COCHISE COUNTY AIRPORT

WILLCOX, ARIZONA

AIRPORT MASTER PLAN
WORKING PAPER #1

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1.1 INTRODUCTION AND AIRPORT HISTORY

Cochise County Airport (P33) is a general aviation airport located in southeastern Arizona, approximately four miles west of the City of Willcox in Cochise County. The Airport is approximately 82 miles east of Tucson and approximately 211 miles southeast of the state capitol in Phoenix, Arizona.

The airport was originally built for use by the U.S. military as a bomber training facility in the early 1940's. At some point after World War II, perhaps in the early 1950's, the government transferred the Airport over to Cochise County, where it was developed into a civilian airport.

1.2 AIRPORT SERVICE LEVEL AND ROLE

Since 1970, the FAA has classified a subset of the 5,400 public-use airports in the United States as being vital to serving the public needs for air transportation, either directly or indirectly, and therefore may be made eligible for federal funding to maintain their facilities. These airports are classified within the National Plan of Integrated Airport Systems (NPIAS), where the airport service level reflects the type of public use the airport provides. The service level also reflects the funding categories established by Congress to assist in airport development.
The categories of airports listed in the NPIAS are:

- **Commercial Service -** public airports that accommodate scheduled air carrier service provided by the world's certificated air carriers. Commercial service airports are either:
    - Primary – a public-use airport that enplanes more than 10,000 passengers annually;
    - Non-primary - a public-use airport that enplanes between 2,500 and 10,000 passengers annually.
- **Reliever** - an airport designated by the FAA as having the function of relieving congestion at a commercial service airport and providing more general aviation access. These airports comprise a special category of GA airports and are generally located within a relatively short distance of primary airports. Privately owned airports may also be identified as reliever airports.
- **General Aviation –** airports used exclusively by private and business aircraft not providing scheduled air carrier passenger service. There are many GA airports that are not included in the NPIAS, however, one criterion for inclusion is that the airport has at least 10 based aircraft and is located at least 20 miles away from the nearest NPIAS airport.

Cochise County Airport's service level is categorized in the NPAIS as general aviation. According to FAA records, as of 2012, the Airport has 22 based aircraft. The Airport is also

located approximately 40 miles from Benson Municipal Airport, and 57 miles from Safford Regional Airport; both airports are also included in the NPIAS as general aviation airports. The nearest NPIAS primary commercial service airport to Cochise County Airport is Tucson International Airport, located approximately 77 miles to the southwest.

At the State level, the Arizona Department of Transportation – Aeronautics Division has long recognized the importance of planning as a proactive approach to ensuring aviation continues its role in the statewide transportation system. They created a similar plan to the FAA's NPIAS in 1978 called the Arizona State Airports System Plan (ASASP). The purpose of the ASASP is to provide a framework for the integrated planning, operation, and development of Arizona's aviation assets. The most current version of the ASASP was published in 2008.

The ASASP also classifies airports into service roles. Cochise County Airport is categorized as a general aviation (GA) community airport. The ASASP defines GA-community airports as airports that serve regional economies, connecting to state and national economies, and serve all types of general aviation aircraft. ASASP defines a regional economy as the economic activity of an area that encompasses multiple communities or political jurisdictions. This classification generally represents the role Cochise County Airport plays in the local community. The majority of the aircraft utilizing the Airport are predominately single-engine piston, multi-engine piston, turbo prop, light turbo jet, and rotorcraft aircraft. However, larger corporate jet aircraft utilize the airport on occasion for business related activities. Furthermore, the role of a general aviation community airport lends itself to specific aeronautical activities. The types of aeronautical activities found at Cochise County Airport include the following:

Business Transportation: Business aviation users benefit by being able to travel to or from business centers to conduct business activities in a single day, without requiring an overnight stay or extensive ground travel time. Local and other small businesses generally utilize single engine and multi-engine piston aircraft. Larger corporate businesses may utilize turbo prop and turbo jet aircraft. This user category also includes state and federal agencies and travel by government officials. Cochise County Airport is located 4 miles west of the central business district in Willcox, AZ. Additionally, the Airport is located 2 miles from U.S. Interstate 10 (I-10); I-10 is a major highway corridor connecting with the major city of Tucson to the west, and New Mexico to the east. Many business communities are located along or near the I-10 corridor.

Recreational and Tourism: These users include transient pilots flying into the region to visit recreational and tourist attractions. These users mostly utilize single-engine piston aircraft; however, a small percentage may operate multi-engine piston aircraft. Other types of aircraft in this category include home-built, experimental aircraft, gliders and ultralights. Cochise County Airport is located in an area of the State that does attract a fair amount of tourists and contains multiple recreational activity areas.

Flight Training: These users conduct local and itinerant flights in order to meet flight proficiency requirements for obtaining FAA pilot certifications. These flights include touch-and-goes, day and night local and cross-country flights and simulated approaches. Student pilots and instructors frequently use the Airport for flight training activities.

Military and Other Federal/State Agencies: Military operations are those conducted by U.S. or Foreign military aircraft and personnel for the purposes of national security and defense. Almost all military operations are training or proficiency activities. Cochise County Airport is

located in proximity to Fort Huachuca and Davis-Monthan Air Force Base. Thus, both the Army and Air Force use the Airport and/or its airspace during training exercises and for re-fuelling services while in the area. In addition to use by the military, the Arizona Department of Public Safety and U.S. Customs and Border Patrol frequently utilize the Airport as well, mostly for re-fueling purposes.

Air Medevac Services: Occasionally, Arizona Lifeline, Lifenet, and Air Evac provide essential emergency medical transportation for life threatening situations and assists in patient transfers by air to higher level care facilities using helicopters. The air medevac services provide quick and efficient transportation in emergency situations when time is of the essence, resulting in lives being saved.

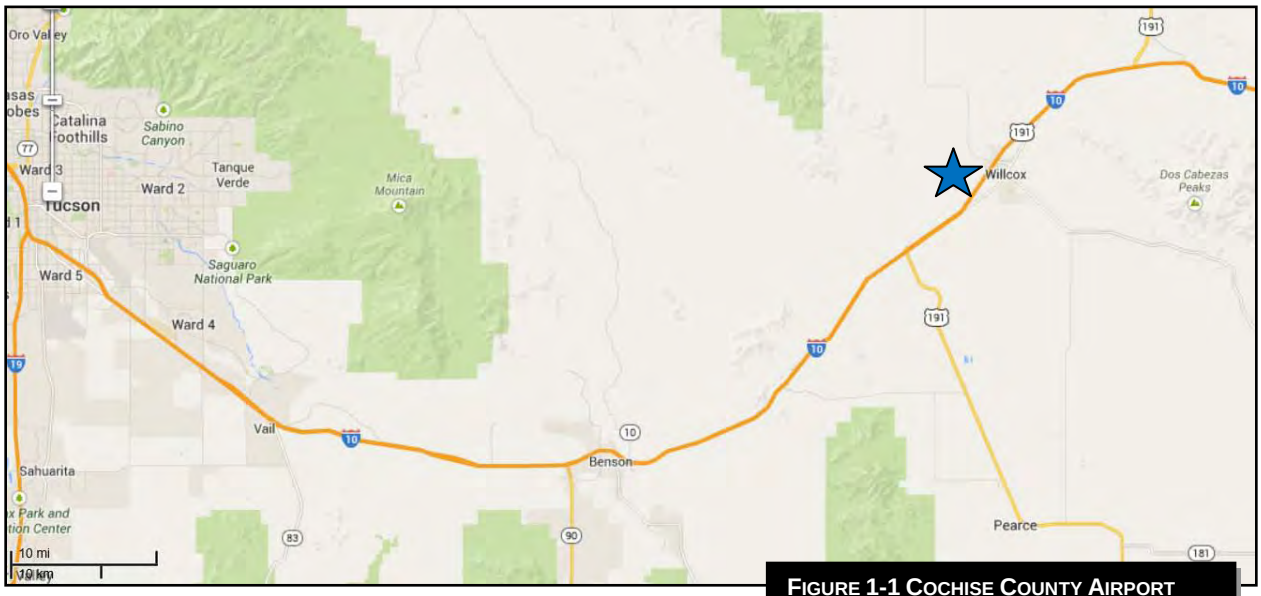
Aerial Firefighting: The Airport is utilized by aerial firefighting aircraft during the Arizona wildfire season of May through July. The airport's configuration is able to accommodate large rotary aircraft, aerial tankers and patrol aircraft. The U.S. Forest Service fire crew has a permanent base at the Airport during wildfire season, and one U.S. Forest Service firefighting-equipped helicopter is based on the airfield during these months.

Agricultural: The Airport is located in an area that contains several agricultural land uses nearby. On occasion, aircraft equipped with pesticide spraying capabilities utilize the airport for refueling purposes.

1.3 AIRPORT SETTING

Cochise County Airport (P33) is located in the southeast corner of Arizona in Cochise County, approximately 82 miles east of Tucson and 50 miles from the Arizona/New Mexico border. The terrain surrounding the Airport within a 10-15 mile radius is generally flat. The Dos Cabezas Peaks are located approximately 15 miles east of the Airport and reach an elevation of 8,360 feet mean sea level (MSL). The Winchester Mountains are located to the northwest, with its highest peak, Reiley Peak, reaching 7,680 MSL. The Airport is also located approximately 5 miles north of Willcox Playa, an enormous shallow dry lake. When rain waters fill this lake, it looks as though it is fairly deep. During World War II, U.S. Navy Pilots flying a large amphibious aircraft could not resist the temptation of landing on a lake in the middle of the desert. The planes grounded and sat there for months. Furthermore, the Willcox Water Fowl Area consists of four hundred and forty acres which the Arizona Game and Fish Department acquired in 1969. Approximately sixty acres are ponds and are located within the Willcox Playa area.

The Airport is designated by the FAA as Site Number 00830.*A, and is situated at a field elevation of 4,187 MSL. An airport's location is defined by its Airport Reference Point (ARP), which is the geometric center of the runway system based upon the length of the existing runways. ARPs are calculated based on future and ultimate runway lengths and locations. The existing ARP at Cochise County Airport is located at 32^{o} 14' 43.45"N latitude and 109^{o} 53' 40.68"W longitude. The existing airport property encompasses approximately 960 acres which is owned and operated by Cochise County. The geographic location of Cochise County Airport is depicted in **Figure 1-1**.



Source: Google Maps, 2013

FIGURE 1-1 COCHISE COUNTY AIRPORT LOCATION MAP

1.4 COMPATIBLE LAND USE

Land use compatibility conflicts are a common problem around many airports, including smaller general aviation facilities. In urban areas, as well as some rural settings, airport owners find that essential expansion to meet the demands of airport traffic is difficult to achieve due to the nearby development of incompatible land uses. Aircraft noise is generally a deterrent to residential development and other noise sensitive uses. In accordance with State of Arizona airport compatibility legislation, residential development should be placed outside of the 65 DNL noise contour.

Conflicts may also exist in the protection of runway approach/departure and transition zones to ensure the safety of both the flying public and the adjacent property owners. Adequate land for this use should be either owned in fee or controlled in easements, as recommended in this and future sections of this Airport Master Plan.

All of the unincorporated areas of Cochise County have been zoned. The purpose of zoning is to guide the development of land in accordance with the County's Comprehensive Plan, and to promote the public health, safety and general welfare of the County's residents. Zoning districts specify permitted land uses, minimum lot sizes, and certain site development standards. Cochise County encompasses a large and diverse area; there are 34 individual zoning districts within the County. However, for general purposes, the majority of these zoning districts can be classified into three broad groupings: Rural, Residential and Commercial/Industrial.

According to the Cochise County zoning base map of the area, all of the airport property encompassing Cochise County Airport is zoned as Rural (RU-4). Likewise, the land surrounding the airport has several different zoning classifications; these include Planned Development (PD) to the northwest, Residential (R-36) to the north and east, and General Business (GB) to the southeast. All single and multiple-house-hold dwellings with a minimum four acre lot are permitted within the RU-4 zones. The closest residential dwellings are located

approximately 1,000 feet from Runway 21's threshold. These dwellings are located within the R-36 zone; one dwelling per 36,000 square feet is permitted within this zone. The existing Cochise County land use zoning map of the land surrounding the Airport is shown in **Figure 1-2**.

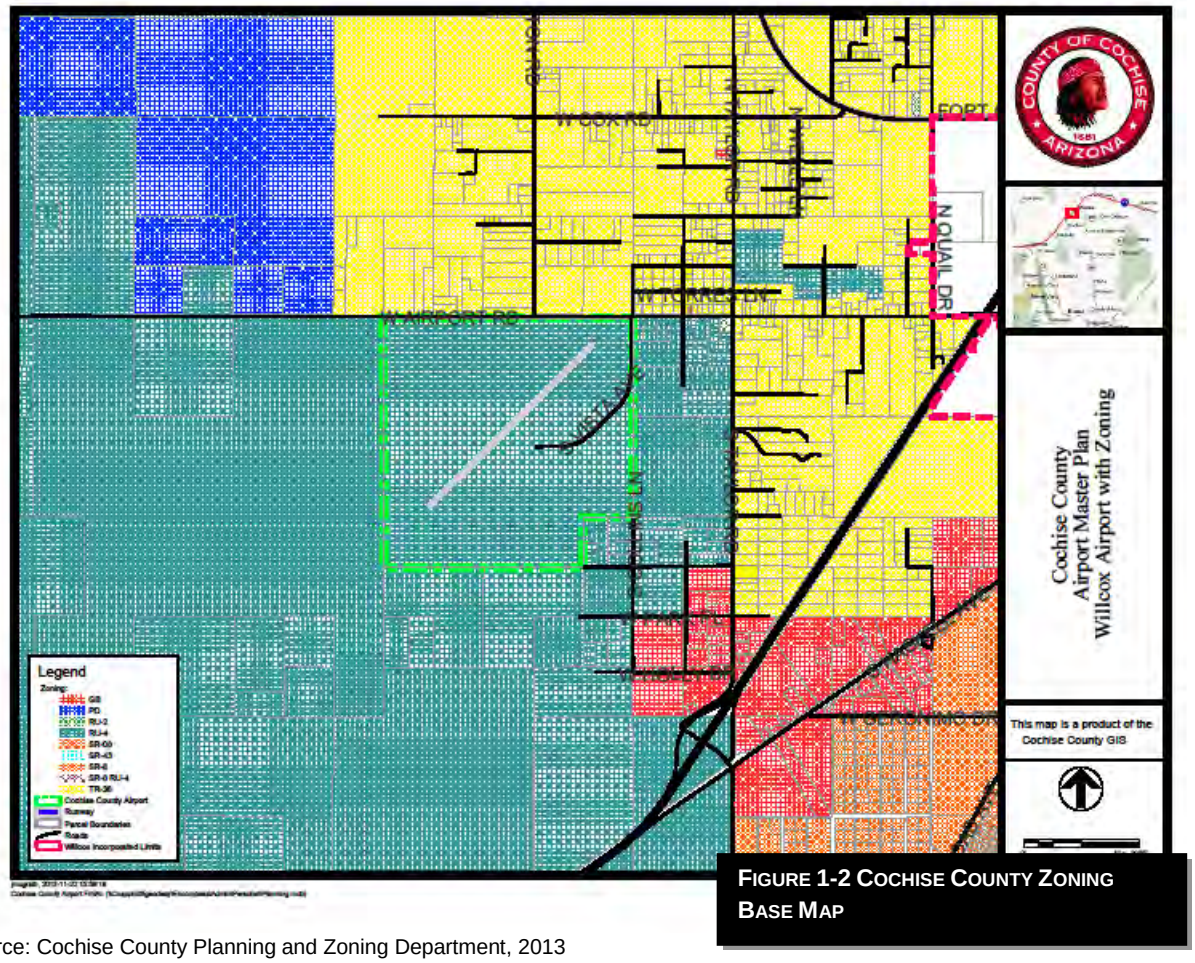


FIGURE 1-2 COCHISE COUNTY ZONING BASE MAP

Source: Cochise County Planning and Zoning Department, 2013

1.5 SOCIOECONOMIC CHARACTERISTICS

The socioeconomic makeup of the community of an airport is always an important aspect to examine during the Airport Master Planning process. Examining the specific socioeconomic characteristics of Cochise County will help determine the factors influencing aviation activity in the area and the extent to which aviation facility developments are needed. Characteristics, such as employment, demographic patterns and income will help in establishing the potential growth rate of aviation within the area. In other words, by analyzing the information in this Chapter, forecasts of aviation activity can be developed. Those forecasts are provided in Chapter 2.

1.5.1 LOCAL PROFILE

Cochise County Airport is geographically situated in the north- central portion of Cochise County and on the west edge of the City of Willcox, across Interstate 10. Interstate 10 is the major highway providing access to Willcox and to Tucson to the west and New Mexico to the east. U.S. Highway 191 provides north/south access through the County and to Mexico to the south.

Originally known as "Maley," Willcox was founded in 1880 as a whistlestop on the Southern Pacific Railroad. It was later renamed in honor of General Orlando B. Willcox who arrived on the first train in 1880. The town was incorporated in 1915. Willcox has maintained its rural lifestyle through a strong agricultural and ranching economy. Many community residents have established farms and ranches spanning several generations due to the mild climate and year-round growing season. Specialty crops including pistachios and pecans, along with livestock and exotic animals, play an important role in the local economy. In addition, Willcox has also carved a niche within the agricultural micro-enterprises business; these businesses include approximately a dozen wineries and U-pick farms, such as Apple Annie's. Willcox is the home of many businesses including Simflo Pumps, a large pump fabricator and manufacturer, and NatureSweet Tomatoes, the largest greenhouse tomato producer in the world, and Inde Motorsports Ranch, a private motorsports club for motorsport enthusiasts, just to name a few. Businesses like these have chosen Willcox because of the mild climate, reasonable price of land, good water, and access to major utilities.

1.5.2 POPULATION

According to 2010 U.S. Census data, there are 131,346 people residing in Cochise County. Furthermore, there are 3,757 people residing in Willcox, Arizona, the closest city to the Airport. The population has increased at a double-digit rate from 2000-2010 in the State of Arizona, as well as in Cochise County. The population of Willcox has remained relatively the same over this ten year period; a small increase of .06 percent did occur. The increase in population trend is illustrated in **Table 1-1**.

TABLE 1-1 CURRENT AND HISTORICAL POPULATION

	2000	2010	Annual Growth Rate 2000-2010
Willcox, Arizona	3,733	3,757	.06%
Cochise County	117,755	131,346	11%
Arizona	5,130,632	6,392,017	22%

Source: U.S. Census Bureau, 2000 and 2010 Census Briefs

Population projections for Cochise County and Arizona were obtained from the Arizona Department of Administration, Office of Employment and Population Statistics. Based upon 2012 data, the population of Cochise County is projected to grow on average 1.1 percent annually between 2015 and 2030; the population of Arizona is projected to grow on average 1.8 percent annually between 2015 and 2030. Long-range population projections for Willcox were calculated based upon the annual growth rate from 2000-2010. These projections are shown in **Table 1-2** and **Figure 1-3**. Traditionally, population growth in an area is advantageous to

airports; an increase in an area's population often means the potential for increases in an airport's user base and aviation and non-aviation related businesses.

