Payson Airport

Airport Master Plan

AIRPORT MASTER PLAN

for

PAYSON AIRPORT
Payson, Arizona

Prepared for the

PAYSON REGIONAL AIRPORT AUTHORITY
and
TOWN OF PAYSON

by

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Approved by

Payson Regional Airport Authority
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And

Payson Town Council
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INTRODUCTION

Payson Airport

Introduction

The Payson Airport Master Plan Update has been undertaken to evaluate the airport's capabilities and role, to forecast future aviation demand, and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The ultimate goal of the Master Plan is to provide systematic guidelines for the airport's overall maintenance, development, and operation.

The Master Plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need. This is done to ensure that the Town of Payson and Payson Regional Airport Authority (PRAA) can coordinate project approvals, design, financing, and construction in a timely manner, prior to experiencing the detrimental effects of inadequate facilities.

An important result of the Master Plan is reserving sufficient areas for future facility needs. This protects development areas and ensures they will be readily available when required to meet future needs. The intended result is a detailed land use concept which outlines specific uses for all areas of airport property, including strategies for revenue enhancement.

The preparation of this Master Plan is evidence that the Town of Payson and PRAA recognize the importance of the airport to the community and the associated challenges inherent in providing for its unique operating and improvement needs. The cost of maintaining an airport is an investment which yields impressive benefits to the community. With a sound and realistic Master Plan, Payson Airport can

maintain its role as an important link to the national air transportation system for the community and maintain the existing public and private investments in its facilities.

The Town of Payson initiated this Master Plan in 2007 to re-evaluate and adjust as necessary the future development plan for Payson Airport. The last Master Plan for Payson Airport was completed in June 1998. Since this time, the management and operation of the airport have transferred from the Town of Payson to the PRAA through a 30-year airport lease agreement. This Master Plan is intended to provide guidance through an updated capital improvement and financial program to demonstrate the future investments required by the PRAA and Town at Payson Airport.

The Town of Payson has supported strong residential and employment growth over the past several years. Growth in these areas is expected as the Town continues to develop. The Town and PRAA desire to understand how this will affect demand at Payson Airport and how the airport can be a catalyst for continued development of the area. This Master Plan also considers the ever-changing needs of the air transportation industry. Significant changes in the general aviation industry have occurred since the completion of the last Master Plan including the development of the very light jet and the Sport Pilot rule. These factors need to be considered in terms of future facility needs at Payson Airport.

MASTER PLAN GOALS AND OBJECTIVES

The primary objective of the Payson Airport Master Plan is to develop and maintain a financially feasible, long term development program which will satisfy aviation demand; be compatible with community development, other transportation modes, and the environment; and be a source of employment and revenue for the Town, PRAA, and surrounding areas.

The accomplishment of this objective requires the evaluation of the existing airport and a determination of what actions should be taken to maintain an adequate, safe, and reliable airport facility to meet the air transportation needs of the area. The completed Master Plan will provide an outline of the necessary development and give responsible officials advance notice of future needs to aid in planning, scheduling, and budgeting.

Specific goals and objectives of the Payson Airport Master Plan are to:

- **Preserve Public and Private Investments**

The Town of Payson, United States Government (through the Federal Aviation Administration [FAA]), and the State of Arizona (through the Department of Transportation -- Aeronautics Division [ADOT]) have made considerable investments in the airport's infrastructure. Private individuals and businesses have made investments in buildings and other fa-

cilities. The Master Plan will provide for continued maintenance and necessary improvements to the airport's infrastructure to ensure maximum utility of the private facilities at Payson Airport and ensure the continued use of publicly funded facilities.

- **Be Reflective of Community Goals and Objectives**

The Payson Airport is a public facility serving the needs of local residents and businesses. The Master Plan needs to be reflective of the desires and visions the local community has for quality of life, business and development, and land use. The Master Plan will consider existing planning documents for the Town of Payson in the ultimate design and use of the airport.

- **Maintain Safety**

Safety is an essential consideration in the planning and development at the airport. The Master Plan will focus on maintaining the highest levels of safety for airport users, visitors, employees, and surrounding community.

- **Preserve the Environment**

Protection and preservation of the local environment are essential concerns in the Master Plan. Any improvements called for in the Master Plan will be mindful of environmental requirements.

- **Attract Public Participation**

To ensure that the Master Plan reflects the concerns of the public, the local community, airport tenants, airport users, and businesses throughout the region, the Master Plan process will include an active public outreach program to solicit comments and suggestions and include them in the final Master Plan concept, to the extent possible.

- **Strengthen the Economy**

In continuing support of the area's economy, the Master Plan is aimed at retaining and increasing jobs and revenue for the region and its businesses.

MASTER PLAN TASKS

The Master Plan will accomplish these objectives by carrying out the following:

- Determining projected needs of airport users through the year 2028;
- Analyzing socioeconomic factors likely to affect air transportation demand in the Town of Payson, including regional factors;
- Identifying potential existing and future land acquisition needs;
- Evaluating future airport facility development alternatives which will optimize undeveloped airport property to promote capacity and aircraft safety;
- Developing a realistic, commonsense plan for the use and expansion of the airport;

- Presenting environmental consideration associated with any recommended development alternatives;

- Establishing a schedule of development priorities and a program for improvements;

- Preparing a general aviation rates and charges analysis;

- Producing current and accurate base maps and Airport Layout Plan (ALP) drawings;

- Coordinating this Master Plan with local, regional, state, and federal agencies; and

- Preparing this Master Plan under guidelines established by the FAA and ADOT.

BASELINE ASSUMPTIONS

While the ultimate recommendations of this Master Plan have yet to be determined, a study such as this typically requires several baseline assumptions that will be used throughout this analysis. The baseline assumptions for this study are as follows:

- Payson Airport will continue to operate as a general aviation airport through the planning period.

- Payson Airport will continue to seek general aviation tenants and transient operations.

- The general aviation industry will continue to grow positively through the planning period. Specifics of projected growth in the national general aviation industry are contained in Chapter Two – Aviation Demand Forecasts.

- The socioeconomic characteristics of the region will remain as forecast (see Chapter Two).

- Both a federal program and a state program will be in place through the planning period to assist in funding future capital development needs.

- The Town of Payson will continue to lease the Payson Airport to the PRAA through the planning period. The initial term of the lease took effect on September 1, 2007 and continues through June 30, 2037.

MASTER PLAN ELEMENTS AND PROCESS

The Payson Airport Master Plan is being prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices, as shown on **Exhibit IA**. The Master Plan has six chapters that are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation.

Chapter One – Inventory summarizes the inventory efforts. The inventory efforts are focused on collecting and assembling relevant data pertaining to the airport and the area it serves. Information is collected on existing airport facilities and operations. Local economic and demographic data

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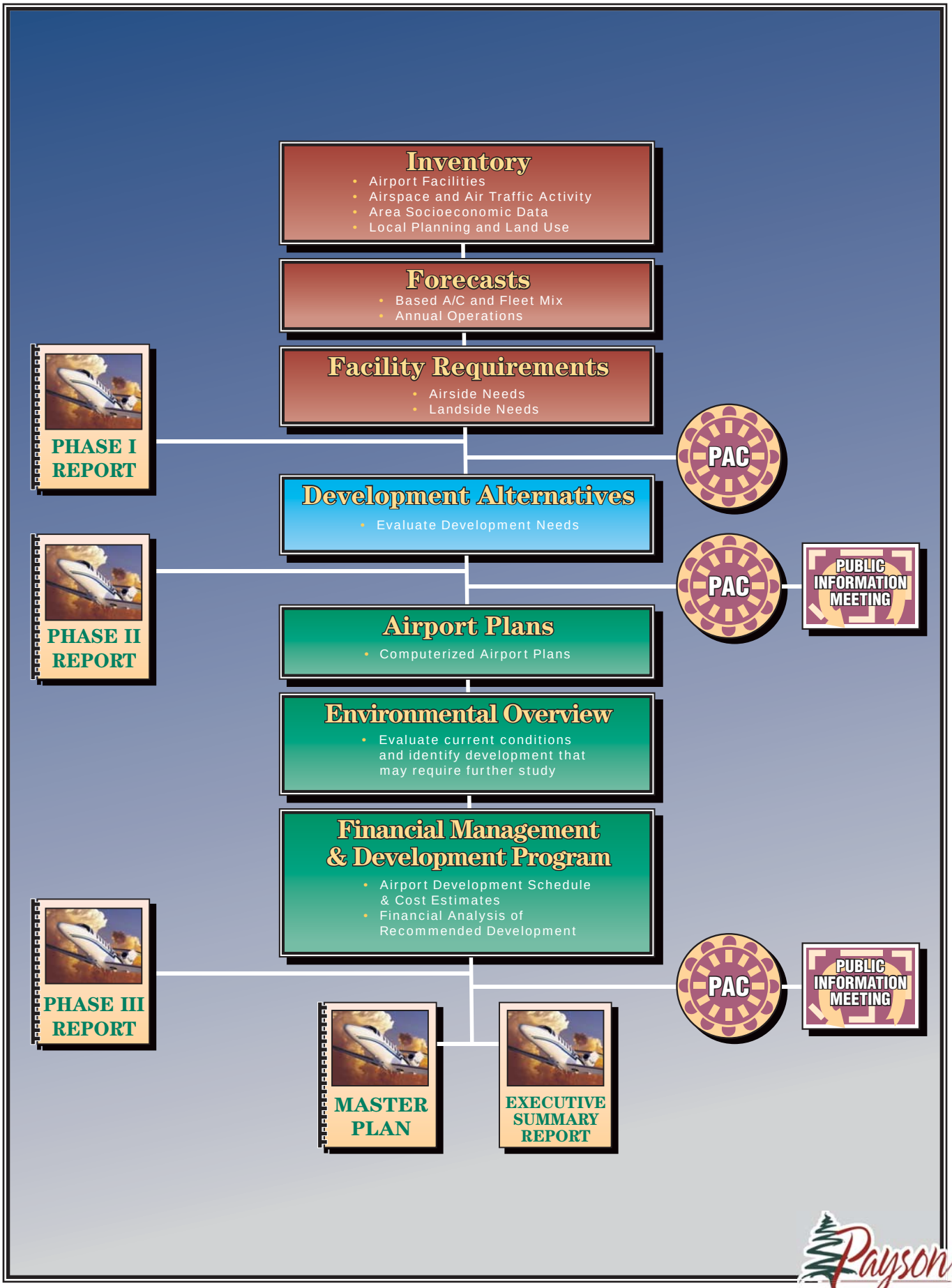

Payson

Exhibit IA
PROJECT WORK FLOW

is collected to define the local growth trends. Planning studies which may have relevance to the Master Plan are also collected.

Chapter Two – Aviation Demand Forecasts examines the potential aviation demand at the airport. The analysis utilizes local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at Payson Airport through the year 2028. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demand at the airport through the planning period.

Chapter Three – Airport Facility Requirements comprises the demand capacity and facility requirements analyses. The intent of this analysis is to compare the existing facility capacities to forecast aviation demand and determine where deficiencies in capacities (as well as excess capacities) may exist. Where deficiencies are identified, the size and type of new facilities to accommodate the demand are identified. The airfield analysis focuses on improvements needed to safely serve the type of aircraft expected to operate at the airport in the future, as well as navigational aids to increase the safety and efficiency of operations. This element also examines the general aviation terminal, hangar, apron, and support needs.

Chapter Four – Airport Development Alternatives considers a variety of solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations which can meet the projected facility needs. An analysis is completed to identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development.

Chapter Five – Master Plan Concept and Capital Program provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport. An environmental overview is also provided. Focus is also given to a proposed capital needs program which defines the schedules, costs, and funding sources for the recommended development projects.

Appendix B – Airport Plans includes the official ALP and detailed technical drawings depicting related airspace, land use, and property data. These drawings are used by the FAA and ADOT in determining grant eligibility and funding.

COORDINATION

The Payson Airport Master Plan is of interest to many within the local community. This includes local citizens, community organizations, airport users, airport tenants, and aviation organizations. As an important component of the regional, state, and national aviation systems, the Payson Airport is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the Master Plan, the Town of Payson and PRAA have identified a group of community members and aviation interest groups to act in an advisory role in the development of the Master Plan. Members of the Planning Advisory Committee (PAC) will review phase reports and provide comments throughout the study to help ensure that a realistic, viable plan is developed.

To assist in the review process, draft phase reports will be prepared at various milestones in the planning process. The phase report process allows for timely input and review during each step within the Master Plan to ensure that all issues are fully addressed as the recommended program develops.

Public information workshops will also be held as part of the plan coordination. The workshops are designed to allow any and all interested persons to become informed and provide input concerning the Master Plan. Notices of meeting times and locations will be advertised through the media. The draft phase reports will also be available at www.coffmanassociates.com for public viewing.

Chapter One

INVENTORY

Payson Airport

Inventory

The inventory of existing conditions at Payson Airport will serve as an overview of the airport, its facilities, its role in regional and national aviation systems, and the relationship to development which has occurred around the airport in the past. The information delineated in this chapter provides a foundation, or starting point, for all subsequent evaluations.

This Master Plan includes a comprehensive collection and evaluation of information relating to the airport and the surrounding area, including the following:

- Physical inventories and descriptions of facilities and services now provided by the airport.
- An overview of existing regional plans and studies to determine their potential influence on the development and implementation of the Airport Master Plan.
- Background information pertaining to the Town of Payson, Gila County, surrounding areas, and the State of Arizona. Analysis of these areas also includes descriptions of recent development which has taken place on the airport environs and plans for future development which may impact the airport.
- Population and socioeconomic information which provides an indication of the market and possible future development in the region and on the airport.

An accurate and complete inventory is essential to the success of the Master Plan. The inventory of existing condi-

tions serves primarily as a basis, or foundation, upon which most of the analysis conducted in later chapters is formed. This information was obtained through on-site investigations of the airport and interviews with Town management, Payson Regional Airport Authority (PRAA), airport tenants, representatives of various government agencies, and local and regional economic agencies. Information was also obtained from available studies concerning the Town of Payson and Payson Airport, including the *Payson Municipal Airport Master Plan Update (1998)*, *Payson General Plan Update (2003)*, *Payson Unified Development Code (1996)*, as well as documents prepared by the Federal Aviation Administration (FAA) and Arizona Department of Transportation (ADOT) – Aeronautics Division.

AIRPORT CHARACTERISTICS

The purpose of this section is to summarize various studies and data collected to provide an understanding of the characteristics of the airport and the regional area. Within this section is a description of the airport setting, the ground access systems near the airport, other transportation modes in the Town of Payson, the existing and future land use around the airport, and the local climate. This information is important baseline data when developing forecasts for critical airport infrastructure to support demand over the planning period.

AIRPORT HISTORY

Development of the present-day Payson Airport began in 1973, when Gila County obtained a Special Use Permit from the Tonto National Forest to construct and operate an airport on United States Forest Service land. With Gila County serving as the airport sponsor, the Town of Payson was able to seek federal funding to aid in the construction of an airport. In 1974, actual construction of a 4,900-foot by 60-foot wide runway, connecting taxiway, and aircraft apron began to take place, and by July 1975, the Payson Airport became operational.

In 1988, the Special Use Permit held by Gila County allowing the airport to operate on United States Forest Service land was terminated. It was at this time that the Town of Payson entered into a similar agreement in order to keep the airport operational in its same location.

Over the past several years, many airport improvement projects have been completed to better serve general aviation activities. In the late 1980s, additional aircraft apron space was constructed and utility services were improved to help further aviation development on the airport. In the early 1990s, the runway was extended 600 feet to the west and widened to 75 feet, improvements were made to runway and taxiway lighting, and a non-directional beacon (NDB) was installed on the airport. It should be noted that, according to airport

personnel, the NDB was never certified due to terrain features interfering with its signal. It was also during this time that all active runway, taxiway, and apron pavements were rehabilitated.

During the mid 1990s, additional apron and automobile parking areas were constructed and a precision approach path indicator (PAPI) was installed to Runway 24. Campground facilities were also constructed on the south side of the airport at this time. In addition, the Town of Payson purchased approximately 95 acres of land from the United States Forest Service that was covered by the Special Use Permit and an additional nine acres from Gila County that was adjacent to the airport. In 1998, the airport updated its Master Plan.

Many of the recommended improvements included in the most recent Master Plan have been completed, including the realignment of Airport Road to provide for facility expansion, the acquisition of 25 acres of property on the south side of the airport, the construction of an aboveground fuel storage facility on the west side of the airport, and the addition of aircraft storage hangars.

AIRPORT ADMINISTRATION

Payson Airport is owned by the Town of Payson. On September 1, 2007, the Town entered into a 30-year lease agreement with the PRAA. As a result, the PRAA oversees the day-to-day operations and maintenance of the airport. It is also responsible for the establishment and enforcement of applicable federal, state, county, and town rules, regulations, and ordinances affecting the use or operation of the airport and conducting the airport for the use and benefit of the public and making available all airport facilities and services to the public. In addition, the PRAA is in charge of revenues and expenditures generated at the airport. These tasks have previously been the responsibility of the Town of Payson. The Town, however, still remains the Grant Sponsor for federal and state capital improvements.

The PRAA is a non-profit corporation with a seven-member Board of Directors. This group meets regularly to consider various airport matters and makes rules and regulations concerning these matters. Members of the Board of Directors serve staggered terms not exceeding four years and elect a president and vice-president amongst themselves.

AIRPORT LOCATION

As depicted on **Exhibit 1A**, Payson Airport is located on approximately 123 acres of property in Payson, Arizona. The airport is approximately one mile west of Payson's central business district. The Town of Payson is located in the northwest portion of Gila County in Arizona's Rim Country, and is the largest incorporated community within the County. Gila County has a wide range of physical features, ranging from desert terrain to mountain ranges. Attractions including the Salt River Canyon, Tonto Na-

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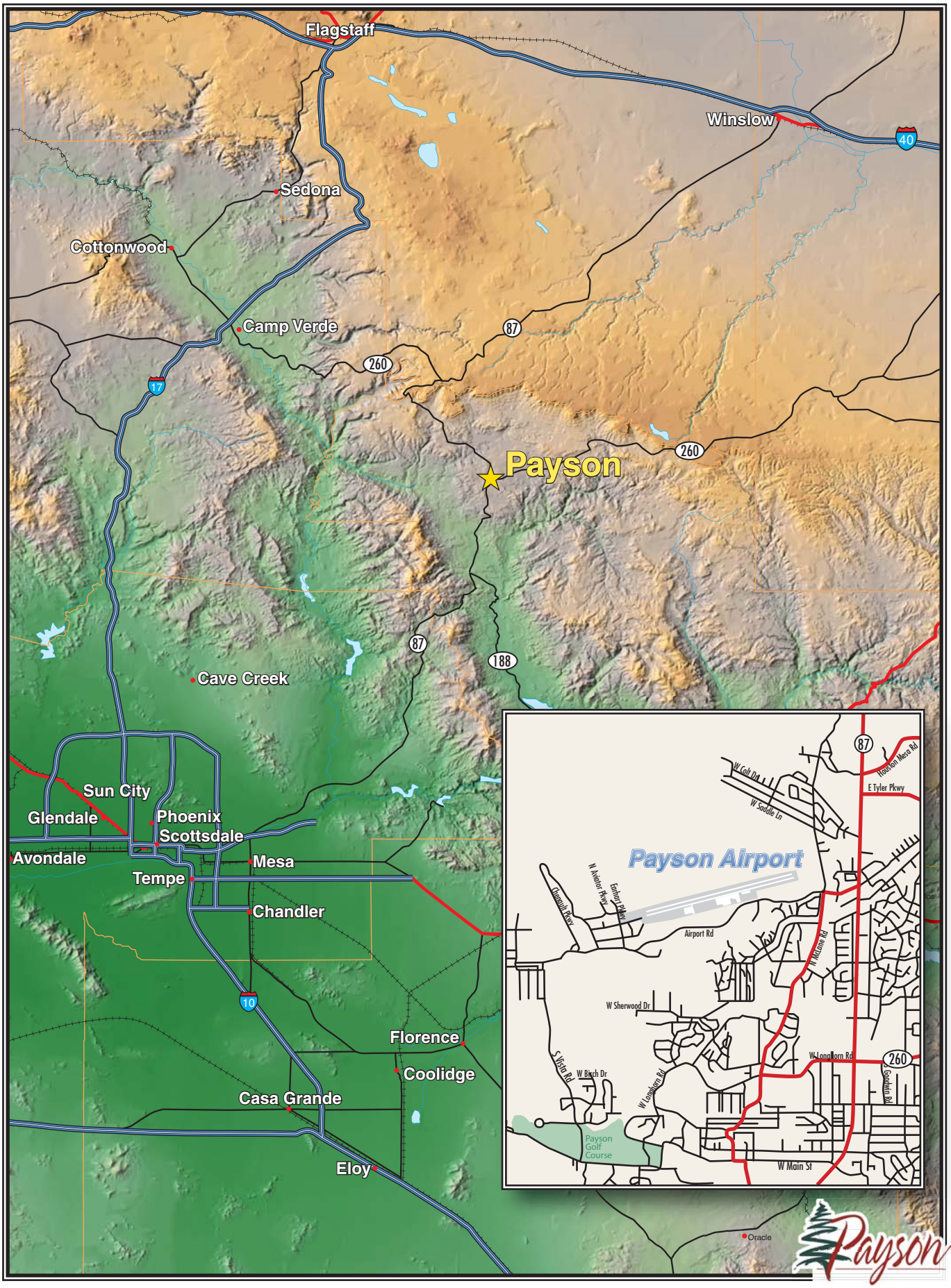

Exhibit 1A
LOCATION MAP

tional Forest, and the Mogollon Rim support tourism and recreational activities, which are major industries within Gila County. The Rim Country includes the Towns of Payson and Star Valley and communities of Pine, Strawberry, and Christopher Creek.

The Town of Payson rests near the base of the Mogollon Rim, a 7,000-foot high, 200-mile long cliff, in the world's largest Ponderosa Pine forest. The Town's elevation of 5,000 feet gives Payson a very attractive four-season climate. Each year, thousands of visitors frequent the area to take part in recreational activities related to hiking, camping, fishing, hunting, and biking. The Town of Payson is also becoming known for its construction industries, with a growing emphasis on manufacturing and service firms.

AIRPORT ACCESS

The Town of Payson is located approximately 90 miles northeast of Phoenix and 90 miles southeast of Flagstaff. Arizona State Highway 87 is the primary north/south route through Payson, providing access to Phoenix to the south and Winslow to the north. State Highway 260 runs east/west through the Town and connects to Cottonwood to the northwest and Show Low to the east.

Direct access to the airport is provided by exiting State Highway 87 onto Airport Road. Airport Road runs in an east/west manner along the south side of the airport. Access to airport facilities is provided via two access roads stemming north off of Airport Road. All airport facilities are located on the south side of the runway.

OTHER TRANSPORTATION MODES

Local ground transportation for the general public within the Town of Payson is available through taxi services. Intercity bus service also exists in Payson. Payson Express provides one daily round trip between Payson and Phoenix. White Mountain Passenger Lines also provides one round trip daily between Show Low and Phoenix, and makes one stop in Payson going each direction.

REGIONAL CLIMATE

Weather conditions must be considered in the planning and development of an airport, as daily operations are affected by weather patterns. Temperature is a significant factor in determining runway length needs, while local wind patterns (both direction and speed) influence optimal runway orientation.

Payson, Arizona experiences four mild seasons. The normal daily minimum temperature ranges from 25 degrees in December and January to 58 degrees in July and August. The normal daily maximum temperature ranges from 54 degrees in January to 93 degrees in July. The region averages approximately 22 inches of precipitation annually. On average, the Town of Payson experiences sunshine 80

percent of the year. The monthly average wind speed is 6.4 miles per hour (mph), and the predominant wind direction is from the southwest to northeast. The area also receives an average of 24 inches of snowfall during the winter months. A summary of climatic data is presented in **Table 1A**.

TABLE 1A
Climate Summary
Payson, AZ

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
High Temp. Avg. (F)	54	59	63	71	80	90	93	91	85	75	63	55
Low Temp. Avg. (F)	25	27	31	35	42	50	58	58	51	40	30	25
Precip. Avg. (in.)	2.33	2.34	2.68	1.15	0.66	0.37	2.42	2.97	1.81	1.89	1.70	1.75
Wind Speed (mph)	6.2	6.5	7.0	7.5	7.2	7.0	6.0	5.5	5.9	6.0	6.3	6.2
Sunshine (%)	77	75	78	84	89	87	77	78	82	81	76	74

Source: www.weather.com and www.city-data.com

AREA LAND USE

The majority of land surrounding Payson Airport is under the jurisdiction of the Town of Payson, and thus is zoned by the Town. **Exhibit 1B** shows land uses based on the Payson General Plan Update. Land immediately north of the airport is currently undeveloped. A portion of this land is owned by the U.S. Forest Service, with the remainder being under the jurisdiction of the Town. Land adjacent to the east side of the airport is also undeveloped. Farther to the east are areas of residential development. Located west of the airport is the Sky Park Industrial Park, which is home to several industrial and commercial related businesses, some of which have runway access to the Payson Airport. Northwest of the airport is the Mazatzal Mountain Residential Airpark. Residents of the airpark also have access to the runway. Approximately 13 acres of private property are currently vacant on the southwest side of the airport and designated for employment areas in the form of industrial and/or commercial operations. A commercial business is also located adjacent to the southeast side of the airport. Farther to the south, across from Airport Road, is land predominantly set aside for residential development.

FUTURE LAND USE/ ZONING PLANS

Under ideal conditions, the development immediately surrounding the airport can be controlled and limited to compatible uses. Compatible uses would include light and heavy industrial development and some commercial development.

There are a number of methods by which governmental entities can ensure that land uses in and around airports are developed in a compatible manner. The objective of enforcing land use restrictions is to protect designated areas for the maintenance of operationally safe and obstruction-free airport activity.

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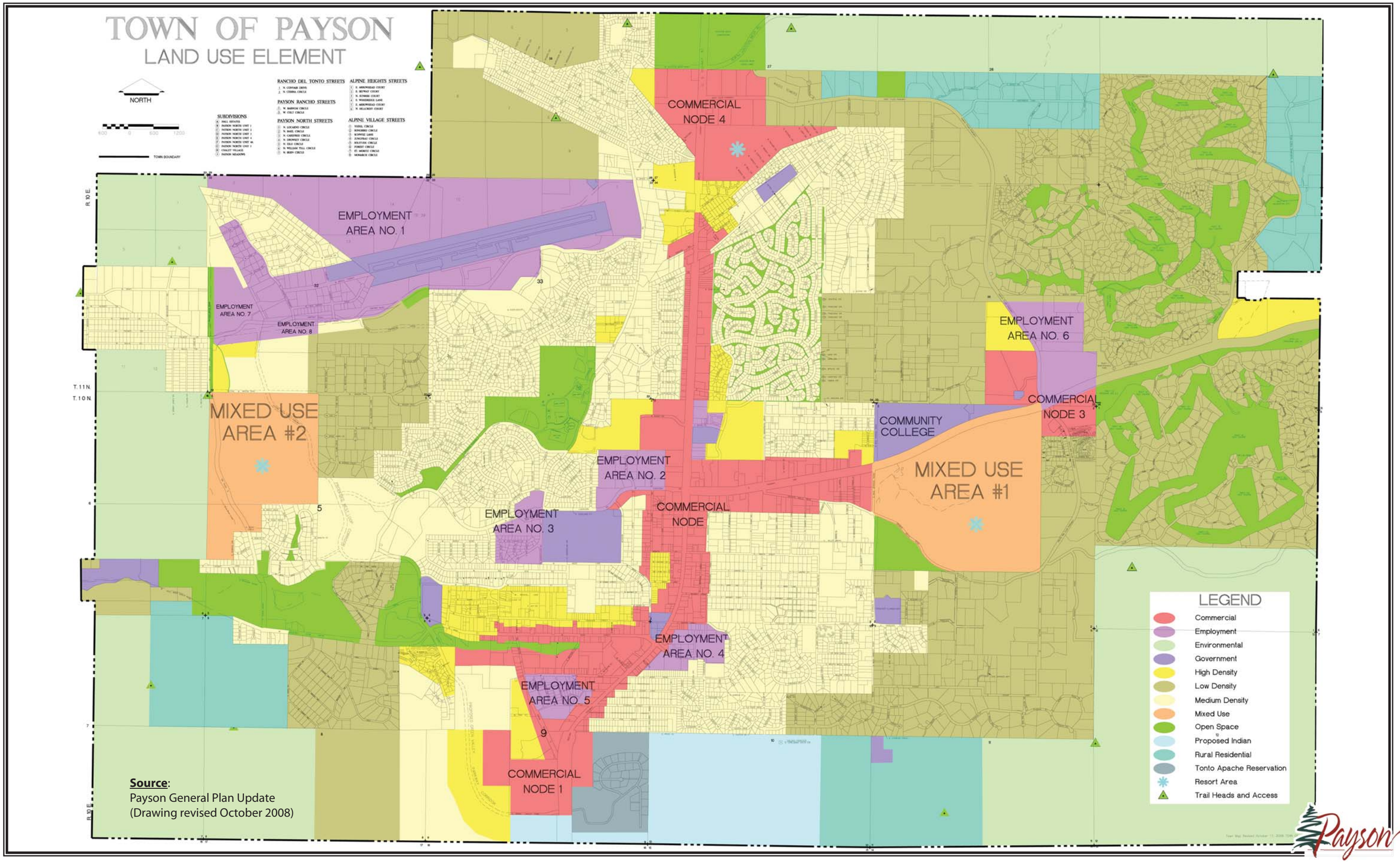

Exhibit 1B
LAND USE ELEMENT

Land use zoning is the most common land use control. Zoning is the exercise of the jurisdictional powers granted state and local governments to designate permitted land uses on each parcel. Typically, zoning is developed through local ordinances and is often included in comprehensive plans. The primary advantage of zoning is that it can promote compatibility with the airport while leaving the land in private ownership. Zoning is subject to change; therefore, any potential alterations to the zoning code near the airport should be monitored closely for compatibility.

Airport Height and Hazard Zoning

Height and hazard zoning establishes height limits for new construction near the airport and within the runway approaches. It is based upon an approach plan which describes artificial surfaces defining the edges of airspace, which are to remain free of obstructions for the purpose of safe air navigation. It requires that anyone who is proposing to construct or alter an object that affects airspace must notify the FAA prior to its construction.

Section 15-02-015 of the *Payson Unified Development Code* establishes an Airport Overlay District. The purpose of the Airport Overlay District is to protect the public health and safety in the area of the airport by minimizing exposure to crash hazards and high noise levels that may be generated by the operations of an airport and to encourage future compatible development for the continued operation of the airport.

Height restrictions are necessary to ensure that objects will not impair flight safety or decrease the operational capability of the airport. Title 14 of the Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, defines a series of imaginary surfaces surrounding airports. The imaginary surfaces consist of the approach zones, conical zones, transitional zones, and horizontal zones. Objects such as trees, towers, buildings, or roads which penetrate any of these surfaces are considered by the FAA to be an obstruction to air navigation. Current Town of Payson ordinances adhere to and support the height restriction guidelines as set forth in 14 CFR Part 77. Height restrictions can be accomplished through height and hazard zoning, avigation easements, or fee simple acquisition.

PUBLIC AIRPORT DISCLOSURE MAP

Arizona Revised Statutes (ARS) 28-8486, *Public Airport Disclosure*, provides for a public airport owner to publish a map depicting the "territory in the vicinity of the airport." The territory in the vicinity of the airport is defined as the traffic pattern airspace and the property that experiences 60 day-night noise level (DNL) or higher in counties with a population of more than 500,000, and 65 DNL or higher in counties with less than 500,000 residents. The DNL is calculated for a 20-year forecast condition. ARS 28-

8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The disclosure map is recorded with the county. As part of this Master Plan, an updated Public Airport Disclosure Map will be prepared.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Stormwater runoff is simply rainwater or snowmelt that runs off the land and into streams, rivers, and lakes. When stormwater runs through sites of industrial or construction activity it may pick up pollutants and transport them into national waterways and affect water quality.

Mandated by Congress under the *Clean Water Act*, the National Pollutant Discharge Elimination System (NPDES) Stormwater Program is a comprehensive two-phased national program for addressing the non-agricultural sources of stormwater discharges which adversely affect the quality of our nation's waters. The program uses the NPDES permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies.

The State of Arizona has been delegated the authority to administer the NPDES program. Administratively, this is the responsibility of the Arizona Department of Environmental Quality (ADEQ). The ADEQ's Arizona Pollutant Discharge Elimination System (AZDES) program now has regulatory authority over discharges of pollutants to Arizona surface water.

Under the regulations, separate permits are required for construction activities that disturb one or more acres of land and for general stormwater permits. Airports are included as an industrial facility under the AZDES and must obtain a Multi-Sector General Permit. This permit requires the development of a SWPPP. At the time of this writing, Payson Airport does not have a SWPPP in place.

SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

Title 40 of the Code of Federal Regulations (CFR) Part 112 defines the Environmental Protection Agency's (EPA) *Oil Pollution Prevention Plan*. The purpose of the rule is to prevent the discharge of oil into the navigable waters of the United States or adjoining shorelines as opposed to response and cleanup after a spill occurs. The EPA revised these prevention rules on July 17, 2002, to establish the SPCC Plan to meet the purpose of this rule. The EPA has recently approved a final rule to extend compliance dates for SPCC Plans to July 1, 2009.

Before a facility is subject to the SPCC rule, it must meet the following three criterion:

1) it must be non-transportation related;

2) it must have an aggregate above-ground storage capacity greater

than 1,320 gallons or a completely buried storage capacity greater than 42,000 gallons; and

3) there must be a reasonable expectation of a discharge into or upon navigable waters of the United States or adjoining shorelines.

By definition within the rule, an airport is considered a non-transportation-related facility. In using this wording, the EPA is trying to distinguish between oil delivery vehicles using public roadways from those facilities that store or handle oil products. The airport has 20,000 gallons of above-ground fuel storage, exceeding the minimums for above-ground storage capacities. Finally, there are a number of existing washes and ditches on the airport that lead to navigable waters of the United States. Therefore, the airport meets all three criterion.

The airport currently does not have an SPCC Plan in place to address issues related to the discharge of oils. As stated earlier, the EPA has extended the compliance deadline to July 1, 2009 for owners and operators of facilities to prepare and implement their SPCC Plan.

Table 1B provides a summary of the status of various regulatory and administrative plans and studies discussed above.

TABLE 1B
Summary of Regulatory / Administrative Plans and Studies
Payson Airport

Description	Status
Height and Hazard Zoning	Adopted February 1996
Public Airport Disclosure Map	Updated as part of Master Plan
Storm Water Pollution Prevention Plan (SWPPP)	Incomplete
Spill Prevention Control and Countermeasures (SPCC) Plan	Incomplete
Airport Rules and Regulations	Adopted July 1994

Source: Town of Payson

ECONOMIC IMPACTS

The last formal economic impact study of the airport was completed by ADOT in 2002. This study analyzed the direct, indirect, and induced economic impact of all public use airports in Arizona, including Payson Airport. At the time, it was estimated that Payson Airport had an impact of $20.4 million annually on the local economy.

The total economic impact of the airport includes direct-effect employment, payroll, and sales. Indirect benefits would include visitor spending, which leads directly to off-airport employment, payroll, and sales. The cumulative economic benefit of an airport includes a multiplier effect which is essentially the recycling of money within the local economy to create more jobs in nearly every economic sector.

On-airport direct economic benefits included 61 jobs, with a direct payroll

of $2.3 million and sales of over $5 million. Visitor spending accounted for 68 additional jobs, $1.3 million in payroll, and $3.3 million in sales. When the multiplier effect was applied, economic activity generated at Payson Airport accounted for 211 local jobs, $5.9 million in payroll, and $14.5 million in sales.

PAVEMENT MANAGEMENT PROGRAM

The ADOT – Aeronautics Division has implemented the Arizona Pavement Preservation Program (APPP) to assist in the preservation of the Arizona airport system infrastructure. Public Law 103-305 requires that airports requesting Federal Airport Improvement Program (AIP) funding for pavement rehabilitation or reconstruction have an effective pavement maintenance management system. To this end, ADOT has completed and is maintaining an Airport Pavement Management System (APMS) which, coupled with monthly pavement evaluations by the airport sponsor, fulfills this requirement.

The APMS uses the Army Corps of Engineers' "Micropaver" program as a basis for generating a five-year APPP. The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement condition in accordance with the most recent FAA Advisory Circular 150/5380-6 and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. Individual airport reports from the update are shared with all participating system airports. ADOT ensures that the APMS database is kept current, in compliance with FAA requirements. In May 2006, a pavement inspection was conducted at the airport by ADOT. Runway 6-24 was found to have a PCI rating of 97 out of a possible 100. Parallel Taxiway A was given a PCI rating of 96.

Every year ADOT, utilizing the APMS, will identify airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the State's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an Inter-Government Agreement (IGA) with ADOT to participate in the APPP.

Payson Airport participates in the State's pavement maintenance program for AIP eligible pavement rehabilitation projects. On a regular basis, airport personnel complete an operations log for the airport, a portion of which includes visual observations of the pavement conditions. The PRAA is responsible for all routine pavement maintenance such as crack sealing and repair on an as-needed basis.

AIRPORT SYSTEM PLANNING ROLE

Airport planning exists on three primary levels: local, state, and national. Each level has a different emphasis and purpose. An Airport Master Plan is the primary local airport planning document. This Master Plan will provide a vision of both the airfield and landside facilities over the course of the next 20 years.

STATE PLANNING

At the state level, Payson Airport is included in the *Arizona State Aviation System Plan* (SASP). The purpose of the SASP is to ensure that the state has an adequate and efficient system of airports to serve its aviation needs. The SASP defines the specific role of each airport in the state's aviation system and establishes funding needs. Through the state's continuous aviation system planning process, the SASP is updated every five years. According to records, the most recent update to the SASP was in 2000 when the *State Aviation Needs Study* (SANS) was prepared. The SANS provides policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airports' capital improvement needs, and identify resources and strategies to implement the plan. Payson Airport is one of 112 airports included in the 2000 SANS, which includes all public and private airports and heliports in Arizona that are open to the public, including American Indian and recreational airports.

NATIONAL PLANNING

At the national level, the airport is included in the FAA *National Plan of Integrated Airport Systems* (NPIAS). This plan includes a total of 3,431 existing airports that are significant to national air transportation and are therefore eligible to receive grants under the FAA AIP. The NPIAS supports the FAA's strategic goals for safety, system efficiency, and environmental compatibility by identifying specific airport improvements. An airport must be included in the NPIAS to be eligible for federal grant-in-aid assistance from the FAA.

The 2007-2011 NPIAS identifies $41.2 billion for airport development across the country. Of that total, approximately 19 percent is designated for the 2,573 general aviation airports identified. Payson Airport is classified as a general aviation airport in the NPIAS. General aviation airports across the country have an average of 33 based aircraft and account for 40 percent of the nation's total active aircraft fleet.

AIRPORT FACILITIES

Airport facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities which are needed for the safe and efficient movement of aircraft such as runways, taxiways, lighting, and navigational aids. The landside category includes those facilities necessary to provide a safe transition from sur-

face to air transportation and support aircraft servicing, storage, maintenance, and operational safety.

AIRSIDE FACILITIES

Existing airside facilities are identified on **Exhibit 1C**. **Table 1C** summarizes airside facility data for Payson Airport.

TABLE 1C
Airside Facility Data
Payson Airport

	Runway 6-24	Helipad
Runway Length (feet)	5,500	50
Runway Width (feet)	75	50
Runway Surface Material	Asphalt	Concrete
Surface Treatment	None	None
Condition	Good	Good
Runway Load Bearing Strength (pounds):		
Single Wheel Loading (SWL)	40,000	N/A
Dual Wheel Loading (DWL)	50,000	N/A
Dual Tandem Wheel Loading (DTWL)	100,000	N/A
Runway Lighting	MIRL	Lighted
Runway Marking	Non-precision	N/A
Taxiway Lighting	MITL on entrance/exit taxiways	N/A
Taxiway Marking	Centerline striping and hold positions	N/A
Approach Aids	PAPI-2 (Runway 24)	N/A
Instrument Approach Aids	RNAV (GPS)-A	N/A
Visual Aids	Segmented Circle, Lighted Wind Cones, Rotating Beacon	
Weather Aids	AWOS-III	

MIRL - Medium Intensity Runway Lights
MITL - Medium Intensity Taxiway Lights
PAPI - Precision Approach Path Indicator
RNAV - Area Navigation
GPS - Global Positioning System
AWOS - Automated Weather Observation System

Source: Airport Facility Directory - Southwest U.S. (December 2007); FAA Form 5010-1, Airport Master Record

Runway

Payson Airport is served by a single asphalt runway orientated in a northeast/southwest manner. Runway 6-24 is 5,500 feet long by 75 feet wide and is in "good" condition, which is the highest rating the FAA designates for runway condition.

Runway 6-24 has a pavement strength of 40,000 pounds single wheel loading (SWL). SWL refers to the design of certain aircraft landing gear that have a single wheel on each main landing gear strut. Other landing gear configurations would include dual wheel loading (DWL), dual tandem wheel loading (DTWL), and double dual tan-

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Exhibit 1C
EXISTING AIRSIDE FACILITIES

dem wheel loading (DDTL). Each of these distributes more of the aircraft weight on runway and taxiway surfaces; thus, the surface itself can support a greater total aircraft weight. The DWL strength rating is 50,000 pounds and the DTWL strength rating is 100,000 pounds.

Helipad

There is one designated helipad located approximately 200 feet south of Runway 6-24. The helipad is 50 feet long by 50 feet wide and is constructed of concrete. The helipad is lighted and surrounded on three sides by a four-foot perimeter fence to aid in preventing encroachment.

Taxiways

The taxiway system at Payson Airport includes a full-length parallel taxiway to Runway 6-24, designated as Taxiway A. Taxiway A is located 150 feet south of the runway centerline and is 35 feet wide. The taxiway extends farther west of the airport and provides airport access to neighboring Sky Park Industrial Park and Mazatzal Mountain Residential Airpark through the use of a controlled-access gate approximately 150 feet southwest of the Runway 6 threshold. West of the controlled-access gate, the taxiway is designated as Taxiway B.

There are four entrance/exit taxiways on the south side of Runway 6-24. Three of these taxiways are 80 feet wide, and the fourth taxiway is 30 feet wide.

Farther to the south are taxiways that provide access to aircraft parking areas. There are also taxilanes that serve more remote areas of the airfield such as T-hangar and box hangar complexes.

Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 6-24 has non-precision markings which identify the runway designations, centerline, touchdown points, and landing thresholds.

Taxiway and taxilane centerline markings are provided to assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Taxiway markings also include aircraft holding positions located on the connecting taxiways. Aircraft movement areas on various aprons are identified with centerline markings. Aircraft tiedown positions are identified on various apron surfaces.

Airfield Lighting

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

***Identification Lighting*:** The location of the airport at night is univer-

sally identified by a rotating beacon. The rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The rotating beacon at Payson Airport is located southwest of the restaurant and approximately 400 feet from the runway centerline.

***Runway and Taxiway Lighting/Signage*:** Runway and taxiway edge lighting utilizes light fixtures placed near the edge of the pavement to define the lateral limits of the pavement. This lighting is essential for safe operations during night and/or times of low visibility in order to maintain safe and efficient access to and from the runway and aircraft parking areas.

Runway 6-24 is equipped with medium intensity runway lights (MIRL). These lights are set atop a pole that is approximately one foot above the ground. The light poles are frangible, meaning if one is struck by an object, such as an aircraft wheel, they can easily break away, thus limiting the potential damage to an aircraft.

Each runway end is equipped with threshold lighting. Threshold lighting consists of specially designed light fixtures that are red on the departure side and green on the arrival side.

Medium intensity taxiway lights (MITL) are mounted on the same type of structure as the runway lights. MITL is currently available on the entrance/exit taxiways leading to Runway 6-24.

The airport has a very limited runway/taxiway signage system. The presence of runway/taxiway signage can be an essential component of a surface movement guidance control system necessary for the safe and efficient operation of the airport. Currently, the signage system at Payson Airport includes information related to noise abatement procedures when departing the airport. Signage referring to runway and taxiway designations, holding positions, routing/directional, and runway exits is not available.

***Visual Approach Lighting*:** On the left side of Runway 24 is a two-box precision approach path indicator (PAPI-2L). The PAPI consists of a system of lights located approximately 800 feet from the Runway 24 threshold at Payson Airport. When interpreted by pilots, these lights give an indication of being above, below, or on the designated descent path to the runway. A PAPI system has a range of five miles during the day and up to 20 miles at night.

***Pilot-Controlled Lighting*:** At nighttime, runway lighting is preset to low intensity. Through a pilot-controlled lighting system, pilots can increase or decrease the intensity of the airfield lighting system from the aircraft with use of the aircraft's radio transmitter. Pilots utilizing the Payson Airport can tune their radio to the common traffic advisory frequency (CTAF) 122.8 MHz to utilize the pilot-controlled lighting system.

Weather and Communication Aids

Payson Airport has a lighted wind cone and a segmented circle located 150 feet north of the Runway 6-24 centerline and approximately 1,700 feet from the Runway 24 threshold. The wind cone provides information to pilots regarding wind conditions, such as direction and intensity. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to pilots. There are three additional lighted wind cones situated on the airfield. Two are located closer to each of the runway ends and the third is located near the helipad on the south side of Taxiway A. Having multiple wind cones spread out along the runway system is advantageous because wind indications can be determined from anywhere along the runway.

The airport is equipped with an Automated Weather Observation System III (AWOS-III). An AWOS automatically records weather conditions such as wind speed, wind gusts, wind direction, temperature, dew point, altimeter setting, and density altitude. In addition, the AWOS-III will record visibility, precipitation, and cloud height. This information is then transmitted at regular intervals on radio frequency 119.325 MHz. In addition, the same information is available through a dial-in telephone number (928-472-4260). The AWOS is located approximately 400 feet south of Runway 6-24 and approximately 1,000 feet from the Runway 24 threshold.

Payson Airport also utilizes a CTAF, which was briefly discussed in the previous section. This radio frequency (122.8 MHz) is used by pilots in the vicinity of the airport to communicate with each other about approaches to, or departures from, the airport. In addition, a UNICOM frequency, which shares the same frequency as the CTAF, is also available where a pilot can obtain fixed base operator (FBO) information.

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies, which pilots of properly equipped aircraft can translate into point-to-point guidance and position information. The types of electronic navigational aids available for aircraft flying to or from Payson Airport include a global positioning system (GPS) and LORAN-C.

GPS was initially developed by the United States Department of Defense for military navigation around the world. GPS differs from other navigational aids in that pilots are not required to navigate using a specific ground-based facility. GPS uses satellites placed in orbit around the earth to transmit electronic radio signals, which pilots of properly equipped aircraft use to determine altitude, speed, and other navigational information. With GPS, pilots can directly navigate to any airport in the country and are not required to navigate using a specific ground-based navigational facility.

The civilian GPS has been improved with the wide area augmentation sys-

tem (WAAS), which was launched on July 10, 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. The present GPS provides for enroute navigation and instrument approaches with both course and vertical navigation. The WAAS upgrades allow for the development of approaches to most airports with cloud ceilings as low as 200 feet above the ground and visibilities as low as three-quarters-of-a-mile.

LORAN-C is a radio navigation system originally developed by the United States Coast Guard for maritime navigation. The system was expanded to include 24 ground-based stations across the continental United States. LORAN-C provides navigation, location, and timing services to both civil and military air, land, and marine users. The system is approved as an enroute supplemental air navigation system for both Instrument Flight Rule (IFR) and Visual Flight Rule (VFR) operations.

With the advancements taking place within the GPS system, the need for the older LORAN-C facilities is being evaluated by the government. Although there are no short term plans to close the LORAN-C system, in the long term the system may be replaced by the GPS system.

Other types of navigational aids include the very high frequency omnidirectional range (VOR) facility and the nondirectional beacon (NDB). The VOR provides azimuth readings to pilots of properly equipped aircraft transmitting a radio signal at every degree to provide 360 individual navigational courses. The NDB transmits nondirectional radio signals whereby the pilot of an aircraft equipped with direction-finding equipment can determine their bearing to or from the NDB facility in order to track to the beacon station. As previously discussed, an NDB was installed on the airport during the 1990s but was never certified due to signal interference. There are no VORs or NDBs in the vicinity of the Payson Airport.

Instrument Approach Procedures

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids to assist pilots in locating and landing at an airport during low visibility and/or cloud ceiling conditions. The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance that the pilot must be able to see to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above ground level) can be situated for a pilot to complete the approach. If the observed visibility or cloud ceiling is below the minimums prescribed for the approach, the pilot cannot complete the instrument approach.

TABLE 1D
Instrument Approach Data
Payson Airport

	Weather Minimums by Aircraft Type					
	Category A and B		Category C		Category D	
	Cloud Height (feet AGL)	Visibility (miles)	Cloud Height (feet AGL)	Visibility (miles)	Cloud Height (feet AGL)	Visibility (miles)
RNAV (GPS)-A						
Straight-In	N/A					
Circling	563	1	603	1.75	603	2

Aircraft categories are established based on 1.3 times the stall speed in landing configuration as follows:
Category A: 0-90 knots
Category B: 91-120 knots
Category C: 121-140 knots
Category D: 141-166 knots
AGL - Above Ground Level

Source: U.S. Terminal Procedures, Southwest SW-4 (December 2007)

There is no straight-in instrument approach procedure approved for the airport at this time. The RNAV (GPS)-A approach is considered a circling approach only, which allows pilots to approach the airport and then land on the runway most closely aligned with the current winds. The circling approach is approved for aircraft with approach speeds up to and including 166 knots. **Table 1D** shows the minimums for the instrument approach approved for use at Payson Airport.

LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include the terminal building, aircraft storage hangars, aircraft maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile parking, utilities, and aircraft rescue and firefighting. Landside facilities are identified on **Exhibit 1D**.

Terminal Building

Payson Airport currently does not have a dedicated airport terminal building. Services including a waiting lobby, pilot lounge area, and restroom facilities are provided in a building operated by Payson Aviation, the FBO on the airport. A smaller building located immediately south of Payson Aviation provides an area for airport operations.

Aircraft Parking Aprons

There are five designated aircraft parking aprons at Payson Airport, encompassing approximately 50,700 square yards and providing 81 designated aircraft parking positions. The five apron areas are adjacent to the south side of Taxiway A and designat-

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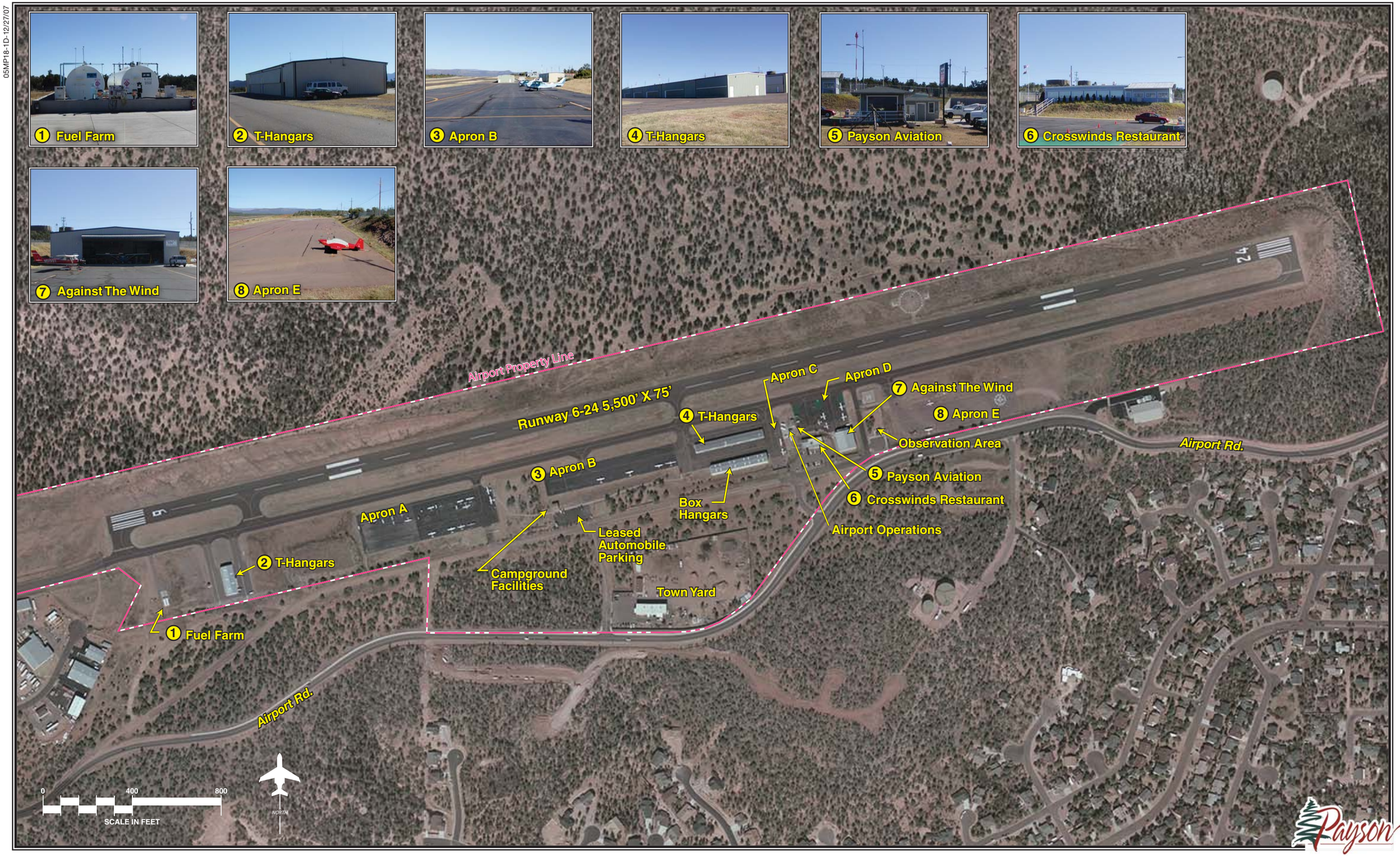

Exhibit 1D
EXISTING LANDSIDE FACILITIES

ed as A, B, C, D, and E from west to east.

Apron A is lighted and provides for approximately 18,940 square yards of apron space and 38 marked aircraft tiedowns. Apron B encompasses approximately 10,830 square yards and has 12 marked tiedown positions. This parking apron provides access to the campground facilities located on the airport. Apron C is the smallest designated parking apron on the airfield, encompassing approximately 1,100 square yards of space and two aircraft tiedowns. Apron D is considered the main transient aircraft apron on the airport and is located adjacent to the FBO and restaurant. It provides approximately 5,000 square yards of apron space and 6 tiedown positions. Apron E, located directly east of the helipad, encompasses approximately 14,780 square yards and has 23 designated aircraft tiedowns.

Aircraft Hangar Facilities

Hangar facilities located on airport property at Payson Airport are comprised of T-hangars, linear box hangars, and one conventional hangar. T-hangars provide for separate hangar facilities within a larger contiguous facility. Two T-hangar complexes are available for aircraft storage at the airport, providing a total of 15 separate aircraft positions. Linear box hangars provide large, connected open box hangars within each facility to allow for separation of multiple aircraft storage. There is currently one linear box hangar complex at the airport that allows for four separate aircraft storage areas. Conventional hangars provide a large open space free from roof support structures, and have the capability to accommodate several aircraft simultaneously. One conventional hangar is located at the airport, adjacent to the south side of Apron D, and encompasses approximately 6,700 square feet. The hangar facilities at the airport are identified on **Exhibit 1D**. Hangar details are presented in **Table 1E**.

TABLE 1E
Airport Hangar Facilities
Payson Airport

Hangar Type	Square Feet (Hangar and Office)	Occupant	Ownership
Conventional	6,700	Against The Wind	ACD Aviation, Inc.
Linear Box Hangar (4-unit)	16,500	Individuals	Town of Payson
T-hangar (5-unit)	11,250	Individuals	Town of Payson
T-hangar (10-unit)	20,000	Individuals	Hangar One

Source: Airport records

Automobile Parking

There are several parking lots available for automobile parking at Payson Airport. The parking area directly to the south of the Crosswinds Restaurant provides approximately 28 spaces, with two being reserved for the

disabled. Farther to the east, adjacent to the observation area, is a dedicated parking lot with 13 marked spaces, two of which are reserved for the disabled. Adjacent to the campground facilities is a third automobile parking lot that has gated access. This parking area is reserved for leased automobile parking, and contains approximately 15 unmarked parking spaces. Payson Airport has a total of approximately 56 automobile parking spaces that serve different aviation-related activities.

Fuel Facilities

The fuel farm at Payson Airport is located on the west side of the airfield. The fuel farm consists of two 12,000-gallon aboveground storage tanks. One storage tank is dedicated for Avgas fuel and the other for Jet A fuel. Payson Aviation is the only fuel provider on the airfield and operates two fuel trucks. These consist of one Avgas and one Jet A fuel truck, each having a capacity of approximately 1,200 gallons.

Campground/Recreational Area

A campground area and facility are located immediately south of Apron B at the Payson Airport. This area provides restroom facilities and campsites, and Apron B allows for the tiedown of aircraft using the campground. This is the only on-airport campground in the State of Arizona developed by ADOT.

Airport Rescue and Firefighting (ARFF)

There are no ARFF facilities permanently based at Payson Airport. The Town of Payson Fire Department provides services as needed with multiple Town-response vehicles and a dedicated full-time fire department. Payson Fire Station Number 12, located approximately one mile east of the airport, is the primary response unit for the Payson Airport in case of fire and/or emergency.

Fencing / Gates

Payson Airport is completely enclosed with perimeter fencing. The fencing consists of an eight-foot chain link fence topped by three-strand barbed wire. There are currently four access gates located at the airport, three of which are electrically operated. The locations include one providing access to Apron A, one at the entrance of the leased automobile parking lot adjacent to the campground facility, and another providing access to the east side of the airfield near the helipad. A fourth access gate is located on the west side of the airport on Taxiway B providing aircraft access to and from Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. It should be noted that there are also two manually operated gates on the north side of the airport to help facilitate the removal of wildlife that may get inside the fenced area.

Utilities

The availability and capacity of the utilities serving the airport are factors in determining the development potential of the airport, as well as the land immediately adjacent to the facility. Utility availability is a critical element when considering future expansion capabilities of an airport, for both airside and landside components.

Payson Airport is supplied by electricity, water, and sanitary sewer. Electric service is provided by Arizona Public Service. The Town of Payson provides water. Sanitary sewer service is provided by Northern Gila County Sanitary District. The primary water and sewer lines serving the airport are located on the south side adjacent to Airport Road.

AIRPORT BUSINESSES

Those businesses that choose to locate on airport property or adjacent to the airport provide a significant economic impact not only to the airport, but also to the region. Encouraging businesses to locate in the vicinity of an airport is a good practice for a number of reasons. First, the business will benefit from being near a commerce and transportation hub. Second, the community will benefit because the airport will develop a buffer of industry and manufacturing that will restrict incompatible land uses, such as residential housing, from locating too close to the airport. Third, business development on and around airports can generate a direct revenue stream to the airport. Some general aviation airports have done this successfully, leading to airport self-sufficiency.

General Aviation Services

A full range of general aviation services are available at Payson Airport. This includes flight training, aircraft maintenance, aircraft charter, aerial tours and sightseeing, aircraft fuel, aircraft tiedowns, and selling pilot supplies such as aeronautical charts and oil products. The following provides a brief discussion of general aviation services at the airport.

Payson Aviation is the airport's only FBO fuel provider and operates out of a 500 square-foot building located between Aprons C and D. It employs five part-time personnel and provides full service Avgas and Jet A fuel to aircraft from 8:00 a.m. to 5:00 p.m. daily. Other services provided by Payson Aviation include aircraft tiedowns, line services, pilot supplies, a pilot lounge, and flight planning.

Against the Wind is an aircraft maintenance provider on the airport. It employs two full-time personnel who operate out of a 10,000 square-foot hangar complex on the south side of Apron D.

U.S. Forest Service bases its operation at the airport during the fire season. It leases a portion of Apron E during this time and utilizes aircraft that include helicopters and Ag Tractors.

Other Tenants

Other businesses/entities are located on airport property, but do not provide services to the aviation community directly at the airport. Crosswinds Restaurant maintains a 3,500 square-foot facility adjacent to Apron D. The Payson Town Yard is located farther south adjacent to Airport Road and encompasses approximately five acres of airport property. This area is used to store and maintain Town equipment and houses a 6,000 square-foot storage and maintenance facility.

"Through-the-Fence" Operations

As previously discussed, the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark are located west of Payson Airport. Taxiway B extends west of the Runway 6 threshold and provides gated access to these areas. Access to the airfield has been approved by the Town of Payson for businesses located within the industrial park and residents of the airpark. The Sky Park Industrial Park contains several commercial and industrial businesses that provide aviation and non-aviation related services. The Mazatzal Mountain Residential Airport is located directly north of the industrial park and contains half-acre lots available for residential development. Those who utilize the airport from the industrial park and residential airpark are assessed a monthly access fee.

AREA AIRSPACE

The Federal Aviation Administration Act of 1958 established the FAA as the responsible agency for the control and use of navigable airspace within the United States. The FAA has established the National Aerospace System (NAS) to protect persons and property on the ground and to establish a safe environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. airspace, including air navigational facilities; airports and landing areas; aeronautical charts; associated rules, regulations, and procedures; technical information; and personnel and material. System components shared jointly with the military are also included as part of this system.

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides for categories of airspace, controlled and uncontrolled, and identifies them as Classes A, B, C, D, E, and G as described below. **Exhibit 1E** generally illustrates each airspace type in three-dimensional form.

- Class A airspace is controlled airspace and includes all airspace from 18,000 feet mean sea level (MSL) to Flight Level 600 (approximately

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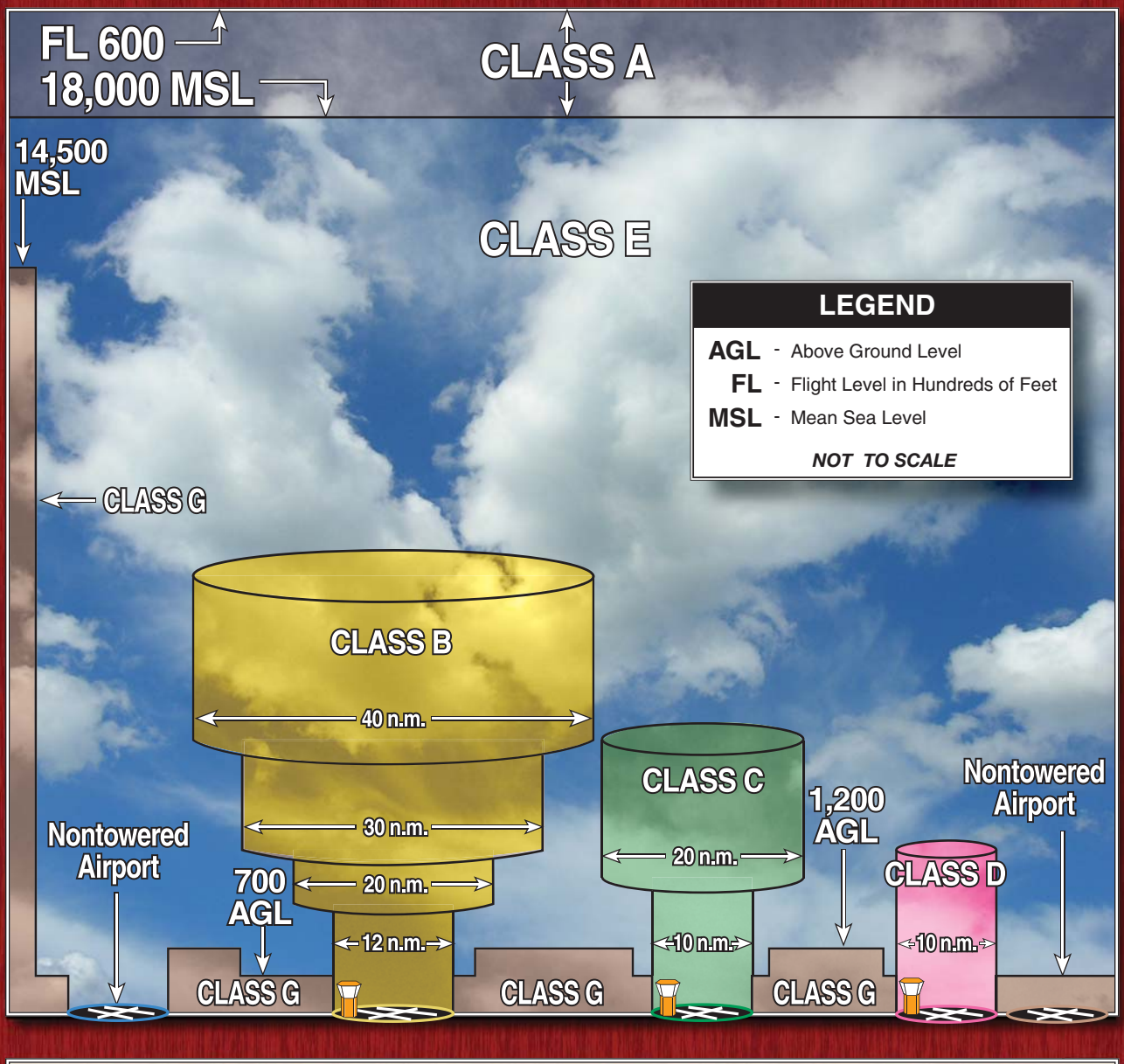

CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered airports with service by radar approach control.
CLASS D	Generally airspace from the surface to 2,500 feet AGL surrounding towered airports.
CLASS E	Generally controlled airspace that is not Class A, Class B, Class C, or Class D.
CLASS G	Generally uncontrolled airspace that is not Class A, Class B, Class C, Class D, or Class E.

Source: "Airspace Reclassification and Charting Changes for VFR Products," National Oceanic and Atmospheric Administration, National Ocean Service. Chart adapted by Coffman Associates from AOPA Pilot, January 1993.

Payson

Exhibit 1E
AIRSPACE CLASSIFICATION

60,000 feet MSL). This airspace is designed in 14 CFR Part 71.193, for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under instrument flight rules (IFR) operations. The aircraft must have special radio and navigational equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.

- Class B airspace is controlled airspace surrounding high-activity commercial service airports (i.e. Phoenix Sky Harbor International Airport). Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high performance, passenger-carrying aircraft at major airports. In order to fly within Class B airspace, an aircraft must be equipped with special radio and navigation equipment and must obtain clearance from air traffic control. A pilot is required to have at least a private pilot's certificate or be a student pilot who has met the requirements of 14 CFR. Part 61.95, which requires special ground and flight training for the Class B airspace. Aircraft are also required to utilize a Mode C transponder within a 30 nautical mile (nm) range of the center of the Class B airspace. A Mode C transponder allows the ATCT to track the location and altitude of the aircraft.

- Class C airspace is controlled airspace surrounding lower-activity commercial service (i.e. Tucson International Airport) and some military airports. The FAA has established Class C airspace at 120 airports around the country, as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. To operate inside Class C airspace, the aircraft must be equipped with a two-way radio, an encoding transponder, and the pilot must have established communication with ATC.

- Class D airspace is controlled airspace surrounding most airports with an operating ATCT and not classified under B or C airspace designations. The Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nm from the airport, extending from the surface up to a designated vertical limit, typically set at approximately 2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path.

All aircraft operating within Class A, B, C, and D airspace must be in constant contact with the air traffic control facility responsible for that particular airspace sector.

- Class E airspace is controlled airspace surrounding an airport that encompasses all instrument approach procedures and low-altitude

federal airways. Only aircraft conducting instrument flights are required to be in contact with the appropriate air traffic control facility when operating in Class E airspace. While aircraft conducting visual flights in Class E airspace are not required to be in radio contact with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist.

- Class G airspace is uncontrolled airspace typically in overtop rural areas that does not require communication with an air traffic control facility. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet above ground level [AGL]). While aircraft may technically operate within this Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, 14 CFR Part 91.119, *Minimum Safe Altitudes*, specifies minimum altitudes for flight.

Airspace within the vicinity of Payson Airport is depicted on **Exhibit 1F**. The airport is located within transitional Class E airspace. The floor of the airspace is 700 feet above the surface and extends to 18,000 feet MSL. The Class E airspace surrounding the airport has been established to protect the instrument approach to the airport.

SPECIAL USE AIRSPACE

Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. These areas are depicted on **Exhibit 1F**.

Victor Airways

For aircraft arriving or departing the regional area using VOR facilities, a system of Federal Airways, referred to as Victor Airways, has been established. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational aids. There are three Victor Airways within a short distance of Payson Airport. V95, associated with the Phoenix and Winslow VORs, is located approximately two miles west of the airport. V567 and V528 are located approximately 14 miles northwest and southeast of the airport, respectively.

Military Training Routes

A Military Training Route, or MTR, is a long, low-altitude corridor that serves as a flight path for military aircraft. The corridor is often ten miles wide, 70 to 100 miles long, and may range from 500 feet to 1,500 feet AGL and can be higher. There are several

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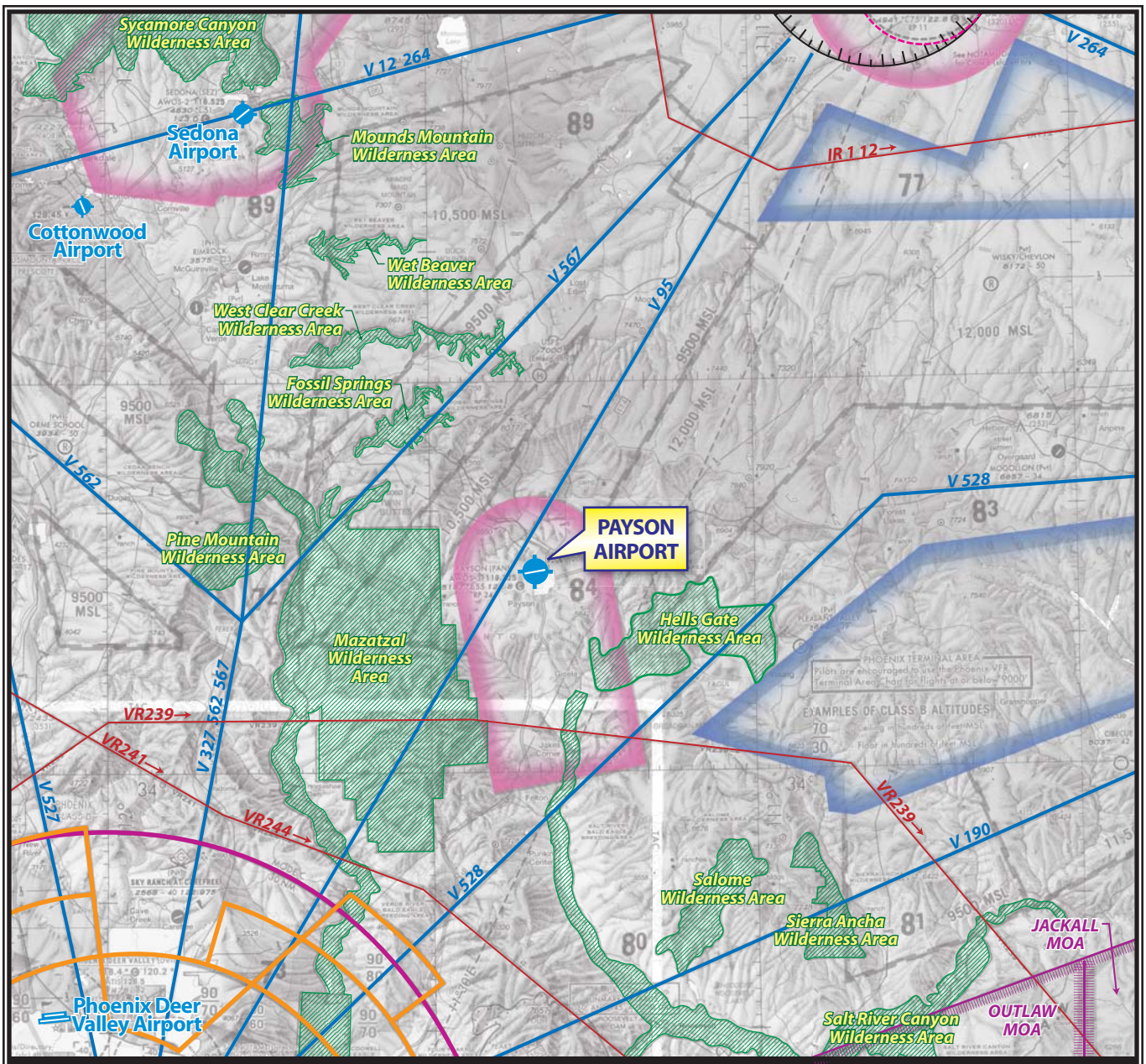


LEGEND

- Mode C
- Class B Airspace
- Class D Airspace
- Class E Airspace with floor 700 ft. above surface
- Class E Airspace with floor 1,200 ft. or greater above surface
- Victor Airways
- Military Training Routes
- Compass Rose
- Wilderness Area
- Military Operations Area (MOA)
- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'

NORTH

NOT TO SCALE

Source: Phoenix North Sectional Chart, US Department of Commerce, National Oceanic and Atmospheric Administration - Jan. 17, 2008

Payson

Exhibit 1F
AIRSPACE MAP

MTRs located in the vicinity of the airport, with the closest being approximately 12 miles to the south. General aviation pilots should be aware of the locations of the MTRs and exercise special caution if they need to cross them.

Military Operations Areas (MOAs)

Located approximately 40 miles southeast of the airport is the Outlaw MOA. An MOA is an area of airspace designated for military training use. This is not restricted airspace; however, pilots who use this airspace should be on alert for the possibility of military traffic. A pilot may need to be aware that military aircraft can be found in high concentrations, conducting aerobatic maneuvers, and possibly operating at high speeds and/or at lower elevations. The activity status of an MOA is advertised by a Notice to Airmen (NOTAM) and noted on sectional charts.

Wilderness Areas

The Hells Gate Wilderness Area and Mazatzal Wilderness Area are located in close proximity to the Payson Airport. Aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park areas, which include wilderness areas and recreational areas. FAA Advisory Circular 91-36C defines the "surface" as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley.

LOCAL OPERATING PROCEDURES

Payson Airport is situated at 5,157 feet MSL. The traffic pattern at the airport is maintained to provide the safest and most efficient use of the airspace surrounding the airport. The airport utilizes a non-standard right-hand traffic pattern for Runway 24 so that aircraft will remain over mostly undeveloped and unpopulated areas north of the runway. A standard left-hand traffic pattern is used for Runway 6. The traffic pattern altitude for high performance aircraft, including jets, is 6,700 feet MSL. The traffic pattern altitude for smaller aircraft is 6,200 feet MSL. For helicopters, the traffic pattern altitude is published at 5,700 feet.

Pilots departing Runway 24 at Payson Airport are encouraged to follow noise abatement procedures, which prohibit straight-out departures. Aircraft should turn right after takeoff and maintain a heading of 270 degrees for two miles before proceeding on course. This procedure is designed so that residential areas to the southwest of the airport can be avoided.

REGIONAL AIRPORTS

A review of public use airport facilities with at least one paved runway within a 50-mile radius of Payson Airport was conducted to identify and distinguish the types of air service provided in the region, as indicated on **Exhibit 1F**. Information pertaining to each

airport was obtained from FAA Form 5010, *Airport Master Record*. **Table 1F** identifies the major characteristics of each airport.

TABLE 1F
Regional Airport Data
Payson Airport

Airport Name	FAA Classification	Distance (miles)	Longest Runway (feet)	Based Aircraft	Annual Operations
Sedona	General Aviation	42	5,129	100	50,000
Cottonwood	General Aviation	45	4,250	49	18,720
Scottsdale	General Aviation Reliever	47	8,250	471	196,300
Phoenix Deer Valley	General Aviation Reliever	50	8,200	1,252	406,500

Source: FAA Form 5010-1, Airport Master Record; FAA Air Traffic Activity System (ATADS)

Sedona Airport (SEZ), located approximately 42 miles northwest of Payson Airport, is owned by Yavapai County and operated by Sedona Airport Authority. The airport is equipped with a single runway that is 5,129 feet in length and rated in good condition. Approximately 100 aircraft are based at the airport, including two jets. There were approximately 50,000 operations reported in 2006. One FBO on the field provides aviation services, including full-service fueling, minor aircraft maintenance, tiedowns, and flight planning. There is one non-precision instrument approach that serves the airport.

Cottonwood Airport (P52) is located approximately 45 miles northwest of Payson Airport in Yavapai County. It is owned and operated by the City of Cottonwood and is served by one runway that is 4,250 feet long and rated in good condition. Approximately 49 aircraft are reported on the airport, including two jets. The airport reported 18,720 operations in 2006. Limited aviation services are provided at the airport and include Avgas fuel and aircraft tiedowns. There are no published instrument approach procedures that serve the airport.

Scottsdale Airport (SDL) is located 47 miles southwest of Payson Airport and is owned and operated by the City of Scottsdale. It has one runway which is 8,250 feet long and rated in good condition. A control tower is located on the field which reported approximately 196,300 aircraft operations in 2006. The airport reports 471 based aircraft, including 96 jets, 89 multi-engine aircraft, and 10 helicopters. Three FBOs are located on the field, providing a variety of aviation services including full-service fuel, aircraft maintenance and avionics, a pilots' lounge, aircraft rental, and courtesy transportation. Three non-precision instrument approaches serve the airport.

Phoenix Deer Valley Airport (DVT), located approximately 50 miles southwest of Payson Airport, is owned and operated by the City of Phoenix. It is served by parallel run-

ways, with Runway 7R-25L providing the greatest length at 8,208 feet. Approximately 1,252 based aircraft are reported at the airport, making it one of the largest airports regarding based aircraft in the country. Of this number, 125 multi-engine aircraft and 19 helicopters are included, but ironically, no jets are considered to be based at the airport. The airport is equipped with a control tower, which reported 378,800 aircraft operations in 2005. One major FBO is located on the field that provides full-service fueling capability, aircraft maintenance, a pilot's lounge, aviation accessories, and aircraft cleaning. There are four non-precision instrument approaches approved for use into the airport.

SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic data has been collected for use in various elements of this Master Plan. This information provides essential background for use in determining aviation service level requirements. Aviation forecasts are related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time.

Whenever possible, local or regional data is used for analysis. Historical data was obtained from the Arizona Department of Economic Security, U.S. Census Bureau, Bureau of Labor Statistics, as well as pertinent internet sites including the Town of Payson's website.

POPULATION

Population is one of the most important elements to consider when planning for future needs of the airport. Historical population data for the Town of Payson, Gila County, the State of Arizona, and the United States is shown in **Table 1G**.

TABLE 1G
Historical Population Statistics

	1990	2000	2005	2006	2007	Average Annual Growth Rate
Town of Payson	8,377	13,180	15,375	15,625	16,742	4.16%
Gila County	40,216	51,335	54,445	56,800	56,885	2.06%
State of Arizona	3,665,228	5,130,632	5,829,839	6,239,482	6,500,194	3.43%
United States	248,709,873	281,421,906	296,507,061	299,398,484	301,621,157	1.14%

Source: Town of Payson; Arizona Department of Economic Security; U.S. Census Bureau

As shown in the table, the Town of Payson, Gila County, and the State of Arizona have all grown at a greater rate than the national average over the past 17 years. The Town of Payson has shown very strong growth during this time period, increasing at an average annual growth rate

(AAGR) of 4.16 percent. This translates into the approximate doubling of new residents in the Town over this time period. Gila County, as a whole, has shown positive growth since 1990, with a 2.06 percent AAGR. Since 2000, population growth rates have been slightly lower for the Town of Payson and Gila County, at 3.48 percent and 1.48 percent respectively.

Since 1990, Arizona is regularly at the top of the list of states with the highest growth rates. It has shown strong growth rates over the period, at 3.43 percent annually.

The overall U.S. population grew at a 1.14 percent AAGR as a point of comparison. These positive growth trends have been attributed to the availability of affordable quality homes, excellent educational institutions, and enjoyable recreational amenities.

EMPLOYMENT

Analysis of a community's employment base can be valuable in determining the overall well-being of that community. In most cases, the community make-up and health are significantly impacted by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers. **Table 1H** provides historical employment characteristics from 1990 to 2007 for the Town of Payson, Gila County, and the State of Arizona.

TABLE 1H
Historical Employment Statistics

	1990	2000	2005	2006	2007	Average Annual Growth Rate
Town of Payson	2,923	5,527	5,552	5,664	5,764	4.08%
Gila County	14,426	19,222	19,307	19,698	20,046	1.95%
State of Arizona	1,707,287	2,404,916	2,727,003	2,854,381	2,916,831	3.20%

Source: US Bureau of Labor Statistics; Arizona Department of Economic Security

Total employment in the Town has grown at a very strong rate similar to that of population over the past 17 years. However, since 2000, employment growth has been much more moderate at less than one percent AAGR. Gila County's employment base has grown 1.95 percent annually since 1990; but similar to the Town of Payson, employment growth has averaged less than one percent annually since 2000. The State of Arizona has experienced strong employment growth through the period.

While the Town of Payson has supported strong population growth over the past several years, employment growth has slowed considerably since 2000. This could be attributed to the fact that the Town has become a popular retirement community for people moving from the Phoenix metropolitan area. Despite a slower employment growth, the Town of Payson has still been able to attract high quality employment opportunities in recent years.

Major Employers

The major employers in the Town of Payson are presented in **Table 1J**. Understanding the types of employment opportunities will aid in identifying demand for aviation services. As is common in most incorporated communities, the largest employer in the Town is the Payson Unified School District. As presented in the table, the largest employers are diverse, providing opportunities for a wide array of economic sectors.

TABLE 1J
Major Employers
Town of Payson

Employer	Description	Employees
Payson Unified School District	Education	425
Wal-Mart	Retail Variety Store	350
Mazatzal Casino	Casino	300
Payson Regional Medical Center	Hospital / Medical Services	300
Town of Payson	City Government	200
Safeway	Grocery	100
U.S. Forest Service	Federal Government	100
Payson Care Center	Nursing Home	100

Source: Arizona Department of Commerce

PER CAPITA PERSONAL INCOME

Table 1K compares the per capita personal income (PCPI) for Gila County, the State of Arizona, and the United States. As illustrated on the table, Gila County's PCPI has historically been well below that of the State of Arizona and United States. However, since 1990, Gila County's PCPI has increased at a stronger growth rate than that of the State of Arizona and United States.

TABLE 1K
Historical Per Capita Personal Income (PCPI) Statistics

	1990	2000	2005	2006	Average Annual Growth Rate
Gila County	$13,445	$18,943	$24,165	$25,128*	3.99%
State of Arizona	$17,005	$25,656	$30,019	$31,178	3.86%
United States	$19,477	$29,843	$34,471	$35,808	3.88%

* Extrapolated

Source: Bureau of Economic Analysis

ENVIRONMENTAL INVENTORY

Available information about the existing environmental conditions at Payson Airport has been derived from internet resources, agency maps, and existing literature. The intent of this task is to inventory potential environmental sensitivities that might af-

fect future improvements at the airport.

AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. Potentially significant air quality impacts, associated with an FAA project or action, would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed.

The airport is located in Gila County part of which is in nonattainment for Particulate Matter (PM_{10}). The nonattainment area is centered on the communities of Haydon and Miami.

FISH, WILDLIFE, AND PLANTS

The Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) are charged with overseeing the requirements contained within Section 7 of the *Endangered Species Act*. This Act was put into place to protect animal or plant species whose populations are threatened by human activities. Along with the FAA, the FWS and the NMFS review projects to determine if a significant impact to these protected species will result with implementation of a proposed project. Significant impacts occur when the proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area.

In a similar manner, states are allowed to prepare statewide wildlife conservation plans through authorizations contained within the *Sikes Act*. Airport improvement projects should be checked for consistency with the State or DOD Wildlife Conservation Plans where such plans exist.

Payson Airport is located approximately three miles south of the East Verde River. The airport is bounded on the north and west by Tonto National Forest.

According to the FWS and the Arizona Game and fish Department (AGFD) numerous protected species have habitat in Gila County. **Table 1L** identifies these species.

TABLE 1L
Threatened or Endangered Species in Gila County, Arizona

Species	Federal Status[1]
Apache (Arizona) trout	Threatened
Arizona hedgehog	Endangered
California brown pelican	Endangered
Chiricahua leopard frog	Threatened
Colorado pikeminnow	Endangered
Gila chub	Endangered
Gila topminnow	Endangered
Gila trout	Threatened
Lesser long-nosed bat	Endangered
Loach minnow	Threatened
Mexican spotted owl	Threatened
Razorback sucker	Endangered
Southwest willow flycatcher	Endangered
Spikedace	Threatened
Yuma clapper rail	Endangered
Headwater chub	Candidate
Yellow-billed cuckoo	Candidate
Arizona bugbane	Conservation Agreement
Species	**State Status[2]**
Western barking frog	WSC
Chiricahua leopard frog	WSC
Lowland leopard frog	WSC
Northern goshawk	WSC
Northern grey hawk	WSC
Common black-hawk	WSC
Belted kingfisher	WSC
Western yellow-billed Cuckoo	WSC
Bobolink	WSC
Southwestern willow flycatcher	WSC
American peregrine falcon	WSC
Bald eagle	WSC
Osprey	WSC
Yuma clapper rail	WSC
Mexican spotted owl	WSC
Gila chub	WSC
Roundtail chub	WSC
Gila topminnow	WSC
Razorback sucker	WSC
Western red bat	WSC
California leaf-nosed bat	WSC
Pima Indian mallow	SR
Arizona agave	HS
Tonto Basin agave	HS
Hohokam agave	HS
Toumey agave	SR
Arizona bugbane	HS
Arizona hedgehog cactus	HS
San Carlos wild-buckwheat	SR
California barrel cactus	SR
Flannel bush	SR
Varied fishhook cactus	SR
Blumer's dock	HS
Mazatzal triteleia	SR
Sonoran Desert tortoise	WSC
Northern Mexican gartersnake	WSC
Narrow-headed gartersnake	WSC

Source: [1] FWS online listed species database, January 2008
[2] Arizona Game and Fish Department, Natural Heritage Program
WSC: Wildlife Special Concern
HS: Highly safeguarded, no collection allowed
SR: Salvage restricted, collection only with permit

FLOODPLAINS

Floodplains are defined in *Executive Order 11988, Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters…including at a minimum, that area subject to a one percent or greater chance of flooding in any given year" (i.e., that area would be inundated by a 100-year flood). Federal agencies, including the FAA, are directed to "reduce the risk of loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." According to the Federal Emergency Management Agency (FEMA) Federal Insurance Rate map (FIRM), airport property does not contain any 100-year floodplains. The airport is located in Zone X which is classified as an area outside of a floodplain. Approximately 0.5 mile southeast of the airport is a floodway/floodplain associated with the American Gulch Tributary. North of the airport approximately three miles is a floodway/floodplain associated with the East Verde River.

WETLANDS/ WATERS OF THE U.S.

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*. Wetlands are defined in *Executive Order 11990, Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonably saturated soil conditions for growth and reproduction." Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

According to the United States Geological Survey (USGS) map, there are no creeks or washes located on airport property. However, according to the FWS National Wetland Inventory (NWI) there is a freshwater forested/shrub wetland located approximately 1,500 feet west and 500 feet north of the Runway 24 threshold, which is currently not on airport property. The location of this wetland appears to be in an area that has been disturbed. Therefore, it is possible that the wetland is no longer present. Further studies would need to be undertaken to determine if wetlands are present on airport property.

HISTORICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

Determination of a project's impact to historical and cultural resources is made in compliance to with the *National Historic Preservation Act* (NHPA) *of 1966*, as amended for fed-

eral undertakings. Two state acts also require consideration of cultural resources. The NHPA requires that an initial review be made of an undertaking's *Area of Potential Effect* (APE) to determine if any properties in, or eligible for inclusion in, the National Register of Historic Places are present in the area. No known historical or cultural resources are known to exist on airport property.

DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f)

Section 4(f) properties include publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance; or any land from a historic site of national, state, or local significance.

Two potential Section 4(f) properties are located within the immediate airport environs. The Payson Airport campground is located on airport property, just south of the runway midpoint. This campground was constructed by ADOT for recreational use by pilots and aircraft passengers only. The Tonto National Forest, the second potential Section 4(f) property, is located adjacent to airport property to the north.

DOCUMENT SOURCES

A variety of different sources were utilized in the inventory process. The following listing reflects a partial compilation of these sources. This does not include data provided by airport management as part of their records, nor does it include airport drawings and photographs which were referenced for information. On-site inventory and interviews with staff and tenants contributed to the inventory effort.

Airport / Facility Directory, Southwest U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, December 2007 Edition.

Phoenix Sectional Aeronautical Chart, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July 2007.

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2007-2011.

U.S. Terminal Procedures, Southwest U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July 2007 Edition.

Payson General Plan Update. Partners for Strategic Action. January 2003.

Payson Unified Development Code. Town of Payson. Ordinance No. 466. February 23, 1996. Updated October 1, 2007.

Payson Municipal Airport Master Plan Update. Coffman Associates and Z&H Engineering. June 1998.

Airport General Regulations. Town of Payson. Ordinance No. 416. July 20, 1994.

A number of internet websites were also used to collect information for the inventory chapter. These include the following:

Town of Payson: www.ci.payson.az.us

Payson Regional Economic Development Corporation: www.paysonecon.org

Rim Country Regional Chamber of Commerce: www.rimcountrychamber.com

FAA 5010 Airport Master Record Data: www.airnav.com

Arizona Department of Transportation – Aeronautics Division: www.dot.state.az.us

Gila County, Arizona: www.co.gila.az.us

Arizona Department of Economic Security: www.de.state.az.us/ASPNew/default.asp

Arizona Workforce Informer: www.workforce.az.gov

Bureau of Economic Analysis, U.S. Department of Commerce: www.bea.gov/bea/regional/index.htm

Arizona Department of Commerce: www.commerce.state.az.us

Chapter Two

AVIATION DEMAND FORECASTS

Aviation Demand Forecasts

Payson Airport

Facility planning must begin with a definition of the demand that may reasonably be expected to occur at the facility over a specific period of time. For Payson Airport, this involves forecasts of aviation activity indicators for a 20-year timeframe. In this Master Plan, forecasts of based aircraft, based aircraft fleet mix, annual aircraft operations, and operational peak periods will serve as the basis for facility development planning.

It is virtually impossible to predict, with certainty, year-to-year fluctuations of activity when looking 20 years into the future. However, a trend can be established which delineates long term growth potential. While a single line is often used to express the anticipated growth, it is important to remember that actual growth may fluctuate above and below this line. Forecasts serve as guidelines, and planning must remain flexible enough to respond to unforeseen facility needs. This is because aviation is affected by many external influences, as well as by the types of aircraft used and the nature of the available services and facilities at the airport.

Recognizing this, it is intended to develop a Master Plan for Payson Airport that will be demand-based rather than time-based. As a result, the reasonable levels of activity potential that are derived from this forecasting effort will be related to the planning horizon levels rather than dates in time. These planning levels will be established as levels of activity from which specific actions for the airport to consider will be presented.

The demand-based manner in which this Master Plan is being prepared is intended to accommodate variations in demand at the airport. Demand-based planning relates capital improvements to demand factors such as based aircraft operations, instead of points in time. This allows the airport to address capital improvement needs according to actual demand occurring at the airport. Therefore, should growth in aircraft operations or based aircraft slow or decline, it may not be necessary to implement some improvement projects. However, should the airport experience accelerated growth, the plan will have accounted for that growth and will be flexible enough to respond accordingly.

In order to fully assess current and future aviation demand for Payson Airport, an examination of several key factors is needed. These include national and regional aviation trends, historical and forecast socioeconomic and demographic information for the area, and competing transportation modes and facilities. Consideration and analysis of these factors will ensure a comprehensive outlook for future aviation demand at Payson Airport.

NATIONAL AVIATION TRENDS

Each year, the Federal Aviation Administration (FAA) updates and publishes a national aviation forecast. Included in this publication are forecasts for the large air carriers, regional/commuter air carriers, air cargo, general aviation, and FAA workload measures. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The current edition when this chapter was prepared was *FAA Aerospace Forecasts – Fiscal Years 2007-2020*, published in March 2007. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

In the seven years prior to the events of September 11, 2001, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. The economic climate and aviation industry, however, has been on the recovery.

The Office of Management and Budget (OMB) expects the U.S. economy to continue to grow in terms of Gross Domestic Product (GDP) at an average annual rate of 2.9 percent through 2020. This will positively influence the aviation industry, leading to passenger, air cargo, and general aviation growth throughout the forecast period (assuming there will be no new successful terrorist incidents against either U.S. or world aviation).

The FAA forecasts for commercial aviation projects a return to growth,

and, over time, the industry is expected to grow significantly. System capacity, the yard stick for measuring the health of the aviation industry, was projected to increase 2.8 percent in 2007, following a decline of 0.2 percent in 2006. In domestic markets, capacity is expected to increase 2.1 percent annually, as legacy network capacity stabilizes and low-cost carriers continue to grow. Regional carrier capacity is forecast to increase 2.9 percent annually, as legacy carriers transfer routes to regional partners and the regionals offer more point-to-point service. Revenue passenger miles (RPMs) are forecast to increase 2.8 percent annually, while enplanements are expected to increase faster, up 3.6 percent annually.

U.S. airline passenger enplanements (combined domestic and international) have now exceeded pre-9/11 levels and are projected to grow at an average of 3.5 percent annually through 2020. Mainline air carriers are forecast to grow 3.7 percent annually, while the regional/commuter airlines are forecast to level off at 3.1 percent annually, after having experienced unprecedented 11.2 percent annual growth from 2000-2006.

Growth in the general aviation sector is expected to continue to be strong, particularly with the introduction of very light jets (VLJs) to the fleet. These relatively inexpensive microjets may redefine "on-demand" air taxi service. In 2008, over 350 VLJs are forecast to enter the fleet, with that figure growing to 400-500 per year through 2020. Overall, general aviation hours flown are projected to increase an average of 3.4 percent per year through 2020. The number of active general aviation aircraft is expected to grow at 1.4 percent annually.

U.S. airline air cargo revenue-ton-miles (RTMs) are projected to grow at 5.6 percent annually.

GENERAL AVIATION

In the 14 years since the passage of the *General Aviation Revitalization Act of 1994* (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture), it is clear that the Act has successfully infused new life into the general aviation industry. This legislation sparked an interest to renew the manufacturing of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry.

After the passage of this legislation, annual shipments of new aircraft rose every year between 1994 and 2000. According to the General Aviation Manufacturers Association (GAMA), between 1994 and 2000, general aviation aircraft shipments increased at an average annual rate of more than 20 percent, increasing from 928 shipments in 1994 to 3,140 shipments in 2000. As shown in **Table 2A**, the growth in the general aviation industry slowed considerably after 2000, negatively impacted by the national economic recession and the events surrounding 9/11. In 2003, there were over 450 fewer aircraft shipments than in 2000, a decline of 14 percent.

TABLE 2A
Annual General Aviation Airplane Shipments
Manufactured Worldwide and Factory Net Billings

Year	Total	SEP	MEP	TP	J	Net Billings ($ millions)
2000	3,140	1,862	103	415	760	13,497.0
2001	2,994	1,644	147	421	782	13,866.6
2002	2,687	1,601	130	280	676	11,823.1
2003	2,686	1,825	71	272	518	9,994.8
2004	2,963	1,999	52	321	591	11,903.8
2005	3,580	2,326	139	365	750	15,140.0
2006	4,042	2,508	242	407	885	18,793.0

SEP - Single Engine Piston; MEP – Multi-Engine Piston; TP - Turboprop; J - Turbofan/Turbojet

Source: GAMA (Note: 2007 figures not available)

In 2004, the general aviation production showed a significant increase, returning to near pre-9/11 levels for most indicators. With the exception of multi-engine piston aircraft deliveries, deliveries of new aircraft in all categories increased. In 2006, total aircraft deliveries increased 12 percent. The largest increase was in single engine piston aircraft deliveries that increased seven percent or by over 180 aircraft. Turbojet and multi-engine piston aircraft also increased significantly from the previous year. As evidenced in the table, new aircraft deliveries in 2006 exceeded pre-9/11 levels by approximately 1,000 aircraft.

On July 21, 2004, the FAA published the final rule for sport aircraft: The *Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft* rules, which went into effect on September 1, 2004. This final rule establishes new light-sport aircraft categories and allows aircraft manufacturers to build and sell completed aircraft without obtaining type and production certificates. Instead, aircraft manufacturers will build to industry consensus standards. This reduces development costs and subsequent aircraft acquisition costs. This new category places specific conditions on the design of the aircraft, to limit them to "slow (less than 120 knots maximum) and simple" performance aircraft. New pilot training times are reduced and offer more flexibility in the type of aircraft the pilot would be allowed to operate.

Viewed by many within the general aviation industry as a revolutionary change in the regulation of recreational aircraft, this new rule is anticipated to significantly increase access to general aviation by reducing the time required to earn a pilot's license and the cost of owning and operating an aircraft. Since 2004, there have been over 30 new product offerings in the airplane category alone. These regulations are aimed primarily at the recreational aircraft owner/operator. By 2020, there are expected to be 13,200 of these aircraft in the national fleet.

While impacting aircraft production and delivery, the events of 9/11 and the subsequent economic downturn have not had the same negative impact on the business/corporate side of general aviation. The increased security measures placed on commercial flights have increased interest in fractional and corporate aircraft ownership, as well as on-demand charter flights. According to GAMA, the total number of corporate operators increased by approximately 2,200 between 2000 and 2006. Corporate operators are defined as those companies that have their own flight departments and utilize general aviation aircraft to enhance productivity. **Table 2B** summarizes the number of U.S. companies operating fixed-wing turbine aircraft between 1991 and 2006.

