CHAPTER 1
INVENTORY

The inventory chapter of existing conditions is the initial step in the preparation of the Sierra Vista Municipal Airport (FHU) master plan. The inventory will serve as an overview of the airport's physical and operational features, including facilities, users, and activity levels, as well as specific information related to the airspace, air traffic activity, and role of the airport. Finally, a summary of socioeconomic characteristics and review of existing environmental conditions on and adjacent to the airport are thoroughly detailed, which will provide further input into the study process.

Information provided in Chapter One serves as the baseline for the remainder of the master plan, which is compiled using a wide variety of resources, including: applicable planning documents; on-site visits; interviews with airport staff, tenants, and users; aerial and ground photography; federal, state, and local publications; and project record drawings. Specific sources are listed below, and environmental resources are detailed at the end of this chapter.

- Sierra Vista Municipal Airport *2014 Airport Master Plan Update*
- City of Sierra Vista airport website: https://www.sierravistaaz.gov/our-city/departments/airport
- City of Sierra Vista general plan, *Vista 2030*
- Sierra Vista Municipal Airport Federal Aviation Administration (FAA) Form 5010, *Airport Master Record*
- Demographic data sources, as detailed in the Community Profile section

AIRPORT SETTING AND BACKGROUND

LOCALE

The City of Sierra Vista is located in southwestern Cochise County, approximately 75 miles southeast of Tucson, Arizona. It is the most populous city in the county, with an estimated 45,439 residents as of 2022.[1] Sierra Vista, which translates to "Mountain View," is surrounded by Coronado National Forest land, which includes the Huachuca Mountains. The area is widely regarded as a recreation destination, with hiking, camping, and birdwatching as some of the top outdoor activities. The city is also the primary commercial center for Cochise County and the surrounding area, including parts of northern Mexico. While all of these activities contribute to the local economy, the presence of Fort Huachuca, a U.S. Army installation, is the chief economic driver. Fort Huachuca is situated on the northwest side of the city and is the largest employer in the county, with more than 19,000 military and civilian employees. The Fort conducts a diverse range of operations, including training, communications, and intelligence missions, among others.

Sierra Vista Municipal Airport-Libby Army Airfield (FHU) is a military/civilian joint-use facility located on Fort Huachuca at an elevation of 4,719 feet mean sea level (MSL). A portion of the airport (approximately 72 acres) has been deeded to the City of Sierra Vista for civilian use. The runways and taxiways are used by both miliary and civilian operators, while landside facilities (hangars, terminal, offices, etc.) are separate. Military facilities are located on the south side of the airport and civilian facilities are generally located on the north side. Access to FHU is provided from State Highway 90, which runs along the airport's eastern boundary and connects to Sierra Vista to the south and Huachuca City to the north. Airport Avenue provides access to the north side of the airport property from State Highway 90. **Exhibit 1A** depicts the airport in its regional setting.

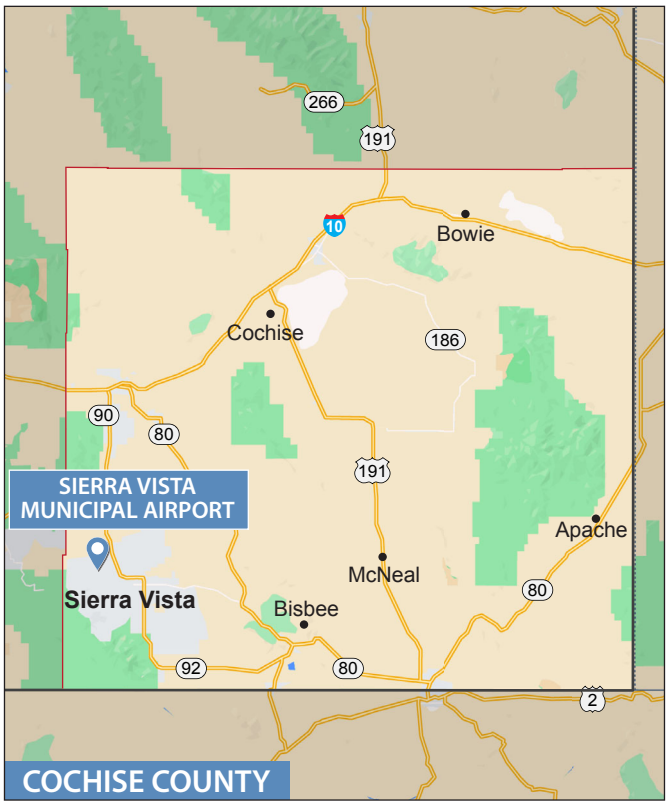
AIRPORT HISTORY

Sierra Vista Municipal Airport's history began in the early 1970s, when the City of Sierra Vista entered into a lease agreement with Fort Huachuca to utilize a 10.5-acre portion of Libby Army Airfield for civilian aviation. Over the next two decades, that property, along with additional parcels, would be deeded to the City of Sierra Vista, making FHU one of just 21 joint-use facilities that exist today. This distinction allows for both military and civilian use of the airport, as described above. The city oversees the day-to-day operations of the general aviation facilities on the airport and receives federal and state grant funds for airport improvement projects, while Fort Huachuca retains ownership of the runways, taxiways, and certain navigational aids (navaids). A 1982 agreement between the Fort and the city outlines the stipulations that regulate civilian use of the facility. Some of these conditions are:

1. The property will be used solely for public airport purposes in conjunction with Libby Army Airfield;
2. Civilian use of the airfield will not interfere with U.S. Army use or operations, and the Army has the right to temporarily suspend or limit civilian operations when necessary;
3. The Army is not required to operate or maintain airport facilities;

[1] U.S. Census Bureau, 2022 (https://www.census.gov/quickfacts/fact/table/sierravistacityarizona,US/PST045222#PST045222)


UTAH
COLORADO
NEVADA
Page
Flagstaff
Prescott
CALIFORNIA
Lake Havasu City
St. Johns
NEW MEXICO
Phoenix
Yuma
SIERRA VISTA MUNICIPAL AIRPORT
MEXICO
ARIZONA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Bowie
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Apache
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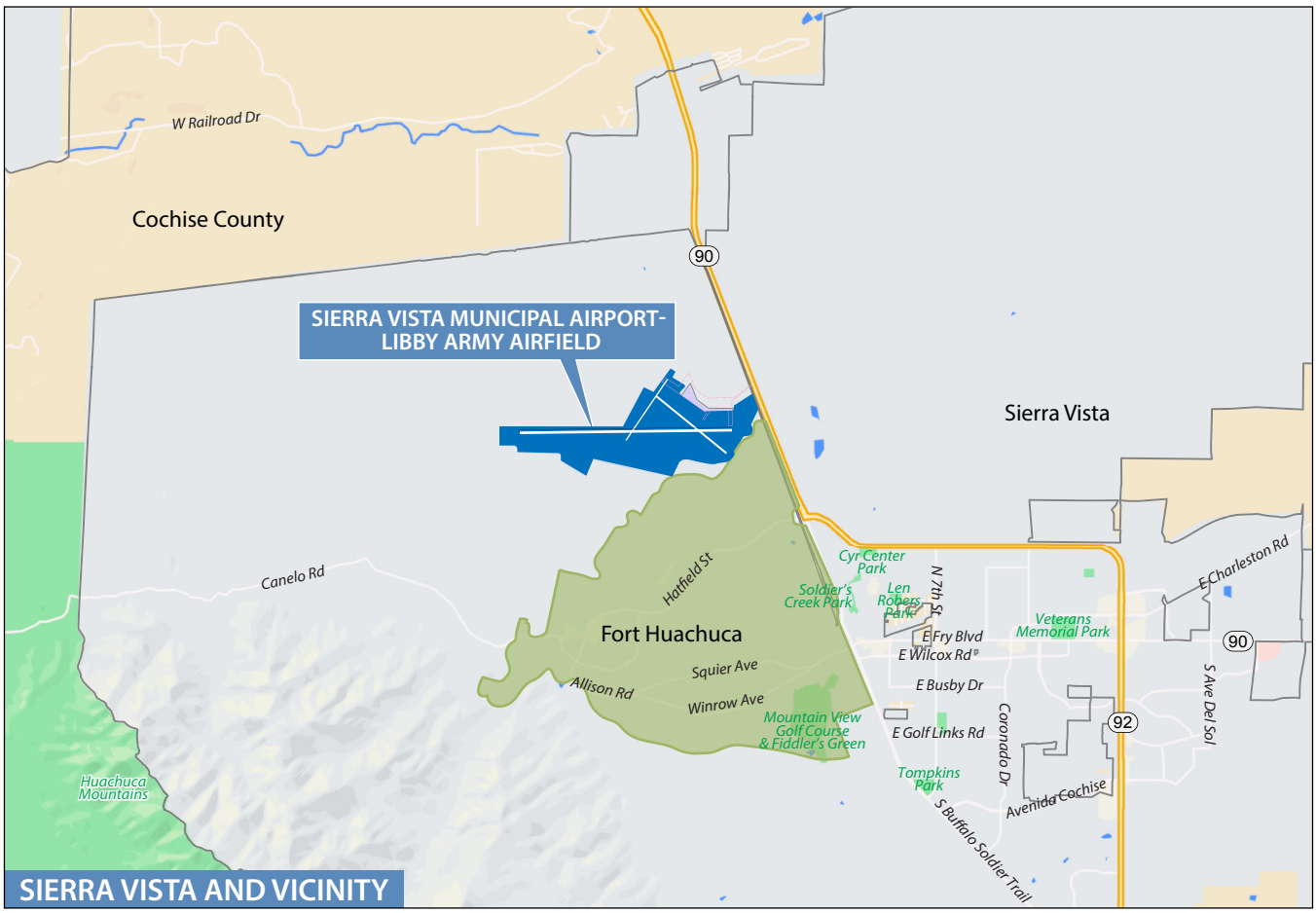
COCHISE COUNTY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LIBBY army AIRFIELD
Sierra Vista
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Cyr Center Park
Soldier's Creek Park
Len Roberts Park
N 7TH ST
E Charleston Rd
Veterans Memorial Park
Fort Huachuca
E Fry Blvd
E Wilcox Rd
Squier Ave
Allison Rd
Winrow Ave
E Busby Dr
Mountain View Golf Course & Fiddler's Green
E Golf Links Rd
Coronado Dr
92
S Ave Del Sol
Tompkins Park
Avenida Cochise
S Buffalo Soldier Trail
Huachuca Mountains
SIERRA VISTA AND VICINITY

4. The city may improve or alter the airfield but must coordinate with the Army to get approval prior to development;
5. The city cannot transfer property interests without Army approval;
6. The city cannot charge landing fees;
7. The city is responsible for emergency and maintenance services required by civilian aircraft; and
8. The Army has the right to require the city to reduce water usage to only what is essential for operation of public airport facilities.

Since its establishment, Sierra Vista Municipal Airport has grown substantially in terms of facility development from the 10.5 acres on which it began. The civilian portion of the airfield now encompasses approximately 72 acres and features a terminal building, aircraft storage hangars and parking, fueling facilities, and more. In the past, the airport has offered scheduled airline service from regional carriers; however, this service was terminated in 2007 and has not been reestablished. Today, along with military operations, the airport accommodates a diverse range of general aviation activity, including recreational flying, flight training, medical transport, and seasonal aerial firefighting.

AIRPORT ADMINISTRATION

The civilian portion of FHU is owned and operated by the City of Sierra Vista. The city's Public Works department has advisory and oversight responsibilities regarding policies, capital improvements, land leases, safety matters, and other items as directed by the City Council. An Airport Technician provides day-to-day oversight of the airport and its maintenance and reports to the Public Works department. The airport is staffed Monday through Friday between the hours of 7:00 a.m. and 3:30 p.m.

CLIMATE

Climate and local weather conditions are an important consideration in the master planning process, as they can significantly impact an airport's operations. For example, high surface temperatures and humidity increase runway length requirements, and runway orientation is dependent on predominant wind patterns for the area. Cloud cover percentages and frequency of other climatic conditions also determine the need for navigational aids and light.

Sierra Vista experiences a semi-arid climate, with more than 300 days of sunshine on average each year. Temperatures are generally mild, with average annual highs in the mid to upper 70s and lows in the mid-40s. Winters are cool and dry with occasional hard freezes. Summers are warm and dry at the start of the season but become rainier as the monsoon season progresses. **Figure 1A** displays weather patterns in the city. June has the highest average maximum temperature of 93.9 degrees Fahrenheit (°F), while January and December are the coolest months, with an average minimum temperature of 29.5 degrees. Annual rainfall totals 13 inches and is most plentiful during the late summer monsoon season. July is the rainiest month, averaging 3.5 inches. Snowfall in Sierra Vista is rare, with less than a half-inch occurring each year on average.

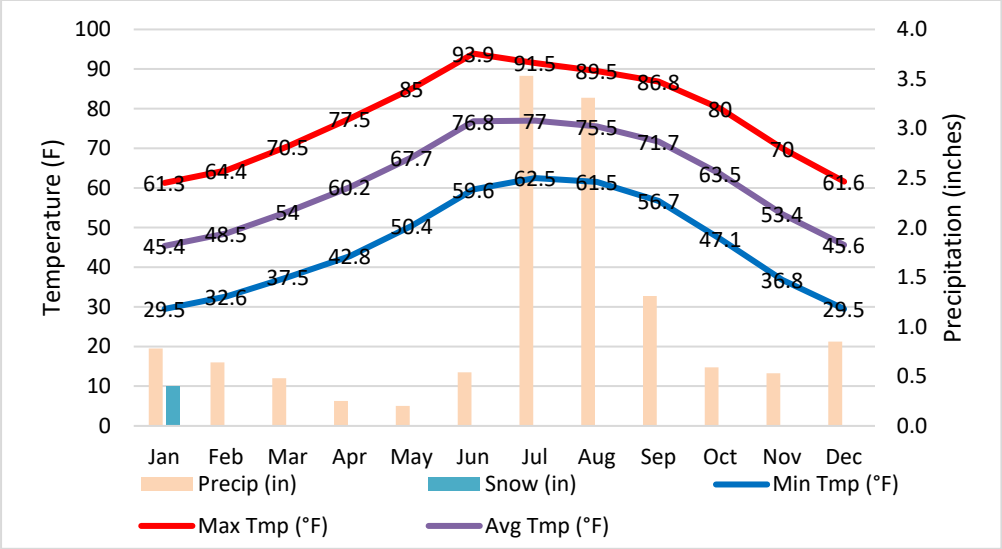

Figure 1A – Sierra Vista Weather Patterns

Table 1A indicates that visual meteorological conditions (VMC) occur 97.89 percent of the time. When under VMC, pilots can operate using visual flight rules (VFR) and are responsible for maintaining proper separation from objects and other aircraft. Instrument meteorological conditions (IMC) account for all weather conditions less than VMC that still allow for aircraft to safely operate under instrument flight rules (IFR). Under IFR, pilots rely on instruments in the aircraft to accomplish navigation. IMC occur 1.25 percent of the time. Less than IMC, or poor visibility conditions (PVC), are present less than one percent of the time. These weather conditions are lower than instrument approach minimums, making the airport inaccessible to most air traffic.

TABLE 1A | Weather Conditions

Condition	Cloud Ceiling	Visibility	Percent of Total
VMC	≥ 1,000' AGL	≥ 3 statute miles	97.89%
IMC	≥ 500' AGL and < 1,000' AGL	≥ 1 to < 3 statute miles	1.25%
PVC	< 500' AGL	< 1 statute mile	0.86%

VMC: Visual Meteorological Conditions
IMC: Instrument Meteorological Conditions
PVC: Poor Visibility Conditions
AGL: Above Ground Level

Source: Fort Huachuca Sierra Vista Municipal Airport, AZ US – Station ID: 72273003124, 1/1/2014 - 12/31/2023

CAPITAL IMPROVEMENT HISTORY

Significant improvements have been made to the airport since its establishment. The Federal Aviation Administration (FAA) and Arizona Department of Transportation – Aeronautics Group (ADOT) have provided funding assistance to the city for capital improvements, primarily through the Airport Improvement Program (AIP). Airport improvement funds are collected through user fees, additional taxes on airline airfares, and aviation fuel taxes. As airports grow or safety standards change over time, funding is needed to maintain a safe and efficient airport environment. The *Airport and Airway Development and Revenue Act* of 1970 established the Aviation Trust Fund, which funds the AIP. Generally, federal AIP

grants fund 91.06 percent of FAA-approved airport improvement projects for airports in the State of Arizona. Airport sponsors are responsible for the remaining 8.94 percent; however, through Arizona's State Aviation Fund, airport sponsors are eligible to receive state matching grants for 50 percent of the sponsor's share. As a result, a typical project cost is broken out as 91.06 percent federal funding, 4.47 percent state funding, and 4.47 percent airport sponsor funding.

