

Cottonwood Municipal Airport

MASTER PLAN UPDATE

Working Paper #1:
Inventory of Existing
Conditions

CONTENTS

1.1. Chapter Introduction	1
1.2. Background and Local Setting.....	1
1.2.1. Ownership and Management	3
1.2.2. Airport History	3
1.2.3. Capital Improvements and Grant History	4
1.2.4. Regional Socioeconomic Data.....	4
1.2.4.1. Population	7
1.2.4.2. Employment	7
1.2.4.3. Per Capita Personal Income (PCPI).....	7
1.2.4.4. Gross Regional Product (GRP)	7
1.3. Airport Role	7
1.3.1. National Plan of Integrated Airport Systems (NPIAS).....	7
1.3.2. Arizona State Aviation System Plan (SASP)	8
1.4. Current Aviation Activity	8
1.4.1. Aircraft Operations	9
1.4.2. Based Aircraft.....	9
1.5. Airside Facilities.....	9
1.5.1. Airport Design Standards.....	11
1.5.2. Runway 14-32	12
1.5.2.1. Dimensional Criteria	13
1.5.3. Taxiways.....	15
1.5.3.1. Taxiway Design Standards	15
1.5.4. Helipad.....	16
1.5.5. Non-Standard Conditions.....	16
1.5.6. Aircraft Hangars and Parking	17
1.5.7. Apron Areas	17
1.5.8. Airfield Pavement	19
1.5.8.1. Runway Pavement Strength	19
1.5.8.2. Airfield Pavement Condition	19

1.5.8.3. Airport Pavement Preservation Program	22
1.5.9. Airfield Lighting.....	22
1.5.10. Navigational Aids (s)	22
1.5.11. Meteorological Conditions.....	23
1.5.11.1. Local Climate	23
1.5.11.2. Runway Use and Crosswind Coverage	24
1.6. Airspace.....	27
1.6.1. Airspace Classifications	27
1.6.2. Standard Operating Procedures.....	31
1.6.2.1. Standard Arrival Procedures	31
1.6.2.2. Standard Departure Procedures.....	31
1.6.3. Instrument Flight Procedures	31
1.6.3.1. Instrument Approach Procedures.....	31
1.6.3.2. Instrument Departure Procedures.....	32
1.6.4. Noise Abatement.....	32
1.7. Landside Facilities.....	32
1.7.1. Terminal Building	32
1.7.2. Fixed Base Operator (FBO)	33
1.7.3. Flight Instruction.....	33
1.7.4. Aircraft Maintenance and Wash Rack	33
1.7.5. Cottonwood Airpark.....	33
1.8. Support Facilities.....	34
1.8.1. Fuel Facilities.....	34
1.8.2. Airport Maintenance	34
1.8.3. Aircraft Rescue and Firefighting.....	35
1.8.4. Airport Emergency Plan.....	35
1.8.5. Airport Fencing and Security.....	35
1.8.6. Utility Infrastructure	35
1.9. Land Use and Zoning.....	36
1.9.1. Existing Land Use	36
1.9.2. Zoning	39

1.9.3. Land Use Planning	41
1.10. Surface Transportation	41
1.10.1. Major and Regional Roadways.....	43
1.10.2. Local and Airport Access Roadways	43
1.10.3. Transportation Planning	44
1.10.4. Airfield Circulation and Automobile Parking.....	46
1.11. Environmental Overview	46
1.11.1. Air Quality	46
1.11.2. Endangered and Threatened Species	47
1.11.3. Water Resources.....	49
1.11.3.1. Stormwater Management	49
1.11.3.2. Floodplains.....	50
1.11.3.3. Wetlands and Waters of the U.S.....	50
1.11.4. Department of Transportation Act, Section 4(f).....	52
1.11.5. Hazardous Materials.....	52
1.11.6. Historic, Cultural, and Archeological Resources	54

TABLES

Table 1.1 - Airport Grant History.....	4
Table 1.2 - Historical and Forecast Socioeconomic Data.....	6
Table 1.3 - Aircraft Approach Categories.....	11
Table 1.4 - Airplane Design Groups.....	11
Table 1.5 - Runway Visual Range.....	12
Table 1.6 - Summary of Existing Runway Characteristics and Design Standards (2020).....	14
Table 1.7 - Airport Taxiways.....	15
Table 1.8 - Taxiway Design Standards (2020).....	16
Table 1.9 - Summary of Non-Standard Conditions.....	17
Table 1.10 - 2019-2024 Unlimited Budget APPP at Cottonwood Municipal Airport.....	22
Table 1.11 - Crosswind Components.....	24
Table 1.12 - Runway 14-32 Crosswind Coverage.....	25
Table 1.13 - Classifications of Airspace.....	28
Table 1.14 - Main Apron Fuel Facility Sales.....	34
Table 1.15 - Verde Valley Master Transportation Plan Projects near Cottonwood Municipal Airport.....	45
Table 1.16 - Endangered, Threatened, and Birds of Concern Species within the Airport's Environs.....	48
Table 1.17 - Properties and Districts Listed on the National Register of Historic Places.....	54

FIGURES

Figure 1.1 - Map of Airport Vicinity	2
Figure 1.2 - Existing Airport Facilities (2020)	10
Figure 1.3 - Airport Aprons, Tie-Downs, and Hangar Facilities	18
Figure 1.4 - Pavement Condition Index (2017)	20
Figure 1.5 - Forecast Pavement Condition Index (2020)	21
Figure 1.6 - Wind Roses (10.5-knot wind coverage; True runway headings of 155°, 335°)	26
Figure 1.7 - Classifications of Airspace	27
Figure 1.8 - VFR Sectional Aeronautical Chart	30
Figure 1.9 - Existing Land Use Map	38
Figure 1.10 - Zoning Map (City of Cottonwood, Town of Clarkdale, Unincorporated Yavapai County)	40
Figure 1.11 - Regional and Local Roadways	42
Figure 1.12 - Federal Wetlands near the Airport	51

1.1. CHAPTER INTRODUCTION

As an initial step in the master planning process, the inventory provides a broad collection of data and information pertaining to the background, local setting, facilities, physical assets, environmental considerations, and activities of Cottonwood Municipal Airport (the Airport) and its surrounding environs. The following chapter describes the Airport's existing conditions as of April 2020. The information in this chapter provides significant context and baseline data for the subsequent forecast, demand capacity, facility requirements, and alternatives analyses included in this Master Plan Update.

Information and data for this inventory were provided by Cottonwood Municipal Airport tenants and stakeholders, City of Cottonwood staff, the Federal Aviation Administration (FAA), the Arizona Department of Transportation Aeronautics Group (ADOT), and various other agencies and resources. Web-based research, site visits, and interviews with Airport staff and other tenants were conducted to supplement this information.

1.2. BACKGROUND AND LOCAL SETTING

Cottonwood Municipal Airport (FAA location identifier: P52) is located in the City of Cottonwood, Arizona within Yavapai County in north-central Arizona. Encompassing approximately 8,123 square miles, the County is roughly the same size as the State of Massachusetts and contains a diverse terrain, including grasslands, desert plains, and mountains.¹ According to the U.S. Census Bureau's 2018 population estimates, Yavapai County is home to 231,993 residents and accounts for 3 percent of Arizona's population.²

The Airport is located in the northwestern portion of the City of Cottonwood, approximately 40 miles southwest of the Flagstaff metropolitan area and 100 miles north of the Phoenix metropolitan area. Per the U.S. Census Bureau's 2018 population estimates, Cottonwood has a population of 12,199. Centrally located in Arizona's Verde Valley, the City is also home to Dead Horse Ranch State Park and the Verde River Greenway.



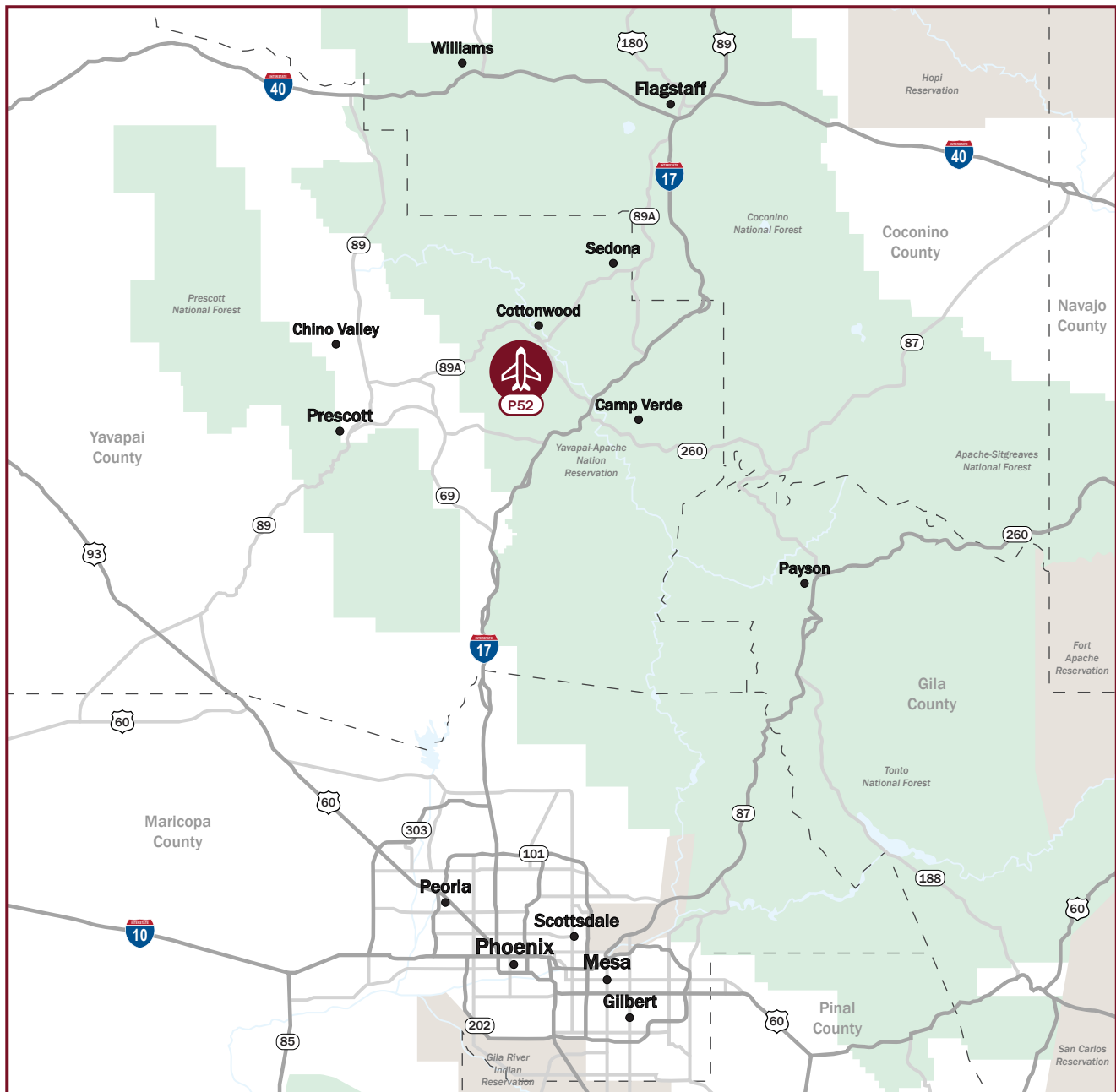
Source: Kimley-Horn







The Airport covers approximately 210 acres at an elevation of 3,560 feet above mean sea level (MSL). It is generally bounded by West Mingus Avenue to the north, the Cottonwood Water Works Well and a single-family residential community to the south, South Airpark Road to the east, and the City of Cottonwood Public Works facility and Mesquite Hills single-family residential community to the west. The Airport is located approximately one quarter of a mile west of Arizona State Route 89A which serves as the major north-south highway traversing the City of Cottonwood and the Verde Valley. The location of the Airport is illustrated in **Figure 1.1**.

¹ Yavapai County Website, About Yavapai County, <https://www.yavapai.us/about-us> (accessed April 2020).

² U.S. Census Bureau, Quick Facts: Yavapai County (accessed April 2020).

Figure 1.1 - Map of Airport Vicinity



- | | |
|--|---|
|  Major Roadway |  County Boundary |
|  Regional Roadway |  Forest/Park Land |
|  River/Water Body |  Native American Reservation |



0 10 20 mi.

Sources:
 Esri (accessed April 2020).
 Kimley-Horn, 2020.

1.2.1. Ownership and Management

Cottonwood Municipal Airport is owned by the City of Cottonwood and operated through the City's Airport Commission. The Airport Commission is made up of five members and is tasked with overseeing capital improvements, maintenance, funding, tenants, and updates to the Airport's master plan.³ Daily operations at the Airport are managed by the City-appointed Airport Manager. The City of Cottonwood also has a lease agreement with Wiseman Aviation to operate as the Airport's fixed base operator (FBO) and provide services such as fuel, aircraft parking, and terminal amenities.

1.2.2. Airport History

Cottonwood Municipal Airport, originally known as Clemenceau Airport, opened in 1929. The Airport was initially privately owned and included a 3,600-foot dirt runway, one hangar, and an office facility. Aircraft maintenance and fuel were offered for local and itinerant pilots, and weekend air shows were held to entertain residents. In 1940, the Airport was acquired by Yavapai County in order to establish a county airport and oversee future improvements, maintenance, and operations.

In the 1940s, Clemenceau Airport hosted primary flight training schools for both the Army and the Navy. After World War II, the Airport (then referred to as the Cottonwood-Clemenceau Airport due to the dwindling population of Clemenceau and the growing community of Cottonwood) offered pilot training, charter air service, scenic rides, and aircraft sales and maintenance services. Due to the influx of activity, funding was obtained in the 1950s to surface the taxiway and ramp, repair the main hangar and maintenance shop, and replace the runway lights. Shortly thereafter, the Airport officially became known as the Cottonwood Airport. In 1968, the newly incorporated Town of Cottonwood (which became the City of Cottonwood in 1987) acquired the Airport from Yavapai County and has since operated the Airport through direct management and/or lease agreements with private entities.

Since its acquisition of the Airport, the City of Cottonwood has continuously invested in development and improvements at the Airport. In 1976, the City constructed a 3,500-foot paved runway as well as a paved parallel taxiway and an aircraft tiedown/parking apron utilizing both federal and state grants. Additionally, medium Intensity Runway Lighting (MIRL), apron lights, and security fencing were installed in subsequent years. In 1980, the runway was extended to its current length of 4,252 feet.

Prompted by previous Master Plan Updates (1986, 1993, 2001), later improvements included the reconstruction of the parking apron, the addition of navigational aids (NAVAIDs) and a weather reporting system, the construction of new aircraft hangars, the acquisition of additional land, and the development of the Cottonwood Airpark commercial/industrial area east of the runway. As previously discussed, Wiseman Aviation currently operates as the Airport's FBO through a lease agreement while the City's Airport Commission continues to oversee and facilitate maintenance, planning, and capital improvements at the Airport.

³ City of Cottonwood Website, Airport Commission, <https://cottonwoodaz.gov/356/Airport-Commission> (accessed April 2020).

1.2.3. Capital Improvements and Grant History

Both the FAA Airport Improvement Program (AIP) and the ADOT Airport Capital Improvement Program (ACIP) provide grants for the planning and development of public-use airports in Arizona. **Table 1.1** provides a summary of Airport projects between 2009 and 2019 that have been funded through AIP and ACIP grants.

Table 1.1 - Airport Grant History

Grant #	Fiscal Year	Project Description	State Share	Total
FAA AIP Grants ¹				
13	2009	Apron and Taxiway Rehabilitation	N/A	\$489,610
14	2012	Automated Weather Observation System Installation (Design Only)	N/A	\$30,165
15	2013	Automated Weather Observation System Installation	N/A	\$175,836
16	2015	Apron Rehabilitation	N/A	\$104,861
17	2016	Apron Rehabilitation	N/A	\$962,954
18	2017	Apron Reconstruction	N/A	\$1,474,609
19	2019	Airport Master Plan Update	N/A	\$364,054
Total			N/A	\$3,602,089
ADOT ACIP Grants ²				
E10F21	2010	Apron Rehabilitation	\$12,885	\$515,380
E2S95	2012	Remove and Replace Rotating Beacon and Wind Cone	\$18,859	\$20,995
E2F3M	2012	Install Weather Reporting Equipment	\$8,632	\$193,100
E7F20	2017	Rehabilitate Apron Base Bid and Alternate One	\$47,270	\$1,057,494
E8M06	2018	Apron Reconstruction	\$72,386	\$1,619,681
Total			\$160,032	\$3,406,650

Source:

FAA Airport Improvement Program Grant Histories (accessed March 2020).

Notes:

FY = Fiscal Year

N/A = Not applicable (state funds are not included in FAA AIP Grants)

¹ = The FAA Fiscal Year the 12-month period beginning on October 1 and ending September 30 of the following year.

² = The State of Arizona Fiscal Year is the 12-month period beginning on July 1 and ending June 30 of the following year.

1.2.4. Regional Socioeconomic Data

A local community's socioeconomic conditions often influence existing and future activity at an airport. As such, the analysis presented in **Table 1.2** and summarized below examines historical trends and future projections of population for the City of Cottonwood, and population, employment, per capita personal income (PCPI), and gross regional product (GRP) for Yavapai County and the State of Arizona. Historical and forecast socioeconomic data for Yavapai County and the State of Arizona were obtained from the U.S. Census Bureau and Woods & Poole Economics, Inc., an independent firm that specializes in economic and demographic data projections.

Population for the City of Cottonwood was determined based on data from the City's 2015 Economic Development Strategic Plan. Using 2000 and 2010 U.S. Census Bureau data, the report forecast that the

City's 2020 and 2030 population will have a compound annual growth rate (CAGR) of 1.2% between 2010 and 2030. This CAGR and the forecast population in 2020 and 2030 were used to extrapolate the City's population for the years 2011 through 2029, and a linear regression analysis was applied to forecast the City's population through 2039. Ratios were then developed to compare the populations of the City and Yavapai County (e.g., in 2020, it was estimated that the City's population would account for approximately 5.13% of the County's population). To develop the City's forecast population shown in **Table 1.2** below, these ratios were applied to socioeconomic data provided by Woods & Poole Economics, Inc., which reflect updated population estimates.

Overall, these socioeconomic indicators reflect a solid economic base for continued aviation demand at the Airport. These data will be used to inform aviation demand forecasts for Cottonwood Municipal Airport.