TABLE 1-2 POPULATION PROJECTIONS

	2015	2020	2025	2030	Average Annual Growth 2015-2030
Willcox,	3,768	3,780	3,791	3,802	.06%
Cochise County[2]	134,166	142,398	150,247	157,693	1.1%
Arizona[2]	6,777,534	7,485,163	8,168,354	8,852,645	1.8%

Sources: [1] Table 1-1 Annual Growth Rate 2000-2010; [2] Arizona Department of Administration, Office of Employment & Population Statistics, 2012

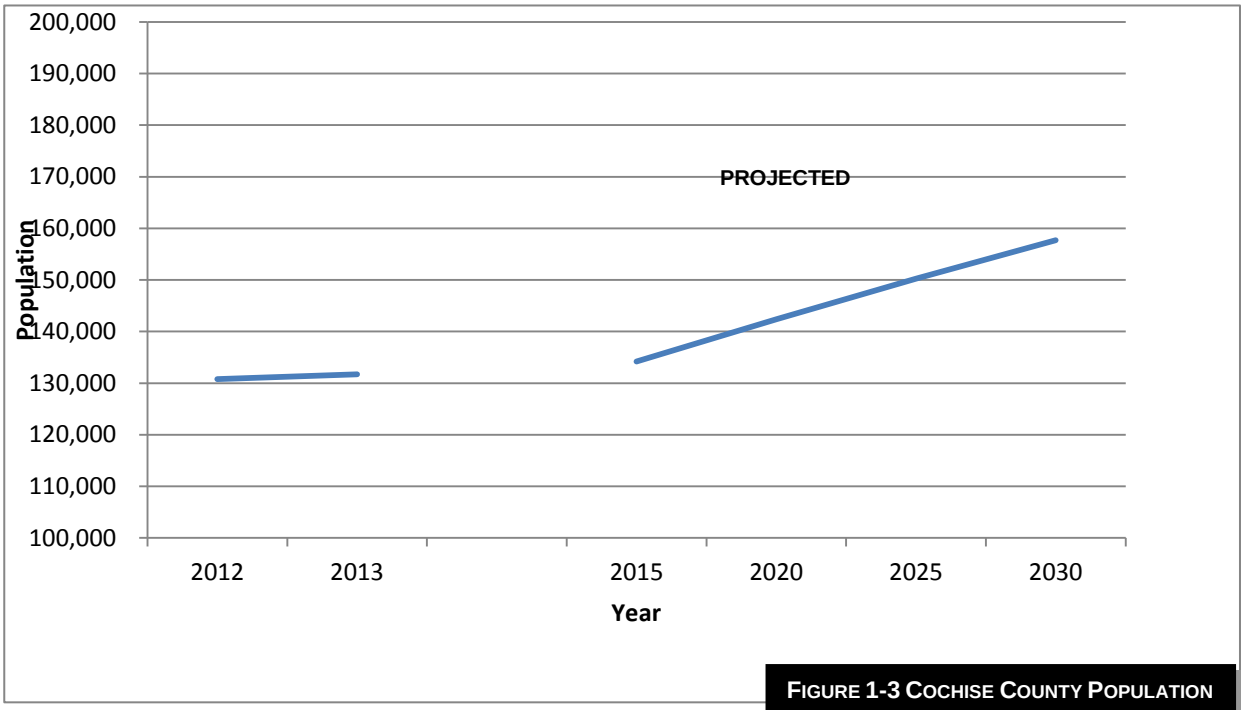


FIGURE 1-3 COCHISE COUNTY POPULATION PROJECTIONS

1.5.3 EMPLOYMENT

According to the U.S. Census Bureau 2007-2011 American Community Survey 5-year Estimates, the largest industries in Cochise County are education, health care and social services, followed by public administration; professional, scientific, management, administration and waste management services, and retail trade. Employment distribution by industry for Cochise County is shown in **Table 1-3** and **Figure 1-4**.

TABLE 1-3 COCHISE COUNTY EMPLOYMENT DISTRIBUTION

	Cochise County	% of Total
Agriculture, forestry, fishing, hunting and mining	1,637	3.4
Construction	3,353	6.9
Manufacturing	1,359	2.8
Wholesale trade	828	1.7
Retail trade	5,925	12.2
Transportation, warehousing and utilities	2,190	4.5
Information	693	1.4
Finance, insurance, real estate, rental and leasing	2,002	4.1
Professional, scientific, management, administrative and waste management services	6,404	13.2
Educational, health and social services	9,383	19.4
Arts, entertainment, recreation, accommodation and food services	4,971	10.3
Public Administration	7,394	15.3
Other services	2,298	4.7
Total	47,116	100%

Source: U.S. Census Bureau, American FactFinder, 2007-2011 American Community Survey 5-year Estimates

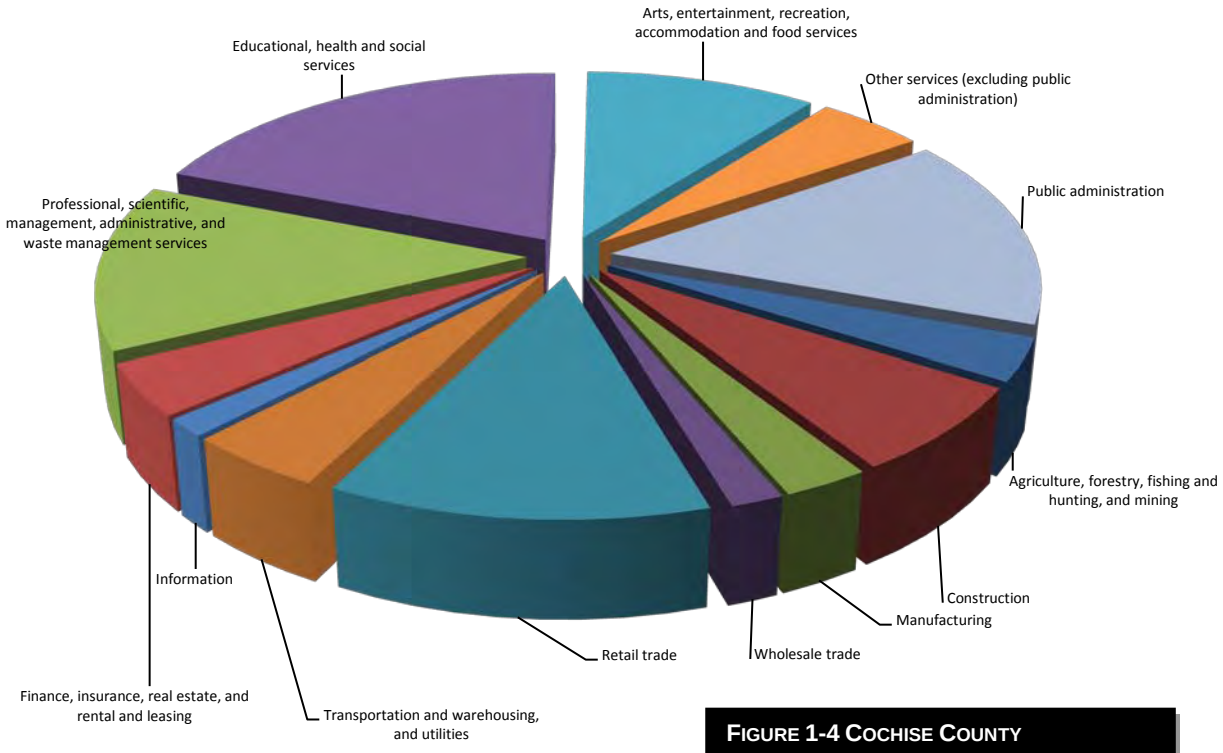


FIGURE 1-4 COCHISE COUNTY EMPLOYMENT BY INDUSTRY

1.5.4 INCOME

According to the U.S. Census American Community Survey 5-year Estimates for 2007-2011, the median household income in Arizona is approximately $50,752. Likewise, according to the same data, the median income for a household in Cochise County is approximately $45,906. The average number of persons per household in Cochise County is 2.53, and 2.64 for Arizona as a whole. The per capita income for 2007-2011 was $23,296 for the County and $25,784 for the State of Arizona. The percentage of families living below the poverty line for 2007-2011 was 16.2 percent for the County, as well as for the State of Arizona.

1.6 CLIMATE AND METEOROLOGICAL CONDITIONS

Meteorological conditions play an important role in the planning and development of an airport. Wind direction and speed are essential in determining optimum runway orientation. Temperatures substantially affect aircraft performance and are a major factor in runway length determination. The percentage of time an airport experiences low visibility because of meteorological conditions is a key factor in determining the need for instrument approach procedures and the type of procedure and facilities needed. The type of instrument approach procedure that might be needed, in turn, determines airspace and imaginary surface requirements. The amount and type of precipitation that occurs at an airport affects visibility and runway friction, or runway braking effectiveness. It also affects the type of maintenance equipment required, for example, snow and ice removal equipment.

1.6.1 LOCAL CLIMATIC DATA

According to the Western Regional Climate Center, the monthly average maximum temperature for the hottest month (July) is 94.5 degrees Fahrenheit. July is the month with the largest amount of precipitation (2.52 inches). The total annual average precipitation is 12.18 inches. The average total snow fall is 3.4 inches and there is no snow accumulation during the winter months.

1.7 SURROUNDING AIRPORTS / SERVICE AREA

As previously discussed, Cochise County Airport is located in the southeastern region of Arizona. The region's mild climate and terrain serve as an ideal location for an airport; In fact, there are several other airports located within the region. A comparison of several other notable airports in the vicinity of Cochise County Airport was conducted in order to illustrate their proximity to the study airport and to give an overall picture of the types of aeronautical facilities available to the surrounding communities. This type of comparison is typically performed in order to define an airport's service area. An airport service area is defined by the communities and surrounding areas served by the airport facility. For example, factors such as the airport's surrounding topographical features (mountains, rivers, etc.), proximity to its users, quality of ground access, required driving time to the airport and the proximity of the facility to other airports that offer the same or similar services can all affect the size of a particular airport's service area. To define the service area for Cochise County Airport, the airports in the area and their specific services and facilities were reviewed. **Table 1-4** summarizes the closest public airports and their services in relation to Cochise County Airport. The service area includes the area within half the distance of the nearest airport with a published instrument approach procedure from Cochise County Airport and is depicted in **Figure 1-5**.

TABLE 1-4 COCHISE COUNTY AIRPORT AND SURROUNDING AIRPORTS

	ID	Nautical Miles	Highway Miles	NPIAS Status	Runway Length & Width	Pavement Type	Approach	Fuel
Cochise County Airport, Willcox, AZ	P33	-	-	GA	6,095' x 75'	Asphalt	RNAV (GPS)	Yes
Safford Regional Airport, Safford, AZ	SAD	39	59	GA	4,799' x 75'	Asphalt	RNAV (GPS)	Yes
Benson Municipal Airport, Benson, AZ	E95	28	40	GA	4,002' x 75'	Asphalt	-	Yes

Source: AirNav.com, 2013

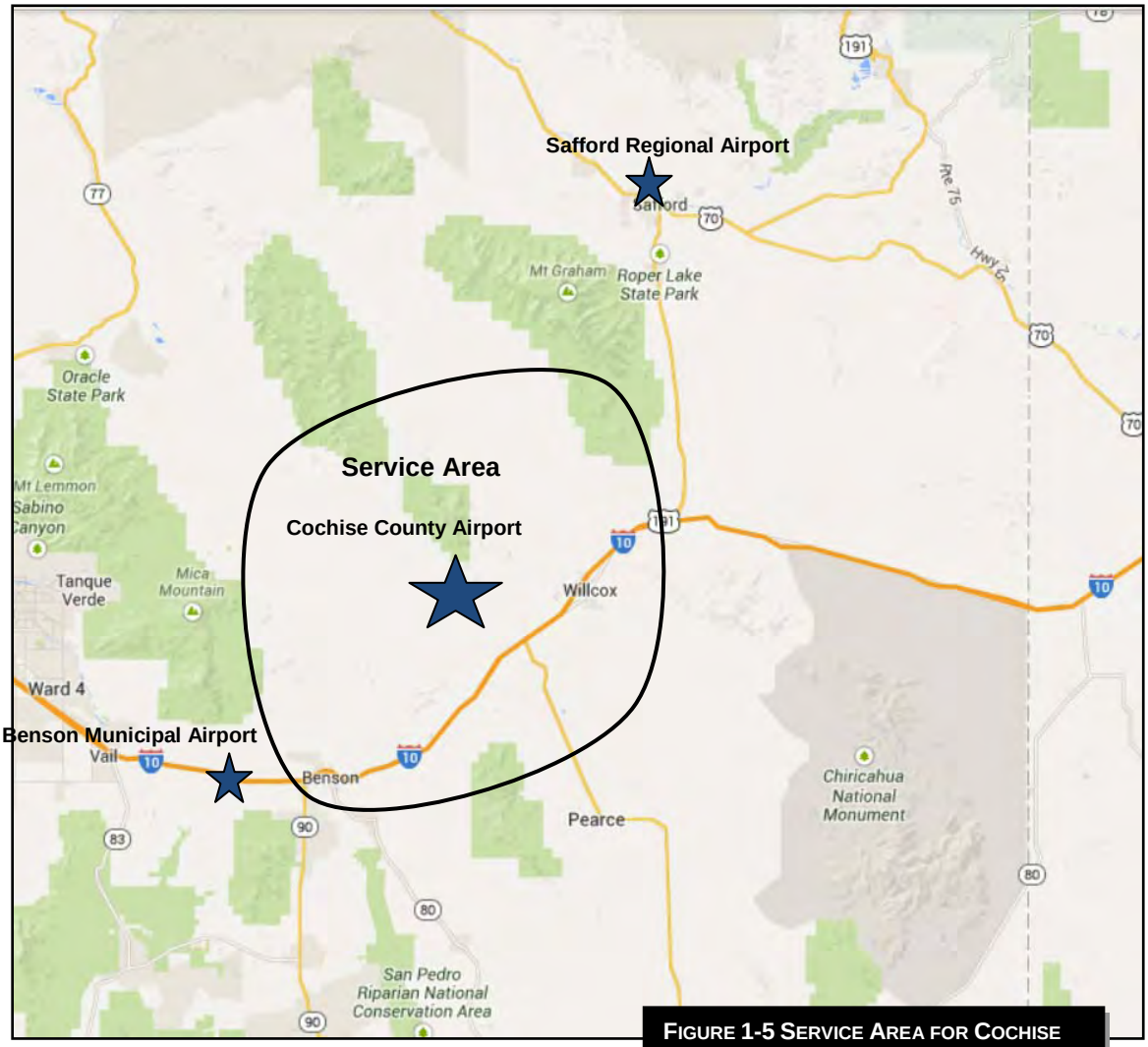


FIGURE 1-5 SERVICE AREA FOR COCHISE COUNTY AIRPORT

Source: Google Maps, 2013

1.8 AIRPORT OWNERSHIP AND MANAGEMENT

Cochise County Airport is owned and operated by Cochise County. The operation and maintenance of the airport is the responsibility of the County's Facilities Management Department. The County Board of Supervisors is responsible for the administrative and financial oversight of the airport.

1.9 GRANT HISTORY

The grant history for the capital improvements at Cochise County Airport is depicted in **Table 1-5**.

TABLE 1-5 COCHISE COUNTY AIRPORT GRANT HISTORY

State Fiscal Year	State Grant Number	Federal Grant Number	Project Description and Project Type	Local Amount	State Amount	Federal Amount	Total Amount
2002	2S06	n/a	Install new perimeter fencing	$1,000	$9,000	-	$10,000
2003	3S01	n/a	Install fencing, upgrade access road and gates	$600	$5,400	-	$6,000
2003	3S89D	T03-20-00054	APPP	$8,128	$73,157	-	$81,286
2005	5S14	n/a	Construct apron, construct partial T/W	$50,000	$450,000	-	$500,000
2008	8S25	n/a	Expand apron area - phase 3, design & construct	$30,000	$270,000	-	$300,000
2009	9F27	3-04-0049-01	Rehabilitate Runway 3-21 7 lighting Phase 1 design only	$1,477	$1,478	$56,148	$59,103
2009	9F52	3-04-0049-02	Rehabilitate Runway 3-21 7 lighting Phase 2 design & construction	$7,895	$7,894	$300,000	$315,789
2011	1F04	3-04-0049-03-10	Install Runway 3-21 lighting Phase 3	$3,947	$3,948	$150,000	$157,895
2012	2S78	n/a	Asphalt overlay Runway 3-21	$53,882	$484,946	-	$538,828
2014	4S1P	n/a	Reconstruction of T/W A, Phase 2 design only	$5,200	$46,800	-	$52,000
2014	4F3E	3-04-0049-004-13	Update Airport Master Plan	$8,724	$8,724	$177,721	$195,169
			Total amount	**$170,853**	**$1,361,347**	**$683,869**	**$2,216,070**

Source: ADOT MPD - Aeronautics Group Sept. 2013

1.10 AIRPORT FINANCIAL DATA

Financial data was obtained for the Cochise County Airport from 2009 to 2013 in order to conduct a review of the revenue and expenditures. The data provides a baseline for the financial status of the airport and allows for further evaluation in the Airport Development and Financial Plan chapters. It is important to note that Cochise County's fiscal year is from July 1st to June 30th.

Some preliminary observations of the data reveal that fuel sales were at their peak at $3,325 in fiscal year 2011/2012. Fuel sales in the last two years are down from their peak, but seem to be holding steady. Airport operations expenditures have been increasing from $3,992 in 2010/2011 to a (budgeted amount) of $6,530 in 2013/2014. The largest source of revenue comes from hangar leases and other leases on the airport. The second source of revenue comes from the sale of aircraft fuel (Jet A and AVGAS).

The Financial Chapter of the master plan report discusses the economic benefits in more detail and provides recommendations to potentially increase revenues and help fund the County's share of future airport capital improvement projects.

A breakdown of airport revenues and expenditures from 2009 to 2013 is depicted in **Table 1-6**.

TABLE 1-6 COCHISE COUNTY AIRPORT FINANCIAL DATA 2009-2013

	2009/20010	2010/2011	2011/2012	2012/2013	*2013/2014
Revenue					
Hangar Leases	$10,410	$9,448	$7,410	$4,960	$5,280
Other Leases	$2,520	$3,010	$2,430	$2,735	$2,810
Fuel (Jet A, AVGAS)	$719	$2,015	$3,325	$2,754	$2,775
Total Revenue	**$13,649**	**$14,473**	**$13,165**	**$10,449**	**$10,865**
Expenditures					
Airport Operations	$4,098	$3,922	$4,899	$7,670	$6,530
Airport Facility Utility	$8,639	$7,592	$9,178	$8,374	$8,608
Debt Service	$0	$0	$0	$0	$0
Total Expenditures	**$12,737**	**$11,514**	**$14,077**	**$16,044**	**$15,138**
Net Gain/Loss	**$912**	**$2,959**	**-$912**	**-$5,595**	**-$4,273**

Source: Cochise County, September 25, 2013
*Budget Amount (2013/2014)
Note: Fiscal Year=07/01 to 06/30

1.11 BASED AIRCRAFT AND OPERATIONS

There are various federal, state and local sources available for determining existing activity levels at an airport. These include, but are not limited to, FAA 5010-1 Form, FAA Terminal Area Forecast (TAF), on-site inventory and airport management records.

The FAA *Airport Master Record*, Form 5010-1, is the official record kept by the FAA to document airport physical conditions and other pertinent information. The information is typically collected from the airport sponsor and includes an annual estimate of aircraft activity as well as the number of based aircraft. The accuracy of the information contained in the 5010-1 Form varies directly with the airport manager's record keeping system and the date of its last revision. The current FAA 5010-1 Form for Cochise County Airport indicates there are 22 based aircraft. The 5010-1 also reports 8,500 annual operations; this is based upon a 12-month reporting period which ended 04/21/2011.

The TAF is a historical record and contains forecast projections of based aircraft and annual operations. The TAF is maintained and utilized by the FAA for planning and budgeting purposes. The 2014-2034 TAF data for the Airport projects 23 based aircraft and 8,500 annual operations for each year over the course of this future projection. The TAF data may not accurately reflect the based aircraft and operations numbers, as it is dependent on when it was last updated by the FAA. Furthermore, it is difficult to accurately record aircraft operations at airports that are not equipped with an air traffic control tower. Normally, operations are recorded by air traffic controllers and reported to the FAA. In this instance, Cochise County Airport does not have an air traffic control tower.

Thus, the existing activity at the Airport was evaluated using a method for estimating general aviation operations. The FAA Statistics and Forecast Branch has developed a *Model for Estimating General Aviation Operations at Non-Towered Airports using Towered and Non-Towered Airport Data.* This model was created using data from towered and non-towered general aviation airports. A dummy variable is used to differentiate between those airports having an air traffic control tower and those that do not. The model was used to estimate the number of operations at 2,789 non-towered general aviation airports included in the FAA *Terminal Area Forecasts*. The equation they developed is Equation #15, Model for Estimating General Aviation Operations at Non-Towered Airports. Local factors such as the number of based aircraft, population, location, and the number of flight schools is applied to the equation resulting in an estimated number of annual operations. The factors pertinent to Cochise County Airport were applied in this formula, and the results are shown below. The number of based aircraft used in this formula is 22 based upon FAA Form 5010-1's most current data. The formula, and the breakdown of data for Cochise County Airport within the formula, is as follows:
Operations = 775 + 241(Based Aircraft) – 0.14(Based Aircraft)^2 + 31,478(Based Aircraft/Total Number of Based Aircraft within 100 miles of Airport) + 5,577(Number of Flight Schools at Airport) + 0.001(Population within 100 miles) – 3,736(multiply by 1 if Airport is Located in WA, CA, OR or AK; multiply by zero if not) + 12,121(Population within 25 miles/population within 100 miles) 775 + 241(22) – 0.14(22)^2 + 31,478(.20) + 0 + 131 – 0 + 12,121(.04) = 12,921 total estimated annual operations.

The estimated number of annual operations determined by Equation #15 is closer to the projections that have been forecasted by the TAF and the Airport Master Record for the Airport, however, they are still quite a bit high. According to discussions with airport management, there were 25 based aircraft and 6,800 annual operations in 2012. The based aircraft fleet mix includes 25 single-engine aircraft. Historical based aircraft and operations are shown in **Table 1-7**.