TABLE 2B
U.S. Companies Operating Fixed-Wing Turbine Business Aircraft and Number of Aircraft, 1991-2005

Year	Number Of Operators	Number of Aircraft
1991	6,584	9,504
1992	6,492	9,504
1993	6,747	9,594
1994	6,869	10,044
1995	7,126	10,321
1996	7,406	11,285
1997	7,805	11,774
1998	8,236	12,425
1999	8,778	13,148
2000	9,317	14,079
2001	9,709	14,837
2002	10,191	15,569
2003	10,661	15,870
2004	10,735	16,369
2005	10,809	16,867
2006	11,611	16,965

Source: GAMA/NBAA

The growth in corporate operators comes at a time when fractional aircraft programs are experiencing significant growth. Fractional ownership programs sell a share in an aircraft at a fixed cost. This cost, plus monthly maintenance fees, allows the shareholder a set number of hours of use per year and provides for the management and pilot services associated with the aircraft's operation. These programs guarantee the aircraft is available at any time, with short notice. Fractional ownership programs offer the shareholder a more efficient use of time (when compared with commercial air service) by providing faster point-to-point travel times and the ability to conduct business confidentially while flying. The lower initial startup costs (when compared with acquiring and establishing a flight department) and easier exiting options are also positive benefits.

Since beginning in 1986, fractional jet programs have flourished. **Table 2C** summarizes the growth in fractional shares between 1986 and 2006. The number of aircraft in fractional jet programs grew rapidly from 2001 to 2006, increasing by approximately 288 aircraft.

VLJs entered the operational fleet in 2006. Also known as a microjet, the VLJ is commonly defined as a jet aircraft that weighs less than 10,000 pounds. There are several new aircraft that fall in this category including the Eclipse 500 and Adams 700 jets. While not categorized by Cessna Aircraft as a VLJ, the Cessna Mustang is a competing aircraft to many of the VLJs expected to reach the mar-

ket. These jets cost between $1 and $2 million, can takeoff on runways less than 3,000 feet, and cruise at 41,000 feet at speeds in excess of 300 knots. The VLJ is expected to redefine the business jet segment by expanding business jet flying and offering operational costs that can support on-demand air taxi point-to-point service. The FAA projects 350 VLJs in service in 2008. This category of aircraft is expected to grow by 400 to 500 aircraft per year, reaching 6,300 aircraft by 2020.

TABLE 2C
Fractional Shares and Number of Aircraft in Use

Year	Number of Shares	Number of Aircraft
1986	3	N/A
1987	5	N/A
1988	26	N/A
1989	51	N/A
1990	57	N/A
1991	71	N/A
1992	84	N/A
1993	110	N/A
1994	158	N/A
1995	285	N/A
1996	548	N/A
1997	957	N/A
1998	1,551	N/A
1999	2,607	N/A
2000	3,834	N/A
2001	3,415	696
2002	4,098	776
2003	4,516	826
2004	4,765	865
2005	4,691	949
2006	4,903	984

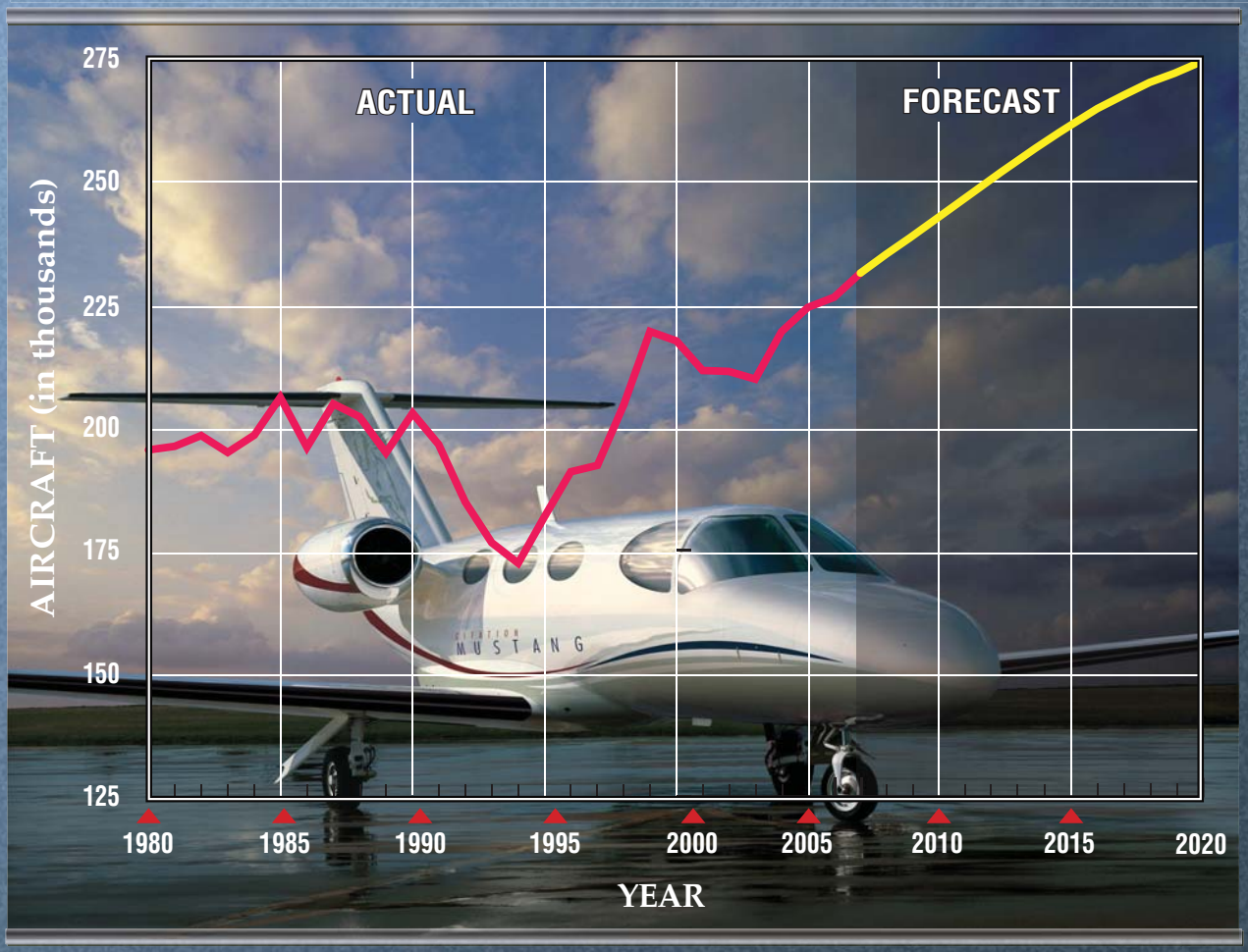
Source: GAMA

The FAA forecast assumes that the regulatory environment affecting general aviation will not change dramatically. It is expected that the U.S. economy will continue to expand through 2007 and 2008, and then continue to grow moderately (near three percent annually) thereafter. This will positively influence the aviation industry, leading to passenger, air cargo, and general aviation growth throughout the forecast period (assuming that there will not be any new successful terrorist incidents against either the U.S. or world aviation). The FAA does recognize that a major risk to continued economic growth is upward pressure on commodity prices, including the price of oil. However, FAA economic models predict a 4.8 percent decrease in the price of oil in 2007, followed by a 7.1 percent increase in 2008. The price of oil is expected to become somewhat less volatile through the remainder of the forecast period.

The FAA projects the active general aviation aircraft fleet to increase at an average annual rate of 1.4 percent over the 14-year forecast period, increasing from 226,422 in 2006 to 274,914 in 2020. This growth is depicted on **Exhibit 2A**. FAA forecasts identify two general aviation economies that follow different market patterns. The turbine aircraft fleet is expected to increase at an average annual rate of 6.0 percent, increasing from 18,058 in 2006 to 31,558 in 2020. Factors leading to this substantial growth include expected strong U.S. and global economic growth, the continued success of fractional ownership programs, the growth of the VLJ/microjet market, and a continuation of the shift from commercial air travel to corporate/business air travel by business travelers and corpora-

05MP18-2A-1/25/08

U.S. ACTIVE GENERAL AVIATION AIRCRAFT



U.S. ACTIVE GENERAL AVIATION AIRCRAFT (in thousands)

Year	FIXED WING				ROTORCRAFT					
	PISTON		TURBINE							
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine	Experimental	Sport Aircraft	Other	Total
2006 (Est.)	148.2	19.4	8.0	10.0	3.4	5.9	24.5	0.4	6.6	226.4
2010	150.4	19.2	8.2	13.4	4.8	6.5	27.7	5.6	6.8	242.8
2015	154.0	19.0	8.5	18.0	6.3	7.2	31.1	10.5	6.7	261.4
2020	155.6	18.8	8.8	22.8	7.4	7.9	33.9	13.2	6.6	274.9

Source: FAA Aerospace Forecasts, Fiscal Years 2007-2020.

Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Payson

Exhibit 2A
U.S. ACTIVE GENERAL AVIATION
AIRCRAFT FORECASTS

tions. Piston-powered aircraft are projected to show minimal growth through 2020 at 0.3 percent annually. Single engine piston aircraft are projected to grow at 0.3 percent annually, while multi-engine piston aircraft are projected to decrease in number by 0.2 percent annually. Piston-powered rotorcraft aircraft are forecast to increase by 5.7 percent annually through 2020.

Aircraft utilization rates are projected to increase through the 14-year forecast period. The number of general aviation hours flown is projected to increase at 3.4 percent annually. Similar to active aircraft projections, there is projected disparity between piston and turbine aircraft hours flown. Hours flown in turbine aircraft are expected to increase at 6.1 percent annually, compared with 1.3 percent for piston-powered aircraft. Jet aircraft are projected to increase at 9.4 percent annually over the next 14 years, being the largest increase in any one category for total aircraft hours flown.

The total pilot population is projected to increase by 51,000 in the next 14 years, from an estimated 455,000 in 2006 to 506,000 in 2020, which represents an average annual growth rate of 0.8 percent. The student pilot population is forecast to increase at an annual rate of 1.2 percent, reaching a total of 100,181 in 2020. Growth rates for other pilot categories over the forecast period are as follows: recreational pilots declining 0.1 percent; commercial pilots increasing 0.8 percent; airline transport pilots increasing 0.2 percent; rotorcraft-only pilots increasing 3.1 percent; glider-only pilots increasing 0.4 percent; and private pilots showing no change. The sport pilot is expected to grow significantly through 2020 at 22.6 percent annually. The decline in recreational pilots and no increase in private pilots is the result of the expectation that most new general aviation pilots will choose to obtain the sport pilot license instead.

Over the past several years, the general aviation industry has launched a series of programs and initiatives whose main goals are to promote and assure future growth within the industry. The "No Plane, No Gain" is an advocacy program created in 1992 by GAMA and the National Business Aircraft Association (NBAA) to promote acceptance and increased use of general aviation as an essential, cost-effective tool for businesses. Other programs are intended to promote growth in new pilot starts and introduce people to general aviation. "Project Pilot," sponsored by the Aircraft Owners and Pilots Association (AOPA), promotes the training of new pilots in order to increase and maintain the size of the pilot population. The "Be A Pilot" program is jointly sponsored and supported by more than 100 industry organizations. The NBAA sponsors "AvKids," a program designed to educate elementary school students about the benefits of business aviation to the community and career opportunities available to them in business aviation. The Experimental Aircraft Association (EAA) promotes the "Young Eagles" program which introduces young children to aviation by offering them a free airplane ride courtesy of aircraft owners who are part of the association. Over the years, programs such as these have

played an important role in the success of general aviation and will continue to be vital to its growth in the future.

AIRPORT SERVICE AREA

In determining the aviation demand for an airport, it is necessary to identify the role of that airport. Payson Airport is classified as a general aviation airport in the *National Plan of Integrated Airport Systems* (NPIAS). As such, the primary role of Payson Airport is to serve the needs of general aviation in the area. General aviation is a term used to describe a diverse range of aviation activities, which includes all segments of the aviation industry except commercial air carriers and military. This includes recreational flying in single engine aircraft up to corporate business jets. The airport does not currently serve nor is it expected to serve scheduled commercial activity in the future.

The initial step in determining the general aviation demand for an airport is to define its generalized service area. The airport service area is a generalized geographical area where there is a potential market for airport services, in particular based aircraft. Access to general aviation airports and transportation networks enter into the equation to determine the size of a service area, as well as the quality of aviation facilities, distance, and other subjective criteria.

The airport service area is determined primarily by evaluating the location of competing airports, their capabilities and services, and their relative attraction and convenience. A description of nearby public-use airports within a 50-nautical mile radius of Payson Airport was presented in Chapter One – Inventory.

The nearest public-use airport with a similar level of service to Payson Airport is Sedona Airport, located approximately 42 nautical miles to the northwest. This airport has a 5,129-foot long runway and a full-service fixed base operator (FBO). There is one non-precision instrument approach that serves the airport. Approximately 100 aircraft are based at Sedona.

Cottonwood Airport, located approximately 45 nautical miles to the northwest of Payson Airport, has a single runway that is 4,250 feet long. Limited general aviation services are provided at the airport. Cottonwood has approximately 49 based aircraft and no published instrument approach procedures.

Scottsdale Airport is located approximately 47 nautical miles southwest of Payson Airport and has a single runway that is 8,250 feet long. It serves as a reliever airport and provides several different types of aviation activities.

Phoenix Deer Valley Airport is located approximately 50 nautical miles southwest of Payson and serves as a reliever airport in the Phoenix metropolitan area. It is served by a parallel runway system, with the primary runway being 8,208 feet long. One major FBO is located on the airfield

that provides a full array of general aviation services. Approximately 1,252 aircraft are based at the airport, and four non-precision instrument approaches are approved for use into the airport.

Due to the proximity of these airports, as well as nine additional private-use airports in the area, the service area for Payson Airport is primarily limited to the Rim Country area of northwestern Gila County. Included in the Rim Country are the Towns of Payson and Star Valley and the communities of Pine, Strawberry, and Christopher Creek.

TOWN OF PAYSON AND RIM COUNTRY

The Town of Payson and the Rim Country's economy are dominated by tourism, retirement, retail, and vacation industries. There is also a growing dependence on manufacturing and service firms and health-related facilities.

Recreation and tourism are an increasingly important part of the economic engine fueling the Town of Payson and Rim Country area. The region's central location offers close proximity to several of Arizona's historic, cultural, and recreational destinations. Opportunities including hiking, camping, hunting, and fishing are located throughout the area.

Another industry which is seeing substantial growth is the retirement industry, as senior citizens are attracted to the Rim Country's comfortable and affordable lifestyle. Small manufacturers, internet firms, and telemarketing-based businesses are also making an impact in the region. All these indicators would appear to point to continued growth for the area surrounding the Town of Payson for the foreseeable future.

The potential for increased aviation demand for Payson Airport lies in the growing population and promising business growth of the Town of Payson and surrounding communities. Ever-growing tourism and recreation industries promise increased private flying activity in the region, while the continued growth in manufacturing and service sectors offer a potential for increased corporate and business general aviation activity. The forecast analyses conducted in the following section take into consideration the expected local and regional growth.

SOCIOECONOMIC TRENDS

Local and regional forecasts developed for key socioeconomic variables provide an indicator of the potential for creating growth in aviation activities at an airport. Three variables typically useful in evaluating potential for aviation growth are population, employment, and per capita personal income (PCPI).

POPULATION

Table 2D summarizes historical and forecast population estimates for the Town of Payson and Gila County. Historical population growth has been very strong for the Town of Payson since 1990, averaging 4.16 percent average annual growth rate (AAGR). Gila County has experienced a more moderate growth in population during the same time period, at 2.06 percent annually. The Town of Payson has averaged approximately 27 percent of the county's overall population since 2000.

Based upon the forecast population estimates, the Town and County populations are expected to grow at a much slower rate during the next 20 years. A 1.35 percent AAGR is forecast for the Town of Payson, while Gila County is expected to grow at 0.93 percent annually.

TABLE 2D
Historical and Forecast Population Data
Town of Payson and Gila County

Year	Town of Payson	Gila County	Town % of County
Historical			
1990	8,377	40,216	20.83%
2000	13,180	51,335	25.67%
2001	14,155	52,290	27.07%
2002	14,510	52,655	27.56%
2003	14,855	53,350	27.84%
2004	15,170	54,055	28.06%
2005	15,375	54,445	28.24%
2006	15,625	56,800	27.51%
2007	16,742	56,885	29.43%
Forecast			
2013	17,967	59,768	30.06%
2018	19,531	63,110	30.95%
2028	22,208	68,921	32.22%

Source: Town of Payson; Arizona Department of Economic Security; U.S. Census Bureau

EMPLOYMENT

Historical and forecast employment data for the Town and County is presented in **Table 2E**. The Town and County's historical employment figures have grown to a very similar rate as that of population since 1990. The Town's employment base has grown 4.08 percent annually, while the County has seen a 1.95 percent AAGR during the same time period. Since 2000, the Town has consistently accounted for approximately 29 percent of the County's total employment.

Gila County is expected to experience positive employment growth at an average annual rate of 3.09 percent through 2027. Future employment estimates for the Town of Payson were unavailable at the time of this study.

TABLE 2E Historical and Forecast Employment Data Town of Payson and Gila County			
Year	**Town of Payson**	**Gila County**	**Town % of County**
Historical			
1990	2,923	14,426	20.26%
2000	5,527	19,222	28.75%
2001	5,508	19,155	28.75%
2002	5,512	19,170	28.75%
2003	5,584	19,419	28.76%
2004	5,574	19,385	28.75%
2005	5,552	19,307	28.76%
2006	5,664	19,698	28.75%
2007	5,764	20,046	28.75%
Forecast			
2013	N/A	27,472	N/A
2018	N/A	30,943	N/A
2028	N/A	37,983	N/A

Source: Arizona Department of Economic Security; Woods and Poole CEDDS 2007; Forecast employment data for Town of Payson was unavailable

PER CAPITA PERSONAL INCOME

Table 2F provides historical and forecast per capita personal income (PCPI), adjusted to 2004 dollars. From 1990 to 2007, PCPI for the county increased at 2.17 percent AAGR. Through 2027, Gila County is projected to experience slightly less gains in PCPI compared to the previous years, at approximately 1.71 percent annually.

FORECASTING APPROACH

The development of aviation forecasts proceeds through both analytical and judgmental processes. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth. However, the judgement of the forecast analyst, based upon professional experience, knowledge of the aviation industry, and assessment of the local situation, is important in the final determination of the preferred forecast.

TABLE 2F Historical and Forecast Per Capita Personal Income Data Gila County	
Year	**Per Capita Personal Income ($2004)**
Historical	
1990	$18,101
2000	$20,529
2001	$20,989
2002	$21,334
2003	$21,936
2004	$22,813
2005	$23,488
2006	$25,773
2007	$26,137
Forecast	
2013	$28,924
2018	$31,481
2028	$37,323

Source: Woods and Poole CEDDS 2007

The most reliable approach to estimating aviation demand is through the utilization of more than one analytical technique. Methodologies frequently considered include trend line projections, correlation/regression analysis, and market share analysis.

Trend line projections are probably the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical demand data, then extending them into the future, a basic trend line projection is produced. A basic assumption of this technique is that outside factors will continue to affect aviation demand in much the same manner as in the past. As broad as this assumption may be, the trend line projection does serve as a reliable benchmark for comparing other projections.

Correlation analysis provides a measure of direct relationship between two separate sets of historic data. Should there be a reasonable correlation between the data sets, further evaluation using regression analysis may be employed.

Regression analysis measures the statistical relationship between dependent and independent variables yielding a Acorrelation coefficient.@ The correlation coefficient (Pearson=s Ar@) measures association between the changes in a dependent variable and independent variable(s). If the r-squared (r^2) value (coefficient determination) is greater than 0.90, it indicates good predictive reliability. A value below 0.90 may be used with the understanding that the predictive reliability is lower.

Market share analysis involves a historical review of airport activity as a percentage, or share, of a larger regional, state, or national aviation market. A historical market share trend is determined providing an expected market share for the future. These shares are then multiplied by the forecasts of the larger geographical area to produce a market share projection. This method has the same limitations as trend line projections, but can provide a useful check on the validity of other forecasting techniques.

It is important to note that one should not assume a high level of confidence in forecasts that extend beyond five years. Facility and financial planning usually require at least a ten-year view, since it often takes more than five years to complete a major facility development program. However, it is important to use forecasts which do not overestimate revenue-generating capabilities or understate demand for facilities needed to meet public (user) needs.

A wide range of factors is known to influence the aviation industry and can have significant impacts on the extent and nature of air service provided in both the local and national markets. Technological advances in aviation have historically altered, and will continue to change, the growth rates in aviation demand over time. The most obvious example is the impact of jet aircraft on the aviation industry, which resulted in a growth rate that far exceeded expectations. Such changes are difficult, if not impossible, to predict, and there is simply no mathematical way to estimate their im-

pacts. Using a broad spectrum of local, regional, and national socioeconomic and aviation information, and analyzing the most current aviation trends, forecasts are presented in the following sections.

The following forecast analysis examines each of the aviation demand categories expected at Payson Airport through 2028. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at Payson Airport during the next 20 years.

GENERAL AVIATION FORECASTS

To determine the types and sizes of facilities that should be planned to accommodate general aviation activity, certain elements of this activity must be forecast. Indicators of general aviation demand include:

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Operations
- Peaking Characteristics
- Annual Instrument Approaches

The remainder of this chapter will examine historical trends with regard to these areas of general aviation and project future demand for these segments of general aviation activity at Payson Airport.

BASED AIRCRAFT

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, the growth of other general aviation activities and demands at the airport can be projected.

Typically, a Master Plan only considers the aircraft located on the publicly owned portions of the airport as based aircraft. However, for Payson Airport, it is necessary to consider the aircraft located adjacent to the airport in Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. The aircraft located in the industrial park and residential airpark represents approximately 30 aircraft, or 33 percent of the total 90 based aircraft. The remaining 60 aircraft are based in hangars and on public tiedown areas on airport property.

It is necessary to include the aircraft located in Sky Park Industrial Park and Mazatzal Mountain Residential Airpark as based aircraft because these aircraft are an important factor in determining the number of annual operations conducted at the airport. The number of operations and type of aircraft operating at the airport are important to the analysis of overall noise exposure for the airport as well. However, for this analysis only active aircraft located in the industrial park and residential airpark are considered based aircraft since the non-active aircraft do not contribute to the operational level at the airport. All aircraft located on airport property are considered based aircraft. This is due to these aircraft occupying hangar and/or tiedown space. The projected number of based aircraft determines the requirements for hangar and tiedown

spaces. Aircraft which are based at the airport only part-time, but occupy hangar or tiedown space, are considered based aircraft for this analysis.

The scope of the Master Plan is limited by FAA requirements to determining the need for facilities on airport property. Therefore, when determining the need for future hangar and apron areas at the airport (discussed in Chapter Three – Airport Facility Requirements), the aircraft located in the industrial park and residential airpark will not be considered. Instead, only the aircraft based on airport property will be considered. To assist in this determination, the total based aircraft projection will be separated by aircraft located on airport property and those located in the industrial park and residential airpark.

In the preparation of based aircraft forecasts for Payson Airport, existing and historical based aircraft records maintained by the Town, State, and FAA were obtained and reviewed. According to hangar and tiedown lease records provided by the Town of Payson and Payson Regional Airport Authority (PRAA), there are approximately 90 aircraft that are considered for the based aircraft analysis at Payson Airport. As previously mentioned, approximately 60 of these aircraft are located on airport property and 30 aircraft are located in the industrial park and residential airpark.

Future based aircraft at Payson Airport will depend on several factors, including the economy, available airport facilities, and competing airports. Forecasts assume a reasonably stable and growing economy and reasonable development of airport facilities necessary to accommodate aviation demand.

Market Share of Registered Aircraft

The first method used to project based aircraft examined the Payson Airport share of registered aircraft in Gila County. As shown in **Table 2G**, the airport captured 46.73 percent of aircraft registered in the county in 1997. The airport's share increased to 66.18 percent in 2007. This is the result of based aircraft at Payson Airport growing faster than the aircraft in Gila County (6.05 percent annually for the airport versus 2.43 percent annually for the county).

Forecasts for registered aircraft growth in Gila County were prepared for the *2000 State Aviation Needs Study* (SANS). The 2000 SANS projected Gila County registered aircraft to grow to 186 aircraft by 2020. For purposes of this analysis, the registered aircraft forecast was extrapolated for year 2028. Forecasts for based aircraft were developed by projecting Payson Airport's share of registered aircraft through 2028. The first forecast assumes a constant market share of the 2007 market share of registered aircraft. This yields 127 based aircraft by 2028. The second projection assumes the airport's market share will increase throughout the planning period, similar to what it has done over the past several years. This projection would yield 145 based aircraft by the year 2028.

TABLE 2G
Market Share of Registered Aircraft (Gila County)
Payson Airport

Year	Based Aircraft	Gila County Registered Aircraft	Market Share of Registered Aircraft
1997	50	107	46.73%
2000	54	113	47.79%
2005	75	119	63.03%
2007	90	136	66.18%
Constant Market Share			
2013	118	179	66%
2018	121	184	66%
2028	127	193	66%
Increasing Market Share			
2013	122	179	68%
2018	131	184	71%
2028	145	193	75%

Source: Based Aircraft - Airport records, FAA TAF, ADOT-Aeronautics Airport Capital Improvement Program; Registered Aircraft - U.S. Census of Civil Aircraft; Forecast Registered Aircraft – SANS 2000 (2028 extrapolated); Coffman Associates analysis

Market Share of General Aviation Aircraft

Based aircraft were also examined as a percentage of U.S. active general aviation aircraft. In 1997, based aircraft at Payson Airport represented 0.0260 percent of U.S. active general aviation aircraft. The airport's market share decreased slightly in 2000, and then increased significantly over the next several years. In 2007, the airport represented 0.0389 percent of the active general aviation fleet.

A constant share projection was first developed. This forecast assumes the airport's share of U.S. active general aviation aircraft will remain constant at 0.0389 percent through the planning period, which yields 119 based aircraft by the year 2028. The second forecast assumes the airport's market share will increase, as it has been doing since 2000. This increasing market share projection yields 138 based aircraft by 2028. These market share projections are presented in **Table 2H**.

Ratio of Town Population

Trends comparing the number of based aircraft with the Town of Payson population were also analyzed. **Table 2J** presents the based aircraft per 1,000 residents in the Town of Payson. An increasing ratio of based aircraft per 1,000 residents projection results in based aircraft increasing at a greater rate than the population, which follows the trend at the airport in recent years. This results in 133 based aircraft by 2028. The constant ratio of based aircraft per 1,000 residents projection results in based aircraft growing at the same rate as the local population. This yields 119 based aircraft by 2028.

TABLE 2H
Market Share of U.S. Active General Aviation Aircraft
Payson Airport

Year	Based Aircraft	U.S. Active General Aviation Aircraft	% of U.S. Active General Aviation Aircraft
1997	50	192,414	0.0260%
2000	54	217,533	0.0248%
2005	75	224,352	0.0334%
2007	90	231,343	0.0389%
Constant Market Share			
2013	99	254,261	0.0389%
2018	105	270,092	0.0389%
2028	119	307,155	0.0389%
Increasing Market Share			
2013	102	254,261	0.0400%
2018	112	270,092	0.0415%
2028	138	307,155	0.0450%

Source: Based Aircraft - Airport records, FAA TAF, ADOT-Aeronautics Airport Capital Improvement Program; Active GA Aircraft - FAA *Aerospace Forecasts Fiscal Years 2007-2020* (2028 extrapolated); Coffman Associates analysis

TABLE 2J
Based Aircraft per Town of Payson Population
Payson Airport

Year	Based Aircraft	Town of Payson Population	Aircraft per 1,000 Residents
1997	50	11,593	4.31
2000	54	13,180	4.10
2005	75	15,375	4.88
2007	90	16,742	5.38
Constant Ratio Projection			
2013	97	17,967	5.38
2018	105	19,531	5.38
2028	119	22,208	5.38
Increasing Ratio Projection			
2013	99	17,967	5.50
2018	111	19,531	5.70
2028	133	22,208	6.00

Source: Based Aircraft - Airport records, FAA TAF, ADOT-Aeronautics Airport Capital Improvement Program; Population - Arizona Department of Economic Security; Coffman Associates analysis

Statistical Trends and Regression

Statistical trends and regression analysis were also conducted on the data sets. As previously mentioned, it is optimal to have an "r^2" value near or above 0.90, which would represent a strong correlation. A trend line projection was considered for forecasting based aircraft at Payson Airport, yielding an "r^2" value of 0.94. This projection yields 169 based aircraft by

2028. A regression analysis was also conducted comparing the Town's population to based aircraft. An "r^2" value of 0.95 resulted. This projection yielded 131 based aircraft for 2028. A regression analysis comparing Gila County's population to based aircraft yields an "r^2" value of 0.91, which results in 141 based aircraft by 2028. **Table 2K** summarizes the statistical trend and regression forecasts for based aircraft at Payson Airport

TABLE 2K
Based Aircraft Forecast Summary
Payson Airport

Projections	2013	2018	2028
Market Share of Registered Aircraft (Gila County)			
Constant Market Share	118	121	127
Increasing Market Share	122	131	145
Market Share of U.S. Active General Aviation Aircraft			
Constant Market Share	99	105	119
Increasing Market Share	102	112	135
Based Aircraft per 1,000 Residents (Town of Payson)			
Constant Ratio Projection	97	105	119
Increasing Ratio Projection	99	110	131
Regression Analysis			
vs. Trend Line (r^2 = 0.94)	110	129	169
vs. Town Population (r^2 = 0.95)	97	110	131
vs. County Population (r^2 = 0.91)	99	115	141
Comparative Forecasts			
Master Plan Update (1998)	86*	96*	121**
Selected Planning Forecast	105	118	140

Source: Coffman Associates analysis; *Interpolated; **Extrapolated

Comparative Forecasts

The Master Plan Update completed in 1998 also contains projections of based aircraft. Interpolating the study, based aircraft projections yield 86 aircraft in 2013 and 96 aircraft by 2018. Extrapolation of the trend results for year 2028 results in 121 based aircraft. This equates to a 2.30 percent average annual growth rate. When taking into account based aircraft in Sky Park Industrial Park and Mazatzal Mountain Residential Airpark, this forecast underestimates based aircraft potential.

The 2000 SANS also contains projections of based aircraft. Interpolation results in 62 aircraft in 2013 and 66 aircraft in 2018. Extrapolation of the trend yields only 72 aircraft in 2028. It is apparent that the 2000 SANS does not consider aircraft located in the industrial park and residential airpark.

It should be mentioned that the FAA TAF also contains projections of based aircraft for Payson Airport. Starting in 2005, the TAF projected 41 based aircraft and maintains this number through the planning period. The

number of current based aircraft at the airport is actually much higher than this number, even when subtracting out those aircraft in the industrial park and residential airpark.

Based Aircraft Summary

Deciding which forecast or combination of forecasts to use to arrive at a final based aircraft forecast involves more than just statistical analysis. Consideration must be given to the current and future aviation conditions at the airport in the short term. For example, it is known that Payson Airport has a "waiting list" for hangar space on the airport. If the airport were to have more hangars constructed, it can be assumed that it would have little difficulty occupying the hangars, and thus increasing its based aircraft numbers.

Experience indicates that when new hangars are constructed, those who rent the space are not always new based aircraft. Some of them will be aircraft owners who have used tiedowns or other facilities at the airport. Typically, a new hangar facility will attract up to 75 percent new based aircraft. Also, approximately 50-75 percent of those on the waiting list will actually sign a lease when the opportunity becomes available.

Table 2K and **Exhibit 2B** provide a summary of all general aviation based aircraft forecasts previously discussed. The planning forecast is a median range projection which reflects the airport capturing a larger portion of county and regional aviation markets through the planning period. The forecast population and economic growth in the area supports the potential for based aircraft growth at Payson Airport.

Based aircraft growth is likely considering the potential for local subdivision growth within Mazatzal Mountain Residential Airpark as well as the continued development of Sky Park Industrial Park. In addition, potential development on airport property to include aircraft storage hangars and additional aviation-related services will lead to based aircraft growth.

The selected forecast projects based aircraft to grow at an average annual rate of 2.2 percent. Based aircraft have historically grown at a higher rate over the past ten years. This is most likely due to the development of more hangars at the airport in recent years as well as the development of the industrial park and residential airpark. It is likely that actual activity will not follow any one of the projections precisely. In all likelihood, based aircraft levels will fluctuate within the range of the projections. Thus, the lines depicted on **Exhibit 2B** serve more as a planning envelope. The planning envelope reflects a reasonable range for based aircraft at the airport. With this in mind, the time-based projections of anticipated growth should serve only as a guide. At any given time over the planning period, the actual level of based aircraft could fall within the envelope area defined by the lower range forecast numbers and the higher range forecast numbers.

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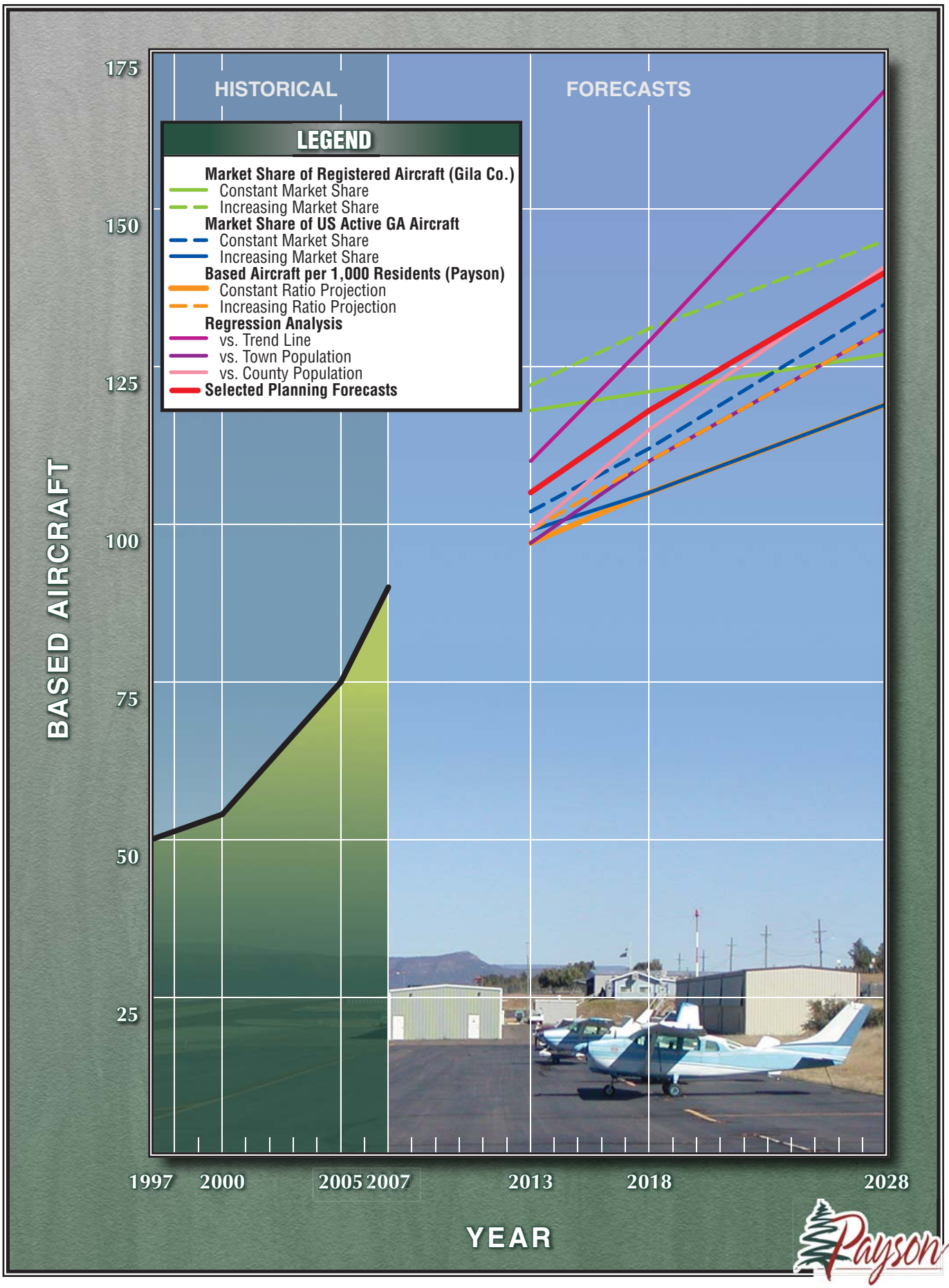

Exhibit 2B
BASED AIRCRAFT FORECASTS

As detailed earlier, the total based aircraft numbers for Payson Airport include aircraft located on airport property as well as those located in the industrial park and residential airpark. For planning purposes, it will be necessary to consider the demand for the aircraft located on airport property separately. **Table 2L** summarizes the projection of total based aircraft separated between aircraft located on airport property and aircraft located off airport property (industrial park and residential airpark). The ratio of on-airport to off-airport aircraft is expected to increase over time as the remaining undeveloped lots within the industrial park and residential airpark are sold and developed.

TABLE 2L
Total Based Aircraft Split
Payson Airport

Based Aircraft	2007	2013	2018	2028
On-Airport Aircraft	60	70	79	95
Off-Airport Aircraft	30	35	39	45
Total Aircraft	**90**	**105**	**118**	**140**

Source: Coffman Associates analysis

BASED AIRCRAFT FLEET MIX

Knowing the aircraft fleet mix expected to utilize the airport is necessary to properly plan facilities that will best serve the level of activity and the type of activities occurring at the airport. The existing based aircraft fleet mix is comprised predominantly of single engine piston aircraft.

As detailed previously, the national trend is toward a larger percentage of turboprops, jets, and helicopters. Active multi-engine piston aircraft are expected to be the only category of aircraft which shows a decrease in annual growth. Growth within each based aircraft category at the airport has been determined by comparison with national projections (which reflect current aircraft production) and consideration of local economic conditions.

The projected trend of based aircraft at Payson Airport includes a growing number of aircraft in each category. While total numbers are forecast to grow in each category, the percentage mix of single and multi-engine piston aircraft is projected to decline. This is a result of expected growth in turboprops, jets, and helicopters, following national trends. The based aircraft fleet mix projection for Payson Airport is summarized in **Table 2M**.

Currently, single engine aircraft compose the largest segment of aircraft type at Payson Airport, making up 93 percent of total based aircraft. Considering the strong recreational nature of single engine aircraft use at the airport, future based aircraft mix will continue to be dominated by single engine aircraft. The new regulations for sport aircraft should increase this level as well. Multi-engine piston aircraft add only three new aircraft through the planning period. Nationally, the number of multi-engine piston aircraft is expected to decline as the sales price and operational costs associated with this aircraft is comparable to many used turboprops. Turboprop and jet aircraft are projected to increase as a percentage of total aircraft. Forecast growth in population

and employment in the region makes it reasonable to expect turboprop and jet aircraft to base at Payson Airport. Helicopter growth is also expected at the airport, which could support recreational and safety-related activities.

TABLE 2M
Based Aircraft Fleet Mix Projections
Payson Airport

	Existing		Forecast					
Aircraft Type	**2007**	**%**	**2013**	**%**	**2018**	**%**	**2028**	**%**
Single Engine	84	93.33%	94	89.52%	103	87.29%	120	85.71%
Multi-Engine	6	6.67%	7	6.67%	8	6.78%	9	6.43%
Turboprop	0	0.00%	2	1.90%	3	2.54%	4	3.57%
Jet	0	0.00%	1	0.95%	2	1.69%	4	2.14%
Helicopter	0	0.00%	1	0.95%	2	1.69%	3	2.14%
Totals	**90**	**100.0%**	**105**	**100.00%**	**118**	**100.00%**	**140**	**100.00%**

Source: Airport records; Coffman Associates analysis

ANNUAL OPERATIONS

Aircraft operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport, or which executes simulated approaches or touch-and-go operations at the airport. Generally, local operations are characterized by training operations. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. These can be made by visitors to the airport or based aircraft operators.

Airport operations can be further broken down into distinct groups. For Payson Airport, operations typically include general aviation, air taxi, and military. General aviation operations are those conducted by private individuals or companies not flying commercially. Air taxi refers to those operators that are certified in accordance with Title 14 of the Code of Federal Regulations (CFR) Part 135 and are authorized to provide on-demand public transportation of persons and property by aircraft. Military operations are those conducted by military personnel and aircraft.

Due to the absence of an airport traffic control tower (ATCT), actual operation counts are not available for Payson Airport. Instead, only estimates of operations are available. For forecasting purposes, operational estimates were obtained from the FAA TAF.

General Aviation Operations

One method of projecting annual operations is to examine the number of general aviation operations per based aircraft. Typically, the operations per based aircraft range from 200 operations per based aircraft at airports with small amounts of flight training to 600 operations per based aircraft with significant levels of flight training. There is an established flight school at Payson Airport, but it does not conduct a significant number of operations. Therefore, it can be as-

sumed that the ratio of operations per based aircraft at Payson Airport would be in the middle of the range as mentioned above. In 2007, it was estimated that itinerant operations accounted for approximately 62 percent of total general aviation operations.

As shown in **Table 2N**, applying a constant 444 operations per based aircraft yields approximately 62,200 annual general aviation operations in 2028. Increasing the operations per based aircraft ratio yields 70,000 annual operations by 2028. The 1998 Master Plan Update, 2000 SANS, and FAA TAF have been examined for comparative purposes. The 1998 Master Plan projected operations growing from 31,200 in 2005 to 50,000 in 2020. Extrapolating these numbers yield approximately 65,000 operations by 2028. The 2000 SANS projected operations growing at a much slower pace, from 26,300 in 2005 to 30,400 operations by 2020. Extrapolating these numbers yield 32,700 operations by 2028. The FAA TAF projects annual operations to remain static at 40,000 through 2025.

TABLE 2N
Annual General Aviation Operations Forecast
Payson Airport

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations	Operations per Based Aircraft
1997	50	5,500	17,600	23,100	462
2000	54	5,500	17,600	23,100	428
2005	75	15,000	25,000	40,000	533
2007	90	15,000	25,000	40,000	444
Constant Operations per Based Aircraft					
2013	105	18,600	28,000	46,600	444
2018	118	22,000	30,400	52,400	444
2028	140	28,000	34,200	62,200	444
Increasing Operations per Based Aircraft					
2013	105	18,900	28,400	47,300	450
2018	118	23,300	32,200	55,500	470
2028	140	31,500	38,500	70,000	500
Selected Planning Forecast					
2013	105	18,800	28,100	46,900	447
2018	118	22,600	31,300	53,900	457
2028	140	29,700	36,400	66,100	472

Source: Based Aircraft - Airport records, FAA TAF, ADOT-Aeronautics Airport Capital Improvement Program; Historical Operations - FAA TAF; Coffman Associates analysis

The FAA projects an increase in aircraft utilization and the number of general aviation hours flown nationally. This trend, along with projected growth in based aircraft, supports future growth in annual operations at Payson Airport. The selected planning forecast for the airport projects the number of operations per based aircraft to gradually increase through the planning period. The selected mid-range forecast results in 66,100 annual general aviation operations by 2028. This is an average annual

growth rate of 2.4 percent. Local operations are projected to increase to approximately 45 percent of total general aviation operations as the number of flight training activities at the airport grows. **Exhibit 2C** depicts the general aviation operations forecasts.

Air Taxi Operations

As previously mentioned, air taxi refers to those operators that are certified in accordance with 14 CFR Part 135 and are authorized to provide on-demand public transportation of persons and property by aircraft. Typically, air taxi operators are operating as a charter service or under a fractional ownership program.

In the post-9/11 environment, many executives have opted to use private jets for their travel needs. Fractional ownership programs were well positioned to meet this growing demand. There are a number of companies, including Citation Shares, NetJets, Bombardier FlexJet, and Flight Options, which provide this service. Companies or individuals are able to purchase partial ownership, typically one-sixteenth or one-eighth of an aircraft. This gives them a certain allotment of time to use an aircraft in the fractional ownership fleet.

Analysis of air taxi operators can have a significant impact on the needs of an airport. Fractional ownership companies utilize business jets almost exclusively. Many of these aircraft are large business jets. As larger business jets increasingly utilize the airport, the necessary design standards for the airport may change. Charter operators use a variety of piston, turboprop, and on occasion, jet aircraft. The type of aircraft using the airport will be a critical element for the airport to prepare for in the future.

As mentioned earlier, an entire new category of VLJs are entering the general aviation market. A number of companies are proceeding with business plans to offer on-demand air taxi service utilizing these types of aircraft. The VLJs are relatively inexpensive compared to larger cabin class business jets, and they will have access to more airports as the required runway length is much less. Payson Airport is well positioned to attract operations by VLJs with adequate runway length and forecasted growth in business opportunities in the airport service area.

As presented in **Table 2P**, air taxi operations accounted for approximately 1,700 annual operations in 2007 according to the FAA TAF. For planning purposes, an increasing trend of 3.5 percent per year will be applied to operations forecasts for air taxi operations. This yields approximately 3,500 operations by 2028.

TABLE 2P
Air Taxi Operations Forecast
Payson Airport

Year	Air Taxi Operations
2007	1,700
2013	2,100
2018	2,500
2028	3,500

Source: FAA TAF; Coffman Associates analysis

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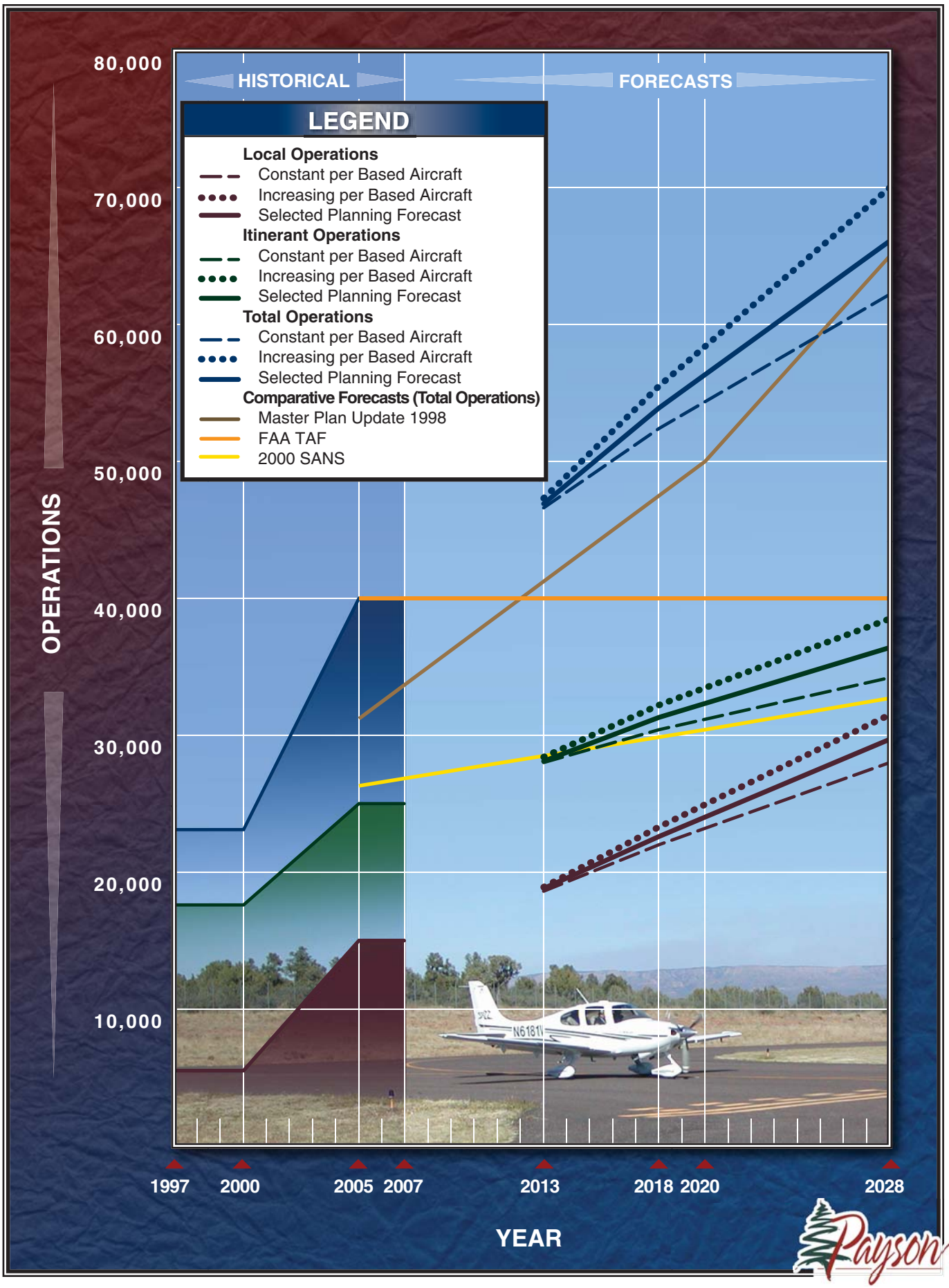


Exhibit 2C
GENERAL AVIATION
OPERATIONS FORECAST

Military Operations

Military activity accounts for the smallest portion of operational traffic at Payson Airport. Since 2005, military operations have accounted for 100 annual itinerant operations according to the FAA TAF. There have been no local military operations. Due to the unpredictable nature of military operations, a constant of 100 total operations annually will be utilized in forecasting. This is consistent with typical industry practices for projecting military operations.

PEAKING CHARACTERISTICS

Many airport facility needs are related to the levels of activity during peak periods (busy times). The periods used in developing facility requirements for this study are as follows:

- **Peak Month** – The calendar month when peak aircraft operations occur.
- **Design Day** – The average day in the peak month. This indicator is derived by dividing the peak month operations by the number of days in the month.
- **Busy Day** – The busy day of a typical week in the peak month.
- **Design Hour** – The peak hour within the design day.