Table 1B summarizes approximately $3.8 million in federal grant-aided capital improvement projects undertaken at the airport since 2011, including grant funds that became available following the COVID-19 pandemic. ADOT funds totaling nearly $200,000 are also included, as are the City of Sierra Vista's local match contributions of approximately $131,000.

TABLE 1B | Grant History

Year	Project Description	AIP Entitlement	CARES General	Covid Relief General	ADOT	Local
2011	Extend Taxiway G	$479,764	-	-	$12,625	$12,625
2011	Update Airport Master Plan Study	$209,377	-	-	$5,510	$5,510
2013	Acquire Equipment	$178,490	-	-	-	-
2013	Wildlife Hazard Assessments	$85,141	-	-	-	-
2014	Design Taxiway P Signage & Lighting	-	-	-	$72,492	$8,055
2015	Strengthen Taxiway	$54,411	-	-	-	-
2016	Strengthen Taxiway	$1,679,293	-	-	$82,434	$82,434
2020	CARES Act Funds	-	$30,000	-	-	-
2020	Rehabilitate Apron	$64,853	-	-	-	-
2020	Seal Taxiway Pavement Surface/Pavement Joints	$22,951	-	-	-	-
2021	CRRSA Act Funds	-	-	$13,000	-	-
2021	General ARPA	-	-	$32,000	-	-
2021	Reconstruct Apron	$476,986	-	-	-	-
2021	Seal Taxiway Pavement Surface/Pavement Joints	$100,000	-	-	-	-
2023	Update Airport Master Plan or Study	$464,406	-	-	$22,797	$22,797
TOTALS		**$3,815,672**	**$30,000**	**$45,000**	**$195,858**	**$131,421**

Sources: Airport & FAA records

ECONOMIC IMPACT

FHU is a significant economic asset to the region and is utilized year-round for military activities, medical transport, law enforcement activities, aerial firefighting, freight/cargo, and recreational flying. In 2021, ADOT undertook a statewide economic impact study to measure how Arizona's airports stimulated the economy. Each airport was evaluated based on its direct impacts to the economy, as well as indirect or induced impacts. The study found that FHU generated more than $7.8 million in total economic activity and supported 55 jobs with more than $2.6 million in total earnings.

THE AIRPORT'S SYSTEM ROLE

Airport planning takes place at the local, state, and national levels, each of which has a different emphasis and purpose.

- **Local |** Sierra Vista Municipal Airport has an airport master plan, which was last updated in 2014.
- **State |** FHU is included within the 2018 update to the *Arizona State Airport System Plan* (SASP).
- **National |** FHU is included in the *National Plan of Integrated Airport Systems* (NPIAS), which categorizes overall airport roles and responsibilities based on input from local and state planning efforts (i.e., master plans and state system plans).

LOCAL AIRPORT PLANNING

***2014 Airport Master Plan* |** The *2014 Airport Master Plan* provided a 20-year airport development vision based on aviation demand forecasts for activity levels. The study used 2011 data for its aviation forecasts baseline. The primary recommendations from the *2014 Airport Master Plan* included extension of Taxiway J to serve as a full-length parallel taxiway to Runway 8-26, extension of Runway 12-30 to support a more diverse general aviation fleet mix, improvement of safety area deficiencies, improved instrument approach procedures, and additional landside facilities (aprons/taxilanes/hangars) on the north side of the airfield.

STATE AIRPORT PLANNING

The primary planning document for the State of Arizona is the SASP, which was last updated in October 2018. The SASP focuses on keeping Arizona's airports highly advanced, safe, and responsive to the public's needs today and throughout the 20-year planning horizon. FHU is classified as a General Aviation (GA) Community airport within the SASP. The SASP definition for a GA Community airport is to "serve regional economies, connect to state and national economies, and serve all types of GA aircraft."[2]

FEDERAL AIRPORT PLANNING

Many of the nation's existing airports were either initially constructed by the federal government or their development and maintenance was partially funded through various federal grant-in-aid programs to local communities; therefore, the system of airports that exists today is due, in large part, to federal policy that promotes the development of civil aviation. As part of a continuing effort to develop a national airport system, the U.S. Congress has maintained a national plan for the development and maintenance of airports.

The FAA maintains the NPIAS, which is a database of airports that are eligible for AIP funding and are for public use. The NPIAS is published and used by the FAA in administering the AIP, which is the source of federal funds for airport improvement projects across the country. The AIP is funded exclusively by user fees and user taxes, such as those on fuel and airline tickets. An airport must be included in the NPIAS to be eligible for federal funding assistance through the AIP.

[2] https://azdot.gov/sites/default/files/2019/05/2018-arizona-sasp-update-technical-report.pdf

The most recent plan is the NPIAS 2023-2027, which identifies 3,287 existing public-use airports and eight proposed nonprimary airports anticipated to open by 2027 that are deemed important to national air transportation. The plan estimates that approximately $62.4 billion in AIP-eligible airport projects will require financial assistance between 2023 and 2027, which is an increase of almost $19 billion compared to the estimate identified in the previous NPIAS report.

The NPIAS categorizes airports by the type of activities that occur, including commercial service, cargo service, reliever operations, and general aviation. FHU is currently classified as a Local GA airport in the FAA's NPIAS. These airports provide a critical component to the national GA system and account for 36 percent of all NPIAS airports. They are typically located near population centers and have moderate levels of activity. They often accommodate flight training and emergency services, and average approximately 33 based propeller-driven aircraft (no jets) at their facilities.

AIRPORT FACILITIES AND SERVICES

There are three broad categories of facilities and services at the airport: airside, landside, and support.

- **Airside facilities** are directly associated with aircraft operations, including runways, taxiways, lighting, markings, navigational aids, and weather reporting.
- **Landside facilities** are necessary to provide a safe transition from surface to air transportation and support aircraft parking, servicing, storage, maintenance, and operational safety.
- **Support facilities** serve as a critical link by providing necessary efficiency to aircraft ground operations and include fuel storage, airport maintenance, firefighting, and fencing.

AIRSIDE FACILITIES

RUNWAYS

Runway 8-26 | As depicted on **Exhibit 1B**, FHU has three runways. Runway 8-26, the primary runway, is oriented east-west and measures 12,001 feet long by 150 feet wide. This runway is constructed of concrete and is reported to be in excellent condition. The runway has a weight-bearing capacity of 75,000 pounds for single wheel aircraft (S), 200,000 pounds for dual wheel aircraft (D), 450,000 pounds for dual tandem wheel aircraft (2D), and 700,000 pounds for double dual tandem wheel aircraft (2D2). Both runway ends are equipped with precision markings, which support the instrument landing system (ILS) and global positioning system (GPS) localizer performance with vertical guidance (LPV) approaches. The runway slopes down from the Runway 8 end at a gradient of 1.00 percent. Runway 8 has a left-hand traffic pattern and Runway 26 has a right-hand pattern. Both runway ends are equipped with blast pads, which are marked with yellow chevrons. Blast pads are provided to reduce the erosive effect of jet blast and propeller wash.

Runway 12-30 | Crosswind Runway 12-30 is 5,366 feet long by 100 feet wide and is oriented northwest-southeast. This runway is constructed of concrete and asphalt and is reported to be in good condition. The runway's weight-bearing capacities are 46,000 pounds S, 106,000 pounds D, 137,000 pounds 2D,

LEGEND

- Sierra Vista Municipal Airport Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Lighted Wind Cone

KEY

ASR: Airport Surveillance Radar
ATCT: Airport Traffic Control Tower
ILS: Instrument Landing System
PAPI: Precision Approach Path Indicator
PAR: Precision Approach Radar
TACAN: Tactical Air Navigation Aid
VOR: Very High Frequency Omni-directional Range

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and 172,000 pounds 2D2. The runway ends are equipped with non-precision markings. The runway has a gradient of 0.06 percent. Runway 12 has a left-hand traffic pattern and Runway 30 has a right-hand pattern. Both runway ends are equipped with blast pads.

Runway 3-21 | Runway 3-21 is the shortest and narrowest runway available at FHU, at 4,285 feet long and 75 feet wide. This asphalt/concrete runway is in good condition and does not have a reported weight-bearing capacity. Both runway ends have basic markings. The runway slopes down from the Runway 3 end at a gradient of 1.99 percent. Runway 3 has a left-hand traffic pattern and Runway 21 has a right-hand pattern. Runway 3 has a 1,253-foot displaced threshold, which allows for 3,032 feet of pavement available for landing operations. Both runway ends are equipped with blast pads.

HELIPAD

A 40-foot by 40-foot asphalt helipad (H1) is located on the northeast side of the airfield, immediately east of the general aviation landside facilities. The helipad is equipped with perimeter lighting and is primarily used for medical transport. There is a left-hand traffic pattern for arriving and departing helicopters.

TAXIWAYS

As shown on **Exhibit 1B**, the taxiway system at FHU consists of a full-length parallel taxiway and partial-parallel taxiway serving Runway 8-26, as well as entrance/exit, access, and connector taxiways serving all runways and apron areas. Taxiway P, the full-length taxiway serving Runway 8-26, is located on the runway's south side and provides access to military-use areas. Taxiways J and K are partial-parallel taxiways that are located north of the primary runway and provide access to/from the general aviation area. Taxiways A, B, C, D, F, and S serve as connector/access taxiways that support Runway 8-26 from the south, while Taxiways D, G, J, and K serve as connectors to various points north of Runway 8-26. **Table 1C** provides additional information about each taxiway.

TABLE 1C | Taxiway System

Designation	Width	Surface	Function
A	75'	Concrete	Threshold access (8)
B	75'	Concrete	Exit/Access
C	75'	Concrete	Threshold access (3)
D	75'	Concrete/Asphalt	Exit/Access
E	75'	Concrete	Exit/Access
F	75'	Concrete	Threshold Access (26)
G	50'	Asphalt	Threshold Access (26)
J	50-75'	Concrete/Asphalt	Partial-parallel (8-26); Exit/Access
K	50'	Concrete/Asphalt	Partial-parallel (12-30); Access
P	75'	Concrete	Full-length parallel (8-26)
S	50'	Asphalt	Threshold access (30); Access

Source: Airport diagram; Coffman Associates analysis

HOLDING BAYS

A holding bay is a designated area on the airfield that is typically located at the end of a taxiway near the runway end. The airport traffic control tower (ATCT) may instruct aircraft to hold on the apron until it is safe for the aircraft to proceed to the runway for takeoff. Pilots may also request to utilize holding bays to conduct final pre-flight checks prior to takeoff.

There are four holding bays on the airfield, as noted on **Exhibit 1B**. The holding bays on Taxiways A and F near the end of Runway 8-26 are each approximately 7,500 square yards (sy) in size and can accommodate multiple aircraft at one time. The holding bay on Taxiway S near the Runway 30 threshold is approximately 3,500 sy; this holding bay is marked with a compass calibration pad[3]. The fourth holding bay is located near the Runway 21 threshold on Taxiway K and is sized at approximately 3,800 sy.

PAVEMENT CONDITION

In order to protect and preserve airfield pavements in the state, the Arizona Pavement Preservation Program (APPP) has been established. To facilitate this, ADOT maintains the Arizona Airport Pavement Management System (APMS). The APMS uses the U.S. Army Corps of Engineers' Micropaver program as a basis for generating a five-year APPP. Visual inspections are conducted every three years to determine a pavement condition index (PCI) rating for runway, taxiway, and apron pavement sections, in accordance with FAA Advisory Circular (AC) 150/5380-6. PCI ratings range from 0 (failed) to 100 (excellent). The purpose of the report is to provide the airport sponsor with pavement condition information to guide pavement maintenance schedules and ensure airfield surfaces are preserved in good working order. Due to the joint-use nature of FHU, the APMS data is limited to the taxiways and apron areas that are used exclusively for general aviation operations; however, the Army Dams and Transportation Infrastructure Program (ADTIP) conducted an inspection of the airfield's runways and their associated taxiways to determine PCIs for these pavement sections. **Exhibit 1C** details the results of the APMS and the ADTIP inspections, both of which occurred in 2022.

In 2014, the FAA implemented the International Civil Aviation Organization (ICAO) pavement classification number (PCN) for identifying strength of airport pavements. The PCN is a five-part code, described as follows:

1) *PCN Numerical Value:* Indicates the load-carrying capacity of the pavement expressed as a whole number. The value is calculated based on several engineering factors, such as aircraft geometry and pavement usage.
2) *Pavement Type:* Expressed as either R for rigid pavement (typically concrete) or F for flexible pavement (typically asphalt).
3) *Subgrade Strength:* Expressed as A (high), B (medium), C (low), or D (ultra low). A subgrade of A would be considered very strong, like concrete-stabilized clay, and a subgrade of D would be very weak, similar to uncompacted soil.

[3] A compass calibration pad is a paved area where aircraft position to calibrate the aircraft magnetic compass, allowing pilots to determine the accuracy of compass readings.

INSET

0 600
SCALE IN FEET

PAVEMENT CONDITION	
PCI	Category
86-100	Good
56-85	Fair
0-55	Poor

Source: Arizona Pavement Management System, 2022 visual inspection

LEGEND

- Sierra Vista Municipal Airport Property Line
- Libby Army Airfield Property Line (Joint Use)
- A — Taxiway Designator
- Unevaluated Pavement

PCI = Pavement Condition Index

Airport Ave

Whitside Rd

Brainard Rd

Arizona St

PAVEMENT CONDITION	
PCI	Category
71-100	Good
56-70	Fair
0-55	Poor

Source: ADTIP AAF-22-01: Illustration 1. Surface condition based on 2022 surface condition survey

0 1,000
SCALE IN FEET

Photo: NV5 10/22/2023

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4) *Maximum Tire Pressure:* Expressed as W (unlimited/no pressure limit), X (high/254 psi), Y (medium/181 psi), or Z (low/72 psi) and indicates the maximum tire pressure the pavement can support. Concrete surfaces are usually rated W.
5) *Process of Determination:* Expressed as either T (technical evaluation) or U (physical evaluation), this value indicates the method of pavement testing.

The PCN for each of the runways at FHU is as follows:

- Runway 8-26: 58/R/B/W/T
- Runway 12-30: 92/F/A/W/T
- Runway 3-21: 8/F/A/W/T

AIRFIELD LIGHTING

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport for this purpose. These lighting systems, categorized by function, are summarized as follows.

Airport Identification Lighting

The location of the airport at night is universally identified by a rotating beacon. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The beacon at FHU flashes white two times, followed by a single green flash, indicating that the airport is a joint-use facility. The beacon operates from sunset to sunrise and is located on the southeast side of the airport, approximately 1,300 feet from the Runway 30 threshold.

Pavement Edge Lighting

Pavement edge lighting defines the lateral limits of the pavement to ensure safe operations during night and/or times of low visibility, maintaining safe and efficient access to and from the runway and aircraft parking areas. Runway 8-26 is equipped with high intensity runway lighting (HIRL), while Runways 12-30 and 3-21 each have medium intensity runway lighting (MIRL). Each runway end is equipped with threshold lights, which emit green light outward from the runway and emit red light toward the runway. Green lights indicate the landing threshold to arriving aircraft and red lights indicate the end of the runway for departing aircraft.

All taxiways at FHU are equipped with medium intensity taxiway lighting (MITL), with the exception of Taxiways P and S. All edge lights are mounted on frangible bases approximately one foot off the ground.

Visual Approach Aids

Visual approach aids are installed at airports to assist pilots in determining the correct descent path to the runway end during landing. Runways 8-26 and 12-30 are equipped with a four-box precision approach path indicator (PAPI-4) system on the left side of each runway end, except for Runway 30, where the PAPI-4 is on the right. PAPIs have an effective visual range of three miles during the day and 20 miles at night. The PAPIs have standard 3.00-degree glide paths.

Runway end identification lights (REILs) provide a visual identification of the runway end for landing aircraft. The REILs consist of two synchronized flashing lights located laterally on each side of the runway end facing the approaching aircraft. These flashing lights can be seen day or night for up to 20 miles, depending on visibility conditions. None of the runways are equipped with REILs.

Pilot-Controlled Lighting

During nighttime hours, pilots can use the pilot-controlled lighting (PCL) system to activate the airfield lights and visual approach aids from their aircraft through a series of clicks of their radio transmitter, using the common traffic advisory frequency (CTAF) (124.95 megahertz [MHz]).

To ensure a reliable source of power for airfield lighting, FHU maintains two generators as secondary power sources for all runway and taxiway lighting systems.