TABLE 1-7 HISTORICAL BASED AIRCRAFT AND OPERATIONS

Year	Total Operations	Based Aircraft
1996[1]	7,000	24
2007[2]	7,860	27
2011[3]	8,500	22
2012[4]	6,800	25
2013[5]	12,921	22

[1]Cochise County Airport Master Plan – 1996 actual data
[2]Arizona State Airports System Plan – 2007 base year data
[3]Cochise County Airport Master Record – October 2013
[4]Cochise County Airport Manager – November 2013
[5]Estimate of Operations-Derived from *Model for Estimating General Aviation Operations at Non-Towered Airport, Equation #15, FAA Statistics and Forecast Branch (July 2001).*

1.12 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT

The FAA databases of certificated airmen and registered aircraft were reviewed to determine the current distribution of pilots and registered aircraft in Cochise County.
This data indicates that there are 494 certificated pilots and 251 aircraft registered in Cochise County as of November 2013. Aircraft are not always based where they are registered. Of the 251 registered aircraft in the Cochise County, 22 are based at Cochise County Airport according to FAA records.

1.13 DESIGN STANDARDS

Airport design standards provide basic guidelines for a safe, efficient and economic airport system. The standards cover the wide range of size and performance characteristics of aircraft that are anticipated to use an airport. Various elements of airport infrastructure and their functions are also covered by these standards. Choosing the correct aircraft characteristics for which the airport will be designed needs to be done carefully so that future requirements for larger and more demanding aircraft are taken into consideration while remaining mindful that designing for large aircraft that will never serve the airport is not economical.

1.13.1 DESIGN AIRCRAFT

According to FAA AC 150/5300-13A *Airport Design*, planning a new airport or improvement to an existing airport requires the selection of one or more “design aircraft”. In most cases, the design aircraft (for the purpose of airport geometric design) is a composite aircraft representing a collection of aircraft classified by the parameters:

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

For the purpose of selecting a design aircraft, the FAA recommends that the most demanding aircraft, or family of aircraft, which makes at least 500 operations per year at the airport be chosen as the design aircraft(s). Additionally, when an airport has more than one active runway, a design aircraft is selected for each runway. According to the approved 1997 Master Plan for the Airport, the existing design aircraft for Runway 3-21 is a light, turboprop aircraft. An example of a light, turboprop aircraft is the Beechcraft King Air.

1.13.2 RUNWAY DESIGN CODE (RDC)

To arrive at the RDC, the AAC, ADG and approach visibility minimums are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to the aircraft wingspan or tail height (physical characteristics). The final component relates to the visibility minimums expressed by runway visual range (RVR) values in feet of 1,200, 1,600, 2,400 and 4,000. The FAA AC 150/5300-13A *Airport Design* RDC requirements are illustrated in **Table 1-8**.

As indicated in the approved 1997 Master Plan for the Airport, the existing RDC for Runway 3-21 is B-II.

TABLE 1-8 RUNWAY DESIGN CODE

Aircraft Approach Category	Approach Speed	
Category A	less than 91 knots	
Category B	91 to 120 knots	
Category C	121 knots to 140 knots	
Category D	141 knots to 165 knots	
Category E	165 knots or more	
Airplane Design Group	**Wingspan**	**Tail Height**
Group I	< 49 feet	<20 feet
Group II	49 to 78 feet	20 to 29 feet
Group III	79 to 117 feet	30 to 44 feet
Group IV	118 to 170 feet	45 to 59 feet
Group V	171 to 213 feet	60 to 65 feet
Group VI	214 to 261 feet	66 to 79 feet
Runway Visual Range (ft.)	**Flight Visibility Category (statue mile)**	
4000	Lower than 1 mile but not lower than 3/4 mile	
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)	
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)	
1200	Lower than 1/4 mile (CAT-III PA)	

Source: FAA Advisory Circular 150/5300-13A *Airport Design*

1.13.3 TAXIWAY DESIGN GROUP (TDG)

To arrive at the best TDG, the undercarriage dimensions of the aircraft are used. The TDG design standards are based on the overall Main Gear Width (MGW) and the Cockpit to Main Gear (CMG) distance. Taxiway/taxilane width and fillet standards, and in some instances, runway to taxiway and taxiway/taxilane separation requirements, are determined by the TDG. The FAA advises that it is appropriate for a series of taxiways on an airport to be built to a different TDG standards based on anticipated use.

For airports with two or more active runways, it is advisable to design all airport elements to meet the requirements of the most demanding RDC and Taxiway Design Group (TDG). However, it may be more practical and economical to design some airport elements such as a

secondary runway to standards associated with a lesser demanding RDC and TDG. For example, it would not be prudent for an air carrier airport that has a separate general aviation runway, or a crosswind runway for general aviation traffic, to design that element for air carrier traffic.

Taxiway A is the full-length parallel taxiway for Runway 3-21; Taxiway A is 35' wide, categorizing it in TDG 2. Taxiways B and C are currently closed due to extreme pavement deterioration, and therefore do not have an assigned TDG.

1.13.4 AIRPORT REFERENCE CODE (ARC)

An Airport Reference Code (ARC) is not a design standard, rather is an airport designation that signifies the Airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning purposes only, and does not limit the aircraft that may be able to operate safely on the airport. According to the approved Master Plan from 1997, the current ARC for Cochise County Airport is B-II. Examples of the types of design aircraft and their corresponding ARC are depicted in **Figure 1-6**.

AI

Primarily Single-Engine Propeller Aircraft, some light twins

Example Type: Cessna 172 Skyhawk

BI

Primarily Light Twin-Engine Propeller Aircraft

Example Type: Piper Navajo

BII

(<12,500 lbs)
Primarily Light Turboprops

Example Type: Beechcraft King Air

BII

(>12,500 lbs)
Mid-sized corporate jets and commuter airliners

Example Type: Cessna Citation II

A/BIII

Primarily large commuter-type aircraft

Example Type: De Havilland Dash 8

CI, DI

Primarily small and fast corporate jets

Example Type: Lear Jet 36

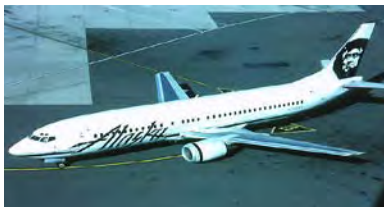
C/DII

Large corporate jets and regional-type commuter jets

Example Type: Gulfstream IV

C/DIII

Commercial airliners (approx. 100-200 seats)



Example Type: Boeing 737

C/DIV

Large commercial airliners (approx. 200-350 seats)

Example Type: Boeing 767

DV

Jumbo commercial airliners (approx. 350+ seats)

Example Type: Boeing 747

FIGURE 1-6 TYPICAL DESIGN AIRCRAFT AND CORRESPONDING ARC

1.13.5 SAFETY AREAS

Runway and Taxiway Safety Areas (RSAs and TSAs) are defined surfaces surrounding the runway and taxiway prepared specifically to reduce the risk of damage to aircraft in the event of an undershoot, overshoot or excursion from the runway or taxiway. The Safety Areas must be:

- Cleared and graded and have no potentially hazardous surface variations;
- Drained so as to prevent water accumulation;
- Capable, under dry conditions, of supporting snow removal equipment, ARFF equipment and the occasional passage of aircraft without causing structural damage to the aircraft;
- Free of objects, except for objects that need to be located in the runway or taxiway safety area because of their function.

Based on a recent windshield survey, the runway safety areas for Runway 3-21 at Cochise County Airport are in good condition and appear to meet FAA standards. No apparent violations were noted at the time of the site visit. The taxiway safety areas were also reviewed and no apparent deficiencies were noted.

1.13.6 OBSTACLE FREE ZONE (OFZ) AND OBJECT FREE AREA (OFA)

The Obstacle Free Zone (OFZ) is a three dimensional volume of airspace which supports the transition of ground to airborne aircraft operations. The clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual Navigational Aids (NAVAIDs) that need to be located in the OFZ because of their function. The OFZ is similar to the FAR Part 77 Primary Surface insofar that it represents the volume of space longitudinally centered on the runway. It extends 200 feet beyond the end of each runway. The Runway Object Free Area (ROFA) is a two-dimensional ground area surrounding the runway. The ROFA standard precludes parked airplanes, agricultural operations and objects, except for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes.

1.13.7 RUNWAY PROTECTION ZONE (RPZ)

The Runway Protection Zone (RPZ) is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end.

For Runway 3-21 the RPZ begins 200 feet from the runway threshold and extends for 1,000 feet at both ends; the RPZ is 500 feet wide at the inner end and 700 feet wide at the outer end. Runway 14-32 is currently closed.

The land uses not recommended by FAA to be within the RPZ are residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers and other uses with similar concentrations of persons typify places of public assembly). The FAA recommends the Sponsor control the entire RPZs through fee simple ownership or avigation easements. A summary of the existing design standards for the Airport's runway and taxiways is depicted in **Table 1-9**.

TABLE 1-9 EXISTING DIMENSIONAL STANDARDS

	Runway 3-21	
	Existing Dimension	Design Standard
Runway Design Code (RDC)	--	**B-II**
Runway length	6,095’	--
Runway width	75’	75’
Runway Safety Area (RSA) width	150’	150’
Runway Safety Area (RSA) length beyond runway end	300’	300’
Runway Object Free Area (ROFA) width	500’	500’
Runway Object Free Area (ROFA) length beyond runway end	300’	300’
Runway Obstacle Free Zone (ROFZ) width	250’	250’
Runway Obstacle Free Zone (ROFZ) length beyond runway end	200’	200’
Runway Protection Zone (RPZ) length	1,000’	1,000’
Runway Protection Zone (RPZ) inner width	500’	500’
Runway Protection Zone (RPZ) outer width	700’	700’
Runway centerline to hold line	200’	200’
Runway centerline to taxiway/taxilane centerline	500'	240’
Runway centerline to aircraft parking area	250'	250’
Taxiway Design Standards		
Taxiway Protection	--	**ADG II**
Taxiway Safety Area (TSA)	79'	79'
Taxiway Object Free Area (OFA)	131'	131'
Taxilane Object Free Area (OFA)	**30'-40'** [1]	115'
Taxiway Separation	--	**ADG II**
Taxiway centerline to fixed or movable object	65.5'	65.5'
Taxilane centerline to fixed or movable object	**30'-40'** [1]	57.5'
Wingtip Clearance	--	**ADG II**
Taxiway Wingtip Clearance	26'	26'
Taxilane Wingtip Clearance	18'	18'
Standards Based on TDG	--	**TDG 2**
Taxiway Width	35'	35'
Taxiway Edge Safety Margin	7.5'	7.5'
Taxiway Shoulder Width	10'	10'

[1] See Section 1.17.2 for description of obstructions
Source: FAA AC 150/5300-13A, *Airport Design*

1.14 FEDERAL AVIATION REGULATION (FAR) PART 77 IMAGINARY SURFACES

FAR Part 77 establishes several imaginary surfaces that are used as a guide to provide a safe and unobstructed operating environment for aviation. These surfaces, which are typical for civilian airports, are shown in **Figure 1-7**. The primary, approach, transitional, horizontal and conical surfaces identified in FAR Part 77 are applied to each runway at both existing and new airports on the basis of the type of approach procedure available or planned for that runway and the specific FAR Part 77 runway category criteria. For the purpose of this section, a visual-utility runway is a runway that is constructed for and intended for use by propeller driven aircraft of a maximum gross weight of 12,500 pounds or less. A larger than utility runway is a runway constructed for an intended for the use of aircraft of a maximum gross weight of 12,500 pounds or greater. A visual runway is a runway intended for the operation of aircraft weighing greater or less than 12,500 pounds and using only visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan or by any planning

document submitted to the FAA by competent authority. A non-precision instrument runway is a runway with an approved or planned straight-in instrument approach procedure.

Runway 3-21 is the runway currently in use at Cochise County Airport. Runway 3-21 is classified as a utility, non-precision instrument runway and has a RNAV (GPS) non-precision instrument approach. The FAR Part 77 imaginary surfaces for these classifications are further described below.

1.14.1 PRIMARY SURFACE

The primary surface is an imaginary surface of specific width, longitudinally centered on a runway. The primary surface extends 200 feet beyond each end of the paved surface of runways, but does not extend past the end of soft field runways. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width is 1,000 feet for precision runways, 500 feet for visual larger than utility runways and non-precision instrument utility runways, and 250 feet for visual-utility runways.

1.14.2 APPROACH SURFACE

The approach surface is a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of the runway based upon the type of approach available or planned for that runway, with approach gradients of 20:1, 34:1 or 50:1. The inner edge of the surface is the same width as the primary surface. It expands uniformly to a width corresponding to the FAR Part 77 runway classification criteria. At Cochise County Airport, these dimensions are 500 feet by 2,000 feet by 5,000 feet, with a 20:1 approach surface gradient for Runway 3-21.

1.14.3 TRANSITIONAL SURFACE

The transitional surfaces extend outward and upward at right angles to the runway centerlines from the sides of the primary and approach surfaces at a slope of 7:1 and end at the horizontal surface.

1.14.4 HORIZONTAL SURFACE

The horizontal surface is considered necessary for the safe and efficient operation of aircraft in the vicinity of an airport. As specified in FAR Part 77, the horizontal surface is a horizontal plane 150 feet above the established airport elevation. The airport elevation is defined as the highest point of an airport's useable runways, measured in feet above mean sea level. The perimeter is constructed by arcs of specified radius from the center of each end of the primary surface of each runway. The radius of each arc is 5,000 feet for runways designated as utility or visual and 10,000 feet for all other runways.

1.14.5 CONICAL SURFACE

The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 20:1 for a horizontal distance of 4,000 feet

1.14.6 SUMMARY OF DIMENSIONAL CRITERIA

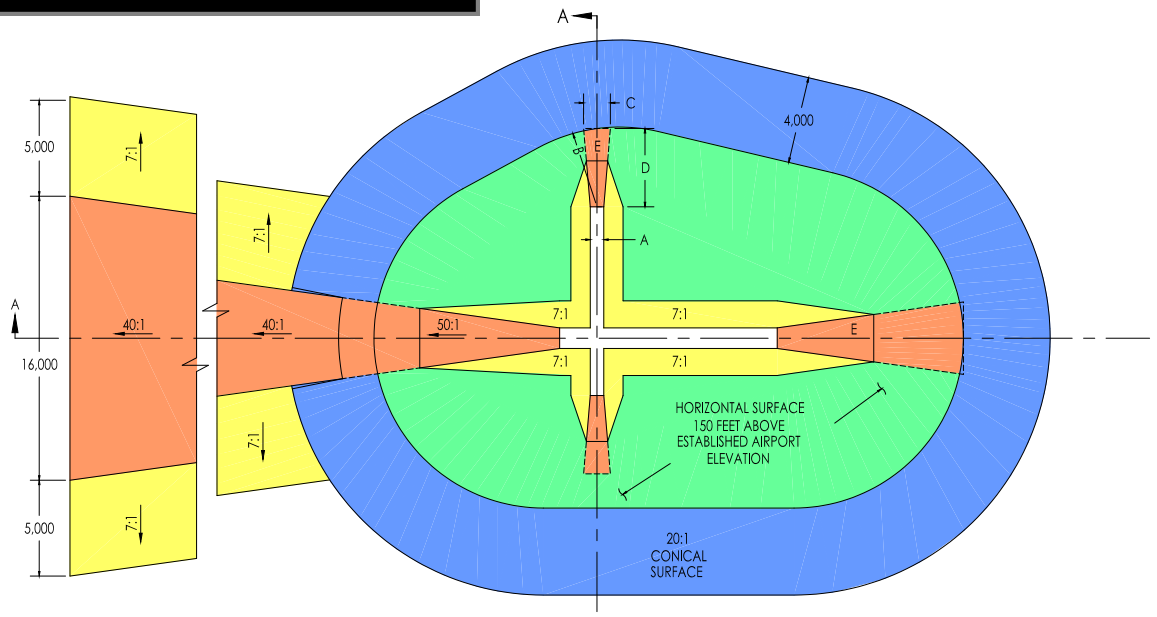
The FAR Part 77 imaginary surfaces described above for the Cochise County Airport are summarized in **Table 1-10**.

TABLE 1-10 FAR PART 77 IMAGINARY SURFACES

	Runway 3-21	
Primary Surface width	500’	
Primary Surface beyond RW end	200’	
Approach Surface dimensions	RW 3 (500’ x 2,000’ x 5,000’) RW 21 (500’ x 2,000’x 5,000’)	
Approach Surface slope	RW 3 (20:1) RW 21 (20:1)	
Transitional Surface slope	7:1	

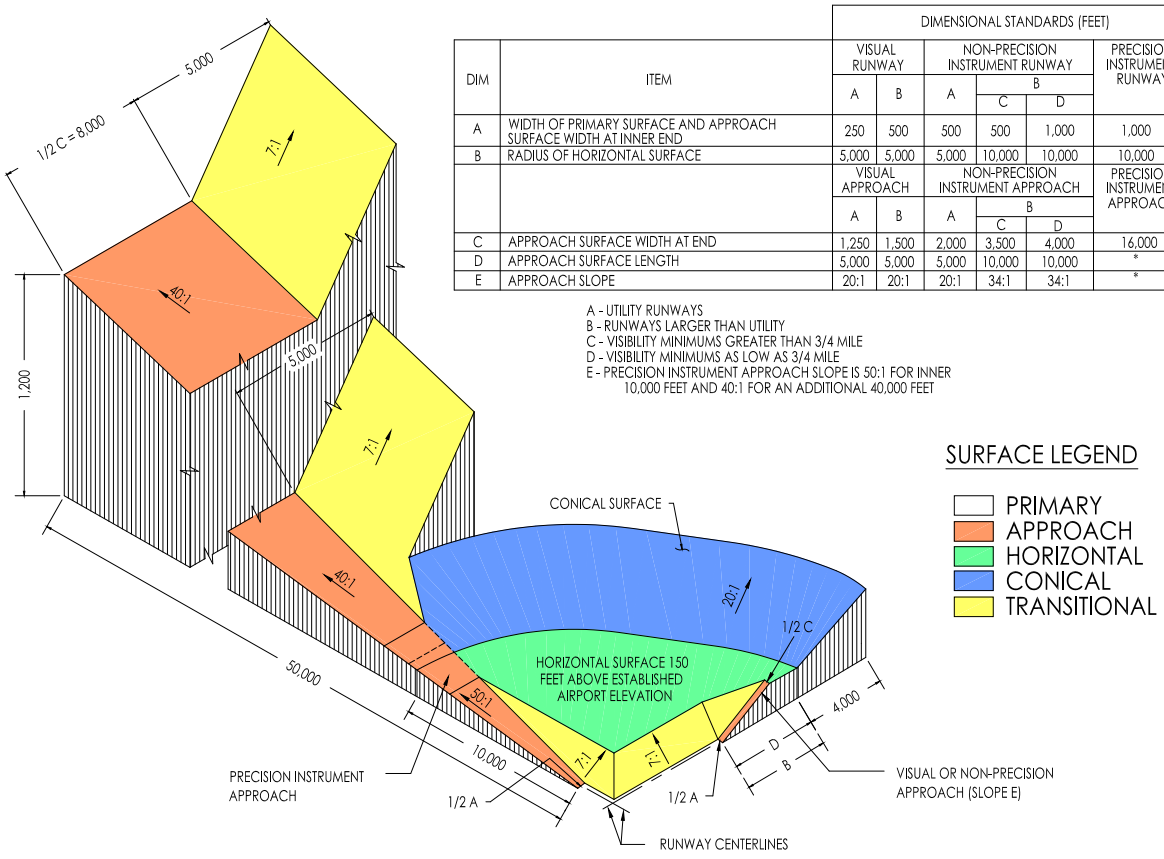
Source: 14 CFR, Part 77 Safe, Efficient Use, and Preservation of Navigable Airspace

FIGURE 1-7 FAR PART 77 IMAGINARY SURFACES



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILE
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
E - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



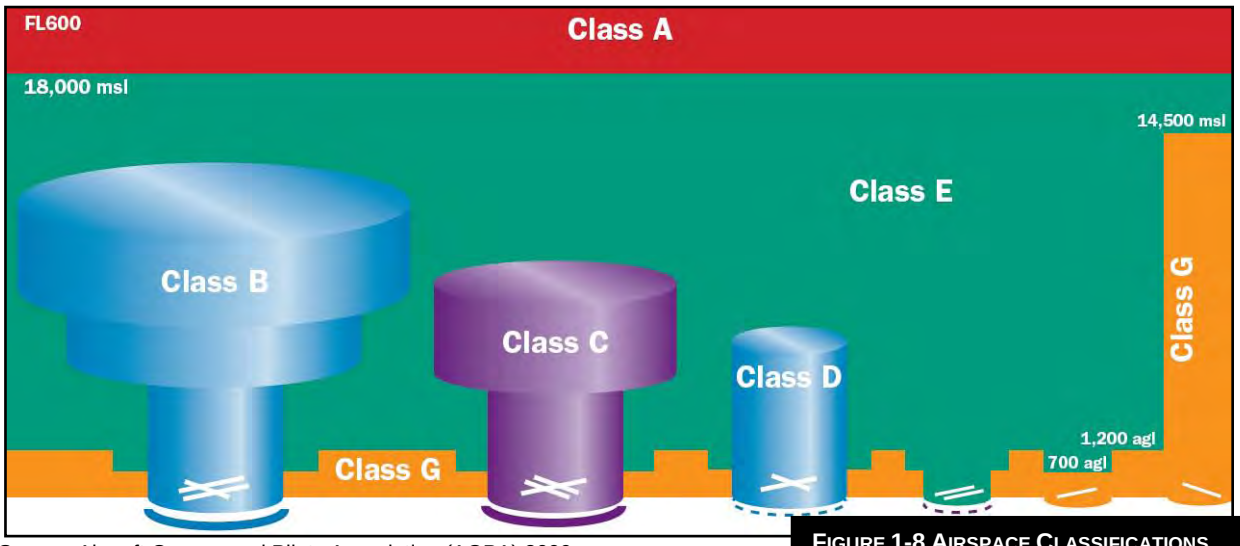
ISOMETRIC VIEW OF SECTION A-A

Source: 14 CFR, Part 77 Safe, Efficient Use, and Preservation of Navigable Airspace

1.15 AIRSPACE CHARACTERISTICS

The National Airspace System consists of various classifications of airspace that are regulated by the FAA. Airspace is either controlled or uncontrolled. Pilots flying in controlled airspace are subject to Air Traffic Control (ATC) and must follow either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR) requirements. These requirements include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace. These rules are described in Federal Aviation Regulations (FAR) Part 71, Designation of Class A, Class B, Class C, Class D and Class E Airspace Areas; Airways; Routes; and Reporting Points and FAR Part 91, General Operating and Flight Rules. **Figure 1-8** shows the different airspace classes and gives a graphical representation of them. General definitions of the Classes of airspace are provided below:

- **Class A Airspace**: Airspace from 18,000 feet MSL up to and including Flight Level (FL) 600.
- **Class B Airspace**: Airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of IFR operations or passenger enplanements.
- **Class C Airspace**: Generally, airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower.
- **Class D Airspace**: Airspace from the surface up to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports with an operational control tower.
- **Class E Airspace**: Generally, controlled airspace that is not Class A, Class B, Class C or Class D.
- **Class G Airspace**: Generally, uncontrolled airspace that is not designated Class A, Class B, Class C, Class D or Class E.
- **Victor Airways:** These airways are low altitude flight paths between ground based VHF Omnidirectional Range receivers (VORs).