Without an ATCT, adequate operational information is not available to directly determine peak operational activity at the airport. Therefore, peak period forecasts have been determined according to trends experienced at similar airports and by examining the operational counts completed at the airport in 2007.

Typically, the peak month for activity at general aviation airports approximates 10 to 15 percent of the airport's annual operations. For planning purposes, peak month operations have been estimated at 12 percent of annual operations at Payson Airport. The design day operations were calculated by dividing the peak month by 30. The design day is primarily used in airfield capacity calculations.

The busy day provides information for use in determining aircraft parking apron requirements. The busiest day of each week accounts for approximately 18 percent of weekly operations. Thus, to determine the typical busy day, the design day is multiplied by 1.25, which represents approximately 18 percent of the days in a week. Design hour operations were determined at 15 percent of the design day operations. **Table 2Q** summarizes peak general aviation operations forecasts for the airport.

TABLE 2Q Peak Period Forecasts Payson Airport	2007	2013	2018	2028
Annual Operations	41,800	49,100	56,500	69,700
Peak Month	5,016	5,892	6,780	8,364
Design Day	167	196	226	279
Busy Day	209	245	282	349
Design Hour	25	29	34	42
Source: Coffman Associates analysis				

ANNUAL INSTRUMENT APPROACHES

An instrument approach, as defined by the FAA, is "an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." To qualify as an instrument approach at Payson Airport, aircraft must land at the airport after following the published instrument approach procedure and then properly close their flight plan on the ground. The approach must be conducted in weather conditions which necessitate the use of the instrument approach. If the flight plan is closed prior to landing, then the instrument approach is not counted in the records. It should be noted that practice or training approaches do not count as annual AIAs.

The increased availability of low-cost navigational equipment could allow smaller and less sophisticated aircraft to utilize instrument approaches. National trends indicate an increasing percentage of approaches given the greater availability of approaches at airports with GPS and the availability of more cost-effective equipment.

Typically, AIAs for airports with available instrument approaches utilized by advanced aircraft will average between one and two percent of itinerant operations. In the Payson area, weather conditions rarely necessitate an instrument approach. In environments similar to the Payson area, five-tenths of one percent of itinerant operations has been utilized to estimate potential future instrument approaches. A forecast utilizing this percentage is shown on **Exhibit 2D**.

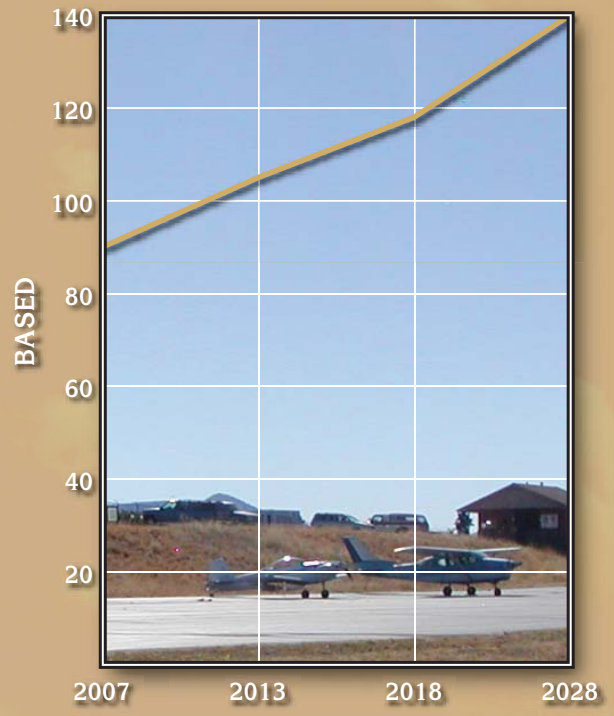
SUMMARY

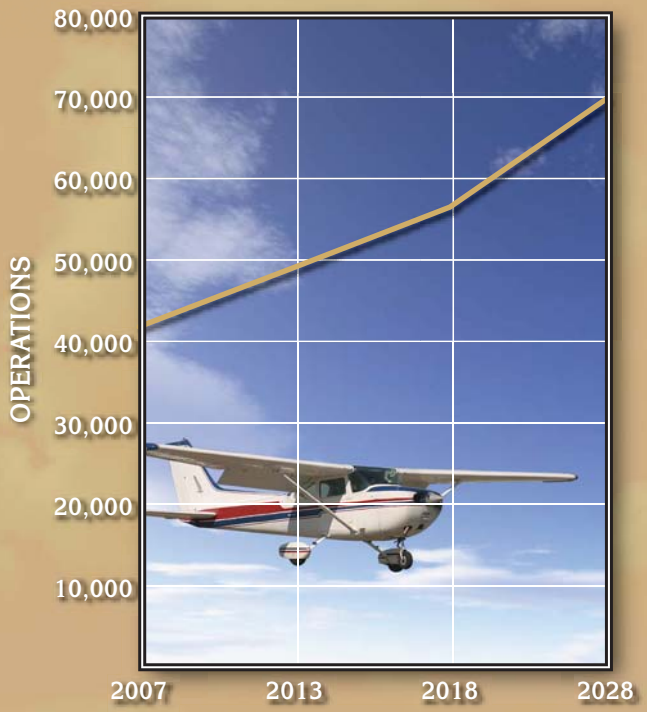
This chapter has provided demand-based forecasts of aviation activity at Payson Airport over the next 20 years. Elements such as local socioeconomic indicators, anticipated area development, and historical aviation data, as well as national aviation trends were all considered when determining future conditions.

The next step in this study will be to assess the capacity of existing facilities, their ability to meet forecast demand, and to identify changes to the airfield and/or landside facilities which will create a more functional aviation facility. A summary of aviation forecasts is depicted on **Exhibit 2D**.

05MP18-2D-01/28/08

BASED AIRCRAFT FORECAST	2007	2013	2018	2028
Single Engine	84	94	103	120
Multi-Engine	6	7	8	9
Turboprop	0	2	3	4
Jet	0	1	2	4
Helicopter	0	1	2	3
Total Based Aircraft	**90**	**105**	**118**	**140**
On-Airport Based Aircraft	60	70	79	95
Off-Airport Based Aircraft	30	35	39	45
ANNUAL OPERATIONS FORECAST				
Itinerant				
General Aviation	25,000	28,100	31,300	36,400
Air Taxi	1,700	2,100	2,500	3,500
Military	100	100	100	100
Total Itinerant	**26,800**	**30,300**	**33,900**	**40,000**
Local				
General Aviation	15,000	18,800	22,600	29,700
Total Local	**15,000**	**18,800**	**22,600**	**29,700**
Total Operations	***41,800***	***49,100***	***56,500***	***69,700***
PEAK OPERATIONS				
Peak Month	5,016	5,892	6,780	8,364
Design Day	167	196	226	279
Busy Day	209	245	282	349
Design Hour	25	29	34	42
ANNUAL INSTRUMENT APPROACHES				
Airport Total		152	170	200





Payson

Exhibit 2D
FORECAST SUMMARY

Chapter Three

AIRPORT FACILITY REQUIREMENTS

Airport Facility Requirements

Payson Airport

To properly plan for the future of Payson Airport, it is necessary to translate forecast aviation demand into the specific types and quantities of facilities that can adequately serve this identified demand. This chapter uses the results of the forecasts conducted in Chapter Two, as well as established planning criteria, to determine the airfield (i.e., runways, taxiways, navigational aids, marking and lighting) and landside (i.e., terminal building, hangars, aircraft parking apron, and automobile parking) facility requirements.

The objective of this effort is to identify, in general terms, the adequacy of the existing airport facilities and outline what new facilities may be needed and when they may be needed to accommodate forecast demands. Having established these facility requirements, alternatives for providing these facilities will be evaluated in Chapter Four to determine the most cost-effective and efficient means for implementation.

PLANNING HORIZONS

The cost-effective, efficient, and orderly development of an airport should rely more upon actual demand at an airport than on a time-based forecast figure. In order to develop a Master Plan that is demand-based rather than time-based, a series of planning horizon milestones has been established for Payson Airport that take into consideration the reasonable range of aviation demand projections prepared in Chapter Two.

It is important to consider that the actual activity at the airport may be higher or lower than projected activity levels. By planning according to activity milestones, the resulting plan can accommodate unexpected shifts, or changes, in the area's aviation demand. It is important that the plan accommodates these changes so that airport personnel can respond to unexpected changes in a timely fashion. These milestones provide flexibility, while potentially extending this plan's useful life if aviation trends slow over time.

The most important reason for utilizing milestones is that they allow the airport to develop facilities according to need generated by actual demand levels. The demand-based schedule provides flexibility in development, as development schedules can be slowed or expedited according to actual demand at any given time over the planning period. The resulting plan provides airport officials with a financially responsible, need-based program. **Table 3A** presents the planning horizon milestones for each aircraft activity category. The planning milestones of short, intermediate, and long term generally correlate to the five, ten, and 20-year periods used in the previous chapter.

TABLE 3A
Planning Horizon Activity Levels
Payson Airport

	2007	Short Term	Intermediate Term	Long Term
Itinerant Operations				
General Aviation	25,000	28,100	31,300	36,400
Air Taxi	1,700	2,100	2,500	3,500
Military	100	100	100	100
Total Itinerant Operations	26,800	30,300	33,900	40,000
Local Operations				
General Aviation	15,000	18,800	22,600	29,700
Total Local Operations	15,000	18,800	22,600	29,700
TOTAL OPERATIONS	**41,800**	**49,100**	**56,500**	**69,700**
TOTAL BASED AIRCRAFT	**90**	**105**	**118**	**140**

In this chapter, existing components of the airport are evaluated so that the capacities of the overall system are identified. Once identified, the existing capacity is compared to the planning horizon milestones to determine where deficiencies currently exist or may be expected to materialize in the future. Once deficiencies in a component are identified, a more specific determination of the approximate sizing and timing of the new facilities can be made.

RUNWAY SAFETY ACTION PLAN

The FAA has always placed a high importance on airfield safety. Several programs have been established to improve safety of ground movements

to prevent aircraft incidents. The Runway Safety Action Team (RSAT) has previously met with airport personnel to determine ways to improve airfield safety and operations. The following recommendations have been made by the RSAT:

- Develop an access control plan to limit non-essential vehicle and pedestrian traffic on the runway and taxiways and users of the ramps and hangars

- Construct a service road on the south side of the airport to eliminate the use of the parallel taxiway as a road by off-field fuel delivery trucks and other vehicular traffic

- Correct pavement edge drop-offs and other safety area drainage and erosion issues adjacent to the runway system

- Develop an airport signage and marking system

- Implement the use of runway edge markings

- Implement the use of taxiway edge reflectors

- Construct a run-up/hold apron to accommodate aircraft that are preparing for takeoff and conducting maintenance run-ups

- Develop a driver-training program

The following sections regarding airfield and landside requirements further detail some of the recommendations made by the RSAT.

AIRFIELD REQUIREMENTS

Airfield requirements include the need for those facilities related to the arrival and departure of aircraft. The adequacy of existing airfield facilities at Payson Airport has been analyzed from a number of perspectives, including:

- Airfield Design Standards
- Airfield Capacity
- Runways
- Safety Area Design Standards
- Taxiways
- Navigational Aids and Instrument Approaches
- Airfield Lighting, Marking, and Signage
- Air Traffic Control

AIRFIELD DESIGN STANDARDS

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or expected to use the airport. The critical design aircraft is defined as the most demanding category of aircraft, or family of aircraft, which conducts at least 500 operations per year at the airport. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These future standards must be considered now to ensure that short term development does not preclude the long range potential needs of the airport.

The FAA has established a coding system to relate airport design criteria to the operational and physical characteristics of aircraft expected to use the airport. This airport reference code (ARC) has two components. The first component, depicted by a letter, is the aircraft approach category and relates to aircraft approach speed (operational characteristic); the second component, depicted by a Roman numeral, is the airplane design group and relates to the aircraft wingspan or tail height (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities. **Exhibit 3A** depicts typical aircraft within each ARC.

According to FAA Advisory Circular (AC) 150/5300-13, Change 11, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon either the aircraft's wingspan or tail height, whichever is greater. For example, an aircraft may fall in ADG II for wingspan at 70 feet, but ADG III for tail height at 33 feet. Following FAA standards, this aircraft would be classified under ADG III as the tail height falls within a higher ADG. The six ADGs used in airport planning are as follows:

Airplane Design Group	Tail Height (feet)	Wingspan (feet)
I	Less than 20	Less than 49
II	Greater than 20, but less than 30	Greater than 49, but less than 79
III	Greater than 30, but less than 45	Greater than 79, but less than 118
IV	Greater than 45, but less than 60	Greater than 118, but less than 171
V	Greater than 60, but less than 66	Greater than 171, but less than 214
VI	Greater than 66, but less than 80	Greater than 214, but less than 262

Source: AC 150/5300-13, Change 11

In order to determine airfield design requirements, the critical aircraft and critical ARC should first be determined and then appropriate airport design criteria can be applied. This begins with a review of aircraft currently using the airport and those expected to use the airport through the planning period.

05MP18-3A-01/29/08

A-I

- Beech Baron 55
- Beech Bonanza
- Cessna 150
- Cessna 172
- Cessna Citation Mustang
- **Eclipse 500**
- Piper Archer
- Piper Seneca

B-I *less than 12,500 lbs.*

- Beech Baron 58
- Beech King Air 100
- Cessna 402
- **Cessna 421**
- Piper Navajo
- Piper Cheyenne
- Swearingen Metroliner
- Cessna Citation I

B-II *less than 12,500 lbs.*

- **Super King Air 200**
- Cessna 441
- DHC Twin Otter

B-I, B-II *over 12,500 lbs*

- Super King Air 300
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation II**, III, IV, V
- Saab 340
- Embraer 120

A-III, B-III

- DHC Dash 7
- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 72
- ATP

C-I, D-I

- Beech 400
- **Lear** 25, 31, **35**, 45, 55, 60
- Israeli Westwind
- HS 125-400, 700

C-II, D-II

- Cessna Citation III, VI, VIII, X
- **Gulfstream** II, III, **IV**
- Canadair 600
- ERJ-135, 140, 145
- CRJ-200, 700, 900
- Embraer Regional Jet
- Lockheed JetStar
- Super King Air 350

C-III, D-III

- ERJ-170, 190
- Boeing Business Jet
- B 727-200
- **B 737-300 Series**
- MD-80, DC-9
- Fokker 70, 100
- A319, A320
- Gulfstream V
- Global Express

C-IV, D-IV

- **B-757**
- B-767
- C-130
- DC-8-70
- DC-10
- MD-11
- L1011

D-V

- **B-747** Series
- B-777

Note: Aircraft pictured is identified in bold type.

Payson

Exhibit 3A
AIRPORT REFERENCE CODES

Critical Aircraft

General aviation aircraft conduct an overwhelming majority of operations at Payson Airport. General aviation aircraft using the airport include a variety of small single and multi-engine piston-powered aircraft, turboprops, and jet aircraft. While the airport is also used by a number of helicopters, they are not included in this determination as they are not assigned an ARC.

The majority of the based aircraft (93 percent) are single-engine piston-powered aircraft which fall within approach category A and ADG I. There are also six multi-engine piston aircraft based at the airport that fall into approach categories A and B and ADG I. Representative based aircraft include single and multi-engine Cessna and Beechcraft aircraft to include the Cessna 182, Beechcraft Bonanza, and Beechcraft Baron, although numerous other aircraft makes and models are based at the airport. Before making a final determination of the critical aircraft family, an examination of the transient aircraft using the airport should also be considered.

Due to the wider wingspans, taller tail heights, and higher approach speeds; the most demanding aircraft to operate at the airport are transient turboprop and jet aircraft. In order to discern the number and type of turboprop and jet operations at Payson Airport, data was obtained from the subscription service, *Airport IQ*. Data available through this service includes documentation of flight plans that are opened and closed on the ground at the airport. From these records, approximately 118 combined operations by turboprop and jet aircraft in ARCs B-I, B-II, and C-I were conducted at Payson Airport in 2007. The ARC B-II classification included the King Air 200 and 300 and Cessna 525, 550, and 560 models. The lone ARC C-I aircraft that was reported at the airport was a Lear 31.

As previously mentioned in Chapter One, the U.S. Forest Service conducts operations at Payson Airport during the fire season. Aircraft including Ag Tractors, small King Airs, and helicopters utilize the airport frequently during this time. These aircraft are categorized in ARC A-I and B-I.

Critical Aircraft Design Conclusion

Payson Airport is currently utilized by all types of general aviation aircraft ranging from small single engine piston aircraft to the occasional turboprop and business jet aircraft. Turboprop and jet aircraft in ARCs B-II and C-I are the most demanding aircraft to utilize the airport in terms of approach speeds and wingspans; however, they currently use the airport on an infrequent basis and do not conduct at least 500 annual operations that the FAA considers to define the critical aircraft.

Given these considerations, the current critical aircraft at Payson Airport falls into ARC B-I design criteria. FAA guidelines make a distinction in the B-I ARC for aircraft over 12,500 pounds and those aircraft below

12,500 pounds. For Payson Airport, the majority of based aircraft within ARC A-I and B-I are less than 12,500 pounds. Therefore, the ARC that best describes the aircraft fleet at the airport is ARC B-I, small aircraft exclusively. Considering the based aircraft fleet mix forecasts as well as the future transient aircraft mix including a larger percentage of corporate and business turboprop and jet aircraft use at the airport, ultimate planning should conform to ARC B-II design standards.

The airfield facility requirements outlined in this chapter correspond to the design standards described in FAA AC 150/5300-13, Change 11, *Airport Design*. The following airfield facilities are outlined to describe the scope of facilities that would be necessary to accommodate the airport's role throughout the planning period.

AIRFIELD CAPACITY

A demand/capacity analysis measures the capacity of the airfield facilities (i.e., runways and taxiways) in order to identify a plan for additional development needs. The capacity of the airfield is affected by several factors including airfield layout, meteorological conditions, aircraft mix, runway use, aircraft arrivals, aircraft touch-and-go activity, and exit taxiway locations. An airport's airfield capacity is expressed in terms of its annual service volume (ASV). ASV is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year with limited levels of delay.

In accordance with FAA guidelines specified in FAA AC 150/5060-5, *Airport Capacity and Delay*, the ASV of a single runway configuration comparable to Payson Airport can provide up to 230,000 annual operations. FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), indicates that improvements should be considered when operations reach 60 percent of the airfield's ASV. As the forecasts for the airport indicate that activity through the planning horizon will remain well below 230,000 annual operations, the capacity of the existing airfield (runway) system will not be reached and the existing single runway configuration can meet operational demands. Thus, additional airfield capacity enhancements are not required.

RUNWAYS

The adequacy of the existing runway system at Payson Airport has been analyzed from a number of perspectives, including orientation, length, width, pavement strength, and FAA safety standards. From this information, requirements for runway improvements were determined for the airport.

Runway Orientation

The airport is served by a single runway system. Runway 6-24 is orientated in a northeast/southwest manner. For the operational safety and efficiency of an airport, it is desirable for the runway to be orientated as

close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off (defined as a crosswind).

FAA AC 150/5300-13, Change 11, *Airport Design*, recommends that a crosswind runway should be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind components. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; 16 knots (18 mph) for ARC C-I through D-II; and 20 knots for ARC A-IV through D-VI.

Exhibit 3B depicts the airport wind rose using wind data collected from 2003 through April 2009. Based upon this wind data, Runway 6-24 provides 99.54 percent wind coverage for 10.5 knot crosswinds, 99.82 percent at 13 knots, 99.99 percent at 16 knots, and 100.00 percent at 20 knots. Runway 6-24 exceeds the 95 percent wind coverage component. The analysis indicates that the existing runway provides adequate crosswind coverage for all aircraft.

Runway Length

The determination of runway length requirements for the airport is based on five primary factors:

- Critical aircraft type expected to use the airport.
- Stage length of the longest non-stop trip destination.
- Mean maximum daily temperature of the hottest month.
- Runway gradient.
- Airport elevation.

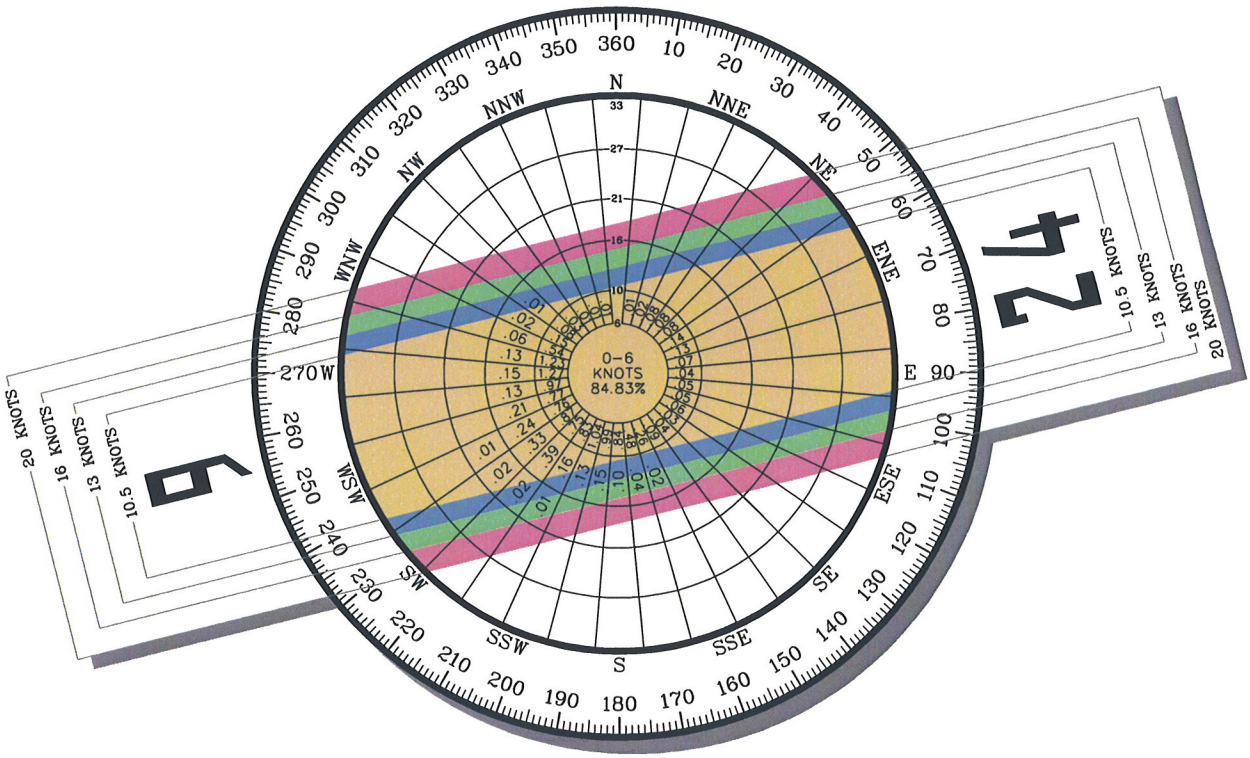
Aircraft performance declines as elevation, temperature, and runway gradient factors increase. For calculating runway length requirements at Payson Airport, the mean maximum daily temperature of the hottest month is 93 degrees Fahrenheit (F), the airport elevation is 5,157 feet above mean sea level (MSL), and the runway end elevation difference for Runway 6-24 is 18.4 feet. Runway 6-24 has a longitudinal gradient of 0.3 percent, which conforms to FAA design standards. For aircraft in approach categories A and B, the runway longitudinal gradient cannot exceed two percent.

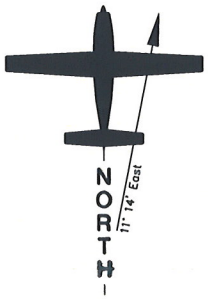
FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidelines to determine runway lengths for civil airports. **Table 3B** outlines the runway length requirements for various classifications of aircraft that operate at Payson Airport utilizing the methodology of this AC. As with other design criteria, runway length requirements are based upon the critical design aircraft or grouping of aircraft making regular use of the airport (at least 500 annual operations).

05MP18-3B-05/04/09

ALL WEATHER WIND COVERAGE

Runway	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 6-24	*99.54%*	*99.82%*	*99.99%*	*100.00%*





Magnetic Variance
11° 14' East (January 2008)
Annual Rate of Change
00° 06' West (January 2008)

SOURCE:
Arizona Meteorological Network
The University of Arizona
Tucson, Arizona
Payson Airport (PAN)
Payson, Arizona

OBSERVATIONS:
47,712 All Weather Observations
11/2003-4/2009

Payson

Exhibit 3B
ALL WEATHER WIND ROSE

TABLE 3B Runway Length Requirements Payson Airport	
Airport and Runway Data	
Airport elevation	5,157 feet
Mean daily maximum temperature of the hottest month	93 degrees F
Maximum difference in runway centerline elevation	18 feet
Runway Length Recommended for Airport Design	
Small airplanes with less than 10 passenger seats:	
75 percent of these small airplanes	4,800 feet
95 percent of these small airplanes	6,500 feet
100 percent of these small airplanes	6,600 feet
Small airplanes with 10 or more passenger seats	6,600 feet

Source: FAA Airport Design Computer Program utilizing Chapter Two of AC 150/5325-4B, *Runway Length Requirements for Airport Design*

Currently, Runway 6-24's length of 5,500 feet exceeds the requirements for 75 percent of small aircraft with less than ten seats. For the majority of aircraft presently using the airport, this existing runway length is adequate. In order to safely accommodate larger piston-engine, turboprop, and business jet aircraft within ARC B-II (100 percent of small airplanes with less than ten seats), future planning should consider providing a runway length of up to 6,600 feet.

Several aircraft which currently utilize the airport on an infrequent basis require runway lengths longer than 5,500 feet. The Cessna 550 and 560 require runway lengths of at least 6,000 feet. Many of these aircraft will be capable of operating at the airport throughout most of the year, but will be weight restricted during hot weather days. Weight restrictions can include taking less fuel and making an additional stop along the intended route, boarding fewer passengers, or taking less cargo.

While an additional 1,100 feet of runway length would better serve the full-range of aircraft expected to serve the airport, it is improbable that an additional 1,100 feet can be accommodated at the airport. Physical constraints restrict any extension to the east, and development within Sky Park Industrial Park and Mazatzal Mountain Residential Airpark will limit an extension to the west. Analysis in the next chapter will examine potential runway extensions that could be achieved.

Runway Width

Runway 6-24 is currently 75 feet wide. FAA design standards call for a runway width of 75 feet to serve aircraft through ARC B-II; therefore, Runway 6-24 currently meets FAA criteria for

runway width. This width should be maintained throughout the planning period.

Runway Strength

The officially published pavement strength for Runway 6-24 is currently 40,000 pounds single wheel loading (SWL), 50,000 pounds dual wheel loading (DWL), and 100,000 pounds dual tandem wheel loading (DTWL). It should be noted that the pavement strength rating is not the maximum weight limit. Aircraft weighing more than the certified strength can operate on the runway on an infrequent basis. However, heavy aircraft operations can shorten the life span of airport pavements. The existing pavement strength on Runway 6-24 will adequately serve future aircraft operations.

Runway/Taxiway Separation

FAA AC 150/5300-13, Change 11, *Airport Design*, also discusses separation distances between aircraft and various areas on the airport. The separation distances are a function of the approaches approved for the airport and the runway's designated ARC. For ARC B-I (small aircraft exclusively) with approaches not lower than three-quarters of a mile, parallel taxiways need to be at least 150 feet from the runway centerline. Currently, parallel Taxiway A at Payson Airport is located 150 feet from the Runway 6-24 centerline and meets this criterion. For ARC B-II with approaches not lower than three-quarters of a mile, the runway to parallel taxiway separation is 240 feet.

The existing runway to parallel taxiway separation does not meet the ultimate design standards called for in this analysis. As a result, further evaluation in Chapter Four will study different alternatives for meeting the design standard for adequate separation.

SAFETY AREA DESIGN STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the runway safety area (RSA), object free area (OFA), obstacle free area (OFZ), and runway protection zone (RPZ). The dimensions of these safety areas are dependent upon the critical aircraft and thus, the ARC of the runway. The current critical aircraft family is ARC B-I (small aircraft exclusively), as previously determined. Ultimate planning will examine the criteria necessary if ARC B-II were to become the critical aircraft.

Runway Safety Area (RSA)

The RSA is defined in FAA Advisory Circular 150/5300-13, Change 11, *Airport Design*, as a "surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." The RSA is centered on the

runway, dimensioned in accordance to the approach speed of the critical aircraft using the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and fire and rescue vehicles, and free of obstacles not fixed by navigational purpose.

The FAA has placed a higher significance on maintaining adequate RSAs at all airports due to recent aircraft accidents. Under Order 5200.8, effective October 1, 1999, the FAA established a *Runway Safety Area Program*. The Order states, "The objective of the Runway Safety Area Program is that all RSAs at federally-obligated airports … shall conform to the standards contained in Advisory Circular 150/5300-13, *Airport Design*, to the extent practicable." Each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSA for each runway at the airport and perform airport inspections.

For ARC B-I runways with not lower than three-quarters of a mile approach minimums, the FAA calls for the RSA to be 120 feet wide and extend 240 feet beyond the runway ends. Analysis in the previous section indicated that Runway 6-24 should be planned to accommodate aircraft up to and including ARC B-II. The RSA for ARC B-II aircraft is 150 feet wide and extends 300 feet beyond each runway end.

The majority of the existing RSA conforms to current standards; however, the eastern portion adjacent to the Runway 24 threshold may be obstructed by trees and surface grading variations. Alternative analysis must consider providing adequate RSA, while also providing for additional runway length.

Object Free Area (OFA)

The runway OFA is "a two-dimensional ground area, surrounding runways, taxiways, and taxilanes, which is clear of objects except for objects whose location is fixed by function (i.e., airfield lighting)." The OFA is centered on the runway, extending out in accordance to the critical aircraft design category utilizing the runway.

For ARC B-I (small aircraft exclusively) and approaches not lower than three-quarters of a mile, the FAA calls for the OFA to be 250 feet wide (centered on the runway), extending 240 feet beyond each runway end. In order to meet design criteria for the future critical aircraft (ARC B-II), the OFA would require a cleared area 500 feet wide, extending 300 feet beyond each runway end.

Similar to the RSA, the eastern portion of the OFA on Runway 6-24 appears to be obstructed by trees. It should be noted that in some cases, the terrain encompassing the OFA may fall significantly below the RSA elevation. In those cases, objects can be in the OFA as long as they do not rise above the elevation of the RSA at any given lateral position.

Obstacle Free Zone (OFZ)

The OFZ is an imaginary surface which precludes object penetrations,

including taxiing and parked aircraft. The only allowance for OFZ obstructions is navigational aids mounted on frangible bases which are fixed in their location by function, such as airfield signs. The OFZ is established to ensure the safety of aircraft operations. If the OFZ is obstructed, the airport's approaches could be removed or approach minimums could be increased.

FAA criterion requires the OFZ to extend 200 feet beyond the runway ends by 250 feet wide (125 feet on either side of the runway centerline) for runways utilized by small aircraft exclusively. The ultimate OFZ should be planned for 400 feet wide and extending 200 feet beyond each runway end in order to accommodate ARC B-II design standards. Currently, there appear to be no OFZ obstructions at Payson Airport. More detailed topographic information will be used in the following chapter to determine potential obstructions to the RSA, OFA, and OFZ.

Runway Protection Zone (RPZ)

The RPZ is a trapezoidal area centered on the runway, typically beginning 200 feet beyond the runway end. The RPZ has been established by the FAA to provide an area clear of obstructions and incompatible land uses in order to enhance the protection of approaching aircraft, as well as people and property on the ground. The dimensions of the RPZ vary according to the visibility requirements serving the runway and the type of aircraft operating on the runway.

The lowest existing visibility minimum for approaches to the runway at Payson Airport is one mile. RPZ dimensions for ARC B-I (small aircraft exclusively) call for a 250-foot inner width, extending outward 1,000 feet to a 450-foot outer width. In order to meet ARC B-II design standards, the RPZ will need to have an inner width of 500 feet, extending outward 1,000 feet to an outer width of 700 feet.

The FAA does not necessarily require the fee simple acquisition (outright property purchase) of the RPZ area, but recommends that airports maintain positive control over development within the RPZ. It is preferred that the airport own the property through fee simple acquisition; however, avigation easements (acquiring control of designated airspace within the RPZ) can be pursued if fee simple purchase is not possible. It should be noted, however, that avigation easements can cost nearly as much as the underlying land value and may not fully prohibit incompatible land uses from the RPZ. Also, the area encompassed by the RPZ envelops a portion of the required RSA and OFA, all of which would be required for purchase.

Currently, the airport owns the majority of the RPZ associated with Runway 6. A small portion extends farther west off airport property into areas of Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. A large majority of the Runway 24 RPZ is located outside of airport property over areas of undeveloped land within the Town of Payson.

TAXIWAYS

Taxiways are constructed primarily to facilitate aircraft movements to and from the runway system. Some taxiways are necessary simply to provide access between the aprons and runways, whereas other taxiways become necessary as activity increases at an airport to provide safe and efficient use of the airfield.

As detailed in Chapter One, the taxiway system at Payson Airport consists of a full-length parallel taxiway and four entrance/exit taxiways serving Runway 6-24. Parallel Taxiway A is 150 feet from Runway 6-24. In order to meet ultimate ARC B-II design standards for approaches with not lower than three-quarters of a mile visibility minimums, Taxiway A needs to be located at least 240 feet from the runway centerline.

Exit taxiways provide a means to enter and exit the runway at various points on the airfield. The type and number of exit taxiways can have a direct impact on the capacity and efficiency of the airport as a whole. While the number of runway exits for current activity levels and aircraft mix is sufficient, additional exits placed between the midfield taxiway and each runway end would improve airfield efficiency. These additional taxiway exits would allow aircraft to exit the runway without having to taxi to the runway end. Exit taxiways are most effective when planned at least 750 feet apart. The possibility of constructing additional taxiways will be studied in the next chapter.

ADG II standards call for taxiways to be 35 feet wide. Parallel Taxiway A is 35 feet wide and meets this standard. Three of the four entrance/exit taxiways are 80 feet wide and exceed the design standard for ADG II. The midfield taxiway is currently 30 feet wide. With the exception of the midfield taxiway which should be planned for a width of 35 feet, all other taxiways on the airfield should be maintained through the planning period.

Holding aprons can also improve the efficiency of the taxiway system. Currently, there are no holding aprons located on the airfield. Holding aprons at each end of Runway 6-24 should be planned during the planning period. Locations for these holding aprons will be discussed further in the next chapter.

Exhibit 3C details runway and taxiway needs through the planning period.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACHES

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies which properly equipped aircraft and pilots translate into point-to-point guidance and position information. The global positioning system (GPS), very high frequency omnidirectional range (VOR), and LORAN-C are available for pilots to navigate to and from Payson Airport. These systems are sufficient for navigation to and

05MP18-3C-01/29/08

RUNWAY

EXISTING	SHORT TERM NEED	LONG TERM NEED
Runway 6-24		
ARC B-I (small aircraft exclusively) 1-mile visibility minimums (circling) 5,500' x 75' 40,000 lbs. SWL / 50,000 lbs. DWL / 100,000 lbs. DTWL	Same Straight in Approach Same Same	ARC B-II Same Up to 6,600' x 75' Same
Runway Safety Area (RSA)		
60' each side of runway centerline 240' prior to landing threshold 240' beyond each runway end	Same Same Same	75' each side of runway centerline 300' prior to landing threshold 300' beyond each runway end
Object Free Area (OFA)		
125' each side of runway centerline 240' beyond each runway end	Same Same	250' each side of runway centerline 300' beyond each runway end
Obstacle Free Zone (OFZ)		
125' each side of runway centerline 200' beyond each runway end	Same Same	200' each side of runway centerline Same
Runway Protection Zone (RPZ) - Runway 6-24		
Inner Width - 250' Outer Width - 450' Length - 1,000'	Same Same Same	Inner Width - 500' Outer Width - 700' Length - 1,000'

TAXIWAYS

EXISTING	SHORT TERM NEED	LONG TERM NEED
Runway 6-24		
Full length parallel Taxiway A Four connecting taxiways All taxiways at least 35' wide except one Parallel taxiway 150' from runway centerline	Same Two additional connecting taxiways Same Same Hold apron at each end of Taxiway A	Same Same All taxiways to at least 35' wide Parallel taxiway 240' from runway centerline Same

HELIPAD

EXISTING	SHORT TERM NEED	LONG TERM NEED
One Lighted Helipad	Same Helicopter Hardstand	Same Same

SWL - Single Wheel Loading DWL - Dual Wheel Loading DTWL - Dual Tandem Wheel Loading

Exhibit 3C
AIRCRAFT OPERATIONAL AREA REQUIREMENTS

from the airport; therefore, no other navigational aids are planned.

Instrument Approach Procedures

Instrument approach procedures (IAPs) are a series of predetermined maneuvers established by the FAA using electronic navigational aids that assist pilots in locating and landing at an airport during times of low visibility and/or cloud ceiling conditions. At Payson Airport, there is a circling RNAV (GPS)-A approach to the airport. This approach allows aircraft to land at the airport when visibility is as low as one mile and cloud ceilings are as low as 563 feet above ground level (AGL) for aircraft with approach speeds less than 121 knots. For higher approach speeds, the visibility and cloud ceiling minimums increase to as much as two miles and 603 feet AGL, respectively.

A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the continued development of the Wide Area Augmentation System (WAAS), which was initially launched in 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. Where the non-WAAS GPS signal provides for enroute navigation and limited instrument approach (lateral navigation) capabilities, WAAS provides for approaches with both course and vertical navigation. This capability was historically only provided by an instrument landing system (ILS), which requires extensive on-airport facilities. The WAAS upgrades are can allow for the development of approaches to most airports with cloud ceilings as low as 200 feet above the ground and visibilities restricted to one-half mile.

The GPS-WAAS would allow for lower approach minimums at the airport and could be an option in the future for improved approach procedures. Ultimate planning will consider the implementation of a straight-in instrument approach to each end of Runway 6-24 and improved cloud ceiling and visibility minimums. As previously discussed, current visibility minimums for Category A and B aircraft are not lower than one mile. It should be noted that any approach providing less than one mile visibility minimums will require the installation of an approach lighting system (ALS). The possibility of implementing an ALS may be difficult considering the physical constraints beyond each end of the runway at Payson Airport. Further evaluation of improved IAPs will be studied in the next chapter.

Weather Reporting Aids

Payson Airport has a lighted wind cone and segmented circle as well as three supplemental lighted wind cones. The wind cones provide information to pilots regarding wind conditions, such as direction and speed. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to

pilots. These should be maintained throughout the planning period.

The airport is equipped with an Automated Weather Observation System III (AWOS-III) which provides automated weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The AWOS-III reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting, and density altitude. This system should be maintained through the planning period.

The AWOS system at Payson Airport is currently not linked to the National Weather Service. As a result, up-to-date weather information that is important to aircraft operations is unavailable to weather stations for purposes of disseminating this information to pilots utilizing the airport environment. In order to provide more accurate and timely weather information, consideration should be given to linking the AWOS-III to the National Weather Service reporting system.

AIRFIELD LIGHTING, MARKING, AND SIGNAGE

There are a number of lighting and pavement marking aids serving pilots using the Payson Airport. These aids assist pilots in locating the airport and runway at night or in poor visibility conditions. They also assist in the ground movement of aircraft.

Aircraft Identification Lighting

The location of the airport at night is universally indicated by a rotating beacon. For civil airports, a rotating beacon projects two beams of light, one white and one green, 180 degrees apart. At Payson Airport, the rotating beacon is located directly southwest of the restaurant and approximately 400 feet from the runway centerline. The beacon is sufficient and should be maintained through the planning period.

Runway and Taxiway Lighting

Runway identification lighting provides the pilot with a rapid and positive identification of the runway and its alignment. Runway 6-24 is equipped with medium intensity runway lights (MIRL). This system should be maintained through the planning period.

Medium intensity taxiway lighting (MITL) is provided on all entrance/exit taxiways leading to Runway 6-24. During the course of the planning period, MITL should be applied to all taxiways. This includes Taxiway A, Taxiway B, and any future taxiways.

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic vis-

ual approach aids are commonly provided at airports. Precision approach path indicators (PAPIs) are commonly found to the side of the runway. These systems consist of either a two or four-box unit. Currently, Runway 24 is served with a two-box precision approach path indicator (PAPI-2). A PAPI-2 should also be installed on Runway 6 during the planning period.

Runway End Identification Lighting

Runway end identification lights (REILs) are flashing lights located at each runway end that facilitate identification of the runway end at night or during poor visibility conditions. REILs provide pilots with the ability to identify the runway ends and distinguish the runway end lighting from other lighting on the airport and in the approach areas. The FAA indicates that REILs should be considered for all lighted runway ends not planned for a more sophisticated approach lighting system. Currently, Runway 6-24 is not served with REILs. REILs should be planned for each end of the runway in the short term planning period.

Pilot-Controlled Lighting

Payson Airport is equipped with pilot-controlled lighting (PCL). PCL allows pilots to control the intensity of the runway and taxiway lighting using the radio transmitter in the aircraft. PCL also provides for more efficient use of energy. This system should be maintained through the planning period.

Airfield Signage

Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. Signs located at intersections of taxiways provide crucial information to avoid conflicts between moving aircraft and potential runway incursions. Directional signage also instructs pilots as to the location of taxiways and apron areas. Currently, signage referring to runway and taxiway designations, holding positions, routing/directional, and runway exits is not available. Future planning should consider implementing these airfield signs to better accommodate aircraft movement on the airfield.

Consideration should be given to designating all taxiways in conformance with FAA AC 150/5340-18D, *Standards for Airport Sign Systems*. This AC specifies that taxiway designations should start from one side of the airport and move to the other. Stub taxiways, such as the connecting taxiways between the runway and parallel taxiway, should be designated alphanumerically. Under the recommendations of this AC, the taxiway identification for the existing taxiways at Payson Airport would be as follows:

Parallel Taxiway A – Taxiway A

Connecting taxiway (Runway 6 end) – Taxiway A1

Connecting taxiway (approximately 600 feet from Runway 6 threshold) – Taxiway A2

Midfield taxiway – Taxiway A3

Connecting taxiway (Runway 24 end) – Taxiway A4

Distance Remaining Signs

Distance remaining signage should be planned for Runway 6-24. These lighted signs are placed in 1,000-foot increments along the runway to notify pilots of the length or runway remaining.

Pavement Markings

Runway markings are designed according to the type of instrument approach available on the runway. FAA AC 150/5340-1F, *Marking of Paved Areas on Airports*, provides guidance necessary to design airport markings. Runway 6-24 has non-precision markings to include the runway designations, centerline, touchdown points, and landing thresholds. These markings should be properly maintained through the planning period, and consideration should be given to adding runway edge markings to better distinguish the runway.

The current hold positions associated with Runway 6-24 are marked 125 feet from the runway centerline. This meets ARC B-I standards for small airplanes. The hold positions would need to be relocated to 200 feet from the runway centerline for the runway to meet ARC B-II standards.

Helipads

The airport currently has one lighted helipad east of transient Apron D. Helicopter and fixed-wing aircraft should be segregated to the extent possible. As a result, this helipad should be maintained through the planning period and consideration should be given to providing additional helicopter hardstands on the airfield for designated helicopter parking.

Exhibit 3D summarizes existing navigational, lighting, and marking aids and presents future requirements and recommendations.

AIR TRAFFIC CONTROL

Payson Airport does not have an operational ATCT; therefore, no formal terminal air traffic control services are available at the airport. The establishment of an ATCT is governed by Title 14 of the Code of Federal Regulation (CFR) Part 170, *Establishment and Discontinuance Criteria For Air Traffic Control Services And Navigational Facilities*.

14 CFR Part 170.13, *Airport Traffic Control Tower (ATCT) Establishment Criteria*, provides the general criteria along with general facility establishment standards that must be met before an airport can qualify for an ATCT. These are as follows:

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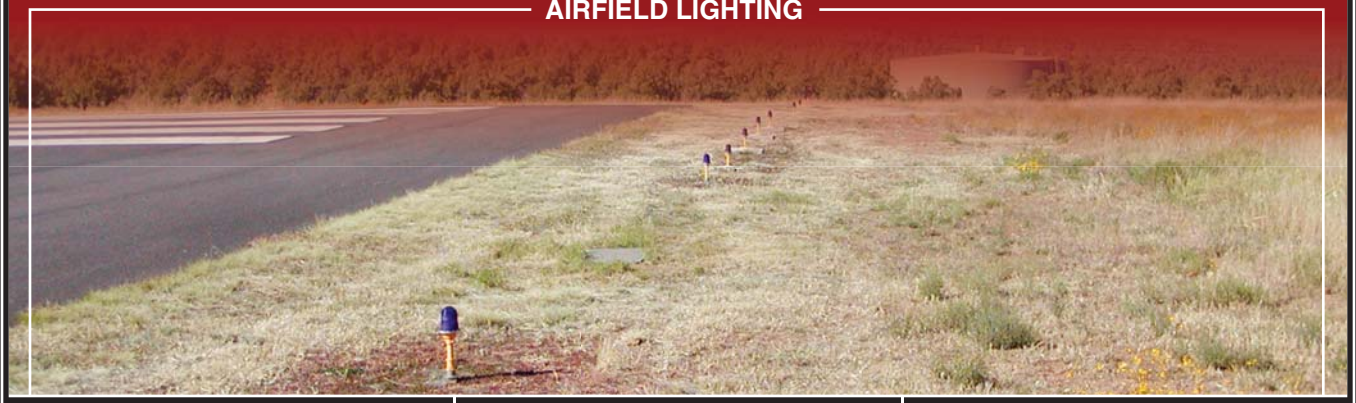
EXISTING	SHORT TERM NEED	LONG TERM NEED
INSTRUMENT APPROACH PROCEDURES		
Runway 6-24		
GPS-A (circling) approach	Straight in GPS approach	Same

AIRFIELD LIGHTING



EXISTING	SHORT TERM NEED	LONG TERM NEED
Rotating Beacon	Same	Same
MITL on entrance / exit taxiways	MITL on all active taxiways	Same
	Implement airfield signage	Same
Runway 6-24		
MIRL	Same	Same
PAPI-2 (Runway 24)	Install PAPI-2 (Runway 6)	Same
	Install REILs (Runway 6-24)	Same
	Install distance remaining signs	Same

AIRFIELD MARKINGS

EXISTING	SHORT TERM NEED	LONG TERM NEED
Taxiway centerline, hold positions	Same	Relocate hold positions
Runway 6-24		
Non-precision	Add runway edge markings	Same
Weather Facilities		
Segmented circle / four windcones	Same	Same
AWOS - III	Link to National Weather Service	Same

KEY

REIL - Runway End Identification Lighting
PAPI - Precision Approach Path Indicator
MITL - Medium Intensity Taxiway Lighting
MIRL - Medium Intensity Runway Lighting
AWOS - Automated Weather Observation System
GPS - Global Positioning System

Payson

Exhibit 3D
AIRPORT SUPPORT REQUIREMENTS

1. The airport, whether publicly or privately owned, must be open to and available for use by the public as defined in the Airport and Airway Improvement Act of 1982;

2. The airport must be recognized by and contained within the National Plan of Integrated Airport Systems;

3. The airport owners/authorities must have entered into appropriate assurances and covenants to guarantee that the airport will continue in operation for a long enough period to permit the amortization of the ATCT investment;

4. The FAA must be furnished appropriate land without cost for construction of the ATCT, and;

5. The airport must meet the benefit-cost ratio criteria utilizing three consecutive FAA annual counts and projections of future traffic during the expected life of the tower facility. (An FAA annual count is a fiscal year or a calendar year activity summary. Where actual traffic counts are unavailable or not recorded, adequately documented FAA estimates of the scheduled and nonscheduled activity may be used.)

An airport meets the establishment criteria when it satisfies the criterion above and its benefit-cost ratio equals or exceeds one. The benefit-cost ratio is the ratio of the present value of the ATCT life cycle benefits (BPV) to the present value of ATCT life cycle costs (CPV).

The benefits of establishing an ATCT result from the prevention of aircraft collisions, the prevention of other types of preventable accidents, reduced flying time, emergency response notification, and general security oversight. Benefits from preventable collisions are further broken down into mid-air collisions, airborne-ground collisions, and ground collisions. Data collected for analyzing the establishment of an ATCT include scheduled and non-scheduled commercial service, and non-commercial traffic which includes military operations. Since the cost data fluctuates each year based on new control tower operational cost estimates, development cost estimates, and aircraft operational costs, the benefit/costs analysis ratios change frequently and cannot be readily determined for the airport in the future. Although future aircraft operation projections appear to fall below levels that may warrant an ATCT, the Town can petition the FAA to conduct a benefit/cost analysis regarding the justification of an ATCT.

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for the handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacity of the various components of each area was examined in relation to projected demand to identify future landside facility needs. This includes components for general aviation needs such as:

- Aircraft Hangars
- Aircraft Parking Aprons
- General Aviation Terminal
- Auto Parking and Access

For this analysis, the requirements for aircraft currently based and projected to be based on airport property will be considered. The scope of the Master Plan does not consider aircraft and facilities located in Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. The number of aircraft to be based on airport property is summarized in **Table 3C**.

