WHITERIVER AIRPORT
AIRPORT MASTER PLAN UPDATE
FINAL REPORT
JULY 21, 2009

ARMSTRONG CONSULTANTS, Inc.
airport engineering and planning services

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INTRODUCTION

The White Mountain Apache Tribe, as the Airport Sponsor, is continuing its effort to plan for future development of the Whiteriver Airport. This development is designed to enhance air and ground operations, improve safety, provide better airport services and stimulate the local economy through business growth potential.

PURPOSE

An airport master plan document describes and depicts the overall concept for the long-term development of an airport. It presents the concepts graphically in the airport layout plan (ALP) drawing set and reports the data and logic upon on which the concept is based in the airport master plan (AMP) report. The goal of the master plan report is to provide direction for future airport development that will satisfy aviation demand in a financially feasible manner and meet the needs of the community with respect to the airport.

OBJECTIVES

The primary objectives of the airport master plan are to produce an attainable phased development plan concept that will satisfy the airport needs in a safe, efficient, economical and environmentally sound manner. The plan serves as a guide to decision makers, airport users and the general public for implementing airport development actions while considering both airport and community concerns and objectives. There are a number of objectives that White Mountain Apache Tribe would like to achieve as a result of this master plan.

Objectives of the airport master plan include:

- Document the issues that the proposed development will address.
- Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the development of the airport and anticipated land uses in the vicinity of the airport.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state and Federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing planning process that will monitor key conditions and permit changes in plan recommendations as required.

MASTER PLAN PROCESS AND SCHEDULE

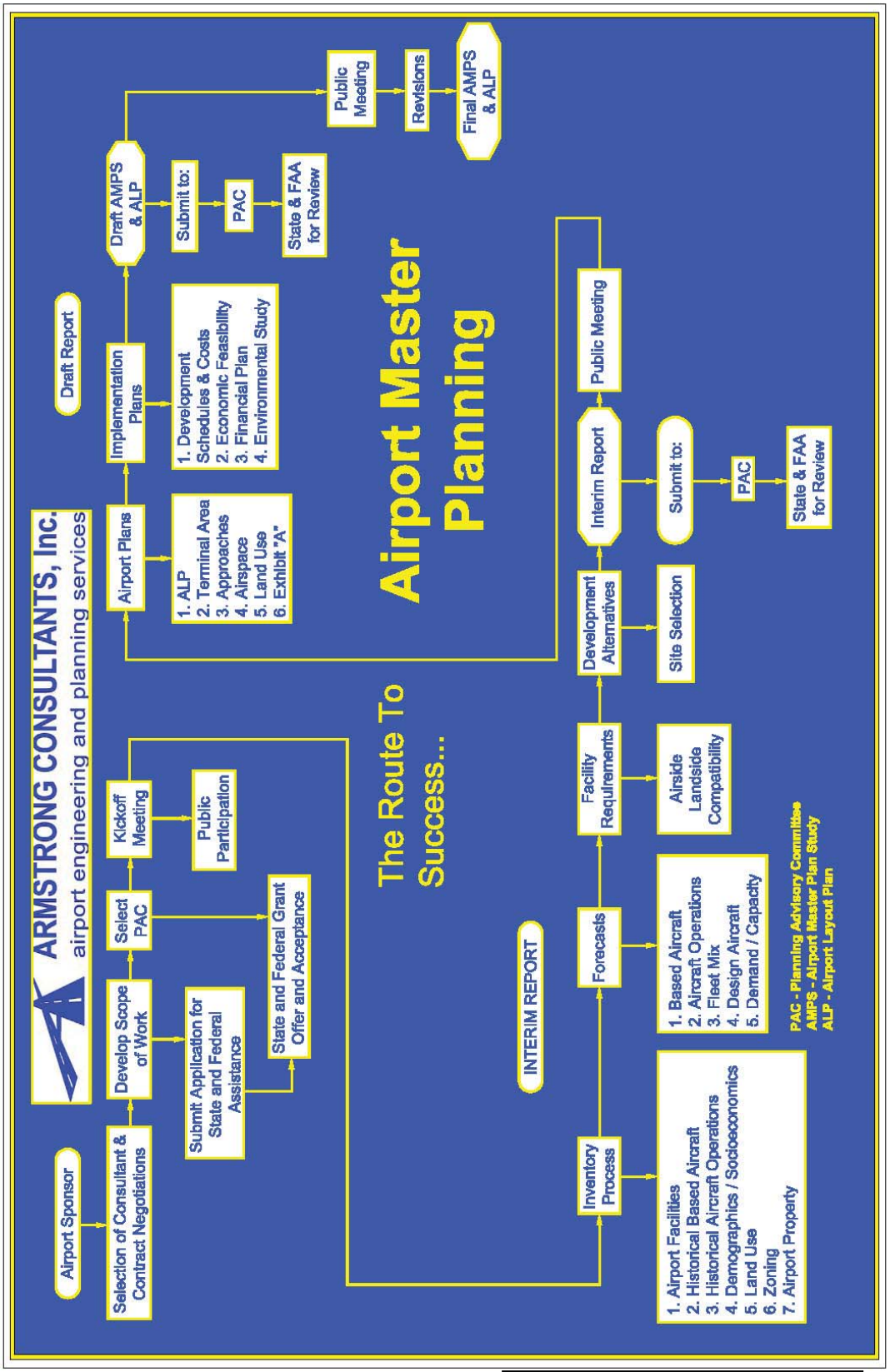

FIGURE 1 MASTER PLANNING PROCESS

Airport planning takes place at a national, state, regional and local level. These plans are formulated on the basis of overall transportation demands and are coordinated with other transportation planning and comprehensive land use planning. The National Plan of Integrated Airport Systems (NPIAS) is a ten-year plan continually updated and published by the Federal Aviation Administration (FAA). This publication lists developments at public use airports that are considered to be of national interest and thus eligible for financial assistance for airport planning and development under the Airport and Airway Improvement Act of 1982. Statewide Integrated Airport Systems Planning identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals. This planning is performed by state transportation or aviation planning agencies. Regional Integrated Airport Systems Planning identifies airport needs for a large regional or metropolitan area. Needs are stated in general terms and incorporated into statewide systems plans. Airport Master Plans are prepared by the operators of individual airports and are usually completed with the assistance of consultants. The White Mountain Apache Tribe is completing this master plan with the assistance of Armstrong Consultants, Inc. The airport master planning process involves collecting data, forecasting demand, determining facility requirements, studying various alternatives and developing plans and schedules. The flow chart in Figure 2 depicts the steps in the master planning process. This process will take into consideration the needs and concerns of the airport sponsor, airport tenants and users, as well as the general public.

PLANNING ADVISORY COMMITTEE

The Whiteriver Airport Planning Advisory Committee (PAC) consists of members representing varied interests in the airport and the community. Their involvement throughout the master planning process will help to keep interested parties informed and will foster consensus for future development actions.

PAC REPRESENTATIVES

- *Richared Palmer – Tribal Transportation Coordinator*
- *Colbert Burnette – Tribal Engineer*
- *Len Chester – BIA Fire Management*
- *Marwin Dazen – BIA Fire Management*
- *Lucinda Harris – IHS Engineering*
- *Keith Burnette – BIA Acting Forest Manager*
- *Bob Hurley – BIA Forestry*
- *Sabino Archuletta – BIA Forestry*
- *Rupert Lupe – Tribal Member*
- *Erika Gloshay– Whiteriver Service Unit Coordinator*
- *Mike Lomayaktewa – Tribal Transportation*
- *Paul Kuehl – White Mountain Apache Tribe Fire Chief*
- *John Shaven – BIA Forestry*
- *Arizona Aeronautics Division – Ken Potts*
- *Federal Aviation Administration – George Buley*

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Chapter One
Inventory

INTRODUCTION AND AIRPORT HISTORY

The Whiteriver Airport (E24) is a general aviation airport located in the southern potion of Navajo County on the Fort Apache Reservation in east central Arizona, approximately one mile southwest of the City of Whiteriver, Arizona on the east side of State Highway 73. The airport is approximately 100 nautical miles west northwest of Phoenix Arizona.

Whiteriver Airport is located at an elevation of 5,152 feet Mean Sea Level (MSL). The Whiteriver Airport lies within a valley with mountains surrounding in all quadrants. The land surrounding the airport is uneven with sloping surfaces. Adjacent to the airport to the east is the north fork of the White River. Terrain to the south of the airport drops sharply then levels out into cattle grazing pastures.

AIRPORT GRANT HISTORY

This Airport Master Plan replaces the 1998 Airport Master Plan and subsequent ALP revisions. A federal grant history for the capital improvements at the Whiteriver Airport is provided in Table 1-1. In Arizona, under the most recent FAA Airport Improvement Program legislation (Vision 100), capital improvement projects are typically funded at 95 percent Federal Aviation Administration (FAA) and 5 percent by the sponsor.

TABLE 1-1 GRANT HISTORY

FAA Grant No. & Year	Description of Work	Federal Amount
001-1996	Conduct Airport Master Plan Study	$50,000
002-1998	Construct Taxiway	$576,892
003-1999	Improve Runway Safety Area – 1/19	$1,035,000
004-2000	Rehabilitate Runway	$2,232,500
	Extend Taxiway	$447,000
	Grant total	$2,679,500
005-2001	Install Perimeter Fencing	$132,251
006-2003	Construct Heliport/Helipad	$265,001
007-2004	Construct Heliport/Helipad	$172,500
008-2005	Construct Heliport/Helipad [Phase III]	$648,777
009-2006	Construct Snow Removal Equipment Storage Building	$342,722
	TOTAL FAA AMOUNTS	**$5,902,643**

(SOURCE: FAA 2007)

The Arizona Department of Transportation Aeronautics Division provides grants to eligible airports in the state to assist with matching funds and other airport projects; however, current State Legislation prohibits State grant funding of airports on Native American reservation. New Legislation has been proposed to eliminate this restriction. If successful an additional 2.5 percent grant funding would be available from the State toward FAA funded projects and 90 percent grant funding toward State only projects.

SERVICE LEVEL

The airport service level reflects the type of public use the airport provides to the community. The service level also reflects the funding categories established by Congress to assist in airport development. The following list identifies the different types of airport service levels:

- **Commercial service** airports are public airports that enplane 2,500 or more passengers annually and receive aircraft offering scheduled passenger service. Commercial service airports are either:

  Primary- an airport that enplanes more than 10,000 passengers annually; or

  Nonprimary- an airport that enplanes between 2,500 and 10,000 passengers annually.

- **General Aviation Airports** while not specifically defined are considered to be airports not classified as commercial service. General aviation airports include:

  Reliever- an airport designated by the FAA as having the function of relieving congestion at a commercial service airport and providing more general aviation access to the overall community. Privately owned airports may be identified as reliever airports.

  Privately owned public-use- airports that enplane 2,500 or more passengers annually and receive scheduled passenger service are also classified as general aviation because they do not meet the criteria for commercial service.

  Other General Aviation- are airports that are largely intended to serve the needs of general aviation users (users who conduct non-military operations not involving the carriage of passengers or cargo for hire or compensation.)

Whiteriver Airport is listed in the NPIAS as a general aviation airport.

AIRPORT ROLE

The Whiteriver Airport provides access to the Fort Apache Reservation area for a variety of users. The geographic location of the Whiteriver Airport near the community of Whiteriver allows easy access to users throughout the entire area.

The Whiteriver Airport is currently an Airport Reference Code (ARC) B-II airport serving predominately single engine piston, multi-engine piston, turboprop aircraft and helicopters with some use by light turbojet aircraft. Users include:

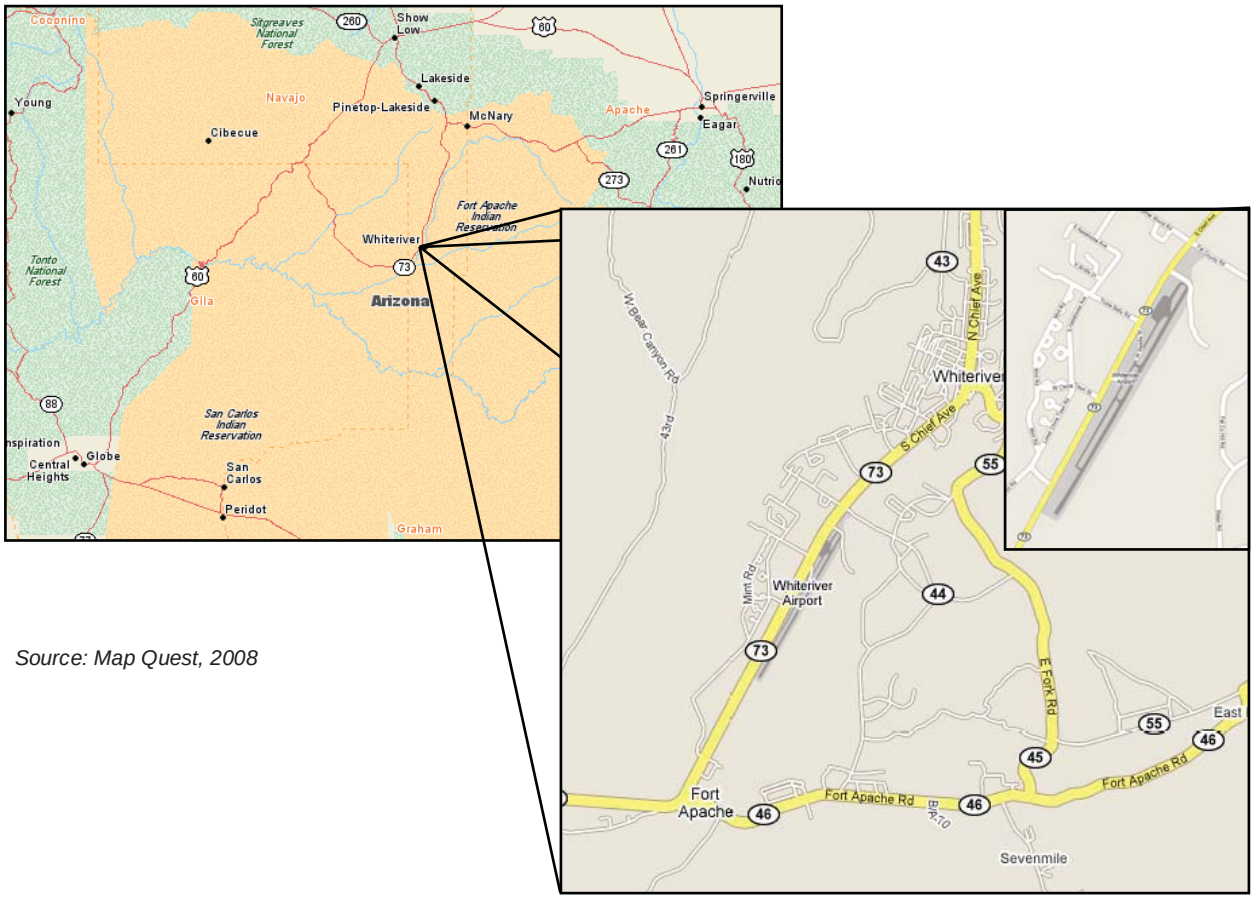
Air Medivac Services: Indian Health Services (IHS) conducts air medivac operations for emergency medical transport in life threatening situations and patient transfers from clinics to higher level care facilities throughout the Fort Apache Reservation area. These users utilize a variety of multi-engine turboprop and turbojet aircraft.

Business/Recreational Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal and business transportation varies with individual preference and resources and generally include a mix of single-engine, multi-engine and turbojet aircraft.

Wildfire Management: The Bureau of Indian Affairs (BIA) utilizes the airport for wildfire control and suppression. The number of these operations varies greatly depending on the fire season in the area. The type of aircraft predominately used for aerial fire fighting are single engine air tankers (SEATs) and helicopters.

AIRPORT LOCATION

The Whiteriver Airport is located in the east central portion of Arizona in Navajo County. Figure 1-1 provides a graphic depiction of the location of the Whiteriver Airport. The airport is designated by the FAA as Site Number 00823.*A and is a public use airport. The airport is located at Latitude 33° 48' 38.19" North and Longitude 109 ° 59' 08.68" West according to survey data collected by Absolute Surveying and Mapping Inc. in 2004. The airport is at an elevation of 5,152 feet MSL and is currently a B-II ARC.



Source: Map Quest, 2008

FIGURE 1-1 LOCATION MAP

AIRPORT PROPERTY

The existing airport property line encompasses approximately 112 acres according to the airport deeds. The airport property is located within a portion of Sections 23 and 26, Township 5 North, Range 22 East of the Gila and Salt River Base Meridian.

LAND USE PLANNING

The FAA recommends that airport sponsors protect the areas surrounding an airport from incompatible development. Incompatible development includes those land uses which would be sensitive to aircraft noise or over flight, such as residences, schools, churches and hospitals and those uses which could attract wildlife and cause a hazard to aircraft operations such as landfills, ponds and wastewater treatment facilities. There are no existing incompatible land uses currently surrounding the airport A recommended Compatible Land Use and Height Restriction Plan is included as part of this Master Plan. The land uses surrounding the airport include industrial and commercial development.

REGIONAL SETTING

Whiteriver Airport is located within the Fort Apache Indian Reservation, home of the White Mountain Apache Tribe, in east central Arizona. The Reservation is approximately 75 miles long and 45 miles wide and encompasses more than 1.6 million acres in portions of Navajo, Apache and Gila Counties. The Whiteriver Airport is located in the southern portion of Navajo County one mile southwest of the City of Whiteriver. The airport is situated at an elevation of 5,152 feet MSL in a valley amongst mountains with top elevation of up to 8,240 feet MSL.

The Reservation has a wide range of topography and climate. The southwestern desert foothills with an elevation of 2,700 feet MSL in the Salt River Canyon, contrast sharply with the mountainous, forested northeastern portions of the Reservation where elevations exceed 11,000 feet MSL in the Mt. Baldy area.

Whiteriver is the largest population center of the Reservation and the seat of the Tribal Government. Whiteriver is located 35 miles south of Show Low, 95 miles northeast of Globe and 190 miles northeast of Phoenix. Figure 1-2 shows the regional setting for Whiteriver.

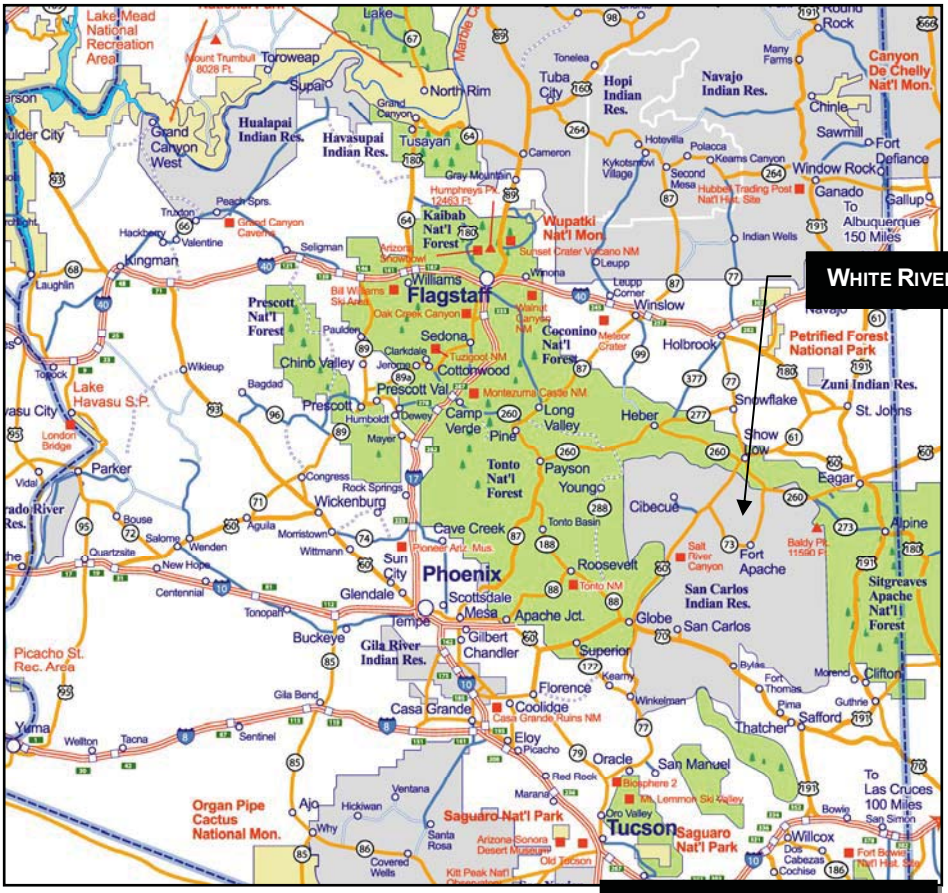


FIGURE 1-2 REGIONAL SETTING

SOCIOECONOMIC CHARACTERISTICS

Examining the specific socioeconomic characteristics of the Fort Apache Reservation will help determine the factors influencing aviation activity in the area and the extent to which aviation facility developments are needed at the Whiteriver Airport. Characteristics, such as employment, demographic patterns and income, will help in establishing the potential growth rate of aviation within the city and the county. In other words, by analyzing the information in this Chapter, forecasts of aviation activity can be developed. Those forecasts are provided in Chapter 2.

LOCAL PROFILE

Fort Apache Reservation is home to an assortment of enterprises including the Fort Apache Timber Company which provides a number of jobs in the local area. Sunrise Park Resort is a well known ski destination. The Hon-Dah Casino is also located near the ski resort to provide entertainment and jobs to the area. The Tribal lands contain a vast array of outdoor activities including hunting, fishing, camping, boating and hiking.

POPULATION

As of the 2000 US Census, there were 12,429 people residing in the Fort Apache Reservation, and 97,470 residing in Navajo County. According to population estimates from the Arizona Department of Economic Security and the U.S. Census Bureau, these populations increased

moderately from 2000 to 2007. Navajo County population increased to 113,470 residents in 2007. Table 1-2 shows this increasing population trend.

TABLE 1-2 POPULATION

	1990	2000	2007
Whiteriver	3,775	5,220	N/A
Fort Apache	10,394	12,429	N/A
Navajo County	77,658	97,470	113,470
Arizona	3,665,228	5,130,632	6,305,210

Sources: US Census Bureau (October 2008)

The Arizona Department of Economic Security, Research Administration, Population Statistics Unit developed population projections for all Arizona communities, counties and the state in 2006. Population projections as shown in Table 1-3, indicate a 57 percent population increase for the State of Arizona from 2004 to 2025. The population of Navajo County is projected to increase to 160,594 by 2027 or a 41 percent increase from the current population.

TABLE 1-3 POPULATION PROJECTIONS

	2012	2017	2022	2027
Whiteriver	6,661	7,227	7,734	8,173
Fort Apache	13,077	14,073	14,962	15,734
Navajo County	128,275	140,385	151,207	160,594
Arizona	7,370,993	8,268,253	9,109,289	9,898,153

Source: Arizona Department of Economic Security, Research Administration Population Statistics Unit (2006)

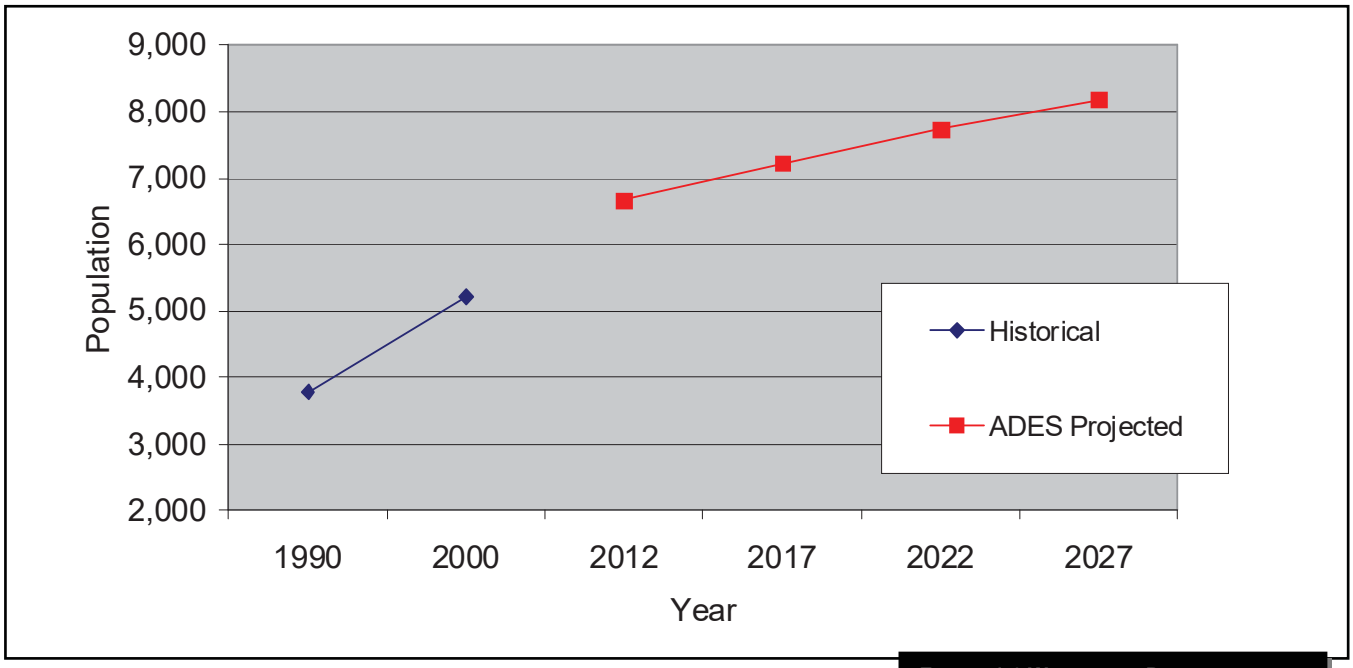


FIGURE 1-3 WHITERIVER POPULATION

EMPLOYMENT

The largest employer on the Fort Apache Reservation is government according to the Arizona Department of Economic Security. The second largest employment sector in the County is trade, transportation and utilities. Education and health services are the third largest employment sector in the County followed by mining and construction.

According to the Arizona Department of Economic Security, the unemployment rate on the Apache Reservation was 20.7 percent in 2000 and 12.6 percent in 2007. While the unemployment rate has decreased for the community, the civilian labor force has decreased from 4,333 in 2000 to 3,788 in 2007. Employment distribution by industry for Whiteriver is shown in Table 1-4 and Figure 1-4.

TABLE 1-4 WHITERIVER EMPLOYMENT DISTRIBUTION

	Whiteriver	% of Total
Agriculture, forestry, fishing, hunting and mining	99	7.9
Construction	102	8.2
Manufacturing	114	9.2
Wholesale trade	5	0.4
Retail trade	111	8.9
Transportation, warehousing and utilities	27	2.2
Information	-	-
Finance, insurance, real estate, rental and leasing	28	2.3
Professional, scientific, management, administrative and waste management services	9	0.7
Educational, health and social services	364	29.3
Arts, entertainment, recreation, accommodation and food services	198	15.9
Other services (including public administration)	187	15.0
Total	1,244	100%

Source: U.S. Bureau of the Census, Census 2000

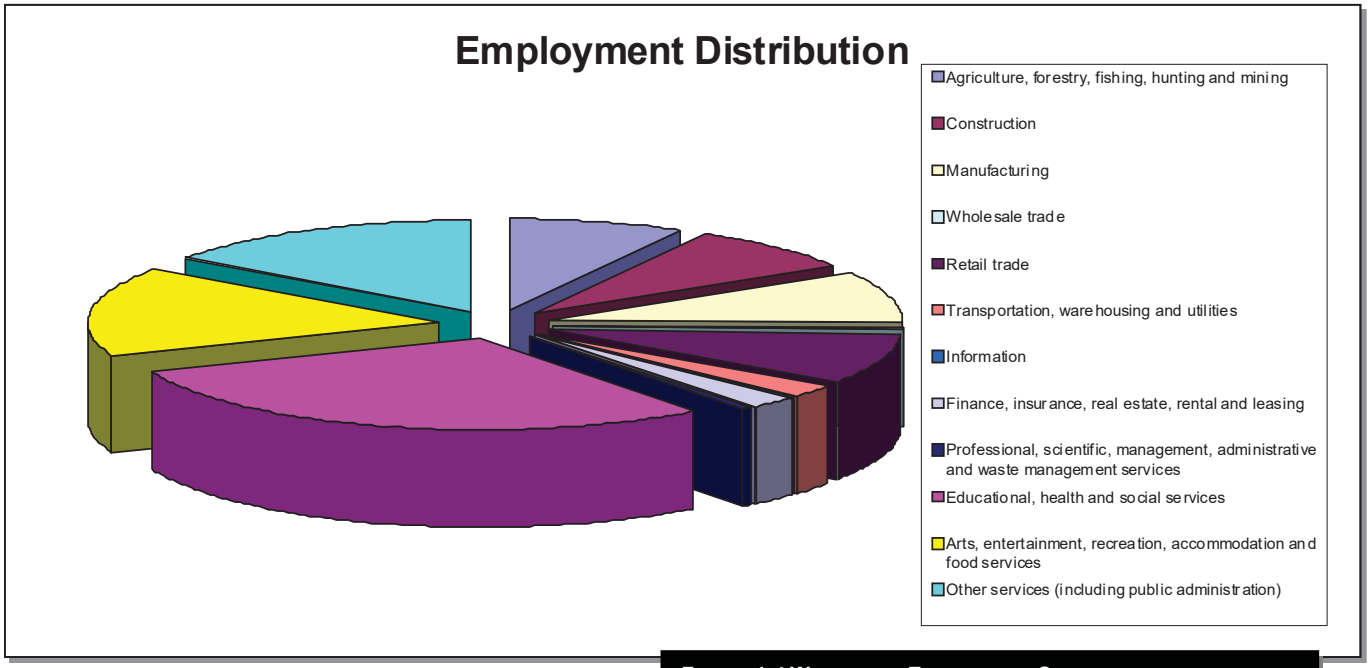


FIGURE 1-4 WHITERIVER EMPLOYMENT SECTORS

INCOME

According to the 2004 US Census, the median income for a household in Navajo County was $31,554. The median household income for Whiteriver was $17,415. The per capita income in 1999 was $11,609 for the County, $5,719 for Whiteriver. The percentage of families living below the poverty line was 23.7 percent for the County, 46.9 percent for Whiteriver.

CERTIFICATED PILOTS AND REGISTERED AIRCRAFT

The FAA databases of certificated airmen and registered aircraft were reviewed to determine the current distribution of pilots and registered aircraft in the Whiteriver area. This data indicates that there is one certificated pilot and no registered aircraft in Whiteriver, Arizona. Aircraft are not always based where they are registered.

TABLE 1-5 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT NEAR WHITERIVER

	Aircraft Registered	Certificated Pilots
Whiteriver	0	1

SOURCE: FAA, 2008

BASED AIRCRAFT AND OPERATIONS

According to the 1998 Airport Master Plan, in 1996 there were 3 based aircraft at the Whiteriver Airport with an annual operations estimate of 2,260. That master plan forecasted based aircraft and operations to increase annually from these baseline numbers. The planning advisory committee indicated that there are still 3 based fire fighting aircraft at the airport. After reviewing the GCR data showing the number of instrument flight plans filed into and out of Whiteriver indicated 19 instrument flights in 2006. However this only indicates operations that were filed under instrument flight plans.

INVENTORY OF EXISTING AIRPORT FACILITIES

AREA AIRPORT/SERVICE AREA

An airport service area is defined by the communities and surrounding areas served by the airport facility. For example, factors such as the airport's surrounding topographical features (mountains, rivers, etc.), proximity to its users, quality of ground access, required driving time to the airport and the proximity of the facility to other airports that offer the same or similar services can all affect the size of a particular airport's service area. To define the service area for the Whiteriver Airport, the airports in the area and their specific services and facilities were reviewed.

The nearest public airport with a paved surface is located approximately 27 nautical miles north in Show Low, Arizona. Runway 6/24 at Show Low Regional Airport is 7,200 feet long and 100 feet wide and Runway 3/21 at Show Low Regional Airport is 3,937 feet long and 60 feet wide. Springerville Municipal Airport is located approximately 39 nautical miles northeast of Whiteriver. Taylor Municipal Airport in Taylor, Arizona is located approximately 39 nautical miles north of Whiteriver. The primary service area includes the area within (20 miles-30 minute drive) of the Whiteriver Airport.

The secondary service area is the area within 20 miles/30-minute drive time of Whiteriver. Users within this area may choose Whiteriver over other airports if there are economic or other advantages at Whiteriver Airport such as lower lease rates, less expensive fuel or hangar availability.

FIGURE 1-5 WHITERIVER AIRPORT SERVICE AREA

SOURCE: MAP QUEST, 2006

TABLE 1-6 AIRPORTS SURROUNDING WHITERIVER

	Identifier	Distance (Nautical Miles)	Distance (Highway Miles)	NPIAS Status	Runway Length(s) Width(s)	Pavement Type	Instrument Approaches	Fuel
Show Low Regional Airport, Show Low, AZ	SOW	27 N	34	OCS	7,200'x100' 3,937'x60'	asphalt	GPS/NDB	Yes
Springerville Municipal Airport, Springerville, AZ	D68	39 NE	59	GA	8,427'x75' 4,600'x60'	asphalt	GPS	Yes
Taylor Municipal Airport, Taylor, AZ	TYL	39 N	50	GA	7,000'x75'	asphalt	GPS	Yes
San Carlos Apache Airport, San Carlos, AZ	P13	44 SW	111	GA	6,500'x100'	asphalt	GPS	No
St. Johns Industrial Air Park, St. Johns, AZ	SJN	52 NE	88	GA	5,322'x75	asphalt	None	Yes

OCS: Other Commercial Service
GA: General Aviation
PVT: Private, not included in NPIAS
SOURCE: AIRNAV, 2008

AIRSIDE FACILITIES

The airside facilities of an airport are described as the runway configuration, the associated taxiway system, the ramp and aircraft parking area and any visual or electronic approach navigational aids. Figure 1-6 depicts the existing airside facilities at the Whiteriver Airport while Figure 1-7 shows the existing landside facilities at the airport. An overview of the Whiteriver Airport facilities is provided in Table 1-7.

FIGURE 1-6 EXISTING AIRSIDE FACILITIES

FIGURE 1-7 EXISTING LANDSIDE FACILITIES

TABLE 1-7 WHITERIVER AIRPORT INVENTORY		
Airport Data		
Identifier	E24	
FAA Site Number	00823.*A	
NPIAS Number		
Airport Reference Code	B-II	
Owner/Sponsor	White Mountain Apache Tribe	
Airport Elevation	5,152’	
Facilities		
Runway 1/19	Length: 6,350’ Width: 75’ Surface: Asphalt Marking: Nonprecision	
Runway Lighting	MIRL dusk-dawn	
Navigational Aids	None	
Approach Minimums	Visual	
Visual Aids Runway 1/19	PAPI-2 RW 1, REILs both ends, Beacon, Lighted wind cone segmented circle, traffic pattern indicators	
Taxiway A	Full Length Parallel to Runway 1/19	
Taxiway Lighting	Exists only (MITL) Remaining (Retroreflectors)	
Aircraft Apron	14,130 SY	
Tie Downs	17	
Pavement Strength	75,000 SWG lbs. 100,000 DWG lbs. 155,000 DTG lbs.	
Landside Facilities	1 Snow Removal Equipment Building	Good
Automobile Parking	10 paved, 10 gravel	
Perimeter Fencing	4-Strand barbed wire and 5-foot chain link fence surrounding the landside area, 1 manual access gate and 1 electronic access gate	
Fuel	None	
Weather Equipment	None	
FBO	None	
Utilities	Power, Water, Sewer and Telephone	

RUNWAY

Whiteriver Airport currently has a single-runway configuration. Runway 1/19 is constructed of asphalt and is 6,350 feet long and 75 feet wide with a published runway strength of 75,000 pounds Single Wheel Gear (SWG), 100,000 pounds Dual Wheel Gear and 155,000 Dual Tandem Wheel Gear (DTG). The pavement is in good condition with nonprecision markings that are in good condition. Runway 19 has a 250 feet displaced threshold to provide a full runway safety area. This provides a full 6,350 feet of take off distance for runway 19 but reduces the Runway 19 landing distance to 6,100 feet and Runway 1 take off and landing distance to 6,100 feet.

TAXIWAY

Taxiways provide a surface for aircraft access from the parking apron to and from the runways. They expedite aircraft departures from the runway and increase operational safety and efficiency. The Whiteriver Airport has a full length parallel taxiway (Taxiway A). Taxiway A is

constructed to 75,000 pounds SWG, 100,000 pounds DWG and 155,000 pounds DTG. Taxiway A is 6,350 feet long and 35 feet wide.

AIRCRAFT APRON

The aircraft apron provides an area for aircraft to park. The apron is typically connected to the runway via taxiways or taxilanes. The aircraft-parking apron at Whiteriver Airport has approximately 14,130 square yards (SY) of area and contains approximately 17 aircraft tiedowns with Group II taxilanes.

FIGURE 1-8 AIRCRAFT APRON

AIRFIELD LIGHTING, SIGNAGE AND VISUAL AIDS

Guidance on airport lighting standards is provided in FAA Advisory Circular (AC) 150/5340-30C, Design and Installation Details for Airport Visual Aids. Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground.

Several common airfield lighting and visual aid features of general aviation airports include a rotating beacon (activated by photoelectric cell for dusk to dawn operations), pilot-controlled Medium Intensity Runway Lights (MIRLs) (activated by aircraft radio signal), threshold lights, Runway End Identifier Lights (REILs) which mark the runway threshold with flashing strobe lights and Precision Approach Path Indicators (PAPIs) to provide descent guidance information during an approach to the runway.

Airfield lighting and visual aids at Whiteriver Airport consists of Medium Intensity Runway Lights (MIRL's) which are on from dusk to dawn. The runway lights have white colored lenses. The airport also has a segmented circle and lighted wind cone. Taxiway A is marked with reflectors. The airport also has lighted runway signs showing runway and taxiway locations. PAPIs are installed on Runway 1 only due to terrain obstruction to the PAPI siting criteria on Runway 19. Both runway ends are equipped with

NAVIGATIONAL AIDS AND APPROACH PROCEDURES

There are currently no published instrument approach procedures to the Whiteriver Airport. Services include Albuquerque Air Route Traffic Control Center (ARTCC) and Prescott Flight Service Station (FSS). Enroute and radar coverage for the Whiteriver area is provided by the Albuquerque ARTCC. The altitude of radar coverage may vary as a result of the FAA navigational/radar facilities in operation, weather conditions and terrain which surround Whiteriver. The Prescott FSS provides additional weather data and other pertinent weather information to pilots on the ground and enroute. There is no air traffic control tower (ATCT) at the airport.

A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. NAVAIDs include Very High Omnidirectional Range (VORs), Very High Frequency Omnidirectional Range with Tactical Information (VOR-TACs),

Nondirectional Beacons (NDBs) and Tactical Air Navigational Aids (TACANs), as examples. There are currently no NAVAIDs at the Whiteriver Airport.

AIRPORT SERVICES/FIXED BASE OPERATIONS

A Fixed Base Operator (FBO) is usually a private enterprise that leases land from the airport sponsor on which to provide services to based and transient aircraft. The extent of the services provided varies from airport to airport; however, these services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge and flight planning facilities and aircraft tiedown and/or hangar storage. There is currently no FBO at the Whiteriver airport and no services are available.

LANDSIDE FACILITIES

BUILDING AREA

The building area of a typical general aviation airport usually consists of FBO offices and/or hangars, a pilot lounge, terminal building, eating facility, additional aircraft hangars, a maintenance building and other related structures. Existing buildings at the Whiteriver Airport include one building which is a snow removal equipment building. The remaining buildings in the northwest corner of the airport are either BIA-owned facilities or Tribal-owned facilities leased to the BIA forestry department.

UTILITIES

Available utilities at the Whiteriver Airport include power, water, phone and sewer. Electricity is provided by Navopache Electric Coop, telephone services are provided by GTE West and Whitewater Regional provides sewer and water services.

GROUND ACCESS AND SIGNAGE

The Whiteriver Airport can be reached by following State Highway 73 south from Whiteriver. The signage to the airport currently consists of one airport sign at the entrance to the airport. Access to the Whiteriver Airport is provided via an airport access road, a paved two lane road which enters from the west side of the airport.

INTERMODAL TRANSPORTATION

The ground transportation network in the vicinity of the Whiteriver Airport consists of private automobile transportation only. There is no bus or rail service to Whiteriver. The nearest bus and rail service is located 114 miles northwest in Winslow, Arizona.

AIRCRAFT FUEL FACILITIES

A Fixed Base Operator (FBO) or the airport sponsor often provides aircraft fuel services. Combinations of 100LL and 80 Octane Aviation Gas and/or Jet-A fuel are usually provided depending on the aircraft traffic mix. These fuels may be stored in underground storage tanks, above ground storage tanks, fuel trucks or a combination of the three. The Whiteriver Airport currently has no existing fuel or FBO facilities available.

AIRPORT FENCING AND SECURITY

The primary purpose of airport fencing is to prevent unwanted intrusions by persons or animals on to airport property. Airport fencing provides increased safety and security for the airport. It is normally installed along the perimeter of the airport property and outside any of the safety areas defined by the Federal Aviation Administration (FAA) in Advisory Circular (AC) 150/5300-13, Airport Design and Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace. The airport is currently fenced with 4-strand barbed wire fence along the perimeter.

The terminal area is fenced with chain link fencing and has one electronic vehicle access gate and one manual access gate.

EMERGENCY SERVICES

Emergency fire, rescue and medical services are available from the White Mountain Apache Tribe Fire and Rescue. The closest hospital is Whiteriver Service Unit located in Whiteriver, Arizona. The hospital is a 50-bed facility with 22 physicians on staff. The White Mountain Apache Tribe EMS provides ambulance service to the area.

TABLE 1-8 WHITERIVER EMERGENCY SERVICES

DISTANCE FROM AIRPORT: 1 MILE	**RESPONSE TIME:** 5 MINUTES
PERSONNEL	
25 FIRE FIGHTERS	35 - EMTS
50 EMS	13 - PARAMEDICS
EQUIPMENT	
1 RESCUE/BRUSH TRUCK	
2 FIRE ENGINES	COMPRESSED AIR FOAM (CAF) CAPABLE
1 TECHNICAL RESCUE TRUCK	
3 COMMAND UNITS	
1 ENGINE WATER TENDER	3,000 GALLONS
3 AMBULANCES	

Source: White Mountain Apache Fire and Rescue, and White Mountain Apache Tribe EMS 2008

ADDITIONAL FACILITIES

There is not currently any Airport Rescue and Fire Fighting (ARFF) equipment or personnel based at the Whiteriver Airport. There are also no designated security personnel at the airport.

FAA SAFETY AND DESIGN STANDARDS

FAA AC 150/5300-13, Airport Design, establishes design standards for airports based on the Airport Reference Code (ARC) of the airport. When design standard deficiencies exist, the FAA recommends correction of such deficiencies as soon as practicable. Design standards are based on the Airport Reference Code (ARC) and approach visibility minimums of the airport. The ARC is a combination of the tail height, wingspan and approach speed of the critical aircraft operating at the airport. The current ARC for the Whiteriver Airport is B-II. A more detailed discussion of ARCs is included in Chapter 3.

SAFETY AREAS

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

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

The runway safety areas off the ends of Runway 1/19 at Whiteriver are in good condition.

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

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

THRESHOLD SITING SURFACE

According to FAA AC 150/5300-13, the runway threshold should be located at the beginning of the full-strength runway pavement or runway surface. However, displacement of the threshold may be required when an object obstructs the airspace required for landing airplanes and is beyond the airport owner's power to remove, relocate or lower. Thresholds may also be displaced for environmental considerations such as noise abatement or to provide the standard RSA and ROFA lengths.

Based on the visual approach and size of aircraft using the Whiteriver Airport, in order to meet FAA design standards, no object should penetrate a surface that starts at the threshold of Runway 1/19 at the elevation of the runway centerline at the threshold and slopes upward from the threshold at a slope of 20 feet (horizontal) to 1 foot (vertical). In the plan view, the centerline of this surface extends 2,250 feet along the extended runway centerline. This surface extends laterally 125 feet on each side of the centerline at the threshold and increases in width to 350 feet at a point 2,250 feet from the threshold.

RUNWAY PROTECTION ZONE (RPZ)

According to FAA AC 150/5300-13, the RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end. At both ends of Runway 1/19 the RPZ begins 200 feet from the runway threshold and extends for 1,000 feet. The RPZ is 500 feet wide at the inner end and 700 feet wide at the outer end. The land uses not recommended within the RPZ are residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers and other uses with similar concentrations of persons typify places of public assembly).

TABLE 1-9 DESIGN STANDARDS

	RW 1/19
Description	B-II
RW Centerline to parallel TW centerline	240’
RW Centerline to aircraft parking apron	250’ (310’ actual)
RW Width	75’
RW Safety Area width	150’
RW Safety Area length beyond Rwy end	300’
RW Object Free Area width	500’
RW Object Free Area beyond Rwy end	300’
RW Obstacle Free Zone width	400’
RW Obstacle Free Zone length beyond Rwy end	200’
RW Protection Zone	1,000’ x 500’ x 700’
TW Width	35’
TW Safety Area width	79’
TW Object Free Area width	131’
RW Centerline to aircraft hold lines	200’

FAA ADVISORY CIRCULAR 150/5300-13 CHANGE 13

AIRSPACE CHARACTERISTICS

The National Airspace System consists of various classifications of airspace that are regulated by the FAA. Airspace is either controlled or uncontrolled. Pilots flying in controlled airspace are subject to Air Traffic Control (ATC) and must follow either Visual Flight Rule (VFR) or Instrument Flight Rule (IFR) requirements. These requirements include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace and are described in Federal Aviation Regulations (FAR) Part 71, Designation of Class A, Class B, Class C, Class D and Class E Airspace Areas; Airways; Routes; and Reporting Points and FAR Part 91, General Operating and Flight Rules. Figure 1-9 below shows the different airspace classes and gives a graphical representation of them.

General definitions of the Classes of airspace are provided below:

- **Class A Airspace**: Airspace from 18,000 feet Mean Sea Level (MSL) up to and including Flight Level (FL) 600.
- **Class B Airspace**: Airspace from the surface to 10,000 feet MSL surrounding the nation’s busiest airports in terms of IFR operations or passenger enplanements.
- **Class C Airspace**: Generally, airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control and that have a certain number of IFR operations or passenger enplanements. The airspace usually consists of a 5 nautical mile (nm) radius core surface area that extends from the surface up to 1,200 feet above the airport elevation and a 10 nm radius shelf area that extends from 1,200 feet up to 4,000 feet above the airport elevation.
- **Class D Airspace**: Airspace from the surface up to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports with an operational control tower.
- **Class E Airspace**: Generally, controlled airspace that is not Class A, Class B, Class C or Class D.
- **Class G Airspace**: Generally, uncontrolled airspace that is not designated Class A, Class B, Class C, Class D or Class E.
- **Victor Airways:** These airways are low altitude flight paths between ground based VHF Omnidirectional Receivers (VORs).

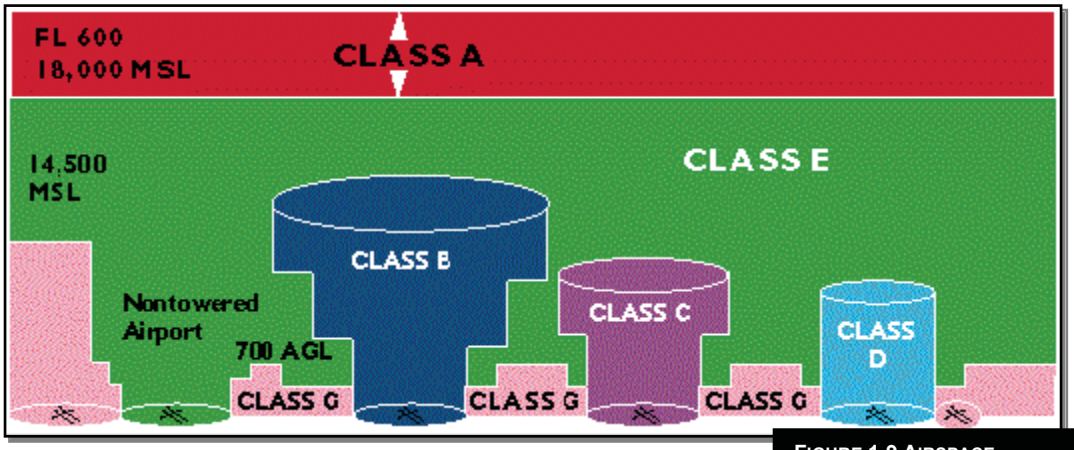


FIGURE 1-9 AIRSPACE

Figure 1-10 provides a graphical depiction of the airspace surrounding the Whiteriver Airport. The airport is situated under Class E airspace starting at 700 feet above the surface. Between the surface and 700 feet, the airspace is considered Class G.