DRAFT

Table 1.2 - Historical and Forecast Socioeconomic Data

Year	Population			Employment ¹		PCPI ²		GRP ³
	Cottonwood ⁴	Yavapai County	AZ	Yavapai County	AZ	Yavapai County	AZ	Yavapai County
Historical								
2009	11,302	211,172	6,343,154	83,156	3,264,078	34,366	40,707	\$4,833,633,000
2010	11,245	210,983	6,407,774	80,860	3,208,327	33,938	40,188	\$4,716,116,000
2011	11,205	211,023	6,473,497	80,354	3,268,484	34,476	40,935	\$4,574,050,000
2012	11,233	211,977	6,556,629	81,640	3,322,734	34,928	41,428	\$4,564,486,000
2013	11,342	214,426	6,634,999	83,296	3,398,934	35,131	40,797	\$4,668,013,000
2014	11,481	217,739	6,733,840	85,992	3,461,582	35,898	41,508	\$4,884,086,000
2015	11,614	220,845	6,833,596	87,832	3,536,249	36,547	42,275	\$5,026,294,000
2016	11,757	224,591	6,945,452	89,651	3,610,514	37,172	43,004	\$5,172,702,000
2017	11,902	228,055	7,048,876	91,436	3,684,143	37,791	43,730	\$5,319,313,000
2018	12,048	231,993	7,171,646	93,209	3,757,545	38,416	44,467	\$5,467,105,000
2019	12,196	236,849	7,296,043	94,986	3,831,392	39,052	45,218	\$5,617,054,000
Forecast								
2024	13,003	256,388	7,911,239	104,012	4,209,122	42,312	49,109	\$6,405,172,000
2029	13,795	277,139	8,567,674	113,170	4,597,078	45,487	52,926	\$7,254,358,000
2034	14,700	298,576	9,249,655	122,332	4,990,266	48,325	56,299	\$8,161,492,000
2039	15,583	320,202	9,942,245	131,633	5,391,529	51,168	59,650	\$9,133,387,000
AAGR 2009-2019	0.77%	1.16%	1.41%	1.31%	1.62%	1.29%	1.06%	1.41%
AAGR 2019-2039	1.23%	1.52%	1.56%	1.64%	1.72%	1.36%	1.39%	2.46%

Sources:

U.S. Census Bureau (accessed March 2020).

Woods & Poole Economics, Inc., 2019.

City of Cottonwood Economic Development Plan, 2015.

Notes:

PCPI = Per capita personal income

GRP = Gross regional product

AAGR = Average annual growth rate

1 = Employment status includes population 16 years and over.

2 = PCPI is shown in 2019 dollars.

3 = GRP is shown in 2009 dollars.

4 = Population for the City of Cottonwood was determined based on data from the City's 2015 Economic Development Strategic Plan and Woods & Poole Economics, Inc.

1.2.4.1. Population

As shown in **Table 1.2**, the City of Cottonwood, Yavapai County, and the State of Arizona experienced population growth between 2009 and 2019 with average annual growth rates (AAGRs) of 0.77 percent, 1.16 percent, and 1.41 percent, respectively. Further, the populations are expected to continue to increase between 2019 and 2039 with a forecast AAGR of 1.23 percent for the city, 1.52 percent for the county, and 1.56 percent for the state.

1.2.4.2. Employment

Employment increases individuals' purchasing power and allows them to positively contribute to the economy. The growth in employment, or the number of employed individuals, in Yavapai County and the State of Arizona has outpaced population growth since 2009 with AAGRs of 1.31 percent and 1.62 percent, respectively. As shown, employment is projected to continue to rise faster than population through 2039. This key metric is an indicator that labor markets are expected to remain strong in the region and across the State.

1.2.4.3. Per Capita Personal Income (PCPI)

PCPI provides a broad measure of individual economic well-being and is another indicator used to gauge the economic growth of a community. PCPI indicates the general ability of individuals to purchase products and services (e.g., personal aircraft or corporate travel). As illustrated above, both Yavapai County and the State of Arizona have experienced increases in PCPI since 2009. Moreover, the projected PCPI for both the county and the state are forecast to continue to increase over the next 20 years.

1.2.4.4. Gross Regional Product (GRP)

Gross regional product (GRP) is a key representation of the general health of a region's overall economy. The GRP of Yavapai County had an AAGR of 1.41 percent between 2009 and 2019 and a forecast AAGR of 2.46 percent through 2039, an indication of the region's strong projected growth.

1.3. AIRPORT ROLE

Airports play a critical role in the national, state, and local aviation systems. Subsequently, various agencies at all levels of government participate in airport system planning to understand the relationship between airports within the system and airports' future requirements as they relate to the economy, population, geography, and projected demand. This section describes Cottonwood Municipal Airport's role within the national and state aviation systems as identified by the respective government agencies.

1.3.1. National Plan of Integrated Airport Systems (NPIAS)

Pursuant to Title 49 U.S. Code, Section 47103, the FAA established the National Plan of Integrated Airport Systems (NPIAS) to maintain development plans for public-use airports. The NPIAS identifies airports

included within the national airport system, the role of each airport, and the amount and types of airport development eligible for federal funding under the AIP over a five-year period.⁴ The NPIAS categorizes the nation's airports based on the types of services provided and the quantity of passengers enplaned, which influences the level of federal funding for which each type of airport is eligible.

The current NPIAS Report (2019-2023) classifies Cottonwood Municipal Airport as a general aviation (GA) airport. The FAA defines GA airports as public-use airports with no scheduled service or less than 2,500 annual passenger boardings.⁵ Approximately 88 percent of airports included in the NPIAS are classified as GA airports. The NPIAS also assigns categories to GA airports based on existing activity levels. Categorized as a "Basic" GA airport, Cottonwood Municipal Airport links the community with the greater national airport system and supports GA activities (e.g., emergency services, charter or critical passenger service, cargo operations, flight training, and personal flying).

1.3.2. Arizona State Aviation System Plan (SASP)

The ADOT Aeronautics Group recognizes the importance of proactive planning to ensure aviation continues its role in the statewide transportation system. As such, the Arizona State Aviation System Plan (SASP) was created in 1978 to supplement the NPIAS by assessing the state's existing airport system and its ability to meet current and future demand. The SASP analyzes a variety of issues affecting Arizona's aviation system, including funding, levels of service, available facilities, and non-aviation influences on airports. The current version of the SASP was published in 2018 and classifies Cottonwood Municipal Airport as a GA-Community airport. ADOT defines GA-Community airports as those that serve regional economies and serve various types of GA aircraft.⁶



For each airport classification, the SASP lists facility and service objectives that present the recommended minimum level of infrastructure and development at an airport in order to serve its role within the statewide aviation system. Cottonwood Municipal Airport meets all facility and service objectives based on criteria for GA-Community airports, with the exception of an automated weather reporting system and internet access. These components are discussed in further detail in later sections of this chapter and in **Chapter 3 - Facility Requirements** of this Master Plan Update.

1.4. CURRENT AVIATION ACTIVITY

This section provides information about current aviation activity at the Airport, including aircraft operations, operational fleet mix, and based aircraft. This information provides a baseline that inform aviation activity forecasts and future facility requirements in later chapters of this Master Plan Update.

⁴ Federal Aviation Administration, *2019-2023 National Plan of Integrated Airport Systems*, 2018.

⁵ Federal Aviation Administration, *Airport Categories* (accessed April 2020).

⁶ Arizona Department of Transportation, *State Airport System Plan*, 2018.

1.4.1. Aircraft Operations

An aircraft operation is defined as either a takeoff or a landing. Therefore, a takeoff and a landing such as a touch-and-go operation is counted as two operations. Operations are categorized as local or itinerant. Local operations are flights that depart from the Airport and remain in the Airport's traffic pattern or have a designated practice area within a 20-mile radius of the Airport. Itinerant operations are flights that land at the Airport from another airport or depart from the Airport and leave the Airport's immediate area.⁷ As an uncontrolled, non-towered airport, estimates of Cottonwood Municipal Airport's historical aircraft operations are reported in the FAA's Terminal Area Forecast (TAF). The City installed operational counting equipment in 2019, which is monitored by Airport Management. According to the TAF, Cottonwood Municipal Airport had 18,900 operations in 2019. Of these operations, 8,000 were reported as local GA operations, 10,500 were itinerant GA operations, 300 were itinerant air taxi operations, and 100 were itinerant military operations. The FAA defines an air taxi as any aircraft designed to have a maximum seating capacity of 60 seats or less, or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for hire or compensation. According to the Airport, approximately five to ten percent of total operations were touch-and-go. Historical and future aircraft operations are discussed further in **Chapter 2 - Aviation Forecasts** of this Master Plan Update.

1.4.2. Based Aircraft

The FAA defines based aircraft as operational and airworthy aircraft registered in the FAA Aircraft Registry that are located at a specific airport for the majority of the year.⁸ According to the FAA National Based Aircraft Inventory Program database, Cottonwood Municipal Airport had 64 based aircraft at the time of writing, including 44 single-engine aircraft, five multi-engine aircraft, two turboprop aircraft, two jets, and 11 helicopters. Like aircraft operations, historical and future based aircraft will be discussed further in **Chapter 2 - Aviation Forecasts** of this Master Plan Update.

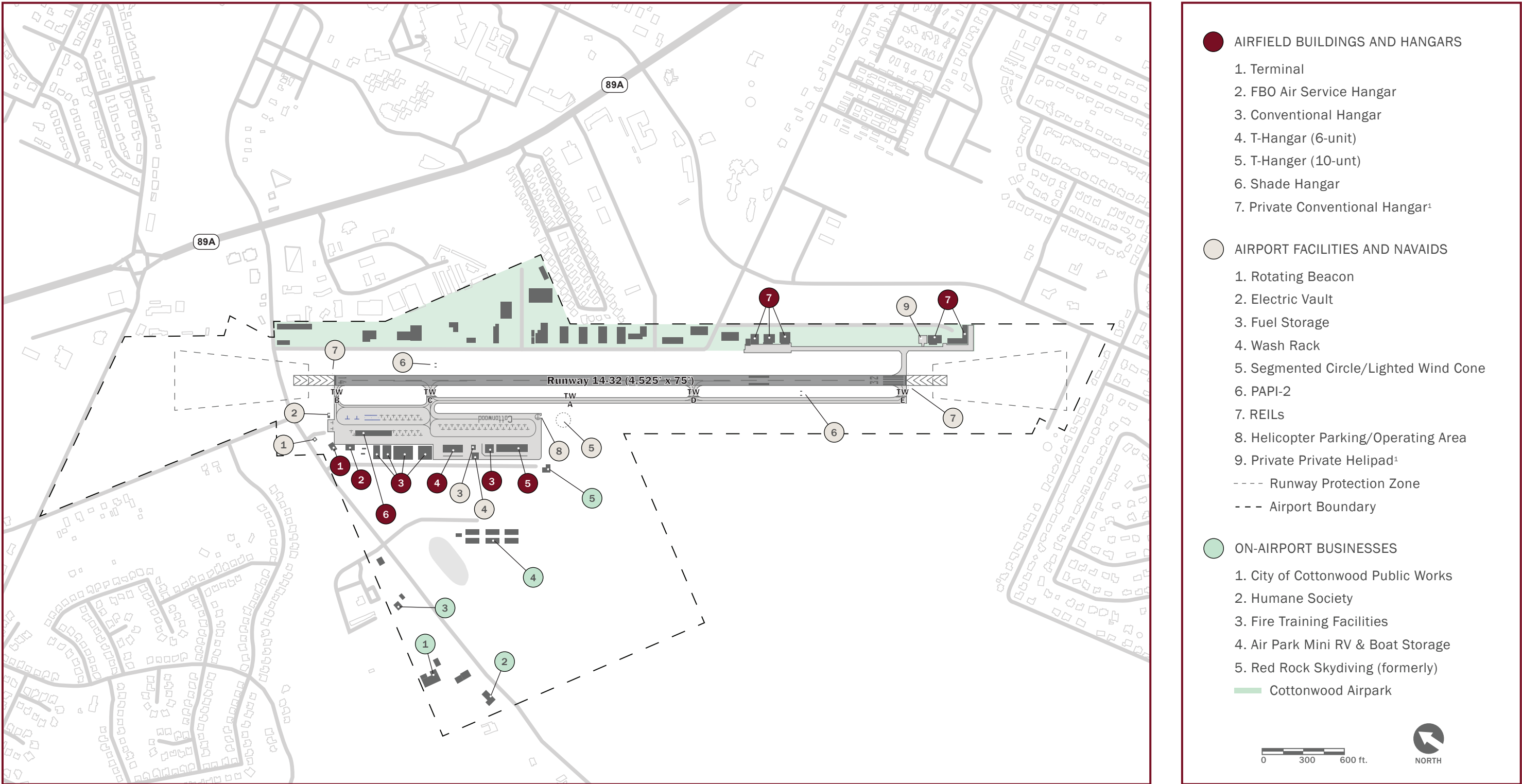
1.5. AIRSIDE FACILITIES

Airside areas encompass facilities and infrastructure that accommodate aircraft operations, including runways, taxiways, aprons, NAVAIDs, and airport lighting. This section describes the primary airside facilities and infrastructure at Cottonwood Municipal Airport as of April 2020. The metrological conditions that impact airside facility usage and aircraft operations are also highlighted in this section. **Figure 1.2** presents the Airport and its airside and landside facilities.

⁷ Federal Aviation Administration, Advisory Circular 150/5070-6B, Change 2, *Airport Master Plans*, 2015.

⁸ Federal Aviation Administration, *General Aviation Airports: A National Asset*, May 2012.

Figure 1.2 - Existing Airport Facilities (2020)



Sources:
FAA 5010 Airport Master Record, 2020.
Cottonwood Municipal Airport FAA-Approved Airport Layout Plan, 2016.
Esri (accessed April 2020).
Kimley-Horn, 2020.

Note: 1 = Facilities are located outside of the airfield fence.

1.5.1. Airport Design Standards

Airside facility planning is largely driven by criteria and standards developed by the FAA that emphasize safety and efficiency while protecting federal investment in airport transportation infrastructure. These design criteria and standards are contained within FAA Advisory Circular 150/5300-13A, *Airport Design*, Change 1 (AC 150/5300-13A) and they address various airport infrastructure and their functions. Airport sponsors that accept federal AIP grants are required to adhere to FAA design standards or obtain approval for any modification of standard (MOS).

Design standards are determined by the airport's designated critical aircraft and Airport Reference Code (ARC). Defined in AC 150/5300-13A, the critical aircraft is the most demanding aircraft that conducts at least 500 operations per year at an airport (excluding touch-and-go activity). This aircraft, or a combination of multiple aircraft that share similar physical and operational characteristics, is reflective of the demand that will regularly be placed on airport facilities and services. Also defined in AC 150/5300-13A, the ARC coding system relates airport design standards to the characteristics of aircraft that operate at an airport. The ARC is based on the airport's design aircraft and is comprised of two components: the aircraft approach category (AAC) and the airplane design group (ADG). The AAC is related to an aircraft's approach speed and the ADG is correlated to the aircraft's wingspan and tail height.

Both AAC and ADG are also components of the runway design code (RDC). The third component of RDC is approach visibility, which refers to a runway's visibility minimums expressed by runway visual range (RVR) in terms of feet. The RDC provides information needed to determine design standards that apply to a particular runway. The criteria of AAC, ADG, and RVR are detailed below in **Tables 1.3, 1.4, and 1.5**, respectively.

Table 1.3 - Aircraft Approach Categories

Aircraft Approach Category	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Source: FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design*, 2014.

Table 1.4 - Airplane Design Groups

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

Source: FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design*, 2014.

Table 1.5 - Runway Visual Range

Runway Visual Range (feet)	Approach Speed
VIS	Visual approach only
5,000	Not lower than 1 mile
4,000	Lower than 1 mile but not lower than 3/4 mile
2,400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)
1,600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)

Source: FAA Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.

Cottonwood Municipal Airport was assigned an ARC of B-I in the Airport's 2001 Master Plan Update and the Airport's current FAA-approved Airport Layout Plan (ALP) published in 2006, with the Citation I as the critical aircraft for Runway 14-32. Both the 2001 Master Plan Update and the ALP recommended the Airport ultimately plan for a future ARC of B-II and use the Beechcraft King Air 300 as the critical aircraft. However, a review of operational data from the FAA's Traffic Flow Management System Count (TFMSC) database show zero Beechcraft King Air 300 operations at the Airport in 2019. Furthermore, analysis of the TFMSC data and discussions with Airport management have resulted in an existing ARC designation of A-I (small) with all aircraft within the A-I (small) category making up the Airport's critical aircraft. The FAA defines "small" aircraft as those with a maximum certified takeoff weight (MTOW) of 12,500 pounds or less. The Airport's future ARC and critical aircraft are evaluated in **Chapter 2 - Aviation Forecasts** of this Master Plan Update

With an RVR of 5,000 feet, Runway 14-32 has an RDC of A-I-5000. A summary of design standards based on the Airport's critical aircraft, ARC, and RDC is shown below in **Table 1.6** and a list of non-standard conditions at the Airport is provided in **Table 1.9**.

1.5.2. Runway 14-32

Cottonwood Municipal Airport has a single runway oriented in a northwest-southeast alignment with a designation of Runway 14-32. Measuring 4,252 feet long by 75 feet wide, the runway was originally constructed in 1976 and later extended to its current length in 1980. The runway is constructed of asphalt over asphalt (AAC) and has 10-foot-wide unpaved shoulders.⁹ Both runway ends have marked stopways (surfaces that extend past the ends of the runway that are able to support aircraft during an aborted takeoff) each measuring 300 feet long by 75 feet wide. The runway has an effective gradient of 0.97 percent, with Runway 14 at an elevation of 3,519 feet above MSL and Runway 32 at an elevation of 3,560 feet MSL. The runway is equipped with MIRLS, both runway ends are equipped with runway end identifier lights (REILs), and Runway 32 is equipped with nonprecision pavement markings and a precision approach path indicator (PAPI).¹⁰ The runway's lighting and NAVAIDs are further discussed in **Sections 1.5.9** and **1.5.10**, respectively. Along with the runway design standards, the existing characteristics of Runway 14-32 are listed in **Table 1.6**.

⁹ Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).

¹⁰ Federal Aviation Administration, Airport Data and Information Portal (accessed April 2020).