TABLE 3C
Based Aircraft on Airport Property
Payson Airport

Planning Horizon	Based Aircraft
Current	60
Short Term	70
Intermediate Term	79
Long Term	95

AIRCRAFT HANGARS

The demand for aircraft storage hangars typically depends upon the number and type of aircraft expected to be based at the airport. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based on actual trends and financial investment opportunities.

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is in more sophisticated and, consequently, more expensive aircraft. Vintage aircraft owners and many recreational aircraft owners prefer hangar space to protect their aircraft. Therefore, many aircraft owners prefer hangar space to outside tiedowns. Presently, the majority of aircraft based on airport property are stored on outside tiedown spaces. There are currently three hangar complexes at the airport which store a total of 22 aircraft.

While a majority of aircraft owners prefer enclosed aircraft storage, a number of based aircraft will still tie down outside (due to lack of hangar availability, hangar rental rates, and/or operational needs). Therefore, enclosed hangar facilities do not necessarily need to be planned for each based aircraft.

There is a waiting list for hangar space at Payson Airport; therefore, it is evident that there is a demand for more hangar space. Analysis of future T-hangar, box hangar, and conventional hangar requirements, as depicted on **Table 3D**, indicates additional hangar positions will be needed through the long term planning period.

T-hangar and box hangar space make up a large portion of hangar area space desired for the long term planning period. T-hangars are typically utilized by single engine or smaller multi-engine aircraft. Box hangars are typically utilized by owners of larger aircraft or multiple aircraft. Often, a corporate flight department will operate out of a box hangar as well.

TABLE 3D
Aircraft Storage Hangar Requirements
Payson Airport

		Future Requirements		
	Currently Available	Short Term	Intermediate Term	Long Term
Total Based	60	70	79	95
Aircraft to be Hangared	22	30	40	57
T-Hangar Aircraft Positions	15	19	24	32
Box Hangar Aircraft Positions	4	8	11	18
Conventional Hangar Aircraft Positions	2	3	5	7
Hangar Area Requirements				
T-Hangar Area	31,200	33,300	42,000	56,000
Box Hangar Area	16,500	19,200	27,500	45,000
Conventional Hangar Area	3,400	7,500	12,500	17,500
Maintenance Area	3,400	10,500	11,800	14,200
Total Hangar Area (s.f.)	**54,500**	**70,500**	**93,800**	**132,700**

Table 3D compares existing hangar space to the future hangar requirements. It is evident from the table that there is a need for additional hangar space throughout the planning period. The analysis also indicates a potential need for additional maintenance and office space through the planning period. It is expected that the aircraft storage hangar requirements will continue to be met through a combination of hangar types.

AIRCRAFT PARKING APRONS

FAA AC 150/5300-13, Change 11, *Airport Design*, suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. At Payson Airport, a planning criterion of 800 square yards per aircraft was applied to determine future transient apron requirements for single and multi-engine aircraft. For business turboprops and jets, a planning criterion of 1,600 square yards per aircraft position was used. Locally based tiedowns typically will be utilized by smaller single engine aircraft; thus, a planning standard of 650 square yards per position is utilized.

A parking apron should provide space for the number of locally based aircraft that are not stored in hangars, transient aircraft, and for maintenance activity. For local tiedown needs, an additional 10 spaces are identified for maintenance activity. Maintenance activity would include the movement of aircraft into and out of hangar facilities and temporary storage of aircraft on the ramp.

Total parking apron requirements are presented in **Table 3E**. Currently, there are 81 total aircraft parking spaces at the airport. Approximately 30 of these spaces are dedicated to transient single and multi-engine aircraft on the airport. One turboprop and/or jet position is available adjacent to the FBO facility. Finally, there are approximately 50 positions utilized for locally based aircraft.

TABLE 3E
Aircraft Parking Apron Requirements
Payson Airport

	Available	Short Term	Intermediate Term	Long Term
Single, Multi-Engine Transient				
Aircraft Positions	30	17	19	22
Apron Area (s.y.)	17,050	13,400	15,000	17,600
Transient Business Turboprop and Jet				
Positions	1	1	2	3
Apron Area (s.y.)	750	1,600	3,200	4,800
Locally-Based Aircraft Positions	50	42	41	40
Apron Area (s.y.)	32,900	27,300	26,700	26,000
Total Positions	**81**	**60**	**62**	**65**
Total Apron Area (s.y.)	**50,700**	**42,300**	**44,900**	**48,400**

As shown in the table, there may be a need for additional transient business turboprop and jet aircraft parking space in the future. It appears that there is adequate transient small aircraft and locally based aircraft parking through the planning period. In order to satisfy the increased need for larger aircraft parking (turboprops and jets), consideration should be given to conversion of some of the smaller aircraft tiedowns to dedicated large aircraft parking.

GENERAL AVIATION TERMINAL FACILITIES

General aviation terminal facilities have several functions. Space is required for a pilots' lounge, flight planning, concessions, management, storage, and various other needs. This space is not necessarily limited to a single, separate terminal building, but can include space offered by FBOs for these functions and services.

The methodology used in estimating general aviation terminal building needs is based on the number of itinerant users expected to utilize general aviation facilities during the design hour. General aviation space requirements were then based upon providing 90 square feet per design hour itinerant passenger. Design hour itinerant passengers are determined by multiplying design hour itinerant operations by the number of passengers on the aircraft (multiplier). An increasing passenger count per aircraft (from 1.8 to 2.1) is used to account for the likely increase in the number of passengers utilizing general aviation services. **Table 3F** outlines the general aviation terminal facility space requirements for Payson Airport.

TABLE 3F
General Aviation Terminal Area Facilities
Payson Airport

	Available	Short Term	Intermediate Term	Long Term
Design Hour Operations	25	29	34	42
Design Hour Itinerant Operations	16	18	20	24
Multiplier	1.8	1.9	2	2.1
Total Design Hour Itinerant Passengers	29	34	41	50
General Aviation Building Spaces (s.f.)	500	3,100	3,700	4,300

Presently, a small building operated by the FBO provides terminal facilities listed above. Future needs could be met with the development of a new facility, expansion of the existing facility, or the private development of similar space in an FBO hangar. The alternatives analysis will examine this in more detail.

AUTOMOBILE PARKING

General aviation vehicular parking demands have been determined for Payson Airport. Space determinations were based on an evaluation of existing airport use, as well as industry standards. Automobile parking spaces required to meet general aviation itinerant demands were calculated by taking the design hour itinerant passengers and using a multiplier of 1.8, 1.9, and 2.1 for each planning period. This multiplier represents the anticipated increase in the number of passengers per aircraft utilizing general aviation services.

The parking requirements of based aircraft owners should also be considered. Although some owners prefer to park their vehicles in their hangars, safety can be compromised when automobile and aircraft movements are intermixed. For this reason, separate parking requirements, which consider one-half of based aircraft at the airport, were applied to general aviation automobile parking space requirements. Parking requirements for the airport are summarized in **Table 3G**.

Currently, there are approximately 28 parking spaces on the south side of the restaurant that were considered for terminal parking. It should be noted that these parking spaces are included in the ground lease with the restaurant. An additional 13 spaces are located east of this area and categorized as general aviation spaces. The vehicle parking lot adjacent to the campground facilities farther west was not used in this analysis as it is dedicated for leased automobile parking only and not open to the general public. By the short term planning period, there appears to be a need for additional vehicle parking in the form of terminal area and general aviation spaces.

A summary of the landside requirements is presented on **Exhibit 3E**.

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Aircraft Storage Hangar Requirements

	Currently Available	Short Term	Intermediate Term	Long Term
Aircraft to be Hangared	22	30	40	57
T-Hangar Positions	15	19	24	32
Box Hangar Positions	4	8	11	18
Conventional Hangar Positions	2	3	5	7
T-Hangar Area (s.f.)	31,200	33,300	42,000	56,000
Box Hangar Area (s.f.)	16,500	19,200	27,500	45,000
Conventional Hangar Area (s.f.)	3,400	7,500	12,500	17,500
Maintenance Area (s.f.)	3,400	10,500	11,800	14,200
Total Hangar Area (s.f.)	54,500	70,500	93,800	132,700

Aircraft Parking Apron Requirements

Single, Multi-Engine Transient Aircraft Positions	30	17	19	22
Apron Area (s.y.)	17,050	13,400	15,000	17,600
Transient Business Turboprop and Jet Positions	1	1	2	3
Apron Area (s.y.)	750	1,600	3,200	4,800
Locally-Based Aircraft Positions	50	42	41	40
Apron Area (s.y.)	32,900	27,000	26,700	26,000
Total Positions	81	60	62	65
Total Apron Area	50,700	42,300	44,900	48,400

General Aviation Terminal Area Facilities

General Aviation Building Spaces (s.f.)	500	3,100	3,700	4,300

Vehicle Parking Requirements

Terminal Vehicle Spaces	28	51	61	75
General Aviation Spaces	13	35	40	48
Total Parking Area (s.f.)	16,200	34,500	40,300	49,200

Exhibit 3E
LANDSIDE SUMMARY

TABLE 3G
Vehicle Parking Requirements
Payson Airport

		Future Requirements		
	Available	**Short Term**	**Intermediate Term**	**Long Term**
Design Hour Itinerant Passengers	29	34	41	50
Terminal Vehicle Spaces	28	51	61	75
Parking Area (s.f.)	11,700	20,500	24,500	30,200
General Aviation Spaces	13	35	40	48
Parking Area (s.f.)	4,500	14,000	15,800	19,000
Total Parking Spaces	**41**	**86**	**101**	**123**
Total Parking Area (s.f.)	**16,200**	**34,500**	**40,300**	**49,200**

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within the classifications of airfield or landside facilities have also been identified. These other areas provide certain functions related to the overall operation of the airport.

FUEL STORAGE

There is one fuel farm located on the airport that currently stores fuel for aviation use. The fuel farm is located on the west side of the airfield. There are two aboveground 12,000-gallon capacity storage tanks: one for Jet A fuel and the other for Avgas fuel. There are also two refueling trucks for full-service fueling operations: one 1,200-gallon capacity Jet A fuel truck and one 1,200-gallon capacity Avgas fuel truck.

Fuel storage requirements are typically based upon maintaining a two-week supply of fuel during an average month. However, more frequent deliveries can reduce the fuel storage capacity requirement. Generally, fuel tanks should be of adequate capacity to accept a full refueling tanker, which is approximately 8,000 gallons, while maintaining a reasonable level of fuel in the storage tank. Maintaining storage to meet a two-week supply for each is currently available. The storage capability of the refueling trucks should also be considered. Combined, the two vehicles provide 2,400 gallons of fuel storage.

In the future, depending on fuel sales and delivery schedules, additional fuel storage capacity may be needed to provide sufficient capacity between fuel deliveries. Thus, proper facility planning should consider additional Jet A and Avgas fuel storage in the amount of 12,000 gallons each.

PERIMETER FENCING/GATES

Perimeter fencing is used at airports to primarily secure the aircraft operations area. The physical barrier of perimeter fencing provides the following functions:

- Gives notice of the legal boundary of the outermost limits of a facility or security-sensitive area.

- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary.

- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV).

- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter.

- Demonstrates the intent of an intruder by their overt action of gaining entry.

- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection.

- Creates a psychological deterrent.

- Optimizes the use of security personnel while enhancing the capabilities for detection and apprehension of unauthorized individuals.

- Demonstrates a corporate concern for facility security.

- Provides a cost-effective method of protecting facilities.

- Limits inadvertent access to the aircraft operations area by wildlife.

Payson Airport operations areas are completely enclosed by a chain link fence topped by three-strand barbed wire and varying in height from six feet to eight feet. The fence does not always follow the airport property line due to the layout of physical features and actual boundary lines. There are currently six access gates located at the airport to provide enhanced security of the airfield.

AIRPORT RESCUE AND FIREFIGHTING

Payson Airport is not currently served by a dedicated aircraft rescue and firefighting facility (ARFF). The airport is provided with rescue and fire assistance from the Town of Payson Fire Department Station Number 12, which is located approximately one mile east of the airport. Federal regulations do not require ARFF services to be located on the airport. ARFF services are required only at FAA certified airports providing scheduled passenger service with greater than nine passenger seats. Unless federal regulations change, there will not be a regulatory requirement for ARFF facilities on the airport. Emergency services will continue to be met with off-airport vehicles. Therefore, there are no additional requirements for ARFF services at Payson Airport.

AIRPORT MAINTENANCE BUILDING

Presently, there is not a dedicated airport maintenance facility at the air-

port. Consideration should be given to developing a maintenance facility for the storage of maintenance equipment and to provide work areas for maintenance personnel.

UTILITIES

Electrical, water, and sanitary sewer services are available at the airport. No information collected during the inventory effort revealed any deficiencies in providing water, electrical, or sanitary sewer services at the airport. Utility extensions to new hangar areas will be needed through the planning period.

REVENUE SUPPORT FACILITIES

Revenue support facilities refer to areas of non-aviation uses on airport property. Non-aviation uses assist in expanding and diversifying the income stream at Payson Airport. Existing non-aviation land uses at Payson Airport include the Town Yard and Crosswinds Restaurant.

FAA policy requires that all airport property be used for aeronautical activities prior to being used for non-aviation uses. The FAA must release any land that would be used for non-aviation uses. Areas for non-aviation uses will be considered during the alternatives analysis and development of the recommended Master Plan concept. A full understanding of the area to be reserved for aeronautical activities must be considered before defining areas that may be available for non-aviation development. Further analysis of aviation and non-aviation land uses will be examined in the next chapter.

SECURITY

In cooperation with representatives of the general aviation community, the TSA published security guidelines for general aviation airports. These guidelines are contained in the publication entitled Security Guidelines for General Aviation Airports, published in May 2004. Within this publication, the TSA recognized that general aviation is not a specific threat to national security. However, the TSA does believe that general aviation may be vulnerable to misuse by terrorists as security is enhanced in the commercial portions of aviation and at other transportation links.

To assist in defining which security methods are most appropriate for a general aviation airport, the TSA defined a series of airport characteristics that potentially affect an airport's security posture. These include:

1. Airport Location – An airport's proximity to areas with over 100,000 residents or sensitive sites that can affect its security posture. Greater security emphasis should be given to airports within 30 miles of mass population centers (areas with over 100,000 residents) or sensitive areas such as military installations, nuclear and chemical plants, centers of government, national monuments, and/or international ports.

2. Based Aircraft – A smaller number of based aircraft increases the likelihood that illegal activities will be identified more quickly. Airports with based aircraft over 12,500 pounds warrant greater security.

3. Runways – Airports with longer paved runways are able to serve larger aircraft. Shorter runways are less attractive as they cannot accommodate the larger aircraft which have more potential for damage.

4. Operations – The number and type of operations should be considered in the security assessment.

Table 3H summarizes the recommended airport characteristics and ranking criterion. The TSA suggests that an airport rank its security posture according to this scale to determine the types of security enhancements that may be appropriate.

TABLE 3H
Airport Characteristics Measurement Tool

Security Characteristics	Assessment Scale: Public Use Airport	Assessment Scale: Payson Airport
Location		
Within 20 nm of mass population areas [1]	5	0
Within 30 nm of a sensitive site[2]	4	0
Falls within outer perimeter of Class B airspace	3	0
Falls within boundaries of restricted airspace	3	0
Based Aircraft		
Greater than 101 based aircraft	3	0
26-100 based aircraft	2	2
11-25 based aircraft	1	0
10 or fewer based aircraft	0	0
Based aircraft over 12,500 pounds	3	0
Runways		
Runway length greater than 5,001 feet	5	5
Runway length less than 5,000 feet, greater than 2,001 feet	4	0
Runway length 2,000 feet or less	2	0
Asphalt or concrete runway	1	1
Operations		
Over 50,000 annual operations	4	0
Part 135 operations	3	3
Part 137 operations	3	3
Part 125 operations	3	0
Flight training	3	3
Flight training in aircraft over 12,500 pounds	4	0
Rental aircraft	4	0
Maintenance, repair, and overhaul facilities conducting long-term storage of aircraft over 12,500 pounds	4	0
Totals		**17**

Source: Security Guidelines for General Aviation Airports
[1] An area with a total population over 100,000
[2] Sensitive sites include military installations, nuclear and chemical plants, centers of government, national monuments, and/or international ports

Table 3H also ranks Payson Airport according to this scale. As shown in the table, the Payson Airport ranking on this scale is 17. Points are assessed for the airport having more than 26 based aircraft, having a runway greater than 5,001 feet in length, having a paved runway surface, having 14 CFR Part 135 charter operations to the airport, having 14 CFR Part 137 aerial applications provided from the airport, and for having flight training activities at the airport.

As shown in **Table 3J**, a rating of 17 points places Payson Airport on the second tier ranking of security measures by the TSA. This rating clearly illustrates that emerging security needs are recommended at Payson Airport as the activity at the airport grows. The Payson Airport ranking could easily extend into the third tier with the addition of aircraft rental services, maintenance and repair services, a based aircraft over 12,500 pounds, or more than 100 based aircraft. Each of these factors is expected to occur during the planning period.

Based upon the results of the security assessment, the TSA recommends 13 potential security enhancements for Payson Airport should the airport ultimately fall within the third tier. These enhancements are shown in **Table 3J**.

TABLE 3J
Recommended Security Enhancements Based on Airport Characteristics Assessment Results

	Points Determined Through Airport Characteristics Assessment			
Security Enhancements	> 45	25-44	15-24	0-14
Fencing	■			
Hangars	■			
Closed-Circuit Television (CCTV)	■			
Intrusion Detection System	■			
Access Controls	■	■		
Lighting System	■	■		
Personal ID System	■	■		
Challenge Procedures	■	■		
Law Enforcement Support	■	■	■	
Security Committee	■	■	■	
Transient Pilot Sign-in/Sign-Out Procedures	■	■	■	
Signs	■	■	■	
Documented Security Procedures	■	■	■	■
Positive/Passenger/Cargo/Baggage ID	■	■	■	■
Aircraft Security	■	■	■	■
Community Watch Program	■	■	■	■
Contact List	■	■	■	■

Source: Security Guidelines for General Aviation Airports

A review of each recommended security procedure is below.

Access Controls: To delineate and adequately protect security areas from unauthorized access, it is important to consider boundary measures such as fencing, walls, or other physical barriers, electronic boundaries (e.g., sensor lines, alarms), and/or natural barriers. Physical barriers can be used to deter and delay the access of unauthorized persons onto sensitive areas of airports. Such structures are usually permanent and are designed to be a visual and psychological deterrent as well as a physical barrier.

Lighting System: Protective lighting provides a means of continuing a degree of protection from theft, vandalism, or other illegal activity at night. Security lighting systems should be connected to an emergency power source, if available.

Personal ID System: This refers to a method of identifying airport employees or authorized tenant access to various areas of the airport through badges or biometric controls.

Vehicle ID System: This refers to an identification system which can assist airport personnel and law enforcement in identifying authorized vehicles. Vehicles can be identified through use of decals, stickers, or hang tags.

Challenge Procedures: This involves an airport watch program which is implemented in cooperation with airport users and tenants to be on guard for unauthorized and potentially illegal activities at Payson Airport.

Law Enforcement Support: This involves establishing and maintaining a liaison with appropriate law enforcement agencies including local, state, and federal. These organizations can better serve the airport when they are familiar with airport operating procedures, facilities, and normal activities. Procedures may be developed to have local law enforcement personnel regularly or randomly patrol ramps and aircraft hangar areas, with increased patrols during periods of heightened security.

Security Committee: This Committee should be composed of airport tenants and users drawn from all segments of the airport community. The main goal of this group is to involve airport stakeholders in developing effective and reasonable security measures and disseminating timely security information.

Transient Pilot Sign-in/Sign-Out Procedures: This involves establishing procedures to identify non-based pilots and aircraft using their facilities, and implementing sign-in/sign-out procedures for all transient operators and associating them with their parked aircraft. Having assigned spots for transient parking areas can help to easily identify transient aircraft on an apron.

Signs: The use of signs provides a deterrent by warning of facility boundaries as well notifying of the consequences for violation.

Documented Security Procedures: This refers to having a written security plan. This plan would include documenting the security initiatives already in place at Payson Airport, as well as any new enhancements. This document could consist of, but not be limited to, airport and local law enforcement contact information, including alternates when available, and utilization of a program to increase airport user awareness of security precautions such as an airport watch program.

Positive/Passenger/Cargo/Baggage ID: A key point to remember regarding general aviation passengers is that the persons on board these flights are generally better known to airport personnel and aircraft operators than the typical passenger on a commercial airliner. Recreational general aviation passengers are typically friends, family, or acquaintances of the pilot in command. Charter/sightseeing passengers typically will meet with the pilot or other flight department personnel well in advance of any flights. Suspicious activities such as use of cash for flights or probing or inappropriate questions are more likely to be quickly noted and authorities could be alerted. For corporate operations, typically all parties onboard the aircraft are known to the pilots. Airport operators should develop methods by which individuals visiting the airport can be escorted into and out of aircraft movement and parking areas.

Aircraft Security: The main goal of this security enhancement is to prevent the intentional misuse of general aviation aircraft for terrorist purposes. Proper securing of aircraft is the most basic method of enhancing general aviation airport security. Pilots should employ multiple methods of securing their aircraft to make it as difficult as possible for an unauthorized person to gain access to it. Some basic methods of securing a general aviation aircraft include: ensuring that door locks are consistently used to prevent unauthorized access or tampering with the aircraft, using keyed ignitions where appropriate, storing the aircraft in a hangar, if available, and locking hangar doors, using an auxiliary lock to further protect aircraft from unauthorized use (i.e., propeller, throttle, and/or tie-down locks), and ensuring that aircraft ignition keys are not stored inside the aircraft.

Community Watch Program: The vigilance of airport users is one of the most prevalent methods of enhancing security at general aviation airports. Typically, the user population is familiar with those individuals who have a valid purpose for being on the airport property. Consequently, new faces are quickly noticed. A watch program should include elements similar to those listed below. These recommendations are not all-inclusive. Additional measures that are specific to each airport should be added as appropriate, including:

- Coordinate the program with all appropriate stakeholders including airport officials, pilots, businesses and/or other airport users.

- Hold periodic meetings with the airport community.

- Develop and circulate reporting procedures to all who have a regular presence on the airport.

- Encourage proactive participation in aircraft and facility security and heightened awareness measures. This should include encouraging airport and line staff to 'query' unknowns on ramps, near aircraft, etc.

- Post signs promoting the program, warning that the airport is watched. Include appropriate emergency phone numbers on the sign.

- Install a bulletin board for posting security information and meeting notices.

- Provide training to all involved for recognizing suspicious activity and appropriate response tactics.

Contact List: This involves the development of a comprehensive list of responsible personnel/agencies to be contacted in the event of an emergency procedure. The list should be distributed to all appropriate individuals. Additionally, in the event of a security incident, it is essential that first responders and airport management have the capability to communicate. Where possible, coordinate radio communication and establish common frequencies and procedures to establish a radio communications network with local law enforcement.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for Payson Airport for the planning horizons. Following the facility requirements determination, the next step is to determine a direction of development which best meets these projected needs through a series of development alternatives. The remainder of the Master Plan will be devoted to outlining this direction, its schedule, and its cost.

Chapter Four

AIRPORT DEVELOPMENT ALTERNATIVES

Payson Airport

Airport Development Alternatives

The previous chapters have focused on the airport's available facilities, existing and potential future demand levels, and the types of facilities that are needed to meet demand. Specific attention was also given to defining Federal Aviation Administration (FAA) design standards that are applicable to Payson Airport.

Prior to defining the recommended development program for Payson Airport, it is important to first consider development potential as well as constraints to future development at the airport. The purpose of this chapter is to formulate and examine reasonable airport development alternatives that address the planning horizon demand levels.

In this chapter, a number of airport development alternatives are considered for the airport, where applicable. For each alternative, different physical layouts are presented for the purposes of evaluation. The ultimate goal is to develop the underlying rationale which supports the final recommended Master Plan development concept. Through this process, an evaluation of the most realistic and best uses of airport property is made while considering local development goals, physical and environmental constraints, and appropriate federal airport design standards.

Any development proposed by a Master Plan evolves from an analysis of projected needs. Though the needs were determined by the best methodology available, it cannot be assumed

that future events will not change these needs. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands for the next 20 years. However, no plan of action should be developed which may be inconsistent with the future goals and objectives of the Town of Payson and the Payson Regional Airport Authority (PRAA), who have a vested interest in the development and operation of the airport.

The development alternatives for Payson Airport can be categorized into two functional areas: airside (runways, taxiways, navigational aids, etc.) and landside (general aviation hangars, aprons, terminal area, etc.). Within each of these areas, specific facilities are required or desired. In addition, the utilization of the remaining airport property to provide revenue support for the airport and to benefit the economic development and well-being of the regional area must be considered.

Each functional area interrelates and affects the development potential of the others. Therefore, all areas must be examined individually, and then coordinated as a whole, to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the existing airport must be evaluated to determine if the investment in Payson Airport will meet the needs of the community, both during and beyond the planning period.

The alternatives presented in this chapter have been developed to meet the overall program objectives for the airport in a balanced manner. Through coordination with the Planning Advisory Committee (PAC), Town of Payson, PRAA, and the general public, the alternatives (or combination thereof) will be refined and modified as necessary to develop the recommended development concept. Therefore, the alternatives presented in this chapter can be considered a beginning point in the development of the recommended concept for the future development of Payson Airport.

NO-BUILD ALTERNATIVE

In analyzing and comparing the advantages and disadvantages of various development alternatives, it is important to consider the consequences of no future development at Payson Airport. The “no-build” or “do nothing” alternative essentially considers keeping the airport in its present condition, not providing any type of expansion or improvement to the existing facilities (other than general airfield and Town-owned hangar and terminal building maintenance projects). The primary result of this alternative would be the inability of the airport to satisfy the projected aviation demands of the airport service area.

Payson Airport is an important contributor to the economic development of the regional area. The airport is a transportation link to other regional and national economic centers. Not improving Payson Airport to meet general aviation needs could limit economic growth for the region.

The potential for increased aviation activity at Payson Airport can be related to the growing population and economy of the Town of Payson and growth within the general aviation industry as a whole. Tourism and recreation industries in the surrounding area as well as manufacturing and service sectors offer a potential for increased private and business general aviation activity. While overall, general aviation growth will be steady but slow nationally, the demand for higher performance aircraft is experiencing the strongest growth rate. With heightened interest in commercial aviation security, corporate general aviation could expect demand for private aircraft to grow even more. This could be spurred by the new very light jet (VLJ) and expectations for true air taxi service at general aviation airports. As mentioned in previous chapters, Payson Airport is well positioned to attract operations by VLJs with adequate runway length and forecasted growth in business opportunities in the airport service area.

Aviation demand forecasts and analysis of facility requirements indicated a potential need for improved facilities at Payson Airport. Improvements recommended in the previous chapter include constructing additional taxiways, improving instrument approach procedures, providing additional airfield lighting, constructing additional hangar facilities, improving navigational aids, improving lighting and marking aids, and constructing a new general aviation terminal building. Without these improvements, regular users of the airport will be constrained from taking maximum advantage of the airport's air transportation capabilities.

The unavoidable consequence of the "no-build" alternative would involve the airport's inability to attract potential airport users and expand economic development in the Town of Payson and the surrounding region. Corporate aviation plays a major role in the transportation of business leaders and key employees. Also, recreational activities surrounding the Town of Payson require general aviation support. If the airport does not have the capability to meet the terminal, hangar, apron, or airfield needs of potential users, the Town's capability to attract the major sector businesses or recreational travelers that rely on air transportation could be diminished.

Following the "no-build" alternative would also not support the private businesses that have made investments at Payson Airport. As these businesses grow, the airport will need to be able to accommodate the infrastructure needs associated with their growth. Each of the businesses on the airport provides jobs for local residents, creates positive economic benefits for the community, and pays taxes for local government operations.

The Town of Payson and PRAA are charged with the responsibility of developing aviation facilities necessary to accommodate aviation demand and minimize operational constraints. Flexibility must be programmed into airport development to assure adequate capacity should market conditions change unexpectedly.

To propose no further development at Payson Airport could adversely affect the long term viability of the airport, resulting in negative economic effects on the Town of Payson and surrounding communities. The "no-build" alternative is also inconsistent with the long term goals of the FAA and Arizona Department of Transportation (ADOT) – Aeronautics Division, which are to enhance local and interstate commerce. Therefore, this alternative is not considered to be prudent or feasible and will no longer be considered in this study.

REVIEW OF PREVIOUS MASTER PLAN

The previous Master Plan for Payson Airport was completed and adopted by the Common Council of the Town of Payson in June 1998. The study examined means by which the airport could continue to operate as a safe, efficient facility that served future aviation demands. The 1998 Master Plan was also demand-based and was designed to allow the airport to respond to aviation demand as it evolved over time.

The previous Master Plan anticipated that operations by aircraft with wingspans greater than 49 feet as well as aircraft over 12,500 pounds would increase at Payson Airport. The 1998 Master Plan identified changes to the airfield system that would be required to meet operational needs of these aircraft as well as FAA design standards. The two primary recommendations were the extension of Runway 6-24 600 feet to the west for an ultimate length of 6,100 feet as well as the ultimate relocation of parallel Taxiway A to the south. The relocation of Taxiway A to the south allowed the airport to conform to FAA design standards for runway/taxiway separation, placement of hold lines, and qualification requirements for straight-in instrument approach procedures.

A significant project that was recommended in the 1998 study was the relocation of Airport Road to accommodate additional landside development to meet projected needs as well as accommodate existing facilities that would be displaced as a result of the relocation of parallel Taxiway A. Airport Road was relocated to the south as shown in the 1998 Master Plan in 2005 with both federal and state grants. Several other landside recommendations in the previous Master Plan have also been completed, including the construction of additional aircraft parking aprons and hangar storage space.

AIRPORT DEVELOPMENT OBJECTIVES

It is the overall objective of this effort to produce a balanced airside and landside complex to serve forecast aviation demands. However, before defining and evaluating specific alternatives, airport development objectives should be considered. The primary goal for the Master Plan is to define a development concept which allows for the airport to be marketed, developed, and safely operated for the betterment of the community and its users. With this in mind, the following develop-

ment objectives have been defined for this planning effort:

- Conform to FAA design and safety standards for the mix of aircraft that could potentially use the airport during the 20-year planning period of the Master Plan.

- Define a plan that allows the PRAA and Town of Payson to systematically place new facilities outside future FAA design and safety areas required by all future potential users.

- Develop facilities that efficiently serve the current and long term needs of general aviation users.

- Provide sufficient airside and landside capacity through additional facility improvements which will meet the long term planning horizon level of demand of the area.

- Identify any future land acquisition needs.

- Develop facilities with a focus on self-sufficiency in both operational and development cost recovery.

- Ensure that any recommended future development is environmentally compatible.

The remainder of this chapter will describe various development alternatives for the airside and landside facilities. Within each of these areas, specific facilities are required or desired. Although each area is treated separately, planning must integrate the individual requirements so that they complement one another. **Exhibit 4A** presents both airside and landside planning considerations that will be specifically addressed.

AIRPORT ROLE

The design and development of the airport is a reflection of the role that the airport serves in the state and national aviation systems. As stated in Chapter One, Payson Airport is identified as a public-use general aviation facility in the Arizona *State Aviation System Plan* (SASP) and the FAA *National Plan of Integrated Airport Systems* (NPIAS).

While this designation essentially reflects the segment of the aviation industry that the airport serves, an understanding and appreciation of the nearby airports also serving general aviation is needed to fully understand the portion of the general aviation industry served by the airport for facility planning and development.

As discussed in previous chapters, the nearest public-use airport with a similar level of service to Payson Airport is Sedona Airport, which is located approximately 42 nautical miles to the northwest. Other public-use airports within 50 nautical miles include Cottonwood Airport and Phoenix Deer Valley Airport. There are several additional private-use airports in the area, but they do not provide the same level of services as Payson Airport and are mainly served with grass or dirt runways. Due to the proximity of these airports and the types of services that they provide, the service area

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AIRSIDE CONSIDERATIONS

- Identify safety design standards associated with Airport Reference Code (ARC) B-I (small aircraft exclusively), B-I (large aircraft), and B-II aircraft classifications.
- Evaluate the potential for a runway extension.
- Identify property acquisition that may be needed for approach protection.
- Provide medium intensity taxiway lighting (MITL) on all active taxiways.
- Construct holding aprons at each runway end to provide smoother transition for taxiing aircraft.
- Evaluate the need for additional taxiways connecting to Runway 6-24.
- Improved instrument approach procedures to the airport.
- Install runway end identification lights (REILs) on Runway 6-24.
- Implement an airfield signage system at the airport.
- Minimize the effects that future airport development could have on airfield operations.

LANDSIDE CONSIDERATIONS

- Identify locations for additional hangar development to meet projected demand.
- Analyze current and future terminal building needs and locations.
- Identify locations suitable for a permanent airport maintenance building and aircraft wash rack.
- Analyze property on south side of airfield for future aviation use.
- Identify property southwest of existing airport boundary for potential land acquisition to be utilized as aviation revenue support.
- Identify potential revenue support parcels to include both airfield access and non-airfield access areas.
- Minimize the effects that future airport development could have on existing landside facilities.

Payson

Exhibit 4A
PLANNING CONSIDERATIONS

for Payson Airport includes the Town of Payson and several smaller incorporated and unincorporated communities located in northwest Gila County.

Currently, Payson Airport predominately accommodates single and multi-engine general aviation aircraft weighing less than 12,500 pounds. However, as previously discussed in Chapter Three, the airport is also utilized by aircraft with wingspans greater than 49 feet and weights above 12,500 pounds. These aircraft are considered differently in FAA design and safety standards than the single and multi-engine general aviation aircraft weighing less than 12,500 pounds that utilize the airport on a regular basis now.

While single and multi-engine general aviation aircraft weighing less than 12,500 pounds and having wingspans less than 49 feet will continue to utilize the airport on a regular basis, it is expected that the airport will see an increase in operations by aircraft with wingspans greater than 49 feet and weights over 12,500 pounds sometime in the future. As a result, the development alternatives to follow consider the FAA design and safety standards required when these larger aircraft conduct more than 500 annual operations at the airport. Additionally, these development alternatives will assist in the development of a Master Plan Concept for the airport that allows the PRAA and Town of Payson to easily accommodate the needed airfield changes if and when these aircraft operations increase. The ultimate intent of this plan will be to place future landside development at a sufficient distance from the runway so as not to be impacted by any future changes to the airfield system.

As previously mentioned, the Town of Payson has implemented projects consistent with the 1998 Master Plan that satisfy the safety design standards of larger aircraft operations. The relocation of Airport Road was done to allow for the relocation of parallel Taxiway A to ultimately conform to the safety design standards associated with larger aircraft while also providing for expanded opportunities for future aviation-related development. In addition, existing airfield conditions to include the runway's length and weight bearing capacity will adequately serve these operations on a regular basis.

AIRSIDE PLANNING CONSIDERATIONS

The purpose of this section is to identify and evaluate the various viable airside development considerations at Payson Airport to meet the program requirements set forth in Chapter Three. Airfield facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and often imparts the greatest influence of the identification and development of other airport facilities. Furthermore, aircraft operations dictate the FAA design criteria that must be considered when examining poten-

tial airfield improvements. These design standards can have a significant impact on the various alternatives intended to meet airfield needs. These criteria, depending upon the areas around the airport, must be defined first in order to ensure that the fundamental needs of the airport are met. Therefore, airside requirements will be considered prior to detailing landside development alternatives.

Several topics will be discussed in detail and then applied to the various airport development alternatives. In the next chapter, a recommended alternative will be presented which may be one of these alternatives as presented or may be a combination of elements from these alternatives.

AIRPORT REFERENCE CODE DESIGNATION

The design of airfield facilities is based, in part, on the physical and operational characteristics of aircraft using the airport. The FAA utilizes the Airport Reference Code (ARC) system to relate airport design requirements to the physical (wingspan and tail height) and operational (approach speed) characteristics of the largest and fastest aircraft conducting 500 or more annual operations at the airport. While this can at times be represented by one specific make and model of aircraft, most often the airport's ARC is represented by several different aircraft which collectively conduct more than 500 annual operations at the airport.

The FAA uses the 500 annual operations threshold when evaluating the need to develop and/or upgrade airport facilities to ensure that an airport is cost-effectively constructed to meet the needs of those aircraft that are using, or have the potential to use, the airport on a regular basis. It is not uncommon for aircraft to operate at airports that are outside the ARC designated for the airport. This is due to these aircraft not meeting the 500 annual operations threshold.

At Payson Airport, based aircraft fall within approach category A (approach speeds less than 91 knots) and approach category B (approach speeds between 91 and 121 knots) and airplane design group (ADG) I (wingspans less than 49 feet and tail heights less than 20 feet) and ADG II (wingspans between 49 feet and 79 feet and/or tail heights between 20 feet and 30 feet). The mix of transient aircraft that utilizes the airport is more diverse and includes aircraft in ARCs A-I, B-I, B-II, and C-I. Aircraft in ARCs B-II and C-I are the most demanding aircraft to utilize the airport in terms of approach speeds and wingspans; however, they currently do not conduct at least 500 annual operations at the airport that the FAA considers to define the critical aircraft.

Given these considerations, the current critical aircraft at Payson Airport falls within ARC B-I design criteria. FAA standards make a distinction in ARC B-I for aircraft over 12,500 pounds and those aircraft below 12,500 pounds (small aircraft exclusively). While the majority of based aircraft are below 12,500 pounds, a review of transient aircraft operations did show more than 100 operations by aircraft weighing more than 12,500

pounds in the previous year. However, since aircraft over 12,500 pounds currently do not conduct more than 500 annual operations, the current ARC for the airport is ARC B-I (small aircraft exclusively).

As previously discussed in Chapter Two and Chapter Three, it is anticipated that during the course of the planning period, the critical aircraft for Payson Airport will transition to ARC B-II. Analysis of future based aircraft fleet mix forecasts as well as the future transient aircraft mix to include aircraft weighing more than 12,500 pounds and having wingspans and/or tail heights greater than 49 feet or 20 feet, respectively supports the fact that ultimate planning should conform to ARC B-II design standards. Therefore, future airport facility planning should define a long term plan that allows the airport to conform to ARC B-II design standards. It should be noted that the FAA does not distinguish aircraft in ARC B-II by weight.

Table 4A compares the design and safety standard requirements for ARC for B-I (small aircraft exclusively), ARC B-I, and ARC B-II for Runway 6-24 and other pertinent airside facilities at Payson Airport.

TABLE 4A
Airfield Safety and Facility Dimensions (in feet)

	ARC B-I (small aircraft)	ARC B-I	ARC B-II
Runways			
Width	60	60	75
Runway Safety Area			
Width	120	120	150
Length Beyond Runway End	240	240	300
Object Free Area			
Width	250	400	500
Length Beyond Runway End	240	240	300
Obstacle Free Zone			
Width	250	400	400
Length Beyond Runway End	200	200	200
Runway Protection Zone			
Inner Width	250	500	500
Outer Width	450	700	700
Length	1,000	1,000	1,000
Runway Centerline to:			
Parallel Taxiway Centerline	150	225	240
Edge of Aircraft Parking Apron	125	200	250
Taxiways			
Width	25	25	35
Safety Area Width	49	49	79
Object Free Area Width	89	89	131
Taxiway Centerline to:			
Parallel Taxiway/Taxilane	69	69	105
Fixed or Moveable Object	44.5	44.5	65.5
Taxilanes			
Object Free Area Width	79	79	115
Taxilane Centerline to:			
Parallel Taxilane Centerline	64	64	97
Fixed or Moveable Object	39.5	39.5	57.5

Note: Runway safety design standards for approaches with not lower than three-quarters-of-a-mile visibility minimums

Source: FAA Advisory Circular (AC) 150-5300-13, Change 13, *Airport Design*

As shown in the table, the runway safety area (RSA), object free area (OFA), obstacle free zone (OFZ), and runway protection zone (RPZ) increase in size as the airport transitions from ARC B-I (small aircraft exclusively) to ARC B-I and ARC B-II. **Exhibit 4B** depicts the RSA, OFA, OFZ, and RPZ for each ARC classification as discussed above assuming the existing runway length and orientation and instrument approaches with visibility minimums not lower than ¾-mile. Runway/parallel taxiway separation standards are not shown on this alternative. Runway/parallel taxiway separation standards for ARC B-I (small aircraft exclusively), ARC B-I, and ARC B-II are discussed later this chapter.

Runway Safety Area

The FAA defines the RSA as "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 from the runway." The RSA is an integral part of the runway environment. RSA dimensions are established in FAA Advisory Circular (AC) 150/5300-13, Change 13, *Airport Design*, and are based on the ARC of the critical design aircraft for the airport. The RSA is intended to provide a measure of safety in the event of an aircraft's excursion from the runway, by significantly reducing the extent of personal injury and aircraft damage during overruns, undershoots, and veer-offs. According to the AC, the RSA must be:

1) cleared and graded and have no potentially hazardous ruts, bumps, depressions, or other surface variations;

2) drained by grading or storm sewers to prevent water accumulation;

3) capable, under dry conditions, of supporting aircraft rescue and fire-fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and

4) free of objects, except for objects that need to be located in the safety area because of their function.

The FAA has placed a higher significance on maintaining adequate RSAs at all airports. Under Order 5200.8, the FAA established the *Runway Safety Area Program*. The Order states, "The goal of the Runway Safety Area Program is that all RSAs at federally-obligated airports and all RSAs at airports certificated under Title 14 of the Code of Federal Regulations (CFR) Part 139 shall conform to the standards contained in AC 150/5300-13, *Airport Design*, to the extent practicable." Under the Order, each Regional Airports Division of the FAA is obligated to collect and maintain data on the RSA for each runway at federally-obligated airports.

As shown on **Exhibit 4B**, the airport presently does not conform completely to ARC B-I (small aircraft exclusively) RSA design standards. Beyond the Runway 24 end, the RSA is obstructed by vegetation and may not meet grad-

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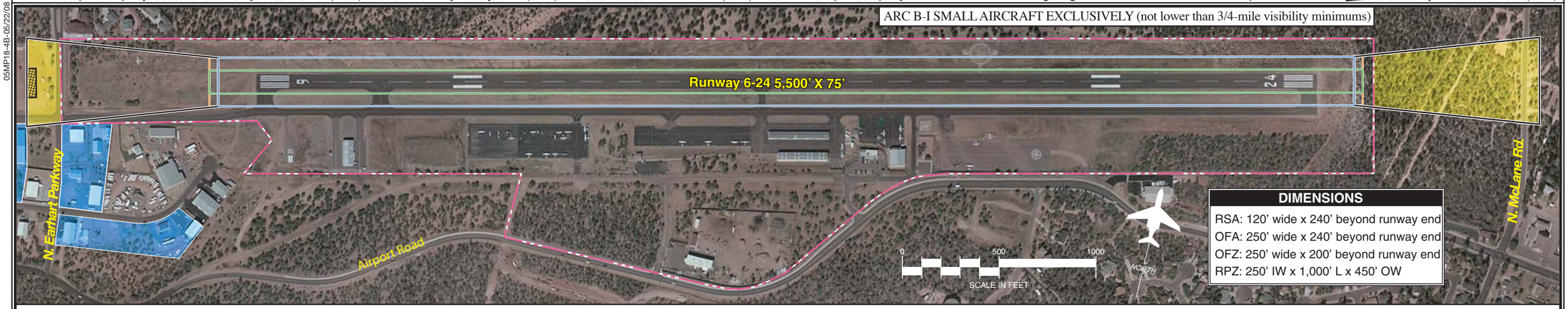
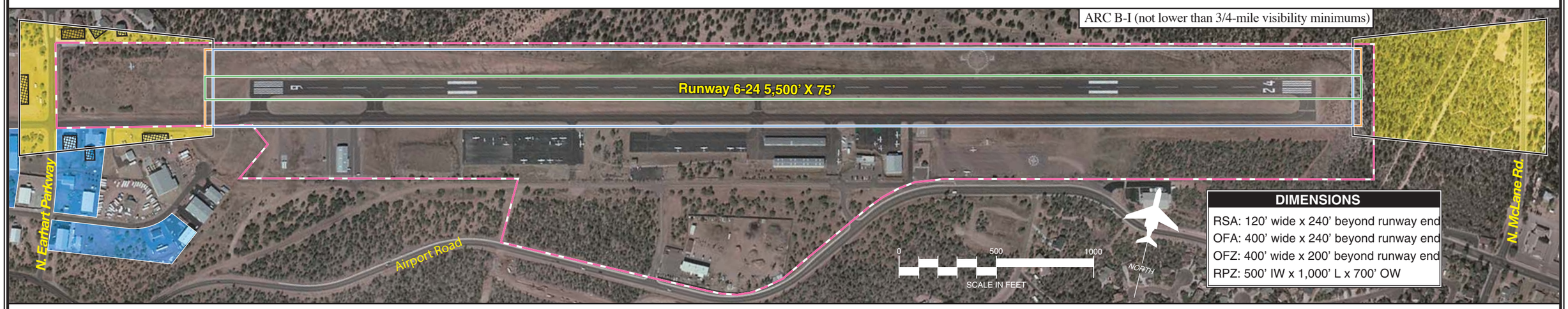
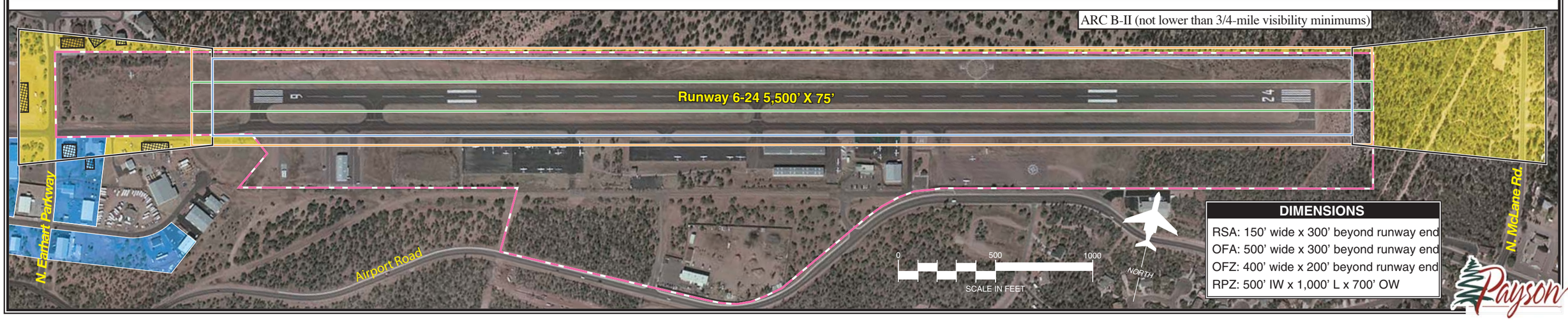
LEGEND

Airport Property Line | Object Free Area (OFA) | Runway Safety Area (RSA) | Obstacle Free Zone (OFZ) | Acquire Property Interest | Existing Avigation Easement | Incompatible Land Use | Runway Protection Zone (RPZ)







Payson

Exhibit 4B
RSA, OFA, OFZ, RPZ
SAFETY DESIGN STANDARDS

ing requirements. The bottom of **Exhibit 4B** depicts the safety areas when the airport progresses to ARC B-II design standards without other improvements being made. As depicted, the enlarged ARC B-II RSA would remain on airport property; however, the larger RSA would need to be improved to meet standards as described above, similar to the existing RSA requirements.

Object Free Area

The runway OFA is defined in FAA AC 150/5300-13, Change 13, *Airport Design*, as an area centered on the runway extending laterally and beyond each runway end, in accordance to the critical aircraft design category utilizing the runway. The OFA must provide clearance of all ground-based objects protruding above the RSA edge elevation, unless the object is fixed by function serving air or ground navigation. It should be noted that, in some cases, the terrain encompassing the OFA may fall significantly below the RSA elevation. In those cases, objects can be in the OFA as long as they do not rise above the elevation of the RSA at any given lateral position.

As shown **Exhibit 4B**, while the existing OFA at Payson Airport falls within existing airport boundaries, portions of the existing segmented circle are within the limits of the OFA. Beyond the Runway 24 end, existing vegetation may encroach upon the OFA. For ARC B-II, the OFA extends beyond existing airport property on the north and southwest sides of the airport and encompasses the lighted wind cone in addition to the segmented circle and vegetation.

Obstacle Free Zone

The OFZ is an imaginary surface which precludes object penetrations, including taxiing and parked aircraft. The only allowance for OFZ obstructions is navigational aids mounted on frangible bases which are fixed in their location by function, such as airfield signs. The OFZ is established to ensure the safety of aircraft operations. If the OFZ is obstructed, the airport's approaches could be removed or approach minimums could be increased.

For runways serving small aircraft exclusively, the FAA requires the OFZ to extend 200 feet beyond each runway end and 125 feet on each side of the runway centerline. The OFZ expands to 400 feet wide (200 feet on either side of the runway centerline) for ARC B-I and B-II classifications when aircraft over 12,500 pounds utilize the airport on a regular basis. As depicted on **Exhibit 4B**, parallel Taxiway A penetrates the OFZ associated with ARC B-I and B-II. The taxiway extending west into the adjacent industrial park also extends into the OFZ. Similar to the OFA, the ARC B-I and ARC B-II OFZ encompasses the lighted wind cone in addition to the segmented circle and vegetation. The runway/parallel taxiway separation alternatives to follow will provide more detail in adhering to OFZ standards for ARC B-II classification.