The traffic patterns to the Whiteriver Airport include a standard left hand pattern to Runway 19 and a nonstandard right hand pattern to Runway 1. There are no noise abatement procedures currently in place at the airport.

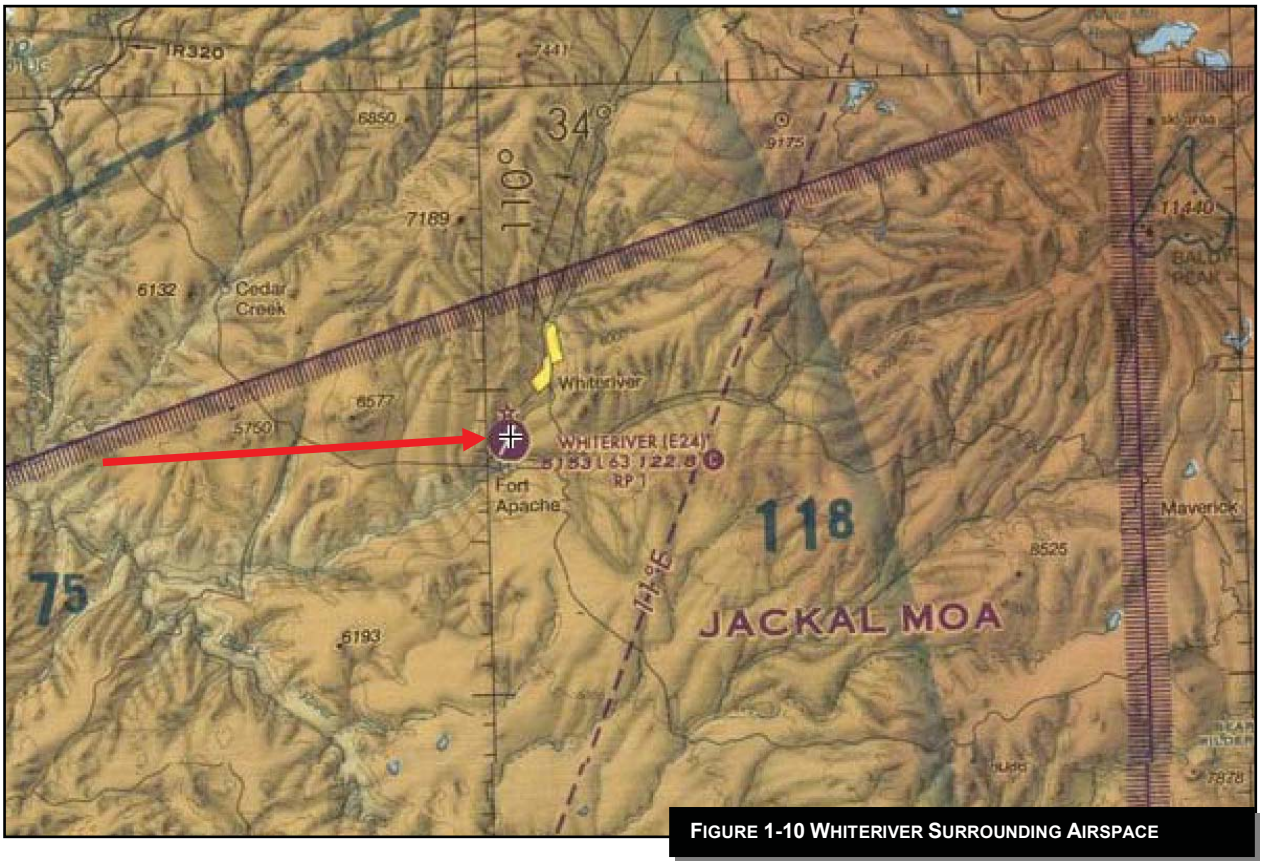


FIGURE 1-10 WHITERIVER SURROUNDING AIRSPACE

Source: 2008 Phoenix Sectional

AIRSPACE JURISDICTION

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

AIRSPACE RESTRICTIONS

The Whiteriver Airport is located north of a low-level military training route (MTRs), the Whiteriver Airport is also located within the Jackal Military Operations Area (MOA) (see Figure 1-10). MOAs and MTRs are established for the purpose of separating certain military training activities, which routinely necessitate acrobatic or abrupt flight maneuvers, from Instrument Flight Rules (IFR) traffic. IFR traffic can be cleared through an active MOA if IFR separation can be provided by Air Traffic Control (ATC), otherwise ATC will reroute or restrict the IFR traffic.

The Whiteriver Airport is located within the Jackal MOA which is in 0700-1800 Monday through Friday, 1800-2200 Monday through Friday by NOTAM and intermittent weekends by NOTAM. The controlling agency is Albuquerque Center. The altitude of use of the Jackal MOA is 11,000 feet Mean Sea Level (MSL) or 3,000 feet AGL whichever is higher.

In addition to the MOAs, an MTR also exists in the vicinity of Whiteriver. The MTR program is a joint venture by the FAA and the Department of Defense (DOD). MTRs are mutually developed for use by the military to conduct low-altitude, high-speed training. Military Training Route IR-276-320 is located approximately 13 nautical miles north of Whiteriver Airport. Increased vigilance is recommended for pilots operating in the vicinity of these training routes.

METEOROLOGICAL CONDITIONS

Meteorological conditions have a direct impact on the operational characteristics of an airport. These conditions determine the regulations under which operations may be conducted, the frequency of use for each operational configuration and the instrumentation required to assist aircraft in landing and departing.

LOCAL CLIMATOLOGICAL DATA

Whiteriver is located in southern Navajo County in an area that receives approximately 18 inches of precipitation annually. Average annual snowfall for the Whiteriver Area is 16.9 inches. The average maximum temperature of the hottest month, July, is 90.2 degrees Fahrenheit, while the average minimum temperature of the coldest month, January, is 21.4 degrees Fahrenheit. The annual average maximum temperature is 71.8 degrees Fahrenheit and the annual average minimum temperature is 38.1 degrees Fahrenheit.

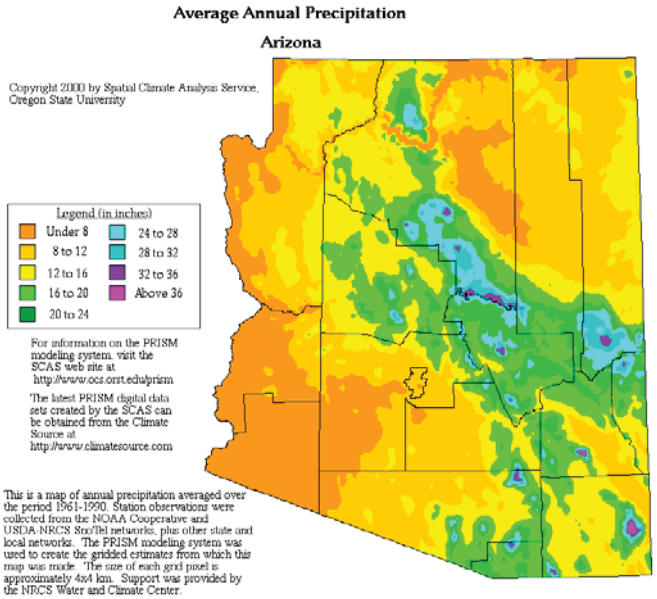


FIGURE 1-11 ARIZONA PRECIPITATION

Source: Spatial Climate Analysis Service, Oregon State University

CEILING AND VISIBILITY CONDITIONS

Ceiling and visibility conditions are important considerations since the occurrence of low ceiling and/or poor visibility conditions limit the use of the airport to instrument approach and departure operations until conditions change. Under poor visibility conditions or Instrument Meteorological Conditions (IMC), the pilot must operate under Instrument Flight Rules (IFR), rather than Visual Flight Rules (VFR). Under IFR, the pilot maneuvers the aircraft through sole reference to instruments in the aircraft and navigational aids on the ground. The airport must be closed for use when conditions are worse than the published IFR minimums for that airport. When flight conditions are visual or Visual Meteorological Conditions (VMC), the pilot can maneuver the aircraft by reference to the horizon and objects on the ground.

There is currently no existing instrument approach into the Whiteriver Airport.

RUNWAY WIND COVERAGE

Wind direction and speed determine the desired alignment and configuration of the runway system. Aircraft land and takeoff into the wind and therefore can tolerate only limited crosswind components (the percentage of wind perpendicular to the runway centerline). The ability to land and takeoff in crosswind conditions varies according to pilot proficiency and aircraft type.

FAA Advisory Circular 150/5300-13, Airport Design, recommends that a runway should yield 95 percent wind coverage under stipulated crosswind components. If one runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The crosswind component of wind direction and velocity is the resultant vector, which acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for each Airport Reference Code is shown in Table 1-10.

TABLE 1-10 CROSSWIND COMPONENT

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

A wind rose was developed for the Whiteriver Airport using hourly observations from the U.S. Forest Service remote weather observation system from January 1996 to December 1996. This wind rose is shown in Figure 1-12 and indicates 10.5-knot crosswind coverage of 99.74 percent and 13-knot crosswind coverage of 99.90 percent. Table 1-11 shows the crosswind coverage for each runway at 10.5 and 13 knots. There is currently no weather reporting station located at the Whiteriver Airport.

TABLE 1-11 CROSSWIND COVERAGE

	10.5 knots	13.0 knots
Runway 1/19	99.74%	99.90%

SOURCE: U.S. FOREST SERVICE REMOTE WEATHER OBSERVATION SYSTEM, JANUARY1996-DECEMBER 1996

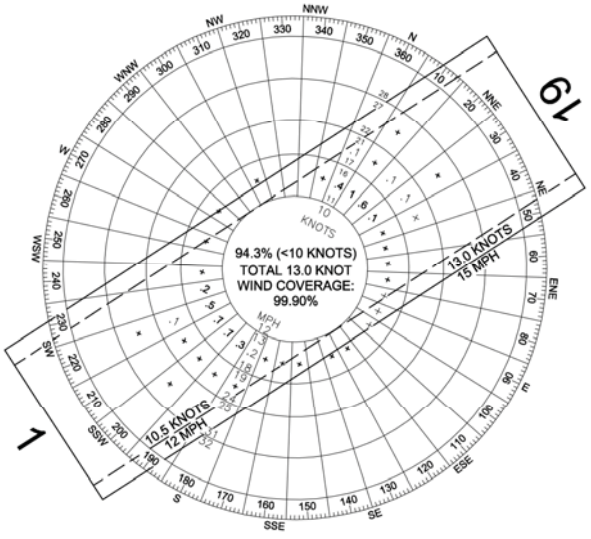


FIGURE 1-12 WHITERIVER WIND ROSE

ENVIRONMENTAL INVENTORY

INTRODUCTION

The purpose of the environmental inventory is to identify key environmental resources that maybe affected by potential airport development. The data compiled in this section will be used later in this study in evaluating potential airport development alternatives and to identify environmental related permits that may be required for recommended development projects.

AIR QUALITY

Air quality attainment maps were obtained from the October 2008 Arizona Department of Environmental Quality map of nonattainment areas. The project is located within an attainment area (See Figure 1-13). An attainment area is a zone within which the level of a pollutant is considered to meet National Ambient Air Quality Standards.

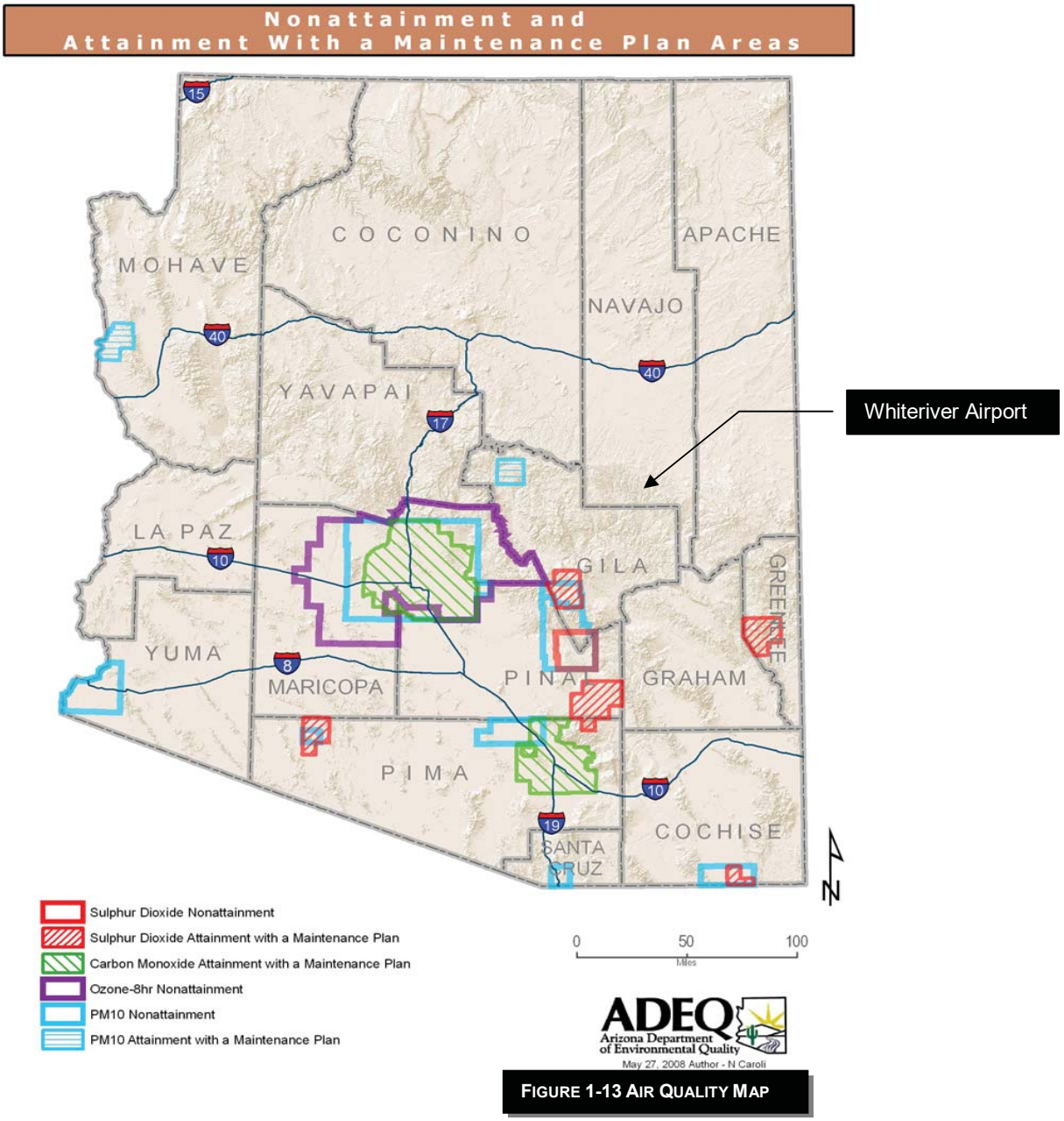


FIGURE 1-13 AIR QUALITY MAP

LAND USE COMPATIBILITY

The existing airport is located on approximately 112 acres of land. The surrounding land uses are considered compatible with the airport. The right-hand traffic pattern to Runway 1 avoids aircraft overflights of the residential area west of the airport.

DEPARTMENT OF TRANSPORTATION ACT

There are currently no public parks, recreation areas or wildlife and waterfowl refuge of National, State or Local significance surrounding the airport. The nearest wilderness area is the Bear Wallow Wilderness Area located approximately thirty nautical miles southeast of the airport.

FISH, WILDLIFE AND PLANTS

The U.S. Fish and Wildlife Service website was searched concerning the possibility of any impacts to any threatened and endangered species and candidate species that may occur within the airport environment. A list of federally threatened or endangered species was obtained for Navajo County. Future development projects should be evaluated to determine if any of the listed species occur or would be impacted by any future development.

The following species are currently listed for Navajo County but do not necessarily occur in the vicinity of Whiteriver Airport. An Environmental Assessment was conducted in 1996 which identified the potential for Loach minnow to occur within the White River. Therefore it is recommended that the airport protect against erosion and pollution from the airport. A Stormwater Pollution Prevention Plan (SWPPP) is being prepared as a part of this study.

Endangered
Black footed ferret, Mustela nigripes
Brown pelican, Pelecanus occidentalis
California condor, Gymnogyps californianus
Peebles Navajo cactus, Pediocactus peeblesianus
Southwestern willow flycatcher, Empidonax trailli

Threatened
Apache trout, Oncorhynchus apache
Chiricahua leopard frog, Rana chiricchuensis
Loach minnow, Tiaroga cobitis
Mexican spotted owl, Strix occidentailis lucida
Navajo sedge, Carex specuicola

Candidate
Yellow-billed cuckoo, Coccyzus americanus

Chapter One
Inventory

INTRODUCTION AND AIRPORT HISTORY

The Whiteriver Airport (E24) is a general aviation airport located in the southern potion of Navajo County on the Fort Apache Reservation in east central Arizona, approximately one mile southwest of the City of Whiteriver, Arizona on the east side of State Highway 73. The airport is approximately 100 nautical miles west northwest of Phoenix Arizona.

Whiteriver Airport is located at an elevation of 5,152 feet Mean Sea Level (MSL). The Whiteriver Airport lies within a valley with mountains surrounding in all quadrants. The land surrounding the airport is uneven with sloping surfaces. Adjacent to the airport to the east is the north fork of the White River. Terrain to the south of the airport drops sharply then levels out into cattle grazing pastures.

AIRPORT GRANT HISTORY

This Airport Master Plan replaces the 1998 Airport Master Plan and subsequent ALP revisions. A federal grant history for the capital improvements at the Whiteriver Airport is provided in Table 1-1. In Arizona, under the most recent FAA Airport Improvement Program legislation (Vision 100), capital improvement projects are typically funded at 95 percent Federal Aviation Administration (FAA) and 5 percent by the sponsor.

TABLE 1-1 GRANT HISTORY

FAA Grant No. & Year	Description of Work	Federal Amount
001-1996	Conduct Airport Master Plan Study	$50,000
002-1998	Construct Taxiway	$576,892
003-1999	Improve Runway Safety Area – 1/19	$1,035,000
004-2000	Rehabilitate Runway	$2,232,500
	Extend Taxiway	$447,000
	Grant total	$2,679,500
005-2001	Install Perimeter Fencing	$132,251
006-2003	Construct Heliport/Helipad	$265,001
007-2004	Construct Heliport/Helipad	$172,500
008-2005	Construct Heliport/Helipad [Phase III]	$648,777
009-2006	Construct Snow Removal Equipment Storage Building	$342,722
	TOTAL FAA AMOUNTS	**$5,902,643**

(SOURCE: FAA 2007)

The Arizona Department of Transportation Aeronautics Division provides grants to eligible airports in the state to assist with matching funds and other airport projects; however, current State Legislation prohibits State grant funding of airports on Native American reservation. New Legislation has been proposed to eliminate this restriction. If successful an additional 2.5 percent grant funding would be available from the State toward FAA funded projects and 90 percent grant funding toward State only projects.

SERVICE LEVEL

The airport service level reflects the type of public use the airport provides to the community. The service level also reflects the funding categories established by Congress to assist in airport development. The following list identifies the different types of airport service levels:

- **Commercial service** airports are public airports that enplane 2,500 or more passengers annually and receive aircraft offering scheduled passenger service. Commercial service airports are either:

  Primary- an airport that enplanes more than 10,000 passengers annually; or

  Nonprimary- an airport that enplanes between 2,500 and 10,000 passengers annually.

- **General Aviation Airports** while not specifically defined are considered to be airports not classified as commercial service. General aviation airports include:

  Reliever- an airport designated by the FAA as having the function of relieving congestion at a commercial service airport and providing more general aviation access to the overall community. Privately owned airports may be identified as reliever airports.

  Privately owned public-use- airports that enplane 2,500 or more passengers annually and receive scheduled passenger service are also classified as general aviation because they do not meet the criteria for commercial service.

  Other General Aviation- are airports that are largely intended to serve the needs of general aviation users (users who conduct non-military operations not involving the carriage of passengers or cargo for hire or compensation.)

Whiteriver Airport is listed in the NPIAS as a general aviation airport.

AIRPORT ROLE

The Whiteriver Airport provides access to the Fort Apache Reservation area for a variety of users. The geographic location of the Whiteriver Airport near the community of Whiteriver allows easy access to users throughout the entire area.

The Whiteriver Airport is currently an Airport Reference Code (ARC) B-II airport serving predominately single engine piston, multi-engine piston, turboprop aircraft and helicopters with some use by light turbojet aircraft. Users include:

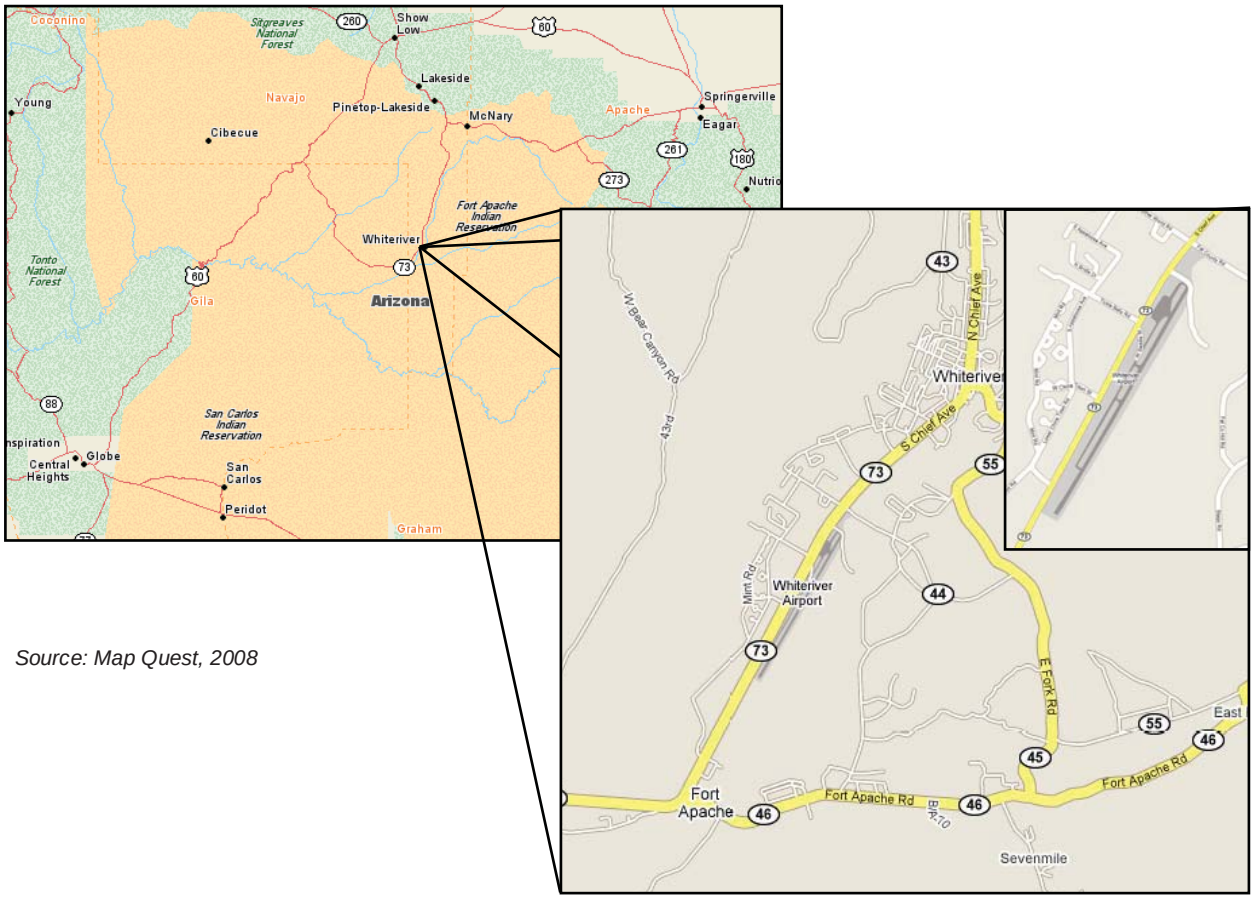
Air Medivac Services: Indian Health Services (IHS) conducts air medivac operations for emergency medical transport in life threatening situations and patient transfers from clinics to higher level care facilities throughout the Fort Apache Reservation area. These users utilize a variety of multi-engine turboprop and turbojet aircraft.

Business/Recreational Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal and business transportation varies with individual preference and resources and generally include a mix of single-engine, multi-engine and turbojet aircraft.

Wildfire Management: The Bureau of Indian Affairs (BIA) utilizes the airport for wildfire control and suppression. The number of these operations varies greatly depending on the fire season in the area. The type of aircraft predominately used for aerial fire fighting are single engine air tankers (SEATs) and helicopters.

AIRPORT LOCATION

The Whiteriver Airport is located in the east central portion of Arizona in Navajo County. Figure 1-1 provides a graphic depiction of the location of the Whiteriver Airport. The airport is designated by the FAA as Site Number 00823.*A and is a public use airport. The airport is located at Latitude 33° 48' 38.19" North and Longitude 109 ° 59' 08.68" West according to survey data collected by Absolute Surveying and Mapping Inc. in 2004. The airport is at an elevation of 5,152 feet MSL and is currently a B-II ARC.



Source: Map Quest, 2008

FIGURE 1-1 LOCATION MAP

AIRPORT PROPERTY

The existing airport property line encompasses approximately 112 acres according to the airport deeds. The airport property is located within a portion of Sections 23 and 26, Township 5 North, Range 22 East of the Gila and Salt River Base Meridian.

LAND USE PLANNING

The FAA recommends that airport sponsors protect the areas surrounding an airport from incompatible development. Incompatible development includes those land uses which would be sensitive to aircraft noise or over flight, such as residences, schools, churches and hospitals and those uses which could attract wildlife and cause a hazard to aircraft operations such as landfills, ponds and wastewater treatment facilities. There are no existing incompatible land uses currently surrounding the airport A recommended Compatible Land Use and Height Restriction Plan is included as part of this Master Plan. The land uses surrounding the airport include industrial and commercial development.

REGIONAL SETTING

Whiteriver Airport is located within the Fort Apache Indian Reservation, home of the White Mountain Apache Tribe, in east central Arizona. The Reservation is approximately 75 miles long and 45 miles wide and encompasses more than 1.6 million acres in portions of Navajo, Apache and Gila Counties. The Whiteriver Airport is located in the southern portion of Navajo County one mile southwest of the City of Whiteriver. The airport is situated at an elevation of 5,152 feet MSL in a valley amongst mountains with top elevation of up to 8,240 feet MSL.

The Reservation has a wide range of topography and climate. The southwestern desert foothills with an elevation of 2,700 feet MSL in the Salt River Canyon, contrast sharply with the mountainous, forested northeastern portions of the Reservation where elevations exceed 11,000 feet MSL in the Mt. Baldy area.

Whiteriver is the largest population center of the Reservation and the seat of the Tribal Government. Whiteriver is located 35 miles south of Show Low, 95 miles northeast of Globe and 190 miles northeast of Phoenix. Figure 1-2 shows the regional setting for Whiteriver.

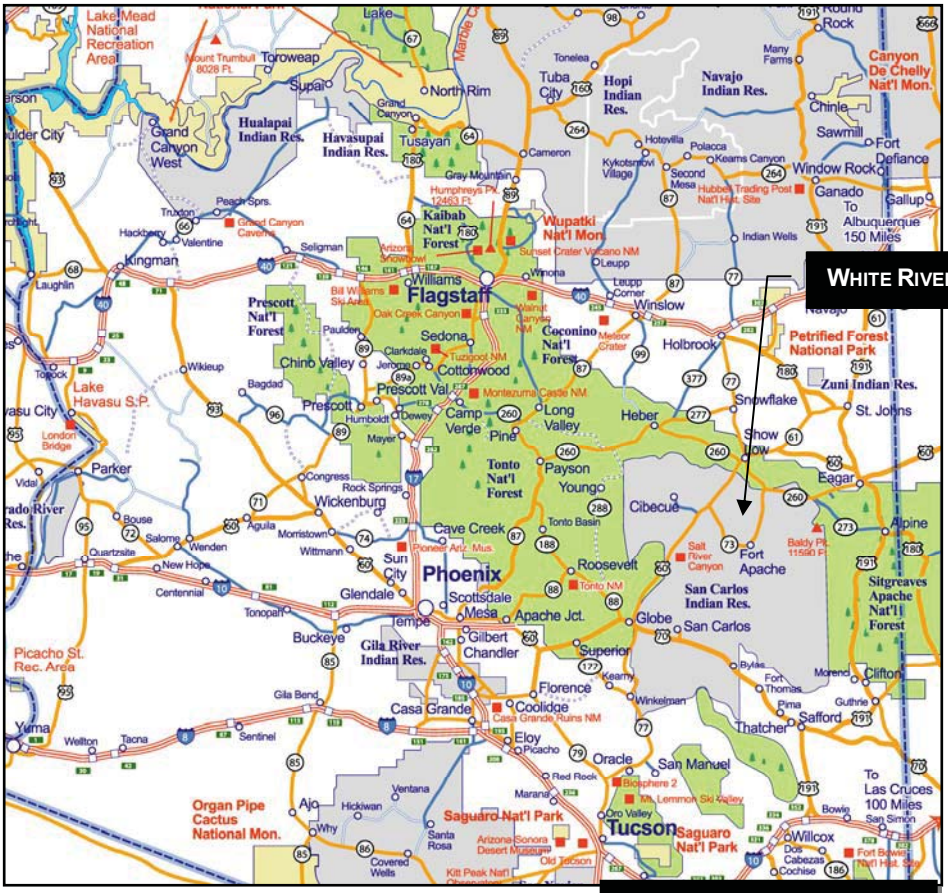


FIGURE 1-2 REGIONAL SETTING

SOCIOECONOMIC CHARACTERISTICS

Examining the specific socioeconomic characteristics of the Fort Apache Reservation will help determine the factors influencing aviation activity in the area and the extent to which aviation facility developments are needed at the Whiteriver Airport. Characteristics, such as employment, demographic patterns and income, will help in establishing the potential growth rate of aviation within the city and the county. In other words, by analyzing the information in this Chapter, forecasts of aviation activity can be developed. Those forecasts are provided in Chapter 2.

LOCAL PROFILE

Fort Apache Reservation is home to an assortment of enterprises including the Fort Apache Timber Company which provides a number of jobs in the local area. Sunrise Park Resort is a well known ski destination. The Hon-Dah Casino is also located near the ski resort to provide entertainment and jobs to the area. The Tribal lands contain a vast array of outdoor activities including hunting, fishing, camping, boating and hiking.

POPULATION

As of the 2000 US Census, there were 12,429 people residing in the Fort Apache Reservation, and 97,470 residing in Navajo County. According to population estimates from the Arizona Department of Economic Security and the U.S. Census Bureau, these populations increased

moderately from 2000 to 2007. Navajo County population increased to 113,470 residents in 2007. Table 1-2 shows this increasing population trend.

TABLE 1-2 POPULATION

	1990	2000	2007
Whiteriver	3,775	5,220	N/A
Fort Apache	10,394	12,429	N/A
Navajo County	77,658	97,470	113,470
Arizona	3,665,228	5,130,632	6,305,210

Sources: US Census Bureau (October 2008)

The Arizona Department of Economic Security, Research Administration, Population Statistics Unit developed population projections for all Arizona communities, counties and the state in 2006. Population projections as shown in Table 1-3, indicate a 57 percent population increase for the State of Arizona from 2004 to 2025. The population of Navajo County is projected to increase to 160,594 by 2027 or a 41 percent increase from the current population.

TABLE 1-3 POPULATION PROJECTIONS

	2012	2017	2022	2027
Whiteriver	6,661	7,227	7,734	8,173
Fort Apache	13,077	14,073	14,962	15,734
Navajo County	128,275	140,385	151,207	160,594
Arizona	7,370,993	8,268,253	9,109,289	9,898,153

Source: Arizona Department of Economic Security, Research Administration Population Statistics Unit (2006)

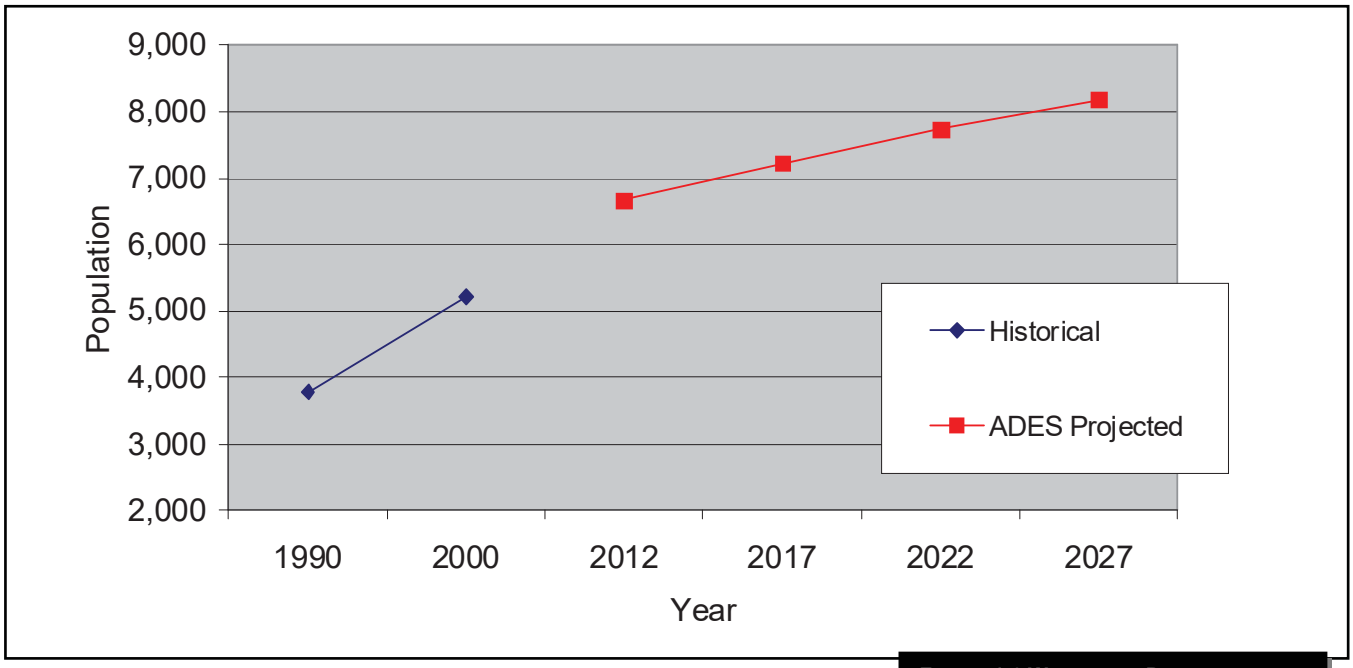


FIGURE 1-3 WHITERIVER POPULATION

EMPLOYMENT

The largest employer on the Fort Apache Reservation is government according to the Arizona Department of Economic Security. The second largest employment sector in the County is trade, transportation and utilities. Education and health services are the third largest employment sector in the County followed by mining and construction.

According to the Arizona Department of Economic Security, the unemployment rate on the Apache Reservation was 20.7 percent in 2000 and 12.6 percent in 2007. While the unemployment rate has decreased for the community, the civilian labor force has decreased from 4,333 in 2000 to 3,788 in 2007. Employment distribution by industry for Whiteriver is shown in Table 1-4 and Figure 1-4.

TABLE 1-4 WHITERIVER EMPLOYMENT DISTRIBUTION

	Whiteriver	% of Total
Agriculture, forestry, fishing, hunting and mining	99	7.9
Construction	102	8.2
Manufacturing	114	9.2
Wholesale trade	5	0.4
Retail trade	111	8.9
Transportation, warehousing and utilities	27	2.2
Information	-	-
Finance, insurance, real estate, rental and leasing	28	2.3
Professional, scientific, management, administrative and waste management services	9	0.7
Educational, health and social services	364	29.3
Arts, entertainment, recreation, accommodation and food services	198	15.9
Other services (including public administration)	187	15.0
Total	1,244	100%

Source: U.S. Bureau of the Census, Census 2000

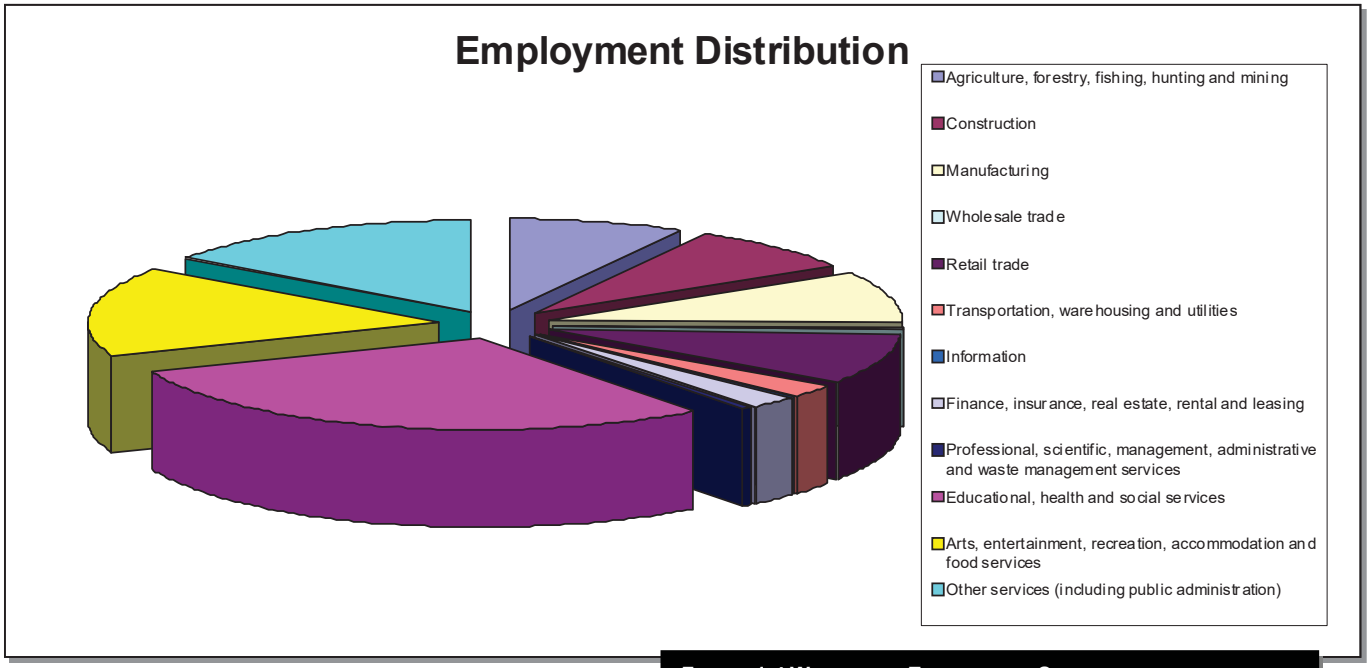


FIGURE 1-4 WHITERIVER EMPLOYMENT SECTORS

INCOME

According to the 2004 US Census, the median income for a household in Navajo County was $31,554. The median household income for Whiteriver was $17,415. The per capita income in 1999 was $11,609 for the County, $5,719 for Whiteriver. The percentage of families living below the poverty line was 23.7 percent for the County, 46.9 percent for Whiteriver.

CERTIFICATED PILOTS AND REGISTERED AIRCRAFT

The FAA databases of certificated airmen and registered aircraft were reviewed to determine the current distribution of pilots and registered aircraft in the Whiteriver area. This data indicates that there is one certificated pilot and no registered aircraft in Whiteriver, Arizona. Aircraft are not always based where they are registered.

TABLE 1-5 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT NEAR WHITERIVER

	Aircraft Registered	Certificated Pilots
Whiteriver	0	1

SOURCE: FAA, 2008

BASED AIRCRAFT AND OPERATIONS

According to the 1998 Airport Master Plan, in 1996 there were 3 based aircraft at the Whiteriver Airport with an annual operations estimate of 2,260. That master plan forecasted based aircraft and operations to increase annually from these baseline numbers. The planning advisory committee indicated that there are still 3 based fire fighting aircraft at the airport. After reviewing the GCR data showing the number of instrument flight plans filed into and out of Whiteriver indicated 19 instrument flights in 2006. However this only indicates operations that were filed under instrument flight plans.

INVENTORY OF EXISTING AIRPORT FACILITIES

AREA AIRPORT/SERVICE AREA

An airport service area is defined by the communities and surrounding areas served by the airport facility. For example, factors such as the airport's surrounding topographical features (mountains, rivers, etc.), proximity to its users, quality of ground access, required driving time to the airport and the proximity of the facility to other airports that offer the same or similar services can all affect the size of a particular airport's service area. To define the service area for the Whiteriver Airport, the airports in the area and their specific services and facilities were reviewed.

The nearest public airport with a paved surface is located approximately 27 nautical miles north in Show Low, Arizona. Runway 6/24 at Show Low Regional Airport is 7,200 feet long and 100 feet wide and Runway 3/21 at Show Low Regional Airport is 3,937 feet long and 60 feet wide. Springerville Municipal Airport is located approximately 39 nautical miles northeast of Whiteriver. Taylor Municipal Airport in Taylor, Arizona is located approximately 39 nautical miles north of Whiteriver. The primary service area includes the area within (20 miles-30 minute drive) of the Whiteriver Airport.

The secondary service area is the area within 20 miles/30-minute drive time of Whiteriver. Users within this area may choose Whiteriver over other airports if there are economic or other advantages at Whiteriver Airport such as lower lease rates, less expensive fuel or hangar availability.

FIGURE 1-5 WHITERIVER AIRPORT SERVICE AREA

SOURCE: MAP QUEST, 2006

TABLE 1-6 AIRPORTS SURROUNDING WHITERIVER

	Identifier	Distance (Nautical Miles)	Distance (Highway Miles)	NPIAS Status	Runway Length(s) Width(s)	Pavement Type	Instrument Approaches	Fuel
Show Low Regional Airport, Show Low, AZ	SOW	27 N	34	OCS	7,200'x100' 3,937'x60'	asphalt	GPS/NDB	Yes
Springerville Municipal Airport, Springerville, AZ	D68	39 NE	59	GA	8,427'x75' 4,600'x60'	asphalt	GPS	Yes
Taylor Municipal Airport, Taylor, AZ	TYL	39 N	50	GA	7,000'x75'	asphalt	GPS	Yes
San Carlos Apache Airport, San Carlos, AZ	P13	44 SW	111	GA	6,500'x100'	asphalt	GPS	No
St. Johns Industrial Air Park, St. Johns, AZ	SJN	52 NE	88	GA	5,322'x75	asphalt	None	Yes

OCS: Other Commercial Service
GA: General Aviation
PVT: Private, not included in NPIAS
SOURCE: AIRNAV, 2008

AIRSIDE FACILITIES

The airside facilities of an airport are described as the runway configuration, the associated taxiway system, the ramp and aircraft parking area and any visual or electronic approach navigational aids. Figure 1-6 depicts the existing airside facilities at the Whiteriver Airport while Figure 1-7 shows the existing landside facilities at the airport. An overview of the Whiteriver Airport facilities is provided in Table 1-7.

FIGURE 1-6 EXISTING AIRSIDE FACILITIES

FIGURE 1-7 EXISTING LANDSIDE FACILITIES

TABLE 1-7 WHITERIVER AIRPORT INVENTORY		
Airport Data		
Identifier	E24	
FAA Site Number	00823.*A	
NPIAS Number		
Airport Reference Code	B-II	
Owner/Sponsor	White Mountain Apache Tribe	
Airport Elevation	5,152’	
Facilities		
Runway 1/19	Length: 6,350’ Width: 75’ Surface: Asphalt Marking: Nonprecision	
Runway Lighting	MIRL dusk-dawn	
Navigational Aids	None	
Approach Minimums	Visual	
Visual Aids Runway 1/19	PAPI-2 RW 1, REILs both ends, Beacon, Lighted wind cone segmented circle, traffic pattern indicators	
Taxiway A	Full Length Parallel to Runway 1/19	
Taxiway Lighting	Exists only (MITL) Remaining (Retroreflectors)	
Aircraft Apron	14,130 SY	
Tie Downs	17	
Pavement Strength	75,000 SWG lbs. 100,000 DWG lbs. 155,000 DTG lbs.	
Landside Facilities	1 Snow Removal Equipment Building	Good
Automobile Parking	10 paved, 10 gravel	
Perimeter Fencing	4-Strand barbed wire and 5-foot chain link fence surrounding the landside area, 1 manual access gate and 1 electronic access gate	
Fuel	None	
Weather Equipment	None	
FBO	None	
Utilities	Power, Water, Sewer and Telephone	

RUNWAY

Whiteriver Airport currently has a single-runway configuration. Runway 1/19 is constructed of asphalt and is 6,350 feet long and 75 feet wide with a published runway strength of 75,000 pounds Single Wheel Gear (SWG), 100,000 pounds Dual Wheel Gear and 155,000 Dual Tandem Wheel Gear (DTG). The pavement is in good condition with nonprecision markings that are in good condition. Runway 19 has a 250 feet displaced threshold to provide a full runway safety area. This provides a full 6,350 feet of take off distance for runway 19 but reduces the Runway 19 landing distance to 6,100 feet and Runway 1 take off and landing distance to 6,100 feet.

TAXIWAY

Taxiways provide a surface for aircraft access from the parking apron to and from the runways. They expedite aircraft departures from the runway and increase operational safety and efficiency. The Whiteriver Airport has a full length parallel taxiway (Taxiway A). Taxiway A is

constructed to 75,000 pounds SWG, 100,000 pounds DWG and 155,000 pounds DTG. Taxiway A is 6,350 feet long and 35 feet wide.

AIRCRAFT APRON

The aircraft apron provides an area for aircraft to park. The apron is typically connected to the runway via taxiways or taxilanes. The aircraft-parking apron at Whiteriver Airport has approximately 14,130 square yards (SY) of area and contains approximately 17 aircraft tiedowns with Group II taxilanes.

FIGURE 1-8 AIRCRAFT APRON

AIRFIELD LIGHTING, SIGNAGE AND VISUAL AIDS

Guidance on airport lighting standards is provided in FAA Advisory Circular (AC) 150/5340-30C, Design and Installation Details for Airport Visual Aids. Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground.

Several common airfield lighting and visual aid features of general aviation airports include a rotating beacon (activated by photoelectric cell for dusk to dawn operations), pilot-controlled Medium Intensity Runway Lights (MIRLs) (activated by aircraft radio signal), threshold lights, Runway End Identifier Lights (REILs) which mark the runway threshold with flashing strobe lights and Precision Approach Path Indicators (PAPIs) to provide descent guidance information during an approach to the runway.

Airfield lighting and visual aids at Whiteriver Airport consists of Medium Intensity Runway Lights (MIRL's) which are on from dusk to dawn. The runway lights have white colored lenses. The airport also has a segmented circle and lighted wind cone. Taxiway A is marked with reflectors. The airport also has lighted runway signs showing runway and taxiway locations. PAPIs are installed on Runway 1 only due to terrain obstruction to the PAPI siting criteria on Runway 19. Both runway ends are equipped with

NAVIGATIONAL AIDS AND APPROACH PROCEDURES

There are currently no published instrument approach procedures to the Whiteriver Airport. Services include Albuquerque Air Route Traffic Control Center (ARTCC) and Prescott Flight Service Station (FSS). Enroute and radar coverage for the Whiteriver area is provided by the Albuquerque ARTCC. The altitude of radar coverage may vary as a result of the FAA navigational/radar facilities in operation, weather conditions and terrain which surround Whiteriver. The Prescott FSS provides additional weather data and other pertinent weather information to pilots on the ground and enroute. There is no air traffic control tower (ATCT) at the airport.