1.5.2.1. Dimensional Criteria

Dimensional criteria are established by the FAA in AC 150/5300-13A. The following criteria apply to runways and their surrounding areas.¹¹

- **Runway Safety Area (RSA):** The RSA is an area surrounding the runway and centered about the runway centerline that reduces the risk of damage to an aircraft in the event of an undershoot, overshoot, or excursion from the runway. The RSA must be cleared, graded, free of hazardous surface variations, and free of objects, except for objects needed for air navigation or aircraft ground maneuvering.
- **Runway Object Free Area (ROFA):** The ROFA is an area surrounding the runway and centered about the runway centerline that must be cleared of all above-ground objects, except those needed for air navigation or aircraft ground maneuvering purposes. In addition, taxiing and holding aircraft are permitted to operate within the ROFA.
- **Runway Obstacle Free Zone (ROFZ):** The ROFZ is a three-dimensional volume of airspace along the runway and extended runway centerline that protects aircraft landing or taking off from the runway. The ROFZ extends 200 feet beyond the end of each runway and must be clear of all aircraft and object penetrations except for NAVAIDs that need to be located in the ROFZ due to their function of providing air navigation.
- **Runway Protection Zone (RPZ):** The RPZ is a trapezoidal area on the ground that is centered about the extended runway centerline. The RPZ's function is to enhance the safety and protection of people and property on the ground. There are both approach and departure RPZs applicable to each runway end, and their location is dependent upon landing and takeoff distances. The approach RPZ dimension is also a function of the type of aircraft and approach visibility minimums associated with the particular runway end. In order to effectively enhance the safety and protection of people and property on the ground, the FAA recommends airport owner control over the land within which the RPZ is located. At Cottonwood Municipal Airport, both the approach and departure RPZs are co-located, are the same dimensions, and are fully located within the Airport's boundary.

While a summary of the Airport's existing design standards is presented in **Table 1.6**, a full analysis of required dimensional criteria associated with the Airport's existing and future ARC is presented in **Chapter 2 - Facility Requirements** of this Airport Master Plan Update.

¹¹ Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, Change 1, 2014.

Table 1.6 - Summary of Existing Runway Characteristics and Design Standards (2020)

Runway Component	Runway 14-32		Design Standard - A-I (Small)
	14	32	
Runway Length	4,252 feet		Varies ¹
Runway Width	75 feet		60 feet
Aircraft Approach Category (AAC)	A		-
Airplane Design Group (ADG)	I (small)		-
Runway Visual Range (RVR)	5,000 feet		-
Runway Design Code (RDC)	A-I-5000		-
Critical Aircraft	All A-I (small) aircraft		-
Pavement Type	Asphalt over Asphalt		-
Pavement Markings	Basic	Nonprecision	-
Edge Lights	Medium Intensity Runway Lights (MIRL)		-
Declared Distances	None		-
Displaced Threshold	None	None	-
Runway End Elevation (above mean sea level)	3,519 feet	3,560 feet	-
Approach Lighting System	None	None	-
Runway End Identifier Lights (REILs)	Yes	Yes	-
Runway Visual Range (RVR) Equipment	None	None	-
Visual Approach Aids	PAPI 2L	None	-
Runway Shoulder Width	10 feet (unpaved)		10 feet
Stopway Length	300 feet	300 feet	-
Stopway Width	75 feet	75 feet	-
Runway Centerline to Holding Position Distance	125 feet		125 feet
Runway Centerline to Parallel Taxiway Centerline	150 feet		150 feet
Runway Centerline to Aircraft Parking Area	240 feet		125 feet
Runway Safety Area (RSA) Width	120 feet		120 feet
RSA Length Beyond Runway End	240 feet ²		240 feet
Runway Object Free Area (ROFA) Area Width	250 feet		250 feet
ROFA Length Beyond Runway End	240 feet		240 feet
Runway Obstacle Free Zone (ROFZ) Width	250 feet		250 feet
ROFZ Length Beyond Runway End	200 feet		200 feet
Approach/Departure Runway Protection Zone (RPZ) Length	1,000 feet	1,000 feet	1,000 feet
Approach/Departure RPZ Inner Width	250 feet	250 feet	250 feet
Approach/Departure RPZ Outer Width	450 feet	450 feet	450 feet

Sources:

FAA 5010 Airport Master Record, 2020.

FAA Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.

Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).

Cottonwood Municipal Airport FAA-Approved Airport Layout Plan, 2006.

Kimley-Horn, 2020.

Notes:

PAPI 2L = Precision approach path indicator – two lights

¹ = Runway length is described in FAA AC 150/5325-4 and in aircraft flight manuals. Appropriate runway lengths are determined by airport elevation, local prevailing surface wind and temperature, runway condition and slope, and aircraft performance characteristics.² = When a stopway is present (like it is at Cottonwood Municipal Airport), the RSA length beyond the runway end begins at the stopway end. The RSA on the Runway 32 departure end intersects with Mingus Avenue and therefore does not meet the design standard.

Values in the table are rounded to the nearest foot.

1.5.3. Taxiways

Taxiways provide aircraft access between runways, aprons, hangars, terminals, and other airside facilities. Cottonwood Municipal Airport has one partial parallel taxiway (Taxiway A) and four runway entrance/exit taxiways (Taxiways B, C, D, and E). Taxiways B and C also serve as ramp connectors between Runway 14-32 and the aircraft parking apron. In addition to connecting Taxiway A with Runway 32, Taxiway E also provides airfield access to the taxilane and private hangars located outside the airfield of fence on the southeast portion of the Airport. The Airport's taxiways are summarized in **Table 1.7**.

Table 1.7 - Airport Taxiways

Taxiway	Type	Taxiway Width (feet)
A	Partial Parallel	40
B	Runway Entrance/Exit and Ramp Connector	30
C	Runway Entrance/Exit and Ramp Connector	50
D	Runway Entrance/Exit	40
E	Runway Entrance/Exit	50

Sources:

Cottonwood Municipal Airport FAA-Approved Airport Layout Plan, 2006.
Nearmap (accessed April 2020).

1.5.3.1. Taxiway Design Standards

The FAA established specific standards for taxiway design with the publication of AC 150/5300-13A in February 2014. These standards provide guidance on taxiway dimensions and layouts to enhance airfield safety. Previous guidance on taxiway design was based on ADG (which is established by the critical aircraft's wingspan and tail height) but did not account for aircraft undercarriage dimensions, which must be considered to ensure taxiway turns, or fillets, can accommodate specific aircraft. Therefore, the taxiway design group (TDG) was created based on aircraft main gear width (MGW) and cockpit-to-main gear (CMG) distance.¹² With the fleet of A-I (small) aircraft serving as the critical aircraft, the Airport has a TDG of 1A. Taxiway and taxilane design standards for the Airport's ADG and TDG are presented in **Table 1.8**. It should be noted that TDG standards were established after the publication of the Airport's 2001 Master Plan Update.

¹² Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, Change 1, 2014.

Table 1.8 - Taxiway Design Standards (2020)

Taxiway Component	Design Standard (feet)	Meets Standard
Design Standards based on Airplane Design Group (ADG = I)		
Taxiway Safety Area (TSA)	49	Yes
Taxiway Obstacle Free Area (TOFA)	89	Yes
Taxilane Obstacle Free Area (OFA)	79	Yes
Taxiway Centerline to Parallel Taxiway/Taxilane Centerline	70	Yes
Taxiway Centerline to Fixed or Movable Object	44.5	Yes
Taxilane Centerline to Parallel Taxilane Centerline	64	Yes
Taxilane Centerline to Fixed or Movable Object	39.5	No
Taxiway Wingtip Clearance	20	Yes
Taxilane Wingtip Clearance	15	Yes
Design Standards based on Taxiway Design Group (TDG = 1A)		
Taxiway Width	25	Yes
Taxiway Edge Safety Margin	5	Yes
Taxiway Shoulder Width	10	No

Sources:

FAA 5010 Airport Master Record, 2020.

FAA Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.

Cottonwood Municipal Airport FAA-Approved Airport Layout Plan, 2006.

Nearmap (accessed April 2020).

Kimley-Horn, 2020.

1.5.4. Helipad

A helipad is an area dedicated for the takeoff and landing of helicopters. Helipads provide helicopters with a clearly marked area away from potential obstructions which may compromise the safety of the aircraft or persons on the ground. The Airport has one GA helipad that is located outside of the airfield fence on the southeast portion of the airfield and serves the private hangars along Airpark Road. The helipad is approximately 9,000 square feet and is not marked with touchdown and lift-off (TLOF) or final approach and take-off (FATO) areas. Since the helipad is located outside of the airfield fence and is privately operated and maintained, it is not required to meet FAA helipad design standards. The Airport also has a marked helicopter parking and operation area located on the southeast corner of the main apron.

1.5.5. Non-Standard Conditions

As shown above in **Table 1.8**, two non-standard taxiway conditions are present at the Airport. Additionally, a non-standard condition exists with the RSA. A summary of these standards and other non-standard conditions is provided in **Table 1.9**. Non-standard conditions will be further addressed in **Chapter 3 - Facility Requirements** of this Master Plan Update.

Table 1.9 - Summary of Non-Standard Conditions

ADG / TDG	Design Standard Not Met	Details
A-I (Small)	RSA must be cleared, graded, free of hazardous surface variations, and free of objects, except for objects needed for air navigation or aircraft ground maneuvering.	When a stopway is present, the RSA length beyond the runway end begins at the stopway end. Since the Airport has a designated stopway at each runway end, the RSA extends 240 feet past each stopway (the design standard for A-I (small) ARC). The RSA on the departure end of Runway 32 intersects Mingus Avenue and, therefore, does not meet design standards.
ADG I	Taxilane centerline to fixed or movable object is required to be a minimum of 39.5 feet.	Aircraft open tie-downs and the marked helicopter parking position on the main apron do not meet taxilane separation standards.
TDG 1A	Taxiway shoulder width must be a minimum of 10 feet.	Taxiway shoulders are not present at the Airport. Although paved taxiway shoulders are not required for airports with an ARC of A-I (small), taxiways should include recommended measures such as turf or bituminous stabilized soil.
Airfield Geometry	Taxiway fillets design standard.	AC 150/5300-13A introduced new design standards for taxiway fillets that include tapered pavement edges leading up to a turn. The existing taxiway fillets at the Airport do not meet these standards.
Airfield Geometry	Situational awareness turns from apron to runway.	Taxiways B and C provide taxiing aircraft direct runway access from the Airport's main apron to Runway 14-32 without requiring a turn.

Sources:

FAA Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.
Kimley-Horn, 2020.

Notes:

ADG = Airplane design group
TDG = Taxiway design group

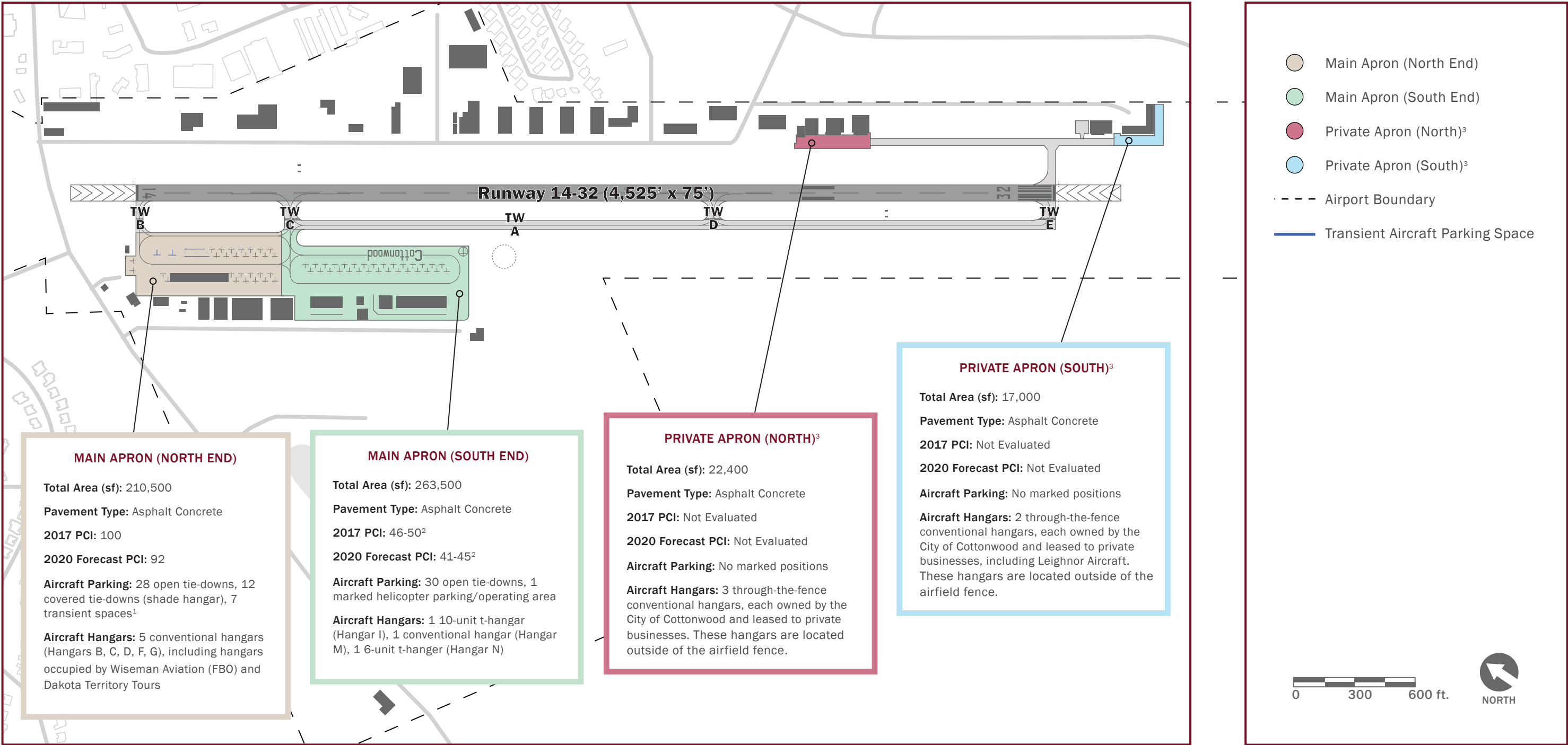
1.5.6. Aircraft Hangars and Parking

Hangars are covered or enclosed structures that provide space for the storage or maintenance of aircraft. As of April 2020, the Airport had 13 hangar structures that provided approximately 164,423 square feet of aircraft storage space. Of the hangars, 11 are conventional hangars (enclosed buildings), including an aircraft maintenance hangar and five privately leased hangars over the fence. The other two hangars are t-hangars, which hold six and 10 aircraft, respectively. As of April 2020, the hangars were 100 percent occupied and there were 14 aircraft owners on the Airport's hangar waitlist. Construction of two additional private hangars outside of the airfield fence on the southeast portion of the property was nearing completion at the time this chapter was drafted. Additionally, the Airport has 65 open tie-down and 12 covered tie-down spaces (shade hangars) located on the main apron. Seven of the open tie-down spaces are designated for transient aircraft and are delineated with blue striping. As of April 2020, 11 of the open tie-down spaces and all of the covered tie-down spaces were leased. Aircraft hangars and tie-down spaces are displayed below in **Figure 1.3**.

1.5.7. Apron Areas

Aprons are located in the non-movement area of an airfield and provide aircraft access to terminals, hangars, and parking areas. Aprons generally accommodate the loading and unloading of passengers and cargo, fueling, maintenance, and aircraft parking. Cottonwood Municipal Airport has three apron areas: one on the northwest portion of the airfield that serves the Airport's terminal, fueling and maintenance areas, and based and transient aircraft parking areas; and two over-the-fence aprons on the southeast portion of the airfield that provide access to five private hangars and a helipad. The Airport's aprons are depicted in **Figure 1.3**.

Figure 1.3 - Airport Aprons, Tie-Downs, and Hangar Facilities



Sources:
FAA 5010 Airport Master Record, 2020.
Cottonwood Municipal Airport FAA-Approved Airport Layout Plan, 2016.
Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).
Esri (accessed April 2020).
Kimley-Horn, 2020.

Notes:
1 = Transient tie-downs are marked in blue and are available for free to transient aircraft for up to 10 days.
2 = Main apron was inspected in three sections. See PCI map below for exact boundaries.
3 = Hangars are located outside of the airfield fence.
Apron names in this figure are not official names but are used in this Master Plan Update for identification purposes.

1.5.8. Airfield Pavement

Airfield pavement such as runways, taxiways, and aprons represent a significant capital investment for the City of Cottonwood. Since this pavement directly impacts operational efficiency and the safety of aircraft, timely maintenance and rehabilitation of pavement infrastructure is critical. The ADOT Aeronautics Group maintains a statewide airport pavement management system (APMS) which evaluates pavement infrastructure at the state's public-use airports and provides airports, ADOT, and the FAA with information to help optimize pavement management programs.¹³ As pavements deteriorate over time, continuous assessments and routine maintenance is needed to extend pavement life.

1.5.8.1. Runway Pavement Strength

The FAA employs the Aircraft Classification Number – Pavement Classification Number (ACN-PCN) method to report runway pavement strength.¹⁴ PCN expresses the relative load carrying capacity of a pavement section in terms of standard single-wheel load. ACN are determined for specific aircraft models and express the relative effect of the aircraft on the pavement. To prevent damage and ensure the life span of the pavement, the ACN of aircraft using the pavement should not typically exceed the pavement's PCN. Heavier aircraft operations may be permissible, though frequent operations by heavier aircraft may shorten the pavement's lifespan.

A runway strength analysis for the Airport was completed in 2014 as part of the APMS. The analysis evaluated Runway 14-32 in two sections: one section for the runway ends and one section for the remainder of the runway. The APMS currently identifies these sections as RW1432CT-20 and RW1432CR-10, respectively (visible in **Figures 1.4** and **1.5**). The PCN report assigned section RW1432CT-20 with a PCN of 3/F/D/Y/T and section RW1432CR-10 with a PCN of 5/F/D/X/T. The report's final recommended PCN for Runway 14-32 was 3/F/D/Y/T based on the structural capacity of the weakest pavement section. The report noted that this PCN is insufficient to accommodate some aircraft operating at the Airport. A detailed analysis of runway pavement strength and future requirements will be completed in **Chapter 3 – Facility Requirements**.