Runway Protection Zone

The RPZ is a trapezoidal surface which begins 200 feet from the runway threshold. The RPZ is a designated area beyond the runway end that the FAA encourages airports to own or, in some fashion, maintain positive control over the types of land uses within the RPZ. The goal of the RPZ standard is to increase safety for both pilots and people on the ground by maintaining the RPZ free of items that attract groupings of people or property on the ground. Additionally, it is the current position of the FAA Western-Pacific Region Airports Division that public roadways be located outside the RPZ.

The FAA does not necessarily require the fee simple acquisition of the RPZ area, but highly recommends that the airport have positive control over development within the RPZ. Avigation easements which limit land uses within the RPZ can be pursued if fee simple purchase is not possible. It should be noted, however, that avigation easements can often cost as much as 80 to 90 percent of the full property value. Often, local land use planning and zoning can limit future development within an undeveloped RPZ. Many times, fee simple acquisition is the only means to remove existing incompatible objects within an RPZ.

As depicted on **Exhibit 4B**, the RPZ for ARC B-I and B-II design standards is significantly larger than the RPZ for ARC B-I (small aircraft exclusively). The ARC B-I (small aircraft exclusively) RPZ extends beyond airport property on each runway end. Beyond the Runway 6 end, the RPZ crosses North Earhart Parkway and West Baron Boulevard and encompasses a newly constructed building. Beyond the Runway 24 end, the RPZ crosses North McLane Road; however, the RPZ is not obstructed otherwise. For ARC B-II, the RPZ on Runway 6 encompasses approximately six acres of land outside airport property and both residential properties to the northwest and commercial/industrial properties to the west and south of the runway. As previously mentioned, the FAA strongly encourages keeping the RPZ as clear as possible or, at a minimum, over areas with compatible land uses. For Runway 24, the RPZ extends beyond airport property to the east over areas of undeveloped land and crosses North McLane Road.

RUNWAY LENGTH

Analysis in Chapter Three identified a potential future need for a minimum of 6,600 feet of runway length to fully satisfy the future requirements of aircraft within ARC B-II through the long term planning period. This runway length is consistent with the FAA runway length requirements contained in FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*.

The 5,500 feet of available length on Runway 6-24 can allow for unrestricted operations for aircraft within ARC B-I (small aircraft exclusively) and the majority of aircraft in ARC B-II presently using the airport when weather conditions such as mild temperatures and a non-contaminated

(free of water/snow) runway prevail. Operations may become more restricted when daily temperatures climb into the 90s, which occurs on a frequent basis in Payson during the summer months. At these higher temperatures, aircraft operators must reduce useful load to be able to depart on Runway 6-24. This means that larger piston-engine, turboprop, and business jet aircraft operators must reduce fuel or passenger loading to ensure that they can depart on the available runway length. This can increase operator costs as they must stop enroute to their final destination to take on additional fuel needed.

A review of the most demanding aircraft that utilize Payson Airport was studied. The data revealed that a large majority of existing flights from the airport are currently regional in nature with short stage lengths, thus eliminating the need to stop enroute for additional fuel as just mentioned.

Several aircraft which currently utilize the airport on an infrequent basis require runway lengths longer than 5,500 feet. If these types of business jets, such as the Cessna Citation 550 and 560, begin to operate at the airport on a much more regular basis, necessary justification may be made to extending the length of Runway 6-24. Some of these aircraft call for as much as 7,000 feet of available length to operate. Also, if the stage lengths of aircraft operating from Payson Airport increase, additional runway length may be justified to allow for increased useful loads.

In analyzing different runway extension alternatives for Payson Airport, several existing conditions had to be considered. While an additional 1,100 feet of runway length would better serve the full range of aircraft expected to serve the airport, it is improbable that this length can be accommodated at the airport. It has been determined that physical terrain constraints restrict any feasible extension to the east of Runway 6-24. As a result, the only runway extension alternatives that were analyzed involve extending Runway 6-24 to the west. On the west side of the airport, development within Sky Park Industrial Park and Mazatzal Mountain Residential Airpark limit the degree to which the runway can be extended. The following section describes two runway extension alternatives for Runway 6-24 at Payson Airport.

Runway Extension Alternative A

Runway Extension Alternative A, depicted on **Exhibit 4C**, considers the extension of Runway 6-24 600 feet to the west, achieving a total pavement length of 6,100 feet that is usable in both directions. Design standards are based upon ARC B-II. While this length falls short of the 6,600 feet needed to better accommodate the full range of aircraft expected to utilize the airport in the future, this length allows the extended runway pavement and RSA and OFZ to remain on existing airport property. This alternative is consistent with the 1998 Master Plan which also concluded that a 1,110-foot extension to the west is limited by changes in topography and development within the Sky Park Industrial Park. A 600-foot extension

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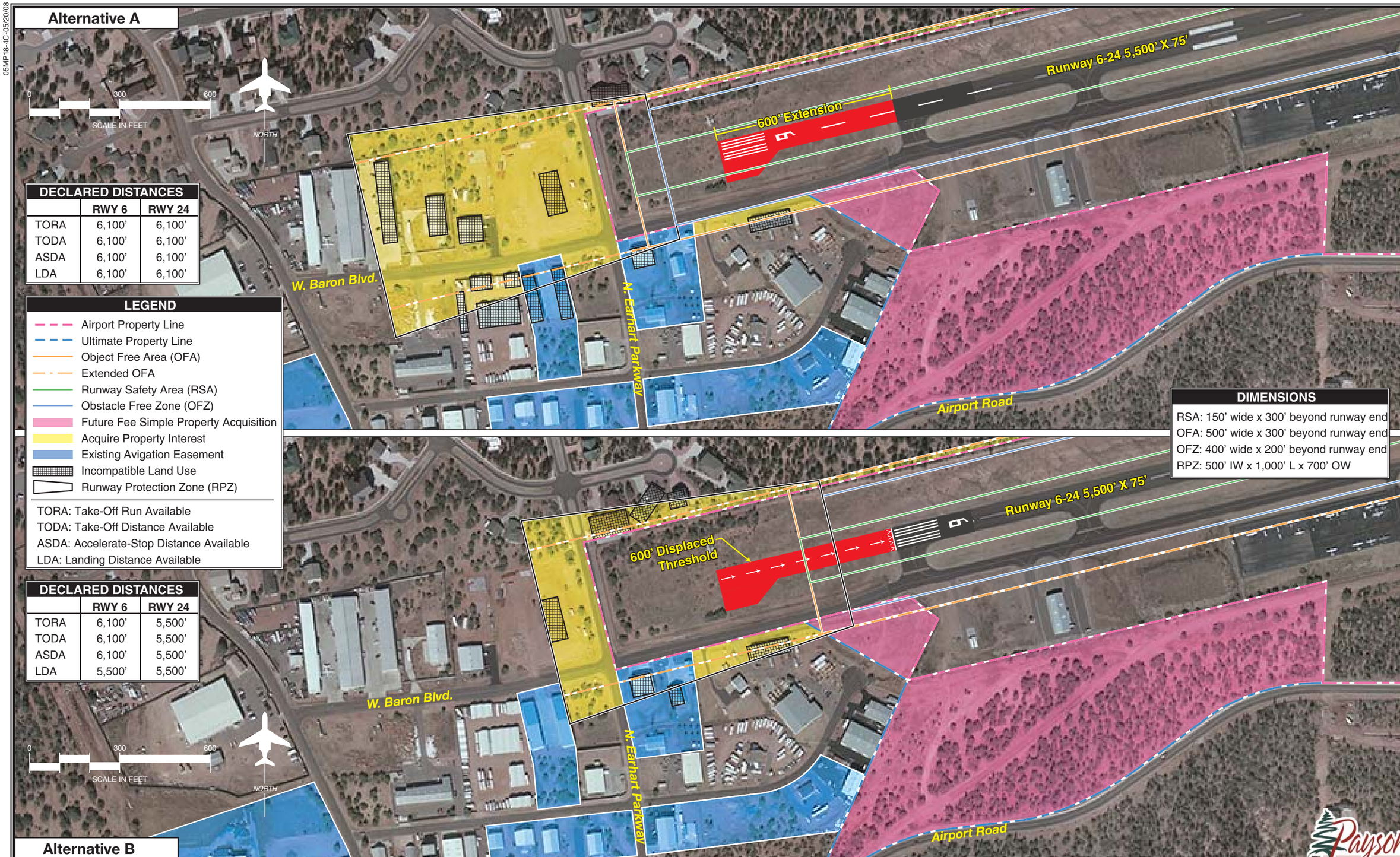
Alternative A



DECLARED DISTANCES	RWY 6	RWY 24
TORA	6,100'	6,100'
TODA	6,100'	6,100'
ASDA	6,100'	6,100'
LDA	6,100'	6,100'

LEGEND

- Airport Property Line
- Ultimate Property Line
- Object Free Area (OFA)
- Extended OFA
- Runway Safety Area (RSA)
- Obstacle Free Zone (OFZ)
- Future Fee Simple Property Acquisition
- Acquire Property Interest
- Existing Avigation Easement
- Incompatible Land Use
- Runway Protection Zone (RPZ)

TORA: Take-Off Run Available
TODA: Take-Off Distance Available
ASDA: Accelerate-Stop Distance Available
LDA: Landing Distance Available

DIMENSIONS

RSA: 150' wide x 300' beyond runway end
OFA: 500' wide x 300' beyond runway end
OFZ: 400' wide x 200' beyond runway end
RPZ: 500' IW x 1,000' L x 700' OW

DECLARED DISTANCES	RWY 6	RWY 24
TORA	6,100'	5,500'
TODA	6,100'	5,500'
ASDA	6,100'	5,500'
LDA	5,500'	5,500'

Alternative B

Payson

Exhibit 4C
RUNWAY EXTENSION ALTERNATIVES

maintains the North Earhart Parkway corridor which provides access to the Mazatzal Mountain Residential Airpark.

The most notable considerations with this alternative relate to the portions of the proposed OFA and RPZ which would extend beyond the current property boundary. The total area of land outside the property line but within the safety areas is approximately 12.5 acres. The portions of the OFA that extend beyond airport property encompass approximately 1.5 acres. One residential home site and one commercial building are located in the OFA. Along with the building and residential home site, the remaining areas of the OFA would need to be cleared of trees, fencing, and any other obstructions to conform to FAA design standards. The taxiway leading to the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark would also need to be relocated as it would be within the limits of the OFZ.

This proposed runway extension places the Runway 6 RPZ over portions of 12 buildings (one residential home site and 11 commercial buildings) as well as parking lots that serve the commercial buildings. These properties are not consistent with the RPZ as they can cause the congregation of people and property on the ground. It is likely that many of these buildings would need to be removed to gain approval to extend Runway 6-24 as shown.

As mentioned, this alternative is similar to the extension recommended in the 1998 Master Plan Update and shown on the current Airport Layout Plan (ALP). During the preparation of the previous Master Plan, there were no buildings located within the extended Runway 6 RPZ.

Advantages: The extension would provide a maximum 6,100 feet of operational length for take-offs and landings in both directions, which would accommodate the majority of aircraft utilizing Payson Airport and limit operational restrictions in the warm summer months.

Disadvantages: The OFA and RPZ extend beyond airport property encompassing 12 buildings (one residential home site and 11 commercial buildings). It is likely that many of these buildings would need to be removed to gain approval to extend Runway 6-24 as shown.

Runway Extension Alternative B

While Runway Extension Alternative A depicts 6,100 feet of total runway length usable in both directions, Alternative B proposes to lessen the degree to which the proposed Runway 6 RPZ extends beyond the west end of the runway, by designating the 600 feet of extended pavement as usable for takeoff to the east only. In this manner, the existing Runway 6 threshold is maintained in its existing location and the RPZ is not shifted to the west as shown on Alternative A. This limits the number of buildings encompassed by the RPZ.

As depicted on the bottom half of **Exhibit 4C**, the proposed 600 feet of pavement would provide 6,100 feet of usable take-off length on Runway 6

only. The landing threshold on Runway 6 remains in its existing location, thus keeping the amount of landing distance available on Runway 6 at 5,500 feet. The take-off and landing distance on Runway 24 would also remain the same.

As in the previous alternative, the proposed RSA and OFZ would remain on airport property; however, portions of the proposed OFA and RPZ would extend beyond the current property boundary. The total area of land outside the property line but within the safety areas is approximately six acres. The OFA encompasses approximately one-half acre of land to the southwest of the airport that is not included on airport property. It should be noted that this portion of land is currently being evaluated for potential airport fee simple property acquisition. While there are no buildings located within the proposed OFA, obstructions such as trees and fencing would need to be removed.

The Runway 6 RPZ in Alternative B encompasses three residential home sites, four commercial buildings, associated vehicle parking lots, and portions of North Earhart Parkway and West Baron Boulevard. These properties are not consistent with the RPZ as they can cause the congregation of people and property on the ground. It is likely that many of these buildings would need to be removed to gain approval to extend Runway 6-24 as shown.

As previously mentioned, Alternative B displaces the Runway 6 threshold in order to decrease the number of incompatible land uses that are introduced into the proposed RPZ. Displacing the threshold requires the application of declared distances. Declared distances are the effective runway distances that the airport operator declares available for take-off run, take-off distance, accelerate-stop distance, and landing distance requirements. These are defined by the FAA as:

Take-off run available (TORA) – The length of runway declared available and suitable to accelerate from brake release to lift-off, plus safety factors.

Take-off distance available (TODA) – The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA available to accelerate from brake release past lift-off to start of take-off climb, plus safety factors.

Accelerate-stop distance available (ASDA) – The length of the runway plus stopway declared available and suitable to accelerate from brake release to take-off decision speed, and then decelerate to a stop, plus safety factors.

Landing distance available (LDA) – The distance from threshold to complete the approach, touchdown, and decelerate to a stop, plus safety factors.

Exhibit 4C shows the declared distances for Alternative B.

Advantages: The extension would provide 6,100 feet of usable take-off length on Runway 6. In comparison with Alternative A, there is less land

located within the portions of the OFA and RPZ that extend beyond airport property. There are also fewer buildings and home sites located within the RPZ.

Disadvantages: No additional runway length is provided for aircraft landing on Runway 6. No additional runway length is provided on Runway 24, the most used runway at the Payson Airport. As shown by the wind analysis in Chapter Three, the prevailing wind conditions at Payson Airport support the use of Runway 24 a large majority of the time. Since this alternative only provides additional runway length for aircraft departing Runway 6, those aircraft utilizing Runway 24, which is the primary runway of use, will gain no additional runway length. The OFA and RPZ extend beyond airport property encompassing seven buildings (three residential home sites and four commercial buildings). It is likely that many of these buildings would need to be removed to gain approval to extend Runway 6-24 as shown.

RUNWAY EXTENSION ALTERNATIVES SUMMARY

The previous alternatives considered two methods which attempt to provide additional runway length in order to better accommodate larger aircraft expected to use the airport through the planning period, while also attempting to meet FAA airport safety design criteria and limiting impacts on the existing Sky Park Industrial Park and Mazatzal Mountain Residential Airpark.

Runway Extension Alternative A provides 6,100 feet of usable runway length in both directions. The OFA and RPZ associated with this alternative extend beyond the current airport property line encompassing a total of 13 buildings that are incompatible with RPZ standards as established by the FAA.

Runway Extension Alternative B provides additional pavement length for departures to the east only. In contrast with Alternative A, Alternative B reduces the number of incompatible land uses within the OFA and RPZ. There are seven buildings that are located within the proposed RPZ associated with this alternative.

As depicted on **Exhibit 4C**, the two alternatives would require aircraft to back-taxi approximately 600 feet on the runway in order to obtain access to the Runway 6 end. Once there, they could utilize the turn-around to prepare for departure. Although this is not desirable, the taxiway connecting to Sky Park Industrial Park and Mazatzal Mountain Residential Airpark would need to be closed to extend the parallel taxiway to the extended Runway 6 end. Existing land constraints on the north and south sides of the runway would make it difficult to relocate the taxiway connecting the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. Significant grading and fill would be required to provide taxiway access to the Runway 6 end as well as additional property acquisition and building relocations.

From this analysis, implementation of either of the runway extension alternatives would result in significant costs. While an additional 600 feet of runway length would better accommodate larger piston-engine, turboprop, and business jet aircraft that utilize the airport, it must be carefully considered the degree to which operations will be benefited as compared to the overall costs associated with undertaking such a project. Prior to extending the runway to the west, an environmental assessment would be required.

RUNWAY/PARALLEL TAXIWAY SEPARATION

As previously discussed, Runway 6-24 is anticipated to accommodate more than 500 annual operations by aircraft in ARC B-II sometime during the planning period of this Master Plan. FAA design standards specify that the runway/parallel taxiway separation for aircraft in ARC B-II should be 240 feet for visual approaches and/or approaches with not less than ¾-mile visibility minimums. Currently at Payson Airport, Runway 6-24 and parallel Taxiway A are separated by 150 feet, which meets design standards for ARC B-I (small aircraft exclusively) only.

In addition to the runway/parallel taxiway separation standards, the FAA also specifies separation distances between a taxiway and taxilane and/or a fixed or movable object, such as a hangar or aircraft parking. These distances apply at Payson Airport in areas where aircraft parking aprons, hangars, and other structures extend parallel to Taxiway A. Presently, the apron edge taxilanes associated with Aprons A and C are located approximately 70 feet south of Taxiway A. Marked tiedowns for aircraft parking on Apron D are also located approximately 70 feet south of Taxiway A. The fixed base operator (FBO) building and one T-hangar complex are located 90 feet and 100 feet, respectively, from the taxiway. Finally, the airport's helipad is situated 50 feet to the south of Taxiway A. For aircraft in ADG II, FAA standards specify that a parallel taxiway be separated by a distance of 105 feet between the centerline of a taxiway/taxilane and 65.5 feet from a fixed or movable object (i.e. apron tiedowns, hangars, helipad).

The runway/parallel taxiway separation standard is intended to prevent the possibility of an aircraft operating on the runway from coming into contact with the wing of an aircraft operating on the taxiway. Also, the separation standard should prevent the wing of a taxiing aircraft from penetrating the RSA or OFZ surrounding the runway. ARC B-II design standards call for the RSA to be 150 feet wide and the OFZ to be 400 feet wide, with both being centered on the runway centerline.

The following describes three options for addressing the runway/parallel taxiway separation issue at Payson Airport. Also considered are proper separation between parallel Taxiway A and existing landside facilities farther south, additional entrance/exit taxiways, hold aprons, and possible relocation sites for the segmented circle and wind cone.

It should be noted that the relocation of Taxiway A will not be required until the airport experiences 500 annual operations by aircraft within ARC B-II. Selection of one of these alternatives primarily defines the development direction for the airport should the airport reach this threshold. With a development direction that considers the ultimate ARC B-II standards, the placement of future landside facilities can be made that does not obstruct the ARC B-II safety areas and separation requirements. This eliminates the need to relocate facilities at a later date to meet ARC B-II standards.

Option 1

Option 1 is similar to what is depicted on the most recently approved ALP per the 1998 Master Plan. As shown at the top of **Exhibit 4D**, parallel Taxiway A is relocated 90 feet to the south in order to provide the FAA specified 240-foot separation between Runway 6-24 and parallel Taxiway A to comply with ARC B-II design standards. The taxiway would be constructed to 35 feet in width and extend the full length of the runway, connecting at each runway end. This option maintains Runway 6-24 in its existing location; however, the proposed relocated parallel taxiway would affect existing landside facilities.

As previously discussed, the taxiway OFA for ADG II is 65.5 feet on either side of the taxiway centerline. The relocation of parallel Taxiway A would introduce several existing landside facilities into the proposed taxiway OFA. As depicted on **Exhibit 4D**, aircraft parking aprons A, B, and D would be affected by the taxiway relocation. On Apron A, approximately 6,300 square yards and 22 marked tiedown positions would be located within the taxiway OFA. Approximately 16 additional marked tiedown positions located on this apron would remain outside the proposed taxiway OFA. Moving farther to the east, a large majority of Apron B would be impacted by the relocated taxiway. This parking apron provides access to the campground facilities located on the airport. While it appears the 12 marked tiedown positions fall just outside the proposed taxiway OFA, the access taxilane and approximately 4,700 square yards of pavement would fall within the OFA. Finally, Apron D, which is considered the main transient aircraft parking apron on the airport and is associated with an adjacent FBO, restaurant, and aircraft maintenance facility, would fall completely within the relocated taxiway OFA. This includes six aircraft tiedown positions and approximately 5,000 square yards of apron space. It should be noted that although large portions of pavement associated with Aprons A, B, and D are located within the proposed parallel taxiway OFA, this does not necessitate the removal of this pavement. Aircraft could continue to utilize the pavement to gain access to and from the aircraft tiedown positions. Only tiedown positions with the limits of the relocated Taxiway A OFA would be removed.

Other landside facilities that would be located within the proposed taxiway OFA include a T-hangar complex and the existing FBO building. The T-

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LEGEND

- Ultimate Airport Pavement
- Airport Property Line
- Ultimate Property Line
- Object Free Area (OFA)
- Extended OFA
- Taxiway OFA
- Runway Safety Area (RSA)
- Obstacle Free Zone (OFZ)
- Taxiway OFA Deficiency
- Future Fee Simple Property Acquisition
- Acquire Property Interest
- Existing Avigation Easement
- Incompatible Land Use
- Runway Protection Zone (RPZ)

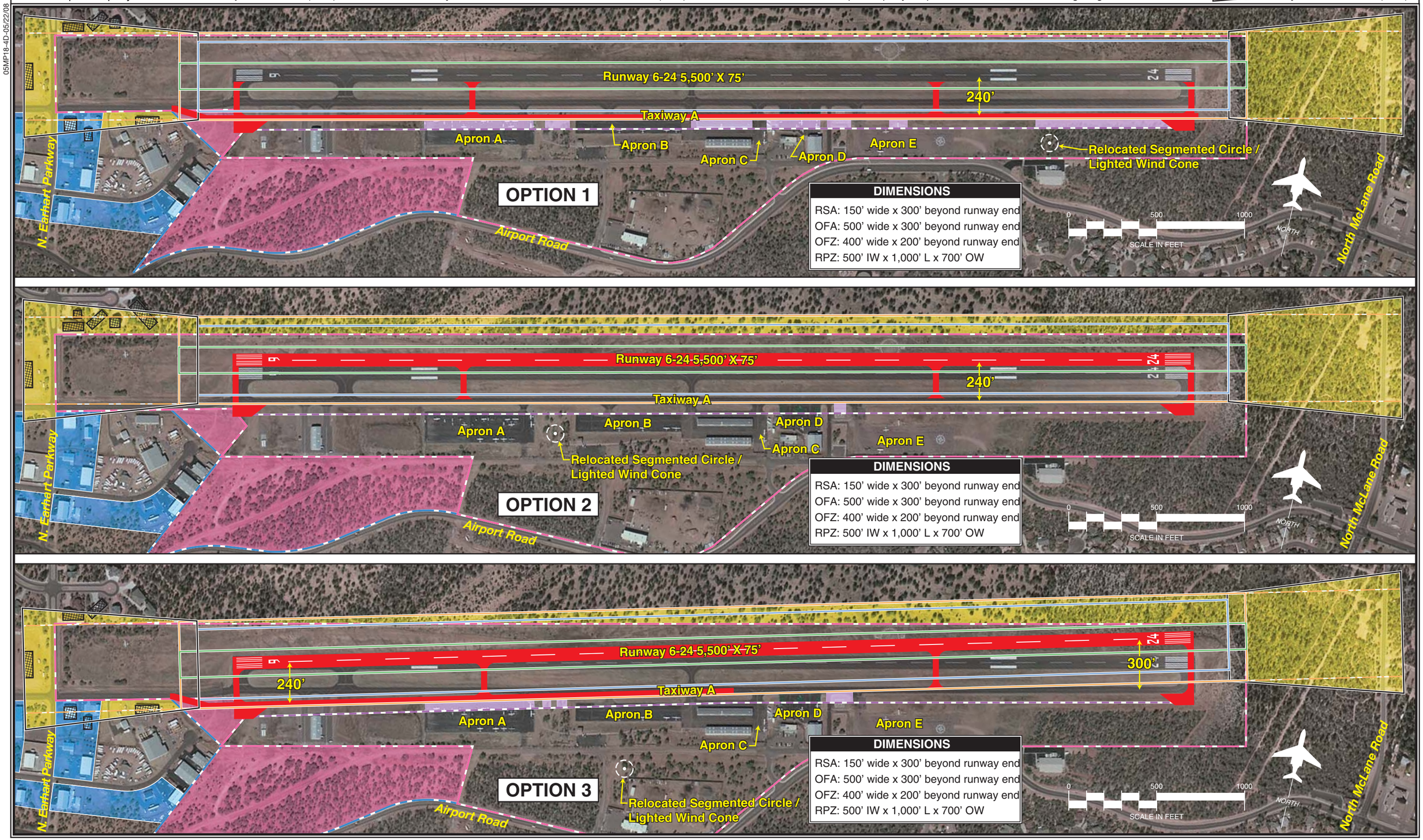

Exhibit 4D
RUNWAY / PARALLEL TAXIWAY
SEPARATION ALTERNATIVES

hangar complex encompasses approximately 20,000 square feet and includes ten individual aircraft storage spaces. The FBO building, located between Aprons C and D, provides approximately 500 feet of space for FBO operations as well as pilot and passenger use. Farther to the east of the terminal area, the helipad would be located within the path of the relocated taxiway surface. A storage tank utilized by the United States Forest Service that is located adjacent to the north side of Apron E would also need to be relocated in order to avoid penetrating the relocated taxiway OFA. Finally, several trees would need to be cleared in areas between Aprons A and B and east of Apron E.

Portions of the proposed OFA and RPZ would extend beyond the current property boundary, necessitating land acquisition. The total area of land outside the property line but within the safety areas is approximately 21.5 acres. The proposed OFA includes thin pieces of land adjacent to the north and southwest sides of the airport that encompasses approximately four acres. These areas containing the OFA would need to be cleared of trees to comply with FAA standards. At a minimum, the airport would need to acquire the OFA areas outside the property line. Approximately 1.5 acres of land on the southwest side of the airport that includes a portion of the proposed OFA is under evaluation to potentially be purchased by the airport.

Portions of the taxiway connecting the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark to the airport would need to be relocated. The eastern portions of this taxiway would extend through the OFZ and be considered an obstruction. Option 1 depicts a proposed realignment of a portion of this taxiway.

In addition to increased runway/parallel taxiway separation, ARC B-II standards would also increase the size of the RPZ beyond each runway end as discussed previously. For this alternative, Runway 6-24 is maintained in its existing location. On the west side of the airport, the proposed RPZ is placed over portions of three residential home sites and four commercial buildings. In addition, North Earhart Parkway and West Baron Boulevard traverse the RPZ. To the east of the airport, the Runway 24 RPZ will expand into areas of undeveloped land consisting of trees and steep terrain. North McLane Road extends in a north/south manner along the eastern portion of the RPZ. As previously stated, the airport should obtain some level of interest in the portions of the RPZ extending beyond airport property. This could include fee simple acquisition, obtaining an avigation easement, or enacting land use zoning that prevents future incompatible development within the RPZ in the future.

Other airside considerations taken into consideration with Option 1 include the development of two entrance/exit taxiways connecting Runway 6-24 and relocated parallel Taxiway A. The taxiways would be located approximately 1,400 feet from each runway end and constructed to 35 feet in width. These additional taxiways would provide a more efficient taxiing network from the runway system and

improve operational capacity. A total of five entrance/exit taxiways are proposed on the south side of Runway 6-24.

Also proposed are holding aprons located at each runway end. Holding aprons provide an area at the runway end for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. Currently, there are no holding aprons located at the airport.

The airport is currently equipped with a segmented circle and lighted wind cone on the north side of the airfield to aid pilots in determining appropriate traffic patterns, wind directions, and speed. Once the ARC design standards are upgraded to B-II, the safety areas will widen, causing the segmented circle and wind cone to be located within the runway OFZ and OFA. In Option 1, the segmented circle and wind cone are relocated approximately 900 feet southwest of the Runway 24 end in order to avoid penetrating these areas.

The cost to implement Option 1 (not including land acquisition) is approximately $3.46 million. This includes $796,000 for site preparation, $2.27 million for the relocation of parallel Taxiway A on the south side of the runway, $382,000 for the construction of additional entrance/exit taxiways and holding aprons, and $10,000 for the removal/relocation of existing landside facilities.

Advantages: The airport meets FAA ARC B-II runway/parallel taxiway separation standards. The relocation of parallel Taxiway A would allow Runway 6-24 to remain in its existing location. This would allow Runway 6-24 to remain open during the relocation of the parallel taxiway, better accommodating airport tenants and businesses. There is less land located within the OFA and RPZ outside airport property than in the other options being considered. This option will be less expensive than those to follow due to the smaller amount of pavement involved with relocating the taxiway.

Disadvantages: This option requires relocating an existing 10-unit T-hangar and the existing FBO building. In addition, 28 tiedowns will be removed. The helipad would need to be removed or relocated. An existing storage tank used by the United States Forest Service (USFS) would need to be relocated.

Option 2

Option 2 maintains parallel Taxiway A in its existing location and relocates Runway 6-24 to the north to gain the FAA required separation between the runway and parallel taxiway, as depicted on the middle portion of **Exhibit 4D**. In this option, the runway would be shifted approximately 90 feet to the north and constructed to a length of 5,500 feet by 75 feet wide. The two-box precision approach path indicators (PAPI-2) currently serving the Runway 24 end would also need to be relocated to the new runway ends.

Under Option 2, the only existing landside facility that penetrates the parallel taxiway OFA is the helipad

located between Aprons D and E. While this facility would need to be relocated outside the taxiway OFA, several of the landside facilities affected in Option 1, including aircraft tiedown positions, a T-hangar complex, and the FBO building can remain in their respective locations. The taxiway connecting the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark would also be unaffected.

As a result of the runway being shifted to the north, the associated RSA, OFA, OFZ, and RPZs will also be relocated to the north. Just as in the previous option, the OFA and RPZs will extend beyond the current airport property boundary. Additionally, portions of the OFZ will also be located to the north of existing airport property. The total area of land outside the property line that encompasses the OFZ, OFA, and RPZs is approximately 32.7 acres. The OFZ and OFA combined encompass approximately 13.8 acres of land.

On the west side of the airport, the relocated RPZ extends over five residential home sites and one commercial building. As in the previous option, portions of North Earhart Parkway and West Baron Boulevard are located within the RPZ. The proposed RPZ on the east side of the airport remains over areas of mainly undeveloped land. North McLane Road traverses the eastern portion of the RPZ.

Similar to the previous option, airside projects, including the construction of additional entrance/exit taxiways and two holding aprons, were considered. In Option 2, the entrance/exit taxiways extend from the relocated runway to existing parallel taxiway. The holding aprons are depicted at each end of Runway 6-24 adjacent to Taxiway A.

The location of the segmented circle and wind cone was also analyzed. In order to avoid penetrating the proposed RSA, OFA, and OFZ associated with a relocated Runway 6-24, Option 2 relocates the segmented circle and wind cone approximately 400 feet south of Runway 6-24 in an accommodating midfield location.

Option 2 is estimated to have a total associated construction cost of approximately $6.53 million. This includes $1.59 million for site preparations, $4.53 million for the northerly relocation of Runway 6-24, $382,000 for the construction of additional entrance/exit taxiways and holding aprons, $26,000 for the relocation of navigational aids (PAPI-2), and $2,000 for the removal/relocation of existing landside facilities.

Advantages: The airport meets FAA ARC B-II runway/parallel taxiway separation standards. In contrast with Option 1, this option only requires the removal/relocation of the helipad.

Disadvantages: The total area of land outside the property line that encompasses the OFZ, OFA, and RPZs is approximately 32.7 acres, the largest of all three options. Construction costs associated with a new runway will be much more expensive than those associated with relocating the taxiway. The airport could be closed for a lengthy period of time (minimum six to twelve months) while the run-

way is being relocated. Shifting the runway to the north could increase noise levels over residential land uses adjacent to the northwest of the airport.

Option 3

Option 3, as depicted at the bottom of **Exhibit 4D**, considers canting the runway 1.55 degrees from its existing alignment. This would shift the Runway 24 end toward the northeast. In doing so, the eastern half of the parallel taxiway would not need to be relocated and would be allowed to remain in its existing location. Reorienting the runway would maintain a minimum of 240 feet from the existing taxiway for eastern portions of Taxiway A increasing to 300 feet of separation between the relocated Runway 24 end and existing Taxiway A. The western half of Taxiway A would gradually shift farther south to allow for 240 feet of separation between the reoriented Runway 6 end. The existing Runway 6 threshold, although canted slightly to the southwest, would remain in the same relative location. As with Option 2, the PAPI-2 currently serving Runway 24 would need to be relocated to account for the shifting of the runway ends.

As previously discussed in Chapter Three, it is desirable that the runway is orientated as close as possible to the direction of the prevailing wind for the operational safety and efficiency of an airport. When compared to historical wind data from Payson Airport, the new runway alignment will still exceed the 95 percent wind coverage that is recommended in FAA AC 150/5300-13, Change 13, *Airport Design*. A reoriented Runway 6-24 would provide 96.39 percent wind coverage for 10.5 knot crosswinds increasing to 99.87 percent at 20 knots. These numbers are very similar to the existing wind coverage at the airport.

When considering landside facilities, no existing buildings would be impacted by this option. However, several marked tiedown positions on Apron A will be affected by the relocation of Taxiway A. As depicted on **Exhibit 4D**, this option requires the removal of 12 aircraft tiedown positions on Apron A. Approximately 3,500 square yards of pavement on Apron A would be located within the relocated Taxiway A OFA. Immediately to the east of Apron A is an area of trees that would need to be removed Moving farther east, the proposed taxiway OFA traverses portions of Aprons B and D but does not include aircraft tiedown positions or other facilities located in these areas. As the taxiway begins to straighten into its existing location, the only other landside facility that serves as a penetration to the proposed taxiway OFA is the helipad. Similar to Options 1 and 2, the helipad would need to be removed/relocated.

Portions of the taxiway connecting the Sky Park Industrial Park and Mazatzal Mountain Residential Airpark to the airport would need to be relocated. The eastern portions of this taxiway would extend through the OFZ and be considered an obstruction. Option 3 depicts a proposed realignment of a portion of this taxiway.

Similar to the previous option, portions of the proposed OFA, OFZ, and RPZs associated with Runway 6-24 would extend beyond current airport property. The relocated OFZ, OFA, and RPZs would encompass approximately 31.7 acres of land outside the property line. The OFZ and OFA would extend beyond the property line to the north of the airport and the OFA would also extend beyond existing airport property on the southwest side. A total of 12.7 acres would be included in the proposed OFZ and OFA.

The RPZ on the west side of the airport will shift slightly to the southwest to account for the canting of the runway. Two residential home sites, four commercial buildings, and associated parking lots that serve these facilities are included in the proposed RPZ. In addition, portions of North Earhart Parkway and West Baron Boulevard traverse the area. On the east side of the airport, the proposed RPZ includes areas of undeveloped land and North McLane Road.

As with the previous options, the construction of entrance/exit taxiways and two holding aprons is proposed. The location of the segmented circle and wind cone in Option 3 is approximately 600 feet south of the runway. While in a desirable midfield location, it would be more difficult to see for aircraft on the runway/taxiway system and occupy property than could be used for revenue support.

This option is estimated to cost approximately $6.54 million when all construction costs are considered. This includes $1.97 million for site preparations, $4.11 million for the relocation of Runway 6-24 and Taxiway A, $428,000 for the construction of additional entrance/exit taxiways and holding aprons, $26,000 for the relocation of navigational aids (PAPI-2), and $2,000 for the removal/relocation of existing landside facilities.

Advantages: The airport meets FAA ARC B-II runway/parallel taxiway separation standards. In contrast with Option 1, this option only requires the removal/relocation of the helipad and 12 tiedown positions.

Disadvantages: Existing landside facilities to include the helipad and several marked aircraft tiedown positions on Apron A will penetrate the proposed taxiway OFA and would need to be removed/relocated. Construction costs associated with relocating the majority of Runway 6-24 and approximately half of parallel Taxiway A will make this option the most expensive of all three options. Closure of the entire airport would also need to occur during the runway and taxiway construction process. The relocated OFZ, OFA, and RPZs would encompass approximately 31.7 acres of land outside the property line.

RUNWAY / PARALLEL TAXIWAY SEPARATION SUMMARY

The previous options considered three methods which attempt to provide additional separation between Runway 6-24 and parallel Taxiway A in order to meet the projected increase in demand for larger aircraft, while also attempting to meet FAA airport safety design criteria for ARC B-II.

Option 1 proposes relocating parallel Taxiway A 90 feet south in order to obtain 240 feet of separation between the runway and taxiway. Shifting the taxiway to the south will require removing 28 marked aircraft tiedown positions, a T-hangar complex, the FBO building, a helipad, and a storage tank that would be located within the relocated Taxiway A OFA. Safety areas associated with the runway to include the OFA and RPZs would extend beyond the current airport property line, but to a lesser extent than the other two options. Approximately 21.5 acres of land to include seven buildings and portions of existing roadways are located in the proposed safety areas.

Option 2 considers keeping the parallel taxiway in its current location while shifting Runway 6-24 approximately 90 feet north to provide the proper separation. This option has very little impact on existing landside facilities south of the parallel taxiway. Only the helipad will penetrate the proposed OFA associated with Taxiway A. The OFA, OFZ, and RPZs would extend beyond airport property to the north, east, and west sides of the airport. With this option, approximately 32.7 acres of land are located within the proposed safety areas. Six buildings and existing roadways are also included in the proposed RPZs.

Option 3 involves canting Runway 6-24 to the northeast 1.55 degrees. This would require only the western half of Taxiway A to be relocated. Existing landside facilities including 12 marked tiedown positions on Apron A and the helipad would need to be removed/relocated. A substantial amount of land is located within the proposed safety areas associated with Option 3 to include approximately 31.7 acres of land, as well as six buildings and existing roadways.

All three options consider improvements to operational safety and efficiency of the airport to include additional entrance/exit taxiways and holding aprons. Options for relocating the segmented circle and wind cone outside the ultimate safety areas are also presented.

The construction cost of each proposed option increases as the amount of runway and taxiway pavement to be displaced increases. **Table 4B** provides a more detailed breakdown of construction costs associated with the three proposed runway/parallel taxiway separation options as previously discussed.

As previously discussed, implementation of any of the options would require new property interests to be acquired by the airport. This could include fee simple acquisition, avigation easements, or a combination of both. The above costs associated with each option do not take into account the land that will need to be controlled by the airport. Properties that could be affected include those owned by residents in Mazatzal Mountain Residential Airpark, commercial businesses in Sky Park Industrial Park, the United States Forest Service, and other private entities. Additional analysis separate from this Master Plan will be needed to determine the costs associated with controlling the properties above.

TABLE 4B Runway/Parallel Taxiway Separation Construction Cost Projections Payson Airport			
Project	**Option 1**	**Option 2**	**Option 3**
Runway			
Site Preparation	-	$1,591,000	$1,545,000
Existing Pavement Removal	-	$357,000	$265,000
Relocated Runway	-	$4,171,000	$3,000,000
Navigational Aid Relocation (PAPI-2)	-	$26,000	$26,000
Subtotal	**$0**	**$6,145,000**	**$4,836,000**
Taxiways			
Site Preparation	$796,000	-	$425,000
Existing Pavement Removal	$183,000	$2,000	$80,000
Relocated Parallel Taxiway	$2,088,000	-	$770,000
Entrance/Exit Taxiways	$255,000	$255,000	$301,000
Hold Aprons	$127,000	$127,000	$127,000
T-Hangar Removal/Relocation	$310,000	-	-
FBO Building Removal/Relocation	$150,000	-	-
Subtotal	**$3,909,000**	**$384,000**	**$1,703,000**
Total Costs	**$3,909,000**	**$6,529,000**	**$6,539,000**

Environmental impacts would result in the implementation of any of these options. These include potential wetland areas on or adjacent to the airport and floodways/floodplains associated with the Santa Ana River, American Gulch Tributary, and East Verde River, all which are located in close proximity to Payson Airport. In addition, areas on or in close proximity to Section 4(f) properties, including the airport campground and Tonto National Forest adjacent to the north of the airport would be affected. The proposed projects, would impact wooded areas, in particular, on the north side of the airport, which would need to be surveyed for biological and cultural resources.

OTHER AIRSIDE CONSIDERATIONS

Currently, only the entrance/exit taxiways on the south side of Runway 6-24 are equipped with medium intensity taxiway lighting (MITL). In an effort to increase safety and provide enhanced guidance for aircraft taxiing during nighttime conditions, MITL should be applied to all active taxiways on the airport.

Consideration should also be given to designating all taxiways in conformance with FAA AC 150/5340-18D, *Standards for Airport Sign Systems*. This AC specifies that the entrance/exit taxiways that connect Runway 6-24 and parallel Taxiway A should be designated alphanumerically. This was a recommendation outlined in the Runway Safety Action Plan in June 2004. In addition to taxiway designations, signage referring to the runway, holding positions, routing/directional, and runway exits should be implemented.

A PAPI-2 currently serves Runway 24 at Payson Airport. A PAPI-2 should also be installed on Runway 6 in order to provide pilots with visual guidance information during landings to this runway.

In order to provide pilots with the improved ability to distinguish the runway ends during nighttime conditions, runway end identification lights (REILs) should be planned on Runway 6-24. Further, the FAA indicates that REILs should be considered on all lighted runway ends not planned for a more sophisticated approach lighting system. This applies to Payson Airport.

The airport is equipped with an Automated Weather Observation System III (AWOS-III) which provides automated weather observations 24 hours per day; however, the AWOS-III at Payson Airport is currently not linked to the National Weather Service. As a result, the up-to-date weather information that is important to aircraft operations is unavailable to weather stations for purposes of disseminating this information to pilots utilizing the airport environment. In order to provide more accurate and timely weather information, the AWOS-III should be linked to the National Weather Service reporting system.

Currently, the airport is served by an RNAV (GPS)-A circling approach only. This approach allows aircraft with approach speeds less than 121 knots to land at the airport when visibility is as low as one mile and cloud ceilings are as low as 563 feet above ground level (AGL). For higher approach speeds, the visibility and cloud ceiling minimums increase to two miles and 603 feet AGL, respectively. With recent advances in GPS technologies, including the development of the Wide Area Augmentation System (WAAS), planning should consider the implementation of a straight-in instrument approach to Runway 6-24. Due to wind conditions predominately favoring the use of Runway 24, a straight-in approach should be strongly considered for this runway with improved cloud ceiling minimums. Any approach providing less than one mile visibility minimums will require the installation of an approach lighting system (ALS). The possibility of implementing an ALS will be difficult considering the physical constraints beyond each runway end at Payson Airport.

LANDSIDE PLANNING CONSIDERATIONS

Landside planning considerations were summarized previously on **Exhibit 4A**. The following paragraphs briefly describe proposed landside facility improvements.

AIRCRAFT HANGAR DEVELOPMENT

The facility requirements analysis indicated a need for the development of more aircraft storage hangars at Payson Airport. Hangar development takes on a variety of sizes corresponding with several different uses.

Commercial general aviation activities are essential to providing the neces-

sary services needed on an airport. This includes businesses involved with (but not limited to) aircraft rental and flight training, aircraft charters, aircraft maintenance, line service, and aircraft fueling. These types of operations are commonly referred to as FBOs. The facilities associated with businesses such as these include large conventional type hangars that hold several aircraft. High levels of activity often characterize these operations, with a need for apron space for the storage and circulation of aircraft. These facilities are best placed along ample apron frontage with good visibility from the runway system for transient aircraft. Utility services are needed for these types of facilities, as well as automobile parking areas.

Planning for commercial general aviation activities is important for this Master Plan. The mix of aircraft using Payson Airport is expected to change to include some aircraft which have larger wingspans. These larger aircraft require greater separation distance between facilities, larger apron areas for parking and circulation, and larger hangar facilities.

The medium-activity use category defines the next level of airport use and primarily includes smaller corporate aircraft that may desire their own executive or box hangar storage. Typically, these types of hangars are used by corporations with company-owned aircraft or by an individual or group of individuals with several aircraft. The best location for this type of activity is off the immediate flight line, but still readily accessible to aircraft. Due to an airport's layout and other existing conditions, if this area is to be located along the flight line, it is best to keep it out of the midfield area of the airport, so as to not cause congestion with transient aircraft utilizing the airport. Parking and utilities such as water and sewer should also be provided in this area.

Another need indicated was additional space for the storage of smaller aircraft. This primarily involves T-hangars. Since storage hangars often have lower levels of activity, these types of facilities can be located away from the primary apron areas in more remote locations of the airport. Limited utility services are needed for these areas. Typically, this involves electricity, but may also include water and sanitary sewer.

TERMINAL BUILDING

Payson Airport currently does not have a dedicated airport terminal building. A building operated by the FBO on the airport provides a waiting lobby, pilot lounge area, and restroom facilities. There is very limited space in this facility. A smaller building located immediately south provides an area for airport operations. Additional terminal area space was identified as being needed during the course of the planning period. The designated terminal area for the airport currently is located adjacent to Apron D.

FAA AC 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, identifies a number of basic considerations that affect the location of a terminal building. The primary considerations include the following:

1. **Runway configuration**: The terminal should be located to minimize aircraft taxiing distances and times and the number of runway crossings.

2. **Access to transportation network**: The terminal should be located to provide the most direct/shortest routing to the regional roadway network.

3. **Expansion potential**: The long term viability of the terminal is dependent upon the ability of the site to accommodate expansion of the terminal beyond forecast requirements.

4. **FAA Geometric Design Standards**: The terminal location needs to assure adequate distance from present and future aircraft operational areas.

A review of each of these factors is listed below.

Runway configuration: The terminal area is situated near the midpoint of Runway 6-24 adjacent to Apron D. Taxiway A serves the main apron and is located south of the runway.

Access to transportation network: The existing terminal area is located on an access road immediately north of Airport Road. Airport Road connects directly with State Highway 87 approximately two miles east of the airport. Public vehicle parking is not available adjacent to the existing small terminal building. Vehicles must park near the restaurant and walk down steps to reach the terminal building

Expansion potential: Limited space is available along the existing terminal area for building expansion. Terrain limits development to the south. The location of Taxiway A prevents expansion to the north. A T-hangar and apron area limit development potential to the west. Apron area D limits development potential to the east.

FAA Geometric Design Standards: The exiting terminal area is located approximately 300 feet south of the Runway 6-24 centerline. Portions of the terminal area could be affected by future airport safety design standards depending on future airside development, in particular if Taxiway A is relocated 90 feet south.

In the landside alternatives to follow, retention of the terminal area in its existing location will be considered. However, for planning purposes, a new terminal location will also be explored as a new area can alleviate many of the deficiencies listed above.

REVENUE SUPPORT LAND USES

Due to the physical terrain and layout of certain portions of airport property, the landside alternatives to follow consider options for Payson Airport to utilize portions of the airport for both aviation-access and non-aviation access commercial and/or industrial development.

It should be noted that the Town does not have the approval to use airport

property for non-aeronautical purposes at this time. This requires specific approval from the FAA. The Master Plan does not gain approval for non-aeronautical uses, even if these uses are ultimately shown in the Master Plan. A separate request justifying the use of airport property for non-aeronautical uses will be required once the Master Plan is complete. The Master Plan can be a source for developing that justification.

Federal law obligates an airport sponsor to use all property shown on an ALP and/or Property Map for public airport purposes. A distinction is generally not made between property acquired locally and property acquired with federal assistance. However, property acquired with federal assistance or transferred surplus property from the federal government may have specific covenants or restrictions on its use different from property acquired locally.

These obligations will require that the Town formally request from the FAA a release from the terms, conditions, reservations, and restrictions contained in any conveyance deeds and assurances in previous grant agreements. A release is required even if the airport desires to continue to own the land and only lease the land for development. The obligations relate to the use of the land just as much as they do to the ownership of the land.

U.S. Code 47153 authorizes the FAA to release airport land when it is convincingly clear that:

a. Airport property no longer serves the purpose for which it was conveyed. In other words, the airport does not need the land now or in the future because it has no airport-related or aeronautical use, nor does it serve as approach protection, a compatible land use, or a noise buffer zone.

b. The release will not prevent the airport from carrying out the purpose for which the land was conveyed. In other words, the airport will not experience any negative impacts from relinquishing the land.

c. The release is actually necessary to advance the civil aviation interests of the counters. In other words, there is a measurable and tangible benefit for the airport or the airport system.

Ultimately, the ability of the Town to use airport property for non-aeronautical revenue production will rest upon a determination by the FAA that portions of the airport property are no longer needed for airport-related or aeronautical uses. To prove that land is not needed for aeronautical purposes, an assessment and determination of the area that will be required for aeronautical purposes will be required. The Master Plan provides this analysis.

A formal request to the FAA for a release from Federal obligations will have several distinct elements. The major elements of the request will include:

1. A description of the obligating conveyance instrument or grant.

2. A complete property description including a legal description of the land to be released.

3. A description of the property condition.

4. A description of federal obligations.

5. The kind of release requested (lease or sale).

6. Purpose of the release.

7. Justification for the release.

8. Disposition and market value of the released land.

9. Reinvestment agreement. A commitment by the Town to reinvest any lease revenues exclusively for the improvement, operation, and maintenance of the airport.