A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. NAVAIDs include Very High Omnidirectional Range (VORs), Very High Frequency Omnidirectional Range with Tactical Information (VOR-TACs),

Nondirectional Beacons (NDBs) and Tactical Air Navigational Aids (TACANs), as examples. There are currently no NAVAIDs at the Whiteriver Airport.

AIRPORT SERVICES/FIXED BASE OPERATIONS

A Fixed Base Operator (FBO) is usually a private enterprise that leases land from the airport sponsor on which to provide services to based and transient aircraft. The extent of the services provided varies from airport to airport; however, these services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge and flight planning facilities and aircraft tiedown and/or hangar storage. There is currently no FBO at the Whiteriver airport and no services are available.

LANDSIDE FACILITIES

BUILDING AREA

The building area of a typical general aviation airport usually consists of FBO offices and/or hangars, a pilot lounge, terminal building, eating facility, additional aircraft hangars, a maintenance building and other related structures. Existing buildings at the Whiteriver Airport include one building which is a snow removal equipment building. The remaining buildings in the northwest corner of the airport are either BIA-owned facilities or Tribal-owned facilities leased to the BIA forestry department.

UTILITIES

Available utilities at the Whiteriver Airport include power, water, phone and sewer. Electricity is provided by Navopache Electric Coop, telephone services are provided by GTE West and Whitewater Regional provides sewer and water services.

GROUND ACCESS AND SIGNAGE

The Whiteriver Airport can be reached by following State Highway 73 south from Whiteriver. The signage to the airport currently consists of one airport sign at the entrance to the airport. Access to the Whiteriver Airport is provided via an airport access road, a paved two lane road which enters from the west side of the airport.

INTERMODAL TRANSPORTATION

The ground transportation network in the vicinity of the Whiteriver Airport consists of private automobile transportation only. There is no bus or rail service to Whiteriver. The nearest bus and rail service is located 114 miles northwest in Winslow, Arizona.

AIRCRAFT FUEL FACILITIES

A Fixed Base Operator (FBO) or the airport sponsor often provides aircraft fuel services. Combinations of 100LL and 80 Octane Aviation Gas and/or Jet-A fuel are usually provided depending on the aircraft traffic mix. These fuels may be stored in underground storage tanks, above ground storage tanks, fuel trucks or a combination of the three. The Whiteriver Airport currently has no existing fuel or FBO facilities available.

AIRPORT FENCING AND SECURITY

The primary purpose of airport fencing is to prevent unwanted intrusions by persons or animals on to airport property. Airport fencing provides increased safety and security for the airport. It is normally installed along the perimeter of the airport property and outside any of the safety areas defined by the Federal Aviation Administration (FAA) in Advisory Circular (AC) 150/5300-13, Airport Design and Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace. The airport is currently fenced with 4-strand barbed wire fence along the perimeter.

The terminal area is fenced with chain link fencing and has one electronic vehicle access gate and one manual access gate.

EMERGENCY SERVICES

Emergency fire, rescue and medical services are available from the White Mountain Apache Tribe Fire and Rescue. The closest hospital is Whiteriver Service Unit located in Whiteriver, Arizona. The hospital is a 50-bed facility with 22 physicians on staff. The White Mountain Apache Tribe EMS provides ambulance service to the area.

TABLE 1-8 WHITERIVER EMERGENCY SERVICES

DISTANCE FROM AIRPORT: 1 MILE	**RESPONSE TIME:** 5 MINUTES
PERSONNEL	
25 FIRE FIGHTERS	35 - EMTS
50 EMS	13 - PARAMEDICS
EQUIPMENT	
1 RESCUE/BRUSH TRUCK	
2 FIRE ENGINES	COMPRESSED AIR FOAM (CAF) CAPABLE
1 TECHNICAL RESCUE TRUCK	
3 COMMAND UNITS	
1 ENGINE WATER TENDER	3,000 GALLONS
3 AMBULANCES	

Source: White Mountain Apache Fire and Rescue, and White Mountain Apache Tribe EMS 2008

ADDITIONAL FACILITIES

There is not currently any Airport Rescue and Fire Fighting (ARFF) equipment or personnel based at the Whiteriver Airport. There are also no designated security personnel at the airport.

FAA SAFETY AND DESIGN STANDARDS

FAA AC 150/5300-13, Airport Design, establishes design standards for airports based on the Airport Reference Code (ARC) of the airport. When design standard deficiencies exist, the FAA recommends correction of such deficiencies as soon as practicable. Design standards are based on the Airport Reference Code (ARC) and approach visibility minimums of the airport. The ARC is a combination of the tail height, wingspan and approach speed of the critical aircraft operating at the airport. The current ARC for the Whiteriver Airport is B-II. A more detailed discussion of ARCs is included in Chapter 3.

SAFETY AREAS

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

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

The runway safety areas off the ends of Runway 1/19 at Whiteriver are in good condition.

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

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

THRESHOLD SITING SURFACE

According to FAA AC 150/5300-13, the runway threshold should be located at the beginning of the full-strength runway pavement or runway surface. However, displacement of the threshold may be required when an object obstructs the airspace required for landing airplanes and is beyond the airport owner's power to remove, relocate or lower. Thresholds may also be displaced for environmental considerations such as noise abatement or to provide the standard RSA and ROFA lengths.

Based on the visual approach and size of aircraft using the Whiteriver Airport, in order to meet FAA design standards, no object should penetrate a surface that starts at the threshold of Runway 1/19 at the elevation of the runway centerline at the threshold and slopes upward from the threshold at a slope of 20 feet (horizontal) to 1 foot (vertical). In the plan view, the centerline of this surface extends 2,250 feet along the extended runway centerline. This surface extends laterally 125 feet on each side of the centerline at the threshold and increases in width to 350 feet at a point 2,250 feet from the threshold.

RUNWAY PROTECTION ZONE (RPZ)

According to FAA AC 150/5300-13, the RPZ is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end. At both ends of Runway 1/19 the RPZ begins 200 feet from the runway threshold and extends for 1,000 feet. The RPZ is 500 feet wide at the inner end and 700 feet wide at the outer end. The land uses not recommended within the RPZ are residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers and other uses with similar concentrations of persons typify places of public assembly).

TABLE 1-9 DESIGN STANDARDS

	RW 1/19
Description	B-II
RW Centerline to parallel TW centerline	240’
RW Centerline to aircraft parking apron	250’ (310’ actual)
RW Width	75’
RW Safety Area width	150’
RW Safety Area length beyond Rwy end	300’
RW Object Free Area width	500’
RW Object Free Area beyond Rwy end	300’
RW Obstacle Free Zone width	400’
RW Obstacle Free Zone length beyond Rwy end	200’
RW Protection Zone	1,000’ x 500’ x 700’
TW Width	35’
TW Safety Area width	79’
TW Object Free Area width	131’
RW Centerline to aircraft hold lines	200’

FAA ADVISORY CIRCULAR 150/5300-13 CHANGE 13

AIRSPACE CHARACTERISTICS

The National Airspace System consists of various classifications of airspace that are regulated by the FAA. Airspace is either controlled or uncontrolled. Pilots flying in controlled airspace are subject to Air Traffic Control (ATC) and must follow either Visual Flight Rule (VFR) or Instrument Flight Rule (IFR) requirements. These requirements include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace and are described in Federal Aviation Regulations (FAR) Part 71, Designation of Class A, Class B, Class C, Class D and Class E Airspace Areas; Airways; Routes; and Reporting Points and FAR Part 91, General Operating and Flight Rules. Figure 1-9 below shows the different airspace classes and gives a graphical representation of them.

General definitions of the Classes of airspace are provided below:

- **Class A Airspace**: Airspace from 18,000 feet Mean Sea Level (MSL) up to and including Flight Level (FL) 600.
- **Class B Airspace**: Airspace from the surface to 10,000 feet MSL surrounding the nation’s busiest airports in terms of IFR operations or passenger enplanements.
- **Class C Airspace**: Generally, airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control and that have a certain number of IFR operations or passenger enplanements. The airspace usually consists of a 5 nautical mile (nm) radius core surface area that extends from the surface up to 1,200 feet above the airport elevation and a 10 nm radius shelf area that extends from 1,200 feet up to 4,000 feet above the airport elevation.
- **Class D Airspace**: Airspace from the surface up to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports with an operational control tower.
- **Class E Airspace**: Generally, controlled airspace that is not Class A, Class B, Class C or Class D.
- **Class G Airspace**: Generally, uncontrolled airspace that is not designated Class A, Class B, Class C, Class D or Class E.
- **Victor Airways:** These airways are low altitude flight paths between ground based VHF Omnidirectional Receivers (VORs).

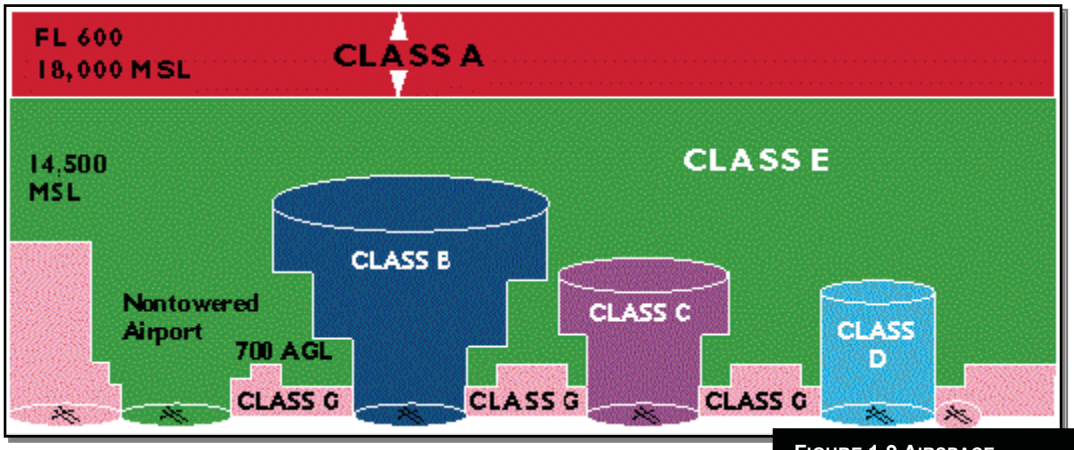


FIGURE 1-9 AIRSPACE

Figure 1-10 provides a graphical depiction of the airspace surrounding the Whiteriver Airport. The airport is situated under Class E airspace starting at 700 feet above the surface. Between the surface and 700 feet, the airspace is considered Class G.

The traffic patterns to the Whiteriver Airport include a standard left hand pattern to Runway 19 and a nonstandard right hand pattern to Runway 1. There are no noise abatement procedures currently in place at the airport.

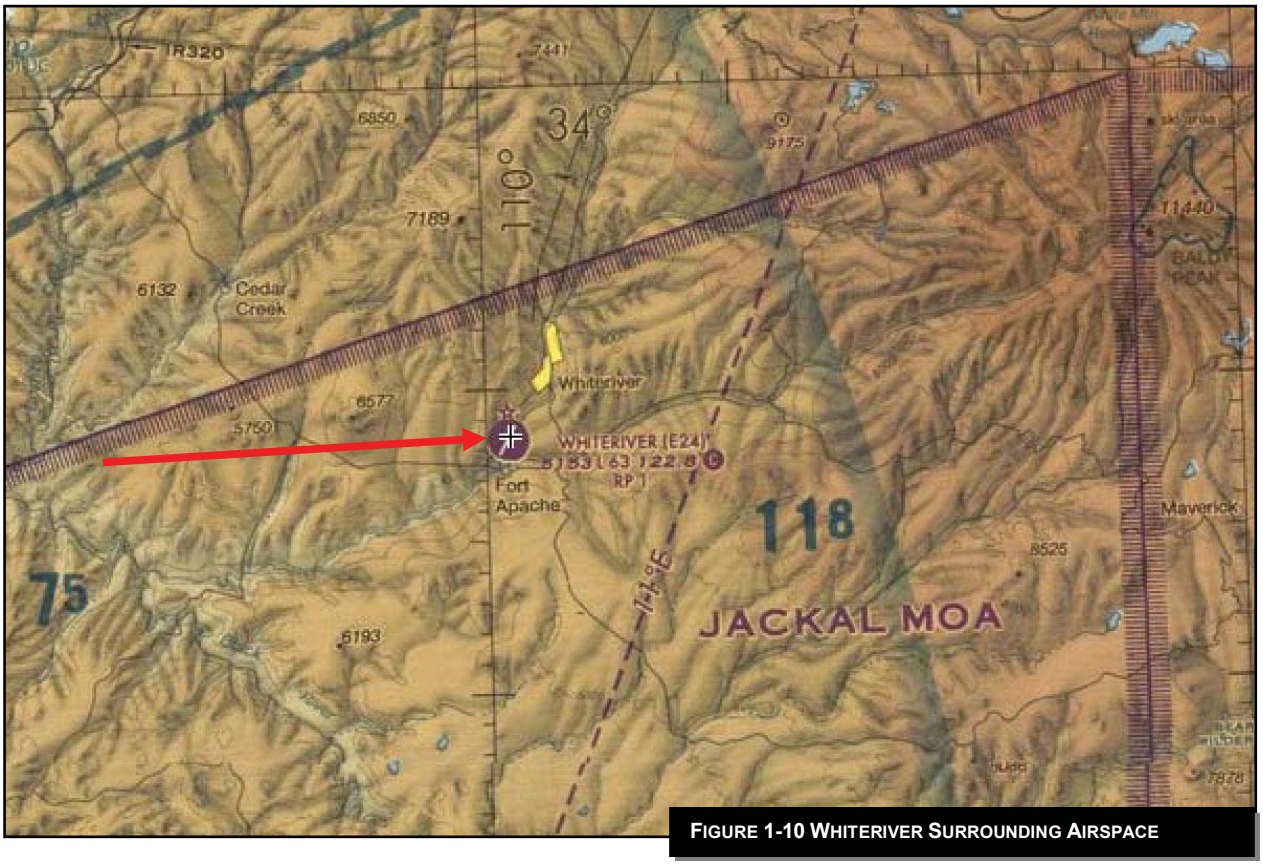


FIGURE 1-10 WHITERIVER SURROUNDING AIRSPACE

Source: 2008 Phoenix Sectional

AIRSPACE JURISDICTION

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

AIRSPACE RESTRICTIONS

The Whiteriver Airport is located north of a low-level military training route (MTRs), the Whiteriver Airport is also located within the Jackal Military Operations Area (MOA) (see Figure 1-10). MOAs and MTRs are established for the purpose of separating certain military training activities, which routinely necessitate acrobatic or abrupt flight maneuvers, from Instrument Flight Rules (IFR) traffic. IFR traffic can be cleared through an active MOA if IFR separation can be provided by Air Traffic Control (ATC), otherwise ATC will reroute or restrict the IFR traffic.

The Whiteriver Airport is located within the Jackal MOA which is in 0700-1800 Monday through Friday, 1800-2200 Monday through Friday by NOTAM and intermittent weekends by NOTAM. The controlling agency is Albuquerque Center. The altitude of use of the Jackal MOA is 11,000 feet Mean Sea Level (MSL) or 3,000 feet AGL whichever is higher.

In addition to the MOAs, an MTR also exists in the vicinity of Whiteriver. The MTR program is a joint venture by the FAA and the Department of Defense (DOD). MTRs are mutually developed for use by the military to conduct low-altitude, high-speed training. Military Training Route IR-276-320 is located approximately 13 nautical miles north of Whiteriver Airport. Increased vigilance is recommended for pilots operating in the vicinity of these training routes.

METEOROLOGICAL CONDITIONS

Meteorological conditions have a direct impact on the operational characteristics of an airport. These conditions determine the regulations under which operations may be conducted, the frequency of use for each operational configuration and the instrumentation required to assist aircraft in landing and departing.

LOCAL CLIMATOLOGICAL DATA

Whiteriver is located in southern Navajo County in an area that receives approximately 18 inches of precipitation annually. Average annual snowfall for the Whiteriver Area is 16.9 inches. The average maximum temperature of the hottest month, July, is 90.2 degrees Fahrenheit, while the average minimum temperature of the coldest month, January, is 21.4 degrees Fahrenheit. The annual average maximum temperature is 71.8 degrees Fahrenheit and the annual average minimum temperature is 38.1 degrees Fahrenheit.

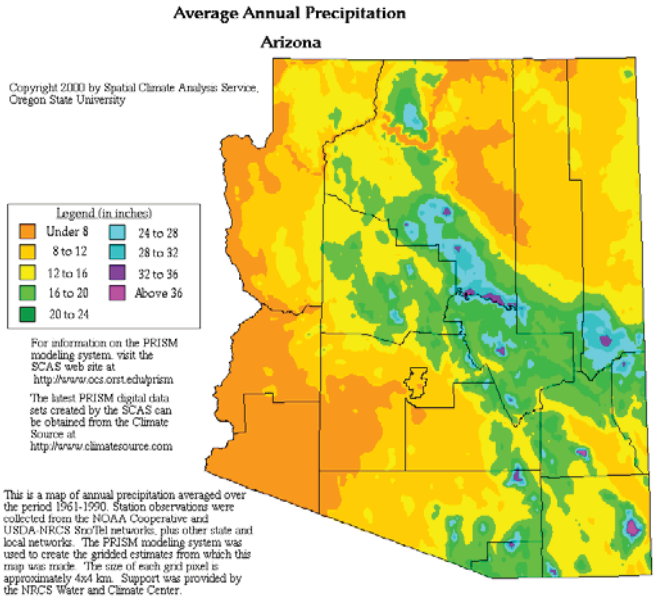


FIGURE 1-11 ARIZONA PRECIPITATION

Source: Spatial Climate Analysis Service, Oregon State University

CEILING AND VISIBILITY CONDITIONS

Ceiling and visibility conditions are important considerations since the occurrence of low ceiling and/or poor visibility conditions limit the use of the airport to instrument approach and departure operations until conditions change. Under poor visibility conditions or Instrument Meteorological Conditions (IMC), the pilot must operate under Instrument Flight Rules (IFR), rather than Visual Flight Rules (VFR). Under IFR, the pilot maneuvers the aircraft through sole reference to instruments in the aircraft and navigational aids on the ground. The airport must be closed for use when conditions are worse than the published IFR minimums for that airport. When flight conditions are visual or Visual Meteorological Conditions (VMC), the pilot can maneuver the aircraft by reference to the horizon and objects on the ground.

There is currently no existing instrument approach into the Whiteriver Airport.

RUNWAY WIND COVERAGE

Wind direction and speed determine the desired alignment and configuration of the runway system. Aircraft land and takeoff into the wind and therefore can tolerate only limited crosswind components (the percentage of wind perpendicular to the runway centerline). The ability to land and takeoff in crosswind conditions varies according to pilot proficiency and aircraft type.

FAA Advisory Circular 150/5300-13, Airport Design, recommends that a runway should yield 95 percent wind coverage under stipulated crosswind components. If one runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The crosswind component of wind direction and velocity is the resultant vector, which acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for each Airport Reference Code is shown in Table 1-10.

TABLE 1-10 CROSSWIND COMPONENT

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

A wind rose was developed for the Whiteriver Airport using hourly observations from the U.S. Forest Service remote weather observation system from January 1996 to December 1996. This wind rose is shown in Figure 1-12 and indicates 10.5-knot crosswind coverage of 99.74 percent and 13-knot crosswind coverage of 99.90 percent. Table 1-11 shows the crosswind coverage for each runway at 10.5 and 13 knots. There is currently no weather reporting station located at the Whiteriver Airport.

TABLE 1-11 CROSSWIND COVERAGE

	10.5 knots	13.0 knots
Runway 1/19	99.74%	99.90%

SOURCE: U.S. FOREST SERVICE REMOTE WEATHER OBSERVATION SYSTEM, JANUARY1996-DECEMBER 1996

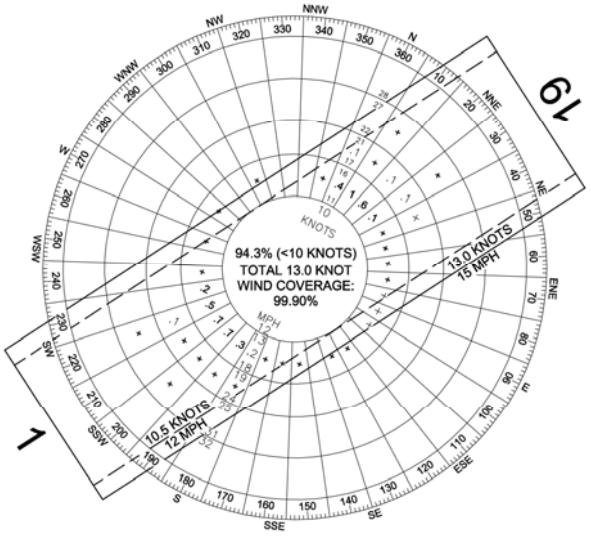


FIGURE 1-12 WHITERIVER WIND ROSE

ENVIRONMENTAL INVENTORY

INTRODUCTION

The purpose of the environmental inventory is to identify key environmental resources that maybe affected by potential airport development. The data compiled in this section will be used later in this study in evaluating potential airport development alternatives and to identify environmental related permits that may be required for recommended development projects.

AIR QUALITY

Air quality attainment maps were obtained from the October 2008 Arizona Department of Environmental Quality map of nonattainment areas. The project is located within an attainment area (See Figure 1-13). An attainment area is a zone within which the level of a pollutant is considered to meet National Ambient Air Quality Standards.

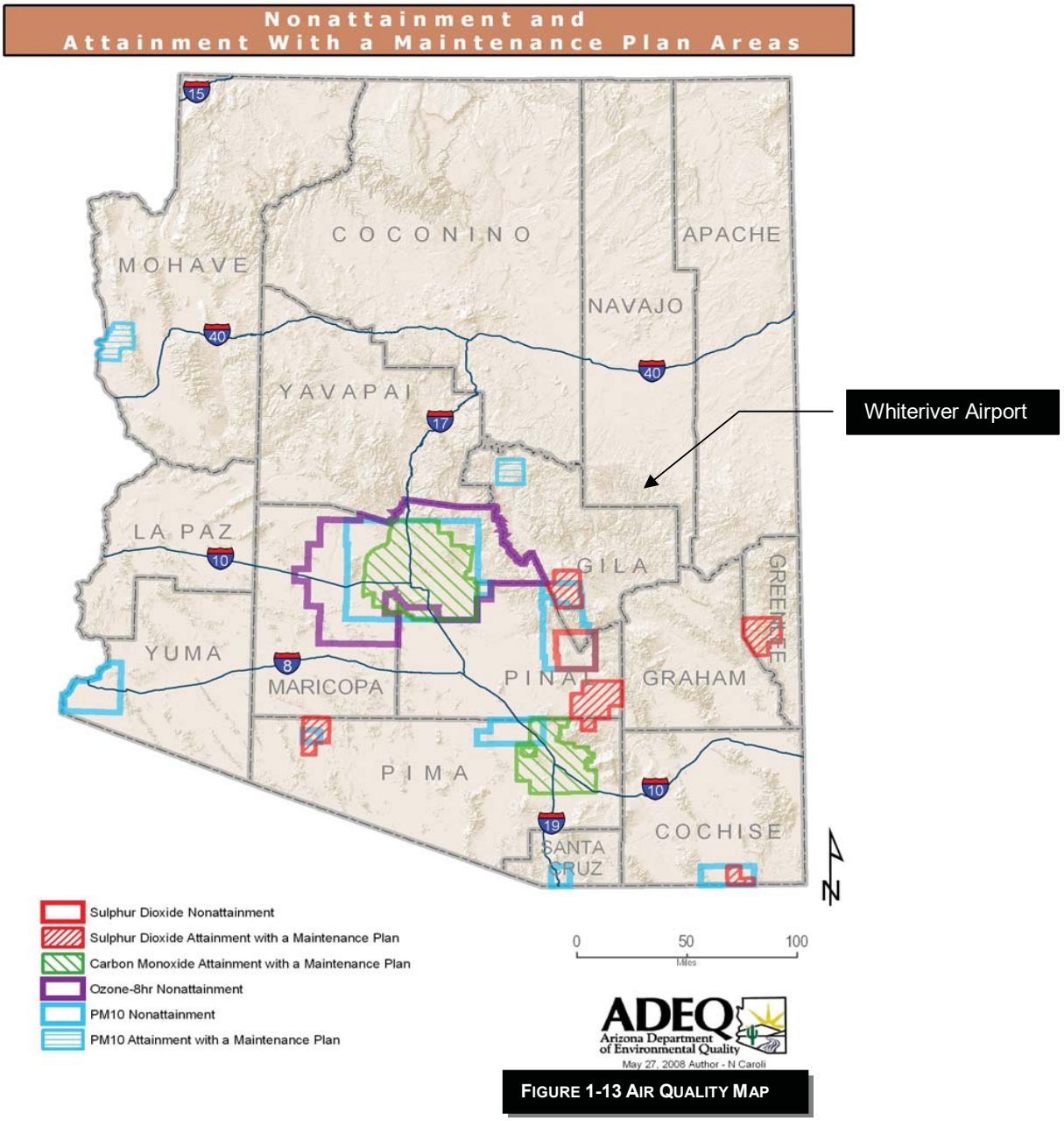


FIGURE 1-13 AIR QUALITY MAP

LAND USE COMPATIBILITY

The existing airport is located on approximately 112 acres of land. The surrounding land uses are considered compatible with the airport. The right-hand traffic pattern to Runway 1 avoids aircraft overflights of the residential area west of the airport.

DEPARTMENT OF TRANSPORTATION ACT

There are currently no public parks, recreation areas or wildlife and waterfowl refuge of National, State or Local significance surrounding the airport. The nearest wilderness area is the Bear Wallow Wilderness Area located approximately thirty nautical miles southeast of the airport.

FISH, WILDLIFE AND PLANTS

The U.S. Fish and Wildlife Service website was searched concerning the possibility of any impacts to any threatened and endangered species and candidate species that may occur within the airport environment. A list of federally threatened or endangered species was obtained for Navajo County. Future development projects should be evaluated to determine if any of the listed species occur or would be impacted by any future development.

The following species are currently listed for Navajo County but do not necessarily occur in the vicinity of Whiteriver Airport. An Environmental Assessment was conducted in 1996 which identified the potential for Loach minnow to occur within the White River. Therefore it is recommended that the airport protect against erosion and pollution from the airport. A Stormwater Pollution Prevention Plan (SWPPP) is being prepared as a part of this study.

Endangered
Black footed ferret, Mustela nigripes
Brown pelican, Pelecanus occidentalis
California condor, Gymnogyps californianus
Peebles Navajo cactus, Pediocactus peeblesianus
Southwestern willow flycatcher, Empidonax trailli

Threatened
Apache trout, Oncorhynchus apache
Chiricahua leopard frog, Rana chiricchuensis
Loach minnow, Tiaroga cobitis
Mexican spotted owl, Strix occidentailis lucida
Navajo sedge, Carex specuicola

Candidate
Yellow-billed cuckoo, Coccyzus americanus

Chapter Two
Forecasts of Aviation Activity

Whiteriver Airport
Airport Master Plan

Chapter Two
Forecasts

INTRODUCTION

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

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

At airports not served by air traffic control towers, estimates of existing aviation activity are necessary in order to form a basis for the development of realistic forecasts. Unlike towered airports, non-towered general aviation airports have historically not tracked or maintained comprehensive logs of aircraft operations. Estimates of existing aviation activity are based upon a review of based aircraft, available historical data, available local information and regional, state and national data form the baseline to which forecasted aviation activity trends are applied.

Activity projections are made based upon estimated growth rates, area demographics, industry trends and other indicators. Forecasts are prepared for the Initial-Term (0-5 years), the Intermediate-Term (6-10 years) and the Long-Term (11-20 years) time frames. Utilizing forecasts within these time frames will allow the construction of airport improvements to be timed to meet demand, but not so early as to remain idle for an unreasonable length of time.

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

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

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

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

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

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

NATIONAL AND REGIONAL TRENDS

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

The FAA annually convenes expert panels in aviation and develops forecasts for future activity in all areas of aviation, including general aviation. The FAA's 2008-2025 forecast predicts that the total general aviation fleet will increase at an average annual rate of 1.3 percent during the 18-year forecast period, growing from an estimated 225,007 aircraft in 2007 to 286,500 aircraft in 2025. The fleet of jet turbine aircraft is expected to increase at a greater rate than the fleet of piston aircraft; as a result, the number of piston aircraft, while continuing to increase, is expected to represent a smaller percentage of the total general aviation fleet. Figures 2-1 and 2-2 illustrate this forecasted change to the general aviation fleet that is forecast to occur over the 14-year period.

In 2005 the category of "light sport" aircraft was created. At the end of 2006 a total of 1,273 aircraft were estimated to be in this category. The forecast assumes registration of 5,600 aircraft over a 5-year period beginning in 2005 including both newly built aircraft and conversions from ultralight trainers. By 2025 a total of 14,700 light sport aircraft are projected to be in the fleet.

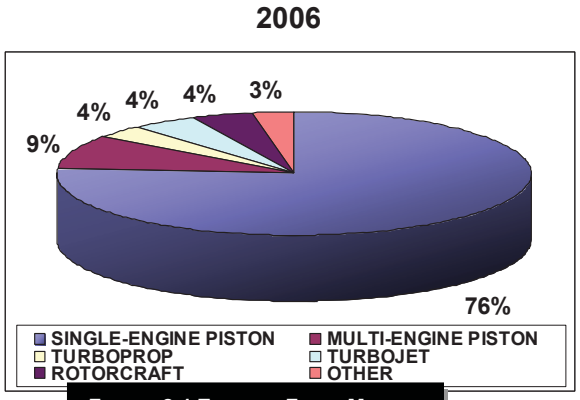


FIGURE 2-1 EXISTING FLEET MIX

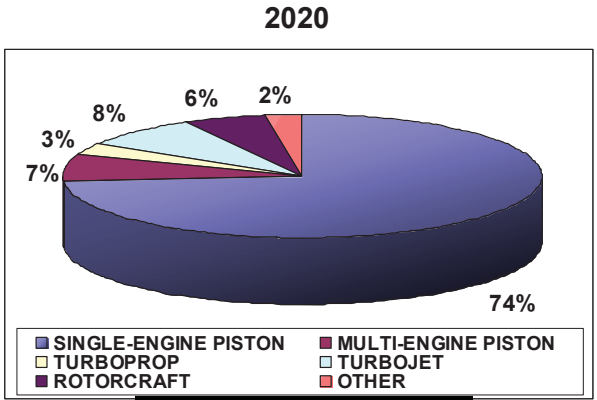


FIGURE 2-2 FUTURE FLEET MIX

Source: General Aviation & Air Taxi Activity & Avionics Survey 2006

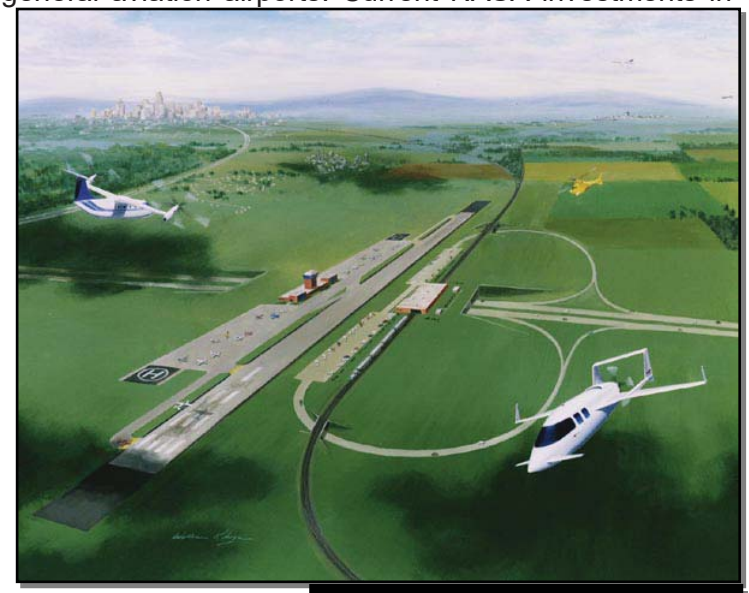
The General Aviation Manufacturer's Association (GAMA) produces activity forecasts based on general aviation hours flown. As shown in Table 2-1, the number of turbojet (TJ) hours is forecasted to increase by 203 percent between 2007 and 2020.

TABLE 2-1 NATIONAL GENERAL AVIATION FORECAST

	Hours Flown (in millions)				
Year	SE	ME	TP	TJ	Total
2007	14.0	2.7	2.2	4.4	23.3
2008	14.1	2.7	2.2	5.0	24.0
2009	14.3	2.7	2.2	5.6	24.8
2010	14.5	2.7	2.2	6.3	25.7
2011	14.7	2.7	2.2	7.0	26.6
2012	14.9	2.7	2.2	7.8	27.6
2013	15.0	2.7	2.3	8.5	28.5
2014	15.2	2.7	2.3	9.2	29.4
2015	15.4	2.8	2.3	10.0	30.5
2016	15.6	2.8	2.3	10.7	31.4
2017	15.7	2.8	2.3	11.4	32.2
2018	15.9	2.8	2.4	12.1	33.2
2019	16.0	2.8	2.4	12.9	34.1
2020	16.1	2.8	2.4	13.6	34.9

Source: General Aviation Manufacturer's Association 2007 statistical Databook

Another industry trend is the increasing amount of research funding for programs like the Small Aircraft Transportation System (SATS). The National Aeronautics and Space Administration (NASA), Federal Aviation Administration, States, industry and academic partners have joined forces to pursue the NASA National General Aviation Roadmap leading to a Small Aircraft Transportation System. This long-term strategic undertaking seeks to bring next-generation technologies and improved air access to small communities. The envisioned outcome is to improve travel between remote communities and transportation centers in urban areas by utilizing a new generation of single-pilot light aircraft for personal and business transportation between the nation's 5,400 public use general aviation airports. Current NASA investments in aircraft technologies are enabling industry to bring affordable, safe and easy-to-use features to the marketplace, including "Highway in the Sky" glass cockpit operating capabilities, affordable crashworthy composite airframes, more efficient IFR flight training and revolutionary aircraft engines. To facilitate this initiative, a comprehensive upgrade of public infrastructure must be planned, coordinated and implemented within the framework of the national air transportation system. State partnerships are proposed to coordinate research support in key public infrastructure areas. Ultimately,



Source: NASA Nebraska Space Grant & EPSCoR

FIGURE 2-3 SATS CONCEPTUALIZATION

SATS may permit more than tripling aviation system throughput capacity by tapping the under-utilized general aviation facilities to achieve the national goal of doorstep-to-destination travel at four times the speed of highways for the nation's suburban, rural and remote communities.

FIGURE 2-4 VLJ

The introduction of the Very Light Jet (VLJ) is a major milestone in aviation history. The small (less than 10,000 lbs.) jet can travel at speeds exceeding 400 knots at altitudes of 41,000 feet and is relatively inexpensive in the jet market. These aircraft will allow people to travel in jet aircraft to virtually any airport in the U.S. due to the small size and the short length required for takeoff and landing. The demand for these aircraft is beginning to take shape. Estimates have forecasted as many as 8,145 VLJs flying by 2025. The majority of the VLJ market is expected to be business people who seek flexible traveling schedules and air taxi services. The lack of efficiency in the hub and spoke system is a major contributor to the VLJ market which will provide high-speed, low cost, convenient service to desired destinations.

The continued growth in fractional ownership arrangements is another significant industry trend. Fractional ownership arrangements allow businesses and individuals to purchase an interest in an aircraft and pay for only the time that they use the aircraft. According to the National Business Aviation Association (NBAA), in 1986, there were three owners of fractionally held aircraft. By 1993, there were 110. From 2000 to 2002, the number of companies and individuals using fractional ownership grew by 52 percent, from 3,834 to 5,827 shares; the growth from 1999 (2,607) to 2002 was 124 percent. The number of airplanes in fractional programs grew 11 percent in 2002, from 696 to 776. The shift toward turbine aircraft is likely a result of the success of fractional ownership, the introduction of new types of turbine aircraft and a transition from commercial air travel to corporate/business air travel as a result of inconvenient airline travel.

AVAILABLE ACTIVITY FORECASTS

The first step in preparing aviation forecasts is to examine historical and existing activity levels and currently available forecasts from other sources. The FAA Terminal Area Forecasts (TAF) (December 2007) indicates 1 existing based aircraft for Whiteriver Airport and 4,906 existing annual operations. The TAF for Whiteriver Airport shows no increase in based aircraft through 2027. In 2000 Arizona Department of Transportation Aeronautics Division conducted a State Aviation Needs Study (SANS) to evaluate the needs of the aviation system for Arizona. The study included forecasts of future based aircraft and operations. The SANS indicated 8 based aircraft to remain constant over the planning period, the study also indicated 5,000 annual operations to remain constant over the planning period.

FAA RECORDS OF BASED AIRCRAFT AND OPERATIONS

FAA Form 5010-1, Airport Master Record, is the official record kept by the Federal Aviation Administration to document airport physical conditions and other pertinent information. The record normally includes an annual estimate of aircraft activity as well as the number of based aircraft. This information is normally obtained from the airport sponsor. The accuracy of these documents varies directly with the sponsor's record keeping system. The FAA Form 5010-1 for the Whiteriver Airport indicates 0 based aircraft and 3,910 annual aircraft operations. This form

also breaks down the Whiteriver Airport operations to 850 GA Local, 3,000 GA Itinerant and 60 military operations. According to the Airport Planning Advisory Committee and the inventory (September, 2008) for this Master Plan there are 3 based aircraft and approximately 3,900 annual operations.

EXISTING AVIATION ACTIVITY

For the purposes of this study, existing based aircraft and operations at the Whiteriver Airport will be 3 based aircraft and 3,900 annual operations. According to the BIA there are approximately 148 annual operations from fire fighting aircraft at the Whiteriver airport which can vary depending on the fire season. IHS report 200 annual operations at the Whiteriver Airport in 2007. These totals result in approximately 1,300 operations per based aircraft (OBPA). This represents the total annual operations divided by the number of based aircraft and includes operations by both based and transient aircraft.

The Whiteriver Airport is currently an Airport Reference Code (ARC) B-II airport serving predominately single engine piston, rotorcraft, multi-engine piston aircraft, with some use by light turbojet and turboprop aircraft.

HISTORICAL BASED AIRCRAFT AND OPERATIONS

There is no accurate historical record of based aircraft and operations for the Whiteriver Airport. There are currently no commercial service or air cargo operations at the Whiteriver Airport.

FORECASTS OF AVIATION ACTIVITY

FACTORS INFLUENCING AVIATION DEMAND

Factors influencing aviation demand at the Whiteriver Airport include the use of the airport by fire suppression aircraft. The airport serves the Bureau of Indian Affairs (BIA) as a single engine air tanker (SEAT) reload base. The airport is also utilized on a regular basis by Indian Health Services (IHS) for air medivac operations, including patient transfer and physician transportation.

The existing based aircraft at the Whiteriver Airport are fire fighting aircraft which are expected to remain fairly constant over the planning period. Therefore a comparison analysis was conducted of other communities in Arizona with similar population and per capita income to determine the average number of aircraft for these communities.

TABLE 2-2 AREA AIRPORT INFORMATION

Name	Population	Per Capita Income	Based Aircraft	Based Aircraft per 1,000 people
Chinle, AZ	5,366	$8,755	6	1.1
Window Rock, AZ	3,059	$11,122	3	.98
San Carlos, AZ	3,716	$4,615	4	.98
Average	*4,046*	*$8,164*	*4*	*1*
Whtieriver, AZ	5,220	$5,719	3	*0

*The existing based aircraft are fire fighting only aircraft
Information from the FAA 5010 and the US Census 2000 data

BASED AIRCRAFT

A comparative analysis of based aircraft forecasts was accomplished using three methodologies to derive a preferred forecast of based aircraft for the Whiteriver Airport. The first method utilized the comparison method of the three communities and the average number of based aircraft per 1,000 people. This results in 8 aircraft in 2027

TABLE 2-3 COMPARATIVE ANALYSIS MODEL

Year	Population	Aircraft
2007	N/A	3
2012	6,661	7
2017	7,227	7
2022	7,734	8
2027	8,173	8

*Preferred Based Aircraft Forecast

According to FAA Order 5090.3C, when forecast data is not available, a satisfactory procedure is to forecast based aircraft using the statewide based aircraft growth rate from the December 2007 TAF and to develop activity statistics by estimating annual operations per based aircraft. The second forecasting method for based aircraft utilized the FAA's Terminal Area Forecast annual growth rate for the State of Arizona of 4.4 percent per year. This growth rate of 22 percent every five years results in approximately 7 based aircraft in Whiteriver in 2027.

TABLE 2-4 FAA TAF MODEL

Year	TAF Arizona Based Aircraft	Average Annual Growth Rate	Based Aircraft
2007	10,122	22%	3
2012	10,942	22%	4
2017	11,820	22%	5
2022	12,789	22%	5
2027	15,602	22%	7

The third forecasting method for based aircraft utilized a combination of the comparative analysis and the FAA TAF Method to develop a cohort forecast. This method took the population growth for 2012 and grew 22 percent every five years after that. This resulted in 13 based aircraft in Whiteriver in 2027.

TABLE 2-5 COHORT MODEL

Year	Based Aircraft
2007	3
2012	7
2017	9
2022	10
2027	13

It is anticipated the Whiteriver based aircraft growth rate will trend closer to the comparative population model rather than the based aircraft overall growth rate for the State or the combination Cohort Method. Therefore, the Comparative Model was selected as the preferred.

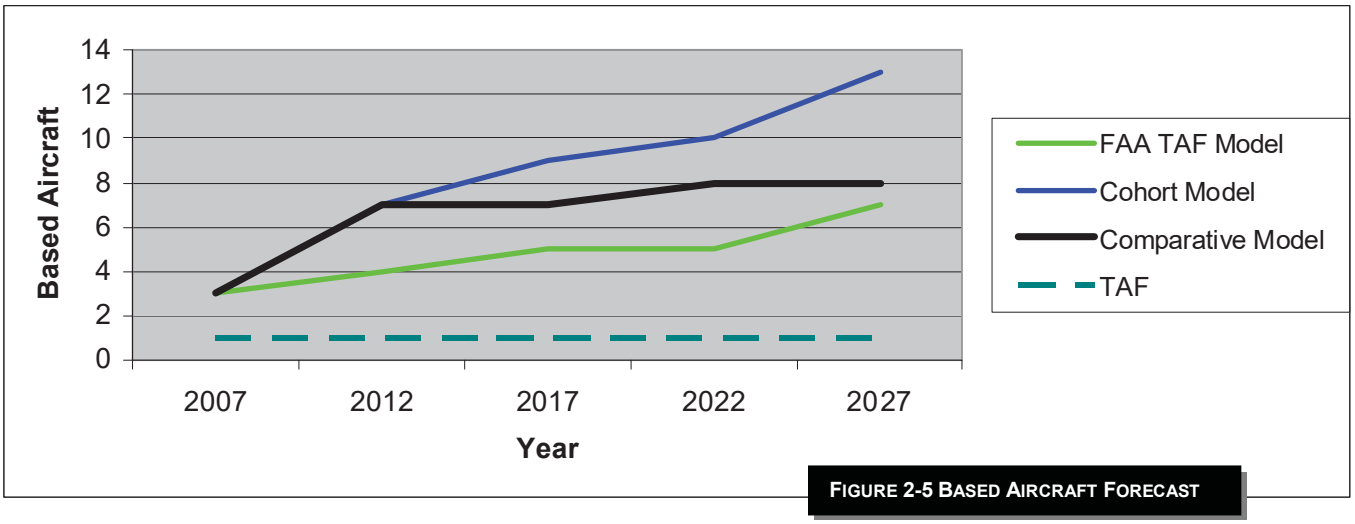


FIGURE 2-5 BASED AIRCRAFT FORECAST

ANNUAL AIRCRAFT OPERATIONS

In order to develop a preferred method of forecasting aircraft operations at the Whitervier Airport, a number of methods were analyzed. Each method utilizes the preferred based aircraft

forecast of 8 based aircraft in 2027, then applies an OPBA to the based aircraft forecast. The methods are summarized as follows:

Method 1: Existing operations and based aircraft (1,300 OPBA)

Method 2: FAA Order 5090.3C (250 OPBA)

Method 3: FAA Advisory Circular 150/5300-13 (679 OPBA)

For the first method, the base year level of operations per based aircraft of 1,300 was applied to the preferred based aircraft forecast. Applying 1,300 OPBA to the preferred based aircraft forecast (Table 2-3) results in 10,400 annual operations in 2027.

For the second method, a general guideline from FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS) of 250 OPBA for rural general aviation airports with little itinerant traffic was applied to the based aircraft forecast. Applying 250 OPBA to the preferred based aircraft forecast results in 2,000 forecast operations in 2027.

The third method, as outlined in FAA Advisory Circular 150/5300-13, applied 679 OPBA (for NPIAS Public Use Airports) to the preferred based aircraft forecast. This method results in a forecast of 5,432 operations in 2027.

These estimates provide a likely range of activity for future operations at the Whiteriver Airport and are shown in Figure 2-6. Because aircraft operations are expected to continue increasing however with additional based aircraft the OPBA is expected to decrease, Method 3 was determined to be the most realistic and was therefore selected as the preferred operations forecast for the Whiteriver Airport.

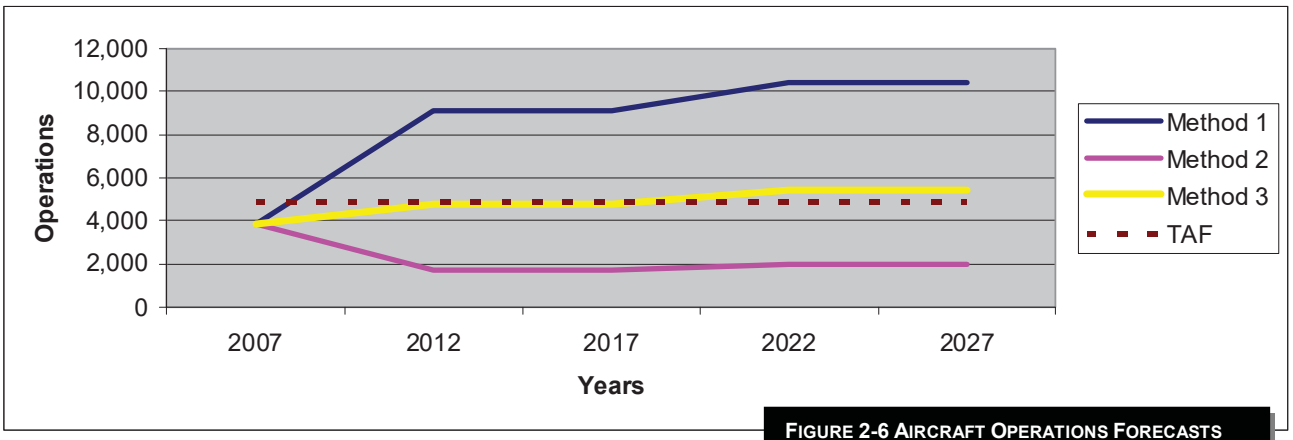


FIGURE 2-6 AIRCRAFT OPERATIONS FORECASTS

ITINERANT AND LOCAL OPERATIONS

Local operations consist primarily of training and recreational flights in the area. The remaining itinerant flights primarily consist of personal transportation, business transportation and recreational flights to and from other airports. The percentage of local versus itinerant operations is expected to remain fairly constant over the 20 year planning period. Anticipated users whose operations would likely be considered local include ranchers, aerial observation and surveying, recreation and tourism, aerial fire fighting and flight training.

INSTRUMENT OPERATIONS

According to the FAA TAF, 21 percent of the total aircraft operations in Arizona are instrument operations. This number is forecast to increase to 24 percent by 2025. Since virtually all commercial and business jet flights and most military aircraft flights are IFR, the number of instrument operations does not reflect the occurrence of instrument weather or the provision of instrument approaches at airports. At most general aviation airports with an instrument approach and no commercial service or military activity, instrument operations will comprise approximately 2.5 percent of total operations. The majority of general aviation operations are under VFR. Business transportation and air medivac/air ambulance are the most likely users of the instrument approaches at Whiteriver however with no existing instrument approach to the airport there were only 19 instrument flight plans on file for the airport in 2006. Given most of the traffic at Whiteriver Airport consists of light single-engine aircraft, a high volume of instrument operations are not expected. However, an increasing number of single-engine aircraft are being equipped for known-icing conditions and with approach certified GPS receivers; and most turboprops and VLJs are certified for known-icing. A future instrument approach at Whiteriver would be expected to be used approximately 1.5 percent of the time. Table 2-6 shows the preferred forecast of aviation activity for Whiteriver; however, given the low relative cost of a GPS approach it could prove beneficial for the air medivac flights.