Source: Kimley-Horn

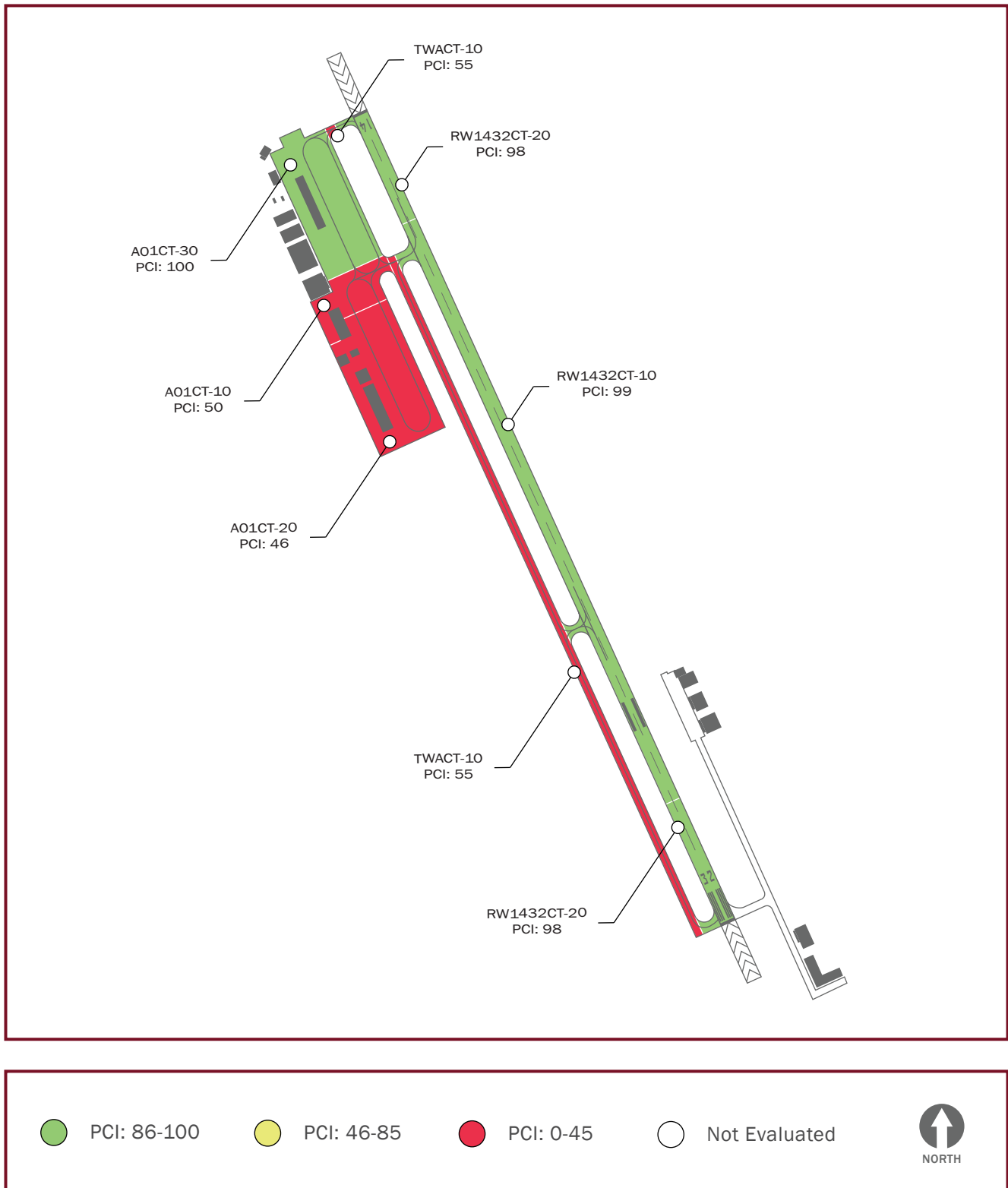
1.5.8.2. Airfield Pavement Condition

ADOT maintains an online database with pavement condition details for all public-use airports in the state system. Pavement condition is expressed as a numerical rating called Pavement Condition Index (PCI). PCI is calculated based on the distresses observed during condition surveys and is represented by a numerical index between 0 and 100, where 0 is the worst possible condition and 100 is the best possible condition. According to the APMS online database, Cottonwood Municipal Airport was last inspected in 2017. The 2017 PCI values from this inspection are illustrated in **Figure 1.4** and the 2020 forecast PCI values are displayed in **Figure 1.5**.

¹³ Arizona Department of Transportation, *Arizona Airport Pavement Management System Update*, 2010.

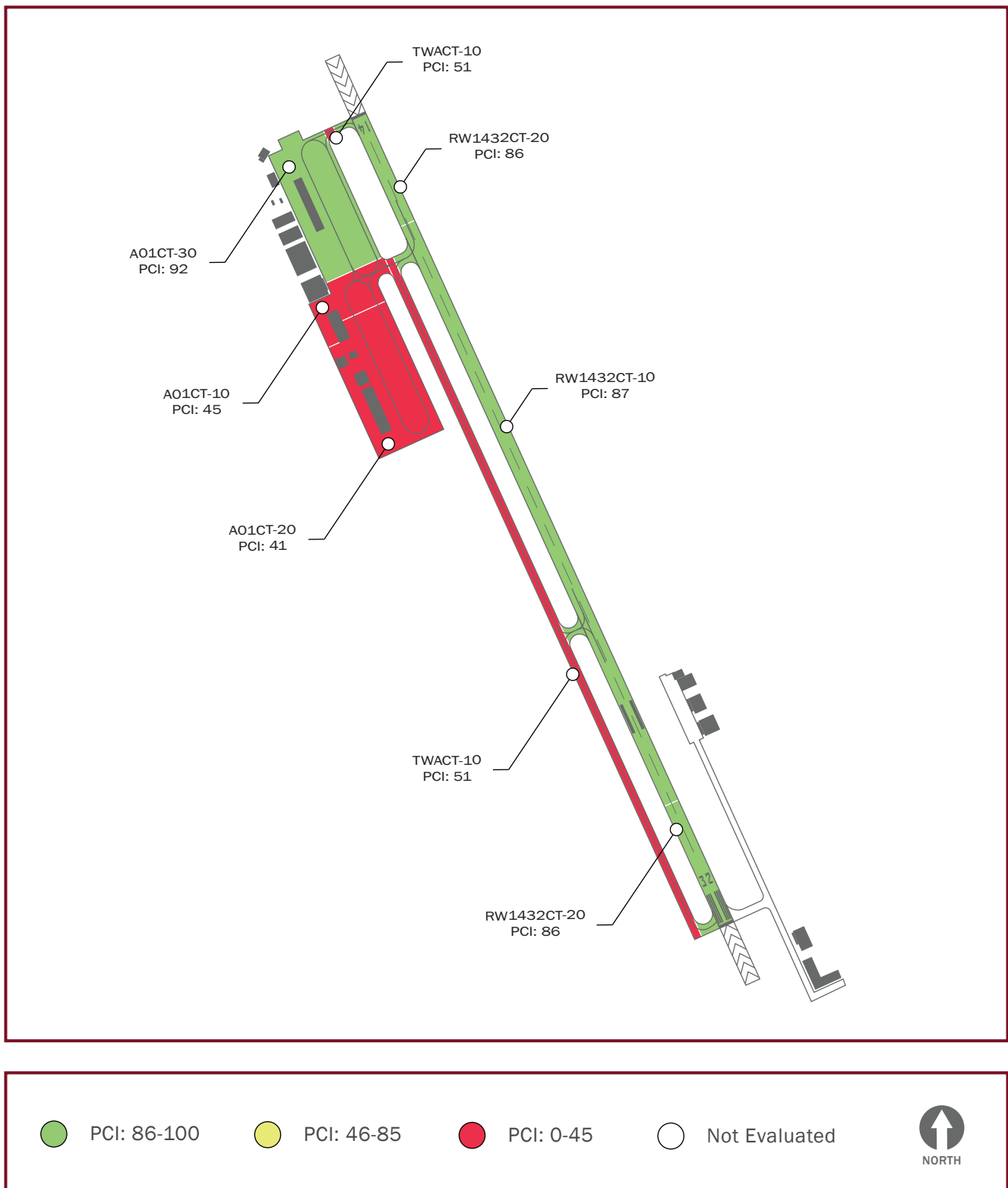
¹⁴ Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.

Figure 1.4 - Forecast Pavement Condition Index (2017)



Sources:
 Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).
 Kimley-Horn, 2020.

Figure 1.5 - Forecast Pavement Condition Index (2020)



Sources:
 Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).
 Kimley-Horn, 2020.

1.5.8.3. Airport Pavement Preservation Program

In conjunction with the APMS, ADOT established an Airport Pavement Preservation Program (APPP) to determine necessary projects statewide, develop PCI forecast models, and prioritize project funding accordingly. Two reports are developed and are periodically updated to inform the program's priorities; the Unlimited Budget APPP, which prioritizes projects based on pavement conditions, and the Constrained Budget APPP, which prioritizes projects based on pavement condition *and* pavement use. Both reports were last updated in 2018 for the years 2019 through 2024. As listed below in **Table 1.10**, two projects at Cottonwood Municipal Airport are included in the 2019-2024 Unlimited Budget APPP. It should be noted that the 2019 work has not been completed as of April 2020.¹⁵ No projects at Cottonwood Municipal Airport were included in the 2019-2024 Constrained Budget APPP.

Table 1.10 - 2019-2024 Unlimited Budget APPP at Cottonwood Municipal Airport

Year	Location on Airport	Branch and Section ID	Work Type	Estimated Cost
2019	Northern portion of main apron	A01CT-30	P-608 Application	\$124,000
2022	Northern portion of main apron	A01CT-30	P-608 Application	\$133,000
Total Estimated Cost				\$257,000

Source: Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).

Notes:

Pavement branch and section IDs can be found on the PCI maps in this chapter.

Per FAA Advisory Circular 150/5370-10H, P-608 Application is the FAA's specification for a specialized type of Emulsified Asphalt Seal Coat. Sealcoating is the process of applying a protective coating to asphalt-based pavements to provide a layer of protection from the elements.

1.5.9. Airfield Lighting

Airfield lighting is critical for the safe and efficient operation of aircraft during nighttime and periods of low visibility. At Cottonwood Municipal Airport, Runway 14-32 is equipped with MIRLS to identify the edge of usable pavement. Additionally, both runway ends are equipped with REILs to provide pilots on approach with identification of the runway ends. As of April 2020, the Airport did not have taxiway edge lighting and the terminal and apron areas were lit via area lighting.

1.5.10. Navigational Aids (s)

NAVAIDs are ground-based visual or electronic devices that provide course guidance, altitude information, or weather conditions to pilots. The following NAVAIDs are found at the Airport:

- **Automated Weather Observation System (AWOS):** An AWOS provides continuous, real-time information on airport weather conditions. Located at midfield and immediately south of the segmented circle, the Airport's AWOS is an AWOS III and reports information such as altimeter, wind speed and directions, density altitude, visibility, and precipitation accumulation.¹⁶ According to data from the FAA and National Oceanic and Atmospheric Administration (NOAA), as of April 2020 the

¹⁵ Arizona Department of Transportation, Airport Pavement Management System IDEA (accessed April 2020).

¹⁶ Federal Aviation Administration, Surface Weather Observation Stations, 2020.

Airport's AWOS inconsistent data reporting has rendered the system inoperable. Therefore, the AWOS should be evaluated for functionality and/or considered for replacement.

- **PAPIs:** PAPIs provide guidance information through a combination of lights that help pilots acquire and maintain the correct runway approach. PAPIs consist of fixed boxes with a sequence of two or four lights (two at Cottonwood Municipal Airport) situated on the left side of the runway.
- **REILs:** REILs consist of two synchronized flashing lights positioned on each corner of the runway and provide pilots with identification of the end of the landing threshold. REILs serve as visual NAVAIDs in addition to forms of airfield lighting.
- **Rotating beacon:** Rotating beacons display alternative flashing lights to provide airport identification to pilots at night or during periods of low visibility. Cottonwood Municipal Airport's rotating beacon is located immediately north of the terminal and is mounted on a standalone tower. The beacon is 36 inches in diameter and contains rotating lights projecting alternating green and white beams of light, 180 degrees apart. The beacon operates from sunset to sunrise.
- **Segmented circle with lighted wind indicator / supplemental wind indicator:** A segmented circle is a visual indicator that provides airport traffic pattern information to pilots. Wind indicators, also known as wind socks or wind cones, provide pilots with wind direction and strength prior to takeoff and landing. The Airport's segmented circle indicates a right traffic pattern for Runway 14-32 and is located at midfield, immediately south of the main apron and east of the former Red Rock Skydiving building. A lit wind indicator is located at the center of the segmented circle, and a supplemental wind indicator is affixed atop the airfield fence east of Runway 14.



Source: Kimley-Horn

1.5.11. Meteorological Conditions

Climate and meteorological conditions can significantly influence airport operations and planning. This section describes the current meteorological trends and characteristics at Cottonwood Municipal Airport.

1.5.11.1. Local Climate

Located in north-central Arizona at approximately 3,560 feet MSL, the City of Cottonwood experiences a semi-desert climate that is characterized by variety of weather conditions, including warm summers with temperatures frequently climbing above 100 degrees Fahrenheit, cool winters with temperatures typically falling into the upper twenties in December and January, and moderate humidity.¹⁷ The average annual precipitation for Cottonwood is approximately 12 inches.¹⁸

¹⁷ The University of Arizona, *The Soils and Climate of Yavapai County*, 2018.

¹⁸ Arizona State Park website, *Dead Horse Ranch Annual Weather* (accessed April 2020).

As previously discussed, the Airport's AWOS is not reporting consistent weather data and is effectively inoperable. Furthermore, the nearest National Weather Service Forecast Office is located in Bellemont, Arizona, approximately 36 miles northwest of the Airport at 7,130 feet MSL and does not accurately represent the conditions in Cottonwood. Therefore, for purposes of this Master Plan Update, the mean maximum temperature (the average daily maximum air temperature) during the hottest month of the year (July) from the Airport's most recent FAA-approved ALP of 98.4 degrees Fahrenheit was used.

1.5.11.2. Runway Use and Crosswind Coverage

A prevailing wind is one that blows predominately from a specific direction. A runway is ideally oriented when aircraft can take off and land into the wind, increasing aircraft efficiency. Thus, the prevailing wind direction determines the desired alignment and configuration of a runway. Aircraft can only tolerate limited crosswind, a component of wind that blows perpendicular to the runway centerline. According to the FAA, a crosswind runway should be considered when a runway orientation provides less than 95 percent wind coverage for an airport's RDC.¹⁹ If a runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The allowable crosswind component for each AAC/ADG is shown in **Table 1.11**. With an existing ARC of A-I (small), the Airport's runway configuration should provide 95 percent wind coverage for the 10.5 knot crosswind component.

Table 1.11 - Crosswind Components

Allowable Crosswind	Aircraft Approach Category/Airplane Design Group
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 Advisory Circular 150/5300-13A, Change 1, *Airport Design*, 2014.

The crosswind coverage of a runway is determined based on historical wind data from the local weather observation station. Because the Airport's AWOS was inoperable as of April 2020, wind data was collected from Sedona Airport's AWOS III P/T, located approximately 16 miles northwest of Cottonwood Municipal Airport, and Ernest A. Love Field's Automated Surface Observing System (ASOS) in Prescott, approximately 23 miles southwest of the Airport. These two locations were utilized for comparison purposes. Using this data, **Table 1.12** shows the calculated wind coverage of Runway 14-32 for the four crosswind components. It should be noted that, per FAA guidelines, this analysis uses the Airport's true runway headings of 155 and 335 degrees. While runway designations represent the magnetic heading when they are created (Runway 14-32 represents the magnetic headings of 140 degrees and 320 degrees), the Earth's magnetic lines slowly drift over time causing the true runway headings to shift while the runway's name remains.

¹⁹ Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, *Airport Design*, 2014.

Based on historical wind data obtained from weather observing stations at airports in Sedona and Prescott, the existing runway orientation at Cottonwood Municipal Airport falls below the FAA's recommendation for the crosswind component of 10.5 knots for all categories except the instrument flights rules (IFR) wind component of 10.5 knots at Sedona. According to FAA guidance, a crosswind runway should be considered at the Airport to meet the 95 percent requirement. While runway orientation is further analyzed in **Chapter 3 - Facility Requirements** of this Master Plan Update, replacement of the Airport's existing AWOS and more accurate wind data are required before a crosswind runway can be considered.

Table 1.12 - Runway 14-32 Crosswind Coverage

Allowable Crosswind	VFR	IFR	All Weather
Wind Data from Sedona Airport AWOS III P/T			
10.5 knots	89.25%	98.00%	89.51%
13 knots	94.69%	99.04%	94.82%
16 knots	99.28%	99.75%	99.30%
20 knots	99.91%	99.94%	99.91%
Wind Data from Prescott Ernest A. Love Field ASOS			
10.5 knots	92.21%	88.45%	92.08%
13 knots	95.61%	92.84%	95.51%
16 knots	98.60%	97.14%	98.55%
20 knots	99.68%	99.13%	99.66%

Sources:

FAA Wind Rose Generator 2019 (true runway headings of 155°, 335°).

NOAA National Climate Data Center (2010-2019) (244,441 total observations at SEZ; 89,448 total observations at PRC).

Kimley-Horn, 2020.

Notes:

VFR = Visual Flight Rules

IFR = Instrument Flight Rules

AWOS = Automated Weather Observing Systems

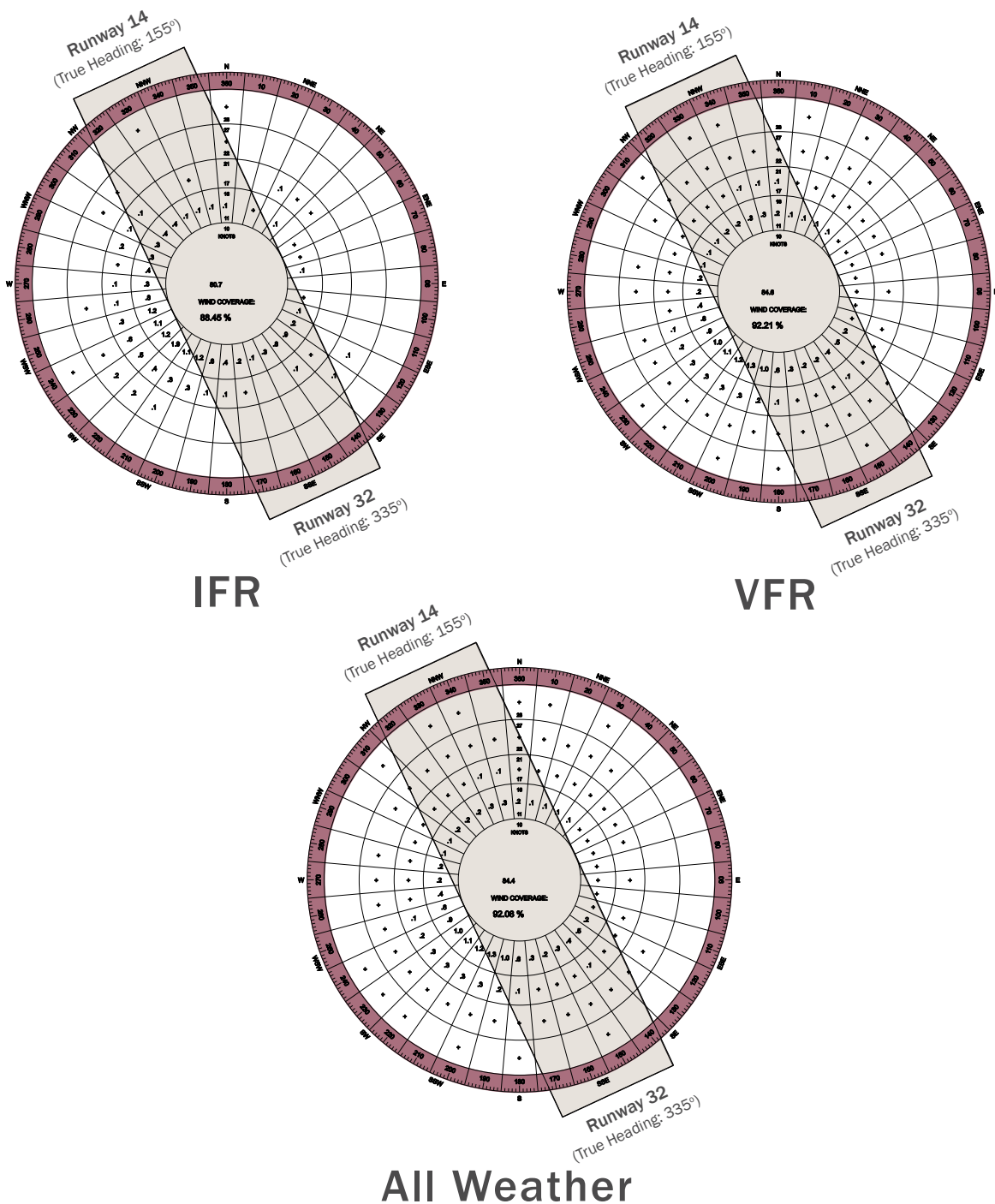
ASOS = Automated Surface Observing Systems

Yellow text = wind coverage falls between 94 percent and 95 percent

Red text = wind coverage does not meet the FAA's 95 percent recommendation

The historical wind data for Prescott was also used to generate visual flight rules (VFR), IFR, and all-weather wind roses for 10.5 knots, displayed in **Figure 1.6**. The wind roses for 10.5 knots are included here to correspond with the Airport's existing ARC of A-I (small).