10. Draft instrument of release.

An environmental determination will also be required. While FAA Order 1050.1E, *Environmental Policies and Procedures*, states that a release of an airport sponsor from Federal obligations is normally categorically excluded and would not normally require an Environmental Assessment, the issuance of a categorical exclusion is not automatic and the FAA must determine that no extraordinary circumstances exists at the airport. Extraordinary circumstances would include a significant environmental impact to any of the environmental resources governed by Federal law. An Environmental Assessment may be required if there are extraordinary circumstances.

LANDSIDE DEVELOPMENT ALTERNATIVES

A series of landside development alternatives have been examined for the south side of the airport only. This area of the airport is served by runway access now (Taxiway A) and located along Airport Road with availability of utilities and has sufficient area to meet future needs with some land acquisition. Roadway access and utilities are not available on the north side of the runway. Each of the alternatives depict the acquisition of approximately 13 acres of land that the Town of Payson is currently pursuing in the southwest portion of the airport along Airport Road and adjacent to the Sky Park Industrial Park.

These alternatives consider general aviation facility development providing for separation of activity levels. The goal of this analysis is to indicate development potentials which would provide Payson Airport with a specific goal for future development. The resultant plan will aid the Town and PRAA in strategic marketing of available airport properties.

LANDSIDE ALTERNATIVE A

Landside Alternative A, depicted on **Exhibit 4E**, considers the relocation of parallel Taxiway A to the south in order to satisfy the safety design standards for runway/parallel taxiway separation previously discussed. It also

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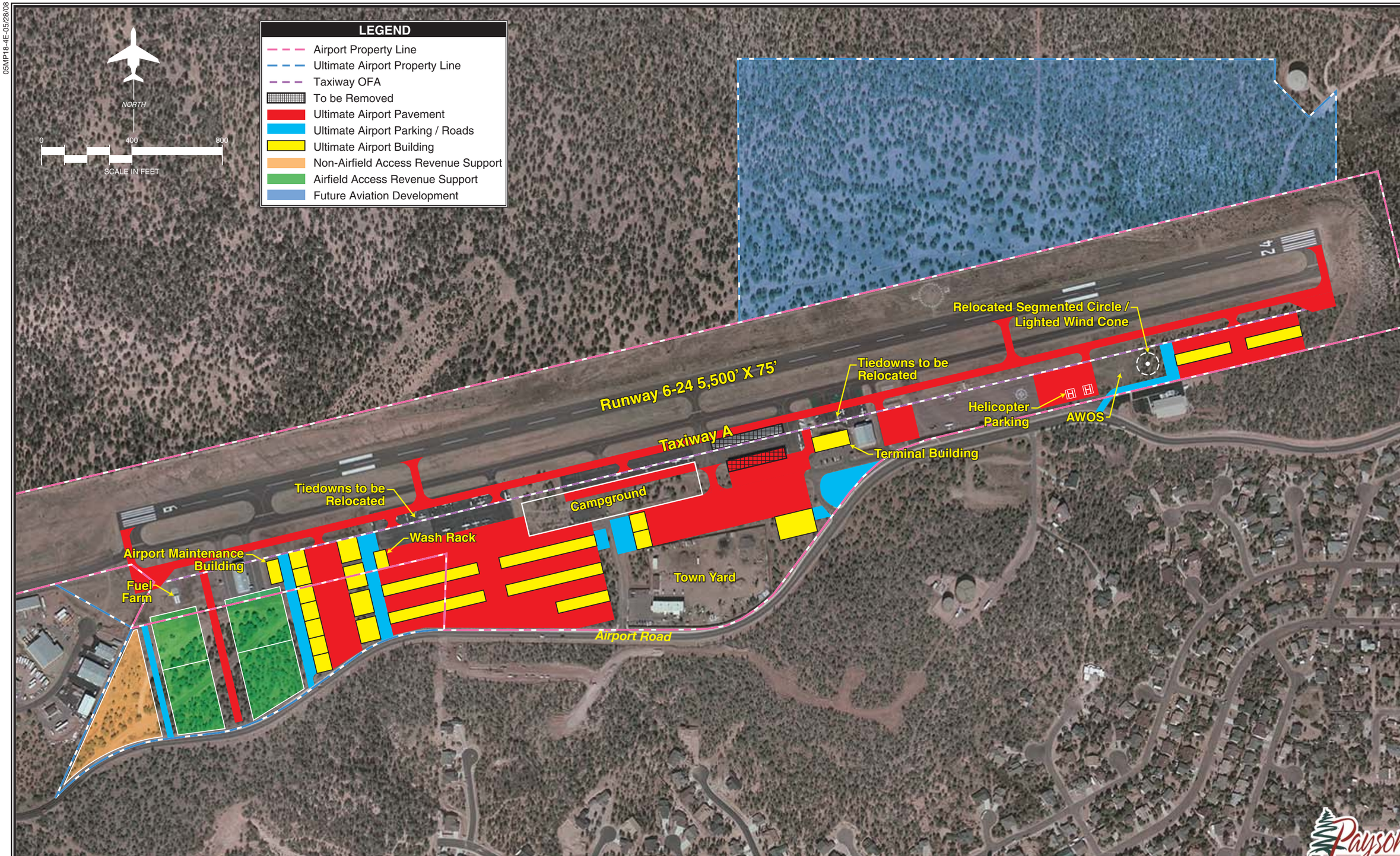

Exhibit 4E
LANDSIDE ALTERNATIVE A

shows the acquisition of approximately 13 acres of land on the southwest side of the airport for future aviation development. The principal philosophy followed is to group facilities supporting similar activity levels together.

This alternative proposes constructing a new terminal building in the current location of the airport restaurant adjacent to Apron D. This proposed facility could provide space for airport management and operations, FBO operations, pilots and passengers, and a restaurant, among other activities. Additional automobile parking is proposed immediately south of the road currently providing access to the terminal area.

Moving east of the terminal area, the east and west sides of Apron E are expanded to accommodate the aircraft parking area that would be displaced on Apron D as a result of the parallel taxiway relocation. Likewise, two helicopter hardstands are proposed on the southeast side of Apron E to compensate for the removal of the existing helipad between Aprons D and E. To the east of the existing AWOS and proposed segmented circle and lighted wind cone, two hangar storage complexes are depicted that could provide T-hangar or linear box hangar storage space. Automobile access would be provided by a roadway extending northeast off of Airport Road.

It should be mentioned that this alternative keeps the AWOS in its current location. FAA Order 6560.20B, *Siting Criteria for Automated Weather Observing Systems (AWOS)*, states that all AWOS sensors should be located together and outside the runway and taxiway object free areas. Generally, AWOS sensors are best placed between 1,000 and 3,000 feet from the primary runway threshold and between 500 and 1,000 feet from the runway centerline. Based upon historical wind conditions at Payson Airport, prevailing winds are from the southwest a large majority of the time, leading to a greater use of Runway 24. Therefore, following AWOS siting criteria, the existing location of the AWOS is determined to be in a desirable position.

West of the proposed terminal building, the 10-unit T-hangar complex and four-unit linear box hangar are shown to be removed and relocated in order to provide additional area for aircraft parking space associated with the terminal area. The expansion of Apron C to the south would lead to a large conventional hangar that could support the storage of several aircraft or FBO operations. This hangar is provided with a large area of apron frontage, which is desired for higher-level aircraft activity usually associated with these types of facilities. West of this location and between the airport campground and Town Yard is land designated for executive hangar development. As mentioned earlier, these hangars are often utilized by corporate flight departments that possess their own aircraft, or an individual or group of individuals, that have several aircraft.

This alternative shows the expansion of Apron B. Apron B, which serves the campground facilities, would be expanded farther south to allow additional aircraft parking space as a re-

sult of the northern portion of the apron being deemed unusable for parking due to the parallel taxiway relocation.

Apron A is also expanded to the south to accommodate the 22 marked aircraft tiedown spaces that would need to be relocated. Still farther south, five T-hangar complexes are depicted that would allow for the storage of several smaller single engine and multi-engine aircraft. A wash rack is proposed on the west side of Apron A that would allow for the proper disposal of aircraft cleaning fluids. There is no such facility approved for use currently available at the airport. This area would be accommodated with vehicle access by extending a roadway to the north from Airport Road.

West of this area is a complex of several aircraft storage hangars that could be utilized for commercial aviation business activities and/or private aircraft storage. A dedicated airport maintenance building is also depicted near the hangar complex that would allow for the storage of airport equipment, while also enhancing the productivity of airport maintenance staff.

This alternative shows a 35-foot wide taxiway extending off the south end of parallel Taxiway A to support additional airfield access activities. Four airfield access revenue support parcels are depicted ranging in size from approximately one to two acres. To the west of the proposed vehicle access road is an area designated for non-airfield access revenue support. This parcel is adjacent to Sky Park Industrial Park and could accommodate commercial and/or industrial activity that does not require airfield access.

The above describes maximum development potential on the south side of the airport to include approximately 13 acres of land acquisition. The most recently approved ALP for Payson Airport does include the potential future acquisition of property adjacent to the northeast side of the airport as depicted on **Exhibit 4E**. In the event that the airport was to purchase this property, access roadways and utility infrastructure would need to be extended to these areas prior to any type of development occurring. It is likely that any development in this area would extend well beyond the planning horizon of this Master Plan.

The proposed development areas discussed in this alternative will need to be analyzed and studied in more detail before ever coming to fruition. As with any development, these areas will have to take into account specific site preparation methods regarding grading and drainage.

LANDSIDE ALTERNATIVE B

Exhibit 4F depicts Landside Alternative B. This alternative proposes a new terminal building to be constructed on the southwest side of the airport in the area currently under evaluation for airport property acquisition. This terminal area location would allow a greater land area to be devoted to terminal operations. This location would require the construction of a vehicle access road extending from Airport Road. On each side of

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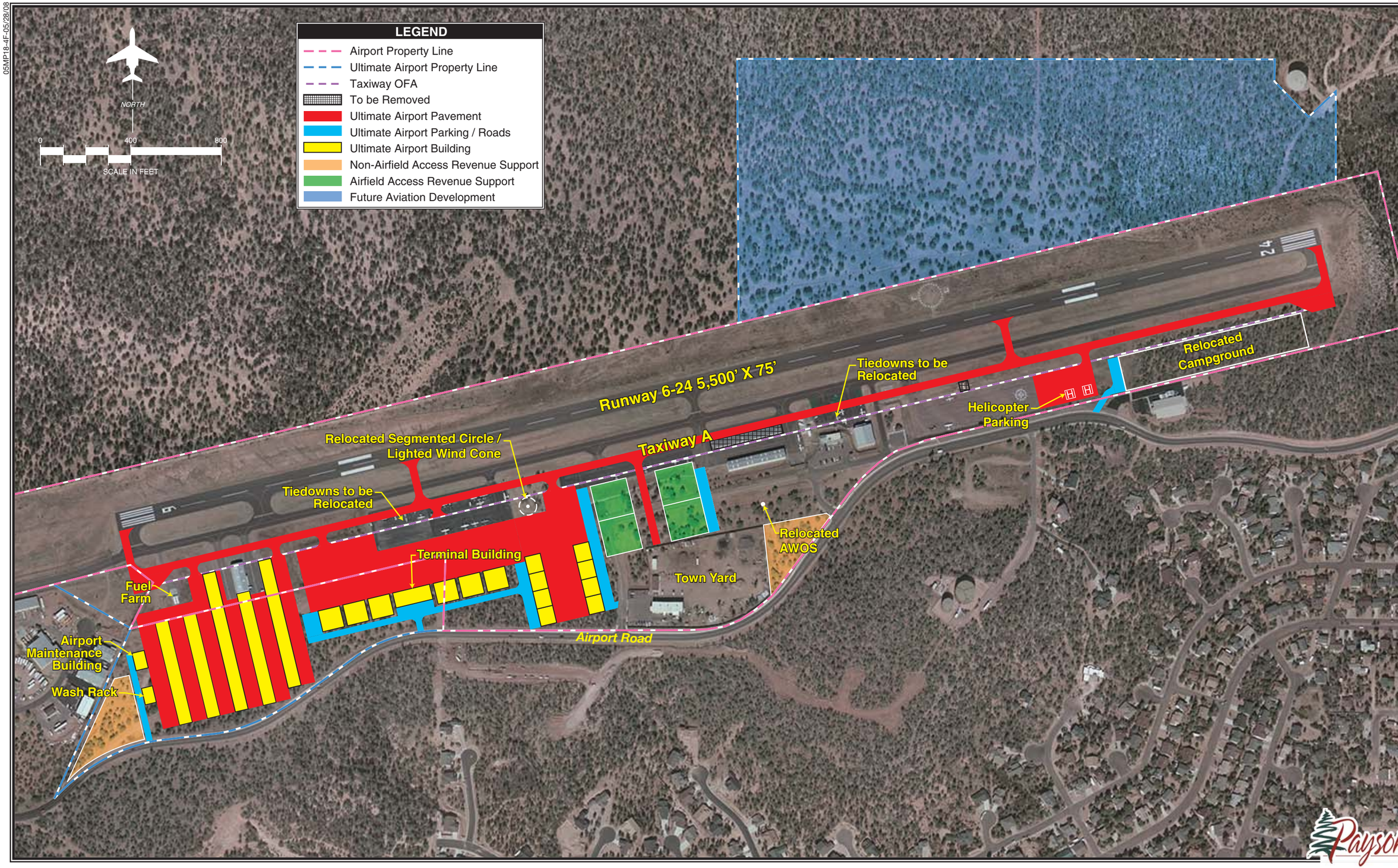

Exhibit 4F
LANDSIDE ALTERNATIVE B

the proposed terminal building are large conventional hangars that could be used for FBO-type operations and/or aircraft storage. Although the mix of these buildings and activities lend themselves well with each other, the location is set farther away from a desired midfield location.

To the west of the terminal area are five rows of aircraft hangars in the form of T-hangars and/or linear box hangars that will support the storage of several smaller general aviation aircraft. This concept keeps with the philosophy of grouping similar levels of aviation activity together. A dedicated airport maintenance building and aircraft wash rack are proposed west of the storage hangars. As in the previous alternative, a parcel dedicated for non-airfield access revenue support is located in the southwest corner of the airport that would be given immediate access to Airport Road. To the east of the terminal area, two rows of executive hangars are depicted that could support corporate flight departments or individual aircraft storage.

Landside Alternative B considers relocating the airport campground to the eastern portion of existing airport property. This concept is depicted on the current ALP for the airport. As a result, the area currently housing the campground facilities is proposed to accommodate four airfield access revenue support parcels, each approximately one-half acre in size. A 35-foot wide taxiway extending south from parallel Taxiway A would provide aircraft access to this area.

Moving farther east, the existing terminal area will be affected by the relocation of the parallel taxiway. The aircraft maintenance facility and airport restaurant adjacent to Apron D could remain, and aircraft wanting access to these facilities could utilize Apron E to the east for parking. The proposed expansion of Apron E would also accommodate aircraft parking for those pilots and passengers utilizing the relocated campground.

This alternative also depicts a new location for the AWOS, setting it approximately 600 feet south of the runway and approximately 2,600 feet southwest of the Runway 24 threshold. Immediately south of the potential AWOS site is another non-airfield access revenue support parcel.

As previously depicted, the area northeast of existing airport property is proposed as future airport property acquisition for development that will likely exceed the long term planning period. As stated earlier, future automobile access and other physical constraints will dictate the potential for acquisition and development of this area.

LANDSIDE ALTERNATIVE C

Landside Alternative C, as depicted on **Exhibit 4G**, keeps parallel Taxiway A in its existing location and assumes the relocation of Runway 6-24 in order to obtain the proper runway/parallel taxiway separation.

Since the existing terminal area would remain intact with no taxiway relocation, a new terminal building is shown in the current location of the airport

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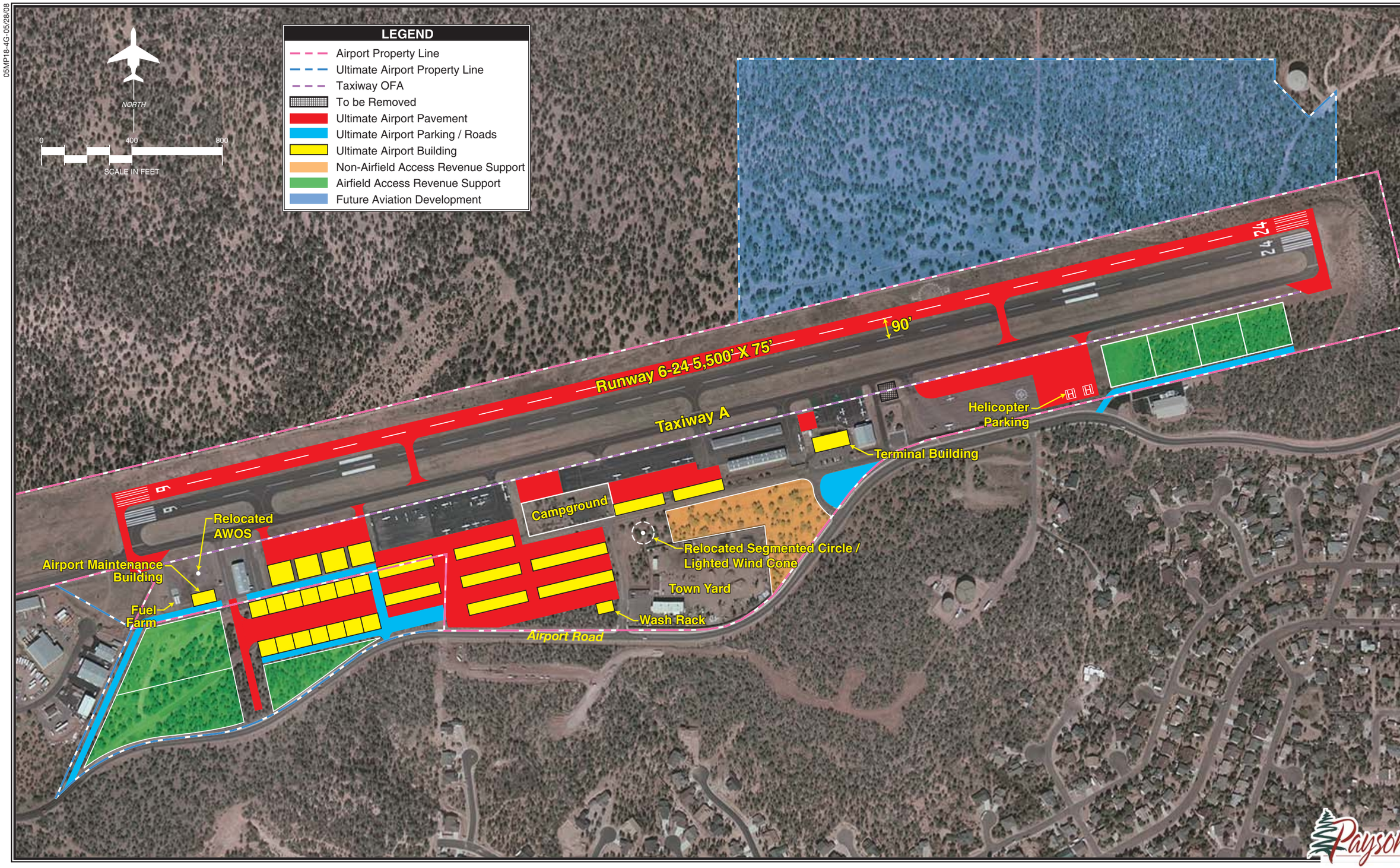


Exhibit 4G
LANDSIDE ALTERNATIVE C

restaurant. As previously mentioned, this facility can accommodate several different functions to include airport management and operations, FBO operations, a restaurant, and pilot and passenger services. Additional pavement is proposed in the location of the existing FBO building to provide more aircraft parking. More automobile parking is shown in an area south of the proposed terminal building and adjacent to Airport Road. Farther east, Apron E could be expanded to the north and east to provide additional aircraft and helicopter parking. As on the previous landside alternatives, expanding Apron E would better segregate the United States Forest Service from normal aviation activities when they utilize the airport during the fire season. On the east side of the airport, four revenue support parcels are depicted that would be provided airfield access directly off of Taxiway A.

A slightly different approach was taken in analyzing the current airport campground. This alternative proposes decreasing the size of the facility and expanding Apron B. Two aircraft storage hangars are also depicted on the south side of the apron expansion that could accommodate single engine and smaller multi-engine aircraft.

To the west, several T-hangar complexes are proposed in areas south of Apron A. An aircraft wash rack facility is shown at the southeast corner of this area. Proper separation between the T-hangar complexes would allow aircraft of all sizes access to the wash rack facility.

Additional aviation support facilities are located in the southwest portion of the airport. Although this area is currently not on airport property, a study is being done to evaluate the acquisition of this land. In the event that the airport would acquire the property, this alternative depicts two rows of executive hangars that would be provided with airfield access via a taxiway connecting to Taxiway A. Also shown in this area are three aviation access revenue support parcels ranging in size from approximately one to three acres. Two new automobile access roads extending north from Airport Road would provide access to these areas. Closer to the runway, four large conventional hangars are proposed that could accommodate commercial aviation activities. As previously mentioned, it is desirable to have these facilities close to the immediate runway/taxiway system as they typically include higher level aviation activity. A maintenance building is shown immediately east of the airport fuel farm. Finally, this alternative depicts the AWOS to be relocated to the west side of the airport near the existing fuel farm and proposed maintenance building in an area that would otherwise remain vacant.

Additional areas designated for non-airfield access are shown on this alternative that would generate additional revenue for the airport in the form of land leases. As in the previous landside alternatives, an area on the northeast side of Runway 6-24 is shown as future airport property acquisition that could be utilized for aviation development.

SUMMARY

The process utilized in assessing airside and landside development alternatives involved a detailed analysis of short and long term requirements, as well as future growth potential. Current and future airport design standards were considered at every stage in the analysis. Safety, both in the air and on the ground, was given a high priority in the analysis of alternatives.

These alternatives present an ultimate configuration of the airport that would need to be developed over a long period of time. The next phase of the Master Plan will define a reasonable phasing program to implement a preferred Master Plan development concept over time.

Upon review and input from the Planning Advisory Committee (PAC), Town officials, PRAA, and the public, a recommended concept will be developed by the consultant. The resultant plan will represent an airside facility that fulfills the safety design standards and a landside complex that can be developed as demand dictates.

The preferred Master Plan development concept for Payson Airport must represent a means by which the airport can grow in a balanced manner, both on the airside as well as the landside, to accommodate forecast demand. In addition, it must provide flexibility in the plan to meet the activity growth beyond the long range planning horizon.

The remaining chapters will be dedicated to refining these basic alternatives into a final development concept with recommendations to ensure proper implementation and timing for a demand-based program.

Chapter Five

MASTER PLAN CONCEPT AND CAPITAL PROGRAM

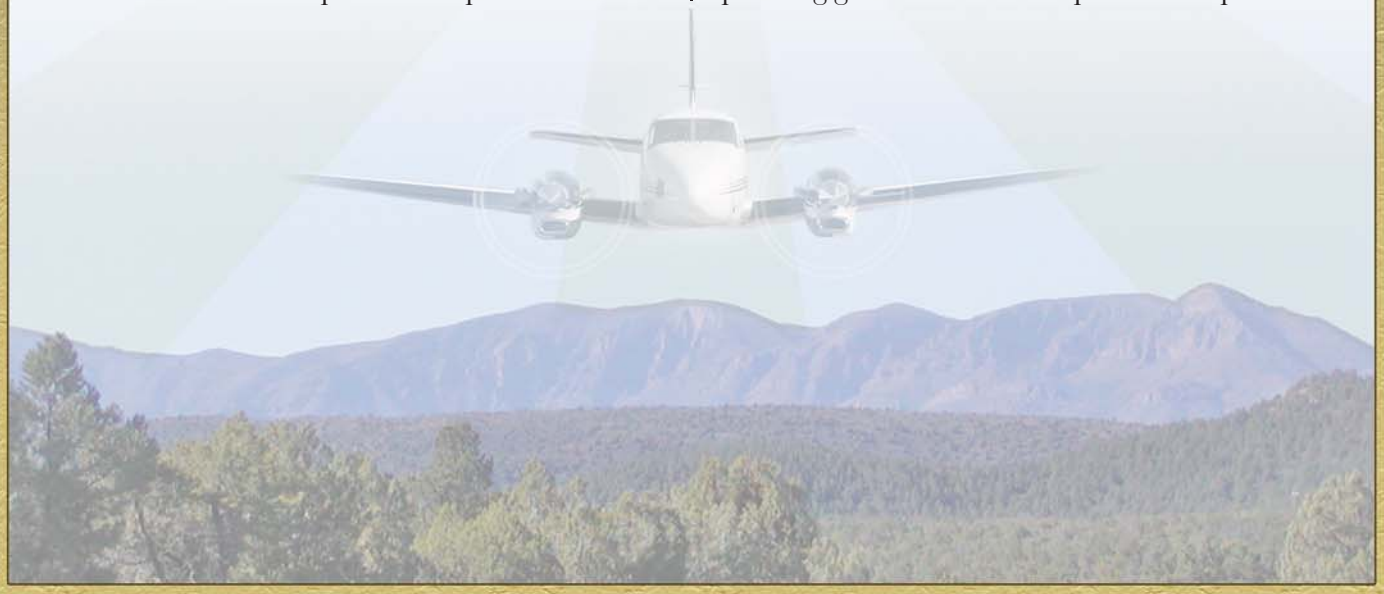
Payson Airport

Master Plan Concept and Capital Program

The planning process for the Payson Airport Master Plan has included several technical efforts in the previous chapters intended to establish the role of the airport, project potential aviation demand, establish airside and landside facility needs, and evaluate alternatives for improving the airport to meet those facility needs. The planning process, thus far, has included the presentation of three draft phase reports to the Planning Advisory Committee (PAC) and public information workshops. In addition, coordination meetings with representatives from the Town of Payson, Payson Regional Airport Authority (PRAA), Federal Aviation Administration (FAA), and Arizona Department of Transportation (ADOT) - Aeronautics Division have taken place to help further refine the Master Plan. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use and development of Payson Airport. Environmental conditions that need to be considered during development are also examined within this chapter. Finally, the airport's capital needs, based on the projected capital improvement program (CIP), are presented and funding sources on the federal, state, and local levels are identified.

DEMAND-BASED PLAN

The Payson Airport Master Plan has been developed according to a demand-based schedule. Demand-based planning establishes planning guidelines for the airport based upon air-



port activity levels, instead of guidelines based upon subjective factors such as points in time. By doing so, the levels of activity derived from the demand forecasts can be related to the actual capital investments needed to safely and efficiently accommodate the level of demand being experienced at the airport. More specifically, the intention of this Master Plan is that the facility improvements needed to serve new levels of demand should only be implemented when the levels of demand experienced at the airport justify their implementation.

For example, the aviation demand forecasts indicate based aircraft at Payson Airport can be expected to grow over the long term. This forecast is supported by the airport service area's expectation for a growing population and economy. Future based aircraft levels, however, will be dependent upon the actual growth in population and economy, as well as trends in the aviation industry. Factors affecting future based aircraft levels include, but are not limited to, aircraft storage hangar costs, the development of property adjacent to the airport to include Sky Park Industrial Park and Mazatzal Mountain Residential Airpark, and the impact of oil prices on recreational aviation. Individually or collectively, these factors can slow or accelerate based aircraft levels differently. Since changes in these factors can affect the accuracy of time-based forecasts over time, it can be difficult to predict the exact time a given improvement may become justified for the out-years of the planning period.

For these reasons, the Master Plan for Payson Airport has been developed as a demand-based plan. The Master Plan projects 70 aircraft based on-airport for the short term planning horizon. In addition, those aircraft located in Sky Park Industrial Park and Mazatzal Mountain Residential Airpark, which also utilize the airport, are expected to increase. As such, the five-year CIP should be considering those needs necessary to accommodate these aircraft. When based aircraft levels in the short term planning horizon are realized, the Master Plan suggests planning begin to consider the intermediate term horizon levels. While the aviation demand forecasts suggest these levels could be reached in another five years, a varying economy and other factors could speed up or slow down when this horizon is reached.

Should the intermediate term horizon levels take longer to achieve than projected in the aviation demand forecasts, any related improvements to accommodate the next horizon would be delayed. Should this level be reached sooner, the schedule to implement the improvements could be accelerated. This provides a level of flexibility in the Master Plan.

A demand-based Master Plan does not specifically require the implementation of any of the demand-based improvements. Instead, it is envisioned that implementation of any Master Plan improvement would be examined against the demand levels prior to implementation. In many ways, this Master Plan is similar to a community's general plan. The Master Plan establishes a plan for the use of airport facilities consistent with the potential aviation needs and capital

needs required to support that use. However, individual projects in the plan are not implemented until the need is demonstrated and the project is approved for funding. **Table 5A** summarizes the key demand milestones for each of the three planning horizons.

TABLE 5A
Planning Horizon Milestone Summary
Payson Airport

	2007	Short Term	Intermediate Term	Long Term
BASED AIRCRAFT				
On-Airport Based Aircraft	60	70	79	95
Off-Airport Based Aircraft	30	35	39	45
Total Aircraft	**90**	**105**	**118**	**140**
ANNUAL OPERATIONS				
Itinerant Operations				
General Aviation	25,000	28,100	31,300	36,400
Air Taxi	1,700	2,100	2,500	3,500
Military	100	100	100	100
Total Itinerant	**26,800**	**30,300**	**33,900**	**40,000**
Local Operations				
General Aviation	15,000	18,800	22,600	29,700
Total Local	**15,000**	**18,800**	**22,600**	**29,700**
Total Operations	**41,800**	**49,100**	**56,500**	**69,700**

MASTER PLAN CONCEPT

The Master Plan Concept represents the development direction for Payson Airport through the planning period of this Master Plan. The Master Plan Concept is the consolidation and refinement of the airside and landside planning alternatives, presented in Chapter Four, into a single development concept collectively representing input received from the PAC, Town of Payson, PRAA, and the general public. It is important to note that the finalized concept provides for anticipated facility needs over the next 20 years, as well as establishing a vision and direction for meeting facility needs beyond the planning period of this Master Plan.

AIRSIDE DEVELOPMENT PLAN

Airside components include the runway, parallel and connecting taxiways, lighting and marking aids, navigational aids, and imaginary surfaces which help provide a safe operating environment for aircraft. The major airside issues addressed in the Master Plan Concept include the following:

- The upgrade of Runway 6-24 to Airport Reference Code (ARC) B-II design standards.

- The relocation of parallel Taxiway A 90 feet south of its current location to obtain 240 feet of separation (centerline to centerline) from Runway 6-24.

- The construction of additional exit taxiways on the south side of Runway 6-24 to reduce the amount of time an aircraft occupies the runway after landing and to provide a more efficient taxiing network to the landside facilities from the runway system.

- Land acquisition for approach protection and meeting FAA object clearing and safety standards.

- The construction of hold aprons at each runway end to provide an area off the taxiway for aircraft to prepare for departure.

- The installation of taxiway lighting on all active taxiways, runway end identification lights (REILs) on Runway 6-24, precision approach path indicator lights (PAPIs) on Runway 6, designating taxiway nomenclature, and upgrading airfield signage.

- Improved instrument approach procedures to Runway 6-24.

- The relocation of the segmented circle and wind cone to conform to FAA object clearing standards.

- The relocation of a portion of Taxiway B where it connects to the relocated parallel Taxiway A.

Airfield Design Standards

As a federally obligated airport (the result of accepting federal grant funding), Payson Airport must comply with FAA design and safety standards. The FAA has established these design criteria to define the physical dimensions of runways and taxiways and the imaginary surfaces surrounding them that ensure the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapter Three, FAA design criterion, categorized by ARC, is a function of the critical design aircraft's approach speed, wingspan, and/or tail height, and in some cases, the runway approach visibility minimums. The critical design aircraft is defined as the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport.

According to FAA Advisory Circular (AC) 150/5300-13, Change 14, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.

Category B: Speed 91 knots or more, but less than 121 knots.

Category C: Speed 121 knots or more, but less than 141 knots.

Category D: Speed 141 knots or more, but less than 166 knots.

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon either the aircraft's wingspan or tail height, whichever is greater. The six ADGs used in airport planning are as follows:

Airplane Design Group	Tail Height (feet)	Wingspan (feet)
I	Less than 20	Less than 49
II	Greater than 20 but less than 30	Greater than 49 but less than 79
III	Greater than 30 but less than 45	Greater than 79 but less than 118
IV	Greater than 45 but less than 60	Greater than 118 but less than 171
V	Greater than 60 but less than 66	Greater than 171 but less than 214
VI	Greater than 66 but less than 80	Greater than 214 but less than 262

Source: FAA AC 150/5300-13, Change 14, *Airport Design*

Payson Airport is used by a wide range of general aviation aircraft. These general aviation aircraft include single and multi-engine piston aircraft within ARCs A-I and B-I, turboprop aircraft within ARCs B-I and B-II, and business jet aircraft within ARCs B-I, B-II, and C-I.

As detailed in the previous chapter, a large majority of aircraft that utilize the airport fall within ARCs A-I and B-I. Aircraft in ARCs B-II and C-I are the most demanding aircraft to utilize the airport in terms of approach speed and wingspans; however, they currently do not conduct at least 500 annual operations at the airport for them to be considered the critical aircraft according to FAA standards. As a result, it has been determined that the current airfield configuration should meet ARC B-I (small aircraft exclusively) design standards. FAA standards make a distinction in ARC B-I for aircraft weighing more than 12,500 pounds and those aircraft weighing less than 12,500 pounds (small aircraft exclusively). A review of based and transient aircraft utilizing the airport determined that only those aircraft weighing less than 12,500 pounds conducted more than 500 annual operations at the airport; thus, classifying the airport as ARC B-I (small aircraft exclusively).

The Master Plan anticipates that Payson Airport will transition to ARC B-II during the course of the planning period as the future based and transient aircraft fleet mix is expected to include larger and more sophisticated aircraft utilizing the airport, consistent with national trends and FAA forecasts. For this reason, Runway 6-24 is ultimately planned to more demanding ARC B-II design standards.

Upgrading to ARC B-II design standards will allow the airport to accommodate a large range of business turboprop and jet aircraft on the market today while ensuring the safety of these operations. Moreover, meeting these design requirements will ensure that the airport is well positioned to remain competitive for aviation-related development and those businesses which have aviation needs.

The design of taxiways considers the wingspan requirements of the most demanding aircraft to operate within the specific area. All taxiways on the south side of Runway 6-24 are planned to accommodate aircraft within ADG II. Taxilanes serving existing and proposed T-hangar areas are planned to accommodate aircraft in ADG I. **Table 5B** summarizes the planned airfield safety and facility dimensions for Payson Airport. The following sections summarize the airside development recommendations as depicted on **Exhibit 5A**.

TABLE 5B
Airfield Safety and Facility Dimensions (in feet)
Payson Airport

	Existing Runway 6-24	Ultimate Runway 6-24
Airport Reference Code (ARC)	ARC B-I (small aircraft)	ARC B-II
Approach Visibility Minimums	1 mile – Circling	1 mile – Straight-in
Runway		
Length	5,500	5,500
Width	75	75
Runway Safety Area (RSA)		
Width	120	150
Length Beyond Runway End	240	300
Object Free Area (OFA)		
Width	250	500
Length Beyond Runway End	240	300
Obstacle Free Zone (OFZ)		
Width	250	400
Length Beyond Runway End	200	200
Runway Centerline to:		
Parallel Taxiway Centerline	150	240
Edge of Aircraft Parking Apron	125	250
Runway Protection Zone (RPZ)		
Inner Width	250	500
Outer Width	450	700
Length	1,000	1,000
Taxiways		
Width	30-80	35
Safety Area Width	49	79
Object Free Area Width	89	131
Taxiway Centerline to:		
Parallel Taxiway/Taxilane Centerline	69	105
Fixed or Moveable Object	44.5	65.5
Taxilanes		
Object Free Area Width	79	115
Taxilane Centerline to:		
Parallel Taxilane Centerline	64	97
Fixed or Moveable Object	39.5	57.5

Source: FAA AC 150/5300-13, Change 14, *Airport Design*; 14 CFR Part 77, *Objects Affecting Navigable Airspace*

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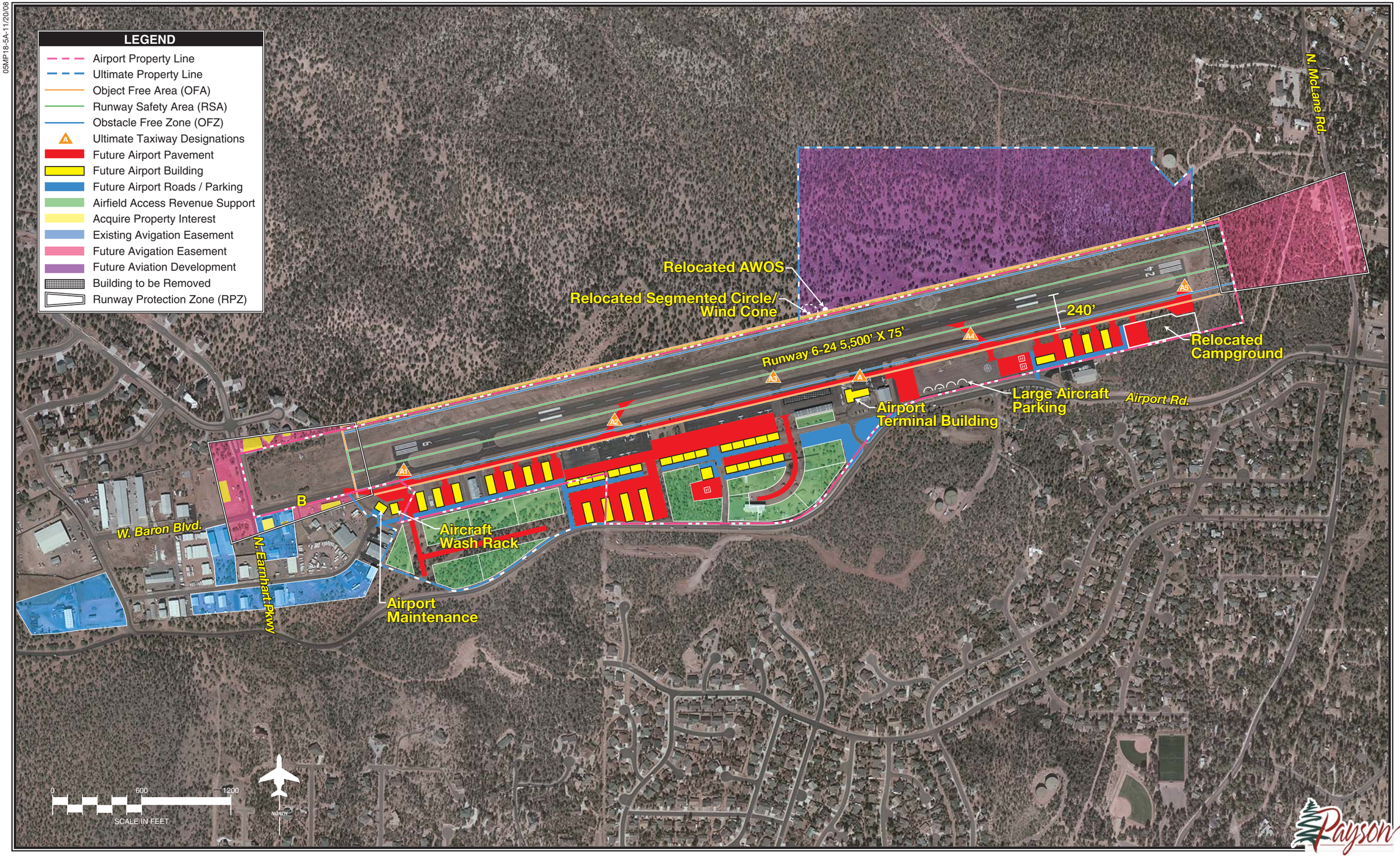


Exhibit 5A
MASTER PLAN CONCEPT

- **The upgrade of Runway 6-24 to ARC B-II design standards**

Should aircraft in ARC B-II conduct more than 500 operations annually at the airport, Runway 6-24, will be required to conform to ARC B-II design standards. As shown in **Table 5B**, this will require meeting FAA designs which require a larger runway safety area (RSA), object free area (OFA), and obstacle free zone (OFZ). In order for the airport to meet these expanded object clearing and safety area standards, parallel Taxiway A and the segmented circle and wind cone will need to be relocated. Areas of vegetation will need to be cleared and grading improvements may also need to be addressed. In addition, the ultimate OFA extends beyond existing airport property on the north and southwest sides of the airport. The total area of land outside the property line but within the ultimate OFA is approximately five acres. At a minimum, the airport would need to acquire the OFA areas outside the property line. In the event that this property cannot be acquired, an easement should be pursued giving the airport control over what can be done in this area. It should be noted that approximately 1.5 acres of land on the southwest side of the airport that includes a portion of the ultimate OFA are under evaluation to potentially be purchased by the airport. An Environmental Assessment (EA) was being pursued in 2009 for the acquisition of approximately 13 acres of land between airport property and Airport Road.

According to FAA standards, the airport will not be required to meet ARC B-II design standards until there are at least 500 annual operations by aircraft within ARC B-II. In 2007, records indicated that less than 150 operations by aircraft in ARC B-II were conducted at the airport.

- **The relocation of parallel Taxiway A 90 feet south of its current location to obtain 240 feet of separation (centerline to centerline) from Runway 6-24**

The Master Plan Concept includes relocating parallel Taxiway A 90 feet to the south to provide the FAA ARC B-II specified 240 feet of separation between Runway 6-24 and parallel Taxiway A. Currently at Payson Airport, Runway 6-24 and parallel Taxiway A are separated by 150 feet (centerline to centerline), which meets the design standards for ARC B-I (small aircraft exclusively) only. The relocated taxiway would be constructed to 35 feet in width and extend the full length of the runway, connecting at each runway end.

As previously discussed in Chapter Four, several landside facilities would be affected by the relocation of the taxiway. The taxiway OFA for ADG II is 65.5 feet on either side of the taxiway centerline. When taking this into consideration, aircraft parking aprons A, B, and D would be affected by the taxiway relocation. Other landside facilities that will be located within the proposed taxiway OFA include the Hangar One T-hangar complex, existing fixed base operator (FBO) building, and storage tank utilized by the U.S. Forest Service. In addition, the existing helipad located east of the

terminal area is located within the path of the relocated taxiway surface.

The relocation of Taxiway A will not be required until the airport experiences 500 annual operations by aircraft within ARC B-II. Further discussion regarding the impact on landside facilities and the timeline associated with the relocation of the parallel taxiway will be detailed later on in this report.

- **The construction of additional exit taxiways on the south side of Runway 6-24 to reduce the amount of time an aircraft occupies the runway after landing and to provide a more efficient taxiing network to the landside facilities from the runway system**

Currently, there are four entrance/exit taxiways on the south side of Runway 6-24. This includes the one entrance/exit taxiway at each runway end, one taxiway approximately 600 feet east of the Runway 6 threshold, and one taxiway located approximately half-way between each runway end. The Master Plan Concept includes the construction of two additional exit taxiways in the form of high-speed exits. The design of these taxiways allows aircraft to exit the runway at a higher speed, thus reducing the amount of time an aircraft occupies the runway. The high-speed exit taxiways are proposed approximately 1,600 feet from each runway threshold.

These taxiways will allow aircraft the opportunity to exit prior to the runway end. As demand warrants, providing for these high-speed exit taxiways will increase the capacity of Runway 6-24 and improve aircraft operational flow on the airport.

- **Land acquisition for approach protection and meeting FAA object clearing and safety standards**

As previously discussed, the runway protection zone (RPZ) is a trapezoidal surface which begins 200 feet from the runway threshold. The RPZ is a designated area beyond the runway end that the FAA encourages airports to gain or maintain positive control over. The goal of the RPZ is to prevent incompatible land uses that encourage the congregation of people, such as houses or commercial buildings.

ARC B-II design standards require a larger runway protection zone (RPZ). This larger RPZ further extends into areas outside existing airport property. On the west side of the airport, approximately five acres of land, including three residential home sites associated with Mazatzal Mountain Residential Airpark and four commercial buildings located within Sky Park Industrial Park, are included in the ultimate Runway 6 RPZ. In addition, North Earhart Parkway and West Baron Boulevard traverse the RPZ. To the east of the airport, the Runway 24 RPZ will extend into areas of undeveloped land consisting of trees and steep terrain encompassing approximately 14 acres. North McLane Road also extends in a north/south manner along the eastern portion of the Runway 24 RPZ.

In order to protect further encroachment within the RPZ west of the airport, it is recommended that the airport acquire the undeveloped property parcels through fee simple property acquisition or through the use of an avigation easement that controls not just the airspace above the property, but land uses within the parcels in order to prevent incompatible development. For those parcels that contain existing infrastructure in the form of residential and commercial buildings, it is recommended that the airport pursue the acquisition of this land to address the incompatible development. As previously mentioned, land within the ultimate RPZ to the east of the airport is currently undeveloped. It is recommended that the airport pursue an avigation easement on this property that controls land use development and the airspace above.

In addition, it is the current position of the FAA Western-Pacific Region Airports Division that public roadways be located outside the RPZ. At a previous meeting regarding the Payson Airport Master Plan, which FAA representatives attended, it was discussed that roadways within an existing RPZ may be able to remain in their present location as long as the current runway system remains unchanged.

Land acquisition is also shown to provide protection to the proposed OFA that would extend along the north side of the airport. Approximately four acres of land would fall within the OFA. The western half of this piece of land is owned by the U.S. Forest Service and the eastern portion is privately owned. As previously discussed, in the event that this land cannot be acquired, an easement should be pursued giving the airport control over what can be done in this area. Methods of gaining control could include an avigation easement, letter of agreement, or memorandum of understanding.

It should be noted that the airport can pursue obtaining a Conditional Use Permit on the portion of land owned by the U.S. Forest Service that would fall within the ultimate boundaries of the runway OFA. In doing so, the airport will be able to adequately clear the property of any penetrations to the OFA while also being able to properly control land use within the area.

- **The construction of hold aprons at each runway end to provide an area off the taxiway for aircraft to prepare for departure**

Hold aprons are recommended to be constructed at each end of Runway 6-24 to provide an area for aircraft to prepare for departure off the taxiway. This allows aircraft ready for departure to bypass other aircraft which are preparing for departure. With the number of aircraft operations at the airport forecast to increase during the planning period, it will be important that the airfield be able to support the smooth transition of taxiing aircraft. Hold aprons will also provide a designated area for transient and local aircraft to perform engine run-ups prior to departure.

- **The installation of taxiway lighting on all active taxiways, REILs on Runway 6-24, PAPI-2 on Runway 6, designating taxiway nomenclature, and upgrading airfield signage**

Currently, only the entrance/exit taxiways on the south side of Runway 6-24 are equipped with medium intensity taxiway lighting (MITL). In an effort to increase safety and provide enhanced guidance for aircraft taxiing during nighttime conditions, MITL is planned for all active taxiways on the airport.

The Master Plan Concept includes the installation of REILs on Runway 6-24. This will provide pilots with the improved ability to distinguish the runway ends during nighttime conditions. The FAA indicates that REILs should be considered on all lighted runway ends not planned for a more sophisticated approach lighting system (ALS).

Runway 24 is currently served with a PAPI-2 at the airport. A PAPI-2 should also be installed on Runway 6 in order to provide pilots with visual guidance information during landings to this runway.

Consideration should also be given to designating all taxiways in conformance with FAA AC 150/5340-18D, *Standards for Airport Sign Systems*. This AC specifies that the entrance/exit taxiways that connect Runway 6-24 and parallel Taxiway A should be designated alphanumerically. This was also a recommendation of the FAA Runway Safety Action Team (RSAT) in June 2004. **Exhibit 5A** depicts potential taxiway designations following the recommendations of the AC. In addition to designating the taxiways, signage referring to the runway distance remaining, holding positions, and runway exits should be implemented.

- **Improved instrument approach procedures to Runway 6-24**

Payson Airport currently has a circling instrument approach to Runway 6-24 that allows for landings when visibility is as low as one mile and cloud ceilings are as low as 563 feet above the ground. Where possible, approach minimums should be as low as practical considering safety and financial constraints. Lower approach minimums and/or a straight-in instrument approach procedure could prevent aircraft from having to divert to another airport when visibility and cloud ceilings are lower than currently provided by the circling approach, which can cause financial hardship for the operator, on-airport businesses, and the Town.

A large majority of new instrument approach procedures in the United States are being developed with global positioning system (GPS). With the development of the Wide Area Augmentation System (WAAS) as previously detailed in Chapter Three, a GPS WAAS approach provides for both course and vertical navigation, just like an instrument landing system (ILS) precision approach. As WAAS is upgraded in the future, precision approaches similar in capability to an ILS should become available for Payson Airport.

The Master Plan Concept plans for a straight-in instrument approach to the airport. Any proposed instrument approach is planned for visibility minimums not lower than one mile. It should be noted that any approach providing less than one mile visibility minimums will require the installation of an ALS. It was determined that the implementation of an ALS would not be feasible given the physical constraints beyond each runway end at the airport. The prevailing winds are most commonly out of the southwest at Payson Airport, favoring the use of Runway 24. As a result, at least a straight-in instrument approach to Runway 24 would be desirable with improved cloud ceiling minimums. Further analysis separate from this study will determine the likelihood of a straight-in instrument approach procedure at Payson Airport.