Source: Aircraft Owners and Pilots Association (AOPA) 2009

FIGURE 1-8 AIRSPACE CLASSIFICATIONS

A graphical depiction of the airspace surrounding Cochise County Airport is shown in **Figure 1-9**. The Airport is situated under Class E airspace starting at 700 feet above ground level (AGL) and continuing up to 18,000 feet MSL, and under Glass G airspace from the surface up to 700 feet AGL. Pilots should check Notices to Airmen (NOTAMs) or the Airport/Facility Directory (A/FD) for Class E (surface) effective hours.

The traffic patterns at Cochise County Airport are standard left traffic for Runway 3-21. Traffic Pattern Altitude (TPA) is 5,187 feet MSL (1,000 feet AGL) for all aircraft. There are currently no noise abatement procedures in place at the Airport.

A Victor Airway is a special kind of Class E airspace and is like a “highway” in the sky. Many powered aircraft follow these routes. The routes connect VOR stations that radiate a signal in all directions. These stations are usually located at or near airfields. North-South Victor Airways have odd numbers while East-West airways have even numbers. These federal or Victor Airways are used by both IFR and VFR aircraft. The airspace set aside for a Victor Airway is eight miles wide with a floor at 1,200 feet AGL and extend up to FL 180 (18,000 feet MSL).

Cochise County Airport lies between two Victor Airways; Victor Airway 94 (V94) lies to the north of the Airport and Victor Airway 16 (V16) lies to the south.

The location of the Airport and the various airspace classifications which surround it can be seen on the Phoenix VFR Sectional Chart (**Figure 1-9**).

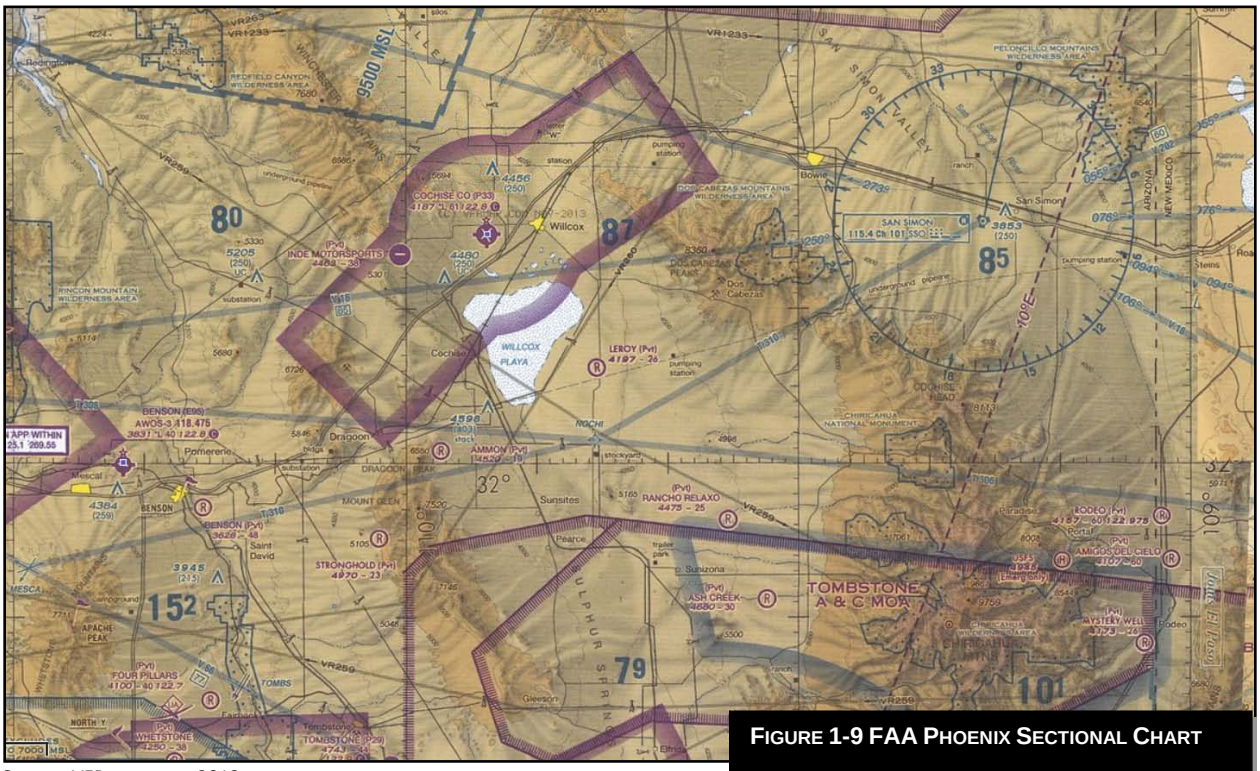


FIGURE 1-9 FAA PHOENIX SECTIONAL CHART

Source: VFRmap.com, 2013

1.15.1 AIRSPACE JURISDICTION

Cochise County Airport is located within the jurisdiction of the Albuquerque Air Route Control Center (ARTCC) and the Prescott Flight Service Station (FSS). The altitude of radar coverage by the Albuquerque ARTCC may vary as a result of the FAA navigational/radar facilities in operation, weather conditions and surrounding terrain. The Prescott FSS provides additional weather data and other pertinent information to pilots on the ground and enroute.

1.15.2 AIRSPACE RESTRICTIONS

Military Operation Areas (MOAs) and Military Training Routes (MTRs) are established for the purpose of separating certain military training activities, which routinely necessitate acrobatic or abrupt flight maneuvers, from Instrument Flight Rules (IFR) traffic. IFR traffic can be cleared through an active MOA if IFR separation can be provided by Air Traffic Control (ATC), otherwise ATC will reroute or restrict the IFR traffic. Restricted areas are defined as “airspace designated under FAR Part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency.” Restricted areas are typically associated with military operations and indicate the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery or guided missiles.

Cochise County Airport is situated between the Jackal and Jackal Low MOAs to the north (approximately 6 nm) and the Tombstone A & C MOAs to the south (approximately 6 nm). The Tombstone A & C MOAs are active Monday through Friday from 6:00 a.m. until 9:00 p.m., and

include the airspace from 500 feet AGL to 14,500 feet MSL. The Jackal and Jackal Low MOAs are active Monday through Friday from 7:00 a.m. until 6:00 p.m. The Jackal MOA includes the airspace from 11,000 feet MSL or 3,000 feet AGL (whichever is higher); the Jackal Low MOA includes the airspace from 100 feet AGL to but not including 11,000 feet MSL or 3,000 feet AGL (whichever is higher). The controlling agency for the MOAs is Albuquerque Center. The MOAs are routinely scheduled for activation on weekends. Above Tombstone MOA is an Air Traffic Control Assigned Airspace (ATCAA) which extends the Tombstone MOA up to 51,000 MSL. The Tombstone MOA/ATCAA may be scheduled active at other times by issuing a Notice to Airmen (NOTAM).

Cochise County Airport is located approximately 18 nm north from the U.S. border with Mexico. Aircraft flying into the U.S. are required to follow the procedures of the Air Defense Identification Zone (ADIZ). An ADIZ is an area of airspace defined by a nation where an aircraft must identify themselves and their location in the interest of national security. An aircraft entering an ADIZ is required to contact ATC and state their planned course, destination and any other information about their trip through the ADIZ.

In addition to MOAs and Restricted airspace, Military Training Routes (MTR) pose a potential hazard to civilian aircraft. The MTR program is a joint venture by the FAA and the Department of Defense (DOD). MTRs are mutually developed for use by the military to conduct low-altitude, high-speed training. Increased vigilance is recommended for pilots operating in the vicinity of these training routes. There are two MTRs in the vicinity of the Cochise County Airport. Visual MTR (VR 260) is located approximately 9 nm southeast of the Airport and runs in a northeast/southwest orientation. Visual MTR (VR 259) is located approximately 7 nm southwest of the Airport and runs in an northwest/southeast orientation.

Special Conservation Areas are also located in the vicinity of the Airport. This type of airspace surrounds many national parks, wildlife refuges and other noise sensitive areas. Pilots are requested to avoid flight below 2,000 feet AGL in these areas. The Dos Cabezas Mountains Wilderness Area is located approximately 15 nm east of the Airport. Additionally, the Redfield Canyon Wilderness Area is located approximately 14 nm to the northwest, and the Galiuro Wilderness Area is approximately 28nm northwest of the Airport.

1.16 RUNWAY WIND COVERAGE

Wind direction and speed determine the desired alignment and configuration of the runway system. Aircraft land and takeoff into the wind and therefore can tolerate only limited crosswind components (the percentage of wind perpendicular to the runway centerline). The ability to land and takeoff in crosswind conditions varies according to pilot proficiency and aircraft type.
FAA Advisory Circular 150/5300-13, Airport Design, recommends that a runway should yield 95 percent wind coverage under stipulated crosswind components. If one runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The crosswind component of wind direction and velocity is the resultant vector, which acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for each Runway Design Code is shown in **Table 1-11.**

TABLE 1-11 CROSSWIND COMPONENT

Allowable Crosswind in Knots	Airport Reference Code
10.5 knots	A-I & B-I
13 knots	A-II & B-II
16 knots	A-III, B-III & C-I through D-III
20 knots	A-IV through D-VI, E-I through E-VI

Source: FAA A/C 150-5300-13A, *Airport Design*

To establish a wind rose for an airport, obtaining reliable wind data is necessary. Cochise County Airport does not currently have a weather reporting station; therefore a review of the previous airport master plan revealed that wind data (speed and direction) was gathered from the Tucson International Airport Weather Station. Data was collected from 1986 – 1995 and included 87,648 observations. The data from the previous airport master plan will be used to generate a wind rose. The Facility Requirements Chapter will discuss the need and benefits of having a weather reporting station located on the airport. **Table 1-12** depicts the wind coverage that will be used for the Cochise County Airport.

TABLE 1-12 WIND COVERAGE – ALL WEATHER

Runway	Crosswind (knots)	Wind Coverage
All Weather		
03-21	10.5	89.20%
03-21	13	93.74%
03-21	16	98.41%
14-32 (closed)	10.5	94.29%
14-32 (closed)	13	97.09%
Combined	10.5	98.45%
Combined	13	99.68%

Source: Tucson International Airport, Weather Reporting Station

Given that Runway 14-32 is closed, the existing active runway configuration does not provide for the recommended wind coverage of at least 95% for A-I, B-I, A-II and B-II aircraft. According to FAA Advisory Circular 150/5300-13A *Airport Design*, the correct application of the results of the wind data analysis will add substantially to the safety and utility of the airport; meaning that if the combined wind coverage is less than 95%, additional runways may be necessary to achieve the desired 95% wind coverage. An illustration of the combined runway wind rose is depicted in **Figure 1-10**.

The Facility Requirements Chapter will discuss the need and benefits of an additional runway to achieve the recommended wind coverage at Cochise County Airport.

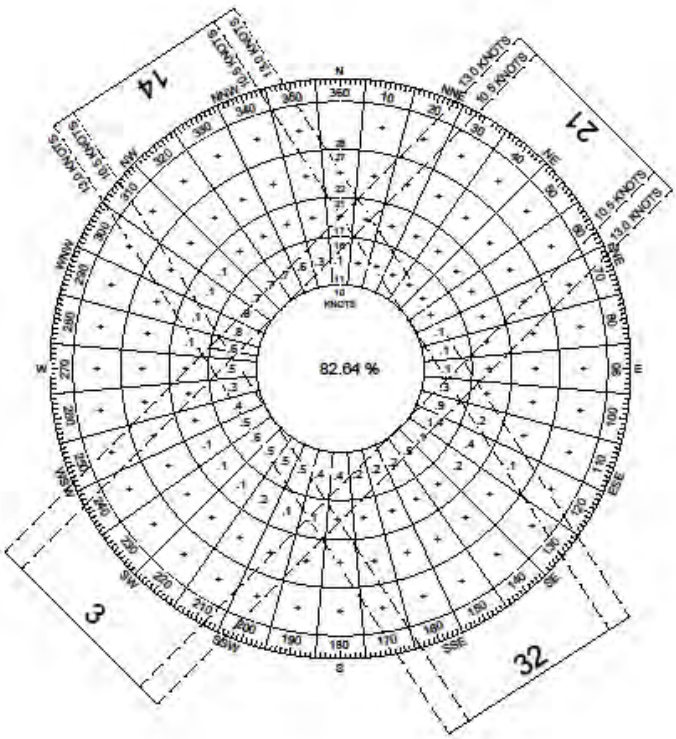


FIGURE 1-10 WIND ROSE

1.17 EXISTING AIRSIDE FACILITY INVENTORY

The definition of airside is that portion of the airport, typically within the public safety and security fenced perimeter, in which aircraft, support vehicles and equipment are located; and in which aviation-specific operational activities take place. The inventory of airside facilities provides the basis for the airfield demand/capacity analysis and the determination of any facility change requirements that might be identified. The various airside facilities are depicted on **Exhibit A** at the end of this section.

1.17.1 RUNWAYS

There is one active runway at Cochise County Airport, Runway 3-21. The other remaining runway, Runway 14-32, is currently closed due to pavement strength deterioration. Runway 3-21 is 6,095 feet long, 75 feet wide, and serves as the primary runway. Runway 3-21 is constructed of asphalt. The existing pavement strength ratings, or weight bearing capacity, for Runway 3-21 are 50,000 lbs. gross weight single-wheel landing gear, 75,000 lbs. gross weight dual-wheel landing gear, and 135,000 lbs. gross weight dual-tandem wheel landing gear.

Pavement markings and lighting for Runway 3-21 are discussed in Section 1.17.5. Runway 3-21 is in good condition.

1.17.2 TAXIWAY / TAXILANE SYSTEM

Taxiway A is configured as a partial parallel taxiway and serves as the primary taxiway on the Airport. Two connector taxiways, A-1 and A-2, provide access to Runway 3-21. Taxiway A-1 is located on the northeast portion of the airfield, providing access to Runway 21. Taxiway A-2 is centrally located on the airfield at approximately the mid-point of Runway 3-21. All taxiways are 35' wide. Taxiway A and its connectors, A-1 and A-2, were fully reconstructed in 2008. The remainder of Taxiway A from the mid-point to Runway 3 is currently not in use due to extreme pavement deterioration. The County anticipates reconstructing the remainder of Taxiway A in July of 2014. After reconstruction, Taxiway A will become a full parallel taxiway to Runway 3-21. During the reconstruction, new Medium Intensity Taxiway Lights (MITL) will be installed. The County also anticipates replacing the existing taxiway reflectors on Taxiway A with MITL to match the newly reconstructed portion of the taxiway sometime in 2015.

There are four existing taxilanes that are used to access two T-hangars and the shaded aircraft tie-down structure. They are located adjacent to the aircraft apron/parking area in front of the terminal building. The furthest east taxilane provides access to an eight bay T-hangar, referred to as T-hangar 1. The second furthest east taxilane provides access to T-hangar 1 and a smaller 6 space T-hangar, referred to as T-hangar 2. A third taxilane provides access to T-hangar 2 and the shaded aircraft tie-down structure. The fourth taxilane begins on the aircraft apron and provides access to all three structures (T-hangar 1, T-hangar 2, and shaded tiedowns). The taxilane pavement is in fair condition. Pavement markings in this area is faded and should be remarked.

Although the Airplane Design Group (ADG) for the airport is currently ADG-II, it was noted that only aircraft that are ADG-I currently access and are stored on this area of the airfield. Thus, ADG-I design standards should be applied only to this portion of the airfield when looking at the taxilane Object Free Area (OFA) design standards. The following obstructions still exist in this area even when applying ADG-I design standards.

- Obstruction 1 - vegetation has grown in an area adjacent to the taxilane providing access to the east side of T-hangar 1. The vegetation appears to be approximately 8 feet from the edge of pavement and is within the taxilane OFA and should be removed. See **Figure 1-11**.
- Obstruction 2 – the distance between the existing terminal building and T-hangar 2 is approximately 58' (or 29' from the taxilane centerline to fixed or movable object). The design standard dimension is 39.5' from taxilane centerline. See **Figure 1-12**.
- Obstruction 3 – the distance between T-hangar 2 and the shade structure is approximately 63', (or 31.5' from taxilane centerline to fixed or movable object). The design standard dimension is 39.5' from taxilane centerline. See **Figure 1-13**.

FIGURE 1-11 TAXILANE OBSTRUCTION 1

FIGURE 1-12 TAXILANE OBSTRUCTION 2

FIGURE 1-13 TAXILANE OBSTRUCTION 3

Lastly, another important observation regarding the taxilane between T-hangar 2 and the shaded aircraft tie-down structure was noted. The drainage pattern is such that run-off appears to collect at the south end of the taxilane between the two structures. Sediment has accumulated along with vegetation growth, which has created a dam off the pavement, as shown on **Figure 1-14**. Therefore, re-grading of the turf area is needed to prevent water from accumulating on the existing pavement.

FIGURE 1-14 TAXILANE PONDING AREA

1.17.3 AIRCRAFT APRON

The aircraft apron is constructed of mostly asphalt and some concrete pavement and encompasses approximately 13,390 square yards. Approximately 3,700 square yards of the portion of the apron located to the northeast of the terminal building was reconstructed in June of 2008 and is in good condition. Adjacent to this portion of the apron is a small concrete section that encompasses approximately 2,190 square yards. Seven open aircraft tie-downs are located in this location. The overall condition of this concrete portion of the apron is in fair to poor condition. The largest remaining portion of the apron encompasses the area adjacent to the concrete section up to Taxiway A and the remaining pavement to the south of the concrete section, totaling approximately 7,500 square yards. This portion of the apron is in fair condition; a prevalent amount of crack and joint sealant was observed over the entire span of the apron. There are two open tie-downs located on the northeast portion of the pavement directly north of the terminal building, and seven open tie-downs located on the far northwest portion of the pavement. Ten shaded tie-downs are located on the far south portion of the apron near the terminal building and T-hangar 2. Presently, four based aircraft are utilizing four of the shaded tie-down parking spaces. Nearly all the tie-down paint markings are highly faded or cracked and therefore are in poor condition.

1.17.4 PAVEMENT CONDITION INDEX (PCI)

According to the Arizona Department of Transportation (ADOT), the airport system in Arizona is a multimillion dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited, and the State Transportation Board

recognizes the need to protect and extend to the maximum amount the useful life of the airport system's pavement. The Arizona Pavement Preservation Program (APPP) has been established to assist in the preservation of the Arizona airport system infrastructure. Every year ADOT's Aeronautics Group, using the Airport Pavement Management System (APMS), identifies airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the state's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an inter-government agreement (IGA) with the Aeronautics Group to participate in the APPP.

ADOT also conducts pavement surveys using the procedure as documented in the following publications:

1 - The Federal Aviation Administration's (FAA's) Advisory Circular 150/5380-6B, Guidelines and Procedures for Maintenance of Airport Pavements.