Figure 1.6 - Wind Roses (10.5-knot wind coverage; True runway headings of 155°, 335°)

**Sources:**

FAA AGIS Wind Analysis Tool.

NOAA National Climate Data Center (2010-2019) (89,448 total observations).

Kimley-Horn, 2020.

Notes:

VFR = Visual Flight Rules

IFR = Instrument Flight Rules

Wind data period is 2009-2019.

Due to the inoperable nature of the AWOS at Cottonwood Municipal Airport, wind data was used from the ASOS at Prescott Ernest A. Love Field.

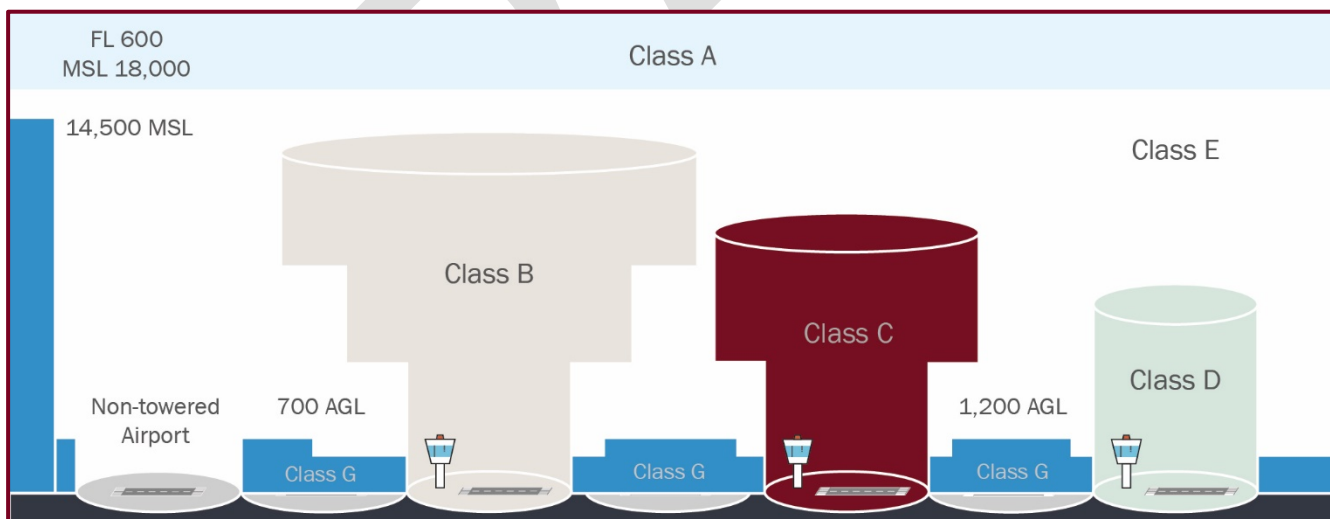
1.6. AIRSPACE

The National Airspace System (NAS) was created by the FAA to create a safe and efficient airspace environment for all aviation operations. The NAS is made up of a network of airport, air navigation, and Air Traffic Control (ATC) facilities and is governed by a set of rules and regulations that allow for the coordination and control of navigable airspace within the U.S. This section describes the surrounding airspace and existing procedures and capabilities at Cottonwood Municipal Airport to determine the airspace's ability to accommodate anticipated demand and traffic patterns throughout the planning horizon.

1.6.1. Airspace Classifications

The NAS consists of various classifications of airspace based on level of service and operating rules. These classifications impose requirements on the operation of aircraft, including visibility minimums, cloud clearance, communication with the ATC, and specific aircraft equipment. As illustrated in **Figure 1.7**, airspace is generally categorized as controlled or uncontrolled and special use or other airspace. Controlled airspace (Classes A, B, C, D, and E) refers to airspace in which ATC services are provided. Uncontrolled airspace (Class G) is airspace in which ATC has no authority or responsibility to control. Special use airspace designates airspace where certain activities occur or where limitations must be imposed. Other airspace refers to the remaining airspace not covered by the aforementioned classifications.²⁰

Figure 1.7 - Classifications of Airspace



Sources:
Federal Aviation Administration, Advisory Circular 150/5300-13A, Change 1, Airport Design, 2014.
Kimley-Horn, 2020.

The classifications of airspace and their relation to the Airport are described in **Table 1.13**. Additionally, the VFR sectional chart displaying the Airport and the surrounding airspace is presented in **Figure 1.8**.

²⁰ Federal Aviation Administration, Pilot's Handbook of Aeronautical Knowledge, 2016.

Table 1.13 - Classifications of Airspace

Airspace Class	Description	Relation to Cottonwood Municipal Airport
Controlled Airspace		
Class A	Airspace generally from 18,000 feet MSL up to and including flight level (FL) 600 (60,000 feet MSL). Unless otherwise authorized, all operations within Class A airspace are conducted under IFR.	All Class A airspace above the Airport is controlled by the Albuquerque Air Route Traffic Control Center.
Class B	Airspace generally from the surface to 10,000 feet MSL surrounding major commercial airports. To enter this airspace, communication and/or clearances must be received from ATC.	The nearest Class B airspace to the Airport surrounds Phoenix Sky Harbor, approximately 55 NM southwest of the Airport.
Class C	Airspace generally from the surface to 4,000 feet AGL surrounding medium-sized commercial airports. Class C airspace typically consists of a surface area with a five-NM radius and an outer circle with a ten-NM radius that extends from 1,200 feet to 4,000 feet AGL. Aircraft must establish two-way radio communications with the ATC prior to entering this airspace.	There is no Class C airspace within the vicinity of the Airport. The nearest Class C airspace surrounds Tucson International, approximately 165 NM southeast of the Airport.
Class D	Airspace generally from the surface to 2,500 feet AGL surrounding all other airports that have an airport traffic control tower (ATCT). Class D airspace typically contains a horizontal radius of 5 NM from an airport, extending from the surface up to a designated vertical limit above the airport. Aircraft must establish two-way radio communications with the ATC prior to entering this airspace.	The nearest Class D airspace to the Airport surrounds Prescott's Ernest A. Love Field and Flagstaff Pulliam Airport.
Class E	General controlled airspace not classified as Class A, B, C, or D. This airspace typically begins at 1,200 feet AGL and extends up to, but does not include, 18,000 feet MSL. However, where specified, Class E airspace can begin at 700 feet AGL.	Class E airspace begins 700 feet above the Airport where Class G airspace ends. All local flights will enter the Class E airspace that surrounds the Verde Valley.
Uncontrolled Airspace		
Class G	The remaining airspace is considered uncontrolled. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet AGL). Although ATC does not control this airspace, VFR rules still apply.	The Airport lies within Class G airspace. The Class G airspace at the Airport extends from the surface up to 700 feet AGL where it abuts Class E airspace.

Airspace Class	Description	Relation to Cottonwood Municipal Airport
Special Use Airspace		
Military Operations Areas (MOAs)	MOAs consist of airspace with defined limits established for the purpose of separating military training activities from IFR traffic.	MOAs in the vicinity of the Airport include the Bagdad 1 MOA and the Gladden 1 MOA, each located approximately 50 NM southwest of the Airport.
Alert Areas	Alert areas contain high volumes of pilot training or an unusual type of aerial activity.	The A-231 Alert Area is located approximately 60 NM southwest of the Airport and is noted on the sectional chart for containing a concentration of student jet transition training.
Grand Canyon Special Flight Rules Area	This special airspace area is designated by the FAA to promote safe aircraft operations and navigation for VFR aircraft within the Grand Canyon National Park. These flight rules apply to all aircraft operations below 14,500 feet MSL and include restricted zones, flight corridors, special communication frequencies, and VFR checkpoints.	The Grand Canyon Special Flight Rules Area is located approximately 83 NM north of the Airport.
Other Airspace		
Special Conservation Areas	In these areas, pilots are requested to maintain a minimum altitude of 2,000 feet AGL.	Several special conservation areas surround the Airport, including the Verde Valley Bald Eagle Breeding Area, the Woodchute Wilderness Area, the Sycamore Canyon Wilderness Area, and the Munds Mountain Wilderness Area.
Military Training Routes (MTRs)	MTRs are routes used by military aircraft to maintain proficiency in tactical flying. These routes are generally established below 10,000 feet MSL for operations at speeds in excess of 250 knots.	Numerous MTRs are present west of the Airport and are associated with the area's MOAs.

Sources:

FAA, *Pilot's Handbook of Aeronautical Knowledge*, 2016.

FAA, *VFR Sectional Aeronautical Charts* (accessed April 2020).

Notes:

IFR = Instrument Flight Rules

VFR = Visual Flight Rules

NM = Nautical miles

AGL = Above ground level

ATCT = Airport traffic control tower

MSL = Mean sea level

Figure 1.7 - VFR Sectional Aeronautical Chart



- | | |
|--|--|
|  Class B Airspace |  Class E Airspace |
|  Class C Airspace |  Military Operations Areas |
|  Class D Airspace |  Special Conservation Areas |

**Sources:**

FAA National Aeronautical Charting Office (accessed April 2020).
Kimley-Horn, 2020.

Note: A full VFR sectional chart legend can be found on the FAA's VFR Charts website: https://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/vfr/

1.6.2. Standard Operating Procedures

Standard operating procedures govern the movement of arriving and departing aircraft in the vicinity of an airport. These procedures increase airspace safety and efficiency and ensure the orderly flow of traffic. The majority of aircraft operations at the Airport are conducted under VFR. Unlike aircraft operating under IFR where air traffic control is responsible for separation from other aircraft and obstacles, aircraft operating under VFR are responsible for maintaining separation from other aircraft and obstacles themselves.

1.6.2.1. Standard Arrival Procedures

For arriving aircraft, the Airport utilizes a left-hand rectangular traffic pattern for Runway 14 and a right-hand rectangular pattern for Runway 32.²¹ Arriving aircraft must utilize the standard traffic pattern entry procedures for an uncontrolled airport. Traffic pattern altitudes are 4,050 feet MSL (500 feet AGL) for helicopters, 4,350 feet MSL (800 feet AGL) for single-engine aircraft, 4,550 feet MSL (1,000 feet AGL) for multi-engine aircraft, and 5,050 feet MSL (1,500 feet AGL) for turbine aircraft.

1.6.2.2. Standard Departure Procedures

Aircraft departing the Airport via Runway 14 are required to maintain the runway heading for 1 nautical mile (NM) beyond the runway's departure end and reach 500 feet AGL before turning.²² Aircraft departing via Runway 32 are required to maintain the runway heading for 0.6 NM beyond the runway's departure end and reach 500 feet AGL before turning. These procedures were enacted to avoid overflight of local residential land uses.

1.6.3. Instrument Flight Procedures

As previously described, VFR and IFR present two unique sets of criteria, procedures, and guidelines under which pilots operate. Instrument flight procedures aid pilots flying under IFR in determining their position, navigating between points, and approaching and departing an airport. This section describes existing procedures at Cottonwood Municipal Airport.

1.6.3.1. Instrument Approach Procedures

Under VFR conditions, pilots may approach an airport using visual cues. IFR conditions occur when cloud ceilings are lower than 1,000 feet AGL and visibility becomes less than 3 statute miles. Under these conditions, only properly trained pilots with adequately equipped aircraft are permitted to fly and must follow FAA-published instrument approach procedures. Cottonwood Municipal Airport is served by one Standard Instrument Approach Procedure (SIAP), an Area Navigation (RNAV) Global Positioning System (GPS) that is aligned with Runway 32. The approach has a descent path of 3.60 degrees and supports AAC A through C. The RNAV GPS Runway 32 SIAP includes a Lateral Navigation (LNAV) approach—a nonprecision approach

²¹ City of Cottonwood, Cottonwood Municipal Airport Operating Rules, 2010.

²² Federal Aviation Administration, Airport Data and Information Portal (accessed April 2020).

that uses a minimum decent altitude and does not provide vertical guidance—and a Circling approach, used to align an aircraft with a runway when a straight-in landing is not possible.

1.6.3.2. Instrument Departure Procedures

Instrument departure procedures are preplanned IFR procedures that provide obstruction clearance from the airport area to the en route structure of the flight. Cottonwood Municipal Airport is served by one published Obstacle Departure Procedure (ODP). ODPs are designed to use the least restrictive route of flight while avoiding obstructions in the area. The Airport's ODP, named MINGY ONE, helps pilots taking off on Runway 14 to avoid obstacles including utility lines, vehicles on Mingus Avenue, trees, and buildings. Similarly, MINGY ONE helps pilots taking off on Runway 32 avoid obstacles including a utility box, fencing, buildings, trees, and poles.

1.6.4. Noise Abatement

The Airport's noise abatement procedures were updated in 2019 after an increase in noise complaints from nearby residents. According to Airport and City officials, the increased noise was not a result of local aircraft traffic, but likely from additional training and commercial flights from neighboring Ernest A. Love Field in Prescott. The Airport's Noise Action Plan designates Runway 32 as the "calm wind" runway to encourage pilots to take off to the north given the residential communities within close proximity of Runway 14's departure end. The Noise Action Plan also prompted the placement of signage throughout the Airport to remind pilots of the appropriate noise abatement procedures. Additionally, standard arrival and departure procedures were enacted at the Airport to avoid continuous aircraft overflight of local residential land uses, as previously discussed. Touch-and-go activity is also prohibited at the Airport 30 minutes before sunset and 30 minutes after dawn.²³

1.7. LANDSIDE FACILITIES

Landside facilities support aircraft maintenance, surface transportation, pilots, passengers, employees, and cargo. This section describes the major landside facilities and tenants at Cottonwood Municipal Airport.

1.7.1. Terminal Building

The Airport's terminal building is located on the northwest side of the property near the intersection of Mingus Avenue and the Airport's access road. The approximately 1,600 square-foot terminal building includes areas dedicated for Airport administration, flight planning, restroom facilities, and other GA services. As of 2019, the terminal building is not equipped with Wifi but the Airport is actively seeking to add service throughout the Airport's property.

²³ Federal Aviation Administration, Airport Data and Information Portal (accessed April 2020).

1.7.2. Fixed Base Operator (FBO)

FBOs provide aviation services and other amenities at an airport to based and transient aircraft. FBOs may be operated by airport owners or private companies, and services often include aircraft fueling, maintenance and repair, pilot lounge and flight planning facilities, and aircraft tie-down and/or hangar storage.

Cottonwood Municipal Airport is serviced by one FBO, Wiseman Aviation. Located inside the terminal building and occupying an approximately 1,800 square-foot conventional hangar south of the terminal, Wiseman Aviation performs daily management operations at the Airport and provides GA services and amenities for pilots, passengers, and aircraft, including pilot planning, a passenger and pilot lounge, aircraft parking, rental car services, and self-service 100LL fuel. The FBO's hours are generally 8:00 am to 5:00 pm Tuesday through Sunday, and 9:00 am to 4:00 pm Sunday and Monday.²⁴

1.7.3. Flight Instruction

Leighnor Aircraft provides rental aircraft and flight training to the general public at Cottonwood Municipal Airport. The company operates out of hangar #3, an approximately 10,000 square-foot facility located at the southern terminus of Airpark Road on the southeast portion of the Airport. Leighnor Aircraft employs three instructors at their Cottonwood location and offers flight training to local and visiting student pilots. The Experimental Aircraft Association (EAA) Chapter 952 Verde Valley also hosts periodic events at the Airport that offer discovery flights and flight instruction opportunities to aspiring pilots.

1.7.4. Aircraft Maintenance and Wash Rack

As the FBO at Cottonwood Municipal Airport, Wiseman Aviation provides aircraft maintenance from their hangar southwest of the terminal. Maintenance staff are not located at the Airport, however, and must travel to Cottonwood from Flagstaff Pulliam Airport. Travel costs are incorporated into the respective maintenance costs. A private contractor also performs periodic Airframe and Powerplant (A&P) services at the Airport.

Wash racks are designated areas for the cleaning of aircraft that are designed to reduce or eliminate negative impacts to the environment. The Airport's wash rack is located on the south portion of the main apron and adjacent to the fueling facility. The wash rack is uncovered and encompasses approximately 2,500 square feet.

1.7.5. Cottonwood Airpark

Cottonwood Airpark is an on-Airport industrial park located east of Runway 14-32 along Airpark Road. The property is owned by the City of Cottonwood and leased to various tenants. Cottonwood Airpark, Inc. is the primary lease holder of this land, managing and subleasing the property on behalf of the City. As of April 2020, Cottonwood Airpark is home to businesses offering a wide variety of products and services, including commercial cleaning services, metal materials and supplies sales, event and party rentals, automobile parts

²⁴ City of Cottonwood, Airport Services (accessed April 2020).

sales and services, health and beauty product sales, gymnastics training, and veterinary services. Aviation tenants located in the Airpark provide aircraft access via a private, secure taxiway that is fenced off from the airfield operating area.

1.8. SUPPORT FACILITIES

Airport support facilities are critical to meeting the needs of aircraft and Airport users. This section describes the support facilities and infrastructure at Cottonwood Municipal Airport, including aircraft fuel storage, utility systems, emergency services, and Airport security.