TABLE 2-6 PREFERRED FORECAST OF AVIATION ACTIVITY

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations	Instrument Operations
2007	3	850	3,060	3,900	19
2012	7	1,036	3,717	4,753	71
2017	7	1,036	3,717	4,753	71
2022	8	1,184	4,248	5,432	81
2027	8	1,184	4,248	5,432	81

FIGURE 2-7 HELICOPTER PARKED AT THE WHITERIVER AIRPORT

Based on the forecasted types of uses for the airport, local and itinerant operations are expected to be conducted by predominately single-engine aircraft and rotorcraft operations with slightly increasing activity by light twins, turboprops and light jets including VLJs. The forecast by aircraft type is shown in Table 2-7.

TABLE 2-7 DETAILED FORECASTS BY AIRCRAFT TYPE

	2007	2012	2017	2022	2027
Single Engine Aircraft	1	5	5	5	5
Operations	2,200	2,803	2,803	3,232	3,232
Multi Engine Piston/Turbo-Prop Aircraft	0	0	0	1	1
Operations	500	550	550	600	600
Turbo-Jet Aircraft	0	0	0	0	0
Operations	50	100	100	150	150
Rotorcraft	2	2	2	2	2
Operations	1,100	1,200	1,200	1,300	1,300
Experimental & Other	0	0	0	0	0
Operations	50	100	100	150	150
Annual Operations	3,900	4,753	4,753	5,432	5,432

AIRPORT SEASONAL USE DETERMINATION

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

Non-towered airports generally experience a substantially higher number of operations in summer months than off-season months. The average seasonal use trend for FAA towered airports from the 1979-1984 records (total aircraft operations handled by tower facilities nationally from FAA Statistical Handbook of Aviation) was used as a baseline for determining seasonal use trends. As discussed above, the seasonal fluctuation is more pronounced at non-towered airports than towered airports. The seasonal use trend for towered airports was adjusted to approximate seasonal use trends at non-towered airports. This is presented in Table 2-8 and in Figure 2-8. Seasonal use trends are especially true for Whiteriver Airport as the majority of the fire fighting aircraft season is during the summertime months.

TABLE 2-8 SEASONAL USE TREND

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

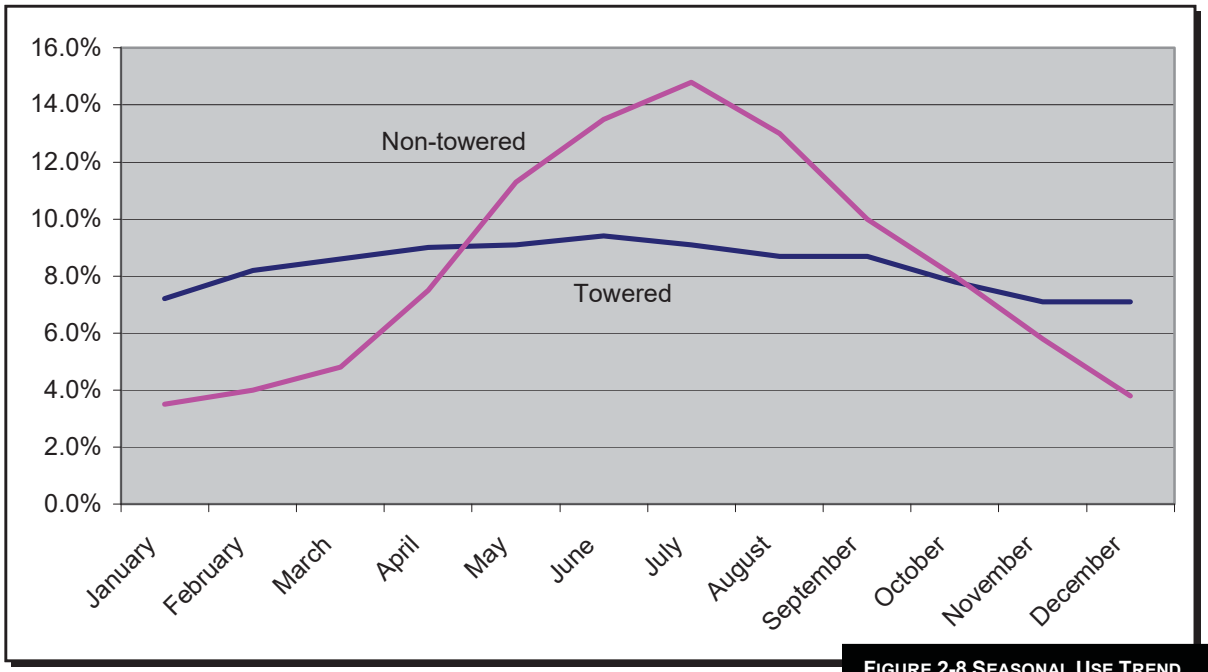


FIGURE 2-8 SEASONAL USE TREND

HOURLY DEMAND AND PEAKING TENDENCIES

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

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

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

Busy Day: The Busy Day of a typical week in the peak month. In this case, the Busy Day is equal to the Design Day.

Design Hour: The peak hour within the Design Day. This descriptor is used in airfield demand/capacity analysis, as well as in determining terminal building, parking apron and access road requirements.

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

The Seasonal Use Trend Curve, as presented in Figure 2-8, was used as a tool to determine the peaking characteristics for the Whiteriver Airport. Using the Seasonal Use information, a formula was derived which will calculate the average daily operations in a given month, based on the percentage of the total annual operations for that month, as determined by the curve. The formula is as follows:

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

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

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

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

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

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

The calculations were made for each month of each phase of the planning period. The results of the calculations are shown in Table 2-9. As is evident in the Table, the Design Day and Design Hour peak demand in the planning year occurs under VFR weather conditions in the month of July (highlighted in bold in each Table), with 40 daily operations and approximately 4.5 operations per hour in 2027.

TABLE 2-9 ESTIMATED HOURLY DEMAND/MONTH

MONTHLY/DAILY/HOURLY DEMAND

Planning Year: 2012
Operations: 4,753

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	166	5	0.6
February	4.0	190	6	0.7
March	4.8	228	7	0.8
April	7.5	356	12	1.4
May	11.3	537	18	2.0
June	13.5	642	21	2.4
July	**14.8**	**703**	**23**	**2.6**
August	13.0	618	20	2.3
September	10.0	475	16	1.8
October	8.0	380	12	1.4
November	5.8	276	9	1.0
December	3.8	181	6	0.7

Planning Year: 2017
Operations: 4,753

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	166	5	0.6
February	4.0	190	6	0.7
March	4.8	228	7	0.8
April	7.5	356	12	1.4
May	11.3	537	18	2.0
June	13.5	642	21	2.4
July	**14.8**	**703**	**23**	**2.6**
August	13.0	618	20	2.3
September	10.0	475	16	1.8
October	8.0	380	12	1.4
November	5.8	276	9	1.0
December	3.8	181	6	0.7

Planning Year: 2022
Operations: 5,432

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	190	6	0.7
February	4.0	217	7	0.8
March	4.8	261	9	1.0
April	7.5	407	13	1.5
May	11.3	614	20	2.3
June	13.5	733	24	2.7
July	**14.8**	**804**	**26**	**2.9**
August	13.0	706	23	2.6
September	10.0	543	18	2.0
October	8.0	435	14	1.6
November	5.8	315	10	1.1
December	3.8	206	7	0.8

Planning Year: 2027
Operations: 5,432

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	190	6	0.7
February	4.0	217	7	0.8
March	4.8	261	9	1.0
April	7.5	407	13	1.5
May	11.3	614	20	2.3
June	13.5	733	24	2.7
July	**14.8**	**804**	**26**	**2.9**
August	13.0	706	23	2.6
September	10.0	543	18	2.0
October	8.0	435	14	1.6
November	5.8	315	10	1.1
December	3.8	206	7	0.8

FORECAST SUMMARY

Multiple forecasts were prepared for the Whiteriver Airport to determine a probable range of future aircraft activity levels. Activity estimates were made for based aircraft operations and the ultimate fleet mix at the airport. These forecasts represent low, medium and high expected activity trends. A summary of the forecasts of aviation activity are provided in Table 2-10. The TAF shows no growth for operations and the existing operations numbers shown on the TAF are incorrect due to expired data collected by the FAA.

TABLE 2-10 FORECAST SUMMARY

	Enplanements			Itinerant Operations					Local Operations					
Year	AC	COMM	TOTAL	AC	AT & COM	GA	MIL	TOTAL	GA	MIL	TOTAL	TOT OPS	INST OPS	BASED AC
2007	0	0	0	0	500	2,490	60	2,550	850	0	850	3,900	19	3
2012	0	0	0	0	729	2,928	60	3,717	1,036	0	1,036	4,753	71	7
2017	0	0	0	0	729	2,928	60	3,717	1,036	0	1,036	4,753	71	7
2022	0	0	0	0	833	3,355	60	4,248	1,184	0	1,184	5,432	81	8
2027	0	0	0	0	833	3,355	60	4,248	1,184	0	1,184	5,432	81	8

Chapter Three
Facility Requirements

Whiteriver Airport
Airport Master Plan

Chapter Three
Facility Requirements

INTRODUCTION

One of the primary objectives of this planning study is to determine the size and configuration of airport facilities needed to accommodate the types and volume of aircraft expected to utilize the airport. Data from Chapter 1 and forecasts from Chapter 2 are coupled with established planning criteria to determine what improvements are necessary to airside and landside areas. Then, having established the facility requirements, alternatives for providing these facilities are provided in Chapter 4 to determine the viability of meeting the facility needs.

The time frame for addressing development needs usually involves short-term (0-5 years), medium-term (6-10 years) and long-term (11-20 year) periods. Long range planning primarily focuses on the ultimate role of the airport and is related to development. Medium-term planning focuses on a more detailed assessment of needs, while the short-term analysis focuses on immediate action items and may include details not geared towards long-term development.

AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) is a system established by the FAA that is used to relate airport design criteria to the operational and physical characteristics of the aircraft currently operating and/or intended to operate at the airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the Aircraft Approach Category and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the Aircraft Design Group and relates to aircraft wingspan and tail height (physical characteristic). Generally, aircraft approach speed applies to runway dimensional criteria and safety zones prior to and beyond the end of the runway. Aircraft wingspan is primarily associated with separation criteria involving taxiways and taxilanes. Table 3-1 has been included to provide a definition of both Aircraft Approach Categories and Aircraft Design Groups. Figure 3-1 shows examples of aircraft and their Airport Reference Codes.

TABLE 3-1 AIRPORT REFERENCE CODE

Approach Category	Approach Speed (knots)
Category A	less than 91
Category B	91 to 120
Category C	121 to 140
Category D	141 to 165
Category E	166 or more

Design Group	Wingspan (ft)	Tail Height (ft)
Group I	less than 49	Less than 20
Group II	49 to 78	20 to 29
Group III	79 to 117	30 to 44
Group IV	118 to 170	45 to 59
Group V	171 to 213	60 to 65
Group VI	214 to 261	66 to 79

AI

Primarily Single-Engine Propeller Aircraft, some light twins

Example Type: Cessna 172 Skyhawk

BI

Primarily Light Twin-Engine Propeller Aircraft

Example Type: Piper Navajo

BII

(<12,500 lbs)
Primarily Light Turboprops

Example Type: Beechcraft King Air

BII

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

Example Type: Cessna Citation II

A/BIII

Primarily large commuter-type aircraft

Example Type: De Havilland Dash 8

CI, DI

Primarily small and fast corporate jets

Example Type: Lear Jet 36

C/DII

Large corporate jets and regional-type commuter jets

Example Type: Gulfstream IV

C/DIII

Commercial airliners (approx. 100-200 seats)

Example Type: Boeing 737

C/DIV

Large commercial airliners (approx. 200-350 seats)

Example Type: Boeing 767

DV

Jumbo commercial airliners (approx. 350+ seats)

Example Type: Boeing 747

FIGURE 3-1 AIRCRAFT REFERENCE CODES

To ensure that all airport facilities are designed to accommodate the expected air traffic and to meet FAA criteria, the specific ARC for the airport must be determined. In order to designate a specific ARC for an airport, aircraft in that ARC should perform a minimum of 500 annual itinerant operations. The majority of aircraft currently using the Whiteriver Airport have an ARC of A-I, B-I and B-II. Airport users and fleet mix were discussed in Chapter 2. Examples of aircraft with an ARC of A-I and B-I are listed in Table 3-2. Examples of aircraft with an ARC of A-II and B-II are listed in Table 3-3. Examples of aircraft with an ARC of C-II and D-II are listed in Table 3-4. Aircraft with an ARC of A-I through B-II are expected to utilize the airport in the short, medium and long-term time frames. A small number of operations by C-I and C-II aircraft occur at Whiteriver Airport. Given the available runway length and the existing visual approach, 500 annual operations of these types of aircraft are not anticipated to occur during the planning period.

This information indicates that fundamental development items should be based on an ARC of B-II for aircraft weighing up to 75,000 pounds Single Wheel Gear (SWG) 100,000 Dual Wheel Gear (DWG) and 155,000 Dual Tandem Wheel Gear (DTG).

TABLE 3-2 EXAMPLE AIRCRAFT HAVING AN ARC OF A-I OR B-I

Aircraft	Approach Speed (knots)	Wingspan (feet)	Max T.O. Weight (pounds)
Beech Baron 58P	101	37.8	6,200
Beech Bonanza V35B	70	33.5	3,400
Beech King Air B100	111	45.9	11,799
Cessna 150	55	33.3	1,670
Cessna 172	60	36.0	2,200
Cessna 177	64	35.5	2,500
Cessna 182	64	36.0	2,950
Cessna 340	92	38.1	5,990
Cessna 414	94	44.1	6,750
Cessna Citation I	108	47.1	11,850
Gates Learjet 28/29	120	42.2	15,000
Mitsubishi MU-2	119	39.1	10,800
Piper Archer II	86	35.0	2,500
Piper Cheyenne	110	47.6	12,050
Rockwell Sabre 40	120	44.4	18,650
Swearingen Merlin	105	46.3	12,500
Raytheon Beechjet	105	43.5	16,100

Source: FAA AC 150/5300-13, Airport Design

TABLE 3-3 EXAMPLE AIRCRAFT HAVING AN ARC OF A-II OR B-II

Aircraft	Approach Speed (knots)	Wingspan (feet)	Max T.O. Weight (pounds)
Air Tractor 802F	105	58.0	16,000
Beech King C90-1	100	50.3	9,650
Beech Super King Air B200	103	54.5	12,500
Cessna 441	100	49.3	9,925
Cessna Citation II	108	51.6	13,300
Cessna Citation III	114	50.6	17,000
Dassault Falcon 50	113	61.9	37,480
Dassault Falcon 200	114	53.5	30,650
Dassault Falcon 900	100	63.4	45,500
DHC-6 Twin Otter	75	65.0	12,500
Grumman Gulfstream I	113	78.5	35,100
Pilatus PC-12	85	52.3	9,920

Source: FAA AC 150/5300-13, Airport Design

TABLE 3-4 EXAMPLE AIRCRAFT HAVING AN ARC OF C-II OR D-II

Aircraft	Approach Speed (knots)	Wingspan (feet)	Max T.O. Weight (pounds)
Canadair CL-600	125	61.8	41,250
Gulfstream-III	136	77.8	68,700
1329 JetStar	132	54.5	43,750
Sabre 80	128	50.4	24,500
Gulfstream-II	141	68.8	65,300
Gulfstream-IV	145	77.8	71,780
Rockwell 980	121	52.1	10,325
Cessna Citation 650	126	53.6	23,000
Cessna Citation 750 X	131	63.6	36,100
Astra 1125	126	52.5	23,500
Hawker 125-1000	130	61.9	36,000
Falcon 900 EX	126	63.5	48,300

Source: FAA AC 150/5300-13, Airport Design

AIRSIDE FACILITY REQUIREMENTS

The airside facilities of an airport are described as the runway configuration, the associated taxiway system, the ramp and aircraft parking area and any visual or electronic approach aids.

RUNWAY REQUIREMENTS

Annual Service Volume: The Annual Service Volume (ASV) is a calculated reasonable estimate of an airport's annual capacity; taking into account differences in runway utilization, weather conditions and aircraft mix that would be encountered in one year. When compared to the forecasts or existing operations of an airport, the ASV will give an indication of the adequacy of a facility in relationship to its activity level. The ASV is determined by reference to the charts contained in FAA Advisory Circular (AC) 150/5060-5, Airport Capacity and Delay.

The FAA Airport Design Program was used to calculate the ASV for a single runway airport with the forecasted operation levels determined in Chapter 2. Annual Service Volume for the runway configuration is 230,000 operations per year. Under these conditions, the existing runway facilities will adequately meet the demand within the time frame of this study.

Runway Length: FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design, provides guidance for determining runway length requirements. Furthermore, the FAA has developed a computer software program entitled "Airport Design." The program provides the user with recommended runway lengths and other facilities on an airport according to FAA design standards. The information required to execute the program for recommended runway lengths, includes airfield elevation, mean maximum temperature of the hottest month and the effective gradient for the runway. This specific information for the Whiteriver Airport that was used for the purposes of this portion of the study for Runway 1/19:

Field Elevation: 5,152' MSL
Mean Maximum Temperature of Hottest Month: 90.2° F
Effective Gradient: 75 Feet

(Note: The actual difference in feet from runway end to runway end is required to run the FAA software program and is listed as the effective gradient. However, the effective gradient is usually shown as a percent.)

With this data, the Airport Design program provides several runway length recommendations for both small and large aircraft according to varying percentages of aircraft fleet and associated takeoff weights. A summary of the data provided by the program is listed in Table 3-5.

TABLE 3-5 RECOMMENDED RUNWAY LENGTH

Description	Runway Length
Existing Runway Length	6,350'
Recommended to accommodate:	
Small Aircraft (<12,500 lbs.)	
Less than 10 passenger seats	
75 percent of these small airplanes	4,700'
95 percent of these small airplanes	6,400'
100 percent of these small airplanes	6,530'
10 or more passenger seats	
Large Aircraft (>12,500 lbs., <60,000 lbs.)	
75 percent of these planes at 60 percent useful load	7,490'
75 percent of these planes at 90 percent useful load	9,350'
100 percent of these planes at 60 percent useful load	11,750'
100 percent of these planes at 90 percent useful load	11,750'

Source: FAA Computer Software Program, Airport Design Version 4.2d

Using the results of the FAA's software program, it would be fair to suggest that the runway should have a minimum length of 6,400 feet. This would accommodate 95 percent of the small aircraft fleet mix. However, it is important to identify the runway length requirements for the specific aircraft that are expected to operate at the airport.

Takeoff Distance Requirements: When determining runway length requirements for any airport it is necessary to consider the types of aircraft (aircraft design group and critical aircraft) that will be using the airport and their respective takeoff distance requirements. Figure 3-2 gives examples of takeoff distance requirements for the aircraft currently using the Whiteriver Airport and aircraft that are anticipated to use the airport in the future.

Based on the required runway lengths for these categories of aircraft, the existing runway length of 6,350 feet provides adequate takeoff distance for the current and forecasted fleet mix of aircraft.

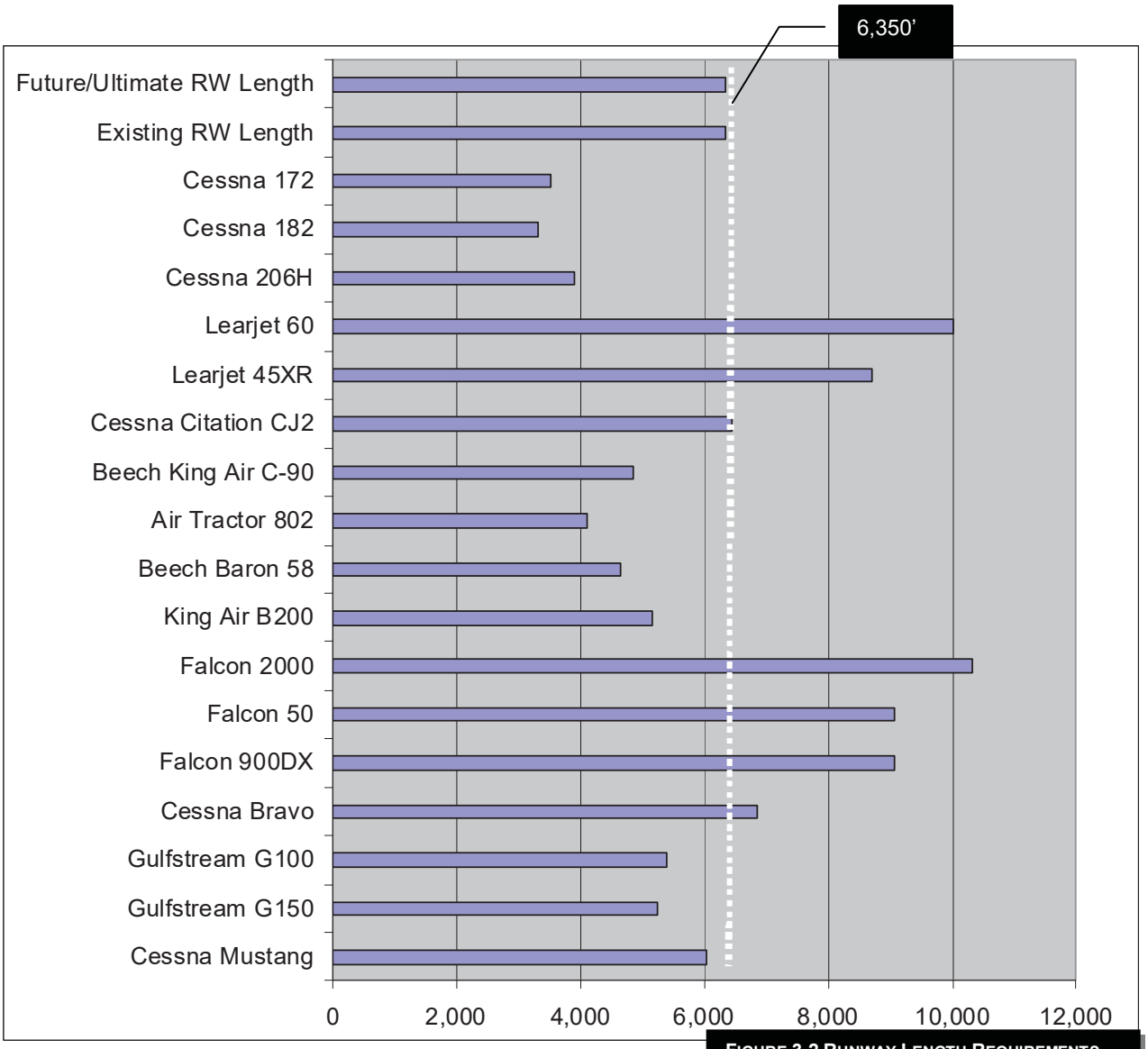


FIGURE 3-2 RUNWAY LENGTH REQUIREMENTS

SOURCE: AIRCRAFT MANUFACTURER'S DATA

**Aircraft performance data based on a mean maximum temperature of the hottest month of 90.2° F and an airport elevation of 5,152 feet mean sea level (MSL).*

Runway Strength and Width: Runway strength requirements are normally based upon the design aircraft that may be expected to use the airport on a regular basis. The existing strength of Runway 1/19 is 75,000 pounds SWG 100,000 pounds DWG and 155,000 DTG. The existing pavement strengths are considered adequate for the planning period.

FAA design standards for runways serving aircraft having an ARC of B-II require a minimum runway width of 75 feet. The existing Runway 1/19 meets this standard.

CROSSWIND RUNWAY REQUIREMENTS

The FAA recommends that a runway's orientation provide at least 95 percent crosswind coverage. If the wind coverage of the runway does not meet this 95 percent minimum for the appropriate ARC, then a crosswind runway should be considered. Crosswind coverage for Runway 1/19 is 99.74 percent for a 10.5 knot crosswind and 99.90 percent for a 13.0 knot crosswind; therefore a crosswind runway is not justified.

RUNWAY INCURSIONS

There are currently no formal runway incursion mitigation measures in place at the Whiteriver Airport. An electric vehicle access gate and manual vehicle access gate have been installed to minimize the potential for wildlife and vehicle incursions. The airport has lighted holding position signs to increase awareness of runways. Should additional facilities be developed on the east side of the airport runway incursion avoidance training should be conducted for operational personnel using the access/service road around the north end of the runway.

TAXIWAY REQUIREMENTS

Length and Width: The primary function of a taxiway system is to provide access between runways and the terminal area. The taxiways should be located so that aircraft exiting the runway will have minimal interference with aircraft entering the runway or remaining in the traffic pattern. Taxiways expedite aircraft departures from the runway and increase operational safety and efficiency.

According to FAA Advisory Circular 150/5300-13, Airport Design, the minimum recommended runway to taxiway centerline separation for a runway with an ARC of B-II is 240 feet and the minimum recommended width is 35 feet. There is currently a full length parallel taxiway for Runway 1/19. The taxiway is currently 35 feet wide and is located 240 feet from runway centerline to taxiway centerline therefore meeting the design standards for B-II.

Strength: The strength of the taxiway should be maintained at a strength equal to that of the associated runway pavement.

AIRCRAFT APRON

The apron space requirements as shown in this planning document were developed according to recommendations given in AC 150/5300-13, Airport Design. Consideration must be made in the overall apron requirements for aircraft parking and tiedown requirements, taxilanes, adjacent taxiways and proximity to all aircraft expected to use the airport, including turboprops and business jets.

Future apron square yardage should be planned for both transient and based aircraft. The existing aircraft parking apron occasionally becomes filled to capacity during peak periods in the summertime. An apron expansion is recommended to accommodate based and transient aircraft including helicopters and single engine air tankers.

FIGURE 3-3 AIRCRAFT APRON

Tiedown Requirements: Aircraft tiedowns should be provided for those small and medium sized aircraft utilizing the airport. These aircraft risk being damaged or may cause damage or injury in sudden wind gusts if not properly secured. A number of tiedowns are required to accommodate the peak daily transient aircraft and overnight transient aircraft, plus based aircraft that are not hangared. Tiedown requirements for the 20-year planning period are listed in Table 3-6. The current tiedown layout is based on Group II taxilane OFAs. The future apron layout should be planned to provide for

Group II taxilane OFAs. Typically large aircraft, including business jets, are not tied down and can usually be parked overtop multiple tiedowns.

Apron Requirements:
Generally speaking, an apron tiedown area should allow approximately 360 square yards per transient aircraft and 300 square yards per based aircraft. This square yardage per aircraft provides adequate space for tiedowns, circulation and fuel truck movement. Whiteriver should plan for additional apron expansion and an area to conduct single engine air tanker (SEAT) operations for by the Bureau of Indian Affairs (BIA). The tanker base would be considered a reload and not a permanent base for the single engine air tankers due to concerns for wind shear surrounding the airport. The installation of up to three helicopter parking pads in close vicinity of the helicopter operations would provide efficient operations for based helicopters during fire season.

NAVIGATIONAL AIDS
A Navigational Aid (NAVAID) is any ground based visual or electronic device used to provide course or altitude information to pilots. NAVAIDs include Very High Omnidirectional Range (VORs), Very High Frequency Omnidirectional Range with Tactical Information (VOR-TACs), Nondirectional Beacons (NDBs) and Tactical Air Navigational Aids (TACANs), as examples. There are no existing NAVAIDs located at the airport and no new NAVAIDs are recommended.

APPROACH PROCEDURES
Non-precision Global Positioning System (GPS) approaches do not require ground-based NAVAIDs. The GPS receiver uses satellites for navigation. Therefore, it involves little or no cost for the Airport Sponsor. GPS was developed by the United States Department of Defense for military use and is now available for civilian use. GPS approaches are rapidly being commissioned at airports across the United States, approach minimums as low as 350-foot ceilings and 1-mile visibility are typical for this type of approach. An instrument approach will increase the utility of the airport by providing for the capability to operate in inclement weather conditions. This is especially important for air medivac/air ambulance, physician transport and business flights. It is also useful for conducting training and maintaining instrument currency and proficiency requirements.

There are no existing instrument approach procedures to the Whiteriver Airport. It is recommended in the future that the airport develop a GPS nonprecision instrument approach with 1-mile visibility minimums. This would allow aircraft to utilize the airport during IFR conditions. The majority of air medivac aircraft are equipped to fly GPS approaches along with the majority of business aircraft. The majority of small aircraft currently being produced are equipped with IFR certified GPS as standard equipment. The GPS approach with visibility minimums of 1-mile would increase the FAR Part 77 approach surface dimensions along with lowering the approach surface slope from 20:1 to 34:1.

AIRFIELD LIGHTING, SIGNAGE, MARKING AND VISUAL AIDS
Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground. Lighting and visual aids can consist of a variety of equipment or a combination thereof as described in Chapter 1. The airport's existing inventory of lighting and visual aids includes two-box precision approach path indicators (PAPI) to Runway 1, a rotating beacon, medium intensity runway lights (MIRLs), runway end identifier lights (REILs), 8-light runway threshold lights, nonprecision runway markings, a segmented circle and taxiway reflectors. The airport terminal area is also equipped with area lighting. The majority of the airfield lighting and visual aids is in good condition and

should be maintained in their present condition. Lighting the taxiways with medium intensity taxiway lights (MITLs) and replacing the fixed beacon tower with a fold-down tower is recommended.

LANDSIDE FACILITY REQUIREMENTS

Landside facilities are another important aspect of the airport. Landside facilities serve as the processing interface between the surrounding community and the airport operating environment. Likewise, it offers the traveler the first impression of the airport and the local area. Landside facilities house the support infrastructure for airside operations and often generate substantial revenues for the airport.

TERMINAL BUILDING

The construction of a terminal building at any airport offers many amenities to passengers, local and transient pilots and airport management. Terminal buildings (often called pilot lounges at general aviation airports) most often house public restrooms, public telephones, a pilot's lounge and information regarding airport services. There is currently no existing terminal building located at the Whiteriver Airport. It is recommended in the future the airport construct a general aviation terminal building. This facility could serve as a multi-function facility providing a pilot lounge, flight planning, restrooms and office space for various agencies.

HANGAR FACILITIES

Hangars are typically classified as either T-hangars, small multi-unit storage complexes that usually accommodate one single engine aircraft in each unit or conventional hangars, small to very large units, which accommodate a variety of aircraft types or corporate fleets. The number of aircraft that each conventional hangar can hold varies according to the manufacturer and the specifications of the airport owner or operators. There are no existing hangars located at the Whiteriver Airport.

Based Aircraft Hangar Requirements: The facility requirements for based aircraft typically determine the number of tiedown locations, number of shaded spaces, number of T-hangars and number of conventional type hangars required for the future. Because of the low number of forecasted based aircraft multi-unit T-hangars are not anticipated. Areas of small individual box hangars will be identified on the ALP.

Transient Aircraft Hangar Requirements: Transient single-engine aircraft operators generally do not require aircraft storage facilities unless there is inclement weather expected (such as hail or snow) or if the operator is planning an extended stay. Some higher performance single-engine and multi-engine aircraft operators may desire overnight aircraft storage or a heated hangar in the winter.

General: The airport sponsor should consider providing long-term land leases to interested parties for the construction of aircraft storage hangars. Allowing the tenant to retain ownership of the hangar while leasing the ground reduces capital outlay requirements for White Mountain Apache Tribe. The tenant ownership also enables the White Mountain Apache Tribe to collect property taxes on the hangar and other improvements. The tenant ownership also provides motivation for the tenant to maintain the hangar in good condition to maximize resale value at the end of the lease period. Legislation has made aircraft hangars an eligible cost under the Airport Improvement Program (AIP). While this creates an opportunity for airport sponsors willing to build hangars to meet existing demand, hangars are considered very a low priority. The White

Mountain Apache Tribe should charge a standard annual, monthly and overnight tiedown fee for use of the open apron.

AVIATION FUEL FACILITIES

Fuel is currently not available at the Whiteriver Airport. It is recommended that a self-serve credit card reader fueling system be installed to provide 24-hour fuel access at the airport for both Jet-A and 100 Low Lead.

AIRPORT ACCESS AND VEHICLE PARKING

The Whiteriver Airport is accessed by traveling south of Whiteriver on State Highway 73. The airport access road is located on the southeast side of State Highway 73. The Airport access road enters the airport from the west side of the airport. Access to the airport is considered adequate for the planning period. There are currently approximately 10 automobile parking spaces available adjacent to the apron area this is considered adequate for the short-term time frame, approximately 20 automobile parking spaces should be made available for the medium and long-term time frames to accommodate airport users and visitors.

FENCING

The Whiteriver Airport is currently fenced with 4-strand barbed wire fencing that follows the existing airport property line. The terminal area is surrounded by chain link fence with an electric vehicle access gate and a manual vehicle access gate. The existing fencing is considered adequate for the planning period.

AIRPORT RESCUE AND FIRE FIGHTING (ARFF) EQUIPMENT & STORAGE BUILDING

Airport Rescue and Fire Fighting (ARFF) equipment is not required at airports that do not serve scheduled passenger service with aircraft having 10 or more passenger seats. Local municipal or volunteer fire departments typically provide fire protection to general aviation airports in their district. Mutual aid agreements may also be provided for nearby fire departments to assist in emergency situations. In any case, procedures should be in place to ensure emergency response in case of an accident or emergency at the airport. Although statistically very safe, the most likely emergency situations at general aviation airports are an aircraft accident, fuel or aircraft fire or hazardous material (fuel) spill. The level of protection recommended in FAA Advisory Circular 150/5210-6D, Aircraft Fire and Rescue Facilities and Extinguisher Agents, for small general aviation airports is 190 gallons of aqueous film forming foam (AFFF) supplemented with 300 pounds of dry chemical. Proximity suits should be utilized for fire fighter protection. Aviation rated fire extinguishers should be immediately available in the vicinity of the aircraft apron and fueling facilities. Adequate facilities should be provided to store any ARFF vehicle(s) or equipment that is acquired.

The White Mountain Apache Tribe Fire and Rescue has 25 fire fighters, two fire trucks, a rescue truck and 3,000 gallon water tender. Estimated response time to the airport is five minutes. It is recommended that the White Mountain Apache Tribe meet the recommendations in FAA Advisory Circular 150/5210-6D. However, these are only recommendations as ARFF equipment is technically not required at the Whiteriver Airport.

SNOW REMOVAL EQUIPMENT

White Mountain Apache Tribe is responsible for the snow removal at the airport. Whiteriver has only a minimal amount of snow removal equipment therefore the airport is a low priority during snow conditions. A snow removal equipment building was recently constructed at the Whiteriver Airport. It is recommended the Airport obtain dedicated snow removal equipment for the airport.

FIGURE 3-4 SNOW REMOVAL EQUIPMENT BUILDING

INFRASTRUCTURE NEEDS

UTILITIES

Available utilities at the airport have been designed and sized to meet the typical needs of a general aviation airport. Power is provided by Navopache Electric Coop. Telephone service is provided by GTE West. Water and sewer is supplied by Whitewater Regional System. The existing utilities are considered adequate for the planning period.

WEATHER REPORTING

Weather information is available to pilots through the Automated Weather Observation System (AWOS) located at the airport. AWOS uses various sensors, a voice synthesizer and a radio transmitter to provide real-time weather data. There are four types of AWOS. An AWOS-A only reports altimeter setting while an AWOS-1 also measures and reports wind speed, direction, gusts, temperature and dew point. AWOS-2 provides visibility information in addition to everything reported by an AWOS-1. The most capable system, the AWOS-3 also includes cloud and ceiling data. The AWOS transmits over a VHF frequency or the voice portion of a navaid. The transmission can be received within 25 nautical miles of the site or above 3,000 feet above ground level (AGL). Currently Whiteriver Airport does not have any weather reporting equipment located at the airport.

It is recommended that the airport obtain an AWOS-3 in the future. The AWOS should be connected to the telephone service allowing pilots to check current weather conditions at the airport. It is recommended that the White Mountain Tribe connect the AWOS to the National Airspace Data Interchange Network (NADIN). This will allow national dissemination of the AWOS observations and allow the National Oceanic and Atmospheric Administration (NOAA) to digitally record the hourly observations and disseminate real-time weather information to Flight Service Stations and other sources.

No buildings/structures may be built within 100 feet of the AWOS. Structures located between 100 feet and 500 feet from the AWOS must have a maximum height no greater than 15 feet below the maximum height of the AWOS. Structures located between 500 feet and 1,000 feet from the AWOS must have a maximum height no greater than 10 feet below the maximum height of the AWOS. Objects of greater height than those referenced above may be constructed within 1,000 feet to 100 feet of the AWOS; however, they must occupy no more than a 10 degree penetration from the AWOS. If multiple objects exceed the height restrictions they must be placed at least 20 degrees apart. This will ensure the accuracy of wind and weather information provided by the AWOS.

LAND USE COMPATIBILITY AND CONTROL

AIRPORT PROPERTY

The existing airport property encompasses 112 acres; including the Runway Protection Zones, according to the airport legal description. The airport property is located within a portion of Sections 23 and 26, Township 5 North, Range 22 East of the Gila and Salt River Base Meridian. No additional land acquisition is needed for existing or future conditions.

COMPATIBILITY WITH STATE/REGIONAL PLANS

The Master Plan for the Whiteriver Airport should conform to all additional state and regional transportation plans. There is not a current ADOT Highway Plan for the area. According to ADOT Transportation Planning Division, Whiteriver is included in the White Mountains Study Area of the Regional Transportation Profile.

ZONING

Development around airports can pose certain hazards to air navigation if appropriate steps are not taken to ensure that buildings and other structures do not penetrate the FAR Part 77 Airspace Surfaces (described in the following section). The FAA, therefore, recommends that all Airport Sponsors implement height restrictions in the vicinity of the airport to protect these Part 77 Surfaces. A draft height restriction zoning ordinance is included as part of this Master Plan project.

COMPATIBLE LAND USE

In addition to ensuring that obstructions to Part 77 Surfaces are avoided or appropriately marked and lighted, it is recommended that the Airport Sponsor make reasonable efforts to prevent incompatible land uses from the immediate area of the airport. For example, the FAA states in FAA Advisory Circular 150/5200-33A, Hazardous Wildlife Attractants On or Near Airports, that landfills and/or transfer stations are incompatible land uses with airports. Therefore, these types of facilities should be located at least 5,000 feet from any point on a runway that serves piston type aircraft and 10,000 feet from any point on a runway that serves turbine type aircraft. Furthermore, any facility which may attract wildlife (especially birds) such as sewage treatment ponds and wastewater treatment plants should also be located this same distance from any point on the runway. Development proposals should also be reviewed to ensure compatibility in the vicinity of the airport.

A land use zoning ordinance will be developed as part of this Airport Master Plan project. It is recommended that the White Mountain Apache Tribe adopt this overlay to protect the airport from future incompatible development.

STATE OF ARIZONA LAND USE PLANNING

Arizona State Statutes 28-8485 and 28-8486 states that airport sponsors can develop Airport Influence Area (AIA) maps, however the State Statutes require the development of airport disclosure maps. These documents are included as part of the Airport Layout Plan portion of this study and will be sent to the Arizona Real Estate Department.

AIRPORT MANAGEMENT STRUCTURE

The White Mountain Apache Tribe is the Sponsor of the Whiteriver Airport, and as such it is responsible for the operations, maintenance and management of the facility. The Tribal Engineer is listed as the Airport Manager and serves as the primary contact point for airport related items. The Tribe has assembled an Airport Working Group Committee, as a subset of

its Transportation Planning Committee, to assist throughout the Master Plan process and to facilitate communication and needs between airport users, tenants and the Tribe.

The Tribe has established a Memorandum of Agreement with the Indian Health Service for the care and maintenance of the airfield lighting and visual aid systems.

To date, there have been no formal rates and charges established for the use of the airport and the Tribe and tenants have looked to each other to contribute both manpower, equipment and finances towards the upkeep and costs of the airport.

Because of the limited Tribal staff available and high level of airport use by tenants including the Indian Health Service and the Bureau of Indian Affairs, and in order to clearly delineate responsibilities, the following recommendations are made with respect to the operations and management of the airport:

- Clearly identify operations and maintenance costs for the airport including supplies (such as light bulbs, mower blades, parts, etc.), utilities, insurance, mowing, snow removal, calibration of visual aids, maintenance of fencing, gates, buildings and pavements, etc.
- Establish a level of rates and charges for the use of the airport including ramp/landing fees, ground lease rates, facility lease rates and fuel flowage rates.
- Establish lease agreements with year round airport tenants (such as the BIA)
- Establish lease agreements with seasonal airport tenants
- Establish lease agreements and/or fee structures for contract air tanker operators (including use of the ramp, buildings, staging areas, fuel flowage, etc.)
- Establish a system for tracking and collecting ramp fees and charges for transient aircraft (such as IHS medivac flights)
- Should the Tribe provide all airport operations and maintenance services these fees and charges would be used to offset the costs of providing these services.
- Should the Tribe choose to enter into a memorandum of agreement or contract for airport operations and maintenance services, an Agreement separate from any lease agreements should be established detailing the duties of and compensation to the contract or tenant agency for providing these services.
- The airport use leases and fee payments (revenues) should not be comingled with payments for maintenance services (expenses). Although these revenues and expenses may offset each other for a particular tenant or organization they should be tracked separately so they may easily be broken out in the event the Agreement with the contract maintenance provider is terminated.

These items are further discussed in the Financial Analysis Chapter.

SUMMARY OF FACILITY REQUIREMENTS

In summary, the facility requirements for the Whiteriver Airport are based on the types and volume of aircraft expected to use the airport in the short and long-term timeframes. These facilities will enable the airport to serve its users in a safe and efficient manner. The recommended airside and landside facilities are summarized in Table 3-6.

TABLE 3-6 SUMMARY OF AIRPORT FACILITY REQUIREMENTS

Facility		Existing	Future
Runways			
1/19	Length (feet)	6,350	6,350’
	Width (feet)	75’ 75,000 (SWG) 100,000 (DWG)	75’ 75,000 (SWG) 100,000 (DWG)
	Strength (pounds)	155,000 (DTG)	155,000 (DTG)
Marking	Runway 1	Nonprecision	Nonprecision
	Runway 19	Nonprecision	Nonprecision
Taxiways			
	Parallel	Yes	Yes
	Bypass Taxiways/Turnarounds	No	Yes
	Width (feet)	35 75,000 (SWG) 100,000 (DWG)	35 75,000 (SWG) 100,000 (DWG)
	Strength (pounds)	155,000 (DTG)	155,000 (DTG)
Apron			
	Tie Downs	17	30*
NAVAID			
	Approaches	Visual	NPI (Straight-in)
	Minimums	N/A	1-mile
Lighting & Visual Aids			
	Runway Edge	MIRL	MIRL
	Taxiway/Apron Edge	Reflectors	MITL
	Threshold Lights	Yes	Yes
	REILs	Yes	Yes
	Approach Slope Indicator	PAPI-2 Runway 1	PAPI-2 Runway 1*
	Segmented Circle/Wind Cone	Yes	Yes
	Rotating Beacon	Yes	Yes
	Approach Lighting System	No	No
Access & Parking			
	Automobile	10	20*
Hangar Facilities			
	T-Hangars	0	0
	Conventional-Small	0	5
	Conventional-Medium/Large	0	2
Fuel Storage			
	100 LL (gallons)	None	10,000 Tank
	Jet-A (gallons)	None	10,000 Tank
Other			
	AWOS	No	Yes (AWOS III)
	Unicom	Yes	Yes
	Terminal Building	No	Yes

**As required based on demand*
Not possible for Runway 19 due to terrain

FEDERAL AVIATION REGULATION (FAR) PART 77 AIRSPACE SURFACES

Federal Aviation Regulations (FAR) Part 77 establishes several Imaginary Surfaces that are used as a guide to provide a safe, unobstructed operating environment for aviation. These surfaces, which are typical for civilian airports, are shown in Figure 3-5. The Primary, Approach, Transitional, Horizontal and Conical Surfaces identified in FAR Part 77 are applied to each runway. For the purpose of this section, a visual/utility runway is a runway that is intended to be used by propeller driven aircraft of 12,500 pound maximum gross weight and less. A non-precision instrument/utility runway is a runway that is intended to be used by aircraft of 12,500 pounds maximum gross weight and less with a straight-in instrument approach procedure and instrument designation indicated on an FAA approved airport layout plan, a military service approved military airport layout plan or by any planning document submitted to the FAA by competent authority. A non-precision instrument/larger-than-utility runway is a runway intended for the operation of aircraft weighing more than 12,500 pounds that also has a straight-in instrument approach procedure.

As described previously, the Whiteriver Airport currently has a visual approach to both runway ends. Runway 1/19 is greater than utility runway since the pavement strength is greater than 12,500 pounds. The FAR Part 77 Airspace Surfaces for these classifications are described in the following paragraphs. While it is desirable to eliminate penetrations of FAR Part 77 airspace surfaces, in some cases, penetrations (also known as obstructions) may be mitigated with appropriate marking and/or lighting. The surfaces are described below and the dimensions are listed in Table 3-7.

PRIMARY SURFACE

The Primary Surface is an imaginary surface of specific width longitudinally centered on a runway. Primary Surfaces extend 200 feet beyond each end of the paved surface of runways, but do not extend past the end of non-paved runways. The elevation of any point on the Primary Surface is the same as the elevation of the nearest point on the runway centerline. The width of the Primary Surface varies from 250, 500 or 1,000 feet depending on the type of approach and approach visibility minimums. The current primary surface width for Runway 1/19 is 500 feet.

APPROACH SURFACE

The Approach Surface is a surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the Primary Surface. An Approach Surface is applied to each end of the runway based upon the type of approach available or planned for that runway, either 20:1, 34:1 or 50:1. The inner edge of the surface is the same width as the Primary Surface. It expands uniformly to a width corresponding to the FAR Part 77 runway classification criteria.

TRANSITIONAL SURFACE

The Transitional Surfaces extend outward and upward at right angles to the runway centerlines from the sides of the Primary and Approach Surfaces at a slope of 7:1 and end at the Horizontal Surface.