2 - The American Society for Testing and Material's (ASTM's) standard D-5340, Standard Test Method for Airport Pavement Condition Index Surveys.

The PCI procedure is the standard used by the aviation industry to visually assess pavement condition. It was developed to provide engineers with a consistent, objective, and repeatable tool to represent the overall pavement condition. During a PCI survey, visible signs of deterioration within a selected sample area are identified, recorded, and analyzed.

According to ADOT, the results of a PCI evaluation provide an indication of the structural integrity and functional capabilities of the pavement. However, it should be recognized that during a PCI inspection only the top layer of the pavement is examined and that no direct measure is made of the structural capacity of the pavement system. Nevertheless, the PCI does provide an objective basis for determining maintenance and repair needs as well as for establishing rehabilitation priorities in the face of constrained resources. Furthermore, the results of repeated PCI monitoring over time can be used to determine the rate of deterioration and to estimate the time at which certain rehabilitation measures can be implemented.

Pavement defects are characterized in terms of type of distress, severity level of distress, and amount of distress. This information is then used to develop a composite index (PCI number) that represents the overall condition of the pavement in numerical terms, ranging from 0 (failed) to 100 (excellent). In general terms, pavements above a PCI of 85 that are not exhibiting significant load-related distress will benefit from routine maintenance actions, such as periodic crack sealing or patching. Pavements with a PCI of 56 (65 for PCC pavements) to 85 may require pavement preservation, such as a surface treatment, thin overlay, or PCC joint resealing. Often, when the PCI is 55 or less, major rehabilitation, such as a thick overlay, or reconstruction are the only viable alternatives due to the substantial damage to the pavement structure. **Figure 1-15** depicts how the appropriate repair type varies with the PCI of a pavement section.

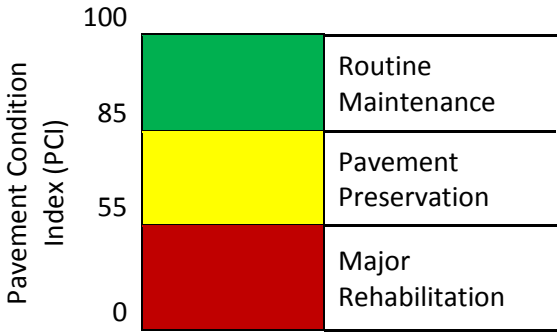


FIGURE 1-15 PCI REPAIR SCALE

For Cochise County Airport, **Figure 1-16** depicts the most recent PCI inspection reported in the 2010 APMS. ADOT is in the process of updating the PCI for all airports in Arizona and the preliminary findings should be released in early 2014.

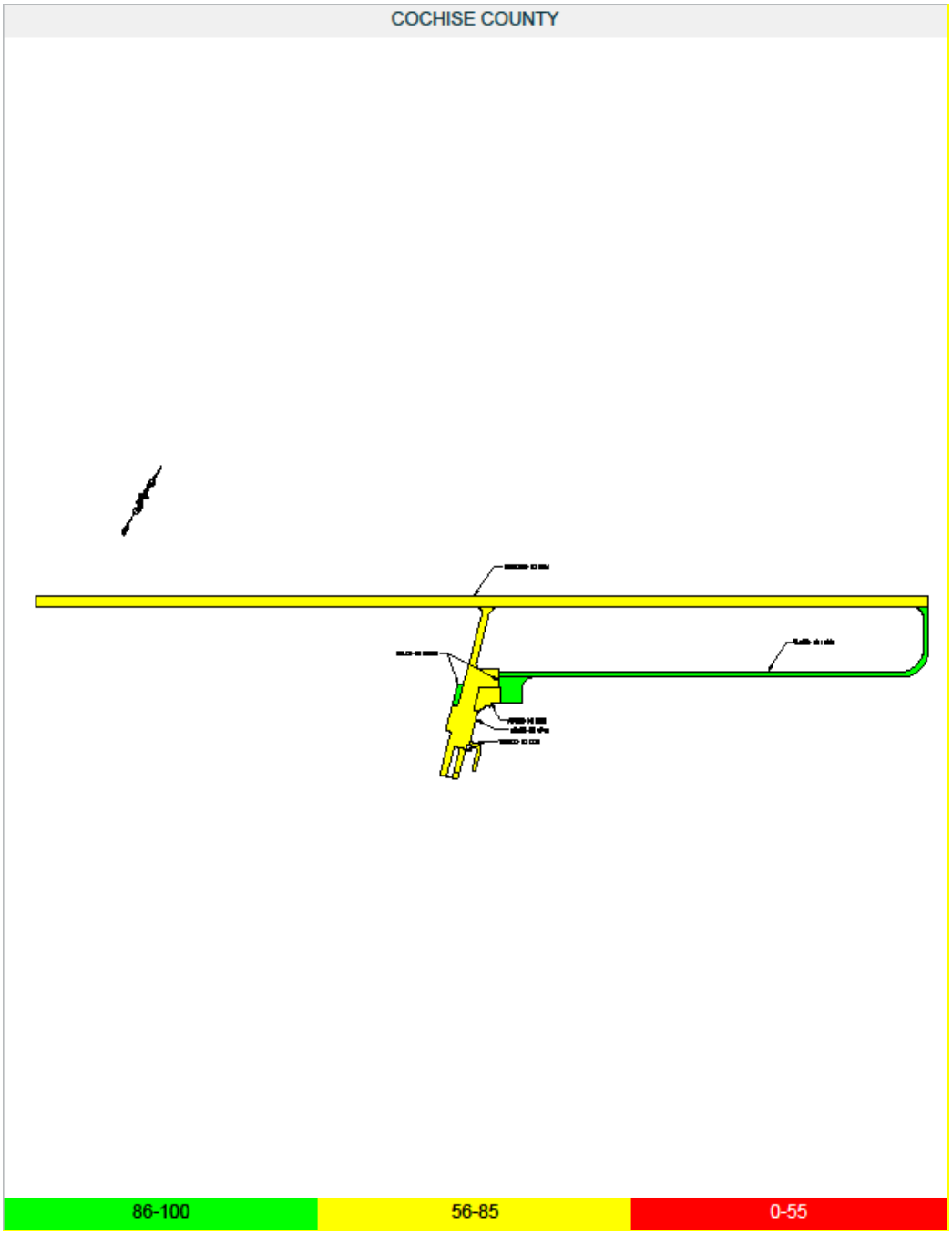


FIGURE 1-16 EXISTING PCI

1.17.5 AIRFIELD LIGHTING, SIGNAGE AND VISUAL AIDS

Runway 3-21 is equipped with Medium Intensity Runway Lights (MIRL) that appear to be in good condition. It was observed that two MIRL are missing and should be replaced. Runway 3-21 is equipped with eight threshold lights at the end of each runway. These lights are in good

condition. Examples of the MIRL and threshold lights for Runway 3-21 are shown in **Figure 1-17** and **Figure 1-18**. The runway edge lights can be controlled by pilots by using the Common Traffic Advisory Frequency (CTAF) for operation at night. Runway 3-21 has non-precision markings that are in good condition.

As previously mentioned, all active taxiways currently have either blue LED Medium Intensity Taxiway Lights (MITL), or blue taxiway edge reflectors. The LED MITLs and the taxiway edge reflectors are in good condition, as shown in **Figures 1-19 and 1-20**.

FIGURE 1-17 MEDIUM INTENSITY RUNWAY LIGHT

FIGURE 1-18 THRESHOLD LIGHT

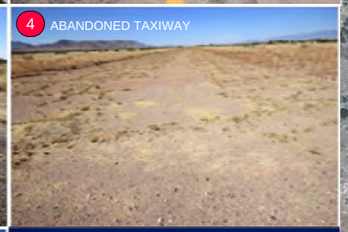
FIGURE 1-19 TAXIWAY REFLECTOR

Two lighted airfield destination/runway hold combination signs exist on the airfield; they are located on Taxiways A-1 and A-2 near the runway hold bar pavement markings. Both signs are in fair condition. It was noted that the runway hold panel in each sign is faded and needs to be replaced. An example of these signs is depicted in **Figure 1-21**. The runway hold bar pavement markings were recently repainted and are in good condition.

FIGURE 1-20 LED MEDIUM INTENSITY TAXIWAY LIGHT

FIGURE 1-21 LIGHTED DESTINATION / RUNWAY HOLD SIGN

The rotating beacon is centrally located on the airfield atop of a steel-framed tower just north of the terminal building. The beacon utilizes alternating white-green lenses, indicating the Airport is a lighted land airport. The beacon appears to be in good condition; however, the steel tower is old and rusted and should be replaced in the future. The existing wind cone and segmented circle are also centrally located on the airfield; they are located adjacent to Runway 3-21 north of Taxiway A. The wind cone is lighted and is in good condition. The segmented circle, however, is currently constructed of old automobile tires that have been painted white. This does not meet current design standards and thus should be replaced. As such, the segmented circle is in poor condition.



CASCABEL RD.

RUNWAY 3/21

S. VISTA AVE.

AIRPORT PROPERTY LINE

ARMSTRONG CONSULTANTS

0 300 600

SCALE IN FEET

1.18 EXISTING LANDSIDE FACILITY INVENTORY

The definition of landside is that portion of the airport designed to serve passengers or other airport users typically located outside of the public safety and security fenced perimeter; landside facilities include terminal buildings, parking areas, entrance roadways, and other buildings that may not necessarily conduct aviation related activities. The inventory of landside facilities provides the basis for the airfield demand/capacity analysis and the determination of any facility change requirements that might be identified. The various landside facilities are depicted on Exhibit B at the end of this section.

1.18.1 AIRPORT SERVICES / FIXED BASE OPERATOR

A Fixed Base Operator (FBO) is usually a private enterprise that leases land from the airport sponsor on which to provide services to based and transient aircraft. The extent of the services provided varies from airport to airport; however, these services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge and flight planning facilities and aircraft tie-down and/or hangar storage.

The current FBO at Cochise County Airport is Walden Aviation. A small building approximately 2,250 square feet in size houses a pilot lounge area, restrooms, and a pilot shop. The two full-time owners/employees are Louise and Jim Walden. Hours of operation are 8:00am to 5:00pm seven days a week, except they are closed on major holidays. Fuel can be purchased from the FBO. Minor airframe and powerplant services are available if needed. The existing condition of the building is fair to poor. At the time of the site visit, it was discovered that the entire building is suffering from a termite infestation. Furthermore, the building is outdated and space is limited offering no room for expansion in the future.

1.18.2 HANGARS / SHADED TIE-DOWNS

There are currently four hangars in use at the Airport. The first hangar is located the furthest east of the FBO building and apron. It is approximately 9,400 square feet and is a steel-frame structure with metal siding. It has eight storage bays and is in good condition. This hangar is privately owned by an airport tenant. A second hangar is located adjacent to the first. This hangar is approximately 6,825 square feet and is also a steel-frame structure with metal siding and has six storage bays. The frame of the hangar is in good condition, but the metal siding is in poor condition. This hangar is owned by Cochise County. A third conventional box hangar is located further north of the FBO building. It is approximately 10,000 square feet and is also a steel-frame structure with metal siding. Again, the steel frame appears to be in good condition, but the metal siding is also in poor condition. This hangar is also owned by the County, and is utilized by the FBO for aircraft maintenance. The fourth remaining hangar is located several hundred feet north of the third hangar along Taxiway A. It is also a conventional box hangar and is approximately 3,600 square feet. It is also a steel-frame structure with metal siding and is in good condition; it is privately owned by an airport tenant. Finally, a ten space covered/shaded aircraft tie-down structure is located adjacent to the main aircraft parking apron in front of the FBO building. It is a steel-frame structure with metal awning and measures approximately 11,000 square feet. It is in good condition and is owned by the County.

1.18.3 ACCESS ROADS AND SIGNAGE

Cochise County Airport can be accessed from Interstate 10, and then by heading north on Taylor Road. The airport entrance is located at the intersection of Airport Road and Vista Avenue. The main airport access road (Vista Avenue) is well marked with a large blue and white sign with the name of the airport on it. The access road itself is paved and in good condition. The access road terminates at the parking area for the airport FBO.

1.18.4 AUTOMOBILE PARKING

There are approximately 10 parking spaces located on the landside entrance to the FBO building. The gravel parking area is well graded and is in good condition.

1.18.5 UTILITIES

Electricity, water, sewer, refuse, telephone, propane, and Internet services are available at the airport. Electrical service is provided by Sulphur Springs Valley Electric Cooperative, Inc. (SSVEC). The County provides the water and septic sewer service. Refuse collection is provided by Southwest Disposal. Propane gas is provided by the Cochise County Farmers Association. Centurylink is the telephone utility provider and Transworld Network Services provides Internet service.

1.18.6 FENCING AND SECURITY

At present, there is no perimeter fencing at Cochise County Airport completely separating the airside from the landside facilities. There is a small metal fence and locked gate near the FBO building parking lot preventing access to the taxilanes near the hangars, however, access to the aircraft apron, and essentially all other airside locations on the airfield like the taxiways, runways and hangars could be accessible from the area near the terminal building and aircraft refueling apron if one desired. There is a small four-strand barbed wire fence encompassing the airport property line that appears to be in fair condition.

1.18.7 AVIATION FUEL FACILITIES

There are currently two above ground, double-walled fuel storage tanks on the Airport that are owned by the County and are operated by the FBO staff. Each fuel tank has a capacity of 10,000 gallons; 100LL AvGas and Jet A are available. A self-service system is available for after-hours use; a credit card reader is installed at the pump for this purpose. The normal business hours for fueling are 8:00am to 5:00pm seven days a week, except on holidays. A Spill Prevention, Control and Countermeasure (SPCC) Plan is on location with airport management.

1.18.8 EMERGENCY SERVICES

The Willcox Rural Fire Department and Cochise County Sherriff's Department are responsible for responding to an emergency at the Airport. Response time is approximately ten minutes. The closest hospital to the Airport is the Northern Cochise Community Hospital, located 4 miles to the northeast in Willcox. The hospital provides a 24-hour, seven days a week, board certified physician staffed emergency department with specially trained nurses and ER technicians. The emergency department was state certified as a Level IV Trauma Center in 2008.

1.18.9 AIRPORT SUPPORT AND MAINTENANCE

There is one wood framed, metal sided airport support equipment building approximately 8'x8' located adjacent to the fuel facility. There is also a concrete block electrical building approximately 10'x20' located adjacent to the rotating beacon tower. The equipment and electrical buildings are in fair condition. The only maintenance equipment on the airport is:

- 1980's vintage 234 International diesel tractor used for mowing

All the equipment is operated by the FBO. No other support or maintenance equipment that is actively being used was observed.

1.18.10 AIRPORT SUSTAINABILITY

The FAA began focusing on sustainability at airports in 2010, and has said that their objective is to make sustainability a core objective in airport planning. The FAA has provided airports across the United States with funding to develop comprehensive sustainability planning documents. These documents, called Sustainability Master Plans and Airport Sustainability Plans, include initiatives for reducing environmental impacts, achieving economic benefits, and increasing integration with local communities. To date, the FAA has funded 45 airports across the United States.

The FAA Reform and Modernization Act of 2012, Section 133 of H.R. 658, requires airport master plans to address the feasibility of solid waste recycling at an airport, minimizing the generation of waste, operation and maintenance requirements, the review of waste management contracts, and the potential for cost savings or revenue generation. The FAA is in the process of crafting guidance for airport sponsors to use in developing a recycling program at their airport as part of an airport master plan. For the purpose of this study, a review of the solid waste collection practices was performed. It was observed that solid waste is being collected from the terminal building and disposed of by a waste collection company. It was also noted that no recycling was taking place by any of the airport tenants. Recommendations for ways to implement a recycling program and other sustainability practices will be discussed in the Facility Requirements chapter.


1 FBO/TERMINAL
2 FUEL FARM
3 SUPPORT EQUIPMENT BUILDING
4 AIRPORT PARKING
5 ELECTRICAL VAULT
6 BEACON
7 HANGARS
TAXIWAY A
TAXIWAY A2
RUNWAY 3/21
S. VISTA AVE.
7
10
12
13
2
3
4
1
5
6
9
8
11
11 SHADE SHELTER
12 AIRPORT SIGN
COCHISE COUNTY
AIRPORT
WILLCOX ARIZONA
ELEVATION 4182
13 AIRPORT ACCESS ROAD
8 HANGARS
9 HANGARS
10 HANGAR
N
ARMSTRONG
CONSULTANTS
0
100
200
SCALE IN FEET

1.19 ENVIRONMENTAL INVENTORY

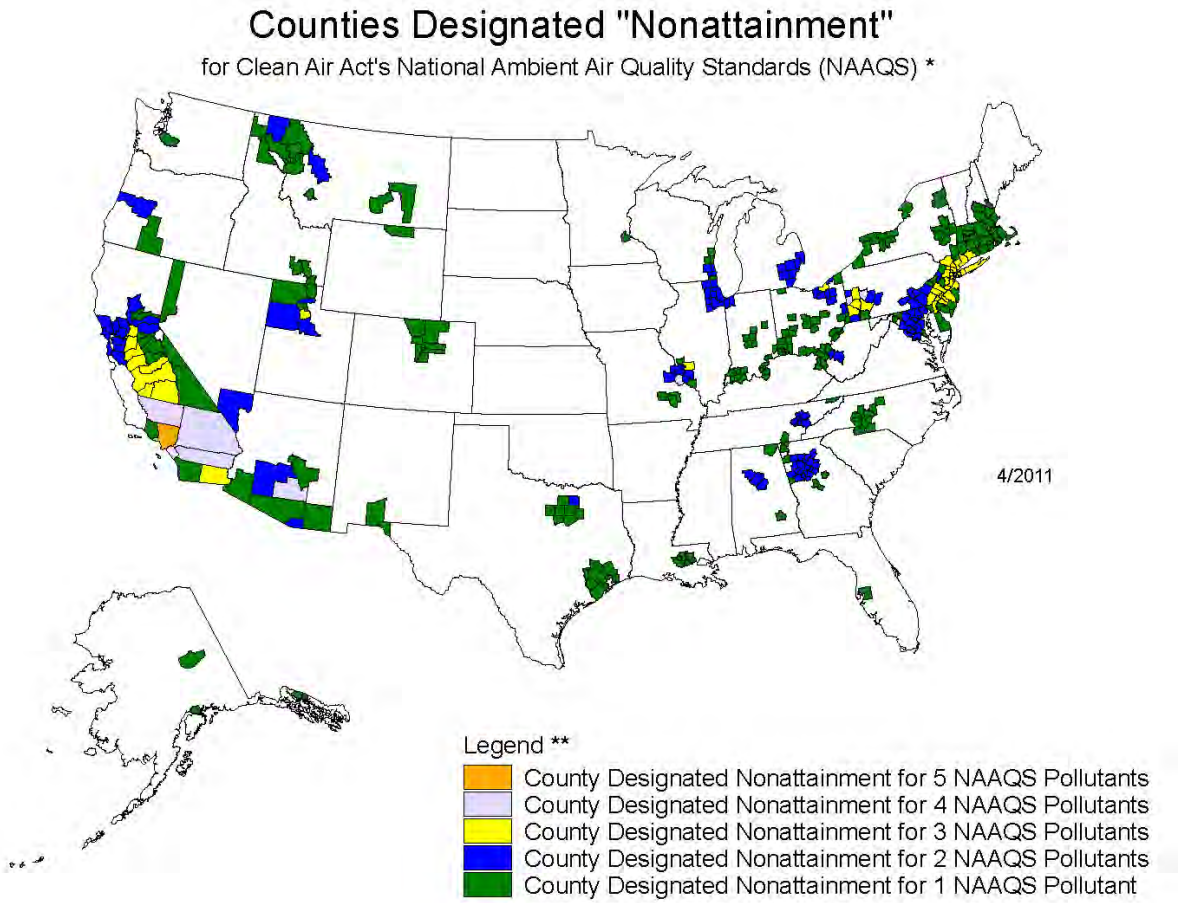
In the airport master planning process, planners are required to identify potential key environmental impacts of the various airport development alternatives so that those alternatives that avoid or minimize impacts on sensitive resources are considered. The evaluation of potential environmental impacts should only be done to the level necessary to evaluate and compare how each alternative would involve sensitive environmental resources. The data compiled in this section will be used in evaluating proposed airport development alternatives and to identify any required environmental permits for the recommended projects.

1.19.1 AIR QUALITY

The US Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) based on health risks for six pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and two sizes of particular matter (PM) measuring 10 micrometers or less in diameter and PM measuring 2.5 micrometers in diameters.

According to EPA, an area with ambient air concentrations exceeding the NAAQS for a criteria pollutant is said to be a nonattainment area for the pollutant's NAAQS, while an area where ambient concentrations are below the NAAQS is considered an attainment area. The EPA requires areas designated as nonattainment to demonstrate how they will attain the NAAQS by an established deadline. To accomplish this, states prepare State Implementation Plans (SIPs) which are typically a comprehensive set of reduction strategies and emissions budgets designed to bring the area into attainment.