AIRFIELD SIGNAGE AND MARKINGS

Airfield identification signs assist pilots in identifying runways, taxiway routes, holding positions, and critical areas. FHU is equipped with lighted runway and taxiway designation, routing/directional, holding position, and runway exit signage.

Airfield Signage

Pavement markings aid in the movement of aircraft along surfaces at the airport and identify closed or hazardous areas. The airport provides and maintains marking systems in accordance with FAA AC 150/5340-1, *Standards for Airport Marking*. As mentioned previously, Runway 8-26 is equipped with precision markings, while Runway 12-30 has non-precision markings and Runway 3-21 has basic markings. On Runway 8-26, the precision markings include the runway centerline, designation, threshold markings, aiming points, and touchdown zone markings. Non-precision markings on Runway 12-30 include all of the above, except for touchdown zone markings. The basic markings on Runway 3-21 include the runway designation and centerline. The blast pads at each runway end are marked with yellow chevrons. All taxiways at the airport are marked with yellow centerline, holding position markings, and leadoff lines on normally used exits. Centerline markings assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway edges. Aircraft holding

positions are marked at each runway/taxiway intersection. Taxiway F is marked with an ILS critical area holding position marking, and tower personnel may instruct pilots waiting to depart Runway 8 to hold short of this marking so as not to interfere with the ILS signal.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACH PROCEDURES

Navigational aids are electronic devices that transmit radio frequencies that pilots in properly equipped aircraft can translate into point-to-point guidance and position information. The very high omnidirectional range (VOR), in general, provides azimuth readings to pilots of properly equipped aircraft, transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility (VOR/DME) to provide distance and direction information to the pilot. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. The VORTAC provides distance and direction information to both civil and military pilots. The FHU area is served by the following[4]:

- Libby VOR/DME – on-airport
- Nogales VOR/DME – 27.9 nautical miles (nm) southwest
- Douglas VORTAC – 38.7 nm east
- Tucson VORTAC – 42.1 nm northwest

A non-directional beacon (NDB) is a radio transmitter at a known location that is used as an aviation or marine navigational aid. The signal transmitted does not include *inherent* directional information, in contrast to other navigational aids, such as a VOR. NDB signals follow the curvature of the Earth, so they can be received at much greater distances at lower altitudes, which is a major advantage over VOR. There is one NDB in the vicinity of FHU: the Ryan NDB, located 53.2 nm northwest. It should be noted that an NDB was previously installed at FHU but was decommissioned in 2018 and the equipment removed in 2023.

The global positioning system (GPS) is an additional navigational aid for pilots. GPS was initially developed by the United States Department of Defense for military navigation around the world. GPS differs from an NDB or VOR in that it does not require pilots to navigate using a specific facility. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft use to determine altitude, speed, and other navigational information. With GPS, pilots can directly navigate to any airport in the country.

Instrument approach procedures assist pilots in locating and landing at an airport during low visibility and cloud ceiling conditions. They are categorized as either precision, approach with vertical guidance (APV), or non-precision. Precision instrument approach aids provide an exact course alignment and vertical descent path for an aircraft on final approach to a runway with a height above threshold (HATh) lower than 250 feet and visibility lower than ¾-mile. APVs also provide course alignment and vertical guidance but have HAThs of 250 feet or more and visibility minimums of ¾-mile or greater. Non-precision instrument approaches provide only course alignment information with no vertical guidance.

[4] A TACAN is located on the airport; however, it is for military use only.

Approach minimums are published for different aircraft categories (described in greater detail in Chapter Two) and consist of a minimum decision altitude (DA) and required visibility. According to Title 14 Code of Federal Regulations (CFR) 91.175, a pilot must be able to make a safe landing and have the runway in sight, and the visibility requirement must be met. For a precision approach or APV, the DA is the point at which the pilot must meet all three criteria for landing, otherwise they cannot land using the published instrument approach. For a non-precision approach, the minimum descent altitude (MDA) is a specified altitude at which the required visual reference must be made, or a missed approach initiated.

Exhibit 1D details the instrument approach procedures at FHU[5].

WEATHER AND COMMUNICATION AIDS

Automated Terminal Information Service (ATIS)

FHU provides weather information to airport users with an Automatic Terminal Information Service (ATIS). ATIS broadcasts are updated hourly and provide arriving and departing pilots with the current surface weather conditions, communication frequencies, and other important airport-specific information. The ATIS frequency at FHU is 134.75 MHz. Pilots can also access information via UNICOM at 122.95 MHz.

Fixed Base Weather Observation System

FHU is equipped with a fixed base weather observation system (AN/FMQ-23), which is an integrated system of weather sensors. The equipment is located south of Runway 8-26, between Taxiways A and B, and is owned by the U.S. Air Force. This system automatically records weather conditions, such as temperature, dew point, wind speed, altimeter setting, visibility, sky condition, and precipitation. This information is then supplied to the ATIS, which provides hourly updates for pilots operating in the vicinity of FHU. Previously, the airport was equipped with an automated surface observing system (ASOS) and an automated weather observing system (AWOS); these systems are no longer in use.

Wind Cones

FHU is equipped with nine wind cones, six of which are lighted. The wind cones provide information to pilots regarding wind conditions, such as direction and intensity. The locations of the lighted wind cones are depicted on **Exhibit 1C**.

Lighted Wind Cone

[5] A fixed base precision approach radar (PAR) approach, which was previously available, was removed in 2023.

	WEATHER MINIMUMS BY AIRCRAFT TYPE							
	Category A		Category B		Category C		Category D	
	DH	VIS	DH	VIS	DH	VIS	DH	VIS
RWY 26 ILS or LOC								
S-ILS 26	200 ft	¾ mile	200 ft	¾ mile	200 ft	¾ mile	200 ft	¾ mile
S-LOC 26	391 ft	1 mile	391 ft	1 mile	391 ft	1 ¼ mile	391 ft	1 ¼ mile
Circling	441 ft	1 mile	461 ft	1 mile	461 ft	1 ½ mile	561 ft	2 mile
RWY 8 RNAV (GPS)								
LPV DA	200 ft	¾ mile	200 ft	¾ mile	200 ft	¾ mile	200 ft	¾ mile
LNAV/VNAV DA	340 ft	1 ⅛ mile	340 ft	1 ⅛ mile	340 ft	1 ⅛ mile	340 ft	1 ⅛ mile
LNAV MDA	561 ft	1 mile	561 ft	1 mile	561 ft	1 ⅝ mile	561 ft	1 ⅝ mile
Circling	561 ft	1 mile	561 ft	1 mile	561 ft	2 mile	561 ft	2 mile
RWY 26 RNAV (GPS)								
LNAV MDA	411 ft	1 mile	411 ft	1 mile	411 ft	1 ¼ mile	411 ft	1 ¼ mile
Circling	441 ft	1 mile	461 ft	1 mile	461 ft	1 ½ mile	561 ft	2 mile
RWY 26 VOR								
S-26	511 ft	1 mile	511 ft	1 mile	511 ft	1 ⅝ mile	511 ft	1 ⅝ mile
Circling	441 ft	1 mile	461 ft	1 mile	461 ft	1 ⅝ mile	561 ft	2 mile

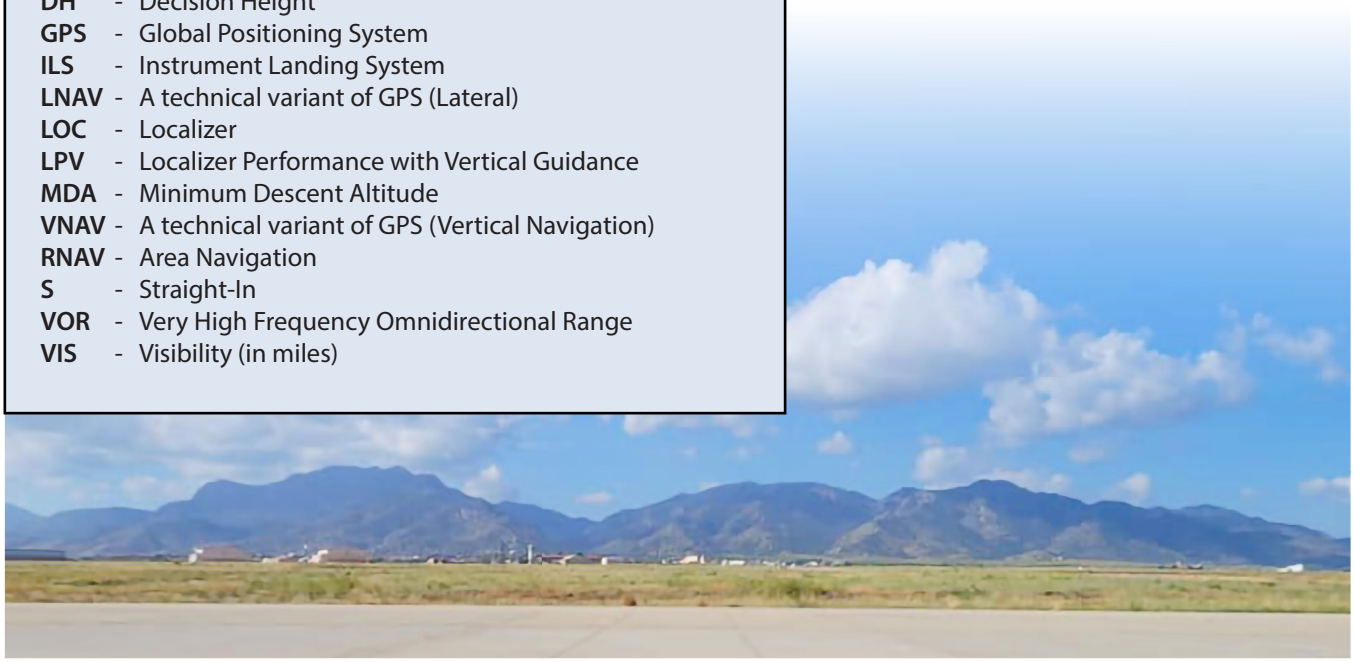
Aircraft categories are based on the approach speed of aircraft, which is determined as 1.3 times the stall speed in landing configuration. The approach categories are as follows:

Category A - 0-90 knots (e.g., Cessna 172)
Category B - 91-120 knots (e.g. Beechcraft King Air)
Category C - 121-140 knots (e.g., B-737, Regional Jets, Canadair Challenger)
Category D - 141-166 knots (e.g., B-747, Gulfstream IV)

Source: AirNav

ABBREVIATIONS

DH - Decision Height
GPS - Global Positioning System
ILS - Instrument Landing System
LNAV - A technical variant of GPS (Lateral)
LOC - Localizer
LPV - Localizer Performance with Vertical Guidance
MDA - Minimum Descent Altitude
VNAV - A technical variant of GPS (Vertical Navigation)
RNAV - Area Navigation
S - Straight-In
VOR - Very High Frequency Omnidirectional Range
VIS - Visibility (in miles)



LANDSIDE FACILITIES

Landside facilities are those airport elements that are not directly related to the airfield system. Landside elements include the terminal complex, general aviation and air cargo facilities, and support facilities (such as fuel storage, airport maintenance, and aircraft rescue and firefighting). Landside facilities are identified on **Exhibit 1E** and detailed below. Only landside facilities associated with Sierra Vista Municipal Airport are being evaluated as part of this master plan.

TERMINAL BUILDING

Sierra Vista Municipal Airport has a dedicated terminal building that was constructed in approximately 1978 and was expanded several years later. The terminal currently encompasses approximately 7,000 square feet (sf) and provides a lobby area, administrative office space, a pilots' lounge, a flight planning room, and restrooms. Because Sierra Vista Municipal Airport previously offered scheduled passenger flights, the terminal also includes features typically found at commercial airports, such as ticketing, baggage claim, and rental car counters. The terminal building is located on the north side of the airport and can be accessed via Airport Avenue.

Airport Terminal Building

FIXED BASE OPERATOR AND AVIATION BUSINESSES

The City of Sierra Vista provides fixed base operator (FBO) services through Aviation Ground Services (AGS). AGS is available on-site from 7:00 a.m. to 3:30 p.m., Monday through Friday, and provides aviation fuel (100LL and Jet A), hangar/tiedown rental, and miscellaneous pilot supplies. Self-service 100LL fuel is available 24/7. Several approved operators also offer a variety of services at the airport. These include:

- Sierra Vista Aviation Services – aircraft maintenance and repair; aircraft inspection
- Enterprise – car rental service
- PHI Air Medical (Air Evac) – emergency transport
- UPS – cargo services

Facility #	Building Description	Size(sf)
1	Terminal Building	9,500
2	Linear Box Hangar (10 units)	13,500
3	Linear Box Hangar (10 units)	15,800
4	Linear Box Hangar (12 units)	15,800
5	Linear Box Hangar (6 units)	8,500
6	Linear Box Hangar (12 units)	17,500
7	Linear Box Hangar (12 units)	16,200
8	Executive Box Hangar (Air Evac)	5,000
9	Office (Air Evac)	1,500
10	Office (Civil Air Patrol)	4,500

LEGEND

- Sierra Vista Municipal Airport Property Line (75 Acres)
- Libby Army Airfield Property Line (Joint Use)
- A Taxiway Designator

Note: Building and apron sizes are approximate.

N

0 200

SCALE IN FEET

Photo: NV5 10/22/2023

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- Ameriflight – UPS affiliate
- Hangar X Aviation – aircraft maintenance and repair; aircraft inspection
- High Desert Aircraft Services – aircraft maintenance
- E&M Aviation – flight instruction

AIRCRAFT HANGAR FACILITIES

Hangar facilities at Sierra Vista Municipal Airport include linear box hangars and an executive box hangar, which are shown on **Exhibit 1E**. Linear box hangars offer individual storage space for tenants. There are 62 linear box hangar units on the airfield comprising approximately 87,300 sf of space. The airport's only executive box hangar is located southeast of the linear box hangars and across from the fuel farm; this hangar is approximately 5,000 sf in size and houses an air ambulance provider, Air Evac. There are no T-hangars, which accommodate individual smaller aircraft, or conventional hangars, which are typically greater than 10,000 sf in size and are used to store larger or multiple aircraft, at the airport. Combined, the hangars at the airport offer approximately 92,300 sf of aircraft storage space.

At the time of this writing (February 2023), all hangar spaces are occupied, and there are seven individuals (aircraft) on a hangar waiting list. Two of the linear box hangars are reserved for transient users and are rented for two-week terms.

Linear Box Hangars

AIRCRAFT PARKING APRONS

There are three aircraft parking aprons at Sierra Vista Municipal Airport. The largest is adjacent to and northwest of the terminal building and encompasses approximately 39,100 square yards (sy). A second apron area is located east of the terminal building and is adjacent to the linear box hangars. This apron is approximately 23,300 sy and is marked with 37 individual aircraft parking positions. The third apron fronts the Air Evac hangar and is approximately 4,500 sy. There are four marked tiedowns on this apron. Aircraft parking aprons are identified on **Exhibit 1E**.

VEHICLE PARKING

A public vehicle parking lot is available adjacent to the terminal building. This lot is accessible from Airport Avenue and includes approximately 250 parking spaces. There are also three parking lots available for tenant use, as identified on **Exhibit 1E**. These lots offer approximately 50 parking spaces combined.

SUPPORT FACILITIES

Firefighting Services

As a general aviation airport, Sierra Vista Municipal Airport is not required to maintain on-site aircraft rescue and firefighting (ARFF) equipment or services; however, as the airport previously provided commercial passenger service, it was certificated under 14 CFR Part 139. A condition of this certification is a requirement to provide ARFF services. The city-owned ARFF truck that was acquired for this purpose was given to Fort Huachuca following the termination of passenger service, with the agreement that the Fort would respond to general aviation ARFF needs, if necessary. The Fort also maintains an ARFF facility and equipment on the south side of the airfield. Additional firefighting and emergency services as needed are provided by the Sierra Vista Fire Department, Station #3, which is located approximately eight miles east of the airport at 675 Giulio Cesare within the City of Sierra Vista.

Fuel Storage

There are two fuel storage facilities at Sierra Vista Municipal Airport. One is located near the terminal building and consists of a self-service 100LL station with a 5,000-gallon, aboveground tank. The second fuel farm is located on the east side of the landside area, adjacent to the Air Evac apron. There are five 15,000-gallon, aboveground storage tanks owned by the city; four of the tanks hold Jet A fuel and the remaining tank provides storage for 100LL fuel. These locations are shown on **Exhibit 1E**. There are two 5,000-gallon Jet A fuel trucks at the airport (one is full-time, and one is seasonal) and one 100LL truck, which has a 1,000-gallon capacity. Historical fuel flowage data provided by the City of Sierra Vista (Aviation Ground Services) is summarized in **Figure 1B**. Over the past three years, AGS dispensed an average of 26,973 gallons of 100LL fuel and 395,797 gallons of Jet A.