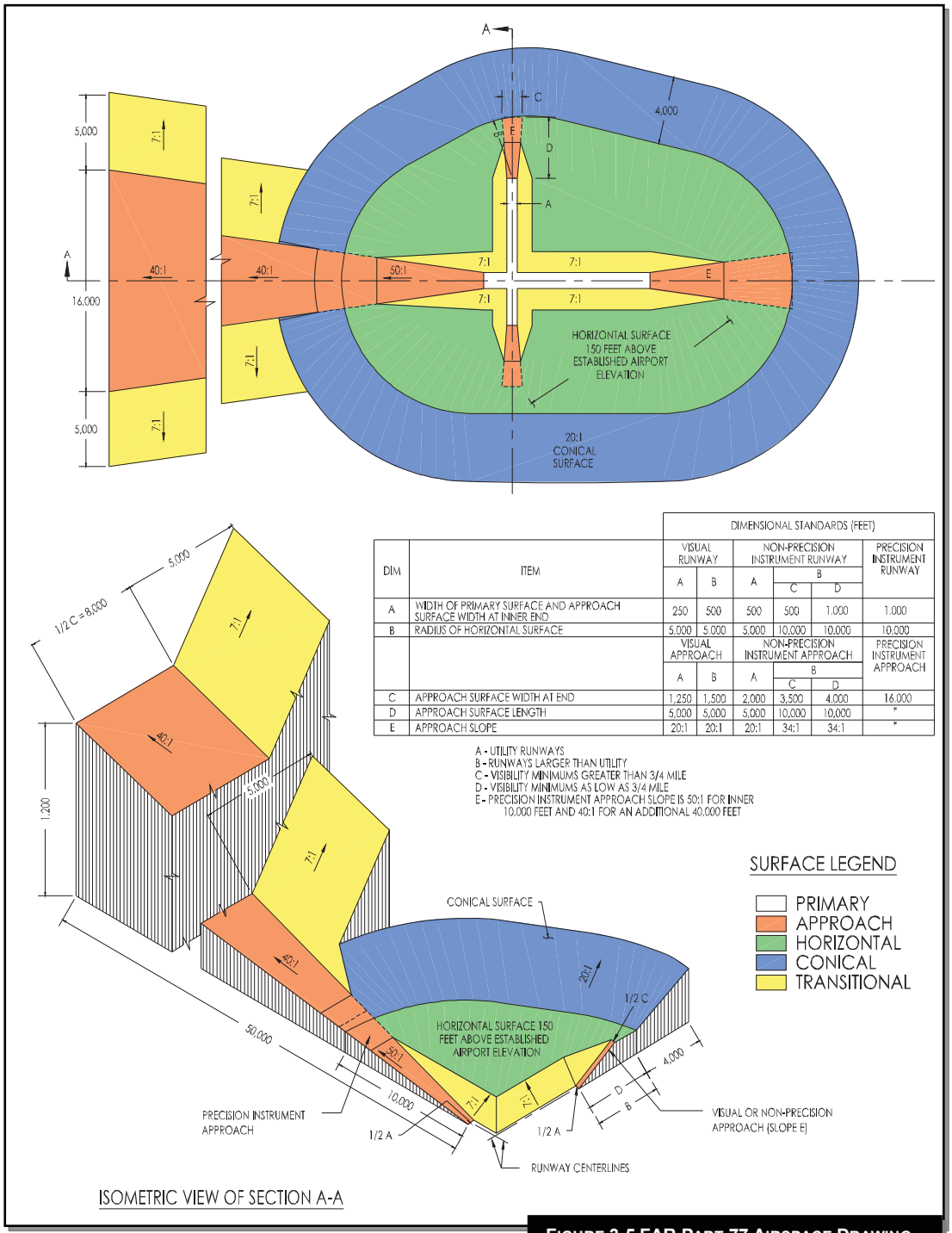
HORIZONTAL SURFACE

The Horizontal Surface is considered necessary for the safe and efficient operation of aircraft in the vicinity of an airport. As specified in FAR Part 77, the Horizontal Surface is a horizontal plane 150 feet above the established airport elevation. The airport elevation is defined as the highest point of an airport's useable runways, measured in feet above mean sea level. The perimeter is constructed by arcs of specified radius from the center of each end of the Primary

Surface of each runway. The radius of each arc is 5,000 feet for runways designated as utility or visual and 10,000 feet for all other runways.

CONICAL SURFACE

The Conical Surface extends outward and upward from the periphery of the Horizontal Surface at a slope of 20:1 for a horizontal distance of 4,000 feet.



ISOMETRIC VIEW OF SECTION A-A

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

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

FIGURE 3-5 FAR PART 77 AIRSPACE DRAWING

SOURCE: FAR PART 77

SUMMARY OF DESIGN STANDARDS

Table 3-7 summarizes the FAA design standards (described in Chapter 1) for the recommended airport facilities.

TABLE 3-7 SUMMARY OF DIMENSIONAL CRITERIA

Design Criteria	Existing	Future
Airport Reference Code	B-II	B-II
Approach Type	Visual >Utility	NPI >Utility, 1-mile visibility minimums
Runway centerline to parallel taxiway centerline	240’	240’
Runway centerline to edge of aircraft parking apron	250’	250’
Runway width	75’	75’
Runway shoulder width	10’	10’
Runway Safety Area width	150’	150’
Runway Safety Area length beyond runway end	300’	300’
Runway Object Free Area width	500’	500’
Runway Object Free Area length beyond runway end	300’	300’
Runway Obstacle Free Zone width	400’	400’
Runway Obstacle Free Zone length beyond runway end	200’	200’
Runway Protection Zone	1,000’x500’x700’	1,000’x500’x700’
Taxiway width	35’	35’
Taxiway Safety Area width	79’	79’
Taxiway Object Free Area width	131’	131’
Taxilane Object Free Area width	115’	115’
Runway centerline to aircraft hold lines	200’	200’
Airspace Surfaces (Part 77)		
Primary Surface width	250’	500’
Primary Surface length beyond runway ends	200’	200’
Approach Surface dimensions RW 1	250’x1,250’x5,000’	500’x3,500’x10,000’
Approach Surface dimensions RW 19	250’x1,250’x5,000’	500’x3,500’x10,000’
Approach Surface slope RW 1	20:1	34:1
Approach Surface slope RW 19	20:1	34:1
Transitional Surface slope	7:1	7:1
Horizontal Surface radius from runway	5,000’	10,000’
Conical Surface width	4,000’	4,000’

SOURCE: FAA AC 150/5300, AIRPORT DESIGN; FAR PART 77, OBJECTS AFFECTING NAVIGABLE AIRSPACE

Chapter Four
Development Alternatives

Whiteriver Airport
Airport Master Plan

Chapter Four
Development Alternatives

INTRODUCTION

The preceding discussion of facility needs provides the basis for formulating project development concepts. Chapter 3 provided recommended development for the majority of needs for the airport. This Chapter will focus on the projects the sponsor should consider for the existing and future configuration of the airport.

DEVELOPMENT CONCEPTS

The overall objective of the alternatives analysis is to 1) Review the facility requirements that have been determined necessary to safely and efficiently accommodate aviation demand over the 20-year planning period; and 2) Through investigation of available projects and options (where applicable) to determine the best way to implement the facility requirements as determined in Chapter 3 of this report.

In some situations, various alternatives exist for implementing facility requirements. In other cases, the selection of a favored project can result from a straightforward and logical evaluation of the options at hand. After reviewing the current conditions, the future development options and recommendations are based on a logical evaluation of where and how they can best be planned. This alternatives analysis discusses recommendations for implementing facility requirements as determined in Chapter 3 of this report.

DEVELOPMENT PROJECTS

A combination of effective airside and landside planning is essential to the successful development of the airport. Airside facilities are those used during takeoff or landing of aircraft. Landside facilities generally support aircraft after they exit the runway and consist of a system of taxilanes, apron area, fuel systems and parking areas. Recommended development projects for the Whiteriver Airport are found in Table 4-1. Each project is depicted graphically at the end of this chapter in the recommended development drawings Figures 4-1 through 4-3.

TABLE 4-1 DEVELOPMENT PROJECTS

Project	Description
1	Install AWOS-III
2	Taxiway Connector
3	Snow Removal Equipment
4	Instrument Approach Survey
5	Fuel System
6	Reconfigure Automobile Parking/Entrance
7	Construct Terminal Building
8	Apron Expansion
9	Pavement Maintenance

Project 1 would provide the airport with an Automated Weather Observation System, which would allow pilots to check current weather conditions before departing, as well as provide real time weather conditions for pilots landing and departing at the airport.

Project 2 would provide a connector taxiway near the apron to allow for circulation of arriving and departing aircraft.

Project 3 would provide snow removal equipment at the airport.

Project 4 would provide a GPS nonprecision approach into Whiteriver Airport. This would enhance the safety and utility of the airport, by providing aircraft the ability to land during inclement weather conditions or periods of low visibility. Providing an instrument approach is very important for air medivac operations, which need to be able to use the airport under less favorable weather conditions. Many operators also intentionally require a published instrument approach for night operations into mountain airports, even in visual meteorological conditions (VMC).

Project 5 would provide a jet fuel and avgas tank and self serve credit card reader to provide pilots 24 hour access to fueling operations.

Project 6 would include reconfiguring the airport entrance road and installing additional automobile parking.

Project 7 would include constructing a general aviation terminal building, to house public restrooms, public telephones, a pilot's lounge and information regarding airport services.

Project 8 would include the expansion of the aircraft parking apron to accommodate the existing and future airport users. The apron expansion would be constructed based on actual demand.

Project 9 would include crack seal and fog seal of airfield pavements. Periodic maintenance is necessary to prolong the useful life of the airport pavements. The affects of weather damage, oxidation and aircraft usage cause the pavement to deteriorate. The accumulation of moisture in the pavement causes heaving and cracking and is one of the greatest causes of pavement distress. The sun's ultraviolet rays oxidize and break down the asphalt binder in pavement mix. This accelerates raveling and erosion and can reduce asphalt thickness.

ACCOMMODATION OF AVIATION DEMAND LEVELS

Each development project would meet FAA safety and design standards for an Airport Reference Code of B-II. This will allow the airport to accommodate the current and projected types of aircraft that are expected to use the airport.

AIRSPACE IMPACTS

Development of a nonprecision GPS approach (Project 4) would provide new airspace surfaces for the runway consistent with a nonprecision greater than utility runway. This effectively increases the FAR Part 77 Airspace Surfaces. The increased FAR Part 77 airspace dimensions are summarized in Table 4-2. This increase results in penetrations of several FAR Part 77 airspace surfaces surrounding the airport. Because of the surrounding terrain the instrument approach minimums (visibility and cloud ceiling) are expected to be somewhat high.

TABLE 4-2 PART 77 AIRSPACE SURFACES

	Existing	Future
Primary Surface width	250'	500'
Primary Surface length beyond runway ends	200'	200'
Approach Surface Dimensions	250' x 1,250' x 5,000'	500' x 3,500' x 10,000'
Approach Surface slope	20:1	34:1
Transitional Surface slope	7:1	7:1

ENVIRONMENTAL IMPACTS

The development projects are expected to result in short-term construction impacts, including mitigatable impacts to air quality. No project is expected to cause significant environmental impacts based on the Federal Aviation Administration's Order 5050.4B, the Airport Environmental Handbook or FAA Order 1050.1E. Environmental impact categories and potential impacts are further evaluated in Chapter 6.

DEVELOPMENT COSTS

Estimated development costs for each project are depicted in Table 7-1. Costs are primarily related to construction, engineering and administration.

Phasing is recommended to accommodate budgetary constraints. In addition, phasing should mirror, to the extent practical, the requirements of users at the airport by phasing according to known and forecast operations referenced in Chapter 2.

OTHER ALTERNATIVES CONSIDERED

DEVELOP NEW AIRPORT SITE

This alternative would include the relocation of the Whiteriver Airport to new a location which would meet FAA standards for aircraft having an ARC of B-II. The existing Whiteriver Airport would be closed and redeveloped to another use if this alternative were chosen. A new airport would require the construction of needed infrastructure such as utility lines and access roads to the selected site. At the minimum, approximately 180 acres would need to be acquired to construct a runway/taxiway system, which would have a length of 6,400 feet along with aircraft parking aprons, helicopter parking pads and a terminal facility.

Initially, only a runway would be constructed, with the addition of a full-length parallel taxiway when demand warrants. It may be possible that the existing airfield pavements at the Whiteriver Airport could be rotomilled and used as base course for the parallel taxiway. This would aid in reducing the loss of existing capital investment at the Whiteriver Airport. A Site Selection Study of several potential sites would be required should this option be implemented.

The process of a site selection includes the following.

1. Identify basic airport facilities and land area requirements

2. Develop strategic plan

3. Conduct site selection analysis

4. Prepare Airport Layout Plan Set and Report

5. Conduct Environmental Assessment and Environmental Impact Statement (EIS) if considered necessary.

6. Maintain an active and responsive public information program and identify a planning advisory committee representing the airport users, business leaders, environmental interest groups and the general public to be involved throughout the planning process. Build local support to obtain political support.

7. Prepare minimum standards document for use in the future leases.

8. Assess best means to manage and operate the new airport.

9. Prepare lease agreements.

10. Prepare zoning and land use management regulations for the airport environs.

Upon evaluation of this alternative it is not considered to be a viable option. There is very little justification for the movement of the airport other than moving the airport away from the Town of Whiteriver and allowing new development to take place. The current airport provides adequate service to the area provides users with close convenient access to Whiteriver meets FAA design standards and compatible land use criteria according to FAA standards and represents a significant financial investment by the FAA and White Mountain Apache Tribe.

PROVIDE SERVICE FROM ANOTHER AIRPORT IN THE REGION

The Whiteriver Airport was constructed primarily to serve general aviation interests and business needs of Whiteriver and the surrounding region. The alternative of providing aviation services from another airport is considered impractical due to the lack of another airport close enough to Whiteriver which possesses adequate facilities to meet the aviation demands of the area. The nearest airports providing facilities to accommodate the aircraft activity that takes place at the Whiteriver airport are located 35 surface miles north at Show Low, Arizona. Show Low Regional Airport does not serve the aviation needs of Whiteriver. Providing service from another airport would not be economical or feasible. Service from another location would result in increased time, energy and additional travel expense to aviation users that would otherwise be unnecessary. This alternative ignores the existing goal of providing safe and efficient service to the Whiteriver Community. Furthermore, the airport represents a significant financial investment by the FAA and White Mountain Apache Tribe and is obligated to remain operational under FAA grant assurances.

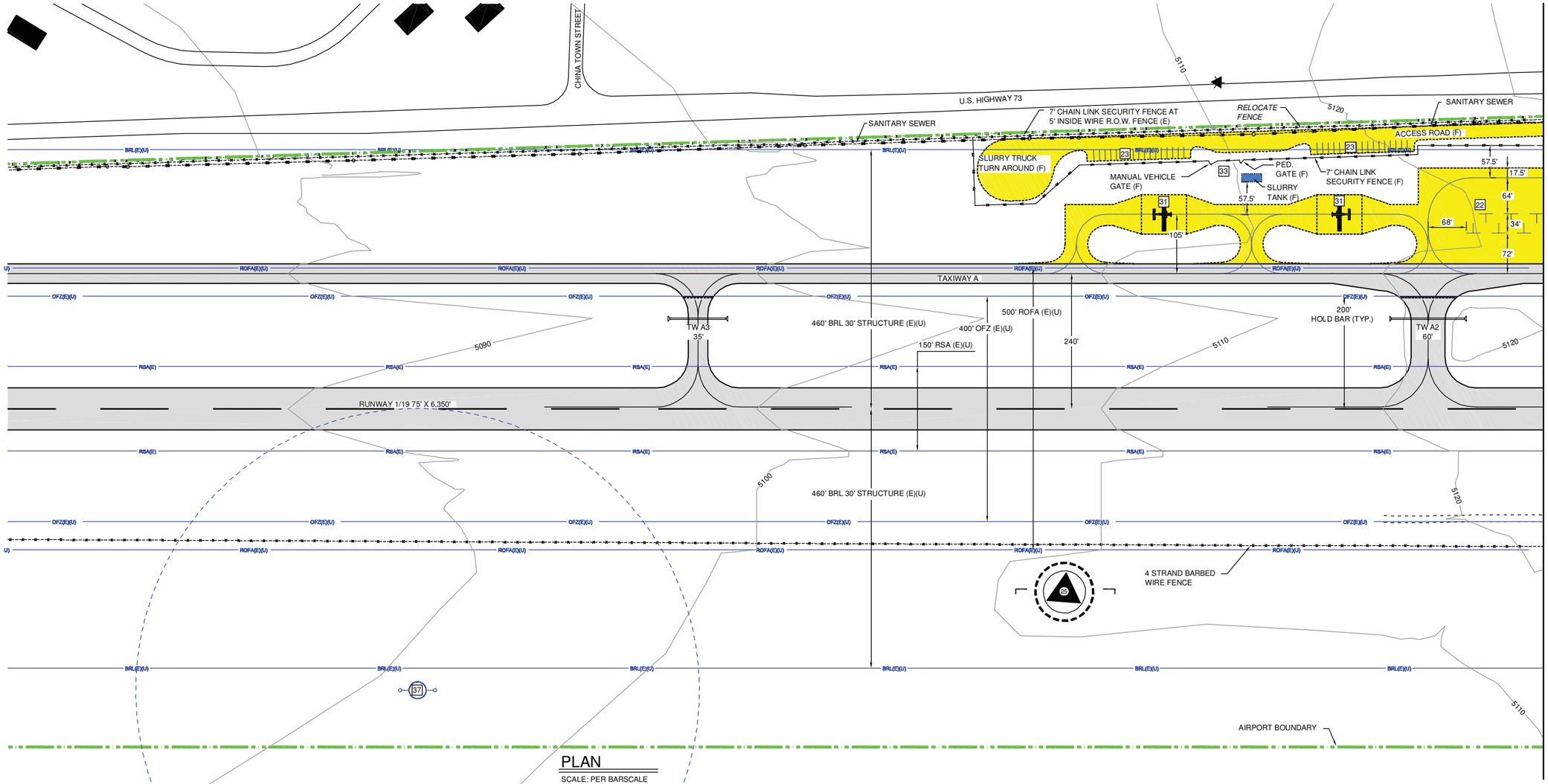
NO ACTION ALTERNATIVE

The no action alternative would include leaving the airport in its current condition including the Runway and Apron area. This alternative does not meet the objectives for accommodating future operations.

CONCLUSIONS AND RECOMMENDATIONS

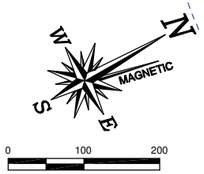
A planning meeting was held in Whiteriver on November 17, 2008 to discuss potential development projects, zoning and to solicit input from the Tribe. The Tribe has selected the projects to be carried forward.

These projects will accommodate existing and forecast traffic utilizing the airport by providing increased safety, providing adequate landside space and a nonprecision instrument approach into the airport. Each project meets the required criteria for accommodation of existing and expected aviation demand. An environmental overview of the proposed projects is included in Chapter 6. In addition, no significant impacts are expected with regard to airspace.



PLAN

SCALE: PER BARSCALE



LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
ss	N/A	SANITARY SEWER			FENCING
w	N/A	WATER LINE			HELIPADS

AIRPORT FACILITIES LIST

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
1	9	HELITACK SHACK	12'	5167
2	9	TRAILER	15	5171.5
3		STORAGE	12	5169.3
4	9	FOREST DEVELOPMENT BLDG.	15	5173.1
5		DISPATCH OFFICE	15	5175.7
6		WAREHOUSE	20	5181.5
7		SHED	10'	5167.2
8		AUTO SHOP	27	5189.4
9	9	TRAILER	14	5166.0
10		TRAINING ROOM	20	5182.4
11		ENGINE SHOP / OFFICE	12'	5175.6
12		COVERED STORAGE	12'	5175.6
13		MAP ROOM	14'	5177.3
14		SAW SHOP	10'	5173.3
15		COVERED PARKING	15	5178.3
16		SNOW REMOVAL EQUIPMENT BLDG.	22.5	5156.5
17	17	FUEL TRAILER / FUEL FARM		
18		ELECTRICAL VAULT	6	5164.1
19	19	TYPE I HELICOPTER PARKING		
20	20	TYPE II HELICOPTER PARKING		
21		TYPE III HELICOPTER PARKING		
22	22	AIRCRAFT PARKING / TIE DOWNS		
23	23	VEHICLE PARKING		
24		BEACON (EXISTING O.L.)	35'	5193
25		WIND CONE / SEGMENTED CIRCLE	23	5133

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
26		SUPPLEMENTAL WIND CONE	23	E
27		THRESHOLD LIGHTS		N/A
28		REILs		N/A
29		PAPIs		N/A
30		PROPANE TANKS		N/A
	31	S.E.A.T. LOADING PADS		N/A
32	32	ELECTRIC SLIDE GATE		N/A
33	33	GATE		N/A
34		AREA LIGHT	22'	5156
35		AREA LIGHT	22'	5161
	36	G.A. TERMINAL	20'	5178
	37	AWOS III	17'	5109
38	38	SLURRY TANKS		
41		ROAD DEPT. BUILDING	20'	5175
42		ROAD DEPT. TRAILER	16'	5171
43		ROAD DEPT. BUILDING	20'	5180
44		ROAD DEPT. BUILDING	16'	5166
45		ROAD DEPT. TRAILER	16'	5166
46		ROAD DEPT. BUILDING	16'	5166
47		ROAD DEPT. BUILDING	20'	5180

NOTE: FUTURE TRAILER 9, WILL CONTAIN OFFICES, TRAINING ROOMS, READY ROOM AND PILOT LOUNGE

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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

THE COMMENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICIES OF THE FAA, AZDOT AIRPORTS DIVISION, OR THE WHITE MOUNTAIN APACHE TRIBE UNLESS SPECIFICALLY STATED. ACCEPTANCE OF THIS PLAN DOES NOT CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREON. ACCEPTANCE OF THIS PLAN DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PROVIDE FEDERAL OR STATE AID FOR THE DEVELOPMENT. ACCEPTANCE OF THIS PLAN DOES NOT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Project No: 075824
Date: 01.05.09
File Name: 5824554

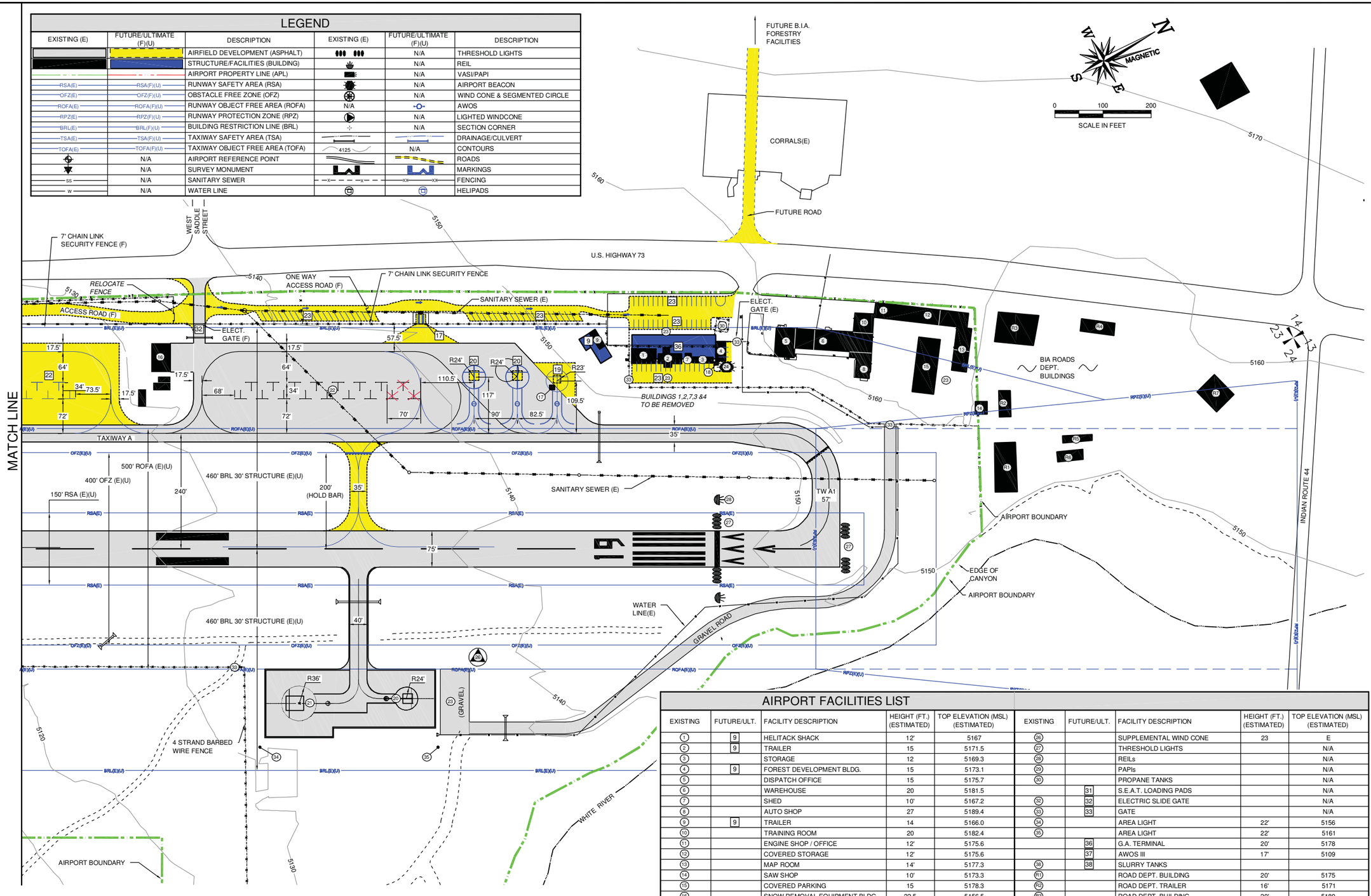
Drawn: JOS
Checked: DPS
Approved: DAC

RECOMMENDED LANDSIDE DEVELOPMENT SOUTH

Figure 4-1

LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
ss	N/A	SANITARY SEWER			FENCING
w	N/A	WATER LINE			HELIPADS



PLAN

SCALE: PER BARSCALE

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15		COVERED PARKING	15	5178.3
16		SNOW REMOVAL EQUIPMENT BLDG.	22.5	5156.5
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19	19	TYPE I HELICOPTER PARKING		
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21		TYPE III HELICOPTER PARKING		
22	22	AIRCRAFT PARKING / TIE DOWNS		
23	23	VEHICLE PARKING		
24		BEACON (EXISTING O.L.)	35'	5193
25		WIND CONE / SEGMENTED CIRCLE	23	5133

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
26		SUPPLEMENTAL WIND CONE	23	E
27		THRESHOLD LIGHTS		N/A
28		REILs		N/A
29		PAPIs		N/A
30		PROPANE TANKS		N/A
	31	S.E.A.T. LOADING PADS		N/A
32	32	ELECTRIC SLIDE GATE		N/A
33	33	GATE		N/A
34		AREA LIGHT	22'	5156
35		AREA LIGHT	22'	5161
	36	G.A. TERMINAL	20'	5178
	37	AWOS III	17'	5109
38	38	SLURRY TANKS		
R1		ROAD DEPT. BUILDING	20'	5175
R2		ROAD DEPT. TRAILER	16'	5171
R3		ROAD DEPT. BUILDING	20'	5180
R4		ROAD DEPT. BUILDING	16'	5166
R5		ROAD DEPT. TRAILER	16'	5166
R6		ROAD DEPT. BUILDING	16'	5166
R7		ROAD DEPT. BUILDING	20'	5180

NOTE: FUTURE TRAILER 9, WILL CONTAIN OFFICES, TRAINING ROOMS, READY ROOM AND PILOT LOUNGE

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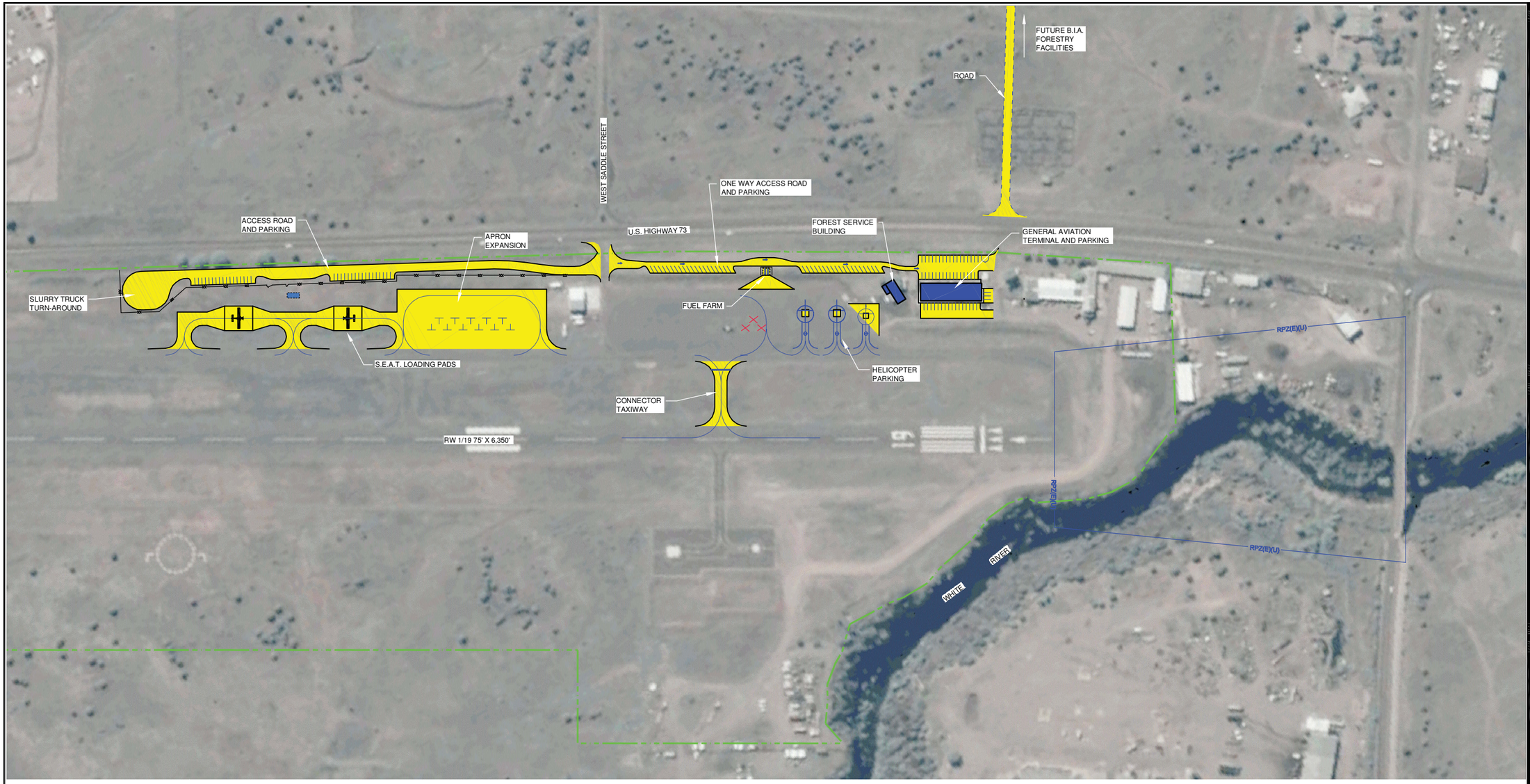
Project No: 075824
Date: 01.05.09
File Name: 5824554

Drawn: JOS
Checked: DPS
Approved: DAC

RECOMMENDED LANDSIDE DEVELOPMENT NORTH

Figure 4-2



N
W
E
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MAGNETIC

0 150 300
SCALE IN FEET

LEGEND

- FUTURE DEVELOPMENT
- FUTURE BUILDINGS OR PAVEMENT MARKINGS
- EXISTING PROPERTY LINE

RECOMMENDED DEVELOPMENT

ARMSTRONG CONSULTANTS, Inc.
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www.armstrongconsultants.com

WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS

No.	Revision	Date	By

THE COMMENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA OR AOT AERONAUTICS AT THE TIME OF THESE DOCUMENTS BY THE FAA OR AOT AERONAUTICS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PROVIDE FUNDING FOR ANY PROPOSALS CONTAINED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Project No: 075824
Date: 01.05.09
File Name: 5824555

Drawn: JOS
Checked: DPS
Approved: DAC

RECOMMENDED DEVELOPMENT

Figure 4-3

Chapter Five
Airport Plans

Whiteriver Airport
Airport Master Plan

Chapter Five
Airport Layout Plan

INTRODUCTION

This set of plans, referred to as the Airport Layout Plan (ALP), has been prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular 150/5300-13, Change 13, Airport Design, the FAA Western-Pacific Regional ALP checklist as well as the State of Arizona, Aeronautics Department, ALP checklist. The purpose of this set of plans is to graphically depict the recommendations for the airport layout, disposition of obstructions and future use of land in the vicinity of the airport.

- Cover Sheet
- Airport Layout Plan Drawing
- Terminal/Building Area Plan Drawing
- Inner Portion of the Approach Surface Drawing
- Airport Airspace Drawing
- Land Use Drawing
- Exhibit “A” Property Map
- Aerial Photograph

In addition to the Airport Layout Plan drawing set, a model zoning ordinance and avigation easement guide has been prepared and is included in Appendix C.

WHITERIVER AIRPORT

WHITE MOUNTAIN APACHE TRIBE

AIRPORT LAYOUT PLANS

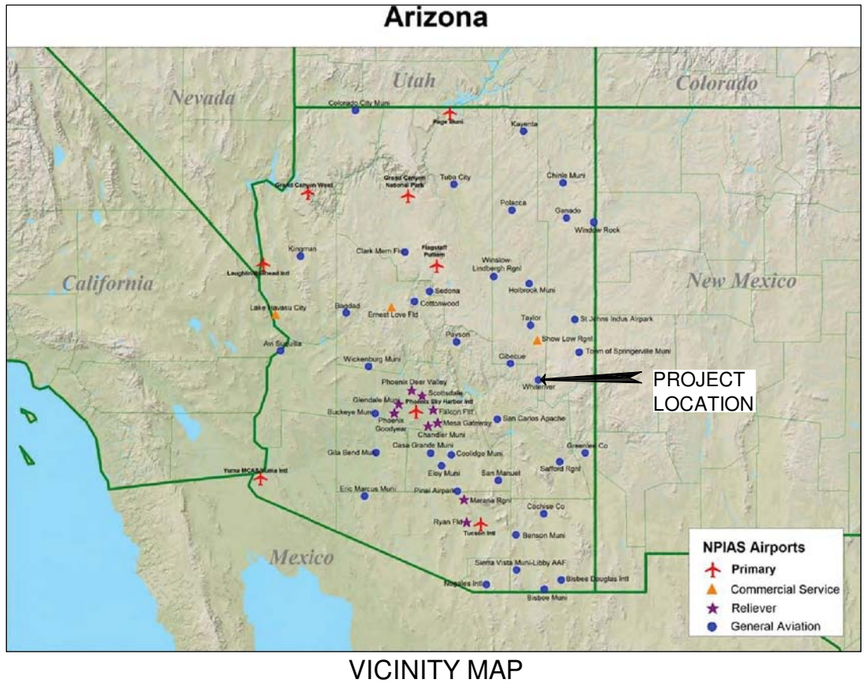
PREPARED BY:

ARMSTRONG CONSULTANTS, INC.

A.I.P. No. 3-04-0047-10
A.C.I. PROJECT NO. 075824
DATE: JUNE 15, 2009

LOCATION MAP

N.T.S.



VICINITY MAP

N.T.S.

INDEX TO SHEETS

5824501

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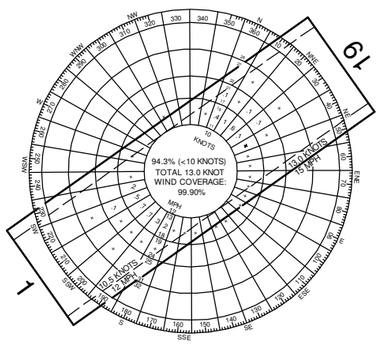
LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
N/A	N/A	AIRPORT REFERENCE POINT			ROADS
N/A	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER	XX	X	FENCING
W	N/A	WATER LINE			HELIPADS



ALL WEATHER WIND ROSE

RUNWAY	10.5 KT/12 MPH	13 KT/15 MPH
1/19	99.74%	99.90%

SOURCE: U.S. FOREST SERVICE, REMOTE WEATHER OBSERVATION SYSTEM, WHITERIVER, ARIZONA JANUARY 1996 - DECEMBER 1996. 7,020 OBSERVATIONS

SECTION CORNER 21 25 28 33

GENERAL NOTES:

ALL AIRPORT PROPERTY, INCLUDING RPZ's, OWNED AND CONTROLLED BY SPONSOR. SEE EXHIBIT "A".

U.S.G.S. SURVEY MONUMENT K 34 IS A STANDARD DISK SET IN THE TOP OF A LARGE ROCK OUTCROP. IT IS UNPROTECTED.

AIRPORT FACILITIES LIST

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION
1	9	HELITACK SHACK	26		SUPPLEMENTAL WIND CONE
2	9	TRAILER	27		THRESHOLD LIGHTS
3		STORAGE	28		REILs
4	9	FOREST DEVELOPMENT BLDG.	29		PAPIs
5		DISPATCH OFFICE	30		PROPANE TANKS
6		WAREHOUSE		31	S.E.A.T. LOADING PADS
7		SHED	32	32	ELECTRIC SLIDE GATE
8		AUTO SHOP	33	33	GATE
9	9	B.I.A. AIR OPERATIONS TRAILER	34		AREA LIGHT
10		TRAINING ROOM	35		AREA LIGHT
11		ENGINE SHOP / OFFICE		36	G.A. TERMINAL
12		COVERED STORAGE		37	AWOS III
13		MAP ROOM	38	38	SLURRY TANKS
14		SAW SHOP	R1		ROAD DEPT. BUILDING
15		COVERED PARKING	R2		ROAD DEPT. TRAILER
16		SNOW REMOVAL EQUIPMENT BLDG.	R3		ROAD DEPT. BUILDING
17	17	FUEL TRAILER / FUEL FARM	R4		ROAD DEPT. BUILDING
18		ELECTRICAL VAULT	R5		ROAD DEPT. TRAILER
19	19	TYPE I HELICOPTER PARKING	R6		ROAD DEPT. BUILDING
20	20	TYPE II HELICOPTER PARKING	R7		ROAD DEPT. BUILDING
21		TYPE III HELICOPTER PARKING			
22	22	AIRCRAFT PARKING / TIE DOWNS			
23	23	VEHICLE PARKING			
24		BEACON (EXISTING O.L.)			
25		WIND CONE / SEGMENTED CIRCLE			

NOTE: FUTURE TRAILER 9, WILL CONTAIN OFFICES, TRAINING ROOMS, READY ROOM AND PILOT LOUNGE

SPONSOR APPROVAL

TRIBAL ENGINEER, WHITE MOUNTAIN APACHE TRIBE DATE

FAA APPROVAL

DATE

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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

Project No: 075824
Date: 06.15.09
File Name: 5824502

Drawn: JOS
Checked: JZP
Approved: DAC

AIRPORT LAYOUT PLAN

Sheet: 2 of: 12

RUNWAY DATA

ITEM		RW 1/19 EXISTING(E)	RW 1/19 ULTIMATE(U)
RUNWAY REFERENCE CODE		B-II	B-II
APPROACH MINIMUMS	RW 1	NONE	1 MILE
	RW 19	NONE	1 MILE
APPROACH TYPE	RW 1	VISUAL, >UTILITY	NPI >UTILITY
	RW 19	VISUAL, >UTILITY	NPI >UTILITY
FAR PART 77 APPROACH SLOPE	RW 1	20:1	34:1
	RW 19	20:1	34:1
RUNWAY LENGTH		6,350'	SAME
RUNWAY WIDTH		75'	SAME
RUNWAY & TAXIWAY PAVEMENT		ASPHALT	SAME
PAVEMENT STRENGTH (LBS)		75,000 SWG 100,000 DWG 155,000 DTW	SAME
RUNWAY LIGHTING		MIRL	SAME
TAXIWAY LIGHTING		RETROREFLECTIVE (MITLs EXITS ONLY)	MITL
RUNWAY MARKING	RW 1	NPI	SAME
	RW 19	NPI	SAME
% EFFECTIVE GRADIENT		1.16%	SAME
% MAXIMUM GRADE		1.80%	SAME
LINE OF SIGHT REQUIREMENTS MET		YES	SAME
VISUAL APPROACH AIDS	RW 1	PAPI 2-L / REILs	SAME
	RW 19	REILs	SAME
INSTRUMENT APPROACH AIDS		NONE	GPS (WAAS)
DESIGN AIRCRAFT	CRITICAL AIRCRAFT	FALCON 900	SAME
	APPROACH SPEED (KNOTS)	100 KTS.	SAME
	WINGSPAN (FEET)	63.4'	SAME
	TAIL HEIGHT	24.8'	SAME
	UNDERCARRIAGE WIDTH	13'	SAME
	MAX. CERTIFIED TAKEOFF WT. (LBS)	45,500	SAME
RUNWAY SAFETY AREA (RSA)	WIDTH	150'	SAME
	LENGTH BEYOND RW END	300'	SAME
RUNWAY OBJECT FREE AREA (ROFA)	WIDTH	500'	SAME
	LENGTH BEYOND RW END	300'	SAME
OBSTACLE FREE ZONE (OFZ) (NO OFZ OBJECT PENETRATIONS)	WIDTH	400'	SAME
	LENGTH BEYOND RW END	200'	SAME
RUNWAY END ELEVATIONS (NAVD 88)	RW 1	5078.9	SAME
	RW 19	5152.9	SAME
DISPLACED THRESHOLD	RW 19	5148.9	SAME
TOUCHDOWN ZONE (TDZ)	RW 1	N/A	5097.5
	RW 19	N/A	5148.9
HIGH POINT		5152.9	SAME
LOW POINT		5078.9	SAME
RUNWAY PROTECTION ZONE DIMENSIONS	RW 1	1,000' x 500' x 700'	SAME
	RW 19	1,000' x 500' x 700'	SAME
RUNWAY CENTERLINE TO HOLD BARS & SIGNS		200'	SAME
RUNWAY / PARALLEL TAXIWAY C/L SEPARATION		240'	SAME
TAXIWAY OFA WIDTH		131'	SAME
TAXIWAY SAFETY AREA WIDTH		39'	SAME
TAXIWAY WING TIP CLEARANCE		26'	SAME
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT		83'	SAME
TAXIWAY WIDTH		VARIES 35' to 60'	SAME
APPROACH SURFACE DIMENSIONS	RW 1	500' x 1,500' x 5,000'	500' x 3,500' x 10,000'
	RW 19	500' x 1,500' x 5,000'	500' x 3,500' x 10,000'

* TERRAIN PENETRATES PAPI SITING CRITERIA FOR RW 19.
SERVICE ROAD NORTH OF RW 1 IS CONTROLLED AND LIMITED USE.