1.8.1. Fuel Facilities

There are two aircraft fuel facilities at the Airport. One facility is located on the south portion of the main apron between the six-unit t-hangar and the conventional hangar. This aboveground fuel storage and dispensing facility consists of two 10,000-gallon tanks: one contains 100LL AvGas and is owned by the City of Cottonwood and managed by Wiseman Aviation; the second contains Jet A fuel and is privately owned but is periodically made available for public use. This facility's fuel sales between Fiscal Years 2015 and 2019 are presented in **Table 1.14**. In July 2020 the Airport was notified by the FAA that the privately-owned fuel tank was out of compliance and must be removed. At the time of writing, the Airport was in the process of removing the tank. The second fueling facility is located outside of the airfield fence in the northwest corner of the north private apron. This aboveground facility is reserved for tenants of the hangar.

Table 1.14 - Main Apron Fuel Facility Sales

Fiscal Year*	Fuel Gallons Sold	Fuel Sales
2015	43,336.67	202,400.02
2016	72,595.11	279,477.43
2017	64,392.25	258,129.75
2018	69,239.56	296,046.60
2019	62,927.64	251,710.56
Total	312,491.23	1,287,764.36

Sources:
Cottonwood Municipal Airport Management.
Wiseman Aviation.

Note: * = City of Cottonwood fiscal year is July – June.

1.8.2. Airport Maintenance

The City of Cottonwood is responsible for upkeep and maintenance of the Airport. While there is no dedicated maintenance facility on Airport property, the City's public works facility is located approximately one quarter of a mile southwest of the Airport on Mingus Avenue. City staff representing the public works department provide airport maintenance on an as-needed basis.

1.8.3. Aircraft Rescue and Firefighting

Title 14 Code of Federal Regulations Part 139 (14 CFR Part 139) mandates that airports with scheduled or unscheduled air carrier aircraft with more than 30 seats, or those that serve scheduled air carrier aircraft containing 9 to 31 seats, must provide on-Airport aircraft rescue and firefighting (ARFF) equipment and services during operations.²⁵ Since the Airport's existing operations do not include these services, the Airport is not Part-139 certified and on-Airport ARFF equipment is not required. The City of Cottonwood Fire and Medical Department provides emergency services to the Airport. The Department's facility is located approximately 0.9 miles east of the Airport near the intersection of 6th Street and Aspen Street.

1.8.4. Airport Emergency Plan

The City completed an Airport Emergency Plan in 2011 that addresses various potential emergency events at Cottonwood Municipal Airport, including aircraft accidents, structural fires, terrorist threats, and hazardous material spills. Following the guidance of several FAA advisory circulars, the Airport Emergency Plan outlines general response plans to mitigate further harm and damage and delineates the roles and responsibilities of the departments, agencies, and organizations that may contribute in an emergency response. The plan is reviewed and revised, if necessary, on an annual basis.²⁶

1.8.5. Airport Fencing and Security

The airfield is completely enclosed by a chain link fence that varies in height from four to six feet. There are six gates along the fence's perimeter, including one security gate southwest of the terminal that provides access to the Airport's hangars, one security gate northeast of the terminal that provides vehicle access to the main apron, and four security gates on the southeast portion of the Airport that provide runway access to the private hangars outside of the airfield fence. The gates are maintained by the Airport and are controlled by either the Airport or adjacent tenants. Gates are kept closed and locked when not in use, and airfield access through the security gates is available via key cards.

1.8.6. Utility Infrastructure

Major utilities serving the Airport include water, sanitary sewer, electricity, and natural gas. The Airport is served by the following utility providers:

- **Water:** City of Cottonwood
- **Sanitary sewer:** City of Cottonwood
- **Electrical service:** Arizona Public Service Electric
- **Natural gas:** UniSource Energy

²⁵ Federal Aviation Administration, Airport Safety, 2020.

²⁶ City of Cottonwood, *Airport Emergency Plan*, 2011.

1.9. LAND USE AND ZONING

Land use and zoning near an airport can have significant impacts on airport operations and growth. This section provides an overview of the current land uses and zoning in the vicinity of Cottonwood Municipal Airport and their implications for airport development.

1.9.1. Existing Land Use

According to the FAA, land use compatibility near an airport is focused primarily on noise levels in the community and the safety of persons and property both on the ground and in the air.²⁷ Generally, land uses such as industrial or commercial are considered to be compatible with aviation-related operations while residential and institutional land uses (e.g., schools, hospitals, churches) are considered to be non-compatible. The areas immediately north, south, and east of Cottonwood Municipal Airport are heavily developed with residential, industrial and commercial land uses. West of the Airport are light industrial, commercial, and residential land uses along with large tracts of undeveloped land. Existing land uses in the vicinity of the Airport are displayed in **Figure 1.9** and additional details are provided below.

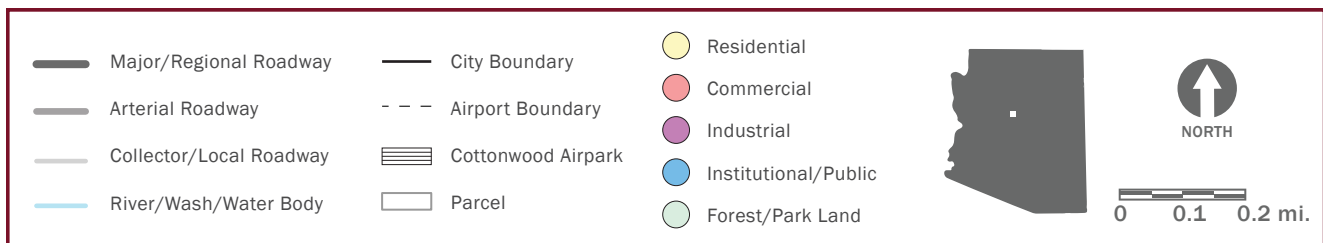
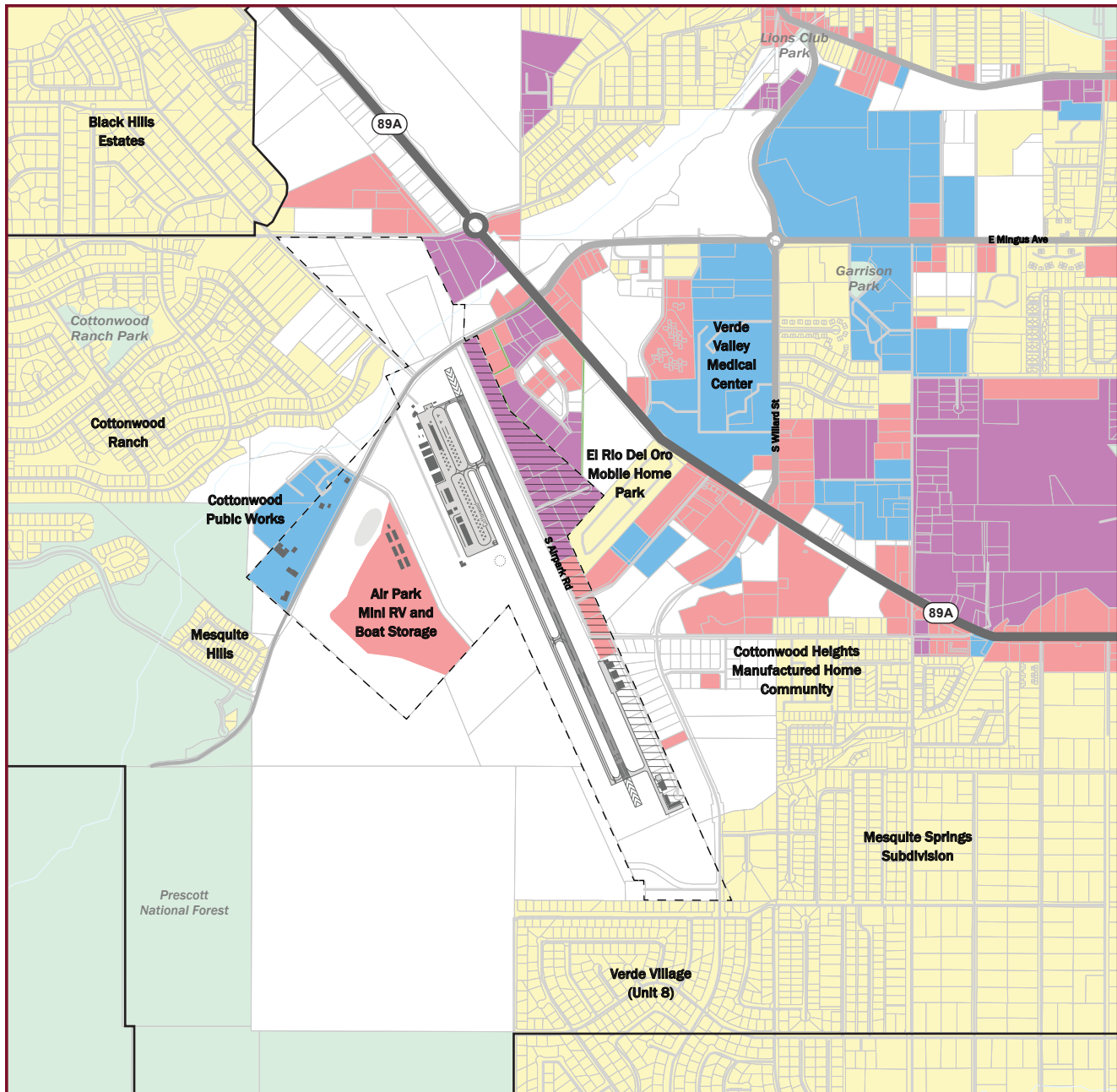
- **Northern Airport Vicinity:** The Airport owns a large tract of land between Mingus Avenue and West Black Hills Drive to control the land that falls within the Runway 14 RPZ. An industrial park and a few commercial land uses reside northeast of the Airport, and the Black Hills Estates community is located northwest of the Airport in the Town of Clarkdale.
- **Southern Airport Vicinity:** Similar to the Airport's northern boundary, the Airport owns land south of Runway 32 to control areas within the RPZ. Land uses south of the Airport are predominantly residential and include the Mesquite Springs Subdivision and the Verde Village (Unit 8) community, with both communities extending south into unincorporated Yavapai County.
- **Eastern Airport Vicinity:** Immediately east of the Airport, along Airpark Road, is the Cottonwood Airpark and other commercial and industrial land uses. The City owns and leases facilities in the Cottonwood Airpark. Between the Airport and State Route 89A are the El Rio Del Oro and Cottonwood Heights mobile home parks as well as various commercial businesses. East of State Route 89A is a combination of commercial, industrial, and residential land uses, including the Verde Valley Medical Center.
- **Western Airport Vicinity:** West of the airfield, the Air Park Mini RV & Boat storage facility and the City of Cottonwood Public Works facility are both located on Airport property. Additionally, the Cottonwood Ranch community is located approximately 500 feet northwest of the Airport's terminal and immediately west of the Runway 14 RPZ. Further west, the Mesquite Hills community is located adjacent to the Public Works facility and borders the Prescott National Forrest. There is undeveloped land between the Airport and Prescott National Forest.

²⁷ Federal Aviation Administration, Order 1050.1F *Environmental Impacts: Policies and Procedures*, 2015.

Although much of the existing development near the Airport is residential, which is generally considered to be non-compatible with aviation-related operations, most of this development is outside of aircraft flight paths. According to the Airport's 2001 noise contours, only the El Rio Del Oro Mobile Home Park and approximately four single-family homes were located within noise-impacted areas. New noise contours have been developed as a part of this Master Plan Update, which should be incorporated into the City's future land use planning, as appropriate.

DRAFT

Figure 1.9 - Existing Land Use Map



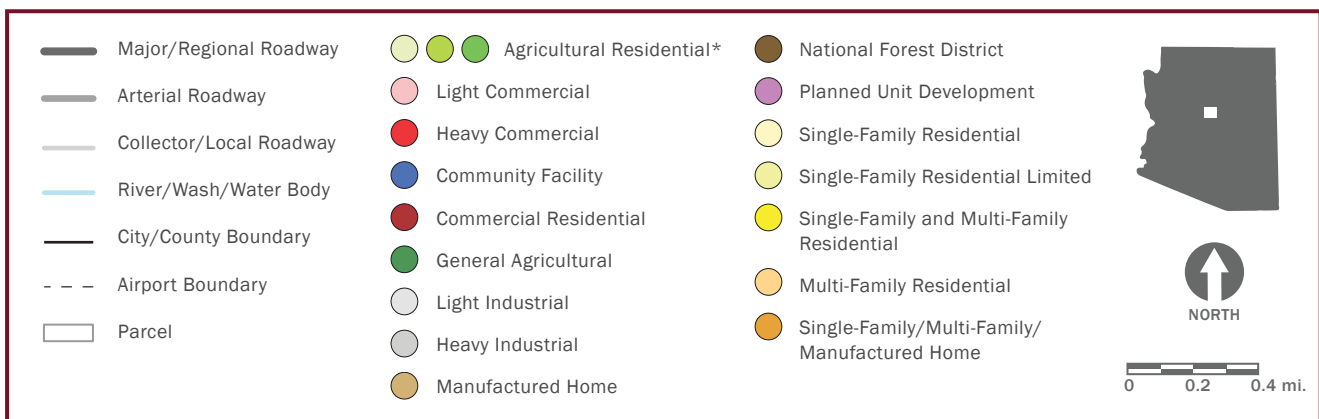
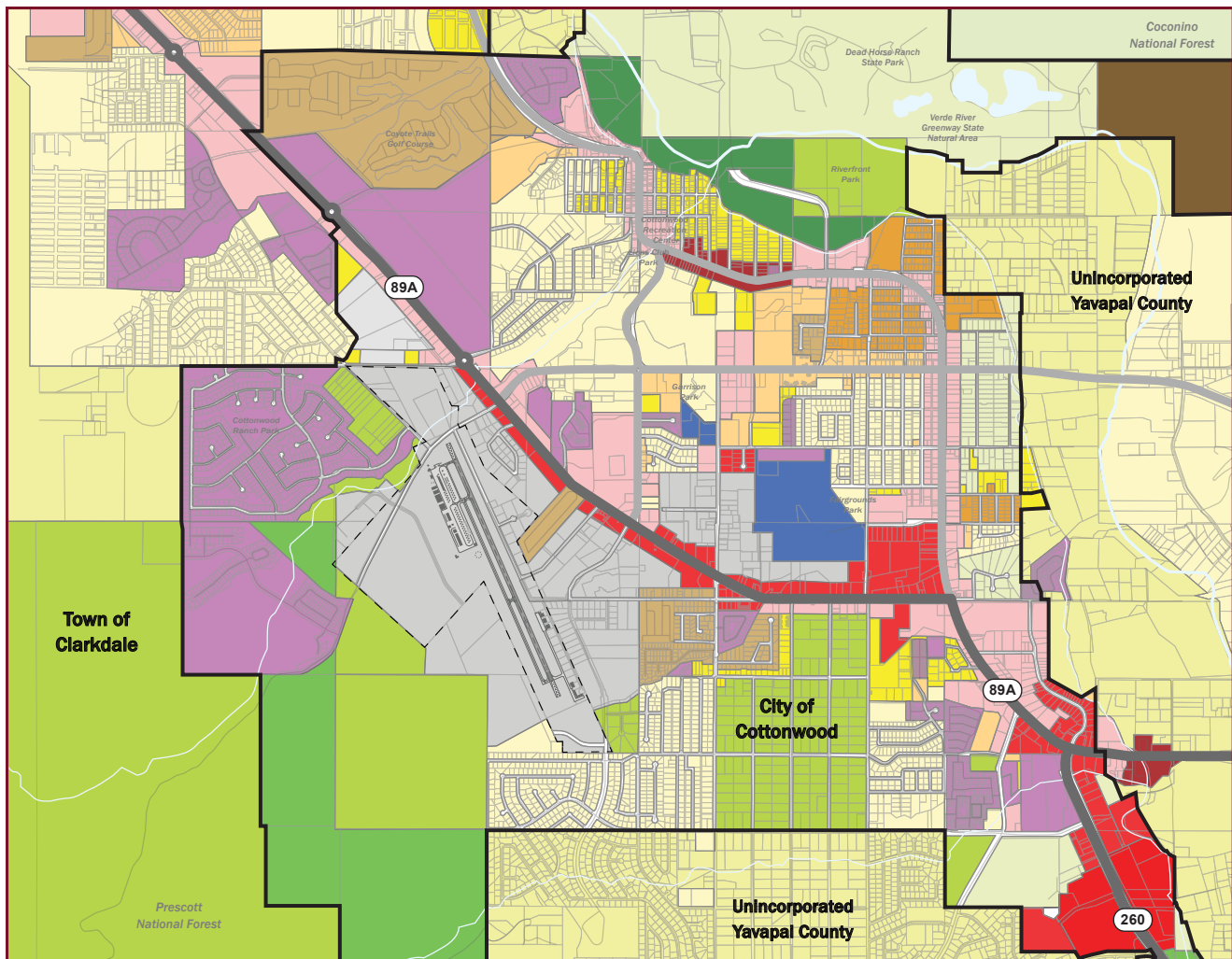
Sources:
 Google Earth (accessed April 2020).
 Esri (accessed April 2020).
 Kimley-Horn, 2020.

1.9.2. Zoning

Zoning is the division of an area into districts for the primary purpose of regulating the use of land to promote public health, safety, and general welfare. Zoning in the jurisdictions surrounding the Airport—including the City of Cottonwood, the Town of Clarkdale, and unincorporated Yavapai County—is shown in **Figure 1.10**. Under the City of Cottonwood Zoning Ordinance, Cottonwood Municipal Airport and the majority of land immediately east of the Airport are zoned as Heavy Industrial.²⁸ Excluding parcels located along State Route 89A that are zoned for commercial use, the land immediately surrounding the Airport is predominately zoned for various residential uses, including single-family residential, multiple-family residential, agricultural residential, manufactured home, and planned unit development. Further west and north, land within the corporate limits of the Town of Clarkdale is zoned for various residential uses. Further east and south, land within unincorporated Yavapai County is zoned almost exclusively for single-family residential use.

²⁸ City of Cottonwood Zoning Ordinance (accessed April 2020).

Figure 1.10 - Zoning Map (City of Cottonwood, Town of Clarkdale, Unincorporated Yavapai County)

**Sources:**

City of Cottonwood, Official Zoning Map (accessed April 2020).

Town of Clarkdale, Zoning Map (accessed April 2020).

Yavapai County, Interactive Zoning Map (accessed April 2020).

Kimley-Horn, 2020

Notes:

* = The City of Cottonwood Zoning Ordinance includes three classifications of Agricultural Residential zoning districts.

For comparison, the zoning districts for the City of Cottonwood, the Town of Clarkdale, and Yavapai County were consolidated into categories based on similar zoning.