100LL Tank and Self-Serve Station

Fuel Farm

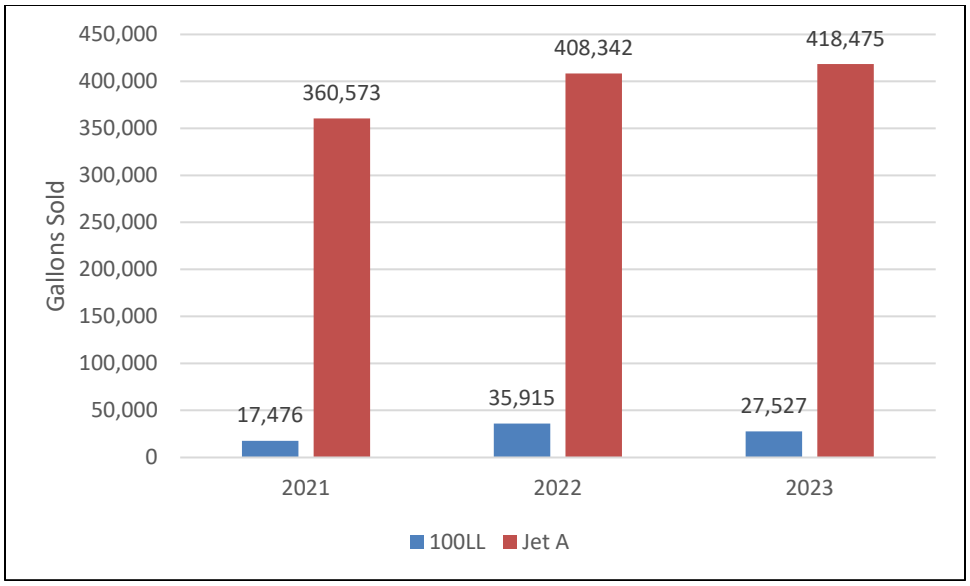


Figure 1B – Historical Fuel Flowage

Airport Maintenance Facilities

There is no dedicated maintenance equipment storage facility. Miscellaneous maintenance equipment and tools are stored in various buildings located on the north side of the airfield.

PERIMETER FENCING

The airfield perimeter is completely enclosed and equipped with eight-foot-tall chain link security fencing topped with three-strand barbed wire to restrict entry to unauthorized persons and vehicles. Motorized vehicle gates at various points along the fence allow access to the airfield and landside areas to authorized personnel using keycards. There are also several pedestrian gates, some of which are controlled with keycard entry; others are secured by padlocks.

Airport Perimeter Fencing and Access Gate

UTILITIES

The availability and capacity of the utilities serving the airport are factors in determining the development potential of the airport property, as well as the land immediately adjacent to the facility. Of primary concern in the inventory investigation is the availability of water, gas, sewer, and power sources. Providers are detailed below:

- Electric – SSVEC
- Gas – Southwest Gas
- Water – City of Sierra Vista wells
- Sanitary sewer – none (septic)
- Solid waste – City of Sierra Vista
- Communications – Cox

AREA AIRSPACE AND AIR TRAFFIC CONTROL

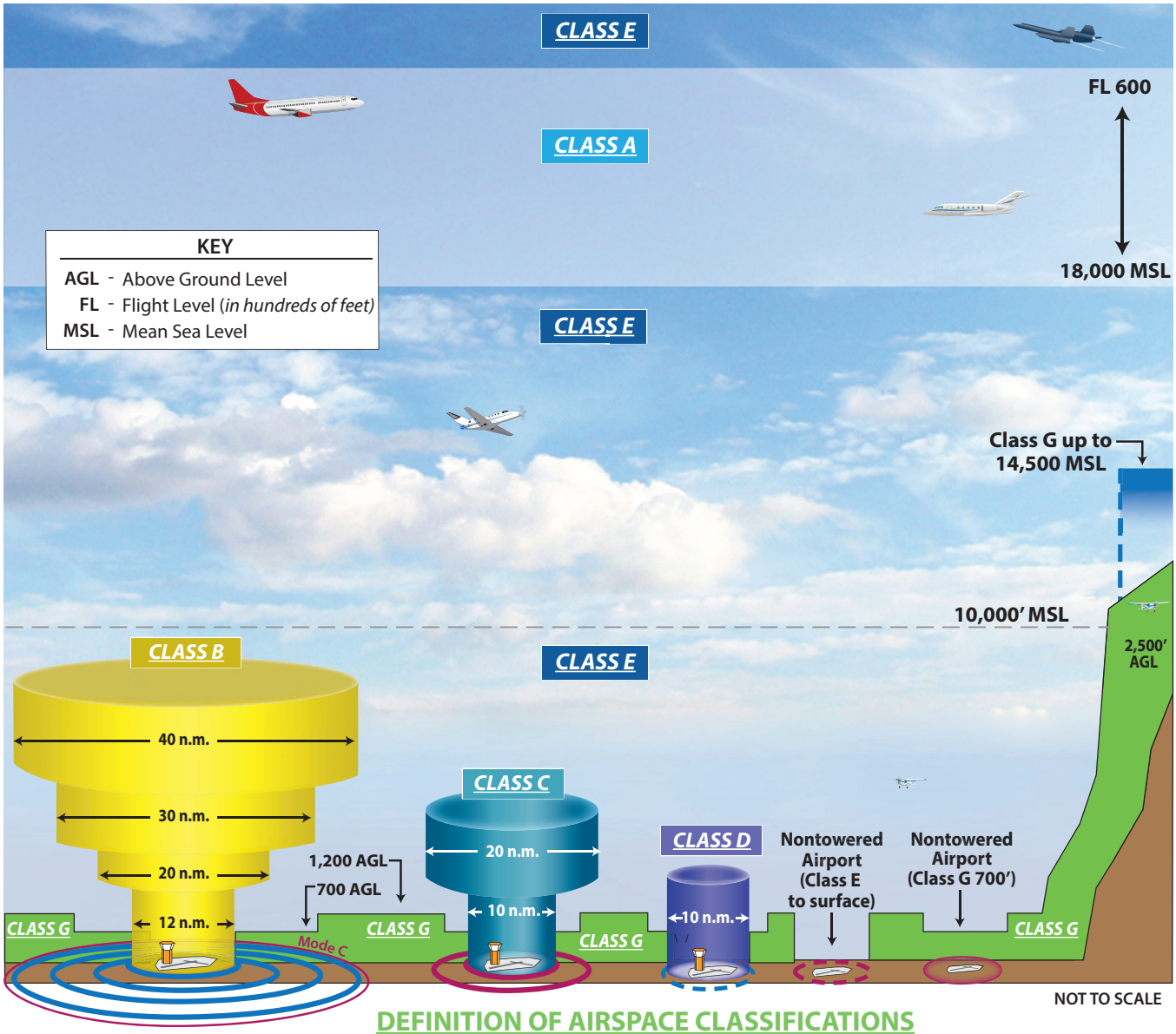
The *FAA Act of 1958* established the FAA as the responsible agency for the control and use of navigable airspace within the U.S. The FAA has established the National Airspace System (NAS) to protect persons and property on the ground, in addition to establishing a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS covers the common network of U.S. airspace, including air navigation facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. The system also includes components shared jointly with the military.

AIRSPACE STRUCTURE

Airspace within the U.S. is broadly classified as either controlled or uncontrolled. The difference between controlled and uncontrolled airspace relates primarily to requirements for pilot qualifications, ground-to-air communications, navigation and air traffic services, and weather conditions. Six classes of airspace have been designated in the U.S., as shown on **Exhibit 1F**. Airspace designated as Class A, B, C, D, or E is considered controlled airspace. Aircraft operating within controlled airspace are subject to varying requirements for positive air traffic control. Airspace near FHU is depicted on **Exhibit 1G**.

Class A Airspace | Class A airspace includes all airspace from 18,000 feet MSL to flight level (FL) 600 (approximately 60,000 feet MSL) over the contiguous 48 states and Alaska. This airspace is designated in 14 CFR Part 71.33 for positive control of aircraft. All aircraft must be on an IFR clearance to operate within Class A airspace.

Class B Airspace | Class B airspace has been designated around some of the country's major airports, such as Phoenix Sky Harbor International Airport (PHX), to separate all aircraft within a specified radius of the primary airport. Each Class B airspace is specifically tailored for its primary airport. This airspace is the most restrictive controlled airspace routinely encountered by pilots operating under VFR in an uncontrolled environment. In order to fly within Class B airspace, an aircraft must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control (ATC). A pilot is required to have at least a private pilot certificate or be a student pilot who has met the requirements of Federal Aviation Regulation (FAR) Part 61.95, which requires special ground and flight training for the



DEFINITION OF AIRSPACE CLASSIFICATIONS

CLASS A Think A - Altitude. Airspace above 18,000 feet MSL up to and including FL 600. Instrument Flight Rule (IFR) flights only, ADS-B 1090 ES transponder required, ATC clearance required.

CLASS B Think B - Busy. Multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports. ADS-B 1090 ES transponder required, ATC clearance required.

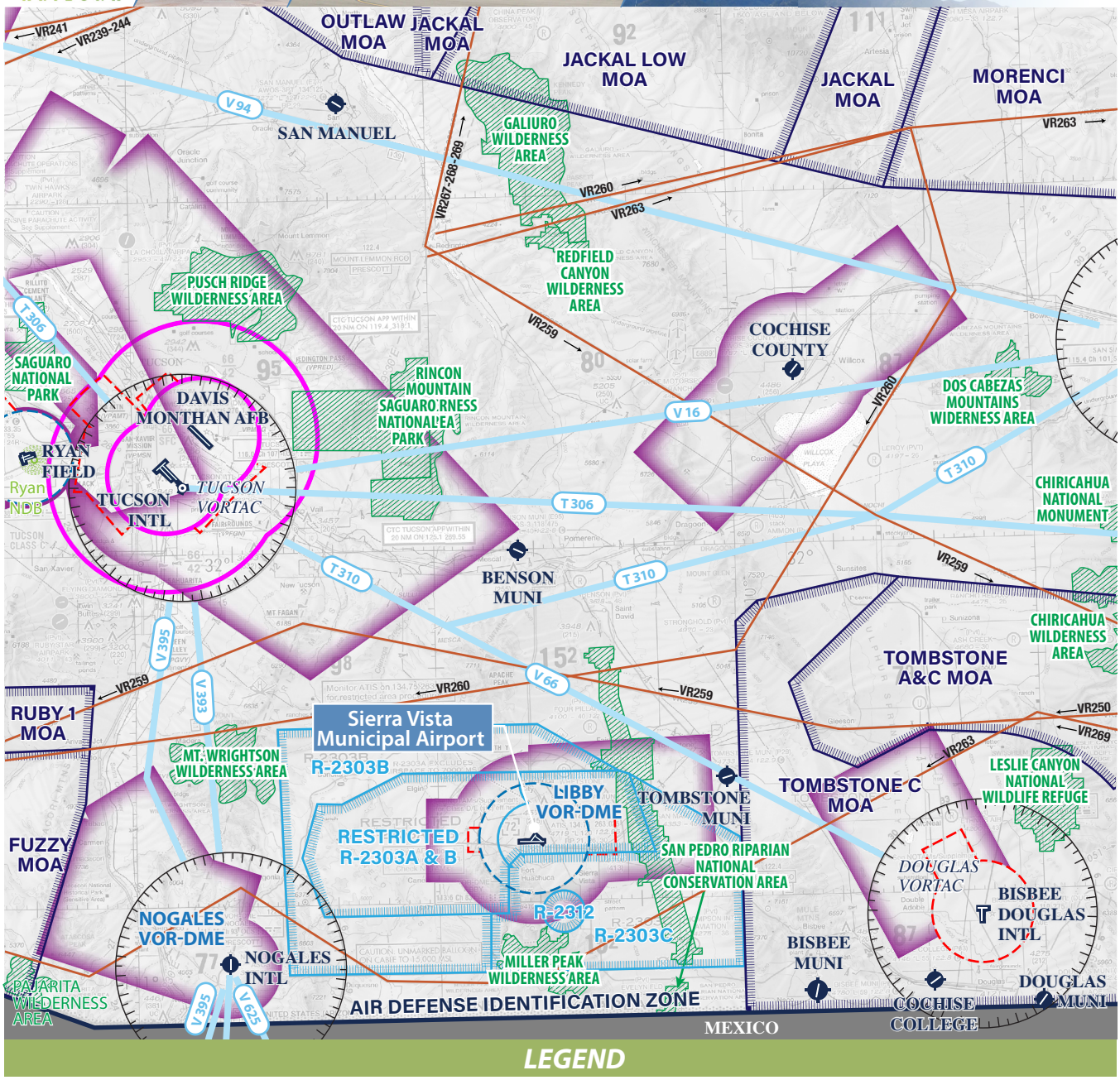
CLASS C Think C - Mode C. Mode C transponder required. ATC communication required. Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.

CLASS D Think D - Dialogue. Pilot must establish dialogue with tower. Generally airspace from the surface to minimum 2,500 feet AGL surrounding towered airports.

CLASS E Think E - Everywhere. Controlled airspace that is not designated as any other Class of airspace.

CLASS G Think G - Ground. Uncontrolled airspace. From surface to a 1,200 AGL (in mountainous areas 2,500 AGL) Exceptions: near airports it lowers to 700' AGL; some airports have Class E to the surface. Visual Flight Rules (VFR) minimums apply.

Source: www.faa.gov/regulations_policies/handbooks_manuals/aviation/phak/media/15_phak_ch15.pdf



LEGEND

- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- Airport with other than hard-surfaced runway
- Compass Rose
- VORTAC
- Non-directional Radio Beacon (NDB)
- Wilderness Area
- Prohibited, Restricted, Warning and Alert Areas
- Military Operations Area (MOA)
- Class C Airspace
- Class D Airspace
- Class E Airspace
- Class E (sfc) Airspace with floor 700 ft. above surface that laterally abuts 1200 ft. or higher Class E airspace
- Victor Airways
- Military Training Routes

Source:
Phoenix Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration, June 15, 2023

Class B airspace. Aircraft are also required to utilize a mode C transponder within a 30-nm range of the center of the Class B airspace. A mode C transponder allows the ATCT to track the location and altitude of the aircraft. FHU is located approximately 100 nm from PHX's Class B airspace.

Class C Airspace | The FAA has established Class C airspace at approximately 120 airports around the country that have significant levels of IFR traffic. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. To fly inside Class C airspace, an aircraft must have a two-way radio, an encoding transponder, and have established communication with the ATC facility. Aircraft may fly below the floor of the Class C airspace or above the Class C airspace ceiling without establishing communication with ATC. The nearest Class C airspace to FHU surrounds Tucson International Airport (TUS) and Davis Monthan Air Force Base (DMA).

Class D Airspace | Class D airspace is controlled airspace surrounding airports with an ATCT. The Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nm from the airport, extending from the surface up to a designated vertical limit, which is typically set at approximately 2,500 feet above the airport elevation. Aircraft operators planning to operate within Class D airspace are required to contact ATC prior to entering or departing the airspace and must maintain contact while within the controlled airspace to land or to transverse the area. FHU is located within Class D airspace when the ATCT is staffed (Monday through Friday, 6:00 a.m. to 11:00 p.m., excluding holidays). When the tower is closed, the Class D airspace reverts to Class G.

Class E Airspace | Class E airspace consists of controlled airspace designed to contain IFR operations near an airport and while aircraft are transitioning between the airport and enroute environments. Unless otherwise specified, Class E airspace terminates at the base of the overlying airspace. Only aircraft operating under IFR are required to be in contact with ATC when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio communication with ATC facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

Class G Airspace | Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. ATC does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and the overlying Class E airspace (700 feet above ground level [AGL]).

While aircraft may technically operate within this Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, federal regulations specify minimum altitudes for flight. FAR Part 91.119, *Minimum Safe Altitudes*, generally states that, except when necessary for takeoff or landing, pilots must not operate an aircraft over any congested area of a city, town, or settlement, or over any open-air assembly of persons, below an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

Over less congested areas, pilots must maintain an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. Helicopters may be operated at less than the minimums

prescribed above if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA.

SPECIAL USE AIRSPACE

Victor Airways | For aircraft arriving or departing the regional area using VOR facilities, a system of federal airways, referred to as Victor Airways, has been established. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational facilities. Victor Airways near FHU are identified on **Exhibit 1G**.