According to NAAQS, Cochise County Airport is located in a nonattainment area for 1 NAAQS Pollutant. A graphical illustration of Counties designated Nonattainment for NAAQS is depicted in **Figure 1-22**. However, according to the Arizona Department of Environmental Quality (ADEQ), Cochise County Airport is located in an attainment area. A graphical illustration of the ADEQ Nonattainment and Attainment areas is depicted in **Figure 1-23**. Further evaluation of any potential air quality impacts will be discussed in the alternatives chapter of the master plan report.



Guam - Piti and Tanguisson Counties are designated nonattainment for the SO2 NAAQS

* The National Ambient Air Quality Standards (NAAQS) are health standards for Carbon Monoxide, Lead, Nitrogen Dioxide, 8-hour Ozone, Particulate Matter (PM-10 and PM-2.5), and Sulfur Dioxide.

** Included in the counts are counties designated for NAAQS and revised NAAQS pollutants. 1-hour Ozone is excluded. Partial counties, those with part of the county designated nonattainment and part attainment, are shown as full counties on the map.

The Indiana portion of the Chicago-Gary-Lake County, IL-IN 8-hr Ozone multi-state nonattainment area has been redesignated, but the area is not considered a maintenance area until both states in the area are redesignated. All of the counties for this area are displayed as being in nonattainment

FIGURE 1-22 COUNTIES DESIGNATED NONATTAINMENT (NAAQS)

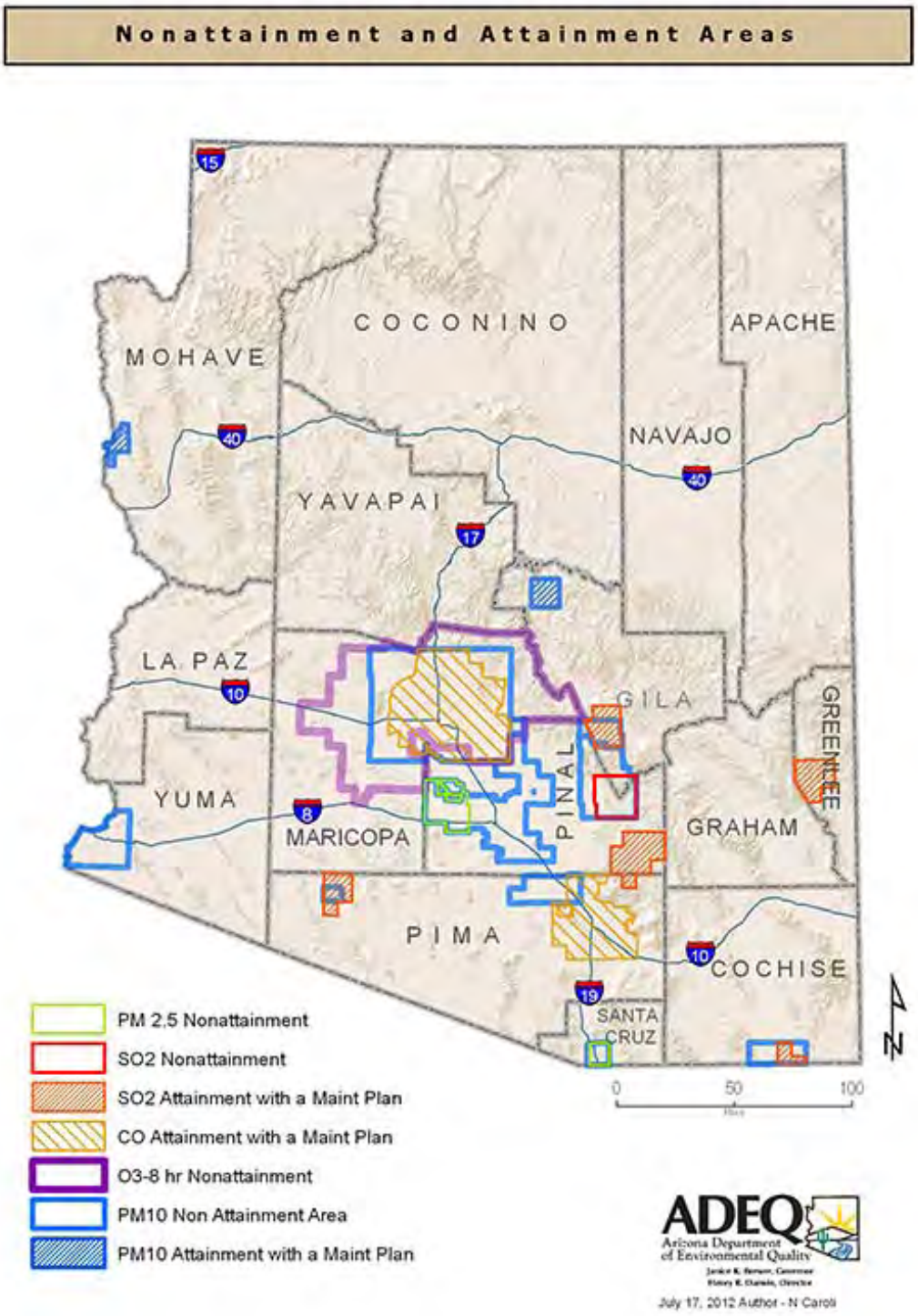


FIGURE 1-23 NONATTAINMENT AND ATTAINMENT AREAS WITH A MAINTENANCE PLAN

1.19.2 BIOTIC COMMUNITIES/ENDANGERED AND THREATENED SPECIES OF FLORA AND FAUNA

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 insure 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.

All of the federally listed threatened and endangered species within Cochise County are illustrated in **Table 1-13.** Cochise County encompasses a large area, and therefore all of the threatened and endangered species listed on Table 1-13 are not necessarily found at Cochise County Airport.

TABLE 1-13 THREATENED, ENDANGERED AND CANDIDATE SPECIES POTENTIALLY OCCURRING WITHIN COCHISE COUNTY, ARIZONA

Common Name	Scientific Name	Status
Arizona treefrog	*Hyla wrightorum*	Candidate
Beautiful shiner	*Cyprinella formosa*	Federally Threatened
Canelo hill ladies'-tresses	*Sprianthes dielitescens*	Federally Endangered
Chiricahua leopard frog	*Rana chiricahuensis*	Federally Threatened
Cochise pincushion cactus	*Coryphantha robbinsorum*	Federally Threatened
Desert pupfish	*Cyprinodon macularius*	Federally Endangered
Gila chub	*Gila intermedia*	Federally Endangered
Gila topminnow	*Poeciliopsis*	Federally Endangered
Huachuca springsnail	*Pyrgulopsis thompsoni*	Candidate
Huachuca water-umbel	*Lilaeopsis schaffneriana var. recurva*	Federally Endangered
Jaguar	*Panthera onca*	Federally Endangered
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	Federally Endangered
Loach minnow	*Tiaroga cobitis*	Federally Endangered
Mexican spotted owl	*Strix occidentalis lucida*	Federally Threatened
New Mexico ridenose rattlesnake	*Crotalus willardi obscurus*	Federally Threatened

Northern aplomado falcon	*Falcon femoralis septenrionalis*	Federally Endangered

TABLE 1-13 THREATENED, ENDANGERED AND CANDIDATE SPECIES POTENTIALLY OCCURRING WITHIN COCHISE COUNTY, ARIZONA CONTINUED

Northern Mexican gartersnake	*Thamnophis eques megalops*	Proposed Threatened
Ocelot	*Leopardus pardalis*	Federally Endangered
San Bernadino springsnail	*Pyrgulopsis bernadina*	Federally Threatened
Sonora tiger salamander	*Ambystoma tigrinum*	Federally Endangered
Sonoran desert tortoise	*Gopherus morafkai*	Candidate
Southwestern willow flycatcher	*Empidonax traillii*	Federally Endangered
Spikedace	*Meda fulgida*	Federally Endangered
Sprague's pipit	*Anthus spragueii*	Candidate
Yaqui catfish	*Ictalurus pricei*	Federally Threatened
Yaqui chub	*Gila purpurea*	Federally Endangered
Yaqui topminnow	*Poeciliopsis occidentalis*	Federally Endangered
Yellow-billed cuckoo	*Coccyzus americanus*	Proposed Threatened

SOURCE: US FISH AND WILDLIFE SERVICE, OCTOBER 2013

1.19.3 COASTAL ZONE MANAGEMENT PROGRAM AND COASTAL BARRIERS

Cochise County Airport is not located within or adjacent to a coastal zone. Any proposed action and reasonable alternatives will not adversely impact the coastal zone natural resources protected by the National Oceanic and Atmospheric Administration regulations under 15 CFR Part 930.

1.19.4 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Section 4(f) of the DOT Act places restrictions on the use of any publicly-owned recreational land, public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance. There are no Section 4(f) resources in the vicinity of the Cochise County Airport.

1.19.5 FARMLAND

The Farmland Protection Policy Act (Public Law 97-98) directs federal agencies to use criteria developed by the U.S. Department of Agriculture to identify and analyze impacts related to the conversion of farmland to nonagricultural uses. According to the U.S. Department of Agriculture, Natural Resources Conservation Services (NRCS), the airport consists of the following soils:

- CmA – Comoro sandy loam (Prime farmland if irrigated)
- Dv – Ducan loam, shallow variant (Non prime farmland)
- Go – Gothard fine sandy loam (Non prime farmland)
- St – Stewart loam (Non prime farmland)

It is important to note that there are currently no active farming activities taking place on airport property.

According to the Farmland Protection Policy Act, the regulation does not apply to land already committed to “urban development or water storage”, i.e., airport developed areas, regardless of its importance as defined by the NRCS. See **Figure 1-24** for the farmland map in the vicinity of the Cochise County Airport.

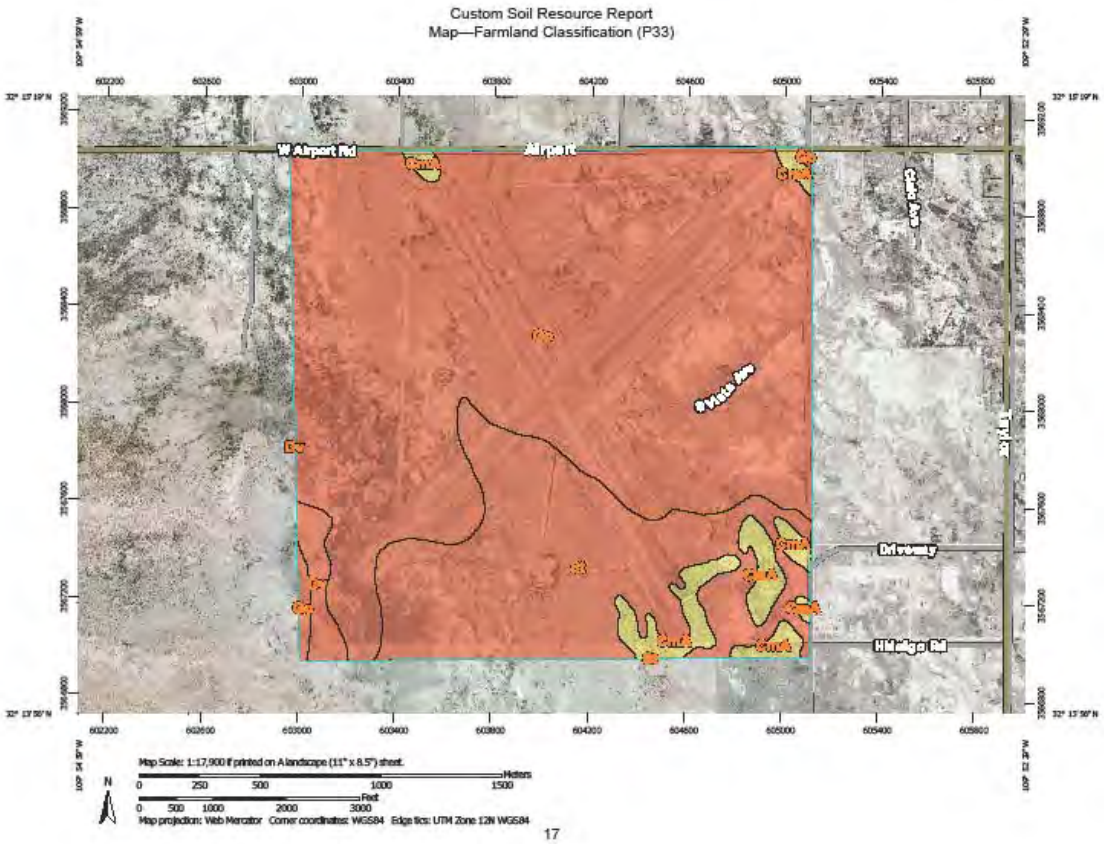


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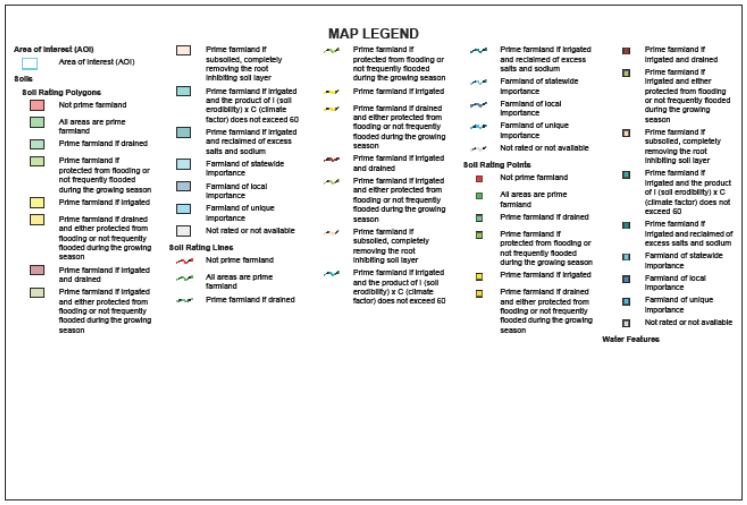
FIGURE 1-24 FARMLAND SOIL CLASSIFICATION



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1.19.6 FLOODPLAINS

Flood plains 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."

The Threshold of Significance (TOS) is exceeded when there is an encroachment on a base flood plain (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 a notable adverse impact on natural and beneficial flood plain values.

According to the Federal Emergency Management Agency (FEMA) National Flood Insurance Rate Map Cochise County Airport is not located in a floodplain, however, the majority of the western portion of the airport property is located in Special Flood Hazard Area.

See **Figures 1-25 and 1-26** for the FEMA Floodplain areas in the vicinity of the Cochise County Airport.

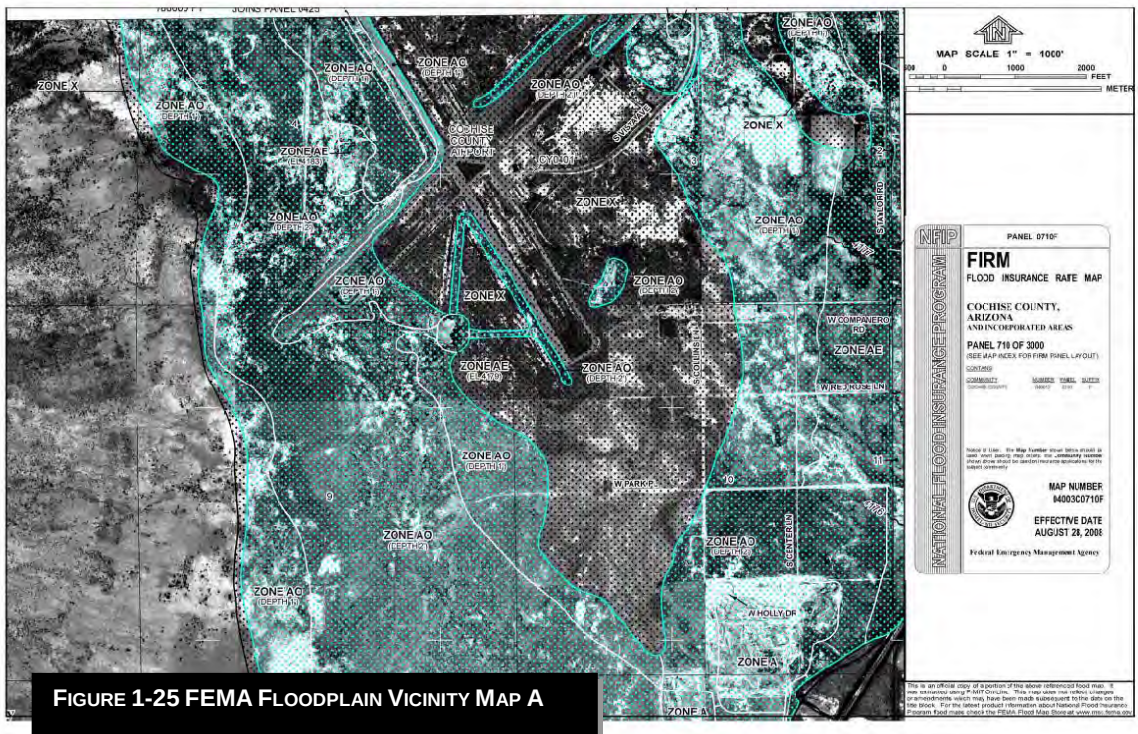


FIGURE 1-25 FEMA FLOODPLAIN VICINITY MAP A

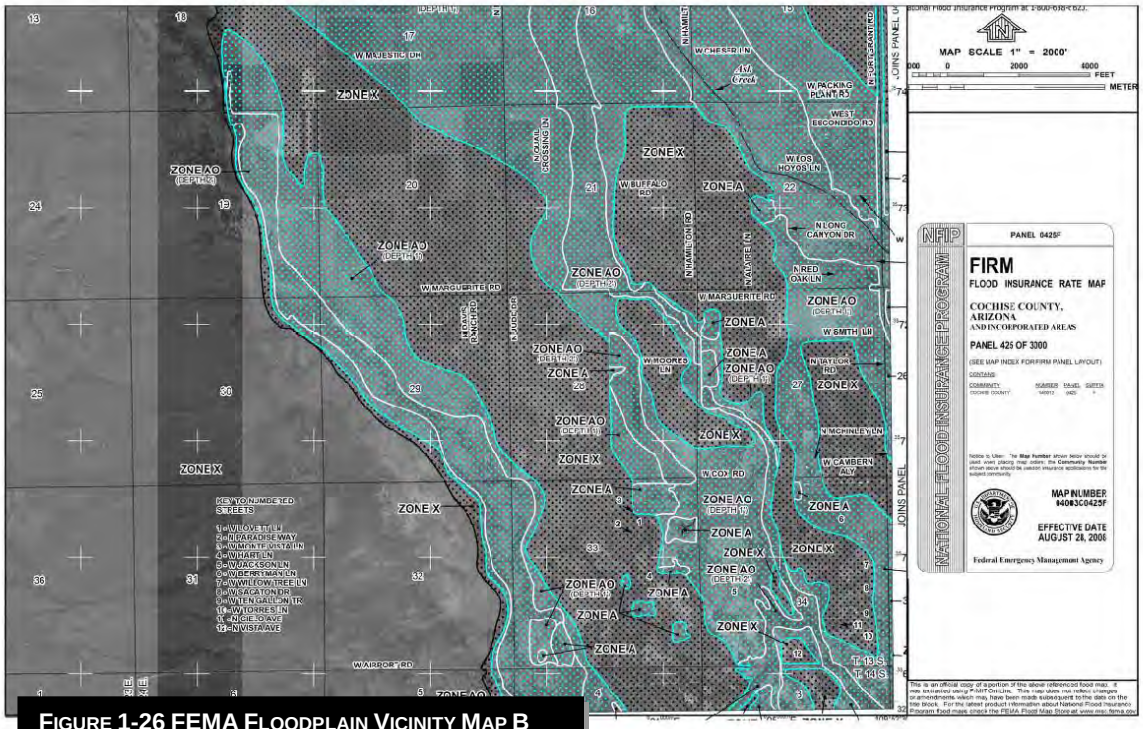


FIGURE 1-26 FEMA FLOODPLAIN VICINITY MAP B

1.19.7 HISTORIC, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) of 1966, as amended requires that an initial review be made to determine if any properties that are in or eligible for inclusion in, the National Register of Historic Places are within the area of a proposed action's potential environmental impact. The Archeological and Historic Preservation Act (AHPA) 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.

An agency coordination letter will be sent to the agency to determine if any of the proposed projects will cause an adverse effect on a property which has been identified as having historical, architectural, archaeological, or cultural significance. To date, a Cultural Resource Survey at the Cochise County Airport has not been completed.