AIRPORT DATA

ITEM		EXISTING(E)	ULTIMATE(U)
AIRPORT ELEVATION (NAVD 88)		5152.9	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	33° 48' 38.19" N	SAME
	LONGITUDE	109° 59' 08.68" W	SAME
MEAN MAX. TEMP: HOTTEST MONTH (JULY)		80.5°F	
RUNWAY WIND COVERAGE	12 MPH / 10.5 kts	99.74%	SAME
	15 MPH / 13kts	99.90%	SAME
	18 MPH / 16 kts	N/A	N/A
AIRPORT REFERENCE CODE		B-II	SAME
NPIAS ROLE		GENERAL AVIATION	SAME
MAGNETIC VARIATION, 2008		10°38' E	
NAVAIDS		BEACON	GPS (WAAS), BEACON

RUNWAY DISPLACEMENT

	REMARKS
EXISTING RUNWAY 1/19 6,350' X 75' RW 19 250' DISPLACED THRESHOLD	

DECLARED DISTANCES

RUNWAY 1/19	EXISTING	ULTIMATE
RUNWAY LENGTH	6,350'	6,350'
RUNWAY 1 TODA	6,350	6,350
RUNWAY 1 LDA	6,100	6,100
RUNWAY 1 ASDA	6,100	6,100
RUNWAY 1 TORA	6,100	6,100
RUNWAY 19 TODA	6,350	6,350
RUNWAY 19 LDA	6,100	6,100
RUNWAY 19 ASDA	6,350	6,350
RUNWAY 19 TORA	6,350	6,350
FAA APPROVED ON AIRPORT LAYOUT PLAN 1998		

THRESHOLD SITING SURFACE PENETRATIONS

RW END	OBJECT	PENETRATION (FEET)(ESTIMATED)	PROPOSED ACTION
19	SERVICE ROAD	11.5'	LIMITED ACCESS
19	RW PAVEMENT	2.5'	NONE
19	BUILDING	6.5'	REMOVE

NON-STANDARD CONDITIONS

RW DESIGN CATEGORY	STANDARD	NON-STD CONDITION	PROPOSED ACTION
B-II	500' ROFA	FENCE PENETRATES 6 FEET ON SOUTH SIDE OF RUNWAY	RELOCATE FENCE

RUNWAY END COORDINATES (NAD 83)

	EXISTING / ULTIMATE		
	RW 1 END	RW 19 END	RW 19 DISP. TH
LATITUDE	33° 48' 10.93" N	33° 49' 05.45" N	33° 49' 03.30" N
LONGITUDE	109° 59' 27.37" W	109° 58' 49.98" W	109° 58' 51.45" W

NOTE: NAD 83 COORDINATES BASED ON SURVEY PERFORMED BY ABSOLUTE SURVEYING AND MAPPING, INC. OCTOBER & NOVEMBER, 2004

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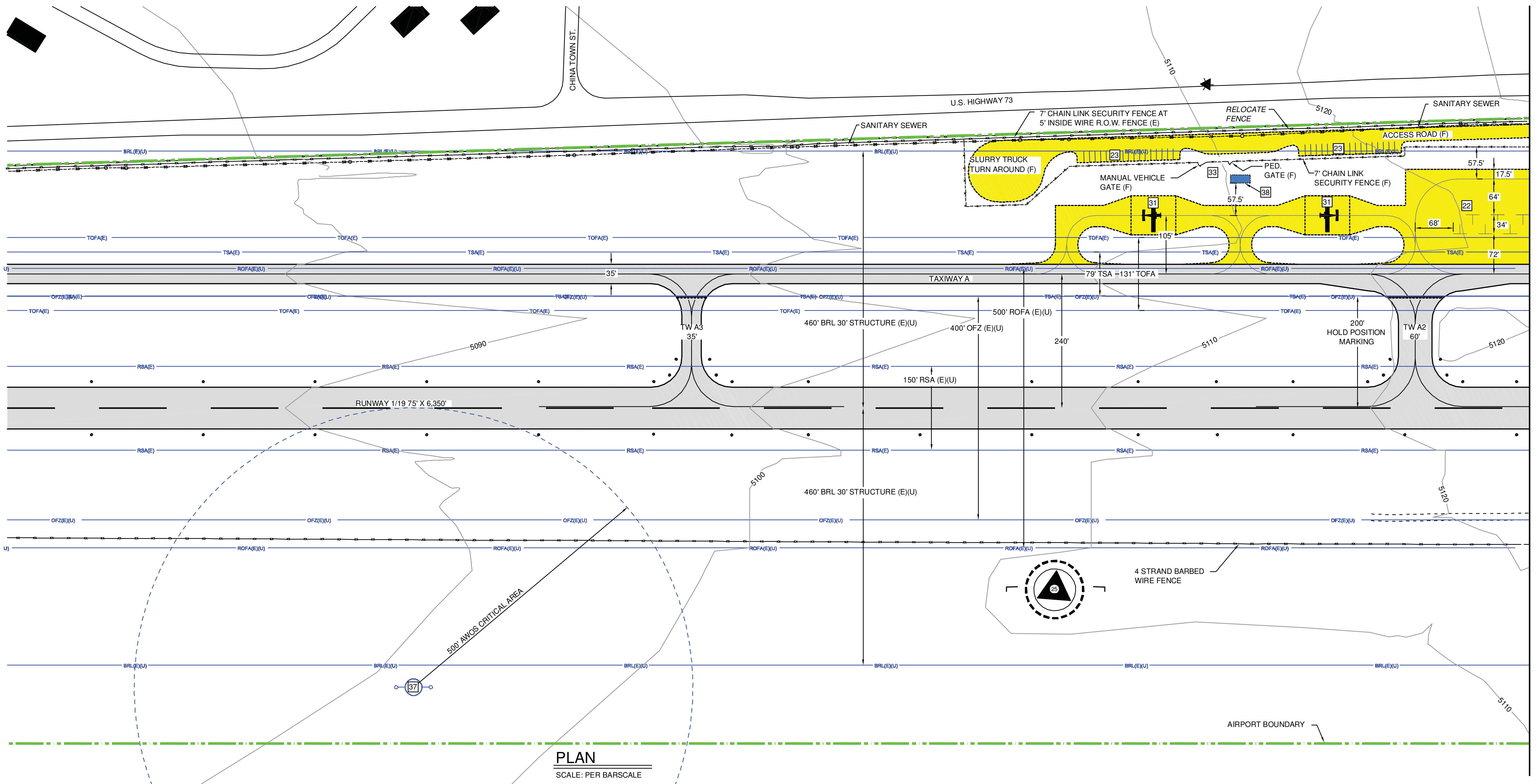
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

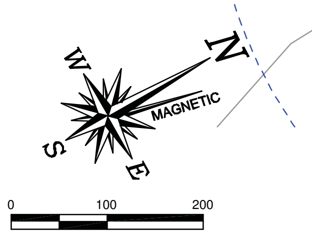
No.	Revision	Date	By

Project No: 075824
Date: 06.15.09
File Name: 5824502

Drawn: JOS
Checked: JZP
Approved: DAC

AIRPORT DATA SHEET





LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER	XX	X	FENCING
W	N/A	WATER LINE			HELIPADS

AIRPORT FACILITIES LIST

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
1	9	HELITACK SHACK	12'	5167
2	9	TRAILER	15	5171.5
3		STORAGE	12	5169.3
4	9	FOREST DEVELOPMENT BLDG.	15	5173.1
5		DISPATCH OFFICE	15	5175.7
6		WAREHOUSE	20	5181.5
7		SHED	10'	5167.2
8		AUTO SHOP	27	5189.4
9	9	B.I.A. OPERATIONS TRAILER	14	5166.0
10		TRAINING ROOM	20	5182.4
11		ENGINE SHOP / OFFICE	12'	5175.6
12		COVERED STORAGE	12'	5175.6
13		MAP ROOM	14'	5177.3
14		SAW SHOP	10'	5173.3
15		COVERED PARKING	15	5178.3
16		SNOW REMOVAL EQUIPMENT BLDG.	22.5	5156.5
17	17	FUEL TRAILER / FUEL FARM		
18		ELECTRICAL VAULT	6	5164.1
19	19	TYPE I HELICOPTER PARKING		
20	20	TYPE II HELICOPTER PARKING		
21		TYPE III HELICOPTER PARKING		
22	22	AIRCRAFT PARKING / TIE DOWNS		
23	23	VEHICLE PARKING		
24		BEACON (EXISTING O.L.)	35'	5193
25		WIND CONE / SEGMENTED CIRCLE	23	5133

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
26		SUPPLEMENTAL WIND CONE	23	E
27		THRESHOLD LIGHTS		N/A
28		REILs		N/A
29		PAPIs		N/A
30		PROPANE TANKS		N/A
	31	S.E.A.T. LOADING PADS		N/A
32	32	ELECTRIC SLIDE GATE		N/A
33	33	GATE		N/A
34		AREA LIGHT	22'	5156
35		AREA LIGHT	22'	5161
	36	G.A. TERMINAL	20'	5178
	37	AWOS III	17'	5109
38	38	SLURRY TANKS		
R1		ROAD DEPT. BUILDING	20'	5175
R2		ROAD DEPT. TRAILER	16'	5171
R3		ROAD DEPT. BUILDING	20'	5180
R4		ROAD DEPT. BUILDING	16'	5166
R5		ROAD DEPT. TRAILER	16'	5166
R6		ROAD DEPT. BUILDING	16'	5166
R7		ROAD DEPT. BUILDING	20'	5180

NOTE: FUTURE TRAILER 9, WILL CONTAIN OFFICES, TRAINING ROOMS, READY ROOM AND PILOT LOUNGE

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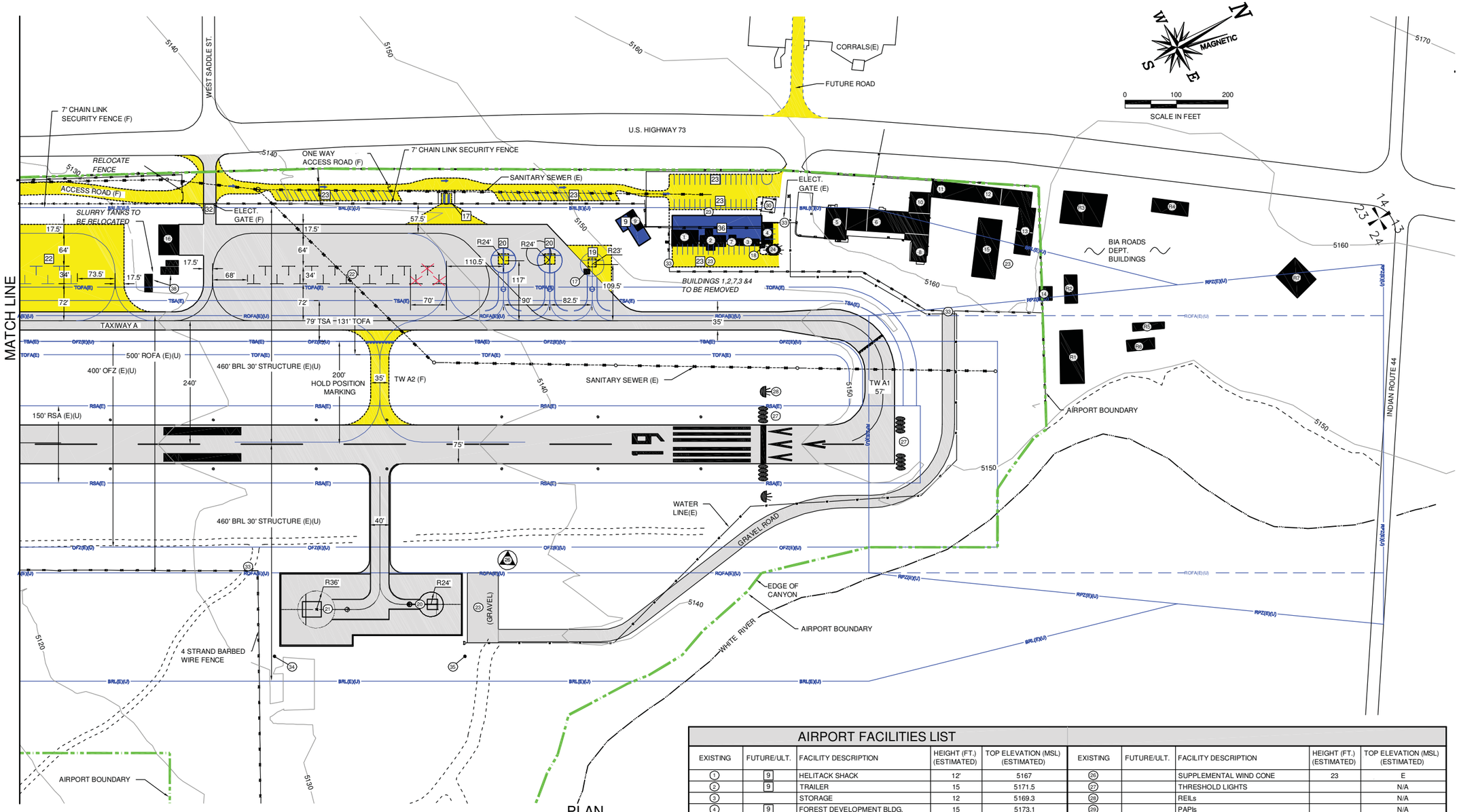
Project No: 075824
Date: 06.15.09
File Name: 5824503

Drawn: JOS
Checked: JZP
Approved: DAC

TERMINAL AREA DRAWING SOUTH



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		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER	XX	X	FENCING
W	N/A	WATER LINE			HELIPADS

AIRPORT FACILITIES LIST

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14		SAW SHOP	10'	5173.3
15		COVERED PARKING	15	5178.3
16		SNOW REMOVAL EQUIPMENT BLDG.	22.5	5156.5
17	17	FUEL TRAILER / FUEL FARM		
18		ELECTRICAL VAULT	6	5164.1
19	19	TYPE I HELICOPTER PARKING		
20	20	TYPE II HELICOPTER PARKING		
21		TYPE III HELICOPTER PARKING		
22	22	AIRCRAFT PARKING / TIE DOWNS		
23	23	VEHICLE PARKING		
24		BEACON (EXISTING O.L.)	35'	5193
25		WIND CONE / SEGMENTED CIRCLE	23	5133

EXISTING	FUTURE/ULT.	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (MSL) (ESTIMATED)
26		SUPPLEMENTAL WIND CONE	23	E
27		THRESHOLD LIGHTS		N/A
28		REILs		N/A
29		PAPIs		N/A
30		PROPANE TANKS		N/A
	31	S.E.A.T. LOADING PADS		N/A
32	32	ELECTRIC SLIDE GATE		N/A
33	33	GATE		N/A
34		AREA LIGHT	22'	5156
35		AREA LIGHT	22'	5161
	36	G.A. TERMINAL	20'	5178
	37	AWOS III	17'	5109
38	38	SLURRY TANKS		
B1		ROAD DEPT. BUILDING	20'	5175
B2		ROAD DEPT. TRAILER	16'	5171
B3		ROAD DEPT. BUILDING	20'	5180
B4		ROAD DEPT. BUILDING	16'	5166
B5		ROAD DEPT. TRAILER	16'	5166
B6		ROAD DEPT. BUILDING	16'	5166
B7		ROAD DEPT. BUILDING	20'	5180

NOTE: FUTURE TRAILER 9, WILL CONTAIN OFFICES, TRAINING ROOMS, READY ROOM AND PILOT LOUNGE

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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

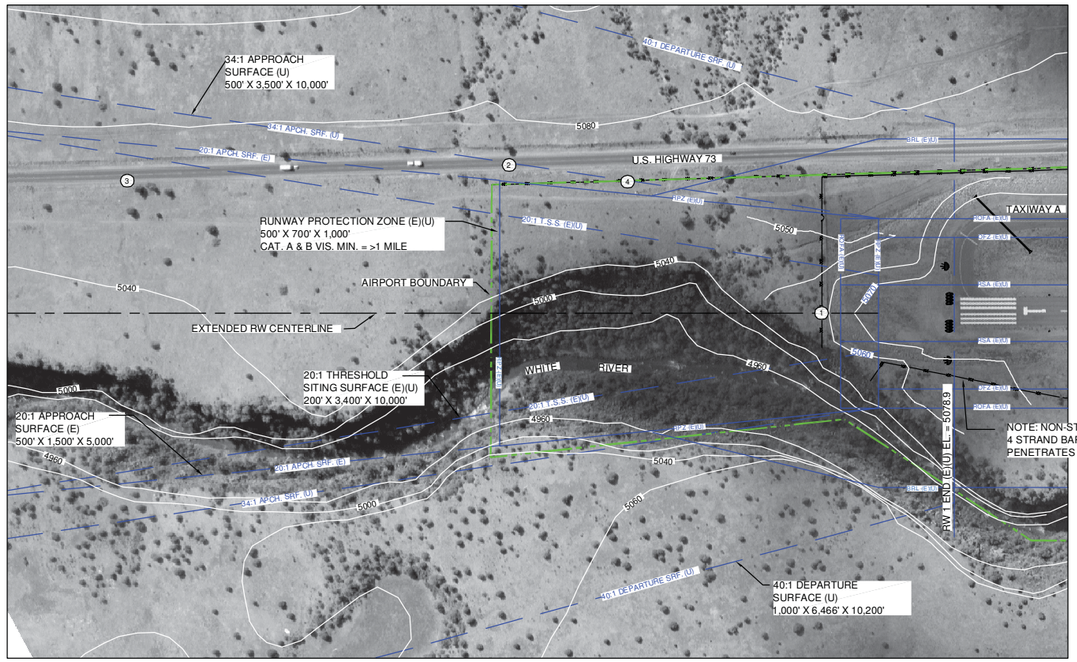
THE COMMENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OF THE WHITE MOUNTAIN APACHE TRIBE UNLESS SPECIFICALLY SET FORTH IN THESE DOCUMENTS BY THE FAA OR ADOT. APPROVAL BY THE FAA OR ADOT AERONAUTICS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PROVIDE FUNDING FOR THE PROPOSED DEVELOPMENT. FURTHER, IT DOES NOT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

Project No: 075824
Date: 06.15.09
File Name: 5824503

Drawn: JOS
Checked: DPS
Approved: DAC

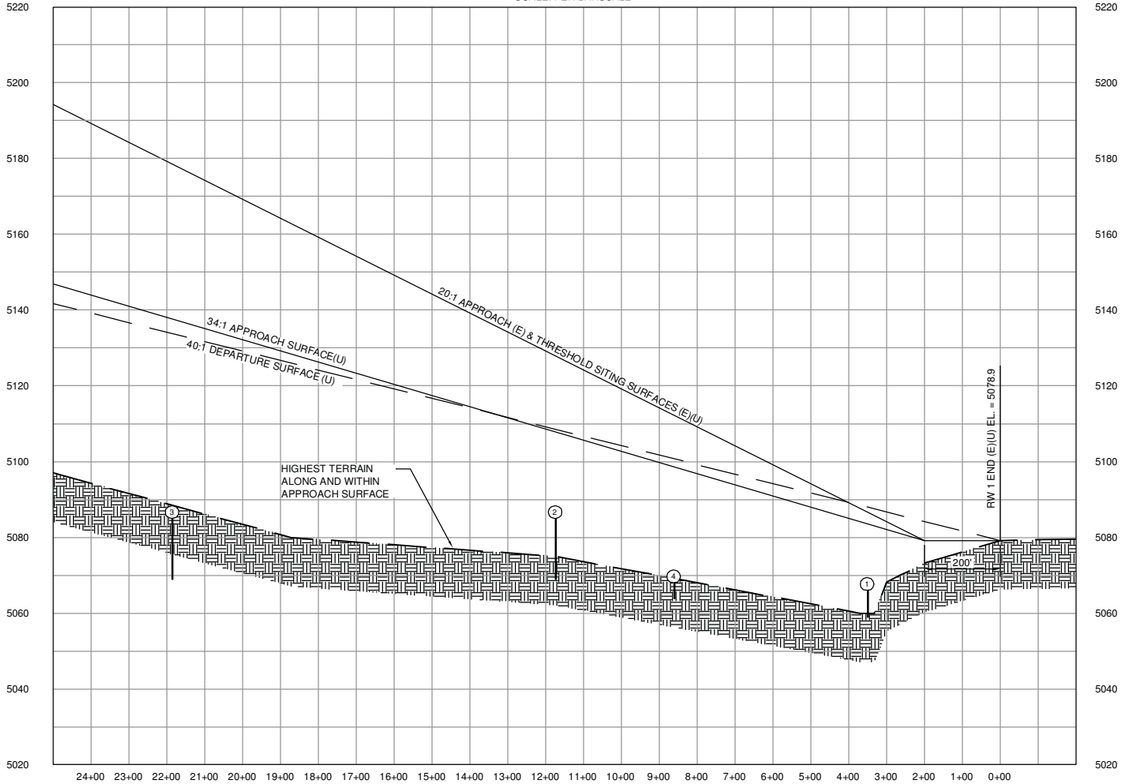
TERMINAL AREA DRAWING NORTH

Sheet: 5 **of:** 12



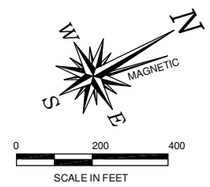
PLAN RW 1 END (E)(U)

SCALE: PER BARSCALE



PROFILE RW 1 END (E)(U)

SCALE: PER GRID



THERE ARE NO THRESHOLD SITING SURFACE PENETRATIONS

OBJECTS WITHIN RW 1 INNER APPROACH SURFACE

No.	OBJECT	SURFACE(S) PENETRATED	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	PENETRATION (E) / (U)	PROPOSED ACTION
1	CHAIN LINK SECURITY FENCE	NONE	5059	7'	5066	-20.7' / -17.6'	-
2	U.S. HIGHWAY 73	NONE	5069	16'	5085	N/A / -22.8'	-
3	U.S. HIGHWAY 73	NONE	5069	16'	5085	-93.4 / N/A	-
4	R-O-W FENCE	NONE	5064	4'	5068	N/A / -30.6'	-

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88)

LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER			FENCING
W	N/A	WATER LINE			HELIPADS

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A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

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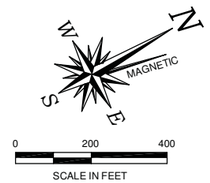
Project No: 075824
Date: 06.15.09
File Name: 5824504

Drawn: JOS
Checked: JZP
Approved: DAC

RW 1
INNER
APPROACH

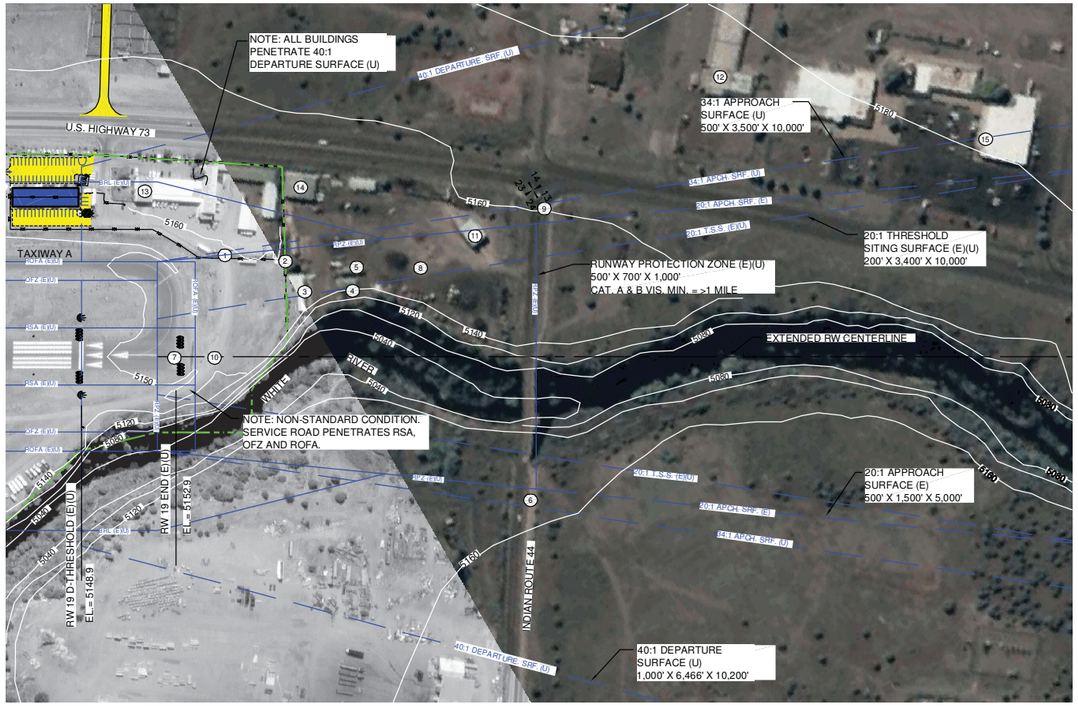
Sheet: 6 of: 12



OBJECTS WITHIN RW 19 INNER APPROACH SURFACE							
No.	OBJECT	SURFACE(S) PENETRATED	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	PENETRATION (E) / (U)	PROPOSED ACTION
①	SERVICE ROAD	20:1, 34:1, 40:1	5158	16'	5174	+16.8' / +20.2' / +15.9'	LIMITED ACCESS
②	FENCE	34:1 / 40:1	5159	7'	5166	+7.1' / +2.4'	
③	BUILDING	TSS, 20:1, 34:1, 40:1	5155	20'	5175	+6.5' / +14.6' / +11.3	REMOVE
④	TRAILER	NONE	5150	16'	5166	-13.6' / -3.0'	
⑤	TRAILER	NONE	5150	16'	5166	-14.3' / -3.4'	
⑥	ROAD	NONE	5158	16'	5174	-24.2' / -3.9'	
⑦	RW 19 END ASPHALT	TSS, 34:1	5152.9	-	5152.9	+2.5' / +1.5'	NONE
⑧	MATERIAL STOCKPILE	NONE	5148	20'	5168	-15.9' / -1.4'	
⑨	ROAD	NONE	5161	16'	5177	-23.0' / -2.0'	
⑩	SERVICE ROAD AT RW C/L	TSS, 20:1, 34:1, 40:1	5152	16'	5168	+11.5' / +14.6' / 10.2'	LIMITED ACCESS
⑪	BUILDING	40:1, 34:1	5158	20'	5178	-10.9' / + 6.3'	
⑫	BUILDING	40:1	5180	20'	5200	+8.9'	
⑬	BUILDING	40:1	5160.7	15'	5175.7	+22.5'	
⑭	BUILDING	40:1	5160	20'	5180	+16.6'	
⑮	BUILDING	NONE	5160	20'	5180	-58' / -13.1' -8.5'	
NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88)							

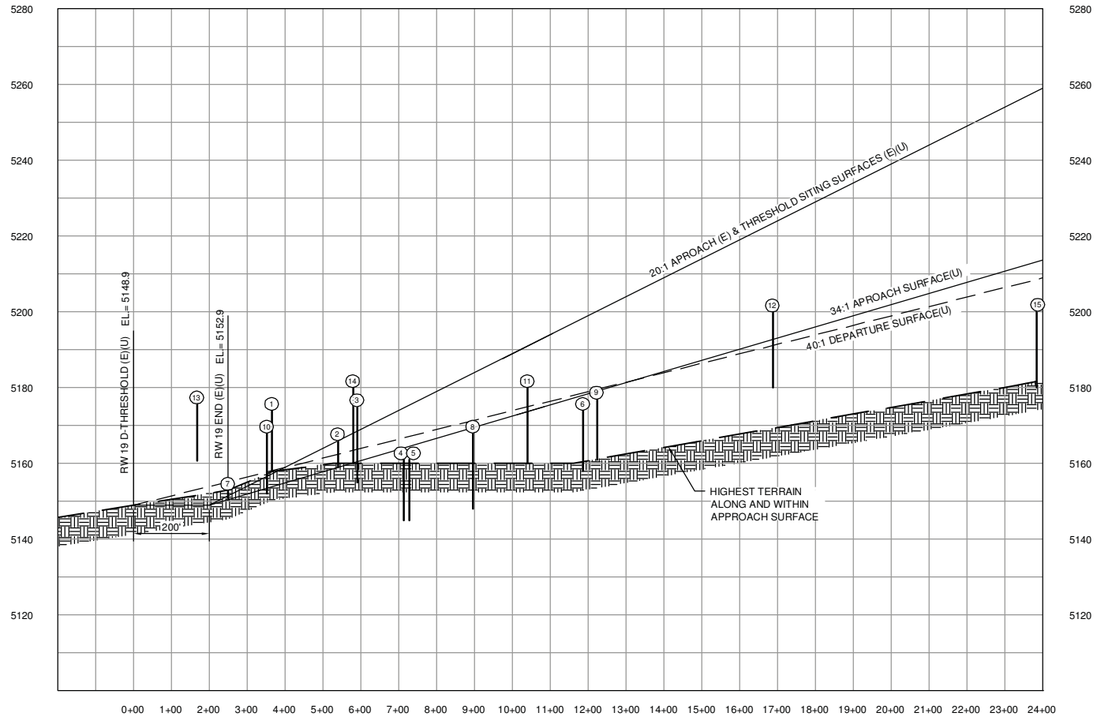
LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER			FENCING
W	N/A	WATER LINE			HELIPADS



PLAN RW 19 END (E)(U)

SCALE: PER BARSCALE



PROFILE RW 19 END (E)(U)

SCALE: PER GRID

NOTE: PENETRATIONS OF THE 40:1 DEPARTURE SURFACE BY EXISTING OBSTACLES OF 35 FEET OR LESS WOULD NOT REQUIRE TODA REDUCTION OR OTHER MITIGATIONS FOUND IN PARAGRAPH 4 OF ADVISORY CIRCULAR 150/5300-13; HOWEVER, THEY MAY AFFECT NEW OR EXISTING DEPARTURE PROCEDURES.

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WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

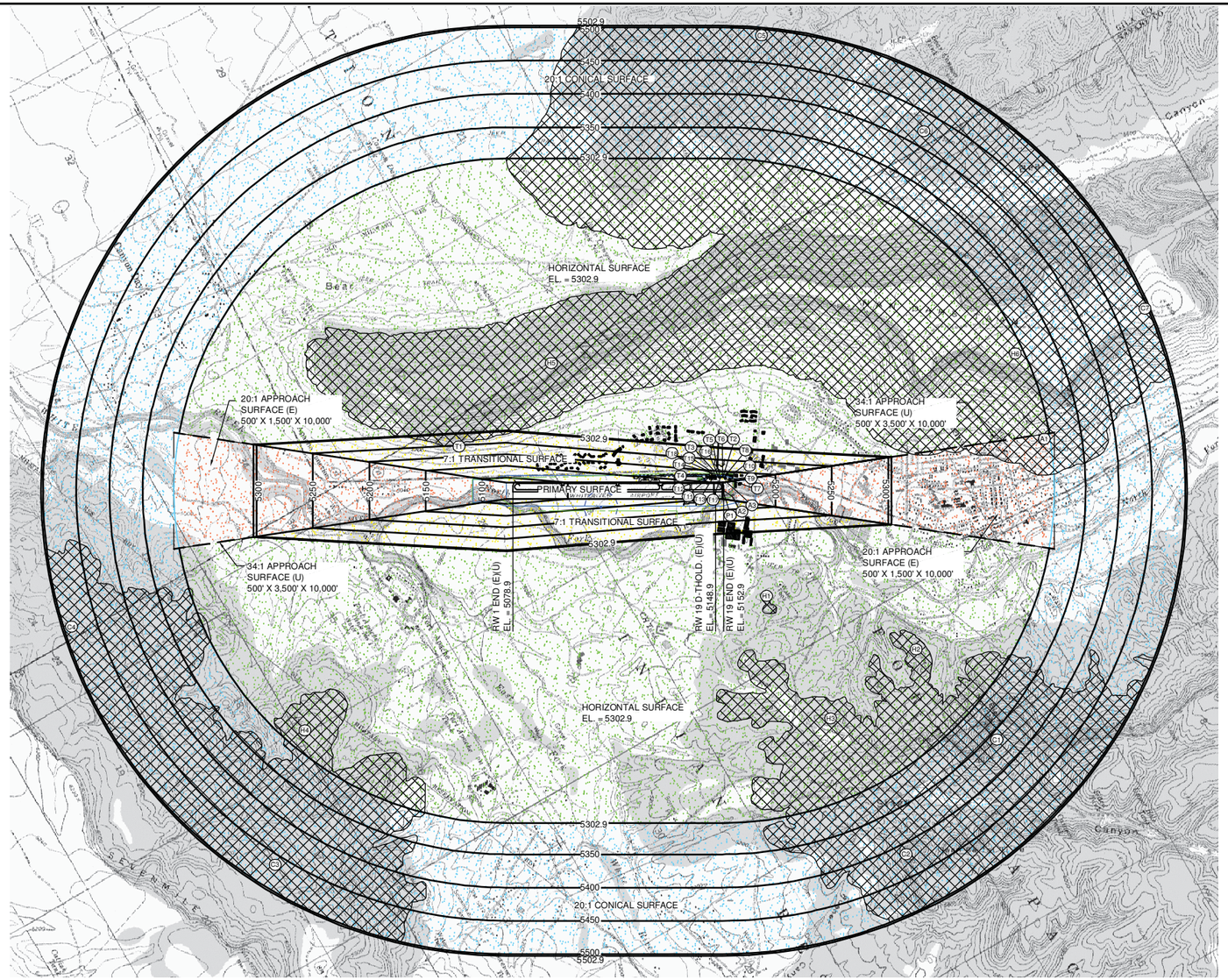
No.	Revision	Date	By

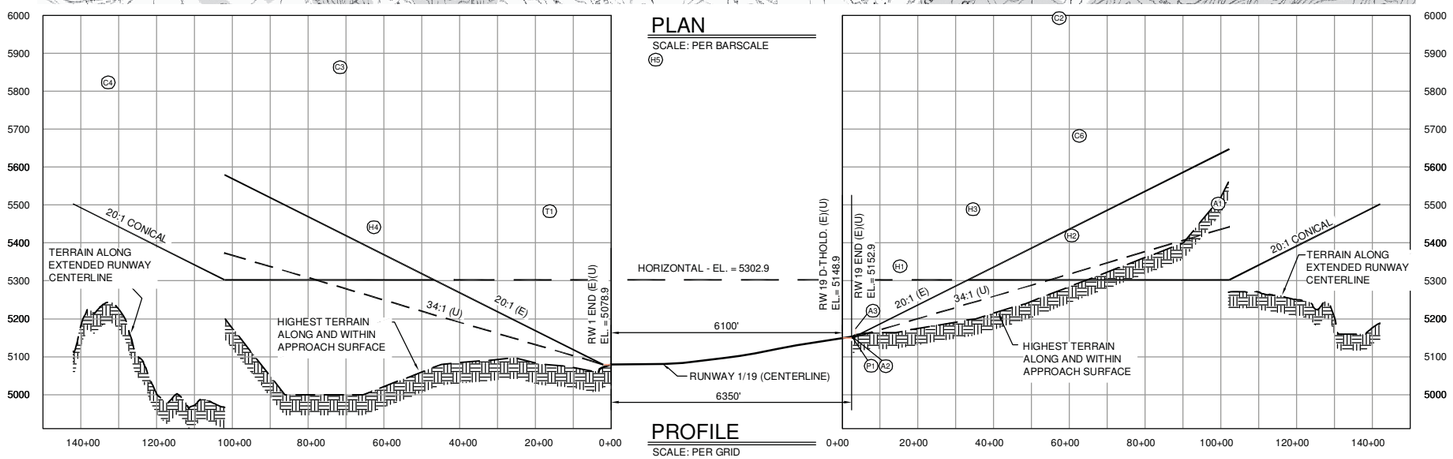
Project No: 075824
Date: 06.15.09
File Name: 5824504

Drawn: JOS
Checked: JZP
Approved: DAC

RW 19
INNER
APPROACH

Sheet: 7 **of:** 12

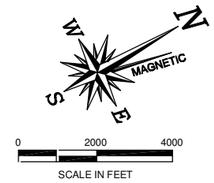




NOTES

a) REFER TO "INNER PORTION OF THE APPROACH SURFACE" DRAWINGS FOR DETAILS ON ANY CLOSE-IN APPROACH OBSTRUCTIONS.

b) APPROACH SURFACES BASED ON ULTIMATE CONDITION



OBSTRUCTION CHART

PART 77 SURFACE	ITEM No.	DESCRIPTION	ESTIMATED TOP ELEVATION (MSL)	PENETRATION (FEET)	REMARKS
PRIMARY	P1	RW 19 ASPHALT	5152.1	3.2	
APPROACH	A1	TERRAIN	5520	217	
	A2	RW 19 ASPHALT	5152.9	4	
	A3	SERVICE ROAD	5174	16.8	RESTRICTED USE
7:1 TRANSITIONAL	T1	TERRAIN	5500	197	
	T2	ANTENNA	5253.4	74	OBSTRUCTION LIGHT
	T3	FOREST DEV. BLDG.	5173.1	2.4	
	T4	TRAILER	5171.5	1.8	
	T5	DISPATCH OFFICE	5175.7	2.3	
	T6	WAREHOUSE	5181.5	2.0	
	T7	AUTO SHOP	5189.4	20.8	
	T8	TRAINING ROOM	5182.4	5.6	
	T9	COVERED PARKING	5179.3	14.3	
	T10	MAP ROOM	5177.3	5.1	
	T11	UTILITY POLE	5175	4.8	OBSTRUCTION LIGHT
	T12	UTILITY POLE	5177.5	4	OBSTRUCTION LIGHT
	T13	UTILITY POLE	5181.8	11.6	OBSTRUCTION LIGHT
	T14	UTILITY POLE	5182.6	7.8	OBSTRUCTION LIGHT
	T15	UTILITY POLE	5183.5	8	OBSTRUCTION LIGHT
	T16	UTILITY POLE	5187.5	7.5	OBSTRUCTION LIGHT
	T17	LIGHT POLE	5190	17.5	OBSTRUCTION LIGHT (E)
	T18	FUTURE G.A. TERMINAL	5178	3'	OBSTRUCTION LIGHT (F)
HORIZONTAL	H1	TERRAIN	5355	52	
	H2	TERRAIN	5436	133	
	H3	TERRAIN	5505	202	
	H4	TERRAIN	5458	155	
	H5	TERRAIN	5900	597	
	H6	TERRAIN	6090	787	
20:1 CONICAL	C1	TERRAIN	6050	692	
	C2	TERRAIN	6010	590	
	C3	TERRAIN	5880	416	
	C4	TERRAIN	5840	337	
	C5	TERRAIN	6040	537	
	C6	TERRAIN	5699	271	
	C7	TERRAIN	6245	742	

TRANSITIONAL SURFACE

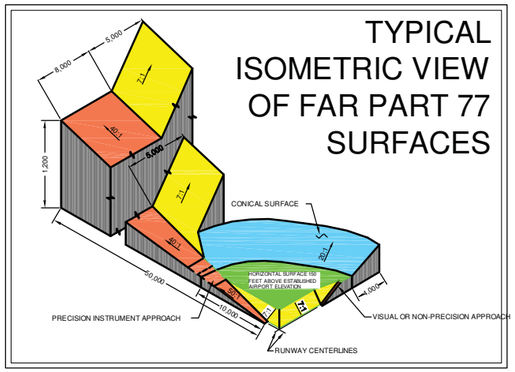
APPROACH SURFACE

HORIZONTAL SURFACE

CONICAL SURFACE

PART 77 TERRAIN PENETRATIONS

TYPICAL ISOMETRIC VIEW OF FAR PART 77 SURFACES



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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

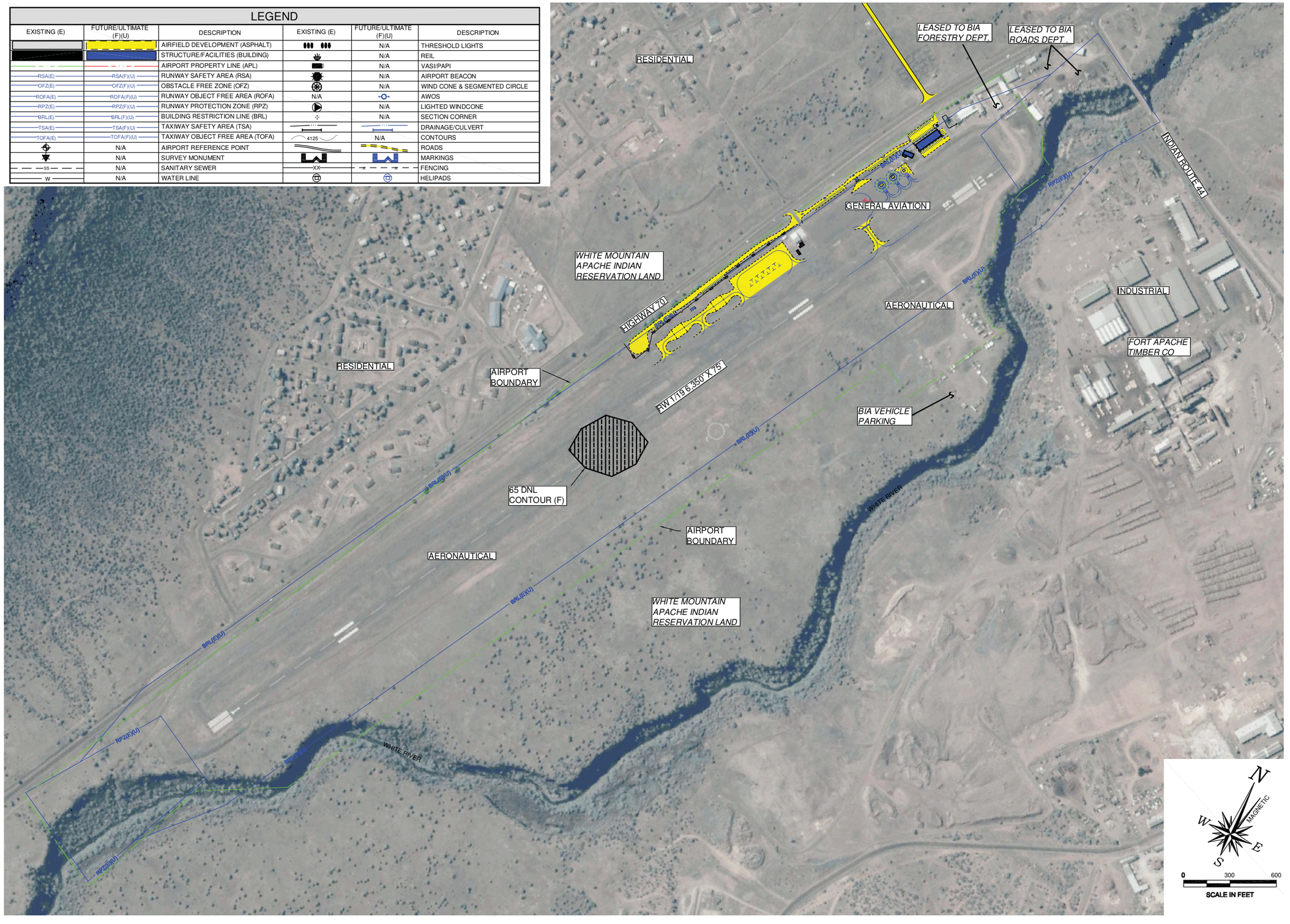
Project No: 075824
Date: 06.15.09
File Name: 5824505

Drawn: JOS
Checked: JZP
Approved: DAC

FAR
PART "77"
AIRSPACE

LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER	XX		FENCING
W	N/A	WATER LINE			HELIPADS



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No.	Revision	Date	By

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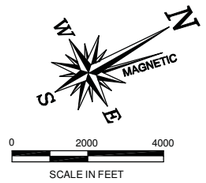
Project No: 075824
Date: 06.15.09
File Name: 5824507

Drawn: JOS
Checked: JZP
Approved: DAC

ON AIRPORT LAND USE



EXISTING ZONING ORDINANCES

NO LAND USE ORDINANCES IN EFFECT.
ALL LAND USES CONTROLLED BY THE WHITE MOUNTAIN APACHE TRIBE.

NOTICE OF PROPOSED CONSTRUCTION

An FAA Form 7460-1, "Notice of Proposed Construction or Alteration" must be submitted for any construction or alteration (including hangars and other on-airport and off-airport structures, towers, etc.) within 20,000 horizontal feet of the airport greater in height than an imaginary surface extending outward and upward from the runway at a slope of 100 to 1 or greater in height than 200 feet above ground level.

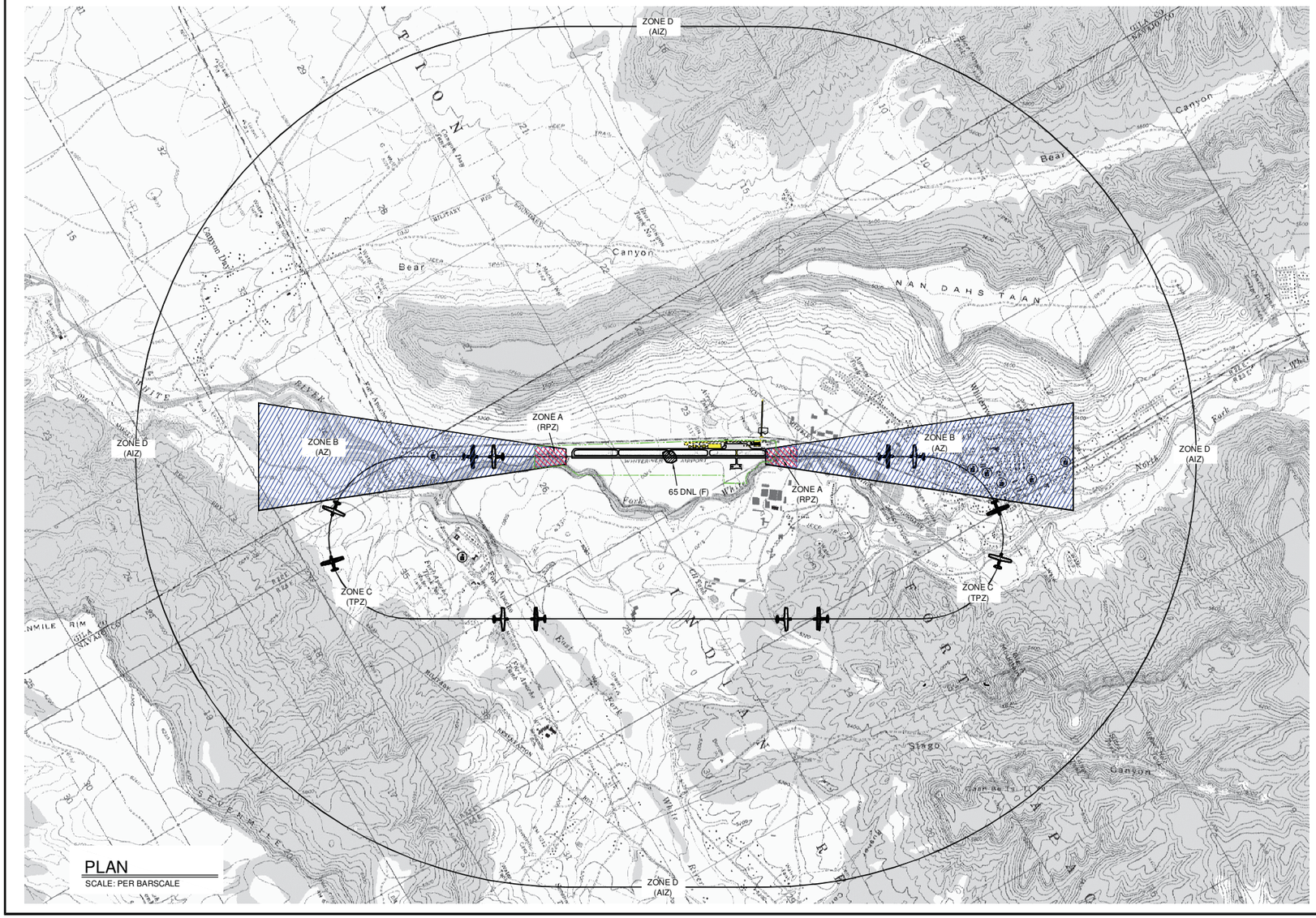
LEGEND

- CHURCH
- SCHOOL
- HOSPITAL
- PARK

LAND USE COMPATIBILITY GUIDELINES

Land Use Category	ZONE D Airport Influence (AIZ)	ZONE C Traffic Pattern (TPZ)	ZONE B Approach (AZ)	ZONE A Runway Protection (RPZ)
Residential				
single-family, nursing homes, mobile homes, multi-family, apartments, condominiums	+	o (3)	- (1,3)	- -
transient lodging, hotel, motel	+	o (3)	- (1,3)	- -
Public				
schools, libraries, hospitals	+	o (3)	- (3)	- -
churches, auditoriums, concert halls	+	o (3)	- (3)	- -
transportation, parking, cemeteries	++	++	++	- (2,5)
Commercial and Industrial				
offices, retail trade, service commercial, wholesale trade, warehousing, light industrial, general manufacturing, utilities, extractive industry	++	+	o (3)	- -
Agricultural and Recreational				
cropland	++	++	++	++
livestock breeding	++	++	++	- (2)
parks, playgrounds, zoos, golf courses, riding stables, water recreation	++	++	++	- (2)
outdoor spectator sports	++	+	- (3)	- -
amphitheaters	o	- (4)	- -	- -
open space	++	++	++	++

NOTE: DEVELOPMENT PROJECTS WHICH ARE WILDLIFE ATTRACTANT, INCLUDING SEWERAGE PONDS AND LANDFILLS, WITHIN 10,000 FEET OF THE AIRPORT ARE UNACCEPTABLE. (REF.: FAA AC 150/5200-33)
(1) If allowed, avigation easements and disclosure must be required as a condition of development.
(2) Any structures associated with uses allowed in the RPZ must be located outside the RPZ.
(3) If no reasonable alternative exists, use should be located as far from extended centerline as possible.
(4) If no reasonable alternative exists, use should be located as far from extended runway centerline and traffic patterns as possible.
(5) Transportation facilities in the RPZ (i.e. roads, railroads, waterways) must be configured to comply with Part 77 requirements.



CRITERIA

Land Use Availability	Interpretation/Comments
++ Clearly Acceptable	The activities associated with the specified land use will experience little or no impact due to airport operations. Disclosure of airport proximity should be required as a condition of development.
+ Normally Acceptable	The specified land use is acceptable in this zone or area. Impact may be perceived by some residents. Disclosure of airport proximity should be required as a condition of development. Dedication of avigation easements may also be advisable.
o Conditionally Acceptable	If appropriate disclosure avigation easements and density limitations are put in place, residential uses and uses involving indoor public assemblies are acceptable.
- Normally Unacceptable	Specified use should be allowed only if no reasonable alternative exists. Disclosure of airport proximity and avigation easements must be required as a condition of development.
- - Clearly Unacceptable	Specified use must not be allowed. Potential safety or overflight nuisance impacts are likely in this area.

- RUNWAY PROTECTION ZONE (RPZ) AS DIMENSIONED ON SHEET 2 OF AIRPORT LAYOUT PLAN.
- APPROACH SURFACE AS DESCRIBED ON THE FAR PART 77 DRAWING OF THE AIRPORT LAYOUT PLAN.
- TYPICAL TRAFFIC PATTERN DIRECTION AND FLIGHT TRACK AREA.
- AIRPORT PROPERTY LINE

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Project No: 075824
Date: 06.15.09
File Name: 5824508

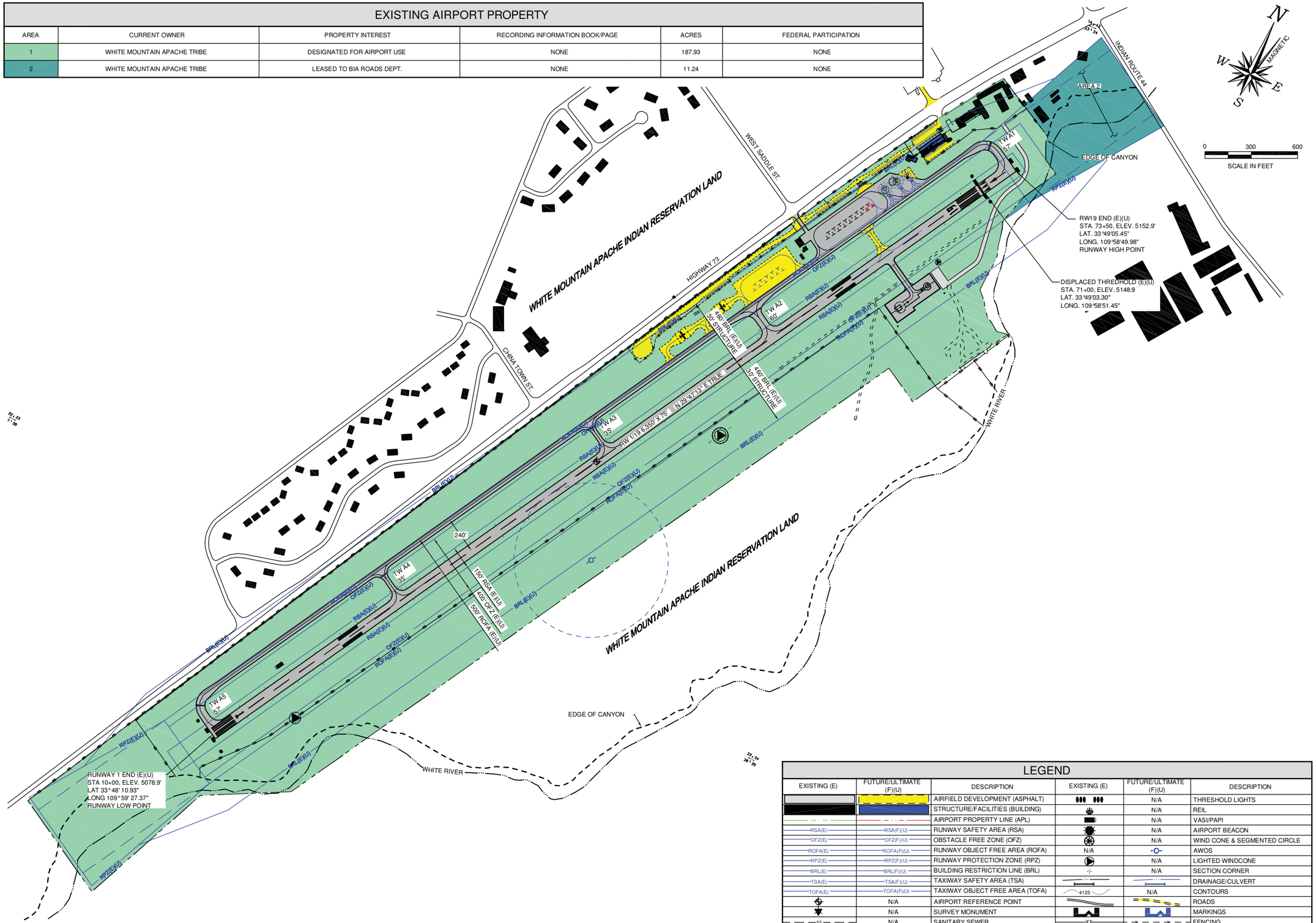
Drawn: JOS
Checked: JZP
Approved: DAC

OFF AIRPORT LAND USE

Sheet: 10 **of:** 12

EXISTING AIRPORT PROPERTY

AREA	CURRENT OWNER	PROPERTY INTEREST	RECORDING INFORMATION BOOK/PAGE	ACRES	FEDERAL PARTICIPATION
1	WHITE MOUNTAIN APACHE TRIBE	DESIGNATED FOR AIRPORT USE	NONE	187.93	NONE
2	WHITE MOUNTAIN APACHE TRIBE	LEASED TO BIA ROADS DEPT.	NONE	11.24	NONE



LEGEND

EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION	EXISTING (E)	FUTURE/ULTIMATE (F)(U)	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		N/A	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)		N/A	REIL
		AIRPORT PROPERTY LINE (APL)		N/A	VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)		N/A	AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)		N/A	WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)	N/A		AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)		N/A	LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
	N/A	AIRPORT REFERENCE POINT			ROADS
	N/A	SURVEY MONUMENT			MARKINGS
SS	N/A	SANITARY SEWER	XX		FENCING
W	N/A	WATER LINE			HELIPADS

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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

Project No: 075824
Date: 06.15.09
File Name: 5824509

Drawn: JOS
Checked: JZP
Approved: DAC

EXHIBIT "A"
PROPERTY
MAP

Sheet: 11 **of:** 12

Sheet: 12 of: 12

AERIAL PHOTOGRAPH

Drawn: JGS
Checked: JZP
Approved: DAC

Project No: 075824
Date: 06.15.09
File Name: S824510

No.	Revision	Date	By

THE COMMENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA OR ADOT AERONAUTICS. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA OR ADOT AERONAUTICS DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES OR THE STATE OF ARIZONA TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
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Chapter Six
Environmental Overview

Whiteriver Airport
Airport Master Plan

Chapter Six
Environmental Overview

INTRODUCTION

This environmental overview examines the environmental impacts associated with the proposed airport improvements listed in the Airport Layout Plan included in Chapter 5. This chapter is intended to provide an overview of the potential impacts and identify additional environmental documentation that may be required as a prerequisite to development. If an action is included in one of the categories of Categorical Exclusion (CatEx) and no extraordinary circumstances apply to the proposed action, the FAA can take action without further environmental review. For proposed actions subject to the National Environmental Policy Act (NEPA) that do not qualify for Categorical Exclusion, an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) is required. The purpose of an EA is to determine whether a proposed action or its alternatives has the potential to significantly affect the environment. If the EA on the proposed action indicates that the action will not result in significant impacts, the responsible FAA official prepares a Finding of No Significant Impact (FONSI). The purpose of this section is to determine which is applicable for each project.