Military Operations Area | A military operations area (MOA) is an area of airspace designated for military training use. This is not restricted airspace; however, pilots who use this airspace should be on alert for the possibility of military traffic. A pilot may need to be aware that military aircraft can be found in high concentrations, conducting aerobatic maneuvers, and possibly operating at high speeds and/or at lower elevations. The nearest MOA to FHU is the Tombstone C MOA, which is approximately 17 nm east of the airport. Other MOAs in the vicinity of FHU include the Tombstone A, Ruby 1, and Fuzzy MOAs. The activity status of an MOA is advertised by a Notice to Air Missions (NOTAMs) and notated on sectional charts.

Restricted Airspace | Restricted airspace is an area (volume) of airspace, typically used by the military, in which the local controlling authorities have determined that air traffic must be restricted (if not continually prohibited) for safety or security concerns. It is depicted on aeronautical charts with the letter "R" followed by a serial number. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to an aircraft and its occupants. Restricted airspace zones may not always be active; in such cases, schedules of local dates and times are typically available to aviators, specifying when the zone is active, and at other times, the airspace is subject to normal operation for the applicable airspace class. There are four areas of restricted airspace in the vicinity of FHU:

- R-2303A – Restricted airspace from the surface to 15,000 feet MSL between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday; controlled by Albuquerque Center. This excludes airspace from the surface to 7,000 feet MSL within a three nm radius of FHU and one nm on either side of State Highway 90 to allow for an unrestricted visual flight rules (VFR) route into and out of the airport.
- R-2303B – Restricted airspace from 8,000 feet MSL to FL 300 between the hours of 7:00 a.m. and 5:00 p.m. Monday through Friday; controlled by Albuquerque Center
- R-2303C – Restricted airspace from 15,000 feet MSL to FL 300 for intermittent periods, as issued by NOTAM; controlled by Albuquerque Center
- R-2312 – Continuously restricted airspace from the surface to 15,000 feet MSL; controlled by Albuquerque Center

It should be noted that these areas are subject to restriction at other times outside the periods detailed above, with additional restrictions issued by NOTAM at least 24 hours in advance.

Alert Areas | Alert areas are depicted on aeronautical charts to inform non-participating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity, such as military operations. Pilots should be particularly alert when flying in these areas. Military activities or other flight training in these areas typically operate at lower altitudes and may occur at any time of the day or night. General aviation flights are not restricted within these areas, but pilots are strongly cautioned to be alert for high-speed military training aircraft.

Military Training Routes | Military training routes (MTRs) are designated airspace established for use by high performance military aircraft to train below 10,000 feet AGL and at speeds exceeding 250 knots. There are visual (VR) and instrument (IR) designated MTRs. MTRs with no segment above 1,500 feet AGL will be designated with VR or IR, followed by a four-digit number. MTRs with one or more segments above 1,500 feet AGL are identified by the route designation, followed by a three-digit number. The arrows on the route show the direction of travel. MTRs in the vicinity of FHU are depicted on **Exhibit 1G** using a red-colored line and are associated with their identifying numbers.

Wilderness Areas | When operating near designated wilderness areas, aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park areas, which includes wilderness areas and designated breeding grounds. FAA AC 91-36C defines the surface as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley. The San Pedro Riparian National Conservation Area and the Miller Peak Wilderness Area are located in close proximity to FHU.

Air Defense Identification Zone | The Air Defense Identification Zone (ADIZ) is located approximately 15 nm south of FHU on the U.S.-Mexico border. This is an area of airspace established to assist in the early identification of aircraft in the vicinity of international U.S. airspace boundaries for purposes of national security. Aircraft that enter an ADIZ are required to file, activate, and close a flight plan with the appropriate aeronautical facility and must provide a position report at least one hour prior to penetrating the ADIZ.

AIRSPACE CONTROL

The FAA has established 21 Air Route Traffic Control Centers (ARTCCs) throughout the continental U.S. to control aircraft operating under IFR within controlled airspace and while enroute. An ARTCC assigns specific routes and altitudes along federal airways to maintain separation and orderly traffic flow. The Albuquerque Center ARTCC controls IFR airspace enroute to and from FHU at altitudes greater than 10,000 feet AGL.

Flight Service Stations (FSSs) are air traffic facilities that provide pilot briefings, flight plan processing, inflight radio communications, search and rescue (SAR) services, and assistance to lost aircraft and aircraft in emergency situations. FSSs also relay ATC clearances, process NOTAMs, and broadcast aviation meteorological and aeronautical information. The Prescott FSS is the nearest to FHU.

As shown on **Exhibit 1G**, the airspace surrounding FHU is Class D airspace, which requires two-way radio communications with the ATCT and consists of controlled airspace extending upward from the surface to 7,200 feet MSL. Pilots operating in FHU's Class D airspace must establish communication with ATC prior to entering the airspace and maintain communications while operating in the Class D airspace. Pilots of arriving aircraft should provide their position, altitude, destination, and any requests to the tower personnel. The ATCT at FHU is operated Monday through Friday between the hours of 6:00 a.m. and 11:00 p.m., except for holidays. When the tower is not open, the Class D airspace reverts to Class G, and pilots operating in the vicinity of FHU should announce their intentions on the CTAF. Tower radio frequencies are as follows:

- Libby Ground – 121.7 MHz
- Libby Tower – 124.95 MHz
- Libby Army Airfield Ground Control Approach – 127.05 MHz
- Libby Army Airfield Ground Control Departure – 127.05 MHz
- Emergency – 121.5 MHz

The airport is equipped with an Airport Surveillance Radar (ASR-11) system. The ASR is the airport's primary radar and feeds to the Albuquerque Center ARTCC and the Department of Homeland Security. This short-range system allows the ATCT controllers to detect and separate aircraft near the airport (approximately 60 nm, with a secondary range of 120 nm). The ASR-11 at FHU, located northwest of the intersection of Runways 8-26 and 3-21, is owned and maintained by Fort Huachuca.

Airport Traffic Control Tower

ASR-11

REGIONAL AIRPORTS

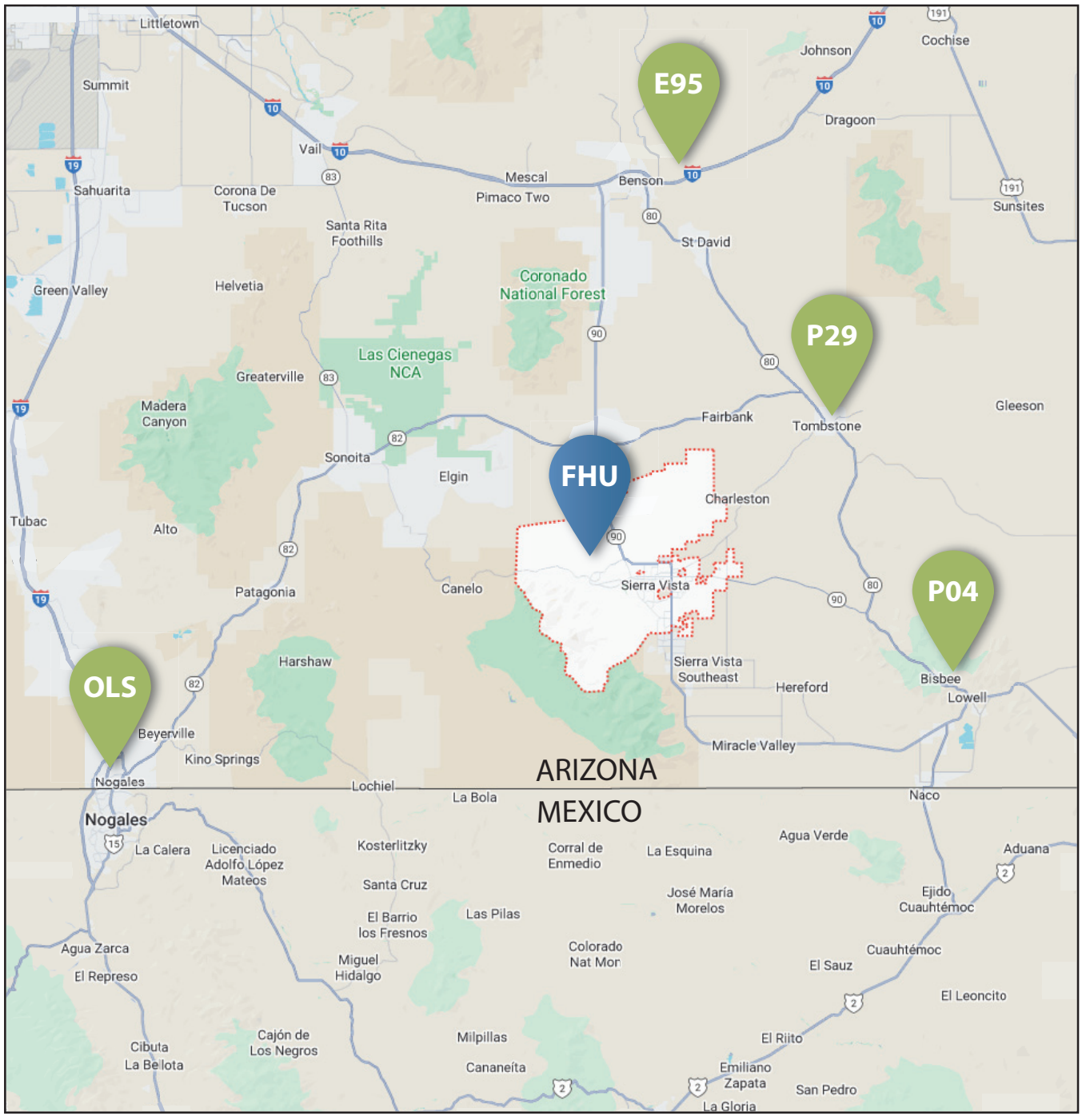
A review of other public-use airports with at least one paved runway within a 30-nm radius of FHU was conducted to identify and distinguish the types of air service provided in the region. It is important to consider the capabilities and limitations of these airports when planning for future changes or improvements at the airport. **Exhibit 1H** provides basic level information on the public-use airports within the vicinity of FHU.

AVIATION ACTIVITY

AIRCRAFT OPERATIONS

Aircraft operations are classified as local or itinerant. Local operations often consist of touch-and-go or pilot training activity. Itinerant operations consist of aircraft that arrive from or depart to destination airports outside the local operating area.

Airport	Distance/Direction from FHU	FAA Service Level	Based Aircraft	Annual Operations	Longest Runway	Lowest Visibility Minimums
Sierra Vista Municipal (FHU)	NA	Local GA	61	111,168	12,001	3/4-mile
Tombstone Municipal (P29)	17 nm ENE	N/A	N/A	300	4,430	Visual
Benson Municipal (E95)	25 nm N	Local GA	17	2,100	4,002	Visual
Bisbee Municipal (P04)	27 nm ESE	Local GA	13	2,900	5,929	Visual
Nogales International (OLS)	28 nm WSW	Local GA	16	46,700	7,200	Visual



Aircraft operations can be separated into four general categories:

- **Air Taxi –** operations associated with aircraft originally designed to have fewer than 60 passenger seats or a cargo payload of less than 18,000 pounds and carrying cargo or mail on either a scheduled or charter basis and/or carrying passengers on an on-demand or limited scheduled basis.
- **Air Carrier –** operations defined as those conducted commercially by aircraft with a seating capacity of 60 or more seats and a cargo payload capacity of more than 18,000 pounds. There are currently no air carriers operating at the airport.
- **General Aviation –** civil aviation operations other than scheduled air services and nonscheduled air transport operations for hire. FHU caters to general aviation activities, and the majority of its operations fall in this category.
- **Military –** operations conducted by aircraft and helicopters with a military designation.

At FHU, the ATCT records and categorizes operations into four categories: military, air carrier (which includes air taxi), general aviation, and unmanned aircraft system (UAS) operations. When the tower is closed, operations are picked up on radar and recorded. **Table 1D** details annual operations occurring at FHU by category since 2018.

TABLE 1D | Historical Operations

Calendar Year	Military	Air Carrier	General Aviation	UAS	Total Operations
2018	58,671	5,899	20,407	43,393	128,370
2019	62,050	5,381	23,021	44,852	135,304
2020	52,401	4,985	17,772	51,110	126,268
2021	55,772	5,836	17,095	40,088	118,791
2022	56,953	5,363	21,962	31,941	116,219
2023	56,481	5,394	28,211	21,082	111,168

BASED AIRCRAFT

Identifying the current number of based aircraft is an important part of the master plan process; however, accuracy can be challenging because of the transient nature of aircraft storage. Sierra Vista Municipal Airport maintains a recent record of based aircraft, but other sources, including previous planning studies and the state system plan, were also consulted to provide a broader history. It should also be noted that the FAA maintains a database of based aircraft within the National Based Aircraft Inventory (basedaircraft.com). This database is maintained and validated by the FAA, and airport sponsors are required to regularly update information about aircraft based on their airports to ensure accuracy. In order to be validated, an aircraft must have a current registration, an active airworthiness certificate, and not be reported as based by another airport. According to this database, the airport has 51 validated based aircraft as of March 2024, while airport records reflect 61 based aircraft at the airport. Historical based aircraft levels at the airport are shown in **Table 1E**.

TABLE 1E | Based Aircraft History

Base Year	Based Aircraft	Source
2011	66	2014 Airport Master Plan
2016	51	2018 State System Plan
2024	61	Current Airport Records

COMMUNITY PROFILE

For an airport planning study, a profile of the local community including its socioeconomic characteristics is collected and examined to derive an understanding of the dynamics of growth within the study area. Socioeconomic information related to the local area is an important consideration in the master planning process. The community profile for the City of Sierra Vista on **Exhibit 1J** is derived from several sources, including the city's website, the Arizona Office of Economic Opportunity, Woods & Poole Economics, and the U.S. Census Bureau.

From a population perspective, growth in the city is projected to increase at a compound annual growth rate (CAGR) of 0.24 percent through 2050, which is slightly less than the Cochise County projected population growth of 0.30 percent. The State of Arizona is anticipated to experience an increase in population, growing from approximately 7.4 million residents in 2022 to just over 9.0 million by 2050, at a rate of 0.70 percent. Key industries in Sierra Vista include education, health care, public administration, and professional/scientific employment, and these, along with others, support a labor force of nearly 17,000 people.

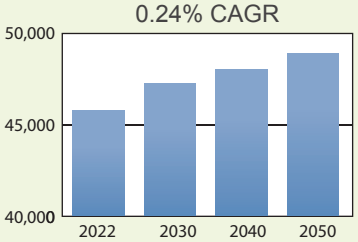
ENVIRONMENTAL INVENTORY

The purpose of the following environmental inventory is to identify potential environmental sensitivities that should be considered when planning future improvements at the airport. Research was performed for each of the 14 environmental impact categories described within FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.