1.9.3. Land Use Planning

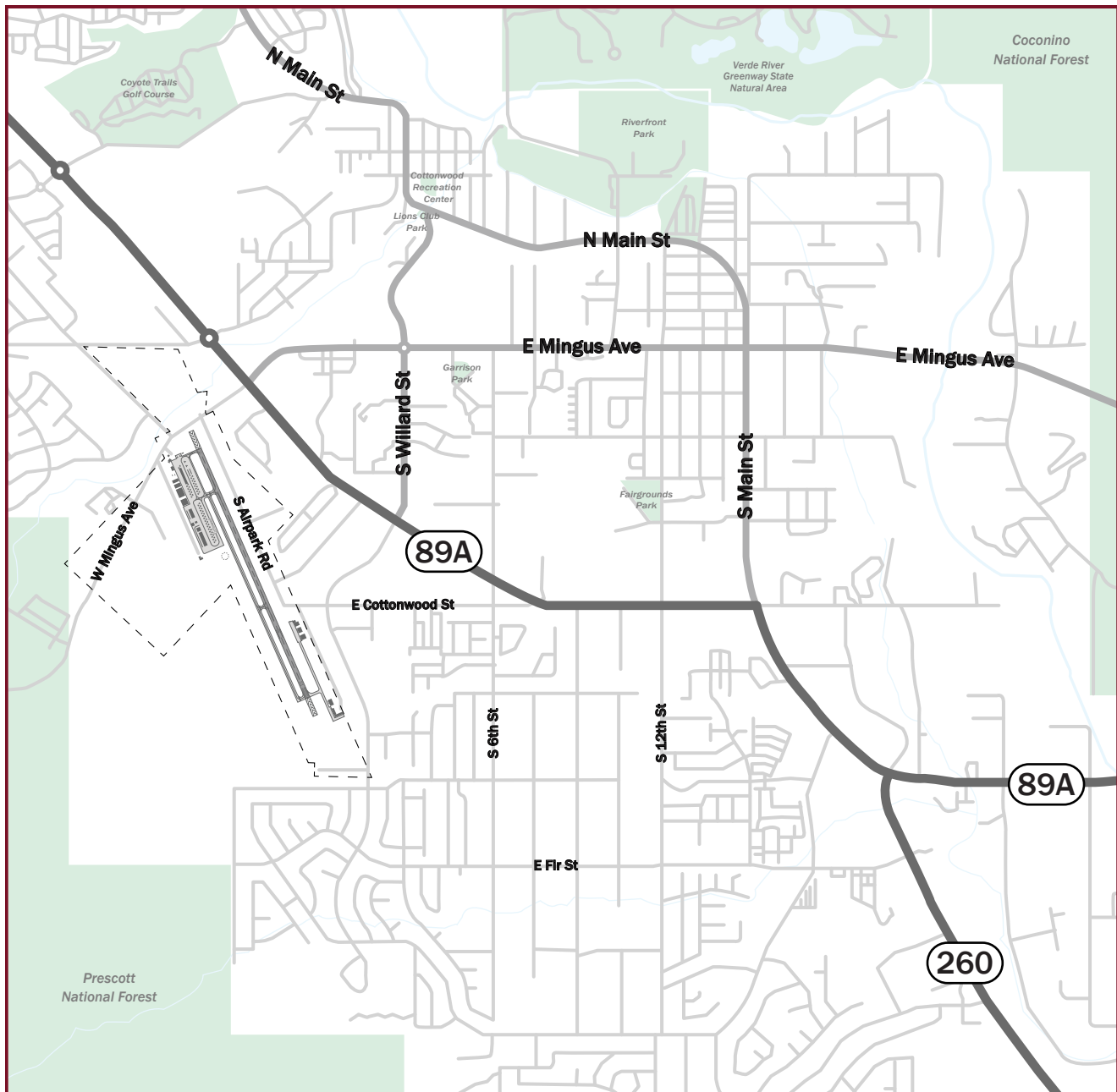
Land use planning at and around an airport ensures that new and existing development is compatible with aviation-related activities in relation to both safety and noise concerns. In 2014, the City of Cottonwood adopted the Cottonwood General Plan 2025, a document that outlines the City's vision for future growth and development. The General Plan recognizes the importance of the Airport to the local and regional economies. It includes guidelines to encourage new business in the area and to ensure neighboring development does not adversely impact the long-term economic viability and potential growth of the Airport and surrounding areas. The General Plan groups the Airport with the West Side Planning Area, which includes the Cottonwood Ranch and Mesquite Hills planned communities and approximately 482 acres of undeveloped ranch properties west of the Airport.²⁹ The General Plan identifies these undeveloped properties as potential future residential land uses but acknowledges the need for sound attenuation measures for any new residential development.

1.10. SURFACE TRANSPORTATION

Cottonwood Municipal Airport is served by a network of on-Airport, access, and regional roadways that connect the Airport to the surrounding communities. **Figure 1.11** illustrates the roadways in the vicinity of the Airport. This section describes the transportation facilities near the Airport and the related municipal transportation planning efforts.

²⁹ City of Cottonwood, Cottonwood General Plan 2025, 2014.

Figure 1.11 - Regional and Local Roadways



- Major/Regional Roadway
- Arterial Roadway
- Collector/Local Roadway

- River/Wash/Water Body
- - - Airport Boundary
- Forest/Park Land



0 0.1 0.2 mi.

Sources:

City of Cottonwood, Cottonwood General Plan 2025
 Esri (accessed April 2020).
 Kimley-Horn, 2020.

1.10.1. Major and Regional Roadways

Major and regional roadways include freeways, highways, and arterials that serve multiple communities and accommodate large volumes of traffic. These roadways provide access to the Airport but are principally used for non-airport related purposes. The regional roadways near Cottonwood Municipal Airport are summarized below.

- **Interstate 17:** Interstate 17 is a major north-south Interstate Highway located approximately 12 miles southwest of the Airport. Interstate 17 is entirely located within the State of Arizona, running between Interstate 10 in Phoenix and Interstate 40 in Flagstaff. The City of Cottonwood and the Airport are connected to Interstate 17 via State Route 260. For reference, Interstate 17 is displayed on the inset map in **Figure 1.11**.
- **State Route 89A:** State Route 89A is a major north-south arterial located east of the Airport. State Road 89A runs between State Route 89 in Prescott and Interstate 17 in Flagstaff. The undivided route varies between two and four lanes, with four lanes near the Airport. The Airport may be accessed from State Route 89A via Mingus Avenue and Willard Street.
- **State Route 260:** State Route 260 is a major east-west arterial located southeast of the Airport that connects State Route 89A in Cottonwood to U.S. Route 191 in Eager. The undivided route varies between two and four lanes, with four lanes near the Airport. State Route 260 also connects the City of Cottonwood and the Airport to Interstate 17.

1.10.2. Local and Airport Access Roadways

Local and airport access roadways serve as the landside interface between the regional roadway system and the Airport's terminal and facilities. The following provides a summary of the pertinent local and access roadways in the vicinity of Cottonwood Municipal Airport.

- **6th Street:** 6th Street is a north-south, two-lane collector road located east of the Airport. The roadway is located entirely within the City of Cottonwood and runs from Mingus Avenue in the north to its southern terminus at Fir Street. 6th Street connects the residential communities southwest of the Airport to State Route 89A, Mingus Avenue, and the Airport.
- **12th Street:** Located east of the Airport, 12th Street is a north-south, two-lane collector road that runs parallel to 6th Street. The roadway connects Main Street in the north and Fir Street in the south and connects residential communities and commercial businesses in Cottonwood with State Route 89A, Mingus Avenue, and the Airport.
- **Airpark Road:** Airpark Road is located immediately east of the Airport and runs parallel to Runway 14-32. The two-lane, unmarked road provides access to the businesses in the Mingus Industrial Park, the Cottonwood Airpark, and the Cottonwood Business Park as well as the private hangars on the southeast portion of the Airport.

- **Cottonwood Street:** Cottonwood Street is an east-west, two-lane local road that connects State Route 89A with Airpark Road. The roadway services various residential and commercial land uses east of the Airport.
- **Fir Street:** Fir Street is an east-west, two-lane collector road located southwest of the Airport. The roadway runs from State Route 206 in the east to Chuckawalla Street to the west. Fir Street runs along the City of Cottonwood boundary and serves the area's residential communities, commercial businesses, and Mingus Union High School.
- **Main Street:** Main Street is a north-south, four-lane arterial road located east of the Airport. The undivided roadway runs from its southern terminus at Camino Real in the City of Cottonwood to Cement Plant Road in the Town of Clarkdale. The roadway's designation changes from Main Street to South Broadway at Hogan Drive and continues north until Main Street curves to the west toward its northern terminus. Main Street primarily serves residential and commercial uses east of the Airport.
- **Mingus Avenue:** Mingus Avenue is an east-west, two-lane arterial roadway that intersects the Airport's boundary north of Runway 14 and provides primary access to the Airport's terminal and facilities. The roadway runs from State Route 89A in the east and turns into an unpaved road southeast of Mesquite Hills Drive, meeting its western terminus shortly thereafter. In the City of Cottonwood, Mingus Avenue serves residential, commercial, and industrial land uses northeast of the Airport.
- **Willard Street:** Willard Street is a north-south arterial roadway located east of the Airport. The roadway runs from its northern terminus at Main Street to its southern terminus at West Mesquite Drive. Willard Street intersects three regional roadways in Cottonwood—Main Street, Mingus Avenue, and State Route 89A—and serves numerous commercial and residential land uses east and south of the Airport.

1.10.3. Transportation Planning

With a collection of federal, state, and local roadways, transportation planning in the vicinity of the Airport requires close coordination of various stakeholders, including local jurisdictions, regional agencies, and the general public. At the regional level, Yavapai County, the Verde Valley Transportation Planning Organization, and ADOT published the Verde Valley Master Transportation Plan in 2016. Similar to a comprehensive plan, this plan presents a cohesive, long-term guide to future development and transportation improvements within the Verde Valley and identifies specific projects to improve the transportation system. **Table 1.15** highlights the projects within the Verde Valley Master Transportation Plan that are near the Airport. While no specific timeline is given, all projects near the Airport are listed in the Verde Valley Master Transportation Plan as “near-term” projects, or those that address the most critical needs and deficiencies and have a reasonable potential for obtaining funding.

Table 1.15 - Verde Valley Master Transportation Plan Projects near Cottonwood Municipal Airport

Project ID	Project Location	Project Description	Estimated Cost
N-6	SR 89A / SR 260	Conduct a traffic study to evaluate performance and operation of intersection.	\$75,000
N-8	SR 260 / Fir Street	Conduct a traffic study to evaluate performance and operation of intersection.	\$30,000
N-16	SR 89A: Mingus Avenue to SR 260	Conduct an access management assessment to identify improvement scenarios.	\$50,000
N-24	SR 89A: 6th Street	Major pavement rehabilitation.	\$1,881,000
N-30.1	Broadway: 0.5mi west of Bill Gray Road to SR 89A	Major pavement rehabilitation.	\$4,250,000*
N-30.2	Mingus Avenue: SR 89A to 18th Street	Major pavement rehabilitation.	
N-30.2	Black Hills Drive: SR 89A to 0.9mi west of SR 89A	Major pavement rehabilitation.	
N-30.4	Fir Street: Chuckwalla Street to Willard Street	Major pavement rehabilitation.	
N-30.5	Willard Street: SR 89A to Mingus Avenue	Major pavement rehabilitation.	
N-30.6	Old State Highway 279: Rio Mesa Trail to Ogden Ranch Road	Major pavement rehabilitation.	
N-35	Broadway: Main Street (Cottonwood) to Main Street (Clarkdale)	Upgrade to major collector with bike lanes and sidewalks in both directions. Install center turn lane or median with left-turn pockets where feasible.	\$332,800
N-36	West Loop Phase 1: Black Hills Drive to Fir Street	Construct two-lane minor collector with bike lanes and sidewalks in both directions. Install center turn lane or median with left-turn pockets where feasible. Extend Black Hills Drive and Mingus Avenue to connect with West Loop Road.	\$4,294,500
N-37	Groseta Ranch Road: SR 89A to North Main Street	Pave roadway to be a two-lane minor collector with bike lanes and sidewalks in both directions. Install center turn lane or median with left-turn pockets where feasible.	\$3,676,500
N-38	Mingus Avenue: North Main Street to Willard Street	Upgrade roadway to an arterial with bike lanes and sidewalks in both directions. Install center turn lane or median with left-turn pockets where feasible.	\$128,000
N-39	Main Street: SR 89A to Mingus Avenue	Upgrade roadway to an arterial with bike lanes and sidewalks in both directions. Install center turn lane or median with left-turn pockets where feasible.	\$102,400
N-40	Fir Street Extension: SR 260 to SR 89A	Extend Fir Street to SR 89A as a four-lane minor collector roadway	\$1,345,500
N-41	Tissaw Road: Cornville Road to SR 89A	Coordinate with developer to construct a four-lane major collector roadway.	\$5,830,500
Total Estimated Cost			\$21,996,200

Source: Arizona Department of Transportation, Verde Valley Master Transportation Plan, 2016.

Notes:

SR = State Route

* = Projects N-30.1 to N-30.6 are part of the Cottonwood major pavement rehabilitation program.

Locally, the Circulation Element of the Cottonwood General Plan 2025 provides a framework for future transportation network improvements and policies within the City of Cottonwood and adjacent areas over a 25-year planning period. To meet the projected needs of the community, the Circulation Element presents projects that emphasize traffic safety and efficiency, multimodal transportation, pedestrian safety, and long-term sustainability. Proposed projects near the Airport include a bicycle facility along Airpark Road and Airport Road up to Black Hills Drive and, in concert with the Verde Valley Master Transportation Plan, a new roadway connecting Mingus Avenue from the Mesquite Hills community to Fir Street south of the Airport as part of the West Loop connector road. Both regional and local transportation projects may contribute to increased automobile and pedestrian traffic near the Airport.

1.10.4. Airfield Circulation and Automobile Parking

Access to the Airport's terminal is provided via Mingus Avenue. The terminal has seven standard marked parking spaces, one handicapped space, and approximately 5,300 square feet of unmarked parking area south of the terminal. When necessary, the Airport also utilizes an approximately 57,000 square-foot unpaved area north of the terminal for additional automobile parking. Primary access to the airfield and its hangars is provided by an entrance road and a security gate located south of the terminal. There are also approximately 50 paved parking spaces along this access road, which runs parallel to the Airport's aircraft parking aprons from Mingus Avenue to the former Red Rock Skydiving building.

Airpark Road provides access to private hangars outside of the airfield fence on the southeast portion of the Airport. As previously discussed, there are four security gates that provide access to the complex's taxilane, three located in between various hangars and one located on a small access drive north of the helipad. An additional gate provides access from the taxilane to Taxiway E and the airfield. There is a total of 17 marked parking spaces in this area, 15 standard and two handicapped, and roadside parking along Airpark Road is also common near these hangars.

1.11. ENVIRONMENTAL OVERVIEW

The environmental setting of the Airport and its surroundings is discussed in this section. This section also provides an overview of the environmental factors that could potentially be affected by future Airport development. This information was gathered through a review of environmental documents, agency databases, and previous studies.

1.11.1. Air Quality

Under the authority of the Clean Air Act (42 U.S.C. 7401-7671q), the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants that are considered harmful to public health and the environment: carbon monoxide (CO), lead (Pb), nitrogen dioxide

(NO₂), ozone (O₃), particulate matter (PM_{2.5} and PM₁₀), and sulfur dioxide (SO₂).³⁰ An area with ambient air concentrations exceeding the NAAQS for one or more criteria pollutants is known as a “nonattainment area.” State and local governments of nonattainment areas have three years to develop implementation plans outlining how areas will attain and maintain the standards by reducing air pollutant emissions.³¹ The Arizona Department of Environmental Quality (ADEQ) is responsible for monitoring air quality throughout the state and attaining the EPA NAAQS. Based on the EPA’s Nonattainment/Maintenance Status Report (as of March 31, 2020) and the ADEQ 2019 Air Quality Report, Yavapai County contains no nonattainment areas.

1.11.2. Endangered and Threatened Species

The Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884) and the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e, 48 Stat. 401) require that agencies’ actions do not jeopardize the existence of endangered or threatened species or their habitats. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally endangered and threatened species in Arizona. The USFWS also designates certain bird species as Birds of Conservation Concern—bird species that represent the highest conservation priority—under the Migratory Bird Treaty Act (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Locally, the Arizona Game and Fish Department (AZGFD) is the state agency responsible for monitoring and managing endangered and threatened species.

With a diverse terrain consisting of desert land, grasslands, streams, mountains, and rock formations, Yavapai County is home to a variety of threatened and endangered species and migratory Birds of Conservation Concern. According to the USFWS’s Information for Planning and Consulting tool, there are 19 federally-listed threatened or endangered species, 10 critical habitats (specific geographic areas that contain features essential to the conservation of an endangered or threatened species), and 34 Birds of Conservation Concern in Yavapai County. As depicted in **Table 1.6**, there are nine federally-listed threatened or endangered species, seven critical habitats, and 13 Birds of Conservation Concern within the general vicinity of the Airport (approximately a 2-mile radius).

³⁰ U.S. Environmental Protection Agency, NAAQS Table, 2016.

³¹ U.S. Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants Green Book*, 2020.

Table 1.16 - Endangered, Threatened, and Birds of Concern Species within the Airport's Environs

Common Name	Scientific Name	Status / Breeding Season
Birds		
Southwestern Willow Flycatcher	Empidonax traillii extimus	Endangered
Yellow-billed Cuckoo	Coccyzus americanus	Threatened
Reptiles		
Northern Mexican Gartersnake	Thamnophis eques megalops	Threatened
Fishes		
Gila Chub	Gila intermedia	Endangered
Loach Minnow	Tiaroga cobitis	Endangered
Razorback Sucker	Xyrauchen texanus	Endangered
Spikedace	Meda fulgida	Endangered
Woundfin	Plagopterus argentissimus	Experimental Population*
Flowering Plants		
Arizona Cliffrose	Purshia (=Cowania) subintegra	Endangered
Birds of Conservation Concern		
Bald Eagle	Haliaeetus leucocephalus	October 15 – July 31
Black Throated Sparrow	Amphispiza bilineata	March 15 – September 5
Black-chinned Sparrow	Spizella atrogularis	April 15 – July 31
Black-throated Gray Warbler	Dendroica nigrescens	May 1 – July 20
Common Black-hawk	Buteogallus anthracinus	April 1 – September 20
Golden Eagle	Aquila chrysaetos	January 1 – August 31
Gray Vireo	Vireo vicinior	May 10 – August 20
Lark Bunting	Calamospiza melanocorys	Breeds elsewhere
Lewis's Woodpecker	Melanerpes lewis	April 20 – September 30
Phainopepla	Phainopepla nitens	March 1 – August 20
Rufous Hummingbird	Selasphorus rufus	Breeds elsewhere
Rufous-winged Sparrow	Aimophila carpalis	June 15 – September 30
Virginia's Warbler	Vermivora virginiae	May 1 – July 31

Source: U.S. Fish and Wildlife Service Information for Planning and Consultation tool (accessed April 2020).

