for at least 3,200 square yards of apron area to accommodate the eight itinerant aircraft anticipated on a busy day. Currently, the Airport has approximately 29,040 square yards of apron adjacent and connecting to Taxiway A that is used primarily for aircraft storage and FBO services. Although there is adequate space available, alternatives should consider designation of space for transient aircraft

parking and ensure that at least 3,200 square yards of aircraft parking is available to accommodate future demand. As previously discussed, the pavement apron areas are generally in poor condition and in need of reconstruction. In addition to its condition, the strength needs to be improved to accommodate the Airport's fleet mix.

FBO Maintenance Area

Practices concerning FBOs and maintenance facilities vary. As such, FBO and maintenance area requirements will differ according to the services provided. MAS currently acts as the Airport's FBO and offers aircraft storage, fuel, and maintenance services. A frequently used criterion to determining facility needs is to compute FBO and maintenance areas at 10 percent of the total aircraft hangar area or 5,000 square feet, whichever is greater. An equal amount of apron area is required for an FBO maintenance ramp. Applying these standards, a 5,000 square-foot hangar and 5,000 square feet (555 square yards) of apron are required for the 20-year planning period. The existing GA hangar is approximately 24,830 square feet and thus meets this demand. The existing GA apron is also adequate to accommodate this area; however, it should be delineated and preserved to ensure there is no encroachment by the MRO or other airport operations.

AIRCRAFT STORAGE FACILITIES

As previously mentioned, all based aircraft are currently stored on the apron (there are no hangar facilities designated for storage of GA aircraft). Given the climate at Pinal Airpark, it is assumed that private aircraft owners would prefer hangar storage; this assumption is therefore considered to determine storage needs to accommodate the forecast of based aircraft. Due to the historical use of the apron for storage and the frequency of use, the aircraft used for USSOCOM activities are assumed to be based on the apron in determining facility requirements. All private aircraft are shown as desiring hangars.

According to airport management, the most likely scenario for private based aircraft hangar storage involves construction of a 10-bay T-hangar unit, which would accommodate the forecasted demand of based aircraft unrelated to the USSOCOM activities. According to FAA AC 5300-13A, *Airport Design*, T-hangars are typically constructed to accommodate aircraft with wingspans up to 55 feet. It is anticipated that the projected GA aircraft, including multi-engine aircraft, would fall below this threshold. Should there be a need for larger business aircraft storage, conventional hangar space may be necessary. This should be further evaluated at the time it is raised. Additionally, given the historical situation of the Airport and lack of hangar storage, it is recommended that the County begin a waiting list of individuals/companies interested in aircraft storage at the Airport to better anticipate the need for hangar space. Although the based aircraft forecast developed herein projects less than 10 GA aircraft unrelated to USSOCOM activities being based at the Airport in the future, it is recommended that property be preserved for at least one additional T-hangar facility. This is further supported by County reports that they

have received interest from private entities/individuals interested in constructing hangars at the Airport.

GA VEHICLE PARKING

The number of vehicle parking spaces required at an airport is dependent upon the level of GA aircraft activity at the facility. The methodology for determining parking needs relates peak hour pilots, passengers, and airport employees to the number of parking spaces required. Numbers of peak hour pilots and passengers were previously derived for the GA terminal building requirements. There is currently one employee working at the Airport on behalf of Pinal County but this will likely grow in the future as activity increases. The number of vehicle parking spaces needed equals the sum of the peak hour pilots/passengers and employees at the Airport. This number was converted into paved area by using a standard of 22 square yards per vehicle space (refer to **Table 4-6**). Currently, the Airport has approximately 1,100 square yards of vehicle parking space adjacent to the GA terminal/administration building. This is deemed adequate over the planning period.

TABLE 4-6
VEHICLE PARKING AREA REQUIREMENTS

Year	Peak Hour Pilot/Passenger	Airport Employees	Total Required Parking Spaces	Required Area (square yards)
2013	3	1	4	88
2018	3	2	5	110
2023	6	3	9	198
2033	23	4	27	594

Source: C&S Engineers, Inc.

4.03-2 MRO Requirements

MRO facilities include areas for aircraft storage and MRO services, as well as employee vehicle parking.

AIRCRAFT STORAGE AND MRO SERVICE AREAS

There is currently adequate space available for aircraft storage and MRO activites associated with the MRO currently operating at the Airport. In addition to the apron, which has over 30 acres of active work area (including the pads that had been used by Evergreen Trade, Inc., [ETI] prior to their bankruptcy filing), there is an unpaved area just to the north that had been used as an end-of-life storage lot for aircraft associated with ETI. Additionally, there are over 250 acres of space available for aircraft storage on the decommissioned runways (including the storage triangle and decommissioned runway south of Runway 12-30). This space may be reduced to clear the Part 77 imaginary surfaces of obstructions. Additional space may be needed if another MRO operator begins service at the Airport.

MRO VEHICLE PARKING AREAS

Parking is available (both paved and unpaved) throughout the landside area of the Airport immediately adjacent to most work areas and facilities. The majority of these parking areas is intended for employee use and tenant visitors. Due to the lack of marking and number of unpaved parking areas, it is difficult to determine an exact number of spaces available for vehicle parking. However, MAS has not expressed a need for additional parking.

4.03-3 Support Area Requirements

The support area requirements at the Airport include the fuel facility.