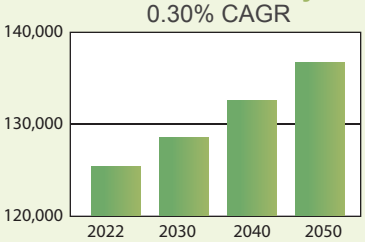
- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- *Department of Transportation Act*, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

POPULATION PROJECTIONS

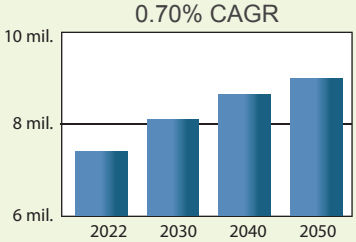
Sierra Vista
0.24% CAGR



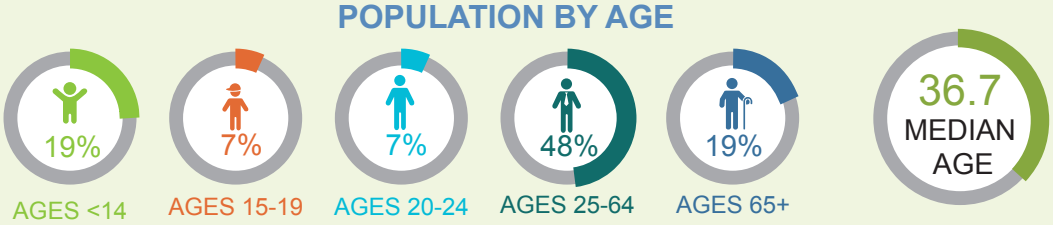
Cochise County
0.30% CAGR



Arizona
0.70% CAGR



POPULATION BY AGE



COCHISE COUNTY EMPLOYMENT

MAJOR EMPLOYERS & INDUSTRIES

Employer	Industry
Fort Huachuca	Government
Cochise County	Government
Sierra Vista Unified School District	Education
Walmart	Retail
Canyon Vista Medical Center	Health Care
Arizona Department of Corrections	Government
Cochise College	Education
Chiricahua Community Health Centers	Health Care
Douglas Unified School District	Education
Copper Queen Community Hospital	Health Care

UNEMPLOYMENT RATE

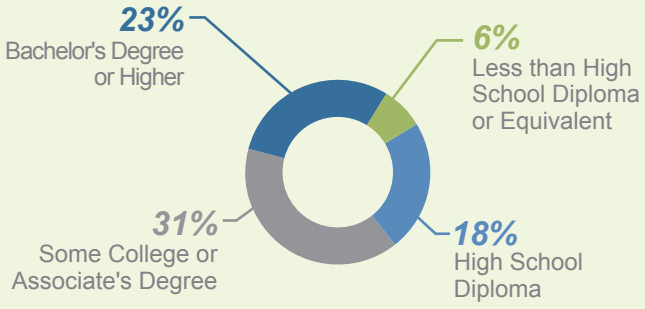
CIVILIAN EMPLOYMENT BY SECTOR

- **23.5%** Education, healthcare, & social services
- **19.5%** Public administration
- **16.1%** Professional, scientific, & administrative services
- **10.2%** Arts, entertainment, food & recreation
- **10.2%** Retail trade
- **6.5%** Construction
- **3.6%** Manufacturing
- **2.8%** Transportation, warehousing, & utilities
- **2.9%** Finance, insurance, & real estate
- **2.4%** Other services
- **0.8%** Agriculture, forestry, & mining
- **0.8%** Information
- **0.5%** Wholesale trade

HOUSEHOLDS

- **$70,899** Median Household Income
- **62%** Home Ownership
- **$215,900** Median Home Value

EDUCATION



Sources: Arizona Office of Economic Opportunity; Woods & Poole Economics; U.S. Census Bureau, 2022 American Community Survey; City of Sierra Vista Economic Development

AIR QUALITY

The concentration of various pollutants in the atmosphere defines the local air quality. The significance of a pollutant's concentration is determined by comparing it to the state and federal air quality standards. In 1971, the U.S. Environmental Protection Agency (EPA) established standards that specify the maximum permissible short- and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for criteria pollutants: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead (Pb).

Based on federal air quality standards, a specific geographic area can be classified as an attainment, maintenance, or nonattainment area for each pollutant. The threshold for nonattainment designation varies by pollutant.

Sierra Vista Municipal Airport is in Cochise County, Arizona. The portion of Cochise County that contains the airport is in attainment for all federal criteria pollutants.[6]

BIOLOGICAL RESOURCES

Biotic resources include the various types of plants and animals that are present in an area. The term also applies to rivers, lakes, wetlands, forests, and other habitat types that support plants and animals.

The U.S. Fish and Wildlife Service (USFWS) is charged with overseeing the requirements of the federal *Endangered Species Act* (ESA), specifically Section 7, which sets forth requirements for a consultation to determine if a proposed action may affect a federally endangered or threatened species. If an agency determines that an action may affect a federally protected species, Section 7(a)(2) requires the agency to consult with the USFWS. If a species has been listed as a candidate species, Section 7(a)(4) requires that each agency must confer with the USFWS on any action that is likely to jeopardize the continued existence of the proposed species or result in the deconstruction or adverse modification of proposed critical habitat. Significant impacts occur when a proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area. The USFWS's *Information for Planning and Consultation* (IPaC) resource list describes species and habitat protected under the ESA within the vicinity of the airport (**Table 1F**).

[6] Arizona Nonattainment / Maintenance Status for Each County by Year for All Criteria Pollutants, November 30th, 2022 (https://www3.epa.gov/airquality/greenbook/anayo_az.html)

TABLE 1F| Species Protected Under ESA Section 7 with Potential to Occur at the Airport

Common Name (*Scientific Name*)	Federal Status	Habitat and Range	Potential for Occurrence
Mammals			
jaguar (*Panthera onca*)	Endangered	Although jaguars were once commonly observed in southern Arizona, this species is currently most associated with expansive rugged areas within the Madrean evergreen woodland and semidesert grassland biotic communities, distant from human presence and roads, while near water, prey, and cover in the mountainous ranges of southeastern Arizona. In addition, valley bottoms and drainage features may provide travel corridors for jaguars between these areas.	**Unlikely to occur.** While jaguars have been observed in the nearby Huachuca Mountains, suitable habitat is not present at the airport. In addition, the airport does not contain dense cover, nor is it situated in a likely dispersal route between mountain ranges.
ocelot (*Leopardus (=Felis) pardalis*)	Endangered	This species is native to the southwestern United States, Mexico, and Central and South America. In Arizona, ocelots are typically observed in dense brushy thickets at elevations below 8,000 feet above mean sea level (amsl) and in riparian bottomlands. Ocelots favor dense cover close to the ground and completely avoid open country. This species has been detected in the Huachuca Mountain range in southeastern Arizona.	**Unlikely to occur.** Ocelots are a rare occurrence in Arizona. The airport lacks the dense cover this species requires. Additionally, the airport is near human developments and is not an obvious link between mountain ranges, making movement through the airport unlikely.
Birds			
Mexican spotted owl (*Strix occidentalis lucida*)	Threatened	Primarily found in mature montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed-conifer and pine-oak vegetation types and generally nests in older forests of mixed conifers or ponderosa pine (*Pinus ponderosa*) - Gambel oak (*Quercus gambelii*). Nests in live trees on natural platforms (e.g., dwarf mistletoe [*Arceuthobium* spp.] brooms), snags, and canyon walls at elevations between 4,100 and 9,000 feet amsl.	**Unlikely to occur.** The airport does not contain suitable habitat for this species. The closest designated critical habitat for this species is 4 miles southwest of the airport in the Huachuca Mountains.
northern aplomado falcon (*Falco femoralis septentrionalis)*	Non-essential Experimental Population	This species has been observed in a variety of habitats, with historical habitats in Arizona, including semi-desert grassland or riparian associations with scattered trees and shrubs at elevations from 3,300 to 4,900 feet amsl. Nests are generally documented in mesquite (*Prosopis* spp.), yucca (*Yucca* spp.), or low bushes up to 5 meters in height.	**Unlikely to occur.** While the boundary of the ESA Section 10(j) reintroduction area includes both Arizona and New Mexico, this species has only been rereleased in New Mexico. Furthermore, there have been no documented occurrences of this species in Arizona since 1977, and it is considered extirpated from the state.

(Continues)

TABLE 1F| Species Protected Under ESA Section 7 with Potential to Occur at the Airport (continued)

Common Name (*Scientific Name*)	Federal Status	Habitat and Range	Potential for Occurrence
yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Primarily observed in riparian woodland vegetation (cottonwood, willow, or saltcedar) at elevations below 6,600 feet amsl. Dense understory foliage is an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde River drainages and Cienega and Sonoita Creeks.	**Unlikely to occur.** The airport does not contain dense riparian habitats or waterways, nor is it adjacent to suitable habitat. Additionally, there are limited trees the species may utilize if migrating through the airport.
Amphibians			
Chiricahua leopard frog (*Rana chiricahuensis*)	Threatened	Restricted to headwater streams, springs, and livestock tanks in the upper portions of watersheds at elevations between 3,281 and 8,890 feet amsl in central, east-central, and southeastern Arizona. An important characteristic of habitat is that it is free of or has low levels of nonnative species, including nonnative fish, crayfish, bull frogs (*Lithobates catesbeianus*), and barred tiger salamanders (*Ambystoma mavortium*). Populations in central and east-central Arizona are distinct from those in southeastern Arizona.	**Unlikely to occur.** No perennial water (streams, springs, and livestock tanks) is present at the airport or adjacent vicinity.
Fishes			
desert pupfish (*Cyprinodon macularius*)	Endangered	This species has been observed in the Salton Sea, shoreline pools, freshwater ponds, and irrigation drains, as well as in creeks/washes, below 5,000 feet amsl. One natural population still occurs in Quitobaquito Spring and Quitobaquito Pond in Pima County, and reintroductions have been made in Pima, Pinal, Maricopa, Graham, Cochise, La Paz, and Yavapai Counties.	**Unlikely to occur.** The airport does not contain perennial water sources.
Gila chub (*Gila intermedia*)	Endangered	Gila chubs can be found in smaller streams, cienegas, and human-made ponds at elevations between 2,720 and 5,420 feet amsl. Adult Gila chubs prefer deeper and quieter waters, whereas the young can be found in shallow waters.	**Unlikely to occur.** The airport does not contain aquatic habitats.
Gila topminnow (incl. Yaqui) (*Poeciliopsis occidentalis*)	Endangered	This species prefers shallow warm waters, including ponds, cienegas, tanks, pools, springs, small streams, and the margins of larger streams at elevations below 4,500 feet amsl. Dense mats of algae and debris along habitats are an important component for cover and foraging. In Arizona, most remaining native populations are in the Santa Cruz River system.	**Unlikely to occur.** The airport does not contain aquatic habitats.

(Continues)

TABLE 1F| Species Protected Under ESA Section 7 with Potential to Occur at the Airport (continued)

Common Name (*Scientific Name*)	Federal Status	Habitat and Range	Potential for Occurrence
Insects			
monarch butterfly (*Danaus plexippus*)	Candidate	The Monarch butterfly is a migratory species found in a variety of habitats and requires milkweed (*Asclepias* spp.) for breeding. During fall migration in Arizona, monarch butterflies favor nectar from native plants, including sunflowers (*Helianthus* spp.), rabbitbrush (*Ericameria* spp.), desertbroom (*Baccharis sarothroides*), sweetbush (*Baccharis salicifolia*), milkweeds, and a variety of other native and garden plants. Populations in Arizona can migrate either to California or Mexico for winter or may overwinter in the low deserts in California or Arizona. In the southwestern United States, migrating monarch butterflies often occur near water sources (e.g., rivers, creeks, riparian corridors, roadside ditches, and irrigated gardens). In the low deserts of Arizona, monarch butterflies breed in late August to early September.	**May occur.** Although portions of the airport have been disturbed, milkweed species and flowering plants were observed in the project area; therefore, the airport contains suitable foraging and breeding habitat.
Flowering Plants			
Arizona eryngo (*Eryngium sparganophyllum*)	Endangered	This species occurs in perennially moist, organic alkali soils in spring-fed cienegas that are supported by adequate groundwater. These plants grow best in areas with full sun coverage and limited woody vegetation. In Arizona, this species has been documented in three disjunct populations in Pima and Cochise Counties at elevations from 2,707 to 4,000 amsl: Agua Caliente Ranch, where it was extirpated but reintroduced; La Cebadilla Cienega near Tanque Verde Wash east of Tucson; and in Lewis Springs Cienega within the San Pedro Riparian National Conservation Area.	**Unlikely to occur.** The airport is not within the current range of this species and does not contain cienega wetland habitat.
Canelo Hills ladies'-tresses (*Spiranthes delitescens)*	Endangered	This species can be found at elevations between 4,585 and 4,970 feet amsl in freshwater wetlands (i.e., cienegas). Cienegas are often found in river channels in a variety of vegetation communities. Only known to occur in four cienegas in southern Arizona.	**Unlikely to occur.** The airport does not contain suitable cienegas or marshland habitat within the project area.
Huachuca water-umbel (*Lilaeopsis schaffneriana var. recurve*)	Endangered	This species has been observed in cienega wetlands between 4,000 and 6,500 feel amsl, rivers, streams, and springs in permanently wet muddy or silty substrates. Occurs in the Huachuca Mountains, Canelo Hills, headwaters of the Santa Cruz River to Black Draw, and the San Pedro River.	**Unlikely to occur.** The airport does not contain wetlands or other aquatic habitats.

(Continues)

TABLE 1F| Species Protected Under ESA Section 7 with Potential to Occur at the Airport (continued)

Common Name (*Scientific Name*)	Federal Status	Habitat and Range	Potential for Occurrence
Wright's marsh thistle (*Cirsium wrightii*)	Endangered	This species can be found in wet meadows associated with alkaline springs and seeps (cienegas).	**Unlikely to occur.** The airport does not contain aquatic habitat.

***USFWS Status Definitions**

Candidate: species for which the USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA; however, these proposed rules have not yet been issued because such actions are precluded at present by other listing activity.

Endangered: any animal or plant species that is in danger of extinction throughout all or a significant portion of its habitat range. Endangered species are protected by the take prohibitions of Section 9 under the ESA.

Threatened: any animal or plant species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its habitat range. Species that fall under this listing are protected by the take prohibitions of Section 9, consistent with any protective regulations finalized under Section 4(d) of the ESA.

Non-Essential Experimental Population (NEP): Experimental population of a species designated under Section 10(j) of the ESA that the USFWS believes is not essential for the continued existence of the species. Regulatory restrictions are considerably reduced under an NEP designation.

Sources: USFWS IPaC (https://ipac.ecosphere.fws.gov/); USFWS (https://www.fws.gov/species); USFWS IPaC, Listing Species (https://ipac.ecosphere.fws.gov/status/list)

Section 3 of the ESA is used to protect critical habitat areas. Designated critical habitat areas are geographically defined and have been determined to be essential to the recovery of a specific species. There is no federally designated critical habitat at the airport.

The airport is located at an elevation of 4,548 feet above mean sea level (amsl) within a semidesert grassland biotic community.[7] Dominant native plant species observed in the area include velvet mesquite (*Prosopis velutina*), Lehmann lovegrass (*Eragrostis lehmanniana*), and curly mesquite (*Hilaria belangeri*).

Ten avian species were documented within the airport: Cooper's hawk (*Accipiter cooperii),* great horned owl (*Bubo virginianus*), common raven (*Corvus corax*), loggerhead shrike (*Lanius ludovicianus*), Gambel's quail (*Callipepla gambelii*), lesser goldfinch (*Spinus psaltria*), white-crowned sparrow (*Zonotrichia leucophrys*), killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), and turkey vulture (*Cathartes aura*). All the birds documented, aside from the Gambel's quail and most of the occurring avian species at the airport, are protected under the *Migratory Bird Treaty Act* (MBTA). Habitat for migratory birds (trees and ground nesting substrate) is present at the airport.

Bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) are protected under both the MBTA and the *Bald and Golden Eagle Protection Act* (BGEPA) on all lands. There have been no documented occurrences of bald eagles within the airport. No suitable bald eagle nesting or foraging habitat (i.e., flowing rivers or lakes containing fish) are within or adjacent to the airport, nor is the species expected to occur at the airport beyond a migratory flyover.

[7] SWCA Environmental Consultants, *Biological Resources Evaluation for the Sierra Vista Municipal Airport Master Plan Update Project in Cochise County*, Arizona / SWCA Project No. 78239, dated December 15, 2023

Unlike the bald eagle, there have been documented occurrences of golden eagles within the airport. The airport contains suitable habitat for foraging (i.e., open country in mountainous areas) but does not contain suitable nesting habitat; therefore, the species may occur at the airport for foraging activities but is not expected to nest on the airport.

CLIMATE

Increasing concentrations of greenhouse gases (GHGs) can affect global climate by trapping heat in Earth's atmosphere. Scientific measurements have shown that Earth's climate is warming with concurrent impacts, including warmer air temperatures, rising sea levels, increased storm activity, and greater intensity in precipitation events. Climate change is a global phenomenon that can also have local impacts. GHGs, such as water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and O_3, are both naturally occurring and anthropogenic (human-made). The research has established a direct correlation between fuel combustion and GHG emissions. GHGs from anthropogenic sources also include hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years.

The U.S. EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2021* shows total U.S. emissions have decreased by two percent from 1990 to 2021, down from a high 15.8 percent above 1990 levels in 2007. During 2020 to 2021, the U.S. saw an increase in economic activity driven by businesses and persons rebounding after the COVID-19 pandemic. This resulted in an increase in total U.S. GHG emissions, of which CO_2 emissions accounted for the majority.

In 2021, the transportation sector and power generation accounted for 79.3 percent of total CO_2 emissions; however, the overall aviation industry (excluding international bunkers) has shown an 18 percent decrease in CO_2 emissions between 1990 and 2021.[8] Commercial aircraft emissions have highly fluctuated over the past 30 years, with a 27 percent increase between 1990 and 2007, a two percent decrease from 2007 to 2019, and a 33 percent decrease from 2019 to 2020, followed by a 23 percent increase from 2020 to 2021. Overall, this represents an eight percent difference between 1990 and 2021 commercial aircraft emissions. Between 1990 and 2021, emissions from military aircraft decreased 65 percent.

Information regarding the climate for the airport and surrounding environments, including wind, temperature, and precipitation, can be found earlier in this chapter.