Notes:

Endangered = A species in danger of extinction throughout all or a significant portion of its range.

Threatened = A species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

* = Experimental populations are species reintroduced to areas outside of the species' current range but within the species' historic range.

The area for this analysis consists of an approximate two-mile radius around Cottonwood Municipal Airport.

1.11.3. Water Resources

1.11.3.1. Stormwater Management

Large volumes of stormwater runoff associated with airport infrastructure and operations can impact local water resources. At Cottonwood Municipal Airport, industrial activities include pavement maintenance; aircraft storage, maintenance, and fueling; aircraft and vehicle washing; and fuel storage and delivery. Fuel, lubricants, solvents, and paints are among the products stored, transferred, used, and disposed of as a result of these activities.³² Section 401 of the Clean Water Act (33 U.S.C. 1251, et seq.) and the National Pollutant Discharge Elimination System (NPDES) establish quality standards and guidelines that govern water discharges from industrial facilities, construction sites, and municipal storm sewer systems. Additionally, ADEQ facilitates the Arizona Pollutant Discharge Elimination System (AZPDES) Permit Program, which has been granted regulatory authority by the EPA over pollutant discharges into Arizona surface water. To ensure compliance with federal and state regulations, airports must evaluate how activities may impact local water resources and implement appropriate measures to reduce or eliminate adverse environmental impacts.

The City of Cottonwood is located in the Verde River Watershed with the Verde River as the main receiving water in the area.³³ In 2016, ADEP issued AZPDES permit number AZG2016-002 to the City to authorize stormwater discharge into the Verde River Watershed. Additionally, the Airport was granted a Multi-Sector General Permit by the EPA in 2008 that permits stormwater discharge into Waters of the U.S. Pursuant to the requirements of these permits, the City prepared an Airport Stormwater Pollution Prevention Plan (SWPP) in 2013. The SWPP outlines requirements and procedures for the Airport's pollutants and associated facilities (e.g., fuel farm, waste oil storage area), including documentation, storage, spills and leaks prevention and response, and compliance inspections.

Several washes traverse the city and end in the Verde River: Mescal Gulch, Del Monte, Railroad, Silver Springs, and Little Oak. The Del Monte wash intersects the northern boundary of the Airport north of Mingus Avenue, the Silver Springs wash runs immediately south of Runway 32, and the Railroad Wash begins east of the Airport near the intersection of Airpark Road and Calvary Way.³⁴ Stormwater on the northern half of the Airport, including the main apron, is conveyed north toward Mingus Avenue and into a detention basin. The basin provides an opportunity for pollutants to settle out of stormwater prior to flowing east via the Del Monte wash and ultimately discharging into the Verde River. Stormwater on the southern half of the Airport but north of Taxiway D runs south and then is conveyed east via an underground storm drain. This stormwater then flows east via the Railroad Wash and is discharged into the Verde River. Stormwater south of the underground storm drain is conveyed south of Runway 32, flows east via the Silver Springs Wash, and is discharged into the Verde River.³⁵

³² City of Cottonwood, Cottonwood Municipal Airport Stormwater Pollution Prevention Plan, 2013.

³³ City of Cottonwood, Stormwater Management Plan, 2016.

³⁴ Federal Emergency Management Agency, Flood Insurance Rate Map Number 04025C1756G, Revised 2010.

³⁵ City of Cottonwood, Cottonwood Municipal Airport Stormwater Site Plan, 2013.

1.11.3.2. Floodplains

As defined by the Federal Emergency Management Agency (FEMA), floodplains are lowland and relatively flat areas adjoining inland and coastal waters that are subject to a 1 percent or greater chance of flooding in any given year.³⁶ Floodplains are identified on FEMA's Flood Insurance Rate Maps (FIRM) to support the U.S. National Flood Insurance Program. Cottonwood Municipal Airport is located on FEMA FIRM number 04025C1756G, dated September 3, 2010. According to the FIRM, portions of the Airport's property are located within the 100-year floodplains (one percent annual chance of flooding) associated with the Del Monte, Railroad, and Silver Springs Washes. Outside of these floodplains, the Airport and the majority of its surroundings are designated as Zone X, or the 500-year floodplain. There are no surface waters located on Airport property, and there are no wild or scenic rivers on or near the Airport.³⁷

1.11.3.3. Wetlands and Waters of the U.S.

The EPA defines wetlands as areas where water covers the soil all or part of the time, such as marshes, swamps, bogs, and fens. Waters of the U.S. includes all surface water bodies, such as drainage ditches, intermittent streams, streams, lakes, and ponds, as well as vegetated wetlands adjacent to water bodies.³⁸ Wetlands and Waters of the U.S. are protected under Sections 401 and 404 of the Clean Water Act (33 U.S.C. 1251, et seq.) and Executive Order 11990, *Protection of Wetlands*. Federal mandates require that agencies avoid impacts to wetlands and Waters of the U.S. to the greatest extent possible. If impacts are unavoidable, agencies must explain that no practical alternative exists and provide measures to mitigate the proposed development's unavoidable impacts.

The USFWS National Wetlands Inventory (NWI) indicates that two wetlands intersect the Airport's property. These wetlands are part of the Del Monte and Silver Springs washes and classified as R4SBJ, meaning they are riverine systems of intermittent streams that may be intermittently flooded. There is also wetland immediately north of the Airport that is classified as R4SBC, meaning it is a riverine system of intermittent streams that are seasonally flooded. These wetlands are depicted below in **Figure 1.12**. In June 2020, the definition of "Waters of the U.S." will be amended by the EPA and the Department of the Army under the new Navigable Waters Protection Rule.³⁹ Coordination with the U.S. Army Corps of Engineers would be needed if any potential airport development would impact these wetlands to determine if they are considered Waters of the U.S. under the Navigable Waters Protection Rule and subject to Sections 401/404 of the Clean Water Act.

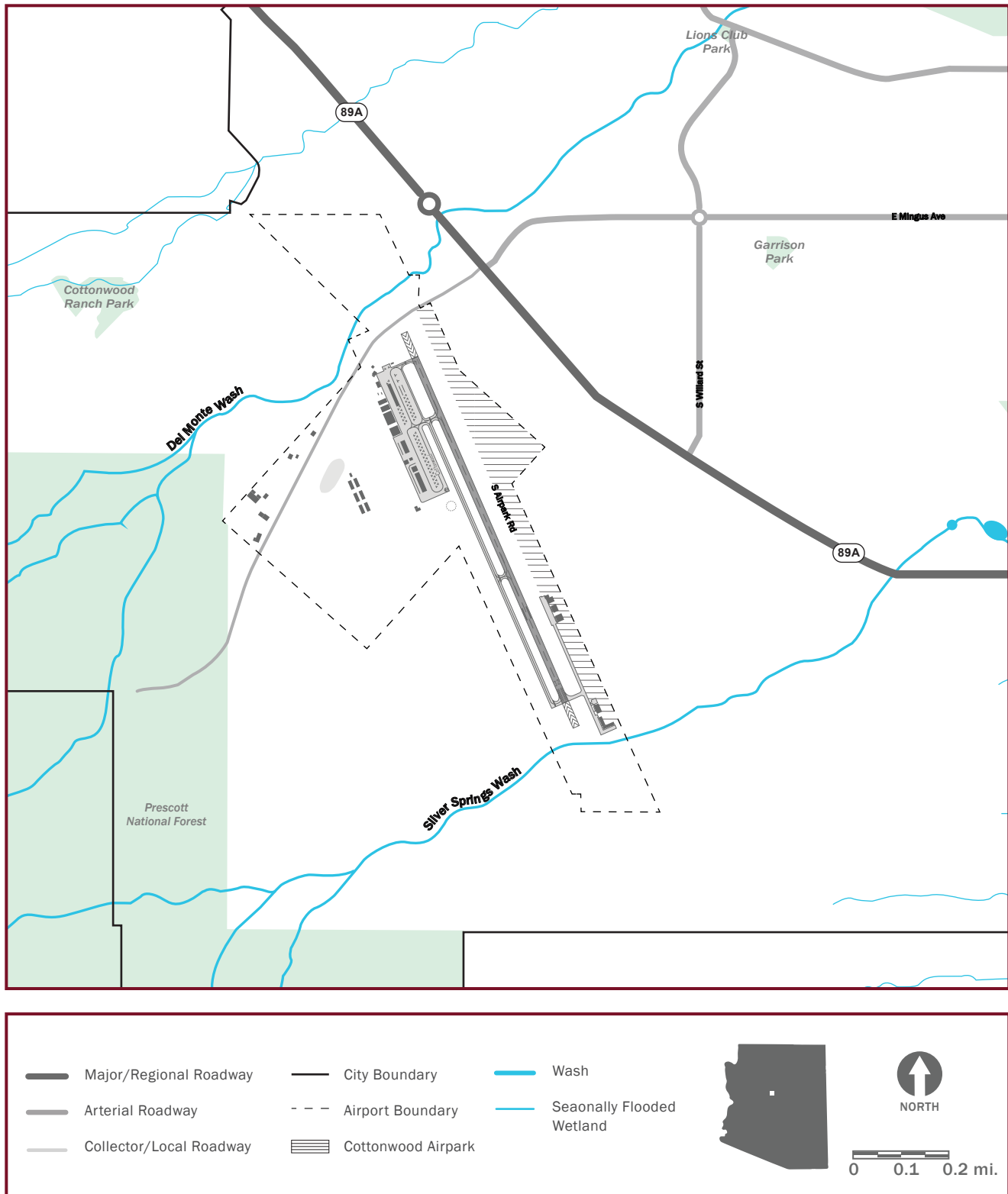
³⁶ Federal Emergency Management Agency, Executive Order 11988 - *Floodplain Management*, 1977.

³⁷ National Wild and Scenic Rivers System, National System Map (accessed April 2020).

³⁸ Federal Emergency Management Agency, Determining if your project will affect "Waters of the U.S.", 2015.

³⁹ Environmental Protection Agency, Current Implementation of "Waters of the United States," 2020.

Figure 1.12 - Federal Wetlands near the Airport



Sources:
 U.S. Fish and Wildlife Service, National Wetlands Inventory (accessed April 2020).
 Esri (accessed April 2020).
 Kimley-Horn, 2020.

1.11.4. Department of Transportation Act, Section 4(f)

Section 4(f) of the U.S. Department of Transportation (U.S. DOT) Act of 1966, codified in 49 U.S.C. 303 and 23 U.S.C. 138, provides protection for specially designated properties, including publicly-owned parks, recreation areas, wildlife and waterfowl refuges, or significant historic sites. Section 4(f) only applies to projects that receive funding or require approval from the U.S. DOT. As described below, there are several Section 4(f) resources in the vicinity of the Airport.

- **Cottonwood Kid's Park:** Cottonwood Kid's Park is located approximately one mile east of the Airport on South 12th Street, between Birch Street and Cherry Street, and is adjacent to the City's fairgrounds. Owned and maintained by the City of Cottonwood, the park includes soccer fields, picnic tables, and a permanent restroom facility. The park also hosts various family events throughout the year.
- **Garrison Park:** Garrison Park is located approximately three quarters of a mile east of the Airport on Brian Mickelson Parkway near the intersection of Mingus Avenue and 6th Street. The park is owned and maintained by the City of Cottonwood and includes children's play equipment, a swing set, a basketball hoop, and a large ramada equipped with picnic tables and grills.
- **Lions Club Park:** Lions Club Park is located approximately three quarters of a mile northeast of the Airport near the intersection of Mingus Avenue and Willard Street and is owned and maintained by the City of Cottonwood. The park offers twelve basketball hoops, three soccer fields, a swing set, children's play equipment, picnic tables, and two baseball/softball diamonds equipped with lighting.
- **Prescott National Forest:** The eastern boundary of Prescott National Forest is approximately one quarter of a mile west of the Airport. The forest is comprised of 1.25 million acres in Yavapai and Coconino Counties. The Prescott National Forest includes mountains, lakes, rivers, and wildlife, and it accommodates a variety of outdoor recreational activities such as hiking, horseback riding, mountain biking, and rock climbing. As part of the U.S. National Forest System, the Prescott National Forest is managed and protected by the U.S. Forest Services and the U.S. Department of Agriculture.

1.11.5. Hazardous Materials

The use, storage, and disposal of hazardous materials is governed by various state and federal statutes. Federal guidance and regulations for hazardous materials are provided by the Resource Conservation and Recovery Act (42 U.S.C. 6901, et seq.), the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. Section 9601), and the Community Environmental Response Facilitation Act (Public Law 102-426). On the state level, the ADEQ Waste Programs Division is responsible for enforcing the requirements of the Resource Conservation and Recovery Act and monitoring the generation, management, transportation, storage, and disposal of hazardous waste in Arizona. Aircraft fuel is the most common hazardous substance in regular use at the Airport. Other hazardous substances used in smaller amounts include lubricants and solvents, used oils, filters, cleaning residues, spent batteries, and other materials and products associated with aircraft operations and maintenance.

In addition to hazardous substances used at the Airport, there are several contaminated sites and areas of concern near the Airport. According to the ADEQ, there is one Superfund site, three Brownfields, and one Water Quality Assurance Revolving Fund (WQARF) site in the general vicinity of the Airport.⁴⁰

A Superfund site is an area where a federal program identifies and clears uncontrolled hazardous waste. Located approximately 19 miles southwest of the Airport in the Town of Dewey-Humboldt, the Superfund site is the former location of the Iron King Mine and Humboldt Smelter. The cleanup of the site has been ongoing since 2011 and has included the removal of contaminants such as arsenic and lead.⁴¹

A Brownfield is land that contains or is perceived to contain hazardous substances, pollutants, or contaminants. To mitigate hazardous conditions on Brownfields, ADEQ established the Brownfields Assistance Program (BAP) in 2003 to provide grant funding to Arizona communities and organizations for environmental assessment, cleanup, and restoration projects. There are three Brownfields near the Airport, each located east of the Airport along Main Street and within the City of Cottonwood⁴².

- **Cottonwood Community Club House:** The Cottonwood Community Club House, formerly known as the Cottonwood Civic Center, is located approximately one mile northeast of the Airport in Old Town Cottonwood at the intersection of Main Street and Balboa Street. Built in 1939, the Cottonwood Community Club House is constructed of local sandstone and river rock and is a historic building within the community. A BAP grant was awarded to the City of Cottonwood in 2017 to perform asbestos and lead-based paint abatement on the building.
- **Two Gardner's Recycling Sites:** Located approximately one mile northeast of the Airport in Old Town Cottonwood, these two adjacent Brownfields are former recycling collection sites on which the City intended to build parking lots to serve local businesses and the Jail Trail. Known as the Gardner's Recycling sites, an environmental assessment of the property revealed soil contamination from heavy metals as a result of large junk piles on the land. A BAP grant was awarded to the City of Cottonwood in 2011 to perform further assessments and site remediation. A parking lot was constructed on the northern lot in 2013 and remediation is ongoing at both sites.

A WQARF site is designated by the State of Arizona as having contaminated soil and/or groundwater that may pose a risk to public health or the environment. ADEQ's WQARF program identifies, assesses, and mitigates the threat of these sites throughout the state. The Highway 260 and Main Street area is a large WQARF site located east of the Airport, bounded by Mingus Avenue to the north, Mongini Lane to the south, the Verde River to the east, and 15th Street to the west.⁴³ The site includes a mixture of public, commercial and residential land uses along Main Street.⁴⁴ Tetrachloroethene was identified as a contaminate of concern

⁴⁰ Arizona Department of Environmental Quality, eMaps (accessed April 2020).

⁴¹ Arizona Department of Environmental Quality, Superfund Site: Iron King Mine and Humboldt Smelter, 2019.

⁴² Arizona Department of Environmental Quality, Brownfields Grant Site Locations, eMaps (accessed April 2020).

⁴³ Arizona Department of Environmental Quality, WQARF Registry (accessed April 2020).

⁴⁴ Arizona Department of Environmental Quality, WQARF Site: Highway 260 and Main Street, 2020.

in several wells in this area as a result of two dry cleaning businesses, and a Remedial Investigation (RI) of the site to assess the extent of contamination and evaluate remediation options is ongoing.

These Superfund, Brownfield, and WQARF sites will not impact future development at the Airport. However, given the industrial land uses in the immediate vicinity of the Airport, ADEQ's list of contaminated sites should be consulted prior to the Airport beginning development or expansion projects.

1.11.6. Historic, Cultural, and Archeological Resources

The National Historic Preservation Act of 1966 (16 U.S.C. 470) established the National Register of Historic Places (NRHP) to identify historic properties worthy of preservation. Additionally, under the Arizona Historic Preservation Act (A.R.S. 41-861 et seq.) the Arizona State Historic Preservation Office designates properties as having local historical, cultural, or archaeological significance in the Arizona State Register of Historic Places (ARHP). As shown in **Table 1.17**, the City has eight properties and one historic district listed on the NRHP.⁴⁵ The City does not have any properties or districts identified on the ARHP that are not included on the NRHP, but the Tuzigoot National Monument in Clarkdale is registered as an Archeological Site by the U.S. National Park Service and is located approximately 2.3 miles from the Airport. These designated places will not impact future development at the Airport. However, pursuant to the National Historic Preservation Act, a cultural resource survey will need to be completed prior to any development to identify potential historic, cultural, or archeological resources on Airport property and the possible impacts of development action.

Table 1.17 - City of Cottonwood Properties and Districts Listed on the National Register of Historic Places

Property / District	Property Type	Date Listed	Distance from Airport (miles)
Building at 826 North Main Street	Office	9/19/1986	0.9
Clemenceau Public School	Offices/Museum	9/19/1986	0.7
Cottonwood Commercial Historic District	Historic District	5/18/2000	0.9
Edens House	Private Residence	9/19/1986	1.0
Master Mechanic's House	Private Residence	9/19/1986	0.6
Smelter Machine Shop	Senior Center	9/19/1986	0.8
Superintendent's Residence	Office (vacant)	10/14/1986	0.7
UVX Smelter Operations Complex	Offices (4 buildings)	9/19/1986	0.7
Willard House	Private Residence	9/19/1986	1.2

Sources:

U.S. National Park Service, National Register of Historic Places Database (accessed April 2020).

City of Cottonwood, Cottonwood General Plan 2025 - Historic Preservation Element, 2014.

Kimley-Horn, 2020.

⁴⁵ U.S. National Park Service, National Register of Historic Places Database (accessed April 2020).