FUEL FACILITY

The size of the Aviation Gasoline (AvGas) and Jet-A fuel storage tanks are a function of aircraft operations. The Airport sold 1,254,282 gallons of Jet-A fuel and 1,773 gallons of AvGas fuel in Fiscal Year 2012. Jet-A fuel accounts for over 99 percent of aircraft fuel sales. The fuel flowage demand is based upon the existing rate of 0.15 gallons per operation for Jet-A fuel (considering MRO operations, which primarily rely on Jet-A) and 0.24 gallons per operation for AvGas fuel (considering GA and USSOCOM operations, which primarily rely on AvGas). **Table 4-7** provides a summary of the fuel flowage demand requirements for the forecasted planning period.

TABLE 4-7
FORECAST OF FUEL FLOWAGE

Year	Annual Operations*	Gallons per Operation	Yearly Requirement (gallons)	Monthly Requirement (gallons)
AvGas				
2013	7,841	0.24	1,882	157
2018	9,704	0.24	2,329	194
2023	14,130	0.24	3,392	157
2033	31,007	0.24	7,442	194
Jet-A				
2013	319	3,932	1,254,282	104,524
2018	344	3,932	1,351,218	112,601
2023	370	3,932	1,455,645	121,304
2033	430	3,932	1,689,336	140,778

*AvGas calculations considered annual operations for the GA and USSOCOM activity as these are the likely contributors to use of AvGas. Jet-A calculations considered annual operations for the MRO activity as this is the likely contributors to use of Jet-A fuel.
Source: C&S Engineers, Inc.

Although fuel deliveries are typically assumed to occur every two weeks for planning purposes, monthly deliveries were assumed to present a conservative estimate of demand. As shown above, the existing aviation fuel tanks (one 30,000-gallon AvGas

tank and five 30,000-gallon Jet-A tanks with a combined capacity of 150,000 gallons) are sufficient to accommodate the future demand at the Airport.[28] These tanks and the three associated high-capacity fuel pumps are in excellent condition. Fueling is provided by MAS on an as-needed basis by which pilots reach the FBO by telephone and requested fueling services on the airfield.

In addition to the aviation fuel tanks located at the Airport and operated by MAS, there is a 30,000-gallon unleaded gasoline tank used for ground vehicles. According to fuel sale records, from 2007 to 2012 consumption averaged approximately 48,000 gallons and never exceeded 58,000 gallons. Therefore, it is assumed that there is adequate capacity unless activities at the Airport change significantly and require additional ground vehicles and/or use of these vehicles. This tank is also in excellent condition.

The entire fuel facility is equipped with secured fencing and adequate lighting.

4.04 Summary

The preceding sections have identified the following needs for the Airport.

4.04-1 Capital Projects

AIRSIDE

- Runway:
  - Complete a full reconstruction of the runway including strengthening to accommodate aircraft over 100,000 pounds and remarking.
  - Consider a runway extension to determine if there is a feasible option that will avoid significant and long-term impacts to on-airport and surrounding operations.
  - Construct runway shoulders to meet the FAA design standard of 35 feet.
  - Address drainage issues within the RSA.
  - Gain control of land uses and activities within RPZs that extend off property. If not possible, mitigate these issues through other means (e.g., displacement of the thresholds).
  - Gain control of the Runway 30 RSA and ROFA that extend off property in order to ensure compliance with FAA design standards. If not possible, mitigate these issues through other means (e.g., displacement of the thresholds).
  - Mitigate on-airport obstructions (removal of two bushes and relocation of stored aircraft)

[28] In 2011 there were a few extreme months that led to a higher ratio of 0.72 gallons per operation of AvGas fuel. Even applying this ratio to the forecast would only result in the Airport needing approximately 22,325 gallons of AvGas, less than the total capacity of the existing tank.

  - The Airport should consider an IAP to either or both of the runway ends.
  - Relocate segmented circle and wind cone outside of the RSA, ROFA and ROFZ.
- Taxiway:
  - Address deteriorating condition of taxiways, particularly the taxiway connectors, with a focus on correcting drainage issues.
  - Consider renaming of taxiways due to Taxiway C decommissioning.
  - Widen all taxiways to meet FAA design standards of 75 feet (Taxiway A1 and a portion of Taxiway A already meet this standard).
  - The TSA should be graded and its drainage issues resolved to comply with FAA design standards.
  - Fencing on the apron and the service road to the fuel facility should be relocated out of the TOFA.
- Lighting, Signage, Marking and NAVAIDs:
  - Install REILs and VGSIs to assist with navigation and per the recommendations of the Arizona SASP and PAG RASP.
  - Consider upgrading MIRLs to HIRLs and relocate runway lighting further from runway edge to prevent damage by aircraft.
  - Upgrade taxiway edge reflectors to MITL to meet FAA requirements.
  - Begin recording of AWOS data and transmitting records to the National Climatic Data Center.
  - Replace wind cones.
  - Reposition distance remaining signs to no more than 75 feet from the runway edge strip.
  - Replace existing guidance signs and distance remaining signs at the end of their useful life to use modern construction methods.
  - Replace signs that have been struck by aircraft or other equipment and require replacement.
  - Remark runway and taxiway markings.

LANDSIDE

- Construct at a 10-bay T-hangar facility in the short term for private aircraft storage; preserve land for additional hangars if needed.
- Reconstruct the apron.
- Preserve apron space for one additional USSOCOM-related aircraft.
- Redesignate apron area to delineate MRO activities, FBO services, based aircraft storage and transient aircraft parking.
- Replace electrical vault powering the airfield and consider a backup generator and/or secondary feed to the airfield.
- Consider direct aircraft fueling.
- Rehabilitate roadways in poor condition (excluding Del Smith Boulevard).
- Rehabilitate paved parking lots.
- Replace utility infrastructure to the Airport.
- The County should purchase landside and airside equipment for the Airport.

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