AIR QUALITY

The Clean Air Act of 1970 was enacted to reduce emissions of specific pollutants via uniform Federal standards. These standards include the National Ambient Air Quality Standards (NAAQS) which set maximum allowable ambient concentrations of ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), lead (Pb) and particulate matter 10 microns or smaller (PM_{10}). Section 176(c) of the Act, in part, states that no Federal agency shall engage in, support in any way or provide financial assistance for, license or permit or approve any activity that does not conform to the State Implementation Plan.

Federal Aviation Administration Orders 5050.4B and 1050.1E require air quality analysis for projects in areas not in compliance with the Environmental Protection Agency (EPA) approved State Implementation Plan (SIP). Because the entire area is considered in attainment with the SIP, no further air quality analysis is required.

Construction emissions, specifically dust, are not a long-term factor. These emissions are described in the “Construction Impacts” section of this Chapter. The necessary permits will be obtained before construction begins and construction projects will conform to FAA Advisory Circular (AC) 150/5370-10C, Standards for Specifying Construction of Airports.

The following best management practices are recommended to minimize construction emissions:

I. Site Preparation
   A. Minimize land disturbance;
   B. Use watering trucks to minimize dust;
   C. Cover trucks when hauling dirt or debris;
   D. Stabilize the surface of dirt piles and any disturbed areas;
   E. Use windbreaks to prevent any accidental dust pollution; and
   F. Segregate storm water drainage from construction sites and material piles.

II. Construction Phase
   A. Cover trucks when transferring materials; and

B. Minimize unnecessary vehicular and machinery activities.

III. Completion Phase
   A. Revegetate any disturbed land not used;
   B. Remove unused material and dirt piles; and

Temporary air pollution may occur as a result of the proposed action. The design and construction of the proposed improvements will incorporate Best Management Practices (BMP) to reduce air quality impacts, including minimizing land disturbance, wetting down, using water trucks, dust suppressant, covering trucks when hauling soil and the use of wind breaks. These practices will be selected based on the site's characteristics. No significant air quality impacts are anticipated as a result of the proposed development.

COASTAL RESOURCES

There are no coastal zones associated with the proposed development. Therefore, compliance with the Coastal Zone Management Act of 1972 and the Coastal Barriers Resources Act of 1982 is not a factor.

COMPATIBLE LAND USE

Land use compatibility considerations include safety, height hazards and noise exposure. Although extremely rare, most aircraft accidents occur within 5,000 feet of a runway. Therefore, the ability of the pilot to bring the aircraft down in a manner that minimizes the severity of an accident is dependent upon the type of land uses within the vicinity of the airport. Land uses are reviewed in three zones surrounding the airport: the Runway Protection Zone (RPZ), the Approach Zone, Airport Influence Zone and the Traffic Pattern Zone. The RPZ is a trapezoidal area extending 1,200 feet beyond the ends of the runway and is typically included within the airport property boundary. Residential and other uses that result in congregations of people are not recommended within the runway protection zone. The approach zone generally falls within the FAR Part 77 Approach Surface area. Within the approach zone, public land uses, such as schools, libraries, hospitals and churches should be avoided. New residential developments should include avigation easements and disclosure statements. The Traffic Pattern Zone is generally the area within one mile of the airport. Within the Traffic Pattern Zone, avigation easements should be considered for residential and public uses within this area and disclosure statements should be included. The Airport Influence Zone is the area where aircraft are transitioning to or from enroute altitude or airport over-flight altitude to or from the standard traffic pattern altitude of 800 to 1,000 feet above airport elevation. The closest populated areas to the Whiteriver Airport are located approximately 1 mile northeast of the airport within the Town of Whiteriver and a half mile west. A right-hand traffic pattern to Runway 1 eliminates over flight of residential areas west of the airport and avoids the high terrain located west of the airport.

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, provides imaginary surfaces surrounding an airport that should be protected from penetration by objects. These include the approach surface, horizontal surface and conical surface. These surfaces were described in Chapter 3. Proposed structures in the vicinity of the airport should be reviewed against the Part 77 criteria to ensure hazards to air navigation are not created. Because the terrain off the end of the runways is lower than the runway elevation, no penetrations to the approach surface currently exist. Objects penetrating these surfaces could result in a hazard to air navigation.

An updated ordinance and drawings have been included as part of this Master Plan to coincide with the planned airport configuration airspace and design standards and should be used by the Tribe to avoid the creation of new obstructions or incompatible land uses. A copy of the proposed ordinance and zoning maps are included in Appendix C.

CONSTRUCTION IMPACTS

Local, State and Federal ordinances and regulations address the impacts of construction activities, including dust and noise from heavy equipment traffic, disposal of construction debris and air and water pollution.

Construction operations for the proposed development will cause specific impacts resulting solely from and limited exclusively to the construction project. Construction impacts are distinct in that they are temporary in duration and the degree of adverse impacts decreases as work is concluded. The following construction impacts can be expected:

- A temporary increase in particulate and gaseous air pollution levels as a result of dust generated by construction activity and by vehicle emissions from equipment and worker's automobiles;
- Increases in solid and sanitary wastes from the workers at the site;
- Traffic volumes that would increase in the airport vicinity due to construction activity (workers arriving and departing, delivery of materials, etc.);
- Increase in noise levels at the airport during operation of heavy equipment; and
- Temporary erosion, scarring of land surfaces and loss of vegetation in areas that are excavated or otherwise disturbed to carry out future developments.

Construction projects will comply with guidelines set forth in FAA Advisory Circular 150/5370-10C, Standards for Specifying the Construction of Airports. The contractor will obtain the required construction permits. The contractor will also prepare Storm Water Pollution Prevention and Fugitive Dust Control Plans for construction. These requirements will be specified in the contract documents for the construction of the proposed improvements.

DOT ACT – SECTION 4(F)

Section 303c of Title 49, U.S.C., formerly Section 4(f) of DOT Act of 1966, provides that the Secretary of Transportation shall not approve any program or project that requires the use of any publicly owned land from a public park, recreation area or wildlife or waterfowl refuge of National, State or Local significance or land from an historic site of National, State or Local significance, as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such project includes all possible planning to minimize impacts. The proposed improvements will not require land from any public park, recreation area or wildlife or waterfowl refuge.

There are currently no public parks, recreation areas or wildlife and waterfowl refuge of National, State or Local significance surrounding the airport. The nearest wilderness area is the Bear Wallow Wilderness Area located approximately thirty nautical miles southeast of the airport. Pilots are requested to remain at least 2,000 feet Above Ground Level (AGL) over all wilderness areas.

FARMLANDS

The Farmland Protection Policy Act (FPPA) authorizes the Department of Agriculture to develop criteria for identifying the effects of Federal programs upon the conversion of farmland to uses other than agriculture.

Conversion of "Prime or Unique" farmland may be considered a significant impact. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed or fiber without intolerable soil erosion as determined by the Secretary of Agriculture. Unique farmland is land other than prime farmland which is used to produce specific high value food and fiber crops, such as citrus, tree nuts, olives, cranberries, fruits and vegetables.

Figure 6-1 shows the land surrounding the Whiteriver Airport in red which indicates that the land is not classified as prime or unique by the US Department of Agriculture (USDA).

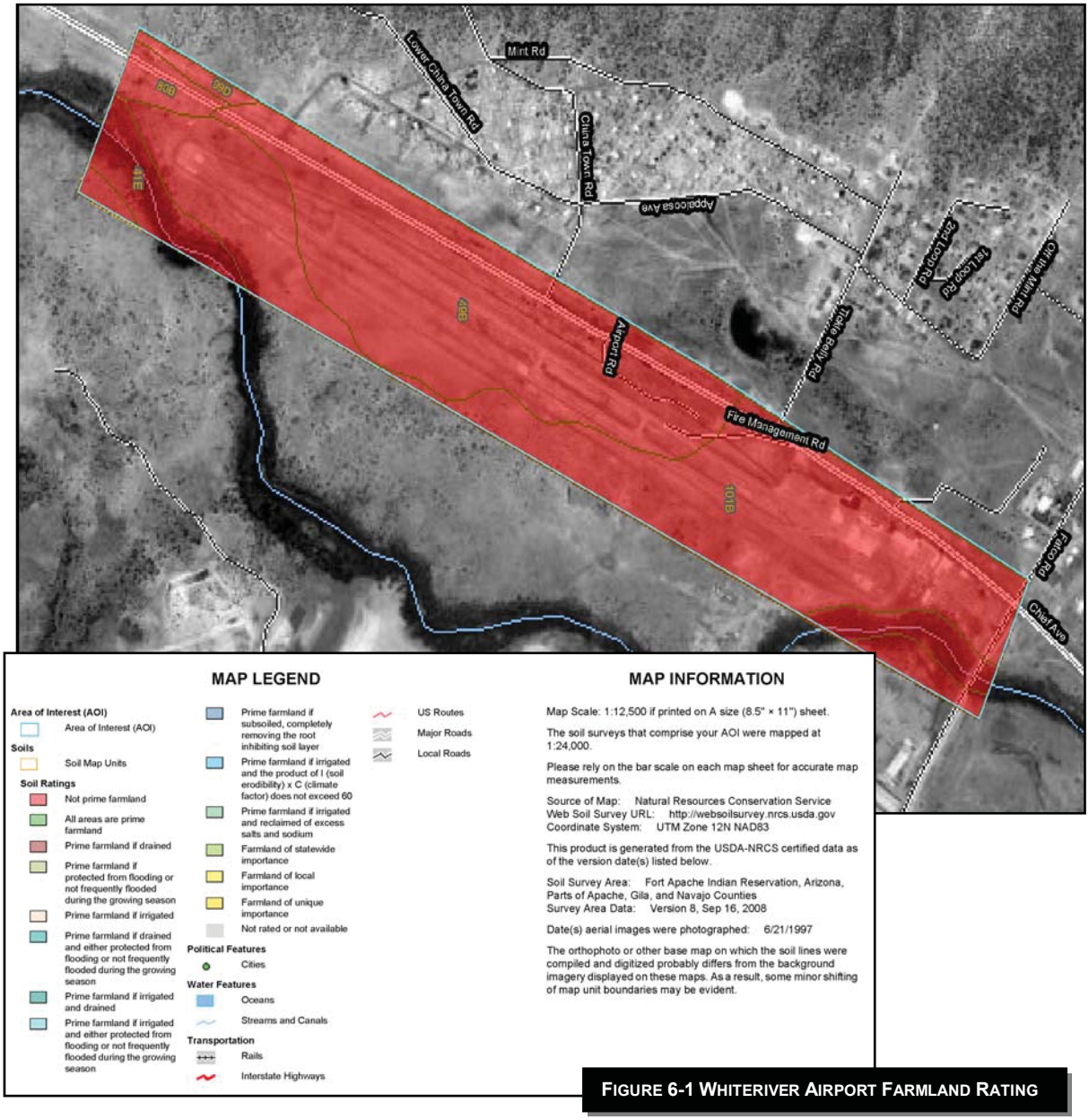


FIGURE 6-1 WHITERIVER AIRPORT FARMLAND RATING

FISH, WILDLIFE AND PLANTS

This category concerns potential impacts to existing wildlife habitat and threatened and endangered species. Examining both the area of land to be altered or removed and its relationship to surrounding habitat quantify the significance of the impacts in this category. For example, removal of a few acres of habitat which represents a small percentage of the area's total similar habitat or which supports a limited variety of common species would not be considered significant. However, removal of a sizeable percentage of the area's similar habitat or habitat which is known to support rare species would be considered significant impact. Improvements to the Whiteriver Airport would remove approximately 15 acres of habitat. The surrounding area offers an abundance of similar habitat and the proposed improvements are not considered to be a significant habitat loss.

Section 7 of the Endangered Species Act, as amended, requires each Federal agency to insure that "any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat of such species . . .".

An Endangered Species is defined as any member of the animal or plant kingdoms determined to be in danger of extinction throughout all or a significant portion of its range. A Threatened Species is defined as any member of the plant or animal kingdoms that is likely to become endangered in the foreseeable future.

The following species are currently listed for Navajo County, but do not necessarily occur in the vicinity of Whiteriver or within the project areas.

Endangered
Brown pelican, Pelecanus occidentalis
Pediocactus peebles Navajo cactus, Pediocactus peeplesianus
Southwestern willow flycatcher, Empidonax traillii extimus
Black-footed ferret, Mustela nigripes
California condor, Gymnogyps californianus

Threatened
Apache trout, Onocorhynchus apache
Chiricahua leopard frog, Rana chirichauensis
Little Colorado spinedace, Lepidomeda vittata
Loach minnow, Tiaroga cobittis
Mexican spotted owl, Strix occidentalis lucida
Navajo sedge, Carx specuicola
Spikedace, Meda fuligida

Candidate
Yellow-billed cuckoo, Coccyzus americanus

A biological assessment was conducted for the airport during the 1998 Airport Master Plan by the White Mountain Apache Tribe Wildlife and Outdoor Recreation Division in which a determination of "no effect on sensitive species of concern on the White Mountain Apache Tribe lands except for a potential may affect not likely to adversely affect on the loach minnow. The biological assessment/threatened and endangered species survey should be updated for previously undisturbed areas.

FLOODPLAINS

Floodplains are defined by Executive Order 11988, Floodplain Management, as the lowland and relatively flat areas adjoining coastal water . . . including at a minimum, that area subject to a one percent or greater chance of flooding in any given year . . . ", that is, an area which would be inundated by a 100-year flood. If a proposed action involves a 100-year floodplain, mitigating measures must be investigated in order to avoid significant changes to the drainage system.

As described in FAA Order 5050.4B, an airport development project would be a significant impact pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values. Mitigation measures for base floodplain encroachments may include committing to special flood related design criteria, elevating facilities above base flood level, locating nonconforming structures and facilities out of the floodplain or minimizing fill placed in floodplains. The project is not located in, nor is it expected to impact any designated floodplains.

HAZARDOUS MATERIALS, POLLUTION PREVENTION AND SOLID WASTE

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances and wastes. The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the Resource Conservation and Recovery Act (RCRA) (as amended by the Federal Facilities Compliance Act of 1992) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA or Superfund) and the Community Environmental Response Facilitation Act of 1992. RCRA governs the generation, treatment, storage and disposal of hazardous wastes. CERCLA provides for consultation with natural resources trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment.

The area surrounding the Whiteriver Airport is currently used for industrial purposes. There is no indication of buried storage tanks or land uses that would indicate the presence of hazardous materials. A windshield tour was conducted of the airport property during the inventory of the Whiteriver Airport.

Airport development actions that relate only to construction or expansion of runways, taxiways and related facilities do not normally include any direct relationship to solid waste collection, control or disposal other than that associated with the construction itself. The nature of the proposed airport meets these criteria and will not significantly increase net waste output for the Tribe.

Any solid waste disposal facility (i.e. sanitary landfill) which is located within 5,000 feet of all runways planned to be used by piston-powered aircraft or within 10,000 feet of all runways planned to be used by turbine aircraft, is considered by the FAA to be an incompatible land use because of the potential for conflicts between birds and low-flying aircraft. This determination is found in FAA Advisory Circular 150/5200-33, Hazardous Wildlife Attractants On or Near Airports. There are no solid waste disposal facilities within 10,000 feet of the airport. Any planned solid waste disposal facilities should be located at least 10,000 feet from the runway.

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

The National Historic Preservation Act of 1966 requires that an initial review be made in order to determine if any properties in or eligible for inclusion in the National Register of Historic Places are within the area of a proposed action's potential environmental impact (the area within which direct and indirect impacts could occur and thus cause a change in historic, architectural, archaeological or cultural properties).

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

The land upon which proposed development would occur has been previously disturbed by human activities; thus the potential of cultural resource impacts are unlikely.

LIGHT EMISSIONS AND VISUAL IMPACTS

Airfield lighting is the main source of light emissions from an airport. Rotating airport beacons are provided so pilots can identify the location of an airport at night or in reduced visibility conditions. Rotating beacons consist of alternating white and green lights rotating at six rotations per minute. Beacons are typically mounted on a tower or on top of a hangar or other building. Specifications for spotting airport beacons allow the beam to be angled from 2^{o} to 12^{o} above the horizon. The standard setting is 6^{o}. If necessary, the beacon can be shielded to reduce visibility of the beacon from below the horizon line. Medium Intensity Runway Edge Lights (MIRLs) are single white or yellow lights mounted on 14-30 inch posts spaced at 200 foot intervals along both edges of the runway. They define the boundaries of the runway surface usable for takeoff and landing. Precision Approach Path Indicators (PAPIs) are used for visual descent guidance and consist of two or four light units located to the left of the runway and perpendicular to the runway centerline. The lights are directed at a glide path angle of 3^{o} above the runway. If the aircraft is above the glide path, the pilot will see all white lights. If the pilot is on the proper glide path, the light unit closest to the runway will be red and the unit farthest from the runway will be white. When the pilot is below the glide path the light units will be red. PAPIs have an effective visual range from the air of approximately five miles during the day and up to twenty miles at night. These visual aids are extremely useful and enhance safety in situations where there are few visual references surrounding the airport. Runway End Identifier Lights (REILs) are synchronized flashing lights located laterally on each side of the runway threshold. They are angled upward and outward from the runway and provide rapid and positive identification of the threshold of a runway. This is especially useful in metropolitan and densely developed areas where lights in the vicinity of the airport make it difficult to identify the runway.

Proposed improvements will not increase light emission impacts at the Whiteriver Airport.

NATURAL RESOURCES, ENERGY SUPPLY AND SUSTAINABLE DESIGN

Executive Order 13123, Greening the Government Through Efficient Energy Management (64FR 30851, June 8, 1999), encourages each Federal agency to expand the use of renewable energy within its facilities and in its activities. E.O. 13123 also requires each Federal agency to reduce petroleum use, total energy use and associated air emissions and water consumption in its facilities.

It is also the policy of the FAA, consistent with NEPA and the CEQ regulations, to encourage the development of sustainability. All elements of the transportation system should be designed with a view to their aesthetic impact, conservation of resources such as energy, pollution prevention, harmonization with the community environment and sensitivity to the concerns of the traveling public.

Energy requirements associated with airport improvements generally fall into two categories: 1) changed demand for stationary facilities (i.e. airfield lighting and terminal building heating) and 2) those that involve the movement of air and ground vehicles (i.e. fuel consumption). The use of natural resources includes primarily construction materials and water.

Energy requirements are not expected to significantly increase as a result of the proposed improvements.

Demand for aircraft fuel is expected to increase. Aircraft fuel should be stored in above ground tanks at the airport that conform to EPA regulations. Significant increases in ground vehicle fuel consumption are not anticipated.

NOISE

Noise analysis considerations include whether the Federal thresholds of noise exposure are exceeded, whether the 65 day-night level (DNL) noise contour extends beyond airport property and if there are any residences, churches, schools or hospitals within the 65 DNL noise contour.

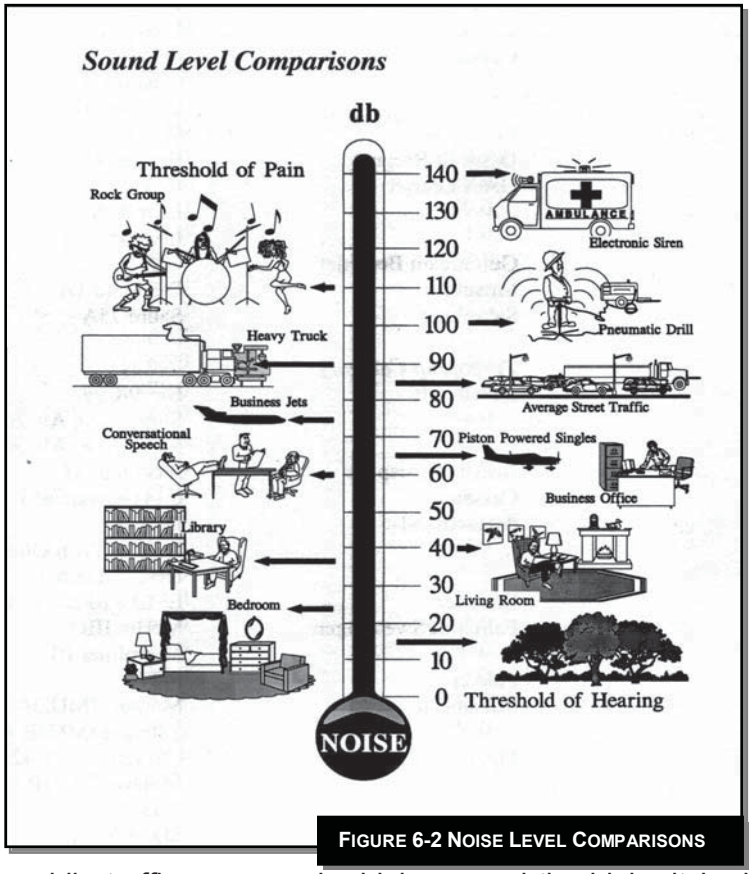


FIGURE 6-2 NOISE LEVEL COMPARISONS

The basic measure of noise is the sound pressure level that is recorded in decibels (dBA). The important point to understand when considering the impact of noise on communities is that equal levels of sound pressure can be measured for both high and low frequency sounds. Generally, people are less sensitive to sounds of low frequency than they are to high frequencies. An example of this might be the difference between the rumble of automobile traffic on a nearby highway and the high-pitched whine of jet aircraft passing overhead. At any location, over a period of time, sound pressure fluctuates considerably between high and low frequencies. Figure 6-2 depicts a Sound Level Comparison of different noise sources.

The identification of airport generated noise impacts and implementation of noise abatement measures is a joint responsibility of airport operators and users. FAA Order 5050.4B states that "no noise analysis is needed for proposals involving Design Group I and II airplanes operating at

airports whose forecast operations in the period covered by the EA do not exceed 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations . . .". Noise analysis is not required for the Whiteriver Airport since operations are forecasted to be 5,432 in 2027. Noise contours were generated for the existing and future operations at the airport, however, there were no existing 65 DNL contours generated with the existing operations The future noise contour is shown in Figure 6-3.

VOLUNTARY NOISE ABATEMENT PROGRAM

Although the noise exposure levels will not exceed 65 DNL over any noise sensitive area, several voluntary measures can be applied to minimize noise exposure to surrounding areas. Several of these measures are listed below. It is recommended that a voluntary noise abatement program be implemented for the airport and publicized to all based and transient pilots.

Pilots:

- Be aware of noise sensitive areas, particularly residential areas near the airport and avoid low flight over these areas.
- Fly traffic patterns tight and high, keeping the aircraft as close to the field as possible.
- In constant-speed-propeller aircraft, do not use high RPM settings in the pattern. Propeller noise from high-performance singles and twins increases drastically at high RPM settings.
- On takeoff, reduce to climb power as soon as safe and practical.
- Climb after liftoff at best-angle-of-climb speed until crossing the airport boundary, then climb at best rate.
- Depart from the start of the runway rather than intersections, for the highest possible altitude when leaving the airport vicinity.
- Avoid prolonged run-ups and do them inside the airport area, rather than at its perimeter.
- Try low-power approaches and always avoid the low, dragged-in approach.

Instructors:

- Teach noise abatement procedures to all students, including pilots you take up for flight reviews.
- Know noise-sensitive areas and point them out to students.
- Assure students fly at or above the recommended pattern altitude.
- Practice maneuvers over unpopulated areas and vary practice areas so that the same locale is not constantly subjected to aircraft operations.
- During practice of ground-reference maneuvers, be particularly aware of houses or businesses in your flight path.
- Stress that high RPM propeller settings are reserved for takeoff and for short final but not for flying in the pattern. Pushing the propeller to high RPM results in significantly higher levels of noise.

Fixed Base Operators (FBOs):

- Identify noise-sensitive areas and work with customers to create voluntary noise abatement procedures.
- Post any noise abatement procedures in a prominently visible area and remind pilots of the importance of adhering to them.
- Call for the use of the least noise sensitive runway whenever wind conditions permit.

- Initiate pilot education programs to teach and explain the rationale for noise abatement procedures and positive community relations.

Airport Owner and Surrounding Jurisdictions:

- Maintain appropriate zoning in the vicinity of the airport and see that noise sensitive land uses are not authorized within pattern, approach and departure paths.
- Disclose the existence of the airport and the airport influence area to real estate purchasers.
- Publish voluntary noise procedures on the Internet.
- Publish voluntary calm runway use procedures.

Source: Aircraft Owners and Pilots Association (AOPA)

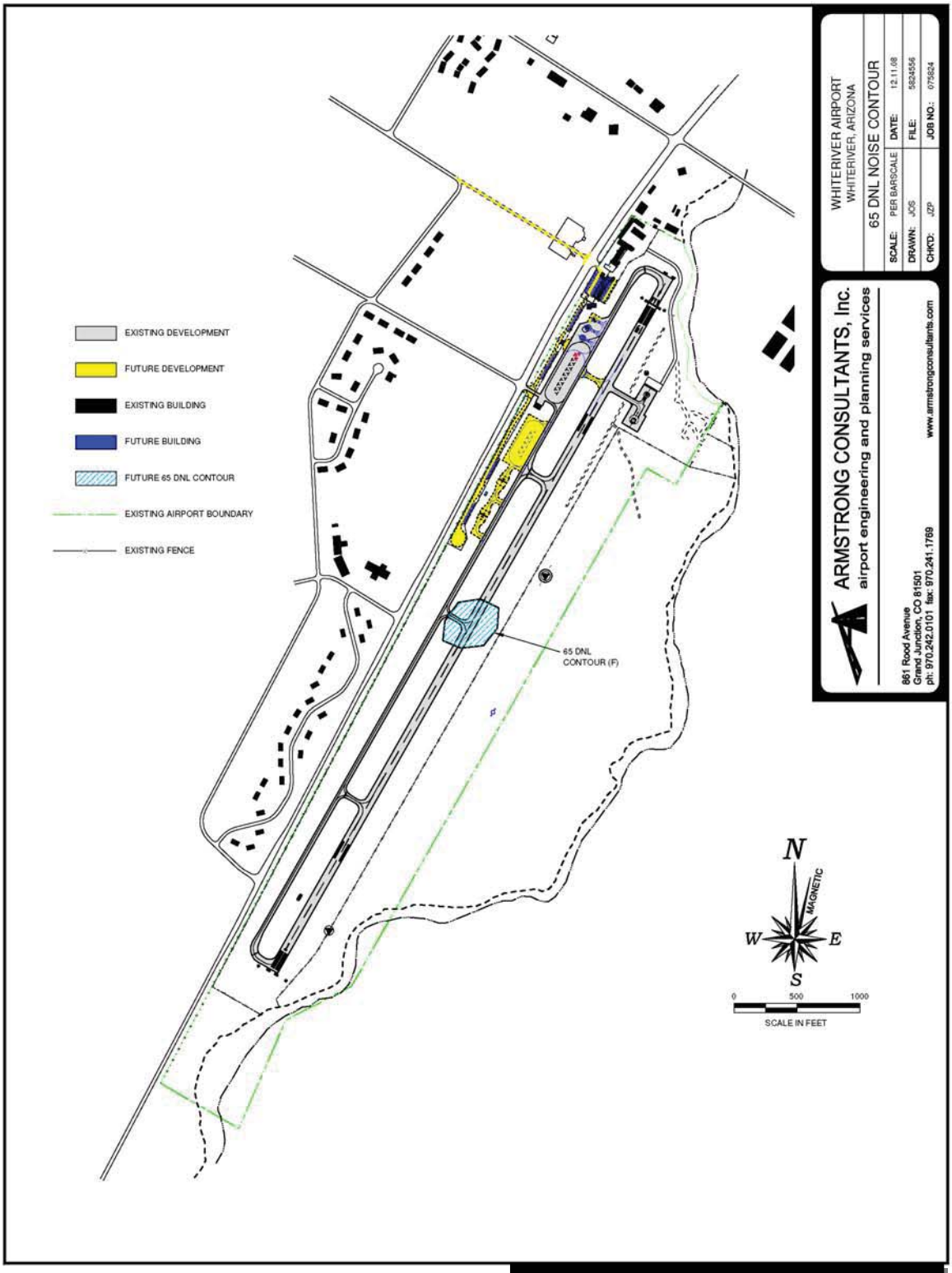


FIGURE 6-3 FUTURE (2027) 65 DNL NOISE CONTOUR

SECONDARY (INDUCED) IMPACTS

These secondary or induced impacts involve major shifts in population, changes in economic climate or shifts in levels of public service demand. The effects are directly proportional to the scope of the project under consideration. Assessment of induced socioeconomic impacts is usually only associated with major development at large air carrier airports, which involve major terminal building development or roadway alignments and similar work. The extent of the indirect socioeconomic impacts of the proposed development is not of the magnitude that would normally be considered significant; however, positive impacts can be foreseen in the form of direct, indirect and induced economic benefits generated from the airport.

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

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, the accompanying Presidential Memorandum and Order DOT 5610.2, Environmental Justice, require the FAA to provide for meaningful public involvement by minority and low-income populations and analysis, including demographic analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. Included in this process is the disclosure of the effects on subsistence patterns of consumption of fish, vegetation or wildlife and effective public participation and access to this information. The Presidential Memorandum that accompanied E.O. 12898, as well as the CEQ and EPA Guidance, encourage consideration of environmental justice impacts in EA's especially to determine whether a disproportionately high and adverse impact may occur. Environmental Justice is examined during evaluation of other impact categories, such as noise, air quality, water, hazardous materials and cultural resources.

SOCIOECONOMIC IMPACTS

Induced socioeconomic impacts are usually only associated with major development at large air carrier airports. The socioeconomic impacts produced as a result of the proposed improvements to the Whiteriver Airport are expected to be positive in nature and would include direct, indirect and induced economic benefits to the local area. These airport improvements are expected to attract additional users and in turn to encourage tourism, industry and to enhance the future growth and expansion of the community's economic base.

If acquisition of real property or displacement of persons is involved, 49 CFR part 24 (implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970), as amended must be met for Federal projects and projects involving Federal funding. Otherwise, the FAA, to the fullest extent possible, observes all local and State laws, regulations and ordinances concerning zoning, transportation, economic development, housing, etc. when planning, assessing or implementing the proposed action.

ENVIRONMENTAL JUSTICE

The focus of the Environmental Justice evaluation is to determine whether the proposed action results in an inequitable distribution of negative effects to special population groups, as compared to negative effects on other population groups. These special population groups include minority or otherwise special ethnicity or low-income neighborhoods.

The proposed action is not expected to result in any significant negative impacts to any population groups and therefore, would not result in disproportionate negative impacts to any

special population group. Socioeconomic and induced economic impacts are expected to be positive in nature and are expected to benefit all population groups in the area.

CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Pursuant to Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, Federal agencies are directed, as appropriate and consistent with the agency's mission, to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Agencies are encouraged to participate in implementation of the Order by ensuring that their policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks. The proposed improvements are not expected to result in any environmental health risks or safety risks on children.

WATER QUALITY

Water quality considerations related to airport development often include increased surface runoff and erosion and pollution from fuel, oil, solvents and deicing fluids. Potential pollution could come from petroleum products spilled on the surface and carried through drainage channels off of the airport. State and Federal laws and regulations have been established to safeguard these facilities. These regulations include standards for above ground and underground storage tanks, leak detection and overflow protection. An effective Storm Water Pollution Prevention Plan (SWPPP) identifies storm water discharge points on the airport, describes measures and controls to minimize discharges and details spill prevention and response procedures. A Stormwater Pollution Prevention Plan (SWPPP) has also been completed as part of this project which identifies the direction of flow for a fuel spill and outlining procedures for responding to such an incident.

In accordance with Section 402(p) of the Clean Water Act, a National Pollution Discharge Elimination System (NPDES) General Permit is required from the Environmental Protection Agency for construction projects that disturb one or more acres of land. Applicable contractors will be required to comply with the requirement and procedures of the NPDES General Permit, including the preparation of a Notice of Intent and a Storm Water Pollution Prevention Plan, prior to the initiation of construction activities.

Recommendations established in FAA Advisory Circular 150/5370-10C, Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control, will be incorporated into the project design and specifications. The design and construction of the proposed improvements will incorporate Best Management Practices (BMP) to reduce erosion, minimize sedimentation, control non-storm water discharges and to protect the quality of surface water features potentially effected. These practices will be selected based on the site's characteristics and those factors within the contractor's control and may include: construction scheduling, limiting exposed areas, runoff velocity reduction, sediment trapping and good housekeeping practices.

Future fuel storage and dispensing facilities should be designed, constructed, operated and maintained in accordance with Federal, State and Local regulations including the development of Spill Prevention Control and Countermeasures (SPCC) Plan commensurate with the installation of above ground fuel storage tanks. Waste fluids, including oils, coolants, degreasers and aircraft wash facility wastewater will be managed and disposed of in accordance with applicable Federal, State and Local regulations.

WETLANDS

Wetlands are defined in Executive Order 11990, Protection of Wetlands, as “those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas such as sloughs, potholes, wet meadows, river overflows and natural ponds. Jurisdictional Waters of the United States may also include drainage channels, washes, ditches, arroyos or other waterways that are tributaries to Navigable Water of the United States or other waters where the degradation or destruction of which could affect interstate or foreign commerce.

Site visits and a review of aerial photography do not indicate the proposed development would impact any wetlands or Waters of the US.

WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (PL 90-542) describes those river areas eligible for protection from development. As a general rule, these rivers possess outstanding scenic, recreational, geological, fish and wildlife, historical, cultural or other similar value.

The Wild and Scenic River list from the National Park Service indicated one Wild and Scenic River listed in Arizona. The Verde River is located in Yavapai County in western Arizona, more than 200 miles from Whiteriver and would not be affected by the proposed improvements.

MEANS TO MITIGATE AND/OR MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS

Where appropriate, the mitigation or minimization of environmental impacts was noted in the discussion of impacts. These actions are summarized below:

- Maintain compatible land uses in the vicinity of the airport;
- Utilize pilot controlled lighting on all airfield lighting and visual aids. Utilize timers or motion sensors for apron and automobile parking area lights;
- Adhere to FAA AC 150/5370-10C, Standards for Specifying the Construction of Airports and best management practices to minimize or eliminate impacts to water quality and air quality during construction;
- Prepare SPCC Plan commensurate with installation of above ground fuel storage tanks;

SUMMARY AND CONCLUSIONS OF ENVIRONMENTAL IMPACTS

Table 6-1 provides a summary of the analysis ratings for the eighteen environmental impact categories with respect to the proposed airport improvements. While some categories indicate a potential impact, they are all estimated to be below the threshold of significance as described in FAA Order 5050.4B. The selected alternatives for the development, offer the least overall environmental impact of all the potential development alternatives evaluated.

TABLE 6-1 POTENTIAL ENVIRONMENTAL IMPACTS

Impact Category	Impact Level	Description
Air Quality	Minor	Short-term dust and exhaust
Coastal Resources	None	
Compatible Land Use	None	
Construction Impacts	Minor	Short-term dust, exhaust erosion
DOT Act Section 4(F)	None	
Farmlands	None	
Fish, Wildlife and Plants	None	
Floodplains	None	
Hazardous Material, Pollution Prevention and Cultural Resources	None	
Historical, Architectural, Archaeological and Cultural Resources	None	
Light Emissions and Visual Impacts	None	
Natural Resources and Energy Supply	None	
Noise	Minor	
Secondary (Induced) Impacts	Minor Positive	Economic benefit from airport
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health	Minor Positive	Increased employment
Water Quality	Minor	Storm water runoff
Wetlands	None	
Wild and Scenic Rivers	None	

Based on this evaluation no significant environmental impacts are expected from the projects included in the Airport Development Plan. Categorical Exclusion determinations would be appropriate for all of the planned projects.

Chapter Seven
Airport Development and Financial Plan

Whiteriver Airport
Airport Master Plan

Chapter Seven
Airport Development and Financial Plan

INTRODUCTION

A program of recommended airport development for the Whiteriver Airport has been formulated to guide the sponsor in the systematic development of the airport and to aid the Federal Aviation Administration and the Tribe in allocating funding over the planning period. In Arizona, projects eligible for Airport Improvement Program (AIP) participation are normally funded at 95 percent by the FAA and 5 percent by the Sponsor. The Arizona Department of Transportation-Aeronautics Division provides grants to eligible airports in the state to assist with matching funds and other airport projects; however, current State Legislation prohibits state grant funding of airports on Native American reservations. New legislation has been proposed to eliminate this restriction. If successful, an additional 2.5 percent grant funding would be available from the State toward FAA funded projects and 90 percent grant funding toward State only projects. The grant eligible items typically include airfield and aeronautical related facilities such as runways, taxiways, aprons, lighting and visual aids as well as land acquisition and environmental tasks needed to accomplish the improvements. The public use (non-revenue generating) portions of passenger and general aviation terminals are also grant eligible. In addition, recent AIP legislation has made fuel systems and hangars eligible, however, these items are considered a low priority for FAA funding.

AIRPORT DEVELOPMENT PLAN

Future airport development at the Whiteriver Airport, as included in this study, covers a twenty-year period. Development items are grouped into three phases. Phase I is short-term (1-5 years), Phase II is medium-term (6-10 years) and Phase III is long-term (11-20 years). Estimated development costs are based on the proposed improvements (as shown on the airport layout plan) and are included for each item in the financial development plan. Proposed improvements are based on the recommended facility requirements discussed in Chapter 3. The phasing of projects assists the airport sponsor in budgetary planning for construction projects. A drawing showing the phasing of each project is included at the end of this Chapter. The sequence in which the projects are completed is important as the ultimate configuration of the airport will require numerous projects.

Phase I (1-5 Years)
Install AWOS-III
Construct Taxiway Connector
Acquire Snow Removal Equipment
Instrument Approach and Survey
Install Fuel System
Pavement Preservation

Phase II (6-10 Years)
Install Taxiway Lighting
Construct GA Terminal Building
Reconfigure Automobile Parking/Entrance
Airport Layout Plan Update
Apron Expansion

Phase III (11-20 Years)
Pavement Preservation
Overlay Runway
Overlay Taxiway
Airport Master Plan Update

TABLE 7-1 20 YEAR FINANCIAL DEVELOPMENT PLAN			
Phase I, Short-Term Development Items	TOTAL	FAA	LOCAL
A1 Install AWOS-III	$300,000	$285,000	$15,000
A2 Connector Taxiway	$350,000	$332,500	$17,500
A3 Acquire Snow Removal Equipment	$300,000	$285,000	$15,000
A4 Install Fuel System	$300,000	$285,000	$15,000
A5 Pavement Preservation	$150,000	$142,500	$7,500
Total Short Term Cost	**$1,400,000**	**$1,330,000**	**$70,000**
Phase II, Medium-Term Development Items	TOTAL	FAA	LOCAL
B1 Install Taxiway Lighting	$250,000	$237,500	$12,500
B2 Apron Expansion	$700,000	$665,000	$35,000
B3 Pavement Preservation	$150,000	$142,500	$7,500
B4 Construct GA Terminal Building	$450,000	$427,500	$22,500
B5 Reconfigure Automobile Parking Entrance	$250,000	$237,500	$12,500
B6 Airport Layout Plan Update	$125,000	$118,750	$6,250
Total Medium-Term Cost	**$1,925,000**	**$1,828,750**	**$96,250**
Phase III, Long-Term Development Items	TOTAL	FAA	LOCAL
C1 Pavement Preservation	$150,000	$142,500	$7,500
C2 Overlay Runway	$2,000,000	$1,900,000	$100,000
C3 Overlay Taxiway	$1,500,000	$1,425,000	$75,000
C4 Airport Master Plan Update	$150,000	$142,500	$7,500
Total Long-Term Cost	**$3,800,000**	**$3,610,000**	**$190,000**
TOTAL	**$7,125,000**	**$6,768,750**	**$356,250**

CAPITAL DEVELOPMENT

Federal Grant Assistance: The phasing of projects assists the airport sponsor in budgetary planning for construction improvements that are needed to provide safe and functional facilities for aviation demands. Phased development schedules also assist the airport sponsor in contingencies and construction. Table 7-1 assumes that the Federal Aviation Administration will participate with funding from the Airport Improvement Program (AIP) of 95 percent of eligible items. The White Mountain Apache Tribe would then be responsible for providing 5 percent matching funds for grant eligible projects. The Tribe may meet its local share requirements through cash, in-kind service, force-account, donations or private/third party participation.

The Airport and Airways Act of 1982 created and authorized the Airport Improvement Program (AIP) to assist in the development of a nationwide system of public-use airports adequate to meet the current projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems (NPIAS).

State Grant Assistance: The Arizona Department of Transportation Aeronautics Division provides grants to eligible airports in the state to assist with matching funds and other airport projects; however, current State Legislation prohibits state grant funding of airports on Native American reservations. New legislation has been proposed to eliminate this restriction. If successful, an additional 2.5 percent grant funding would be available from the State toward FAA funded projects and 90 percent grant funding toward State only projects.

Funding The Local Share: The airport sponsor has several methods available for funding the capital required to meet the local share of airport development costs. The most common methods involve cash, debt financing which amortize the debt over the useful life of the project, force accounts, in-kind service, third-party support and donations.

Bank Financing: Some airport sponsors use bank financing as a means of funding airport development. Generally, two conditions are required. First, the sponsor must show the ability to repay the loan plus interest and second, capital improvements must be less than the value of the present facility or some other collateral used to secure the loan. These are standard conditions which are applied to almost all bank loan transactions.

General Obligation Bonds: General Obligation bonds (GO) are a common form of municipal bonds whose payment is secured by the full faith credit and taxing authority of the issuing agency. GO bonds are instruments of credit and because of the community guarantee, reduce the available debt level of the sponsoring community. This type of bond uses tax revenues to retire debt and the key element becomes the approval of the voters to a tax levy to support airport development. If approved, GO bonds are typically issued at a lower interest rate than other types of bonds.

Self-liquidating General Obligation Bonds: As with General Obligation bonds, Self-liquidating General Obligation Bonds are secured by the issuing government agency. They are retired, however, by cash flow from the operation of the facility. Providing the state court determines that the project is self-sustaining, the debt may be legally excluded from the community's debt limit. Since the credit of the local government bears the ultimate risk of default, the bond issue is still considered, for the purpose of financial analysis, as part of the debt burden of the community. Therefore, this method of financing may mean a higher rate of interest on all bonds sold by the community. The amount of increase in the interest rate depends, in part, upon the degree of risk of the bond. Exposure risk occurs when there is insufficient net airport operating income to cover the level of service plus coverage requirements, thus forcing the community to absorb the residual.

Revenue Bonds: Revenue Bonds are payable solely from the revenues of a particular project or from operating income of the borrowing agency, such as an airport commission which lacks taxing power. Generally, they fall outside of constitutional and statutory limitations and in many cases do not require voter approval. Because of the limitations on the other public bonds, airport sponsors are increasingly turning to revenue bonds whenever possible. However, revenue bonds normally carry a higher rate of interest because they lack the guarantees of municipal bonds. It should also be noted that the general public would usually be wary of the risk involved with a revenue bond issue for a general aviation airport. Therefore, the sale of such bonds could be more difficult than other types of bonds.

Combined Revenue/General Obligation Bonds: These bonds, also known as "Double-Barrel Bonds", are secured by a pledge of back-up tax revenues to cover principal and interest payments in cases where airport revenues are insufficient. The combined Revenue/General Obligation Bond interest rates are usually lower than Revenue Bonds, due to their back-up tax provisions.

Force Accounts, In-kind Service, Donations: Depending on the capabilities of the Sponsor, the use of force accounts, in-kind service, or donations may be approved by the FAA and the State for the Sponsor to provide their share of the eligible project costs. An example of force accounts would be the use of heavy machinery and operators for earthmoving and site

preparation of runways or taxiways; the installation of fencing; or the construction of improvements to access roads. In-kind service may include surveying, engineering or other services. Donations may include land or materials such as gravel or water needed for the project. The values of these items must be verified and approved by the FAA prior to initiation of the project.

Third-Party Support: Several types of funding fall into this category. For example, individuals or interested organizations may contribute portions of the required development funds (Pilot Associations, Economic Development Associations, Chambers of Commerce, etc.). Although not a common means of airport financing, the role of private financial contributions not only increases the financial support of the project, but also stimulates moral support to airport development from local communities. Because of the potential for hangar development, private developers may be persuaded to invest in hangar development. A suggestion would be that the Tribe authorize long-term leases to individuals interested in constructing a hangar on airport property. This arrangement generates revenue from the airport, stimulates airport activity, and minimizes the sponsor's capital investment requirements. Another method of third-party support involves permitting the fixed base operator (FBO) to construct and monitor facilities on property leased from the airport. Terms of the lease generally include a fixed amount plus a percentage of revenues and a fuel flowage fee. The advantage to this arrangement is that it lowers the sponsor's development costs, a large portion of which is building construction and maintenance.

FINANCIAL PLAN

The ultimate goal of any airport should be the capability to support is own operation and development through airport generated revenues. Unfortunately, few airports similar in size to the Whiteriver Airport are able to do this. For example, it is difficult to break even when the fees received from hangar rentals, land leases and fuel sales will not adequately amortize the cost of construction projects and operations and maintenance expenses. Yet the effort to become self-sufficient will generate a more positive perception of the airport by the community.

However, while most airports the size of Whiteriver Airport are not able to become self-sustaining, the intrinsic value of such a well-maintained airport for the community or region exceeds the day-to-day operational and maintenance costs of the airport. In other words, the dollars spent in the community or the region by individuals or businesses that use the airport exceeds the expenses that are incurred as a result of operation of the airport. Furthermore, the Whiteriver Airport provides access for valuable services to the White Mountain Apache Tribe.

PROJECTED REVENUES AND EXPENDITURES

Expenditures: Airport operating expenditures typically include insurance, utilities, maintenance and management costs. Insurance costs include liability insurance for the airport and property insurance for any real property on the airport owned by the Tribe. Utility expenses primarily consist of power costs to operate airfield lighting and visual aids and water for public use areas. Pavement maintenance consists of crack sealing on an annual basis and seal coating and remarking the pavements every five years. Facility maintenance consists of mowing, snow removal and repair and replacement of parts and equipment such as light bulbs, light fixtures, fences, etc. Management costs may include an airport manager or contract services provided by a third party or an FBO.