Currently, the State of Arizona has a climate action document recognized by the U.S. Center for Climate and Energy Solutions. In 2006, Arizona released its *Climate Change Action Plan*. The plan recommends reducing state GHG emissions 50 percent below 2000 levels by 2040. Key aspects of the plan include reducing energy demand and increasing energy efficiency, expanding carbon sinks, and imposing a cap-and-trade program.[9]

[8] U.S. EPA, Inventory of U.S. Greenhouse Gases: Chapter 3 Energy, April 13, 2023 (https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021)

[9] U.S. State Climate Action Plans — Center for Climate and Energy Solutions (https://www.c2es.org/document/climate-action-plans/)

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act*, the *Coastal Zone Management Act*, and Executive Order (E.O.) 13089, *Coral Reef Protection*.

The airport is not located within a coastal zone. The closest National Marine Sanctuary is the Channel Islands National Marine Sanctuary, located 545 miles away.[10]

DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Section 4(f) of the *Department of Transportation Act,* which was recodified and renumbered as Section 303(c) of Title 49 United States Code (U.S.C.), provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly or privately owned historic sites, public parks or recreation areas, or waterfowl and wildlife refuges of national, state, regional, or local importance unless there is no feasible and prudent alternative to the use of such land, and the project includes all possible planning to minimize harm resulting from the use.

There are no Section 4(f) resources within one mile of the airport, including parks, waterfowl or wildlife refuges, national recreational areas, or known historic resources of significance. The closest park is Cyr Center Park, located 1.75 miles southeast of the airport. According to a cultural resources survey conducted at the airport, cultural records indicate that there are seven historic-era sites within a one-mile buffer of the airport.[11] These sites consist of homesteads, artifact scatters, linear transportation and transmission sites, and one multicomponent site. These resources are not listed or eligible for listing on the National Register of Historic Places (NRHP); therefore, there are no NRHP resources on or within one mile of the airport. The nearest wilderness area is Miller Peak Wilderness, located nine miles from the airport.

FARMLANDS

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and consider the adverse effects of federal programs on the preservation of farmland, to consider appropriate alternative actions that could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines, developed by the U.S. Department of Agriculture (USDA), apply to farmland classified as prime, unique, or of state or local importance, as determined by the appropriate government agency with concurrence by the Secretary of Agriculture.

The USDA Natural Resources Conservation Service (USDA-NRCS) Web Soil Survey shows the types of soils and their farmland classification on and adjacent to the airport. The airport is primarily within urbanized area boundaries;[12] however, the entirety of the airport property is classified as "not prime farmland" (**Exhibit 1K**). **Table 1G** describes the farmland classification based on the soil within the airport's boundaries.

[10] National Marine Sanctuary System (https://sanctuaries.noaa.gov/); Google Earth Aerial Imagery (May 2023)
[11] SWCA Environmental Consultants, *Cultural Resources Survey for the Sierra Vista Municipal Airport Master Plan Update in Cochise County*, Arizona, by Heather West, dated December 2023
[12] EPA EJScreen (https://ejscreen.epa.gov/mapper/)

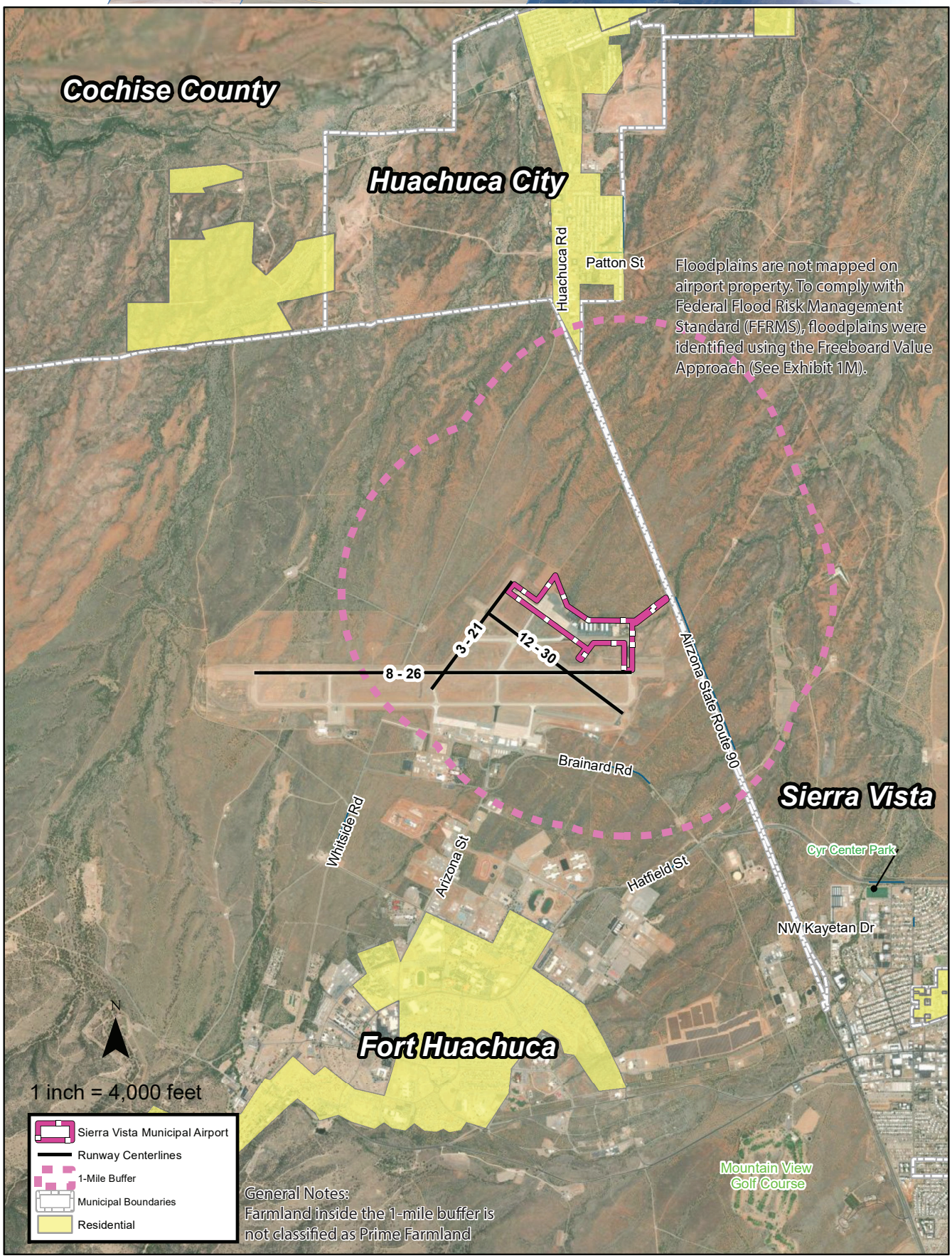

Cochise County
Huachuca City
Huachuca Rd
Patton St
Floodplains are not mapped on airport property. To comply with Federal Flood Risk Management Standard (FFRMS), floodplains were identified using the Freeboard Value Approach (See Exhibit 1M).
3 - 21
12 - 30
8 - 26
Arizona State Route 90
Brainard Rd
Sierra Vista
Whitside Rd
Arizona St
Hatfield St
Cyr Center Park
NW Kayetan Dr
Fort Huachuca
Mountain View Golf Course
N
1 inch = 4,000 feet
Sierra Vista Municipal Airport
Runway Centerlines
1-Mile Buffer
Municipal Boundaries
Residential
General Notes:
Farmland inside the 1-mile buffer is not classified as Prime Farmland

TABLE 1G| Farmland Classification – Summary by Map Unit – Cochise County, Arizona, Douglas-Tombstone Part (AZ671)

Web Soil Survey Symbol	Soil Type	Farmland Rating
87	Haplustolls-Fluvaquents association, thermic, 0 to 4% slopes	Not prime farmland
140	Terrarossa complex, 0 to 45% slopes	Not prime farmland
151	White House complex, 1 to 30% slopes	Not prime farmland

Source: USDA-NRCS Web Soil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx)

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminants may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources. According to the U.S. EPA's *EJScreen* online tool, there are no Superfund or brownfield sites within one mile of the airport. Based on the Arizona Department of Environmental Quality (ADEQ) AZ Underground Storage Tank (UST) Locator Map, there is one active UST located on the airport.

There are several drop locations for recyclable materials in Sierra Vista, AZ. The closest recycling center is the Cochise County Solid Waste Station. The closest landfill is Huachuca City Landfill and Materials Recovery Facility, located more than two miles northeast of airport property boundaries.

The National Pollutant Discharge Elimination System (NPDES) permits outline the regulatory requirements of municipal stormwater management programs and establish requirements to help protect the beneficial uses of the receiving waters. The NPDES program requires permittees to develop and implement best management practices (BMPs) to control/reduce the discharge of pollutants to waters of the United States to the maximum extent practicable (MEP). The NPDES program manages wastewater, construction, stormwater, and pretreatment.

In Arizona, there is an Arizona-specific permit called the Arizona Pollutant Discharge Elimination System (AZPDES) permit.[13] AZPDES permits are required for all stormwater discharges that enter Arizona surface waters or a Municipal Separate Storm Sewer System (MS4) leading to Arizona surface waters, and these permits are also associated with construction activities that disturb one or more acres of land; construction activities that disturb less than one acre but are part of a larger common plan of development that will ultimately disturb one acre or more; and support activities from temporary plants or operations set up to produce concrete, asphalt, or other materials exclusively for the permitted construction project.[14]

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Determination of a project's environmental impact to historic and cultural resources is made under guidance in the *National Historic Preservation Act* (NHPA) *of 1966*, as amended, the *Archaeological and Historic Preservation Act* (AHPA) *of 1974*, the *Archaeological Resources Protection Act* (ARPA), and the

[13] State of Arizona Department of Environmental Quality (https://static.azdeq.gov/permits/azpdes/msgp_permit.pdf)
[14] ADEQ – Arizona Department of Environmental Quality (https://azdeq.gov/AZPDES/CGP)

Native American Graves Protection and Repatriation Act (NAGPRA) *of 1990*. In addition, the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *American Indian Religious Freedom Act of 1978* also protect historic, architectural, archaeological, and cultural resources. Impacts may occur when a proposed project causes an adverse effect on a resource that has been identified (or is identified after being unearthed during construction) as having historic, architectural, archaeological, or cultural significance.

A cultural resources survey and archival review were conducted by SWCA Environmental Consultants (SWCA) as part of this master plan. The SWCA report surveyed land encompassing 77.18 acres of existing airport property and 201.8 acres of Fort Huachuca land that may be acquired in future and resulted in the identification of no archaeological sites or isolated occurrences (IOs) of cultural materials.[15] There are no NRHP-listed resources on or within one mile of the airport.

The nearest tribal land to the Sierra Vista Municipal Airport is the Tohono O'odam Nation Reservation, located more than 44 miles northwest of the airport along the eastern and western border of Interstate 19;[16] however, the airport is located on land of interest to the following tribes: Pueblo of Zuni, Tohono O'odham Nation, White Mountain Apache Tribe, San Carlos Apache Tribe, Pascua Yaqui Tribe, and Hopi Tribe.[17]

LAND USE

Land use regulations on or near airports are achieved through local government codes, city policies, and plans that include airport districts and planning areas. Regulations are used to avoid land use compatibility conflict around airports.

The City of Sierra Vista is currently undergoing the process to update its general plan and seeks to implement *Vista 2040*, the new general plan. Prior to this, the *Vista 2030* general plan was approved and ratified in 2014. The airport is zoned as light industrial (LI)[18]. This zoning designation allows for a mix of light manufacturing uses, office space, and limited open land uses. The airport is surrounded by the Fort Huachuca Military Reservation. Land around the airport is primarily undeveloped, with the exception of the military facilities that comprise Libby Army Airfield and Fort Huachuca, located south of the airport. The area of Fort Huachuca is zoned as Military Reservation. Any proposed development on the airport is required to be coordinated with Fort Huachuca.

NATURAL RESOURCES AND ENERGY SUPPLY

Natural resources and energy supply provide an evaluation of a project's consumption of natural resources. It is the policy of FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities*, to encourage the development of facilities that exemplify the highest standards of design,

[15] SWCA Environmental Consultants, *Cultural Resources Survey for the Sierra Vista Municipal Airport Master Plan Update in Cochise County, Arizona*, by Heather West, dated December 2023
[16] Arizona Game and Fish Department (https://ert.azgfd.gov/content/map)
[17] AZ SHPO, Government to Government Consultation Toolkit (https://sites.google.com/view/az-consultation-toolkit/consultation-map)
[18] Zoning Map of Sierra Vista (https://sierravista.maps.arcgis.com/home/webmap/viewer.html?webmap=cae4a6e14bc9447b8b8612c23f594b8b)

including principles of sustainability. The federal government's commitment to sustainability in terms of natural resources and energy usage has also been reaffirmed through E.O. 14057, *Catalyzing Clean Energy Industries and Jobs through Federal Sustainability*, and the Council on Environmental Quality's (CEQ) *Implementing Instructions for Executive Order 14057* (The White House CEQ 2022). E.O. 14057 requires the federal government to lead by example in achieving a carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by 2050.

40 CFR Part 1502.16(a)(6) and (7) require that federal agencies also consider energy requirements, natural depletable resource requirements, and the conservation potential of a project, its alternatives, and mitigation measures within *National Environmental Policy Act* (NEPA) documents.

Under the *Environmental Quality Act of 1986*, the Arizona State Legislature created the Arizona Department of Environmental Quality (ADEQ) in 1987 as the state's cabinet-level environmental agency.[19] The office's main goal is to protect and enhance both public health and the environment in Arizona. ADEQ is comprised of three primary environmental programs: Air Quality, Water Quality, and Waste. Each program has units responsible for technical, operational, and policy support. ADEQ administers the state's environmental laws and delegated federal programs to prevent air, water, and land pollution and ensure cleanup. ADEQ is also responsible for a series of core functions: planning, permitting, compliance management, monitoring, assessment, cleanups, and outreach.

NOISE AND NOISE-COMPATIBLE LAND USE

Federal land use compatibility guidelines are established under 14 CFR Part 150, *Airport Noise Compatibility Planning*. According to 14 CFR Part 150, residential land and schools are noise-sensitive land uses that are not considered compatible with a 65 decibel (dB) day-night average sound level (Ldn or DNL).[20] Other noise-sensitive land uses (such as religious facilities, hospitals, or nursing homes), if located within a 65 dB DNL contour, are generally compatible when an interior noise level reduction of 25 dB is incorporated into the design and construction of the structure. Special consideration should also be given to noise-sensitive areas within Section 4(f) properties where the land use compatibility guidelines in 14 CFR Part 150 do not account for the value, significance, and enjoyment of the area in question.[21]

The closest residential areas are located over one mile south of the airport across from Hatfield Street, and there are no other types of noise-sensitive land uses or Section 4(f) resources located within one mile of the airport.

[19] ADEQ – Arizona Department of Environmental Quality (https://azdeq.gov/AboutUs)
[20] The DNL accounts for the increased sensitivity to noise at night (10:00 p.m. to 7:00 a.m.) and is the metric preferred by the FAA, the U.S. EPA, and the U.S. Department of Housing and Urban Development as an appropriate measure of cumulative noise exposure.
[21] 49 U.S. Code § 47141 – Compatible land use planning and projects by state and local governments

SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Socioeconomics | *Socioeconomics* is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment, such as population, employment, housing, and public services, might be affected by the proposed action and alternative(s).

The FAA has identified factors to consider when evaluating the context and intensity of potential socio-economic impacts, including whether the proposed action would:

- Induce substantial economic growth in an area, either directly or indirectly;
- Disrupt or divide the physical arrangement of an established community;
- Cause extensive relocation when sufficient replacement housing is unavailable;
- Cause extensive relocation of community business that would cause severe economic hardship for affected communities;
- Disrupt local traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities; or
- Produce a substantial change in the community tax base.

Environmental Justice | *Environmental justice* is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies.

FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, specifically requires that any federal action that causes disproportionate impacts to an environmental justice population (i.e., a low-income or minority population) be further evaluated, as well as environmental health and safety risks to children (see subsection below).

Meaningful involvement ensures that:

- People have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- The public's contribution can influence the regulatory agency's decision;
- Their concerns will be considered in the decision-making process; and
- The decision-makers seek out and facilitate the involvement of those potentially affected.[22]

[22] U.S. EPA website - Environmental Justice (https://www.epa.gov/environmentaljustice)

The closest residential areas are located over one mile south of the airport across from Hatfield Street. According to the five-year 2017-2021 American Community Survey (ACS) estimates, the population within one mile of the airport is 433 persons, of which 41 percent of the population is considered low-income and 35 percent are people of color. As indicated in **Table 1H**, approximately 18 percent of the population has identified as Hispanic or Latino.