1.19.8 NOISE

Most land uses are considered to be compatible with airport noise that does not exceed 65 decibels (dB), although FAR Part 150 declares that "acceptable" sound levels should be subject to local conditions and community decisions. Nevertheless, 65 dB is generally identified as the threshold level of aviation noise which is "significant." The FAA has established 65 DNL as the threshold above which aircraft noise is considered to be incompatible with residential areas. In addition, the FAA has determined that a significant impact occurs if a proposed action would

result in an increase of 1.5 DNL or more on any noise-sensitive area within the 65 DNL exposure justify.

The existing and forecast levels of traffic are below the current threshold of significance (90,000 annual propeller aircraft operations or 700 annual jet operations) for environmental analysis on federally-aided projects, as defined by FAA Order 1050.1E.

1.19.9 LAND USE COMPATIBILITY

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of noise impacts related to that airport. There currently are no generated noise contours for the Airport due to the low activity. Should the Airport generate enough operations to warrant contours, those will have to be addressed and compatibility will have to be reviewed.
Based on a site visit, it appears there are no existing non-compatible land uses on or near the Airport. There are a few residential houses within approximately a mile of the Airport property.
1.19.14 Light Emissions
In order to assess the potential light emissions impacts, the extent to which any proposed airport lighting will create an annoyance among people in the vicinity of the installation must be addressed. No impacts are known to occur based on the existing configuration of the airfield.

1.19.10 LIGHT EMISSIONS

In order to assess the potential light emission impacts, the extent to which any proposed airport lighting will create an annoyance among people in the vicinity of the installation must be addressed. Furthermore, installation of all outdoor lighting fixtures must comply with Cochise County's Light Pollution Code, found within Article 1810 – Outdoor Lighting Standards of the County's Zoning Regulations. No impacts are known to occur based on the existing configuration of the airfield.

1.19.11 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..."

As depicted on **Figure 1-27**, according to the U.S. Fish and Wildlife Service National Wetlands Inventory, an approximate 3.12 acre wetland exists on the south side of the airport. The wetland is designated as PUSJ according to the U.S. Fish and Wildlife Service. According to a recent site visit, the area designated as a wetland is a storm drainage pond. No other wetlands exist on, or adjacent to, the airport property.

FIGURE 1-27 NATIONAL WETLANDS INVENTORY VICINITY MAP

Chapter Two
Forecasts of Aviation Activity

2.1 INTRODUCTION

Forecasts of aviation activity serve as a guideline for the timing required for implementation of airport improvement programs. While such information is necessary for successful comprehensive airport planning, it is important to recognize that forecasts are only approximations of potential future activity, based upon historical data and viewed through present situations. They must therefore, be used with careful consideration, as they may lose their validity with the passage of time.

For this reason, an ongoing program of examination of local airport needs and national and regional trends is recommended in order to promote the orderly development of aviation facilities at Cochise County Airport.

At airports not served by air traffic control towers, approximations of existing aviation activity are necessary in order to form a basis for the development of reasonable forecasts. Unlike towered airports, non-towered general aviation airports have historically not tracked or maintained comprehensive logs of aircraft operations. Approximations of existing aviation activity are based on a review of based aircraft, available historical data, available local information and regional, state and national data that form the baseline to which forecasted aviation activity trends are applied. Arizona Department of Transportation (ADOT) requires the use of the *FAA Model for Estimating General Aviation Operations at Non Towered Airports using Towered and Non Towered Airport Data.* The model is further discussed in Section 2.5, *Existing Aviation Activity*.

Activity projections are made based on estimated growth rates, area demographics, industry trends and other indicators. Forecasts are prepared for the Initial-Term (0-5 years), the Intermediate-Term (6-10 years) and the Long-Term (11-20 years) planning period. Using forecasts within these time frames allows airport improvements to be timed to meet demand.

There are four types of aircraft operations considered in the planning process. These are termed; local, based, itinerant and transient. They are defined as follows:

Local operations - are defined as aircraft movements (departures or arrivals) for the purpose of training, pilot currency or pleasure flying within the immediate area of the local airport. These operations typically consist of touch-and-go operations, practice instrument approaches, flights to and within local practice areas and pleasure flights that originate and terminate at the airport under study.

Based aircraft operations - are defined as the total operations made by aircraft based (stored at the airport on a permanent, seasonal or long-term basis) with no attempt to classify the operations as to purpose.

Itinerant operations - are defined as arrivals and departures other than local operations and generally originate or terminate at another airport. These types of operations are closely tied to local demographic indicators, such as local industry and business use of aircraft and usage of the facility for recreational purposes.

Transient operations - are defined as the total operations made by aircraft other than those based at the airport under study. These operations typically consist of business or pleasure flights originating at other airports, with termination or a stopover at the study airport.

The terms transient and itinerant are sometimes erroneously used interchangeably. This study will confine analysis to local and itinerant operations.

2.2 NATIONAL AND GENERAL AVIATION TRENDS

2.2.1 NATIONAL TRENDS

From a broader perspective the U.S. civil aviation sector has its challenges to overcome, the long term future is bright according to the Federal Aviation Administration (FAA) March 2012 forecast which predicts that the U.S. aviation industry would grow steadily over the next 20 years, reaching 1.2 billion passengers flying commercial by 2024, compared with 731 million in 2011. The FAA believes that cargo traffic on U.S. airlines will more than double during the same period growing 4.9 percent annually on average. The world economy will certainly play a role in FAA's positive outlook. With fewer commercial aircraft currently in service due to the spike in fuel prices between 2008-2009, the airlines are focusing on profitability as opposed to market share, so you're not seeing as much new service added.

2.2.2 GENERAL AVIATION TRENDS

According to factors such as aircraft production, pilot activity and hours flown, general aviation reached a peak in the late 1970s. This peak was followed by a long downturn that persisted through most of the 1980s and the early 1990s and has been attributed to high manufacturing costs associated with product liability issues as well as other factors. The General Aviation Revitalization Act (GARA) of 1994 was enacted with the goal of revitalizing the industry by limiting product liability costs. The Act established an 18-year statute of repose on liability related to the manufacture of all general aviation aircraft and their components. According to a 2001 report to Congress by the General Accounting Office (GAO), trends in general aviation suggest that liability costs have been less burdensome to manufacturers, shipments of new aircraft have increased and technological advances have been made. Indicators of general aviation activity, such as the numbers of hours flown and active pilots, have also increased in the years since GARA, but their growth has not been as substantial as the growth in manufacturing.

The FAA convenes a panel of aviation experts annually and to develop forecasts for future activity in all areas of aviation, including general aviation. According to the *FAA Aerospace Forecast Fiscal Years 2013-2033,* in 2012 the general aviation market showed an improvement especially from the agricultural airplane segment of turboprops and strong growth in the rotorcraft sector. The total operations at FAA and contract towers decreased for the fifth consecutive year, falling 0.3 percent, as activity declines in the air taxi and military categories offset increases in air carrier and general aviation activity.

The active general aviation fleet is projected to increase at an average annual rate of 0.5 percent during the 21-year forecast period, growing from an estimated 220,670 aircraft in 2012 to 246,375 aircraft by 2033. The fleet of jet turbine aircraft is expected to grow at an average of 2.8 percent per year over the 20-year forecast period. Turbine jet aircraft are forecasted to increase at an average rate of 3.5 percent per year, reaching a total of 24,620 by 2033. **Figures 2-1** and **2-2** illustrate the existing and future general aviation fleet that is forecasted to occur over the 20-year planning period.

In 2005 the category of "light sport" aircraft was created. At the end of 2011 a total of 6,645 aircraft were included in this category. The forecast assumes about 3.2 percent growth of the fleet by 2013. Thereafter, the rate of increase in the fleet slows to about 2 percent per year. By 2033 a total of 10,245 light sport aircraft are projected to be in the fleet.

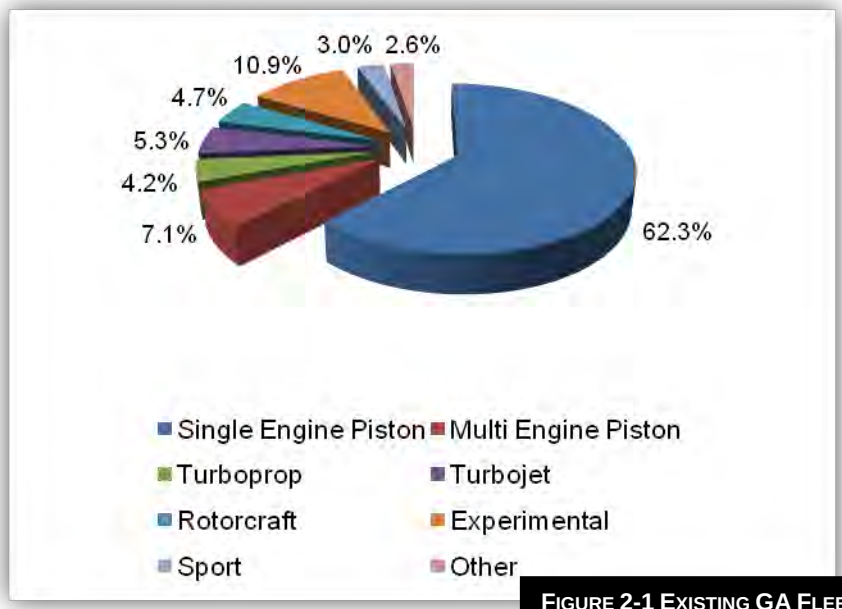
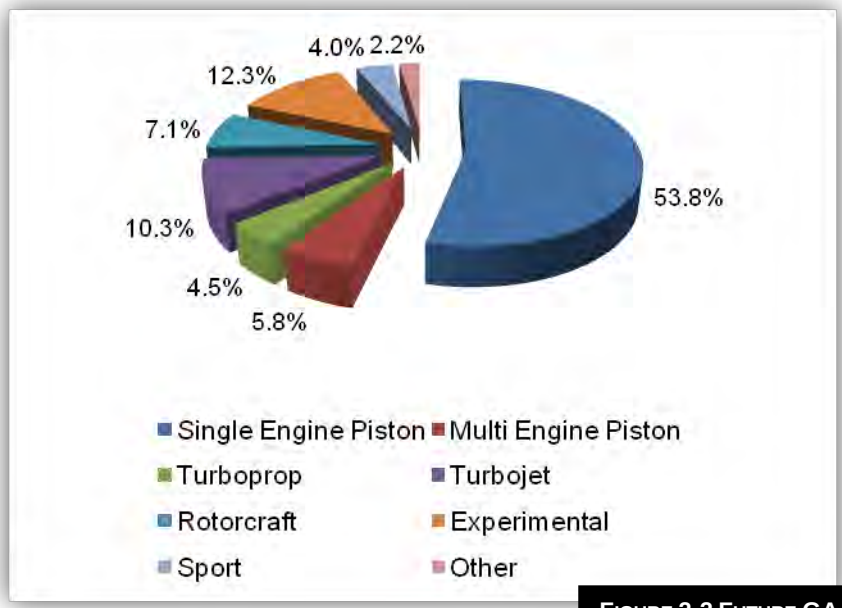


FIGURE 2-1 EXISTING GA FLEET MIX



Source: FAA

FIGURE 2-2 FUTURE GA FLEET MIX

The General Aviation Manufacturer's Association (GAMA) produces activity forecasts based on general aviation hours flown. As shown in **Table 2-1**, the greatest increase is for turbo jet and light sport aircraft at 5.3 percent and 3.5 percent growth respectively from 2013 through 2032. Both fixed wing piston aircraft categories are forecast to decline slightly through the forecast period.

TABLE 2-1 AIRCRAFT HOURS FLOWN (THOUSANDS)

	Fixed Wing				Rotorcraft					
Year	Single Engine	Multi Engine	Turbo Prop	Turbo Jet	Piston	Turbine	Experimental	Light Sport Aircraft	Other	Total General Aviation Fleet
2013	11,091	1,758	2,471	4,330	834	2,611	1,315	356	183	24,728
2014	10,820	1,744	2,523	4,605	858	2,674	1,401	372	183	25,180
2015	10,594	1,728	2,554	4,865	881	2,739	1,462	388	184	25,396
2016	10,409	1,703	2,591	5,106	903	2,819	1,525	404	185	25,645
2017	10,285	1,689	2,624	5,321	924	2,903	1,591	421	185	25,943
2018	10,205	1,678	2,657	5,558	944	2,988	1,627	438	186	26,281
2019	10,150	1,668	2,685	5,774	965	3,071	1,664	455	187	26,619
2020	10,125	1,667	2,704	6,009	986	3,156	1,702	473	188	27,009
2021	10,092	1,665	2,723	6,251	1,006	3,242	1,731	487	188	27,387
2022	10,124	1,667	2,745	6,516	1,028	3,336	1,761	501	189	27,866
2023	10,159	1,668	2,762	6,802	1,051	3,431	1,791	515	190	28,368
2024	10,247	1,673	2,782	7,102	1,075	3,531	1,821	530	190	28,951
2025	10,391	1,675	2,802	7,420	1,099	3,636	1,851	544	191	29,610
2026	10,545	1,684	2,822	7,726	1,124	3,742	1,882	559	192	30,276
2027	10,708	1,696	2,841	8,044	1,149	3,852	1,913	574	193	30,970
2028	10,866	1,709	2,859	8,381	1,174	3,963	1,944	590	193	31,678
2029	10,997	1,719	2,879	8,753	1,200	4,076	1,975	605	194	32,398
2030	11,145	1,729	2,897	9,149	1,225	4,191	2,007	621	195	33,159
2031	11,300	1,743	2,912	9,557	1,250	4,313	2,039	637	196	33,948
2032	11,467	1,760	2,930	9,987	1,275	4,438	2,071	654	197	34,779
Avg. Annual Growth	-0.20%	-0.10%	1.10%	5.30%	2.30%	2.70%	2.60%	3.50%	0.40%	1.70%

Source: FAA 2013-2033 Aerospace Forecast

The number of active general aviation pilots (excluding air transport pilots) is projected to be 510,295 in 2032, an increase of 39,335 (up 0.4 percent yearly) over the forecast period. Commercial pilots are projected to increase from 119,200 in 2012 to 130,100 in 2032, an average annual increase of 0.5 percent. The number of student pilots is forecast to decrease at an average annual rate of 0.03 percent over the forecast period, declining from 117,340 in 2012 to 116,720 in 2032. The number of private pilots is projected to grow at an average yearly rate of 0.3 percent over the forecast period from 188,001 in 2012 to a total of 199,300 in 2032.

The FAA is also projecting that by the end of the forecast period that a total of 13,900 sport pilots will be certified. It is also projected that the estimated number of sport pilot certificates in 2012 was 4,800, reflecting a growing interest in this new "entry level" pilot certificate that was only created in 2005.

2.2.3 OTHER AVIATION INDUSTRY TRENDS

Next Generation Air Transportation System (NextGen) is a new era in flight that is transforming how aircraft navigate the sky and is a replacement to the World War II era technology that has until recently been the primary navigation technology. NextGen utilizes satellite technology which allows pilots to know the precise locations of other aircraft around them. This allows more planes in the sky while enhancing the safety of air travel. Satellite landing procedures also allow pilots to arrive at airports more efficiently by providing for more direct flight routes. **Figure 2-3** highlights the airports in the United States currently benefitting from NextGen.

Source: 2011 General Aviation Manufacturer's Association Statistical Databook & Industry Outlook

FIGURE 2-3 NEXTGEN PRECISION

The FAA is also in the process of selecting sites throughout the United States to serve as research and development hubs for unmanned aerial vehicles (UAV). UAV is an aircraft with no pilot on board. The aircraft can be remote controlled aircraft or can fly autonomously based on pre-programmed flight plans on more complex dynamic automation systems. The FAA has adopted the acronym UAS (Unmanned Aircraft System) to reflect the fact that these complex systems include ground stations and other elements besides actual air vehicles. There are various types of UAVs that can be utilized at the Airport such as the Global Hawk, Predator A, Predator B, X-47A, X-47B, Mariner, Altair, Fire Scout, ER/MP UAS, Hunter, I-GNAT, Army IGNAT ER, etc. **Figures 2-4** depict just two of the many UAVs being used today.

FIGURE 2-4 TYPICAL UAVS

The Arizona Department of Transportation (ADOT) has several published reports on the economic impact aviation has on the State. For example, according to ADOT's research, aviation-related job account for nearly 16.8% of all employment in Arizona. Aviation plays an important role in the economic growth of the State.

2.3 EXISTING AVIATION ACTIVITY AND PROJECTIONS

The first step in preparing aviation forecasts is to examine available historical and existing and activity levels and based aircraft. There are typically several sources for forecasts available from both the FAA and State. The FAA Terminal Areas Forecast (TAF) is an annual forecast of airport activity that is produced by FAA and is commonly used for long term planning.

- For the Cochise County Airport, the FAA TAF suggests that in 2012, there were 23 based aircraft and 8,500 operations at the airport.

- The 2009 Arizona State Airports System Plan (SASP) indicated 27 based aircraft and 7,310 annual operations in 2007.

- The previous 1997 Airport Master Plan suggested that by 2012, the airport would have 28 based aircraft and should experience nearly 8,060 annual operations.

- Based on discussions with the County and airport personnel they indicate that there are 25 based aircraft and approximately 6,800 annual operations in 2012. The activity reported by the County was collected by an onsite airport personnel (FBO) between the hours of 8:00am and 5:00pm Monday through Friday.

2.3.1 FLEET MIX

FAA Form 5010-1, *Airport Master Record*, is the official record kept by the Federal Aviation Administration to document airport physical conditions and other pertinent information. The record normally includes an annual estimate of aircraft activity as well as the number of based aircraft. This information is normally obtained from the airport sponsor and depending on the sponsor's recording keeping system, the accuracy will vary. The current FAA Form 5010-1 for Cochise County Airport indicates 22 based aircraft and 8,500 annual aircraft operations. An operation is defined as a takeoff or a landing. A touch-and-go is considered two operations. This form also breaks down operations to 0 Air Carrier, 0 Air Taxi, 500 GA Local, 7,500 GA Itinerant operations and 500 military operations.

Table 2-2 shows the existing fleet mix of based aircraft at the airport as reported by Cochise County.

TABLE 2-2 BASED AIRCRAFT FLEET MIX

Aircraft Type	Based Aircraft	Fleet Mix Percentage (%)
Single-Engine	25	100%
Multi-Engine	0	0%
Jet	0	0%
Light Sport Aircraft	0	0%
Gliders	0	0%
Ultra lights	0	0%
TOTAL	**25**	**100%**

Source: Cochise County (2013)

Cochise County Airport serves a mix of single-engine piston, multi-engine, turboprop and turbojet and helicopter aircraft. These users include business and recreational transport, (occasional) agricultural, air medivac, aerial firefighting, and some military operations.

The Airport Service Level and Role and the existing aviation activity are described in more detail in. Chapter 1, Section 1.2.

The growth trends for the fleet mix at Cochise County Airport will in all likelihood mirror the national trends. For example, single-engine piston aircraft are projected to continue to account for the majority of based aircraft and at the same time decrease as a percentage of the overall total number of based aircraft. It is anticipated that other types of aircraft will grow at a moderate pace. According the SASP, in Arizona 79 percent of all based aircraft are single-engine aircraft and multi-engine follow with 11 percent. Helicopter and jet aircraft account for four percent each of the state total. Gliders and other aircraft make up the remaining two percent. It is anticipated that the fleet mix will generally remain the same as the existing fleet mix (**Table 2-2**) for the 20-year planning period.

2.3.2 HISTORICAL BASED AIRCRAFT AND OPERATIONS

The 1997 Airport Master Plan for the Cochise County Airport estimated that in 1996 there were 7,000 annual operations and 24 based aircraft at the airport. According to the master plan, the survey was used to verify current activity levels, facility needs and overall performance of the airport. Activity levels were estimated based on a pilot/aircraft owner survey of approximately 80 individuals.

2.3.3 FACTORS INFLUENCING AVIATION DEMAND

Factors influencing aviation demand at the Airport are directly related to any future development on or adjacent to the airport. It is likely that the Airport will see additional demand for hangars over the 20-year planning period. The Airport management reports there is currently a waiting list for hangar space from interested aircraft owners. Demand will be driven by the local economic conditions in Willcox, and Cochise County.

An interesting local endeavor is the Howard G. Buffett Foundation (HGBF). The foundation is a private family foundation working to improve the standard of living and quality of life for the world's most impoverished and marginalized populations. One of the HGBF many initiatives is the Sequoia Farm Foundation. According the HGBF website, most of the world's poor and food insecure are farmers working small plots of land. The Food & Agriculture Organization (FAO)

estimates nearly 900 million people in the world are food insecure, and about half of those are from small farming communities. Sequoia Farm Foundation invests in applied research to improve production practices for smallholder farmers in developing countries in Latin America and Africa. Sequoia Farm Foundation research takes place in partnership with leading agricultural research Universities on two research farms in the U.S.: 1,400 acres in (Willcox) Arizona and 4,000 acres in Illinois. Sequoia also works in close collaboration with the Foundation-funded Ukulima Farm, a 9,200 acres research farm in Limpopo Province, South Africa. It is unknown at this time if the continued investment in research farming will have an impact on the future aviation demand at the airport, but typically, as local businesses grow, there is an increase in aviation demand and related services.