The White Mountain Apache Tribe is the Sponsor of the Whiteriver Airport and as such it is responsible for the operations, maintenance and management of the facility. The Tribe has established a Memorandum of Agreement with the Indian Health Services (IHS) for the care and maintenance of the airfield lighting, visual aid systems, utilities, mowing and snow removal at the airport.

Revenues: Airport revenues generally consist of land leases, user fees and property taxes generated from on-airport improvements. There are currently no charges established for the use of the facilities at Whiteriver Airport. Essentially the services provided by the IHS are in lieu of landing, tiedown or ramp fees that would otherwise be charged to air medivac flights utilizing the airport.

RECOMMENDATIONS

- Establish land lease agreements for the foot print of buildings located on the airport not owned by the Tribe. An example of this would be charging $.10/square foot/ year.
- Establish building leases agreements for buildings owned by the Tribe that are not currently utilized by the Tribe. An example of this would be charging $.10/square foot/ month.
- Establish fuel flowage fee for fuel brought on to the airport. An example of this would be charging $.10/gallon of fuel pumped at the airport.
- Continue the Memorandum of Agreement between the Tribe and IHS.
- Establish rates and charges for seasonal operations areas for the air tankers
- Implement a user fee for commercial operators at the airport such as on demand air taxies and air medivac flights.

The revenue generated as a result of implementing these recommendations would be required to remain on airport and used for airport maintenance and/or the local match for capital improvement projects.

COMMUNITY SUPPORT

While it would certainly be advantageous for an airport to support itself, the indirect and intangible benefits of the airport to the community's economy and growth must be considered. People are directly or indirectly employed as a result of the airport by the Tribe, Indian Health Services, Bureau of Indian Affairs and individual businesses. As airport activity increases, it is probable that employment on the airport will also grow throughout the planning period. The local construction industry will also benefit directly from implementation of the development programs. Other community benefits involve business growth and development that is enhanced by the availability of air transportation including corporate and private aviation. Clients and suppliers of area businesses will also benefit from the future improvement to the airfield.

The use of corporate and business aircraft is an increasing trend across the United States. The movement of American industry from large metropolitan areas to smaller communities that offer lower taxes and labor costs and a better working environment has influenced this trend. Time is money in the business environment and corporate aircraft are answering the need for quick and convenient access to and from these new locations for both executives and management personnel. The ability of a community to provide convenient access to corporate aircraft will be

reflected not only in benefits to existing businesses and industries but will be a strong factor in attracting new industry.

These factors place the Whiteriver Airport in a prime position to capitalize on the trends in the general aviation industry and to maximize the benefits the airport provides to the community.

CONTINUOUS PLANNING PROCESS

Airport planning is a continuous process that does not end with the completion of a major project. The fundamental issues upon which this master plan are based are expected to remain valid for several years; however, several variables, such as based aircraft, annual aircraft operations, and socioeconomic conditions are likely to change over time. The continuous planning process necessitates that the White Mountain Apache Tribe consistently monitor the progress of the airport in terms of growth in based aircraft and annual operations, as this growth is critical to the exact timing and need for new airport facilities. The information obtained from this monitoring process will provide the data necessary to determine if the development schedule should be accelerated, decelerated or maintained as scheduled.

Periodic updates of the Airport Layout Plan, Capital Improvement Plan, and Airport Master Plan are recommended to document physical changes to the airport, review changes in aviation activity and to update improvement plans for the airport. The primary goal of this Airport Master Planning effort is to develop a safe and efficient airport that will meet the demands of its aviation users and stimulate economic development for the White Mountain Apache Tribe. The continuous airport planning process is a valuable tool in achieving that goal.

PROJECT LIST

0 - 5 YEARS

PHASE I, SHORT - TERM DEVELOPMENT ITEMS

A1 INSTALL AWOS III
A2 CONNECTOR TAXIWAY
A3 ACQUIRE SNOW REMOVAL EQUIPMENT
A4 INSTALL FUEL SYSTEM
A5 PAVEMENT PRESERVATION

6 - 10 YEARS

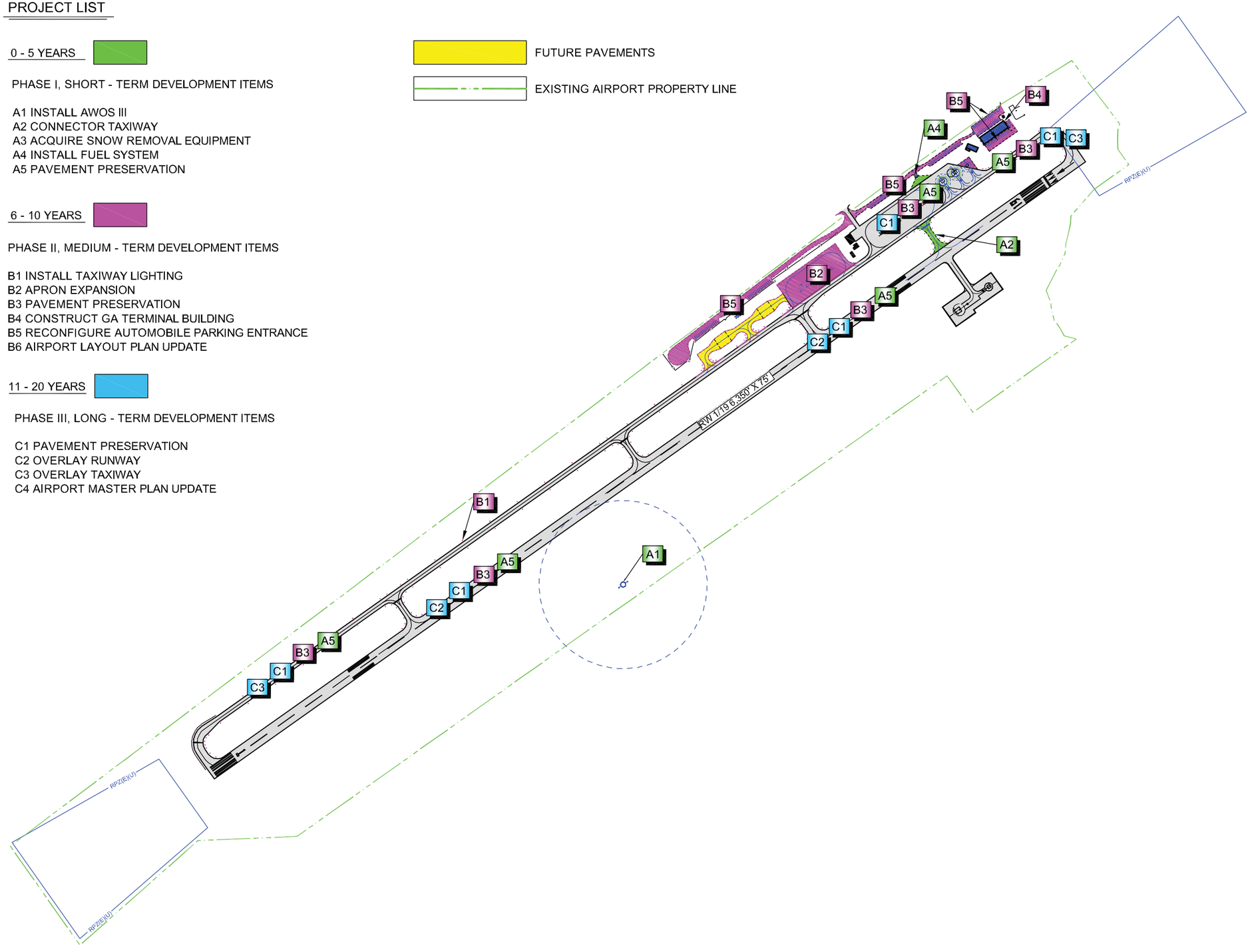
PHASE II, MEDIUM - TERM DEVELOPMENT ITEMS

B1 INSTALL TAXIWAY LIGHTING
B2 APRON EXPANSION
B3 PAVEMENT PRESERVATION
B4 CONSTRUCT GA TERMINAL BUILDING
B5 RECONFIGURE AUTOMOBILE PARKING ENTRANCE
B6 AIRPORT LAYOUT PLAN UPDATE

11 - 20 YEARS

PHASE III, LONG - TERM DEVELOPMENT ITEMS

C1 PAVEMENT PRESERVATION
C2 OVERLAY RUNWAY
C3 OVERLAY TAXIWAY
C4 AIRPORT MASTER PLAN UPDATE



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WHITERIVER AIRPORT
WHITERIVER, ARIZONA
WHITE MOUNTAIN APACHE TRIBE
AIRPORT LAYOUT PLANS
A.I.P. No. 3-04-0047-10

No.	Revision	Date	By

Project No: 075824
Date: 01.26.09
File Name: 5824 CIP

Drawn: JOS/GWK
Checked: JZP
Approved: DAC

FINANCIAL PLAN DRAWING

FIGURE 7-1

Appendix A
Design Standards Inventory

Whiteriver Airport
Airport Master Plan

Airside Inventory Checklist

Airport	Whiteriver Airport (E24)	ARC	B-II
City	Whiteriver, Arizona	Approach Type	Visual
Contact	Colbert Burnette	Date Inventoried	September 29, 2008
Phone No.		Inspected By	DPS/DAC

Runway 1/19 Inventory	Published	Required	Actual
Distance To:			
Hold lines from centerline		200'	200'
Parallel taxiway from centerline		240'	240'
Aircraft parking from centerline			
Runway width	75'	75'	75'
Runway length	6,350'		6,350'
RSA width		150'	150'
ROFA width		500'	500'
Primary/transitional surface penetrations			
Longitudinal grade - site distance problems			
OFZ (Width/Length Beyond Runway End)		200'	200'
Pavement marking type	NPI		NPI
Pavement marking condition	Good		Good
Pavement strength	75, 100, 150		75, 100, 150
Pavement condition	Good		Good
Runway 1 End Inventory			
RSA beyond runway end		300'	300'
ROFA beyond runway end		300'	300'
Approach obstructions			
Runway end elevation	5078.9'		5078.9'
Runway 19 End Inventory			
RSA beyond runway end		300'	300'
ROFA beyond runway end		300'	300'
Approach obstructions			
Runway end elevation	5152.9'		5152.9'
Runway Lighting Inventory			
Distance from pavement edge		10'	10'
Maximum distance between lights		200'	200'
Type	MIRL		MIRL
Condition			
Color		White	White
Runway 1 Threshold			
Distance from pavement edge		10'	10'
Maximum distance between lights			
Color/Number		8 Red/Green	8 Red/Green
Runway 19 Threshold			
Distance from pavement edge		10'	10'
Maximum distance between lights			
Color/Number		8 Red/Green	8 Red/Green

COMMENTS

Airside Inventory Checklist

Airport	Whiteriver Airport (E24)	ARC	B-II
City	Whiteriver, Arizona	Approach Type	Visual
Contact	Colbert Burnette	Date Inventoried	September 29, 2008
Phone No.		Inspected By	DPS/DAC

Taxiway Inventory	Published	Required	Actual
Taxiway width	35'	35'	35'
TSA width		79'	79'
TOFA width		131'	131'
Dist. from centerline to fixed or movable ob		57.5'	57.5'
Pavement marking type			CL
Pavement marking condition			Good
Pavement strength	75, 100, 155		75, 100, 155
Pavement condition			Good
Taxiway Lighting Inventory			
Distance from pavement edge		10'	
Maximum distance between lights		100'	
Type			Reflectors
Condition			
Color		Blue	
Miscellaneous			
Type of beacon		Yes	Yes
Size of beacon			
Visual Aids (i.e. PAPI, VASI, REIL, etc.)	PAPI RW 1, REIL 1/19		PAPI RW 1, REIL 1/19
Windcone (condition & compliance)			Yes
Segmented circle (condition & compliance)	Yes		Yes
Fencing	Perimeter		Perimeter
Signs (type, condition, placement)	lighted, good, correct		lighted, good, correct

COMMENTS:

Landside Inventory Checklist

Airport	Whiteriver Airport (E24)	ARC	B-II
City	Whiteriver, Arizona	Approach Type	Visual
Contact	Colbert Burnette	Date Inventoried	September 29, 2008
Phone No.		Inspected By	DPS/DAC

Facilities	Existing	Notes
Tie-downs	17	
T-hangars	0	
Box hangars	0	
Apron	Yes	
Size	14,130 SY	
Pavement strength	75, 100, 155	
Pavement condition	Good	
Pavement marking	Centerline	
Pavement marking condition	Good	
Automobile parking	10	
Weather equipment	None	
Fuel storage	None	
Fuel type available	N/A	
FBO/Terminal building	None	

COMMENTS

Appendix B
Acronyms

Whiteriver Airport
Airport Master Plan

COMMONLY USED ACRONYMS

AC	Advisory Circular
AD	Airport Design
ADG	Airplane Design Group
AGL	Above Ground Level
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALS	Approach Lighting System
ARC	Airport Reference Code
ARP	Airport Reference Point
ARTCC	Air Route Traffic Control Center
ASDA	Accelerate Stop Distance
ASDE	Airport Surface Detection Equipment
ASR	Airport Surveillance Radar
ASV	Annual Service Volume
ATC	Air Traffic Control
ATCT	Airport Traffic Control Tower
AWOS	Automated Weather Observation system
BRL	Building Restriction Line
CAT	Category
CFR	Code of Federal Regulations
CWY	Clearway
CY	Calendar Year
DME	Distance Measuring Equipment
EL	Elevation
EMT	Emergency Medical Technician
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FSS	Flight Service System
FY	Fiscal Year
GA	General Aviation
GPS	Global Positioning System
HIRL	High Intensity Runway Lights
IEMT	Intermediate Emergency Medical Technician
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
LDA	Landing Distance Available
LOC	Localizer
MALS	Medium Intensity Approach Lighting System
MALSF	Medium Intensity Approach Lighting System
MALSR	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
ME	Multi-Engine
MIRL	Medium Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
MLS	Microwave Landing System
MOA	Military Operating Area
MSL	Mean Sea Level
NAVAID	Navigational Aid
NDB	Nondirectional Beacon
NM	Nautical Mile
NPIAS	National Plan of Integrated Airport Systems
ODALS	Onmnidirectional Approach Lighting System
OFA	Object Free Area
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
RAIL	Runway Alignment Indicator Lights
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVR	Runway Visual Range
RW	Runway
SWY	Stopway
TERPS	Terminal Instrument Procedures
TH	Threshold
TL	Taxilane
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available
TSA	Taxiway Safety Area
TVOR	Very High Frequency Omnirange on an Airport
TW	Taxiway
USGS	United States Geological Society
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VOR	Very High Frequency Omnirange
WAAS	Wide Area Augmentation System

Appendix C
Glossary of Terms

Whiteriver Airport
Airport Master Plan

GLOSSARY OF TERMS

Above Ground Level (AGL)	A height above ground as opposed to MSL (height above Mean Sea Level).
Advisory Circular (AC)	Publications issued by the FAA to provide a systematic means of providing non-regulator guidance and information in a variety of subject areas.
Airport Improvement Program (AIP)	The AIP of the Airport and Airways Improvement Act of 1982 as amended. Under this program, the FAA provide funding assistance for the design and development of airports and airport facilities.
Aircraft Mix	The number of aircraft movements categorized by capacity group or operational group and specified as a percentage of the total aircraft movements.
Aircraft Operation	An aircraft takeoff or landing.
Airport	An area of land or water used or intended to be used for landing and takeoff of aircraft, includes buildings and facilities, if any.
Airport Elevation	The highest point of an airport's useable runways, measured in feet above mean sea level.
Airport Hazard	Any structural or natural object located on or near a public airport, or any use of land near such airport, that obstructs the airspace required for flight of aircraft on approach, landing, takeoff, departure, or taxiing at the airport.
Airport Land Use Regulations	Are designed to preserve existing and/or establish new compatible land uses around airports, to allow land use not associated with high population concentration, to minimize exposure of residential uses to critical aircraft noise areas, to avoid danger from aircraft crashes, to discourage traffic congestion and encourage compatibility with non-motorized traffic from development around airports, to discourage expansion of demand for governmental services beyond reasonable capacity to provide services and regulate the area around the airport to minimize danger to public health, safety, or property from the operation of the airport, to prevent obstruction to air navigation and to aid in realizing the policies of a County Comprehensive Plan and Airport Master Plan.
Airport Layout Plan (ALP)	A graphic presentation, to scale, of existing and proposed airport facilities, their location on the airport and the pertinent applicable standards. To be eligible for AIP funding assistance, an airport must have an FAA-approved ALP.

Airport Master Record, Form 5010	The official FAA document, which lists basic airport data for reference and inspection purposes.
Airport Reference Code (ARC)	The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport.
Airport Reference Point (ARP)	The latitude and longitude of the approximate center of the airport.
Airspace	Space above the ground in which aircraft travel; divided into corridors, routes and restricted zones.
Air Traffic	Aircraft operating in the air or on an airport surface, excluding loading ramps and parking areas.
Approach Surface	A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end.
Automated Weather Observing System (AWOS)	This equipment automatically gathers weather data from various locations on the airport and transmits the information directly to pilots by means of computer generated voice messages over a discrete frequency.
Based aircraft	An aircraft permanently stationed at an airport.
Building Restriction Line	A line, which identifies suitable building area locations on airports.
Ceiling	The height above the earth's surface of the lowest layer of clouds or other phenomena which obscure vision.
Conical Surfaces	A surface extending outward and upward form the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
Controlled Airspace	Airspace in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.
Critical/Design Aircraft	In airport design, the aircraft which controls one or more design items such as runway length, pavement strength, lateral separation, etc., for a particular airport. The same aircraft need not be critical for all design items.

Day Night Level (DNL)	24-hour average sound level, including a 10 decibel penalty for sound occurring between 10:00 PM and 7:00 AM
Decibel	Measuring unit for sound based on the pressure level.
Design Type	The design type classification for an airport refers to the type of runway that the airport has based upon runway dimensions and pavement strength.
Federal Aviation Administration (FAA)	The federal agency responsible for the safety and efficiency of the national airspace and air transportation system.
FAR Part 77	A definition of the protected airspace required for the safe navigation of aircraft.
Fixed Base Operator (FBO)	An individual or company located at an airport and providing commercial general aviation services.
Fuel Flowage Fees	A fee charged by the airport owner based upon the gallons of fuel either delivered to the airport or pump at the airport.
General Aviation (GA)	All aviation activity in the United States, which is neither military nor conducted by major, national or regional airlines.
Glider	A heavier-than-air aircraft that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine (FAR Part 1),
Global Positioning System (GPS)	The global positioning system is a space based navigation system, which has the capability to provide highly accurate three-dimensional position, velocity and time to an infinite number of equipped users anywhere on or near the Earth. The typical GPS integrated system will provide: position, velocity, time, altitude, groundspeed and ground track error, heading and variation. The GPS measures distance, which it uses to fix position, by timing a radio signal that starts at the satellite and ends at the GPS receiver. The signal carries with it, data that discloses satellite position and time of transmission and synchronizes the aircraft GPS system with satellite clocks.
Hazard to Air Navigation	An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities or existing or potential airport capacity.
Horizontal Surface	A horizontal plane 150 feet above the established airport elevation, the perimeter which is constructed by swinging arcs of specified radii form the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs.

Imaginary Surfaces	Surfaces established in relation to the end of each runway or designated takeoff and landing areas, as defined in paragraphs 77.25, 77.28 and 77.29 of FAR Part 77, *Objects Affecting Navigable Airspace*. Such surfaces include the approach, horizontal, conical, transitional, primary and other surfaces.
Itinerant Operations	All operations at an airport, which are not local operations.
Jet Noise	The noise generated externally to a jet engine in the turbulent jet exhaust.
Knots	Nautical miles per hour, equal 1.15 statute miles per hour.
Large Airplane	An airplane of more than 12,500 pounds maximum certified takeoff weight.
Local Operations	Operations by aircraft flying in the traffic pattern or within sight of the control tower, aircraft known to be arriving or departing from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.
Location Identifier	A three-letter or other code, suggesting where practicable, the location name that it represents.
Maneuvering Area	That part of an airport to be used for the takeoff and landing of aircraft and for the movement of aircraft associated with takeoff and landing, excluding aprons.
Master Plan	A planning document prepared for an airport, which outlines directions and developments in detail for 5 years and less specifically for 20 years. The primary component of which is the Airport Layout Plan.
Mean/Maximum Temperature	The average of all the maximum temperatures usually for a given period of time.
Mean Sea Level (MSL)	Height above sea level.
Medium Intensity Runway Lights (MIRL)	For use on VFR runways or runway showing a nonprecision instrument flight rule (IFR) procedure for either circling or straight-in approach.
Minimum Altitude	That designated altitude below which an IFR pilot is not allowed to fly unless arriving or departing an airport or for specific allowable flight operations.

National Airspace System	The common network of United States airspace, navigation aids, communications facilities and equipment, air traffic control equipment and facilities, aeronautical charts and information, rules, regulations, procedures, technical information and FAA manpower and material.
National Plan of Integrated Airport Systems (NPIAS)	A plan prepared annually by the FAA which identifies, for the public, the composition of a national system of airports together with the airport development necessary to anticipate and meet the present and future needs of civil aeronautics, to meet requirements in support of the national defense and to meet the special needs of the Postal Service. The plan includes both new and qualitative improvements to existing airports to increase their capacity, safety, technological capability, etc.
NAVAID	A ground based visual or electronic device used to provide course or altitude information to pilots.
Noise	Defined subjectively as unwanted sound. The measurement of noise involve understanding three characteristics of sound: intensity, frequency and duration.
Noise Contours	Lines drawn about a noise source indicating constant energy levels of noise exposure. DNL is the measure used to describe community exposure to noise.
Noise Exposure Level	The integrated value, over a given period of time of a number of different events of equal or different noise levels and durations.
Non-Precision Instrument	A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance for which a straight-in nonprecision instrument approach procedure has been approved.
Notice to Airmen (NOTAM)	A notice containing information (not known sufficiently in advance to publicize by other means concerning the establishment, condition or change in any component (facility, service, or procedure) of or hazard in the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.
Object	Includes, but is not limited to, above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain and parked aircraft.
Object Free Area (OFA)	A two-dimensional ground area-surrounding runways, taxiways and taxilanes which is clear of objects except for object whose location is fixed by function.

Obstacle Free Zone (OFZ)	The airspace defined by the runway OFZ and, as appropriate, the inner-approach OFZ and the inner-transitional OFZ, which is clear of object penetrations other than frangible NAVAIDs.
Obstruction	An object which penetrates an imaginary surface described in the FAA's Federal Aviation Regulations (FAR), Part 77.
Parking Apron	An apron intended to accommodate parked aircraft.
Pattern	The configuration or form of a flight path flown by an aircraft or prescribed to be flown, as in making an approach to a landing
Precision Approach Path Indicators (PAPI)	The visual approach slope indicator system furnishes the pilot visual slope information to provide safe descent guidance. It provides vertical visual guidance to aircraft during approach and landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that they are "on path" if they see red/white, "above path" if they see white/white and "below path" if they see red/red.
Primary Surface	A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway, but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway.
Rotating Beacon	A visual navaid operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport.
Runway	A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.
Runway End Identifier Lights (REIL)	REILs are flashing strobe lights which aid the pilot in identifying the runway end at night or in bad weather conditions.
Runway Gradient	The average gradient consisting of the difference in elevation of the two ends of the runway divided by the runway length may be used provided that no intervening point on the runway profile lies more than five feet above or below a straight line joining the two ends of the runway. In excess of five feet the runway profile will be segmented and aircraft data will be applied for each segment separately.
Runway Lighting System	A system of lights running the length of a system that may be either high intensity (HIRL), medium intensity (MIRL), or low intensity (LIRL).
Runway Orientation	The magnetic bearing of the centerline of the runway.

Runway Protection Zone (RPZ)	An area off the runway end used to enhance the protection of people and property on the ground.
Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion form the runway.
Segmented Circle	A basic marking device used to aid pilots in locating airports and which provides a central location for such indicators and signal devices as may be required.
Small Aircraft	An airplane of 12,500 pounds or less maximum certified takeoff weight.
Taxiway	A defined path established for the taxiing of aircraft from one part of an airport to another.
Terminal Area	The area used or intended to be used for such facilities as terminal and cargo buildings, gates, hangars, shops and other service buildings, automobile parking, airport motels, restaurants, garages and automobile services and a specific geographical area within which control of air traffic is exercised.
Threshold	The beginning of that portion of the runway available for landing.
Touch and Go Operations	Practice flight performed by a landing touch down and continuous takeoff without stopping.
Traffic Pattern	The traffic flow that is prescribed for aircraft landing at, taxiing on or taking off form an airport. The usual components are the departure, crosswind, downwind, and base legs; and the final approach.
Transitional Surface	These surfaces extend outward and upward at right angles to runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.
Universal Communications (UNICOM)	A private aeronautical advisory communications facility for purpose other than air traffic control. Only one such station is authorized in any landing area. Service available are advisory in nature primarily concerning the airport services and airport utilization. Locations and frequencies of UNICOMs are listed on aeronautical charts and publications.
Visual Flight Rules (VFR)	Rules that govern flight procedures under visual conditions.
Visual Runway	A runway intended for visual approaches only with no straight-in instrument approach procedure either existing or planned for that runway.

Appendix D
Public Involvement

Whiteriver Airport
Airport Master Plan

WHITERIVER AIRPORT
AIRPORT MASTER PLAN
KICKOFF MEETING SUMMARY
AUGUST 29, 2008

The Whiteriver Airport kickoff meeting was held on August 29, 2008 at 9:00 A.M. at the White Mountain Apache Tribal Headquarters. The meeting was held to present and discuss the Airport Master Plan process with the Tribe and other airport users. Attendance at the meeting comprised of 15 individuals, including representatives from the Tribe, Bureau of Indian Affairs (BIA), Forestry and Armstrong Consultants.

The goals of the Airport Master Plan were presented along with the roles of the airport Planning Advisory Committee (PAC). As mentioned in the meeting, the PAC will be included in all aspects of the Airport Master Plan, including the review of working papers, draft reports and drawings.

The process and schedule for the Airport Master Plan was discussed, followed by a brief overview of the associated project costs and budgeting requirements for the Tribes local match.

A review of the Whiteriver Airport's existing airside and landside facilities included a discussion on aircraft operations, nearby land uses, automobile parking, location of a future Single Engine Air Tanker (SEAT) reload base, location of additional helicopter parking spaces and existing landside facility improvements.

The discussion on existing landside facilities included the existing plans by the BIA to relocate the majority of their offices across Highway 73 from their existing location on airport property while adding new landside facilities for on airport operations and replacing older facilities. With the possibility of new landside facilities, the discussion also included possible improvements that could be made to automobile parking, airport security and the provision of a public pilot lounge. The airport currently does not have a public pilot lounge/terminal and telephone available to transient pilots and their passengers.

The discussion on existing airside facilities included discussion on the location of a future SEAT reload base and additional helicopter parking, while discussing the advantages and disadvantages to locating the SEAT reload base and additional helicopter parking on either the west or east side of Runway 1/19. Areas of concern related to accessibility, proximity to obstructions and traffic circulation. As part of the Airport Master Plan, Armstrong Consultants will further evaluate and recommend a safe and efficient location for both the SEAT reload base and additional helicopter needs. The Airport Reference Code (ARC) design standards were briefly covered and included the geometry associated primarily with B-II design standards.

The land within and surrounding the airport influence zone is owned and controlled by the White Mountain Apache Tribe. Land use compatibility was also discussed and will be addressed as part of the Airport Overlay Zoning that will be prepared during the Airport Master Plan.

There is currently limited automobile parking available at the airport. A future automobile parking area with increased capacity will be planned as part of Airport Master Plan.

The next step will be to prepare Working Paper One including the Inventory, Forecast and Facility Requirements Chapters. This information will be distributed in working paper format to participating parties for review and comment.

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"Build a mile of road and go a mile….
Build a mile of runway and go anywhere!"

Whiteriver Airport Master Plan
Airport Working Group Alternatives Meeting Summary
November 17, 2008

Attendees: Attendees included representatives of the Tribe, Indian Health Service (IHS), Bureau of Indian Affairs (BIA), Forestry and Armstrong Consultants. The Federal Aviation Administration (FAA) and Arizona Department of Transportation (ADOT) were unable to attend.

See attached Attendance Roster attendees.

Meeting Summary: An airport working group meeting was held on November 17, 2008 to present the recommended airside development for the Whiteriver Airport.

Armstrong Consultants began with a review of the recommended airside development drawings and a discussion on future landside development. Future recommended airside facilities consist of constructing an additional connector taxiway for improved circulation, constructing one Type III and two Type II helicopter parking spaces on the northern portion of the existing apron and constructing two Single Engine Air Tanker (SEAT) loading pads, south of the existing snow removal equipment building. Comments related to airside development included replacing the existing beacon with a Tip-down pole due to maintenance related safety concerns, replacing portions of airport perimeter fencing and installing an electric access gate in proximity to the existing snow removal equipment building.

A discussion on the landside facilities included identifying the future location of BIA facilities, the location of future terminal/pilot lounge and layout of a future automobile parking layout. The location of existing and future Tribe and BIA facilities were also identified and will be reflected on the updated airport layout plan and terminal area development drawings. As a result of the meeting, a draft airport layout plan drawing set will be prepared.

The Capital Improvement Plan (CIP) was also discussed. The project sequence shown on the existing CIP was updated to reflect the current list of priorities for the airport. Airfield pavement maintenance (i.e. Crack Seal, Fog Seal & Remark) was selected as having the highest priority followed by the replacing the existing beacon with a Tip-down pole. The updated CIP will be submitted to the Tribe and then submitted to the FAA.

The next meeting will include presenting the Airport Layout Plan to the Tribal Council for final approval.

WHITERIVER AIRPORT MASTER PLAN WORKING GROUP MEETING # 2 – SIGN-IN SHEET

NAME	TITLE	COMPANY	PHONE NUMBER	EMAIL
Daniel Spencer	Airport Planner	Armstrong Consultants	970 -242-0101	daniel@armstrongconsultants.com
Justin Pietz	Airport Planner	Armstrong Consultants	970 -242-0101	justin@armstrongconsultants.com
John Cervantes	Helicopter Mgr.	FTA - BIA	928-338-5407	cervantesjohn@hotmail.com
Sabino Archuleta	Aviation manager	FTA-BIA	928-205-5596	saa@blackfootinet
Paul D. Kuehl	Fire Chief	WMA Fire Rescue	928-338-4311	pkuehl@wmat.us
Lucinda Harris	IHS FAC. ENGR.	WHITERIVER USPHS HOSP.	928-338-3586	Lucinda.Harris@ihs.gov
Colbert Burnette	Tribal Engineer	White Mountain Apache Tribe	928-338-2477	cburnette@wmat.nsn.us
Richard Palmer	Tribal Transportation	"	(928) 338-2530	rpalmer@wmat.us
Michael Lomayaktewa	Rds Manager	FAA BIA Transp.	(928) 338-5486	Michael.Lomayaktewa@bia.gov

Appendix E
Overlay Zoning Ordinance

Whiteriver Airport
Airport Master Plan

WHITERIVER, ARIZONA
WHITERIVER AIRPORT
OVERLAY ZONING ORDINANCE

An ordinance regulating and restricting the height of structures and objects of natural growth, and otherwise regulating the use of property, in the vicinity of the Whiteriver Airport by creating the appropriate zones and establishing the boundaries thereof; providing for changes in the restrictions and boundaries of such zones; defining certain terms used herein, referring to the Whiteriver Airport FAR Part 77 Airspace Drawing and Off Airport Land Use Drawing which are incorporated in and made a part of this ordinance; providing for enforcement; establishing a board of adjustment; and imposing penalties.

It is hereby found that an obstruction has the potential for endangering the lives and property of users of the Whiteriver Airport and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums at the Whiteriver Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff and maneuvering of aircraft, thus tending to destroy or impair the utility of the Whiteriver Airport and the public investment therein. Accordingly, it is declared:

1. That the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by the Whiteriver Airport.

2. That the encroachment of noise sensitive or otherwise incompatible land uses within certain areas as set forth herein below may endanger the health, safety and welfare of the owners, occupants or users of the land; and

3. That it is necessary in the interest of the public health, public safety and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

4. That the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation; and

5. That the Whiteriver Airport fulfills an essential community purpose.

It is further declared that the prevention of the creation of establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or the marking and lighting of construction are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

It is hereby ordained by the White Mountain Apache Tribe as follows:

SECTION I
SHORT TITLE

This Ordinance shall be known and may be cited as the Whiteriver Airport Overlay Zoning Ordinance.

SECTION II
DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT – Whiteriver Airport.

2. AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet above mean sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

5. BOARD OF ADJUSTMENT - A Board consisting of _____#_____ members appointed by the White Mountain Apache Tribe.

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HELIPORT PRIMARY SURFACE - The primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

10. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

11. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

12. NAVD 88 - North American Vertical Datum 1988. All elevations in this ordinance are referenced to the 1988 North American Vertical Datum.

13. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of and which is inconsistent with the provisions of this Ordinance or an amendment thereto.

14. NONPRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only

horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned. It also means a runway for which a nonprecision approach system is planned and is so indicated on an approved Airport Layout Plan or any other planning document.

15. OBSTRUCTION - Any structure, growth or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

16. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association or governmental entity; includes a trustee, a receiver, an assignee or a similar representative of any of them.

17. PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), a Precision Approach Radar (PAR) or a Global Positioning System (GPS). It also means a runway for which a precision approach system is planned and is so indicated on an approved airport layout plan or any other planning document.

18. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

19. RUNWAY - A defined area on an airport prepared for landing and takeoff of aircraft along its length.

20. STRUCTURE - An object, including mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation and overhead transmission lines.

21. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

22. TREE - Any object of natural growth.

23. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

24. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

SECTION III
AIRPORT HEIGHT RESTRICTION ZONES

In order to carry out the provisions of this ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces and conical surfaces as they apply to the Whiteriver Airport. Such zones are shown on the Whiteriver Airport Federal Aviation Regulation (FAR) Part 77 Airspace Drawing. Three (3) original, official, and identical copies of the FAR Part 77 Airspace Drawing reflecting the boundaries of the airport height restriction overlay zoning districts of Whiteriver, Arizona are hereby adopted, and the Commissioner and the White Mountain Apache Tribe Clerk are hereby authorized to sign and attest each map as the official Whiteriver Airport FAR Part 77 Airspace Drawing of Whiteriver, Arizona, and such maps shall be filed and maintained as follows:

1. One (1) copy shall be filed for permanent record in the office of the White Mountain Apache Tribe Clerk and shall be designated as Exhibit 1. This copy shall not be changed in any manner.

2. One (1) copy shall be filed in the office of the Director of Planning and shall be designated as Exhibit 2. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

3. One (1) copy shall be filed in the office of the Airport Manager and shall be designated as Exhibit 3. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

Each portion of an area located in more than one (1) of the following zones shall be evaluated independently according to the zone in which it is located. The various zones are hereby established and defined as follows:

1. PRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) – The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet. Its centerline is the continuation of the centerline of the runway.

2. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

3. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) – The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

4. VISUAL RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) – The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach surface expands uniformly to a width of 1,500 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

5. VISUAL RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) - The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach surface expands uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. The centerline of the approach zone is a continuation of the centerline of the runway.

6. TRANSITIONAL ZONE - The transitional zones are the areas beneath the transitional surfaces.

7. HORIZONTAL ZONE - The horizontal zone is established by swinging arcs of 5,000 or 10,000 feet radii from the center of each end of the primary surface of the primary runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones. The horizontal zone was constructed with 10,000 feet radii.

8. CONICAL ZONE - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward there from a horizontal distance of 4,000 feet.

SECTION IV
AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. PRECISION INSTRUMENT RUNWAY APPROACH ZONE – Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline. Then slopes forty (40) feet outward for each foot upward beginning at the end of and at the same elevation as the first 10,000 feet and extending to a horizontal distance of 40,000 feet along the extended runway centerline.

2. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (LARGER THAN UTILITY RUNWAY) - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

3. NONPRECISION INSTRUMENT RUNWAY APPROACH ZONE (UTILITY AIRCRAFT) – Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. VISUAL RUNWAY APPROACH ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

5. TRANSITIONAL ZONE - Slopes seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation. In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

6. HORIZONTAL ZONE - Established at 150 feet above the airport elevation.

7. CONICAL ZONE - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

SECTION V
COMPATIBLE LAND USE REGULATIONS

1. AIRPORT COMPATIBLE LAND USE OVERLAY ZONING DISTRICTS - For the purpose of regulating the development of noise sensitive land uses to promote compatibility between the Airport and the surrounding land uses, to protect the Airport from incompatible development and to promote the health, safety and general welfare of property users, the controlled area of Whiteriver Airport is divided into Airport Compatible Land Use Overlay Zoning districts. The Airport Compatible Land Use Overlay Zoning districts established herein shall be known as:

Off Airport Land Use Zone Number	Zoning District Name
D	Airport Influence Zone (AIZ)
C	Traffic Pattern Zone (TPZ)
B	Approach Zone (AZ)
A	Runway Protection Zone (RPZ)

2. OFF AIRPORT LAND USE DRAWING

A. The boundaries of the Airport Compatible Land Use Overlay Zoning Districts set out herein are delineated upon the Whiteriver Airport Off Airport Land Use Drawing of Whiteriver, Arizona, said Off Airport Land Use Drawing being adopted by reference and made a part of this chapter as fully as if the same were set forth herein in detail.

B. Three (3) original, official, and identical copies of the Off Airport Land Use Drawing reflecting the boundaries of the Airport Compatible Land Use Overlay Zoning districts of Whiteriver, Arizona are hereby adopted, and the Commissioner and the White Mountain Apache Tribe Clerk are hereby authorized to sign and attest each map as the official Off Airport Land Use Drawing of Whiteriver, Arizona, and such maps shall be filed and maintained as follows:

1) One (1) copy shall be filed for permanent record in the office of the White Mountain Apache Tribe Clerk and shall be designated as Exhibit 1. This copy shall not be changed in any manner.

2) One (1) copy shall be filed in the office of the Director of Planning and shall be designated as Exhibit 2. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

3) One (1) copy shall be filed in the office of the Airport Manager and shall be designated as Exhibit 3. This copy shall be maintained by the Planning Department by posting thereon all subsequent changes and amendments.

3. AIRPORT COMPATIBLE LAND USE OVERLAY ZONING DISTRICT BOUNDARIES

A. The Airport Compatible Land Use Overlay Zoning District boundary lines shown on the official Off Airport Land Use Drawing shall be located and delineated along contour lines established for the Whiteriver Airport. Where uncertainty exists as to the boundaries of the Airport Compatible Land Use Overlay Zoning Districts as shown on the official Map, the following rules shall apply:

1) Boundaries shall be scaled from the nearest runway end shown on the map.

2) Boundaries shall be scaled from the nearest physical feature shown on the map.

3) Boundaries may be scaled from the nearest platted lot line as shown on the map.

4) Distances not specifically indicated on the original Off Airport Land Use Drawing shall be determined by a scaled measurement on the map.

B. Where physical features on the ground differ from the information shown on the official Off Airport Land Use Drawing or when there arises a question as to how or where a parcel of property is zoned and such questions cannot be resolved by the application of Section V-3A, the property shall be considered to be classified as the most restrictive Airport Compatible Land Use Overlay Zoning District.

C. Where a parcel of land lies within more than one (1) Airport Compatible Land Use Overlay Zoning District, the zone within which each portion of the property is located shall apply individually to each portion of the development.

4. USE OF LAND AND BUILDINGS

A. Within the Airport Compatible Land Use Overlay Zoning Districts as defined herein, no land shall hereafter be used and no structure or other object shall hereafter be erected, altered, converted or modified other than for those compatible land uses permitted by underlying comprehensive zoning districts, as specified in the White Mountain Apache Tribe Land Use Code. Additional land uses are prohibited in the Airport Compatible Land Use Overlay Zoning Districts, regardless of underlying zoning, as set forth in the Land Use Compatibility Table included in Attachment A.

B. Where any use of prohibited land and buildings set forth in Section V-4A conflicts with any use of land and buildings set forth in the White Mountain Apache Tribe Land Use Code, as an allowed use on the Zoning District Map, this chapter shall apply.

C. Section V-4 does not apply to property within the official boundaries of the airport.

D. Where specified on the Airport Compatible Land Use Table, the property owner shall dedicate, in advance of receiving a building permit, an aviation clear zone easement to Whiteriver, Arizona. The purpose of this easement shall be to establish a maximum height restriction on the use of property and to hold the public harmless for any damages caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft landing at, taking off from, or operating on, or at, public airport facilities.

5. ADDITIONAL LAND USE REGULATIONS

A. Within Whiteriver, Arizona the more restrictive of the Land Use Code or Section V-4A, shall apply to the development of all property covered by the Off Airport Land Use Drawing.

B. On property within the Off Airport Land Use Drawing jurisdiction, but outside the jurisdictional limits of Whiteriver, Arizona, Section V-4A shall apply to formulate land use recommendations or responses to land use comment requests from other jurisdictions.

C. When a provision of this section conflicts with any airport height hazard restrictions, the most restrictive provision shall apply.

D. Notwithstanding any other provisions of this chapter or other chapter of the White Mountain Apache Tribe Land Use Code, no use may be made of land, water, or structures within any zone established by this chapter in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, or result in glare in the eyes of pilots using the airport; impair visibility in the vicinity of the airport; create bird strike hazards, or otherwise in any way endanger or interfere with the landing, taking off or flight operations of aircraft utilizing the airport.

E. When a subdivision plat is required for any property within an Airport Compatible Land Use Overlay Zoning District or within an area shown on the FAR Part 77 Airspace Drawing for the Whiteriver Airport, the property owner shall dedicate an aviation hazard easement to the White Mountain Apache Tribe over and across that property. This easement shall establish a height restriction on the use of the property and hold the public harmless from any damages caused by noise, vibration, fumes, dust, fuel, fuel particles, or other effects that may be caused by the operation of aircraft taking off, landing, or operating on or near the Whiteriver Airport.

SECTION VI
NONCONFORMING USES

1. REGULATIONS NOT RETROACTIVE - The regulations prescribed by this ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this ordinance, or otherwise interfere with the continuance of nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this ordinance, and is diligently prosecuted. Nonconforming land uses existing as of the effective date of this ordinance may be modified such that 1) only existing structures may be enlarged or expanded; 2) that they do not result in any greater violation of height restrictions; and 3) a variance in accordance with Section VII-4 is obtained.

2. MARKING AND LIGHTING - Notwithstanding the preceding provision of this section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the White Mountain Apache Tribe to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated and maintained at the expense of the Whiteriver Airport.

SECTION VII
PERMITS

1. FUTURE USES - Except as specifically provided in A and B hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefore shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the regulating use, structure, or tree would conform to the regulations herein prescribed. An FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, shall accompany each application. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

   A. In the area lying within the limits of the approach zone, transition zone, horizontal zone, and conical zone, no permit shall be required by this ordinance for any tree or structure less than 200 feet above ground level which is also lower than an imaginary surface extending outward and upward at a slope of 100 feet horizontal for each 1 foot vertical beginning at the closest point of the closest runway.

   B. Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction or alteration of any structure, or growth of any tree in excess of any of the height limits established by this ordinance.

2. EXISTING USES - No permit shall be granted that would allow the establishment or creation of any obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. NONCONFORMING USES ABANDONED OR DESTROYED - Whenever the White

Mountain Apache Tribe determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. VARIANCES - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of a proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this ordinance.

   Additionally, no application for variance to the requirements of this ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the White Mountain Apache Tribe for advice as to the aeronautical effects of the variance. If the White Mountain Apache Tribe does not respond to the application within fifteen (15) days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. OBSTRUCTION MARKING AND LIGHTING - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as condition may require in accordance with FAA provisions.

SECTION VIII
ENFORCEMENT

It shall be the duty of the White Mountain Apache Tribe to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the White Mountain Apache Tribe upon a form published for that purpose. Applications required by this ordinance to be submitted to the White Mountain Apache Tribe shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the White Mountain Apache Tribe.

SECTION IX
BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirements, decision, or determination made by the White Mountain Apache Tribe in the enforcement of this ordinance; (2) to hear and decide special exceptions to the terms of this ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The Board of Adjustment shall consist of members appointed by the White Mountain Apache Tribe and each shall serve for a term of __#__ years until a successor is duly appointed and qualified. Of the members first appointed one shall be appointed for a term of __#__ years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this ordinance. Meetings of the Board of adjustment shall be held at the call of the chairperson and at such other times as the Board of Adjustment may determine. The chairperson or, in the absence of the chairperson, the acting chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each questions; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions all of which shall immediately be filed in the office of the White Mountain Apache Tribe Planning and Zoning Department and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order requirement, decision or determination which comes before it under the provisions of this ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision or determination of the White Mountain Apache Tribe or decide in favor of the application on any matter upon which it is required to pass under this ordinance, or to effect variation to this ordinance.

SECTION X
APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the White Mountain Apache Tribe made in the administration of the ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the White Mountain Apache Tribe a notice of appeal specifying the grounds thereof. The White Mountain Apache Tribe shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the White Mountain Apache Tribe certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of the White Mountain Apache Tribe cause imminent peril to life or property. In such case, proceedings shall not be stayed except by the order of the Board of Adjustment on notice to the White Mountain Apache Tribe and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provisions of this ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision or determination appealed form and may make such order, requirement, decision or determination as may be appropriate under the circumstances.

SECTION XI
JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Court of _____ a provided in Section _____ of Chapter _____ of the Public Laws of _____.

SECTION XII
PENALTIES

Each violation of this ordinance or of any regulations, order, or ruling promulgated hereunder shall constitute a misdemeanor and shall be punishable by a fine of not more than _____ dollars or imprisonment for not more than _____ days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII
CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirements shall govern and prevail.

SECTION XIV
SEVERABILITY

If any of the provisions of this ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this ordinance are declared to be severable.

SECTION XV
EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this ordinance is necessary for the preservation of the public health, public safety, and general welfare, and emergency is hereby declared to exist, and this ordinance shall be in full force and effect from and after its passage by the White Mountain Apache Tribe and publication and posting as required by law. Adopted by this _____ day of _____, 20____.

ATTACHMENT A

LAND USE COMPATIBILITY TABLE

LAND USE CATEGORY	AIRPORT INFLUENCE ZONE (AIZ)	TRAFFIC PATTERN ZONE (TPZ)	APPROACH ZONE (AZ)	RUNWAY PROTECTION ZONE (RPZ)
RESIDENTIAL				
Single-Family, Nursing Homes, Mobile Homes, Multi-Family, Apartments, condominiums	+	o(3)	-(1,3)	--
			-(1,3)	
PUBLIC				
Schools, Libraries, Hospitals	+	o(3)	-(3)	--
Churches, Auditoriums, Concert Halls	+	o(3)	-(3)	--
Transportation, Parking, Cemeteries	++	++	++	-(2,5)
COMMERCIAL & INDUSTRIAL				
Offices, Retail Trade	++	+	o(3)	--
Service Commercial, Wholesale Trade, Warehousing, Light Industrial	++	+	o(3)	--
General Manufacturing, Utilities, Extractive industry	++	++	o(3)	--
AGRICULTURAL & RECREATIONAL				
Cropland	++	++	++	++
Livestock Breeding	++	++	++	-(2)
Parks, Playgrounds, Zoos, Golf Courses, Riding Stables, Water Recreation	++	++	++	-(2)
Outdoor Spectator Sports,	++	+	-(3)	--
Amphitheaters	o	-(4)	--	--
Open Space	++	++	++	++

++ Clearly Acceptable + Normally Acceptable o Conditionally Acceptable - Normally Unacceptable - - Clearly Unacceptable

Note: Development projects which are wildlife attractant, including sewerage ponds and landfills, within 10,000 feet of the airport are unacceptable. (Ref.: FAA AC 150/5200-33)

Conditions:

(1) If allowed, avigation easements and disclosure must be required as a condition of development.
(2) Any structures associated with uses allowed in the RPZ must be located outside the RPZ.
(3) If no reasonable alternative exists, use should be located as far from extended centerline as possible.
(4) If no reasonable alternative exists, use should be located as far form extended runway centerline and traffic patterns as possible.
(5) Transportation facilities in the RPZ (i.e. roads, railroads, waterways) must be configured to comply with Part 77 requirements.

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