TABLE 1H | Population Characteristics Within One Mile of the Airport

Characteristic	
Total Population	433
Population by Race[1]	
White	65%
Black	7%
American Indian	1%
Asian	2%
Pacific Islander	0%
Some Other Race	0%
Population Reporting Two or More Races	7%
Total Hispanic population **(of any race)**	18%

[1] Percentages do not add up to 100%. Hispanic or Latino is treated by the U.S. Census as a question separate from Race.

Source: U.S. EPA EJScreen ACS Summary Report (5-Year 2016-2022) (https://ejscreen.epa.gov/mapper/)

Children's Environmental Health and Safety | Federal agencies are directed, per E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, to make it a high priority to identify and assess the environmental health and safety risks that may disproportionately impact children. Such risks include those that are attributable to products or substances a child is likely to encounter or ingest (i.e., air, food, water – including drinking water) or to which they may be exposed.

According to the 2017-2021 ACS estimates, 16 percent of the population is between the ages of one and 18.

VISUAL EFFECTS

Visual effects deal broadly with the extent to which a proposed action or alternative(s) would either (1) produce light emissions that create an annoyance or interfere with activities; or (2) contrast with or detract from the visual resources and/or the visual character of the existing environment. Each jurisdiction will typically address outdoor lighting, scenic vistas, and scenic corridors in its zoning ordinances and general plan.

Light Emissions | The City of Sierra Vista, Arizona Code of Ordinances, Article 151.11, *Outdoor Lighting Control*, states that all exterior light fixtures for new developments shall be fully shielded and any building interior lighting that may cause outdoor glare will be screened to eliminate any potential glare that would be visible from a public roadway. Light trespass and glare will also be minimized on adjoining properties, as much as possible.

Airfield lighting at the airport includes a rotating beacon, medium intensity runway lighting (MIRL) at Runway 12-30 and Runway 3-21, high intensity runway lighting (HIRL) at Runway 8-26, threshold lights at each runway end, medium intensity taxiway lighting (MITL) on all taxiways (aside from Taxiways P and S), four-box precision approach path indicator (PAPI) lights at each runway end for Runways 8-26 and 12-30, and runway end identification lights (REILs) at each side of the runway end. The airfield lights utilize pilot-controlled lighting (PCL); thus, the airfield lights are only lit when activated by pilots using the airport. For further information, see the discussion of the types of airfield lighting and visual approach aids earlier in the inventory.

Visual Resources and Visual Character | *Visual character* refers to the overall visual makeup of the existing environment where a proposed action or its alternative(s) would be located. For example, areas near densely populated areas generally have a visual character that could be defined as urban, whereas less developed areas could have a visual character defined by the surrounding landscape features, such as open grass fields, forests, mountains, deserts, etc.

Visual resources include buildings, sites, traditional cultural properties, and other natural or manmade landscape features that are visually important or have unique characteristics. Visual resources may include structures or objects that obscure or block other landscape features. In addition, visual resources can include the cohesive collection of various individual visual resources that can be viewed at once or in concert from the area surrounding the site of the proposed action or alternative(s).

Although the airport environment is within a designated federal urban area, it is visually characterized by vegetated open areas due to its close proximity to Fort Huachuca's military base. Views of the airport are accessible from surrounding roadways due to the desert scrub and shrubs being spread out rather than densely grouped. In addition, long-range views of the airport are not readily available from nearby roadways due to the relatively flat topography of the airport environs; however, long-range views of scenic resources, such as the Huachuca Mountains, are available from the airport. The Huachuca Mountains are part of the Sky Island Mountain range in southeastern Arizona and support a variety of plant species (i.e., conifer forests, pine forests, and extensive oak and oak-pine woodlands)[23].

ADOT administers the state-designated scenic roads program, while the Federal Highway Administration (FHWA) administers the byways program.

In Arizona, "scenic road" is a general term that is often used to identify both state-designated and federally designated scenic roads.[24] At present, there are a total of 26 state-designated scenic roads in Arizona, three of which are state-designated historic roads and four of which are state-designated parkways. There are a total of five federally designated byways in the state. Of the five byways in Arizona, three are National Scenic Byways and two are classified as All-American Roads.

There are no designated routes within the City of Sierra Vista; therefore, there are no federal or national scenic byways near the airport.

[23] USDA Huachuca Mountains (https://www.fs.usda.gov/recarea/coronado/recarea/?recid=25468), accessed March 2024

[24] ADOT – Arizona Department of Transportation (https://azdot.gov/about/historic-and-scenic-roads/types-scenic-roads#:~:text=There%20are%20a%20total%20of%20five%20federally%20designated%20byways%20in,scenic%20and%20federal%20byway%20designations)

WATER RESOURCES

Wetlands | The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act* (CWA). Wetlands are defined in E.O. 11990, *Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." Wetlands can include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: soil that is inundated or saturated to the surface at some time during the growing season (hydrology), soil that has a population of plants able to tolerate various degrees of flooding or frequent saturation (hydrophytes), and soils that are saturated enough to develop anaerobic (absent of air or oxygen) conditions during the growing season (hydric).

USFWS manages the National Wetlands Inventory (NWI) on behalf of all federal agencies. The NWI identifies surface waters and wetlands in the nation and provides generalized wetland maps of an area (**Exhibit 1K**). There are no NWI-mapped wetlands present within airport boundaries.

An aquatic resources assessment/jurisdictional delineation for the airport was conducted as part of the master plan and concluded there are no potential waters of the U.S. (WOTUS), special aquatic sites, relatively permanent waters, or traditional navigable waters at the airport.[25]

Floodplains | E.O. 11988, *Floodplain Management*, directs federal agencies to take action to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by the floodplains. U.S. Department of Transportation (DOT) Order 5650.2, *Floodplain Management and Protection*, implements the guidelines contained in E.O. 11988.

E.O. 14030, *Climate-Related Financial Risk*, was established on May 25, 2021. Section 5(e) of E.O. 14030 reinstates E.O. 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input* (originally set forth on January 30, 2015). E.O. 13690 amends E.O. 11988 and mandates the creation of a Federal Flood Risk Management Standard (FFRMS). One of the primary purposes of the FFRMS is to expand the management of floodplains from a base flood evaluation to include a higher vertical elevation (and the corresponding floodplain) to protect against future flood risks for federally funded projects.

Under E.O. 13690 and its guidelines, one of several approaches should be used to identify floodplains and their risks to critical[26] or non-critical federally funded actions:

[25] SWCA Environmental Consultants, *Aquatic Resources Assessment/Jurisdictional Delineation for the Sierra Vista Municipal Airport Master Plan Update Project*, Cochise County, Arizona, November 2023

[26] A critical action is defined in E.O. 13690 and the *2015 Guidelines for Implementing E.O. 11988* as any activity for which even a slight change of flooding is too great.

- Climate-Informed Science Approach (CISA) – the elevation and the flood hazard area (i.e., 100-year floodplain) using data that integrate climate science with an emphasis on possible future effects on critical actions
- Freeboard Value Approach – the elevation and flood hazard area and an additional two or three feet above the base flood elevation, depending on whether the proposed federal action is critical or non-critical
- 500-year Floodplain Approach – all areas subjects to the 0.2 percent annual chance flood
- Other methods resulting from updates to the FFRMS

Of the four approaches listed above, federal departments and agencies should use the CISA approach when data to support such an analysis are available.

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel numbers 04003C2127F, and 04003C2129F, effective August 28, 2008, indicates that the airport is in Zone D, an area of undetermined flood hazard.[27] Based on a floodplain analysis conducted using the Freeboard Value Approach, the maximum elevation value of the closest mapped 100-year floodplain is 4,442 feet above mean sea level (amsl). The Freeboard Value Approach contour was created by adding three feet to the base flood elevation derived from the nearest mapped 100-year floodplain elevation; thus, the Freeboard Value Approach contour sits at 4,445 feet amsl. (**See Exhibit 1L**.)

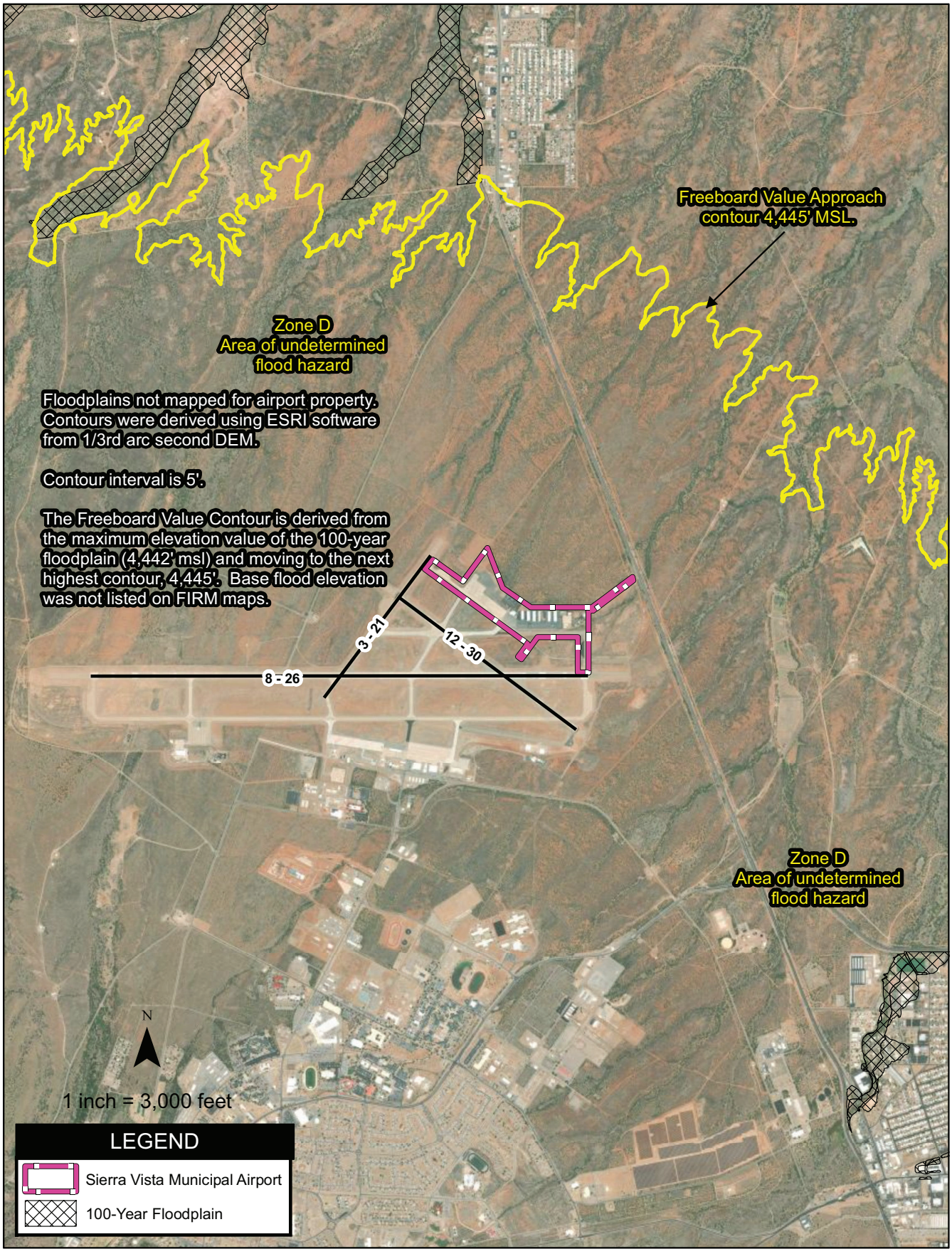
Surface Waters | The CWA establishes water quality standards, controls discharges, develops waste treatment management plans and practices, prevents or minimizes the loss of wetlands, and regulates other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc. Additionally, the U.S. Congress has mandated the NPDES under the CWA (see previous discussion under Hazardous Materials, Solid Waste, and Pollution Prevention).

Sierra Vista Municipal Airport is in the Huachuca Canyon-Babocomari River and Soldier Creek watersheds. There are no impaired waters within these watersheds; thus, there are no impaired waters near the airport.[28] There are no Outstanding Arizona Waters located within or near the project area.

A number of ephemeral streams traverse the airport. The drainage patterns for these surface water features generally flow from the Huachuca Mountains north to the Babocomari River or northeast to the San Pedro River. The Babocomari River eventually flows into the San Pedro River, approximately 11 miles northeast of the airport.[29]

Groundwater | Groundwater is subsurface water that occupies the space between sand, clay, and rock formations. The term aquifer is used to describe the geologic layers that store or transmit groundwater, such as wells, springs, and other water sources. Examples of direct impacts to groundwater could include withdrawal of groundwater for operational purposes or reduction of infiltration or recharge area due to new impervious surfaces.[30]

[27] FEMA Flood Map (https://msc.fema.gov/portal/search?AddressQuery=sierra%20vista%20municipal%20airport)
[28] U.S. EPA – How's My Waterway (https://mywaterway.epa.gov/community/sierra%20vista%20airport/overview)
[29] SWCA Environmental Consultants, *Aquatic Resources Assessment/Jurisdictional Delineation for the Sierra Vista Municipal Airport Master Plan Update Project,* Cochise County, Arizona, 2023
[30] United States Geological Survey – What is Groundwater? (https://www.usgs.gov/faqs/what-groundwater)


Freeboard Value Approach contour 4,445' MSL.
Zone D
Area of undetermined flood hazard
Floodplains not mapped for airport property. Contours were derived using ESRI software from 1/3rd arc second DEM.
Contour interval is 5'.
The Freeboard Value Contour is derived from the maximum elevation value of the 100-year floodplain (4,442' msl) and moving to the next highest contour, 4,445'. Base flood elevation was not listed on FIRM maps.
3 - 21
12 - 30
8 - 26
Zone D
Area of undetermined flood hazard
N
1 inch = 3,000 feet
LEGEND
Sierra Vista Municipal Airport
100-Year Floodplain

According to the Arizona Groundwater Site Inventory (GWSI), there are two wells located within airport property boundaries. An Index well[31] is located near the southern end of the airport and a GWSI well[32] is located near the eastern end of the airport.[33] The depth to groundwater in the airport vicinity is 250 feet or more below the surface.[34]

The U.S. EPA's Sole Source Aquifer (SSA) program was established under Section 1424(e) of the *Safe Drinking Water Act* (SDWA). Since 1977, it has been used by communities to help prevent contamination of groundwater from federally funded projects. The SSA program has increased public awareness of the vulnerability of groundwater resources and is authorized by Section 1424(e) of the SDWA (Public Law 93-523, 42 U.S.C. 300 et. seq), which states:

> "*If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register.*"[35]

According to the U.S. EPA Sole Source Aquifer for Drinking Water website, there are no sole source aquifers located within airport boundaries. The nearest sole source aquifer is the Bisbee-Naco Sole Source Aquifer (SSA), located more than 22 miles from the airport.[36]

Wild and Scenic Rivers | The *National Wild and Scenic Rivers Act* was established to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

The Nationwide River Inventory (NRI) is a list of over 3,400 rivers or river segments that appear to meet the minimum *Wild and Scenic Rivers Act* eligibility requirements, based on their free-flowing status and resource values. The development of the NRI resulted from Section 5(d)(1) in the *Wild and Scenic Rivers Act*, which directs federal agencies to consider potential wild and scenic rivers in the comprehensive planning process.

The closest designated National Wild and Scenic River identified is the Verde River, located 194 miles from the airport.[37] The nearest feature is the San Pedro River East, located nine miles from the airport.[38]

[31] Index wells are used for monitoring and are measured (at a minimum) annually, if not more frequently.
[32] Groundwater Site Inventory (GWSI) wells are used to collect statewide groundwater data.
[33] Arizona Groundwater Site Inventory (GWSI) (https://azwatermaps.azwater.gov/gwsi)
[34] SWCA Environmental Consultants, *Aquatic Resources Assessment/Jurisdictional Delineation for the Sierra Vista Municipal Airport Master Plan Update Project*, Cochise County, Arizona, November 2023
[35] U.S. EPA – Overview of the Drinking Water Sole Source Aquifer Program (https://www.epa.gov/dwssa/overview-drinking-water-sole-source-aquifer-program#Authority)
[36] Sole Source Aquifers (https://epa.maps.arcgis.com/app/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b)
[37] National Wild and Scenic River System in the U.S. (https://nps.maps.arcgis.com/apps/MapJournal/index.html?appid=ba6debd907c7431ea765071e9502d5ac#)
[38] Nationwide River Inventory (https://www.nps.gov/maps/full.html?mapId=8adbe798-0d7e-40fb-bd48-225513d64977)