2.4 EXISTING FORECASTS

2.4.1 ARIZONA STATE AIRPORTS SYSTEM PLAN FORECAST

The 2009 Arizona State Airports System Plan (SASP) forecast of based aircraft for Cochise County Airport was evaluated. Three forecasting methodologies were used to generate a low, medium and high forecast for based aircraft in Arizona. The SASP concludes that the medium forecast was selected based on historic based aircraft growth and FAA industry forecasts. The SASP projected a statewide compound average growth rate of 1.71 percent through 2030 and 1.31 percent through 2030 for the Cochise County Airport. Using a base year of 2007, the SASP reflects 27 based aircraft and a forecast of 43 based aircraft at the Cochise County Airport by 2030.

2.4.2 COCHISE COUNTY AIRPORT MASTER PLAN

The 1997 Cochise County Airport Master Plan forecast of based aircraft indicated that the number of based aircraft would increase from 24 to 34 based aircraft at an average rate of 1.8 percent over the 20 year planning period from 1997 to 2017. The previous airport master plan suggests that the forecast of based aircraft will likely mirror the pace of the local economic growth.

2.5 FORECASTS OF AVIATION ACTIVITY

2.5.1 BASED AIRCRAFT FORECASTS

It is widely accepted within the aviation industry that the number of based aircraft at a given airport is the most basic indicator of general aviation demand.

According to FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), when forecast data is not available, a satisfactory procedure is to forecast based aircraft using the statewide based aircraft growth rate from the January 2013 FAA TAF and develop activity statistics by estimating annual operations per based aircraft. The first forecasting method for based aircraft using the FAA's Terminal Area Forecast annual growth rate for the State of Arizona of 1.6 percent between 2012-2032. This method results in a forecast of 37 based aircraft at Cochise County Airport in 2033. The results of the FAA TAF method are shown in **Table 2-3**.

TABLE 2-3 FAA TAF METHOD

Year	TAF for Arizona Based Aircraft	Average Growth Rate	Based Aircraft
2013	5,422	1.6%	**25**
2018	5,858	1.6%	**28**
2023	6,338	1.6%	**31**
2028	6,869	1.6%	**34**
2033	7,437	1.6%	**37**

The second forecasting method for based aircraft utilized a market share analysis based on the number of based aircraft within the U.S. general aviation fleet mix and the number of based aircraft at Cochise County Airport (**Table 2-4**). This method was then applied to the general aviation fleet mix aircraft projections provided by the 2012 General Aviation Manufacturer's Association Statistical Databook & Industry Outlook. This resulted in 28 based aircraft at Cochise County Airport in 2033.

TABLE 2-4 MARKET SHARE METHOD

Year	Total U.S. General Aviation Fleet Mix	Market Share Aircraft
2013	222,690	**25**
2018	225,490	**25**
2023	231,145	**26**
2028	240,570	**27**
2033	253,205	**28**

The third method utilized a bottom-up per capita approach that projects the number of based aircraft in direct proportion to the projected population of Cochise County (**Table 2-5**) using the Arizona Department of Administration population statistics (medium series). This resulted in 31 based aircraft at Cochise County Airport in 2033.

TABLE 2-5 PER CAPITA METHOD

Year	Population[1]	Aircraft
2013	130,753	**25**
2018	137,452	**26**
2023	145,592	**28**
2028	153,257	**29**
2033	160,682	**31**

It is anticipated that Cochise County Airport based aircraft growth rate will likely trend closer to the Per Capita Method. Recognizing that all of the above methods do not vary significantly the Per Capita Method (indicating 31 based aircraft by 2033) was selected as the preferred based aircraft forecast (**Figure 2-5**).

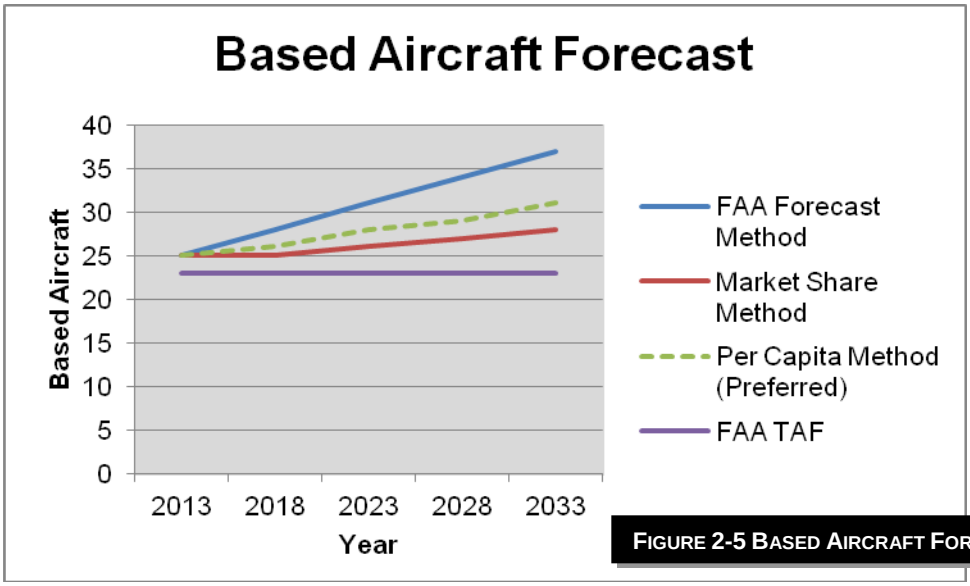


FIGURE 2-5 BASED AIRCRAFT FORECAST

2.5.2 ANNUAL AIRCRAFT OPERATIONS FORECAST

In order to develop a preferred method of forecasting aircraft operations at Cochise County Airport, a number of methods were analyzed. Each method uses the preferred based aircraft forecast of 31 based aircraft in 2033, and then apply an Operations Per Based Aircraft (OPBA) resulting in the total annual operations forecast.

The methods are as follows:

Method 1: Existing operations and based aircraft (272 OPBA)

Method 2: FAA Order 5090.3C (750 OPBA)

Method 3: FAA Advisory Circular 150/5300-13 (538 OPBA)

Method 4: Arizona State System Plan and existing based aircraft (319 OPBA)

1. For the first method using the annual operations (minus military operations) of 6,800 as reported by the FBO will be used as the base year level of operations per based aircraft of 25 was applied to the preferred based aircraft forecast. Applying 272 OPBA to the preferred 31 based aircraft forecast results in 8,432 annual operations in 2033.

2. For the second method, a general guideline from FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) of 750 OPBA for airports with "unusual circumstances" was applied to the based aircraft forecast. Applying 750 OPBA to the preferred 31 based aircraft forecast results in 23,250 forecast operations in 2033.

3. The third method, as outlined in FAA Advisory Circular 150/5300-13, Airport Design, applied 538 OPBA (for Non-NPIAS Public Use Airports) to the preferred 31 based aircraft forecast. This method results in a forecast of 16,678 operations in 2033.

4. The fourth method, the Arizona State System Plan level of operations forecast for 2030 (9,900) was divided by the forecast number of based aircraft 31. Applying 319 OPBA to the preferred based aircraft forecast for 2018, 2023, 2028 and 2033 results in the forecast operations in those given years.

These projections provide a likely range of activity for future operations at Cochise County Airport and are shown in **Figure 2-6**. Aircraft operations can be expected to increase with the additional based aircraft, therefore it is reasonable to anticipate that the OPBA will remain fairly constant over the 20-year planning period.

The selected forecast (method 3) of 16,678 annual operations in 2033 will be used for further analysis in the Cochise County Airport Master Plan. The selected forecast represents a conservative increase in annual operations over the planning period and given the size and current activities at the airport, is considered a reasonable forecast for planning purposes.

The other methods were considered, but dismissed as not being the most likely representative of the potential aviation demand.

2.5.3 ITINERANT AND LOCAL OPERATIONS

The various types of aircraft operations were presented at the beginning of this chapter. For the Cochise County Airport the split in itinerant and local operations used for planning purposes will be in accordance with the SASP. According to the SASP, the existing split of 79 percent local operations and 21 percent itinerant operations is assumed to remain constant throughout the 20-year planning period.

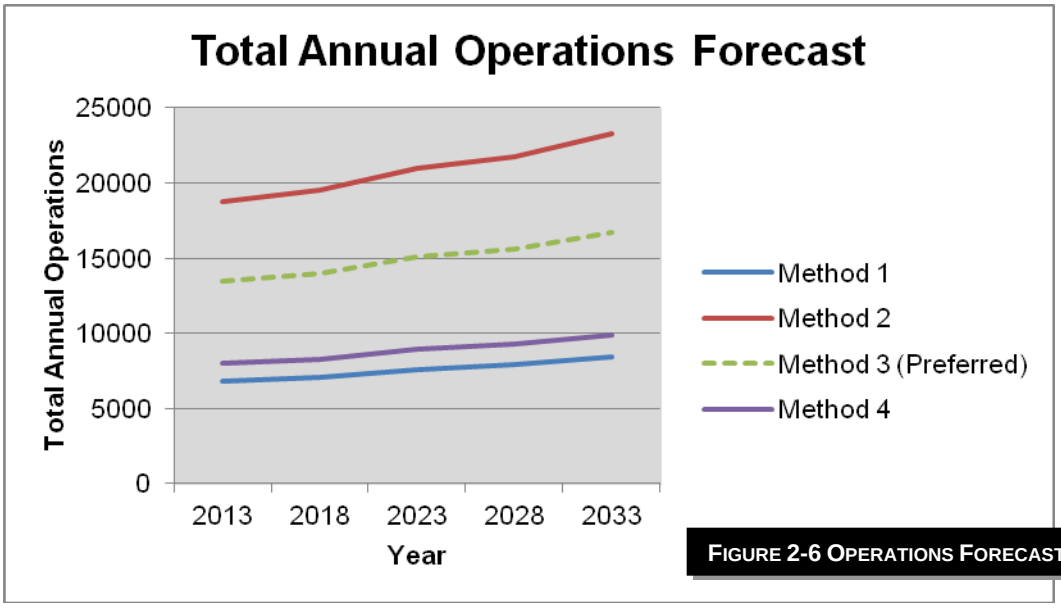


FIGURE 2-6 OPERATIONS FORECAST

2.6 INSTRUMENT OPERATIONS

An instrument approach, as defined by FAA, is “an approach to an airport with the intent to land an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.” An

aircraft landing at an airport must follow one of the published instrument approach procedures to qualify as an instrument approach.

According to the FAA TAF, 21 percent of the total aircraft operations in Arizona are instrument operations. This number is forecasted to increase to 26 percent by 2030. Since virtually all commercial and business jet flights and most military aircraft flights are IFR (since they fly at or above 18,000 feet MSL), the number of instrument operations does not reflect the occurrence of instrument weather or the provision of instrument approaches at airports. At most general aviation airports with an instrument approach and little or no commercial service or military activity, instrument operations will comprise approximately 2.5 percent of total operations.

2.7 PREFERRED FORECAST OF AVIATION ACTIVITY

Table 2-6 depicts the preferred aviation demand forecast activity for Cochise County Airport.

TABLE 2-6 PREFERRED FORECAST OF AVIATION ACTIVITY

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations	Instrument Operations
2013	25	10,626	2,824	13,450	336[1]
2018	26	11,050	2,938	13,988	349[2]
2023	28	11,900	3,164	15,064	376[2]
2028	29	12,326	3,276	15,602	390[2]
2033	31	13,176	3,502	16,678	416[2]

[1]No Existing Instrument Approach Procedure. Aircraft operating in VMC under IFR flight plan.
[2]Assumes an Instrument Approach Procedure for Cochise County Airport.

2.8 AIRPORT SEASONAL USE DETERMINATION

Seasonal fluctuations in aircraft operations may occur at any airport. This fluctuation is most apparent in regions with severe winter weather patterns and at non-towered general aviation airports. The fluctuation is less pronounced at major airports, with a high percentage of commercial and scheduled airline activity.

Non-towered general aviation airports generally experience a substantially higher number of operations in summer months than off-season months. The average seasonal use trend for FAA towered airports from the 1979-1984 records (total aircraft operations handled by tower facilities nationally from FAA Statistical Handbook of Aviation) was used as a baseline for determining seasonal use trends. As mentioned, seasonal fluctuation is more pronounced at non-towered airports than at towered airports. The seasonal use trend for towered airports was adjusted to approximate seasonal use trends at non-towered airports.

A review of Cochise County Airport's total fuel sales from 2009 through June 2013 provided a reasonable depiction of the airport's seasonal use trends. Fuel sales data was not available by type, i.e., Jet A and AvGas. Therefore the use trend reflects total fuel sales (for only the months that data was available) at the airport. Figure 2-7 depict these seasonal use trends and reveals that the greatest quantity of fuel was sold between May through June with a second smaller spike in the October to January timeframe. AvGas (100LL) is used predominantly by piston-powered aircraft and varies the most with each season.

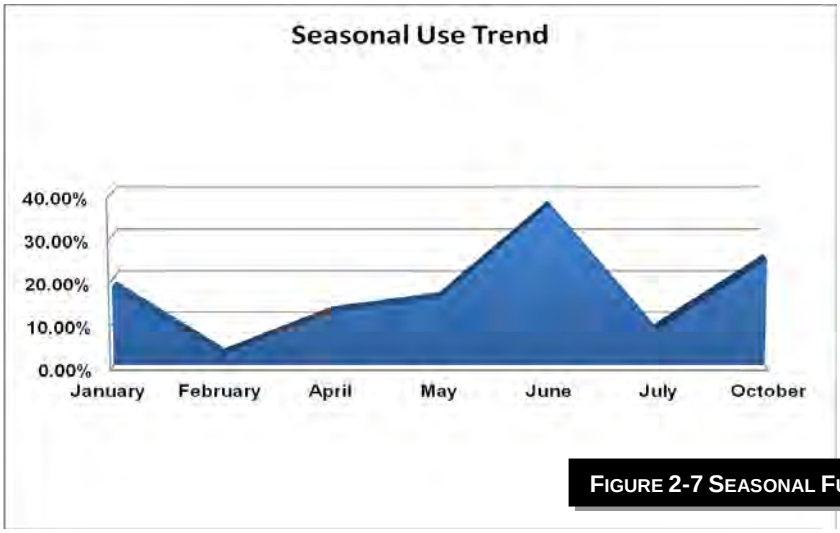


FIGURE 2-7 SEASONAL FUEL USE TREND

Despite 2013 not being a record year for the number of wildfires and acres burned, the need for the US Forest Service protection in Arizona will remain indefinitely into the future. During the peak of the fire season (May through July), the US Forest Service uses the airport as a base of operations and will typically bring in large tankers and helicopters on an as needed basis.

Table 2-7 represents the general seasonal use trends of US airports at both non-towered and towered airports. Although every airport will vary, the non-towered percentages contained in **Table 2-7** will be used to calculate the monthly, daily and hourly peaking characteristics, in other words, the times when the airport is the busiest.

TABLE 2-7 SEASONAL USE TREND

Month	Non-towered	Towered
January	**3.5%**	7.2%
February	**4.0%**	8.2%
March	**4.8%**	8.6%
April	**7.5%**	9.0%
May	**11.3%**	9.1%
June	**13.5%**	9.4%
July	**14.8%**	9.1%
August	**13.0%**	8.7%
September	**10.0%**	8.7%
October	**8.0%**	7.8%
November	**5.8%**	7.1%
December	**3.8%**	7.1%

2.9 HOURLY DEMAND AND PEAKING TENDENCIES

In order to arrive at a reasonable estimate of demand at the airport facilities, it was necessary to develop a method to calculate the levels of activity during peak periods. The periods normally used to determine peaking characteristics are defined below:

Peak Month: The calendar month when peak enplanements or operations occur.

Design Day: The average day in the peak month derived by dividing the peak month enplanements or operations by the number of days in the month.

Busy Day: The Busy Day of a typical week in the peak month. In this case, the Busy Day is equal to the Design Day.
Design Hour: The peak hour within the Design Day. This descriptor is used in airfield demand/capacity analysis, as well as in determining terminal building, parking apron and access road requirements.

Busy Hour: The peak hour within the Busy Day. In this case, the Busy Hour is equal to the Design Hour.

The Seasonal Use Trend was used as a tool to determine the peaking characteristics for the Cochise County Airport. Using the Seasonal Use information, a formula was derived which will calculate the average daily operations in a given month, based on the percentage of the total annual operations for that month. The formula is as follows:

$$M = A (T / 100)$$
$$D = M / (365 / 12)$$

Where T = Monthly percent of use (from curve)
M = Average monthly operations
A = Total annual operations
D = Average Daily Operations in a given month

Approximately 90 percent of total daily operations occur between the hours of 7:00 AM and 7:00 PM (12 hours) at a typical general aviation airport, meaning the maximum peak hourly occurrence may be 50 percent greater than the average of the hourly operations calculated for this time period.

The Estimated Peak Hourly Demand (P) in a given month was, consequently, determined by compressing 90 percent of the Average Daily Operations (D) in a given month into the 12-hour peak use period, reducing that number to an hourly average for the peak use period and increasing the result by 50 percent as follows:

$$P = 1.5 (0.90D / 12)$$

Where D = Average Daily Operations in a given month.
P = Peak Hourly Demand in a given month.

The calculations were made for each month of each phase of the planning period. The results of the calculations are shown in **Table 2-8**. As is evident in the Table, the Design Day and Design Hour peak demand in the planning year occurs under VFR weather conditions in the months of

June and July (highlighted in bold in each Table), with nearly 80 daily operations and approximately 7 operations per hour throughout the 20-year planning period.

TABLE 2-8 ESTIMATED HOURLY DEMAND/MONTH

MONTHLY/DAILY/HOURLY DEMAND

Planning Year: 2018					Planning Year: 2023				
Operations:	13,988				Operations:	15,064			
		Operations					Operations		
Month	% Use	Monthly	Daily	Hourly	Month	% Use	Monthly	Daily	Hourly
January	3.5%	490	16	1	January	3.5%	527	17	1
February	4.0%	560	20	2	February	4.0%	603	22	2
March	4.8%	671	22	2	March	4.8%	723	23	2
April	7.5%	1,049	35	3	April	7.5%	1,130	38	3
May	11.3%	1,581	51	4	May	11.3%	1,702	55	5
June	**13.5%**	**1,888**	**63**	**5**	**June**	**13.5%**	**2,034**	**68**	**6**
July	**14.8%**	**2,070**	**67**	**6**	**July**	**14.8%**	**2,229**	**72**	**6**
August	13.0%	1,818	59	5	August	13.0%	1,958	63	5
September	10.0%	1,399	47	4	September	10.0%	1,506	50	4
October	8.0%	1,119	36	3	October	8.0%	1,205	39	3
November	5.8%	811	27	2	November	5.8%	874	29	2
December	3.8%	532	17	1	December	3.8%	572	18	2

Planning Year: 2028					Planning Year: 2033				
Operations:	15,602				Operations:	16,678			
		Operations					Operations		
Month	% Use	Monthly	Daily	Hourly	Month	% Use	Monthly	Daily	Hourly
January	3.5%	546	18	1	January	3.5%	584	19	2
February	4.0%	624	22	2	February	4.0%	667	24	2
March	4.8%	749	24	2	March	4.8%	801	26	2
April	7.5%	1,170	39	3	April	7.5%	1,251	42	3
May	11.3%	1,763	57	5	May	11.3%	1,885	61	5
June	**13.5%**	**2,106**	**70**	**6**	**June**	**13.5%**	**2,252**	**75**	**6**
July	**14.8%**	**2,309**	**74**	**6**	**July**	**14.8%**	**2,468**	**80**	**7**
August	13.0%	2,028	65	5	August	13.0%	2,168	70	6
September	10.0%	1,560	52	4	September	10.0%	1,668	56	5
October	8.0%	1,248	40	3	October	8.0%	1,334	43	4
November	5.8%	905	30	3	November	5.8%	967	32	3
December	3.8%	593	19	2	December	3.8%	634	20	2

2.10 FORECAST SUMMARY

The recommended forecasts for Cochise County Airport are summarized in **Table 2-9.** The forecasts as presented in this chapter will be used throughout the remainder of the Airport Master Plan. Next step in the planning process is to determine the capacity of the existing facilities and to determine what facilities will be needed to meet future aviation demand.

TABLE 2-9 DETAILED FORECAST SUMMARY

		Passenger and Pilots	Itinerant Operations			Local Operations			
Year	Based Aircraft	Peak Hourly Flow	GA	Military	Total	GA	Military	Total	Total Operations
2013	25	6	2,824	0	2,824	10,626	0	10,626	13,450
2018	26	6	2,938	0	2,938	11,050	0	11,050	13,988
2023	28	6	3,164	0	3,164	11,900	0	11,900	15,064
2028	29	6	3,276	0	3,276	12,326	0	12,326	15,602
2033	31	7	3,502	0	3,502	13,176	0	13,176	16,678

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