- **The relocation of the segmented circle and wind cone to conform to FAA object clearing standards**

The existing location of the segmented circle and wind cone will penetrate ARC B-II OFA design standards. FAA AC 150/5300-13, *Airport Design*, indicates that the OFA should be cleared of objects protruding above the runway safety area edge elevation. The Master Plan Concept depicts the relocation of the segmented circle and wind cone approximately 800 feet west of its current location. In doing so, the facility will not penetrate the ultimate OFA and also provide a more desirable midfield location. It should be noted that a portion of the segmented circle is shown to be within the ultimate OFA. Due to the nature of the segmented circle being at ground level, this portion would not serve as a penetration to the OFA.

- **The relocation of a portion of Taxiway B where it connects to the relocated parallel Taxiway A**

A portion of Taxiway B is located within the limits of the ultimate OFZ for Runway 6-24. Taxiway B provides access to Sky Park Industrial Park and Mazatzal Mountain Residential Airpark. The Master Plan Concept includes the relocation of approximately 400 feet of Taxiway B outside the OFZ and inline with the relocated Taxiway A.

The proposed relocation of Taxiway B will require property acquisition. An EA is currently being processed for the acquisition of approximately 13 acres of land on the southwest side of the airport to include this area. When acquired, this land will allow for the Taxiway A and Taxiway B relocations as well as accommodate future aviation-related development.

LANDSIDE DEVELOPMENT PLAN

Landside components include aircraft storage hangars, terminal buildings, aircraft parking aprons, hangar and apron access taxilanes, fuel storage facilities, and vehicle parking lots which help provide the interface between air and ground transportation modes. The landside plan for Payson Airport has been devised to efficiently

accommodate potential aviation demand and provide revenue enhancement possibilities by designating the use of certain portions of airport property for aviation-related development. Future construction of landside facilities is anticipated to be done through a combination of private and public investments.

All existing landside facilities at Payson Airport are located on the south side of the runway. Parallel Taxiway A connects the terminal apron and main aircraft parking aprons to either end of the runway. The current terminal area is located at approximately midfield, with hangar development and aircraft parking aprons located to the east and west. Conventional, executive, and T-hangar storage space is provided, and the airport maintains a waiting list for additional hangar space.

The primary goal of landside facility planning is to provide adequate aircraft storage space while also maximizing operational efficiencies and land uses. Achieving this goal yields a development scheme which segregates aircraft users (large vs. small aircraft) while maximizing the airport's revenue potential.

The development of landside facilities will be demand-based. In this manner, the facilities will only be constructed if required by verifiable demand. For example, T-hangars will be constructed only if new based aircraft owners desire enclosed aircraft storage. The landside plan is based on projected needs that can change over time. The landside plan is developed with flexibility in mind to ensure the orderly development of the airport should this demand materialize.

The following list includes the major considerations for landside improvements at Payson Airport throughout the planning period.

- Construct a new terminal building in the existing terminal area that can provide space for multiple services to include a restaurant, fixed base operator (FBO), and airport operations.

- Properly relocate/replace landside facilities that are affected by the relocation of parallel Taxiway A to include aircraft storage hangars, aircraft parking space, and FBO operations.

- Construct additional aircraft storage hangars adjacent to the south side of parallel Taxiway A.

- Relocate the airport campground to the east side of the airport to allow for utilization of the midfield area of the airport for aviation-related development.

- Designate marked parking spaces for large aircraft and helicopters on various aircraft parking aprons.

- Construct additional aircraft parking apron space on the south side of the airport.

- Construct aviation support facilities to include an aircraft wash rack and airport maintenance building.

- Improve vehicle access to properly segregate aircraft and automobile activities.

- Acquire approximately 13 acres of land adjacent to the southwest side of the airport for future aviation-related development.

- Identify approximately 50 acres of land adjacent to the northeast side of the airport for future acquisition and aviation-related development.

Terminal Area Plan

As previously mentioned, all aviation-related facilities are located on the south side of the airport. This includes the FBO, aircraft storage hangars, aircraft parking aprons, and other support facilities.

Payson Airport currently does not have a dedicated airport terminal building. Presently, a waiting lobby, pilot lounge area, and restroom facilities are provided in a building operated by Payson Aviation, the FBO on the airport. This facility encompasses approximately 500 square feet. A smaller building located immediately south of Payson Aviation provides an area for airport operations. Approximately 100 feet southeast of these facilities is a larger building that houses the airport restaurant.

Analysis in Chapter Three indicated the need for additional general aviation building space to accommodate the future demands of airport users. Payson Airport can expect an increase in aircraft operations through the planning period, thus creating a need for additional facilities to serve pilots and passengers as well as the general public. It was determined that approximately 4,300 square feet of building space will be needed to accommodate the demands of general aviation users over the planning period.

The Master Plan Concept proposes construction of a new terminal building site in the current location of the airport restaurant. This facility could provide space for airport management and operations, FBO operations, pilots and passengers, and a restaurant, among other activities. This is desirable as the proposed relocation of parallel Taxiway A will require removal of the buildings currently occupied by the FBO and airport operations in order to maintain proper clearances for aircraft taxiing on relocated Taxiway A. Additional automobile parking to support the terminal area is proposed directly to the south between the terminal building and Airport Road.

The relocation of parallel Taxiway A will also impact the aircraft parking apron adjacent to the proposed terminal building, known as Apron D. As a result, the recommended plan calls for the expansion of the east side of Apron E in order to accommodate the aircraft parking area that would be displaced on Apron D. This will allow for transient aircraft parking as well as aircraft parking associated with Against the Wind, the existing aircraft maintenance facility located adjacent to the proposed terminal building.

East Landside Plan

The east landside plan comprises all the available land east of the terminal area on the south side of Runway 6-24. In the plan, the expansion of Apron E will accommodate additional parking for fixed-wing and rotary aircraft. The existing helipad at the airport will need to be removed as a result of the ultimate parallel Taxiway A relocation. Two helicopter hardstands are proposed on the southeast side of Apron E to replace the helipad. An added benefit of expanding Apron E will be better segregation of U.S. Forest Service operations from other general aviation operations. The U.S. Forest Service, which already utilizes a portion of Apron E during the fire season, could shift their operations to the east side of the proposed aircraft parking apron, allowing more space for transient aircraft parking needing to utilize the terminal area. In addition, four large aircraft parking positions are depicted on Apron E.

Directly to the east of Apron E are four proposed aircraft storage hangars. Single engine and smaller multi-engine aircraft could utilize these hangar facilities. Taxilanes extending south from the relocated parallel taxiway would provide access to the runway system. In order to accommodate these hangars, the existing Automated Weather Observation System III (AWOS-III) will need to be relocated. The plan calls for the relocation of the AWOS to the north side of the airport adjacent to the relocated segmented circle and wind cone.

The Master Plan Concept also proposes the relocation of the airport campground to the eastern portion of existing airport property. Approximately two acres would be dedicated to the airport campground, and a taxilane extending south from Taxiway A would provide access to the associated aircraft parking apron. A benefit of the new campground location will be the amount of space made available for additional aviation-related development in the midfield area of the airport. As previously mentioned, the relocated campground concept is depicted on the current ALP for the airport. Prior to relocating the campground, proper coordination between the Town of Payson and ADOT-Aeronautics Division would be needed. Automobile access would be provided to the eastside development area via a road extending from Airport Road.

West Landside Plan

There are currently several aviation facilities located on the west side of Payson Airport that include aircraft storage hangars, aircraft parking aprons, the airport fuel farm, and airport campground. In addition, the Payson Town Yard, used to store and maintain Town equipment, is located farther south of the immediate flight line adjacent to Airport Road.

Relocating parallel Taxiway A will impact several facilities in the west landside area. Approximately 11,000 square yards of pavement and 22 marked aircraft tiedown positions would fall within the relocated taxiway OFA. In addition, a 10-unit T-hangar complex located immediately west of the terminal area would need to be removed/relocated as this facility

is also located within the ultimate Taxiway A OFA. Upon removal of the 10-unit T-hangar complex, the Master Plan Concept calls for replacing this facility with a similar T-hangar complex approximately 1,100 feet to the southwest in an area dedicated for future aircraft storage hangars. The plan also provides approximately 16,900 square yards of additional aircraft parking apron pavement to be added onto Aprons A and B.

The Master Plan Concept includes plans for the development of approximately 13 acres of land to be acquired in the southwest portion of the airport. Significant improvements will be needed for this area to be used for aviation-related development. This includes site preparation to level this area sufficient for airfield access, roadway access, and utility extensions. Careful consideration should be given regarding the implementation of staging projects in this area. While the recommended plan shows total buildout in this area, actual demand will dictate the timeline for future development.

The orderly development of the west side of the airport will be important and should provide for proper separation of high, medium, and low activity levels at the airport. The high activity area should be planned and developed to provide aviation services on the airport. Examples would be aircraft parking aprons associated with Aprons A and B, which provide tiedown locations and circulation for aircraft. Conventional hangars used for FBOs, corporate aviation flight departments, and the storage of large numbers of aircraft should also be considered in this area. The best locations for these types of activities are near the flight line. In the case at Payson Airport, these proposed high activity functions are located adjacent to relocated parallel Taxiway A in a desirable midfield location on the airport. Several smaller executive hangars meeting the medium activity use level are also proposed in this same area.

To the south of the proposed executive hangar development includes smaller T-hangars that would fit the low activity use level. The best location for these types of facilities are off the immediate flight line, but still readily accessible to aircraft. A taxiway extending south from Apron A provides access to this area. Immediately east of this taxiway is a large parcel of land that could support aviation businesses and/or aircraft storage.

Moving farther west, seven additional aircraft storage hangars in the form of T-hangars are proposed in the same general location of the existing T-hangar complex. The facilities are provided access to the runway system via individual taxilanes extending south from the parallel taxiway.

Six aviation access revenue support parcels are depicted ranging in size from approximately one-half to 1.5 acres and are provided access via a taxiway extending south from Taxiway A. These parcels could support aviation businesses and/or aircraft storage.

West of the existing airport fuel farm, an aircraft wash rack and airport maintenance facility are proposed.

Currently, the airport does not have a facility that would allow for the proper disposal of aircraft cleaning fluids nor does it have a dedicated building to store and maintain airport equipment. Vehicle access to this area would be via a roadway extending east from the cul-de-sac located in Sky Park Industrial Park. This roadway would allow for fuel transport trucks to access the airport fuel farm without having to traverse active taxiways, further enhancing safety and security on the airfield. As the west landside area progresses toward total build-out, an access road will be extended north from Airport Road providing vehicle access to the fuel farm and other aviation development. Finally, five aviation access revenue support parcels are depicted in the existing Town Yard location. A taxiway extending south and west would provide access to this area.

Northeast Landside Plan

The recommended plan highlights approximately 50 acres of land adjacent to the northeast side of the airport as future property acquisition for aviation development. In the event that the airport was to purchase this property, access roadways and utility infrastructure would need to be extended to these areas prior to any type of development occurring. The timeline for development in this area will likely extend beyond the long term planning period associated with this Master Plan.

ENVIRONMENTAL OVERVIEW

A review of the potential environmental impacts associated with proposed airport projects is an essential consideration in the Master Plan process. The primary purpose of this section is to review the proposed improvement program at Payson Airport to determine whether the proposed actions could, individually or collectively, have the potential to significantly affect the quality of the environment. The information contained in this section was obtained from previous studies, various internet websites, and analysis by the consultant.

Construction of any improvements depicted on the Airport Layout Plan (ALP) will require compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended. This includes privately funded projects in addition to those projects receiving federal funding.

For projects not "categorically excluded" under FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an EA. In instances where significant environmental impacts are expected, an Environmental Impact Statement (EIS) may be required.

While this portion of the Master Plan is not designed to satisfy the NEPA requirements for a categorical exclusion, EA, or EIS, it is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA process. This evaluation considers all environmental categories required for the NEPA process as outlined in FAA Order 1050.1E and Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementation Instructions for Airport Actions.*

The following sections provide a description of the environmental resources which could be impacted by the proposed airport development, as depicted on **Exhibit 5A**. It was determined that the following resources are not present within the airport environs or cannot be inventoried:

- Coastal Barriers
- Coastal Zone Management Areas
- Construction Impacts
- Energy Supply, Natural Resources, and Sustainable Design
- Farmland
- Induced Socioeconomic Impacts
- Social Impacts
- Wild and Scenic Rivers

Air Quality

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short-term and long-term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Oxide (NO), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. Potentially significant air quality impacts, associated with an FAA project or action, would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed.

Payson Airport is located in Gila County, part of which is classified nonattainment for Particulate Matter (PM_{10}). The nonattainment area is centered on Hayden, Arizona, located approximately 90 miles to the south of the Town of Payson, and does not include Payson Airport.

A number of projects planned at the airport could have temporary air quality impacts during construction. Emissions from the operation of construction vehicles and fugitive dust from pavement removal are common air pollutants during construction. However, with the use of best management practices (BMPs) during construction, these air quality impacts can be significantly lessened.

Biotic Resources and Threatened and Endangered Species

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

Typically, development in areas such as previously disturbed airport property, populated places, or farmland would result in minimal impacts to biotic resources. A review of the State of Arizona's *On-line Environmental Review Tool*[1] indicates that there are no areas of proposed or designated critical habitat within two miles of the airport site.

The Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) are charged with overseeing the requirements contained within Section 7 of the *Endangered Species Act*. This Act was put into place to protect animal or plant species whose populations are threatened by human activities. Along with the FAA, the FWS and the NMFS review projects to determine if a significant impact to these protected species will result with implementation of a proposed project. Significant impacts occur when the proposed action could jeopardize the continued existence of a protected species or would result in the destruction or adverse modification of federally designated critical habitat in the area

Table 5C depicts federally listed threatened and endangered species in Gila County. A search of the State of Arizona's *On-Line Environmental Review Tool* indicates that the following species have been observed within two miles of the airport: common black hawk, desert sucker, bobolink, headwater chub, and narrow-headed garter snake. Additional field surveys would be required to determine if these species, or their habitat, or other listed species, are located within the areas affected by the proposed improvements outlined in this airport master plan.

Section 4(f) Resources

Section 4(f) properties include publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance; or any land from a historic site of national, state, or local significance.

As discussed in Chapter One, two potential Section 4(f) properties are located within the immediate airport environs. The Payson Airport campground is located on airport property, just south of the runway midpoint. The campground was constructed by ADOT for recreational use by pilots and members of the general public. The Tonto National Forest, the second potential Section 4(f) property, is located adjacent to airport property to the north.

As indicated on **Exhibit 5A**, the Master Plan recommends that the existing campground be moved to a location south of the Runway 24 end on the east side of the airport. Additional coordination with local agencies and ADOT may be required to evaluate potential impacts to this resource.

No wildlife or waterfowl refuges are located in proximity to the airport. Further discussion regarding historic sites can be found later in this section.

[1] http://www.azgfd.gov/hgis/. Accessed January 2009.

TABLE 5C
Threatened or Endangered Species in Gila Co. AZ

Species	Federal Status[1]
Apache (Arizona) trout	Threatened
Arizona hedgehog	Endangered
California brown pelican	Endangered
Chiricahua leopard frog	Threatened
Colorado pikeminnow	Endangered
Gila chub	Endangered
Gila topminnow	Endangered
Gila trout	Threatened
Lesser long-nosed bat	Endangered
Loach minnow	Threatened
Mexican spotted owl	Threatened
Razorback sucker	Endangered
Southwest willow flycatcher	Endangered
Spikedace	Threatened
Yuma clapper rail	Endangered
Headwater chub	Candidate
Yellow-billed cuckoo	Candidate
Arizona bugbane	Conservation Agreement
Species	**State Status[2]**
Western barking frog	WSC
Chiricahua leopard frog	WSC
Lowland leopard frog	WSC
Northern goshawk	WSC
Northern grey hawk	WSC
Common black-hawk	WSC
Belted kingfisher	WSC
Western yellow-billed Cuckoo	WSC
Bobolink	WSC
Southwestern willow flycatcher	WSC
American peregrine falcon	WSC
Bald eagle	WSC
Osprey	WSC
Yuma clapper rail	WSC
Mexican spotted owl	WSC
Gila chub	WSC
Roundtail chub	WSC
Gila topminnow	WSC
Razorback sucker	WSC
Western red bat	WSC
California leaf-nosed bat	WSC
Pima Indian mallow	SR
Arizona agave	HS
Tonto Basin agave	HS
Hohokam agave	HS
Toumey agave	SR
Arizona bugbane	HS
Arizona hedgehog cactus	HS
San Carlos wild-buckwheat	SR
California barrel cactus	SR
Flannel bush	SR
Varied fishhook cactus	SR
Blumer's dock	HS
Mazatzal triteleia	SR
Sonoran Desert tortoise	WSC
Northern Mexican gartersnake	WSC
Narrow-headed gartersnake	WSC

Source: [1] FWS online listed species database, January 2008
[2] Arizona Game and Fish Department, Natural Heritage Program
WSC: Wildlife Special Concern
HS: Highly safeguarded, no collection allowed
SR: Salvage restricted, collection only with permit

Environmental Justice

Environmental justice analysis considers the potential for airport development projects to cause disproportionate and adverse effects on low-income or minority populations. According to the EPA's *Environmental Justice Geographic Assessment Tool*[2], several of the U.S. Census Bureau blocks within the airport environs do not contain high percentages (above 50 percent) of minority populations or high percentages of residents below the poverty level.

Noise

Per federal regulation, the Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, EPA, and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three agencies have each identified the 65 DNL noise contour as the threshold of incompatibility. Noise exposure contours are overlaid on maps of existing and planned land uses to determine areas that may be affected by aircraft noise at or above 65 DNL. The noise exposure contours are developed using the FAA-approved Integrated Noise Model which accepts inputs for several airport characteristics including: aircraft type, operations, flight tracks, time of day, and topography. **Exhibit 5B** depicts the existing condition noise exposure contours for the Payson Airport. As shown on the exhibit, the 65 DNL noise contour extends off airport property to the north, south, and east. Based on a review of the aerial photography for the area, the noise contours do not affect any noise-sensitive land uses. **Exhibit 5B** also depicts the ultimate condition noise contours, based on 2028 forecast operations outlined in Chapter Two. As shown on the exhibit, the noise exposure contours extends off airport property to the north, south, and east. The exhibit indicates that a portion of one residential property located northwest of the Runway 6 end falls within the 65 DNL noise contour. This home is located within the Mazatzal Mountain Residential Airpark, a residential community that attracts aircraft owners and operators because of its through-the-fence access to the airport.

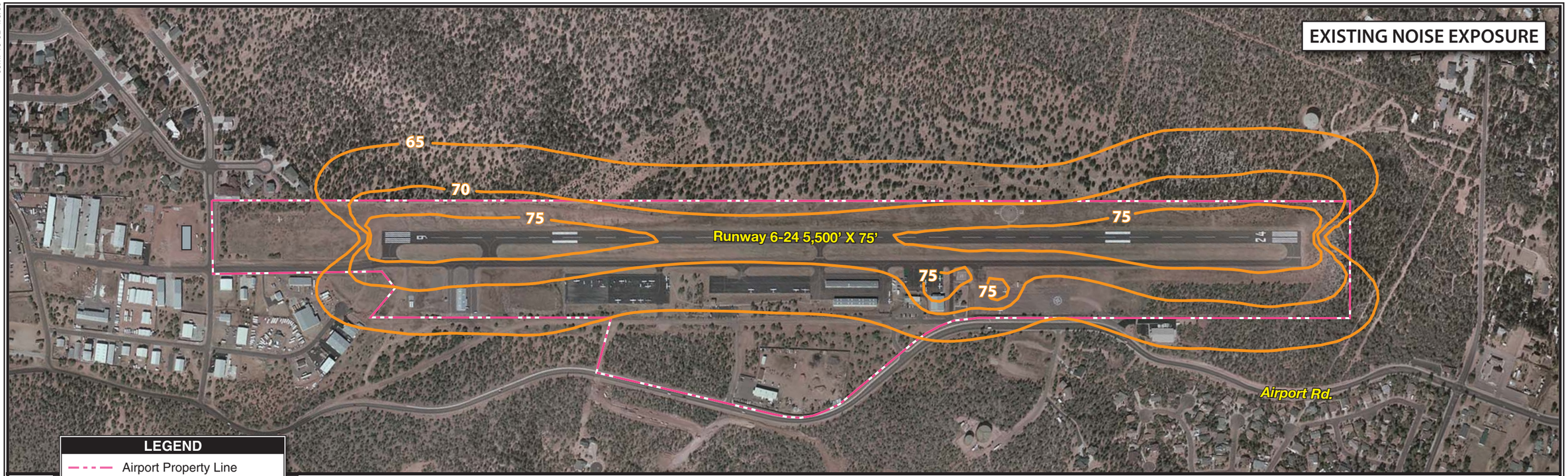
Compatible Land Use

The compatibility of existing and planned land uses in the vicinity of an airport is typically associated with the extent of the airport's noise impacts. Noise impacts are generally evaluated by comparing the extent and airport's noise exposure contours to the land uses within the immediate vicinity of the airport.

As discussed in Chapter One, land immediately north of the airport is currently undeveloped. A portion of this land is owned by the U.S. Forest Service, with the remainder being privately owned. Land adjacent to the east side of the airport is also undeveloped. Farther to the east are areas of residential development. Located west of the airport is the Sky Park In-

[2] http://www.epa.gov/enviro/ej/. Accessed January 2009.

05MP18-5B-1/5/09



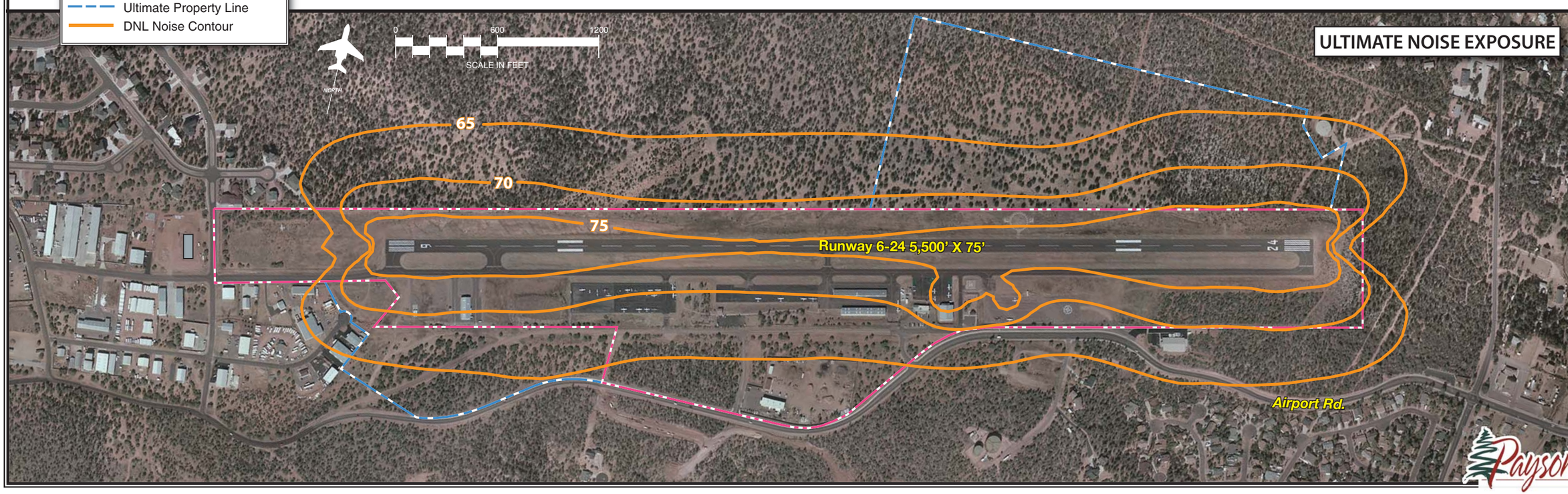


Exhibit 5B
EXISTING AND ULTIMATE NOISE EXPOSURE

dustrial Park, which is home to several industrial and commercial related businesses, some of which have runway access to the Payson Airport. Northwest of the airport is the Mazatzal Mountain Residential Airpark. Residents of the airpark also have access to the airport. Approximately 13 acres of private property are currently vacant on the southwest side of the airport and designated for employment areas in the form of industrial and/or commercial operations. Farther to the south much of the land is developed with residential land uses.

Implementation of the projects contained within the master plan will result in the acquisition of property north and south of the airport. All of the property proposed for acquisition is under private ownership.

Floodplains

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains.

The Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Numbers 04007C0239D and 0407C0240D indicate that the airport and the future aviation development areas are not located within the 100-year floodplain.

Approximately one half mile southeast of the airport is a floodway/floodplain associated with the American Gulch Tributary. North of the airport approximately three miles is a floodway/floodplain associated with the East Verde River. Improvements outlined as part of this Master Plan are not anticipated to impact any 100-year floodplain.

Hazardous Materials

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

The EPA's *Enviromapper for Envirofacts*[3] was consulted regarding the presence of impaired waters or regulated hazardous sites. No impaired waters or hazardous material sites are located on or in the vicinity of the airport.

Historic Properties and Archaeological Resources

Determination of a project's impact to historical and cultural resources is made in compliance with the *National Historic Preservation Act* (NHPA) *of 1966*, as amended for federal undertakings. A historic property is defined as any prehistoric or historic district, site, building, structure, or object in-

[3] http://www.epa.gov/enviro/emef/, Accessed January 2009.

cluded in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Properties or sites having traditional religions or cultural importance to Native American Tribes may also qualify.

No known historical or cultural resources are known to exist on airport property. Field surveys may be required to determine the presence of historic properties or archaeological resources prior to undertaking the improvements outlined in this airport master plan.

Solid Waste

The landfill facility closest to the airport is the Buckehead Mesa Landfill located approximately 10 miles northwest of the Town of Payson on Highway 87. It is not anticipated that the presence of this landfill will impact any of the planned development at the airport.

Water Quality

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc.

A review of topographic maps and aerial photos indicates that there are no streams or washes within the airport area that the U.S. Army Corps of Engineers could consider waters of the United States. It is not anticipated that the airport improvements outlined within the master plan would affect any waters of the U.S.

As previously discussed, none of the waters within the vicinity of the airport are considered impaired, thereby being in violation of established water quality standards.

Wetlands

The U.S. Army Corps of Engineers regulates the discharge of dredged and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*. Wetlands are defined by Executive Order 11990*, Protection of Wetlands*, as those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine areas, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

Based on information from the U.S. Fish and Wildlife Service National Wetlands Inventory *Wetlands Mapper*[4], one wetland area has been identified within the airport area. This palustrine wetland is located approximately 1,500 feet west and 500 feet north of the Runway 24 end in the area identified for future aviation development on the north side of the airport. Additional field investigation may be required to determine the exact location and verify the presence of this wetland feature.

CAPITAL PROGRAM

The previous analyses outlined airport development needs on both the airside and landside to meet projected aviation demand for the next 20 years based on forecast activity, facility needs, and operational efficiency. In this section, basic economic, financial, and management rationale is applied to each development item so that the feasibility of each item contained in the plan can be assessed. The capital program has been organized into two parts. First, the airport's capital needs, based on the projected CIP, are presented. Second, funding sources on the federal, state, and local levels are identified and discussed. The vision of the Master Plan is based on the airport achieving specific demand-based triggers such as growth in based aircraft and an overall increase in aircraft operations.

AIRPORT DEVELOPMENT SCHEDULE AND COST SUMMARIES

Once the specific needs for the airport have been established, the next step is to determine a realistic capital improvement schedule and associated costs for implementing the plan. This section will identify these projects and the overall cost of each item in the development plan. The program outlined in the following pages has been evaluated from a variety of perspectives and represents the culmination of a comparative analysis of basic budget factors, demand, and priority assignments.

The recommended improvements are grouped by the planning horizons: short term, intermediate term, and long term. Each year, Payson Airport will need to re-examine the priorities for funding, adding or removing projects on the capital programming lists.

While some projects will be demand-based, others will be dictated by design standards, safety, or rehabilitation needs. In putting together a listing of projects, an attempt has been made to include anticipated rehabilitation needs through the planning period and capital replacement needs.

Exhibit 5C summarizes the CIP for Payson Airport through the planning period of this Master Plan. An estimate has been included with each project of federal and state funding eligibility, although this amount is not guaranteed. **Exhibit 5D** graphically depicts development staging. As a Master Plan is a conceptual document,

[4] http://www.fws.gov/wetlands/Data/Mapper.html. Accessed January 2009.

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	PROJECT DESCRIPTION	TOTAL COST	FAA ELIGIBLE	ADOT ELIGIBLE*	LOCAL SHARE
	SHORT TERM PROGRAM (0-5 years)				
	2009				
1	Conduct Environmental Assessment for Land Acquisition on Southwest Side of the Airport	$265,000	$251,750	$6,625	$6,625
2	Expand East Side of Aircraft Parking Apron E and Construct Helicopter Hardstands / Extend Automobile Access	404,300	384,085	10,108	10,108
	Subtotal 2009	**$669,300**	**$635,835**	**$16,733**	**$16,733**
	2010				
3	Design and Construct New Terminal Building	$1,413,100	$0	$0	$1,413,100
4	Construct Additional Automobile Parking in Terminal Area	278,900	264,955	6,973	6,973
5	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	490,400	465,880	12,260	12,260
6	Phase I Relocation of Parallel Taxiway A / Construct Taxilanes for Hangar Development	809,600	769,120	20,240	20,240
7	Acquire Approximately 13.5 Acres of Land Southwest of Airport (Airport Development and Buffer)	2,000,000	1,900,000	50,000	50,000
	Subtotal 2010	**$4,992,000**	**$3,399,955**	**$89,473**	**$1,502,573**
	2011				
8	Phase II Relocation of Parallel Taxiway A	$539,500	$512,525	$13,488	$13,488
9	Relocate Airport Campground (Construct Campground Facilities and Aircraft Parking Apron)	351,800	0	316,620	35,180
10	Expand / Reconfigure Aircraft Parking Apron B (Former Airport Campground Area) / Extend Automobile Access	1,593,800	1,514,110	39,845	39,845
11	Construct Airports Service Roads and Fencing for Increased Safety and Security - RSAT	357,800	339,910	8,945	8,945
12	Construct Hold Aprons at Each End of Runway 6-24 - RSAT	400,400	380,380	10,010	10,010
	Subtotal 2011	**$3,243,300**	**$2,746,925**	**$388,908**	**$107,468**
	2012				
13	Upgrade Airfield Marking and Signage System - RSAT	$195,000	$185,250	$4,875	$4,875
14	Improve Safety Areas on Runway 6-24 (Clearing, Grading, Drainage) - RSAT	500,000	475,000	12,500	12,500
15	Construct Taxilanes for Hangar Development	409,000	388,550	10,225	10,225
	Subtotal 2012	**$1,104,000**	**$1,048,800**	**$27,600**	**$27,600**
	2013				
16	Construct Automobile Access Road/Parking on East Side of Airport	$174,200	$165,490	$4,355	$4,355
17	Install PAPI-2 on Runway 6	96,200	91,390	2,405	2,405
18	Install REILs on Runway 6-24	124,800	118,560	3,120	3,120
19	Expand West Side of Aircraft Parking Apron E / Remove Helipad	336,600	319,770	8,415	8,415
	Subtotal 2013	**$731,800**	**$695,210**	**$18,295**	**$18,295**
	TOTAL SHORT TERM PROGRAM	***$10,740,400***	***$8,526,725***	***$541,009***	***$1,672,669***
	INTERMEDIATE TERM PROGRAM (6-10 years)				
1	Purchase Avigation Easements on Each Runway End for Approach Protection (19.3 Acres)	$1,612,800	$1,532,160	$40,320	$40,320
2	Install Centerline and Elevated Edge Reflectors on Parallel Taxiway A	107,300	101,935	2,683	2,683
3	Rehabilitate Runway 6-24	501,000	475,950	12,525	12,525
4	Relocate/Upgrade AWOS	150,000	142,500	3,750	3,750
5	Construct Taxilanes for Hangar Development	236,600	224,770	5,915	5,915
6	Expand/Reconfigure Aircraft Parking Apron A / Extend Automobile Access	750,800	713,260	18,770	18,770
7	Construct Additional Automobile Parking in Terminal Area	212,900	202,255	5,323	5,323
8	Construct High-Speed Exit Taxiways on South Side of Runway 6-24	148,200	140,790	3,705	3,705

	PROJECT DESCRIPTION	TOTAL COST	FAA ELIGIBLE	ADOT ELIGIBLE*	LOCAL SHARE
	INTERMEDIATE TERM PROGRAM (6-10 years) (continued)				
9	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	$658,300	$625,385	$16,458	$16,458
10	Construct Taxilane for Support Facilities and Airfield Access Revenue Support	371,800	353,210	9,295	9,295
11	Construct Permanent Airport Maintenance / Storage Facility	327,100	0	294,390	32,710
12	Acquire Property Interests on North Side of Airport for Safety Areas and Relocation of Weather Aids (Fee Simple Acquisition and/or Easements)	46,000	43,700	1,150	1,150
13	Relocate Segmented Circle/Wind Cone	100,000	95,000	2,500	2,500
14	Construct Taxilanes for Hangar Development	335,400	318,630	8,385	8,385
	TOTAL INTERMEDIATE TERM PROGRAM	***$5,558,200***	***$4,969,545***	***$425,169***	***$163,489***
	LONG TERM PROGRAM (11-20 years)				
1	Remove Hangar One T-Hangar Complex / Construct T-Hangar Complex as a Replacement / Construct Taxilane for Airfield Access Revenue Support	$1,163,000	$1,104,850	$29,075	$29,075
2	Phase III Relocation of Parallel Taxiway A to 240' Separation From Runway 6-24 / Install MITL / Remove Existing Parallel Taxiway	2,027,000	1,925,650	50,675	50,675
3	Extend High-Speed Taxiway Exits to Relocated Parallel Taxiway A	90,000	85,500	2,250	2,250
4	Realign Portion of Taxiway B Connecting to West End of Parallel Taxiway A	370,500	351,975	9,263	9,263
5	Rehabilitate Runway 6-24	3,126,500	2,970,175	78,163	78,163
6	Construct Aircraft Wash Rack	250,000	237,500	6,250	6,250
7	Earthwork/Site Preparation for Further Development in Southwest Area of Airport	800,000	760,000	20,000	20,000
8	Construct Taxilane Leading to Airfield Access Revenue Support	371,500	352,925	9,288	9,288
9	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	702,000	666,900	17,550	17,550
10	Conduct Environmental Assessment for Land Acquisition on Northeast Side of Airport	300,000	285,000	7,500	7,500
11	Relocate Town Yard / Extend Taxilane Leading to Future Airfield Access Revenue Support	1,011,400	960,830	25,285	25,285
	TOTAL LONG TERM PROGRAM	***$10,211,900***	***$9,701,305***	***$255,298***	***$255,298***
	TOTAL PROGRAM COSTS	***$26,510,500***	***$23,197,575***	***$1,221,475***	***$2,091,455***

AWOS - Automated Weather Observation System
MITL - Medium Intensity Taxiway Lighting
PAPI - Precision Approach Path Indicator
REIL - Runway End Identifier Light
RSAT - Runway Safety Action Team

* - The funding of projects will be subject to the Arizona Revised Statutes, Arizona Transportation Board Policies, and administrative policies as well as availability of funds.

Payson

Exhibit 5C
CAPITAL IMPROVEMENT PROGRAM

05MP18-5D-11/20/08

SHORT TERM

2009

1. Conduct Environmental Assessment for Land Acquisition on Southwest Side of the Airport (not pictured)
2. Expand East Side of Aircraft Parking Apron E and Construct Helicopter Hardstands / Extend Automobile Access

2010

3. Design and Construct New Terminal Building
4. Construct Additional Automobile Parking in Terminal Area
5. Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons (not pictured)
6. Phase I Relocation of Parallel Taxiway A / Construct Taxilanes for Hangar Development
7. Acquire Approximately 13.5 Acres of Land Southwest of Airport (Airport Development and Buffer)

2011

8. Phase II Relocation of Parallel Taxiway A
9. Relocate Airport Campground (Construct Campground Facilities and Aircraft Parking Apron)
10. Expand / Reconfigure Aircraft Parking Apron B (Former Airport Campground Area) / Extend Automobile Access
11. Construct Airports Service Roads and Fencing for Increased Safety and Security - RSAT
12. Construct Hold Aprons at Each End of Runway 6-24 - RSAT

2012

13. Upgrade Airfield Marking and Signage System - RSAT
14. Improve Safety Areas on Runway 6-24 (Clearing, Grading, Drainage) - RSAT
15. Construct Taxilanes for Hangar Development

2013

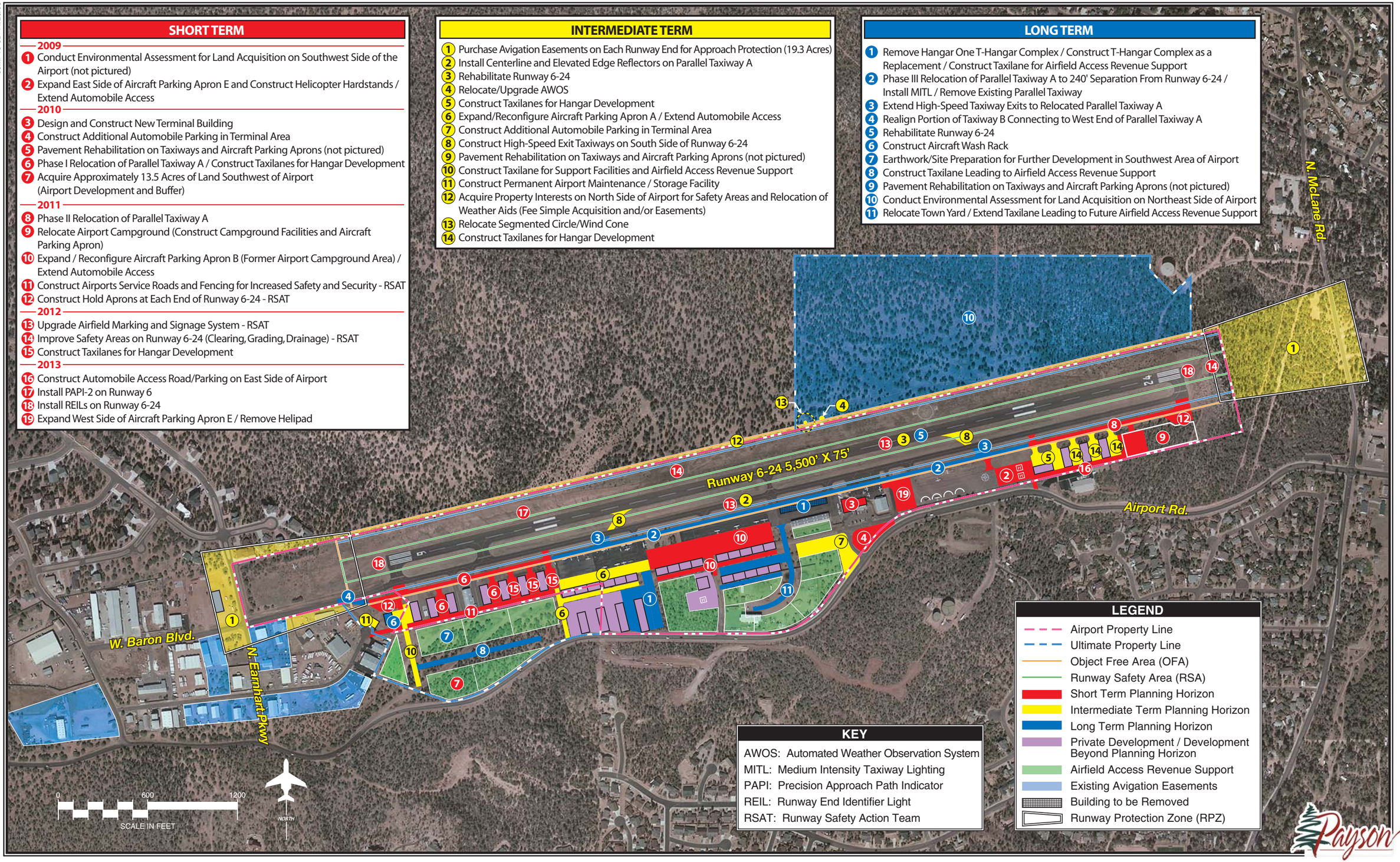
16. Construct Automobile Access Road/Parking on East Side of Airport
17. Install PAPI-2 on Runway 6
18. Install REILs on Runway 6-24
19. Expand West Side of Aircraft Parking Apron E / Remove Helipad

INTERMEDIATE TERM

1. Purchase Avigation Easements on Each Runway End for Approach Protection (19.3 Acres)
2. Install Centerline and Elevated Edge Reflectors on Parallel Taxiway A
3. Rehabilitate Runway 6-24
4. Relocate/Upgrade AWOS
5. Construct Taxilanes for Hangar Development
6. Expand/Reconfigure Aircraft Parking Apron A / Extend Automobile Access
7. Construct Additional Automobile Parking in Terminal Area
8. Construct High-Speed Exit Taxiways on South Side of Runway 6-24
9. Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons (not pictured)
10. Construct Taxilane for Support Facilities and Airfield Access Revenue Support
11. Construct Permanent Airport Maintenance / Storage Facility
12. Acquire Property Interests on North Side of Airport for Safety Areas and Relocation of Weather Aids (Fee Simple Acquisition and/or Easements)
13. Relocate Segmented Circle/Wind Cone
14. Construct Taxilanes for Hangar Development

LONG TERM

1. Remove Hangar One T-Hangar Complex / Construct T-Hangar Complex as a Replacement / Construct Taxilane for Airfield Access Revenue Support
2. Phase III Relocation of Parallel Taxiway A to 240' Separation From Runway 6-24 / Install MITL / Remove Existing Parallel Taxiway
3. Extend High-Speed Taxiway Exits to Relocated Parallel Taxiway A
4. Realign Portion of Taxiway B Connecting to West End of Parallel Taxiway A
5. Rehabilitate Runway 6-24
6. Construct Aircraft Wash Rack
7. Earthwork/Site Preparation for Further Development in Southwest Area of Airport
8. Construct Taxilane Leading to Airfield Access Revenue Support
9. Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons (not pictured)
10. Conduct Environmental Assessment for Land Acquisition on Northeast Side of Airport
11. Relocate Town Yard / Extend Taxilane Leading to Future Airfield Access Revenue Support



KEY

AWOS: Automated Weather Observation System
MITL: Medium Intensity Taxiway Lighting
PAPI: Precision Approach Path Indicator
REIL: Runway End Identifier Light
RSAT: Runway Safety Action Team

LEGEND

- Airport Property Line
- Ultimate Property Line
- Object Free Area (OFA)
- Runway Safety Area (RSA)
- Short Term Planning Horizon
- Intermediate Term Planning Horizon
- Long Term Planning Horizon
- Private Development / Development Beyond Planning Horizon
- Airfield Access Revenue Support
- Existing Avigation Easements
- Building to be Removed
- Runway Protection Zone (RPZ)

Payson

Exhibit 5D
DEVELOPMENT STAGING

implementation of these capital projects should only be undertaken after further refinement of their design and costs through architectural and engineering analyses.

The cost estimates presented in this chapter have been increased to allow for contingencies that may arise on the project. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for planning purposes. Cost estimates for each of the development projects listed in the CIP are listed in current (2009) dollars. Adjustments will need to be applied over time as construction costs or capital equipment costs change.

In an effort to further identify capital needs at the airport, the proposed projects can be categorized as follows:

1) **Safety/Security (SS)** – these are capital needs considered necessary for operational safety and protection of aircraft and/or people and property on the ground near the airport.

2) **Environmental (EN)** – these are capital needs which are identified to enable the airport to operate in an environmentally acceptable manner or meet needs identified in the Environmental Evaluation.

3) **Maintenance (MN)** – these are capital needs required to maintain the existing infrastructure at the airport.

4) **Efficiency (EF)** – these are capital needs intended to optimize aircraft ground operations or passengers' use of the terminal building.

5) **Demand (DM)** – these are capital needs required to accommodate levels of aviation demand. The implementation of these projects should only occur when demand for these needs is verified.

6) **Opportunities (OP)** – these are capital needs intended to take advantage of opportunities afforded by the airport setting. Typically, this will involve improvements to property intended for lease to aviation-related commercial and industrial developments.

Each capital need is categorized according to this schedule. The applicable category (or categories) included are presented in **Table 5D**.

The projects listed in the short term period include all categories and focus heavily on safety and security. Items include upgrading airfield marking and signage and installing REILs and a PAPI-2 on the runway system. In addition, the first two phases of the parallel taxiway relocation are scheduled to allow proper separation between the runway and taxiway once the airport transitions to ARC B-II. Items related to airport efficiency and demand are also addressed to include the expansion of aircraft parking aprons, taxilane construction leading to hangar development, and constructing a new terminal building. Finally, existing taxiways and aircraft parking aprons are maintained and rehabilitated as warranted.

TABLE 5D
Development Needs by Category
Payson Airport

	PROJECT DESCRIPTION	CATEGORY
SHORT TERM PROGRAM (0-5 YEARS)		
1	Conduct Environmental Assessment for Land Acquisition on Southwest Side of the Airport	EN
2	Expand East Side of Aircraft Parking Apron E and Construct Helicopter Hardstands / Extend Automobile Access	EF/DM
3	Design and Construct New Terminal Building	EF/DM
4	Construct Additional Automobile Parking in Terminal Area	DM
5	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	MN
6	Phase I Relocation of Parallel Taxiway A / Construct Taxilanes for Hangar Development	SS/DM
7	Acquire Approximately 13.5 Acres of Land Southwest of Airport (Airport Development and Buffer)	OP
8	Phase II Relocation of Parallel Taxiway A	SS
9	Relocate Airport Campground (Construct Campground Facilities and Aircraft Parking Apron)	OP
10	Expand/Reconfigure Aircraft Parking Apron B (Former Airport Campground Area) / Extend Automobile Access	DM
11	Construct Airport Service Roads and Fencing for Increased Safety and Security - RSAT	SS/EF
12	Construct Hold Aprons at Each End of Runway 6-24 - RSAT	EF
13	Upgrade Airfield Marking and Signage System - RSAT	SS
14	Improve Safety Areas on Runway 6-24 (Clearing, Grading, Drainage) - RSAT	SS
15	Construct Taxilanes for Hangar Development	DM
16	Construct Automobile Access Road/Parking on East Side of Airport	DM
17	Install PAPI-2 on Runway 6	SS
18	Install REILs on Runway 6-24	SS
19	Expand West Side of Aircraft Parking Apron E / Remove Helipad	EF/DM
INTERMEDIATE TERM PROGRAM (6-10 YEARS)		
1	Purchase Avigation Easements on Each Runway End for Approach Protection (19.3 Acres)	SS
2	Install Centerline and Elevated Edge Reflectors on Parallel Taxiway A	SS
3	Rehabilitate Runway 6-24	MN
4	Relocate/Upgrade AWOS	OP
5	Construct Taxilanes for Hangar Development	DM
6	Expand/Reconfigure Aircraft Parking Apron A / Extend Automobile Access	DM
7	Construct Additional Automobile Parking in Terminal Area	DM
8	Construct High-Speed Exit Taxiways on South Side of Runway 6-24	SS/EF
9	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	MN
10	Construct Taxilane for Support Facilities and Airfield Access Revenue Support	DM/OP
11	Construct Permanent Airport Maintenance/Storage Facility	EF/DM
12	Acquire Property Interests on North Side of Airport for Safety Areas and Relocation of Weather Aids (Fee Simple Acquisition and/or Easements)	SS
13	Relocate Segmented Circle/Wind Cone	SS
14	Construct Taxilanes for Hangar Development	DM

TABLE 5D (Continued)
Development Needs by Category
Payson Airport

	PROJECT DESCRIPTION	CATEGORY
	LONG TERM PROGRAM (11-20 YEARS)	
1	Remove Hangar One T-Hangar Complex / Construct T-Hangar Complex as a Replacement / Construct Taxilane for Airfield Access Revenue Support	SS/DM
2	Phase III Relocation of Parallel Taxiway A to 240' Separation From Runway 6-24 / Install MITL / Remove Existing Parallel Taxiway	SS
3	Extend High-Speed Taxiway Exits to Relocated Parallel Taxiway A	SS/EF
4	Realign Portion of Taxiway B Connecting to West End of Parallel Taxiway A	SS
5	Rehabilitate Runway 6-24	MN
6	Construct Aircraft Wash Rack	EN/DM
7	Earthwork/Site Preparation for Further Development in Southwest Area of Airport	DM
8	Construct Taxilane Leading to Airfield Access Revenue Support	DM/OP
9	Pavement Rehabilitation on Taxiways and Aircraft Parking Aprons	MN
10	Conduct Environmental Assessment for Land Acquisition on Northeast Side of Airport	EN
11	Relocate Town Yard / Extend Taxilane Leading to Future Airfield Access Revenue Support	DM/OP

AWOS - Automated Weather Observation System
MITL - Medium Intensity Taxiway Lighting
PAPI - Precision Approach Path Indicator
REIL - Runway End Identifier Light
RSAT - Runway Safety Action Team
Categories:
SS - Safety/Security
EN - Environmental
MN - Maintenance
EF - Efficiency
DM - Demand
OP - Opportunities

Intermediate term improvements focus on projects related to demand and include expanding aircraft parking aprons and constructing additional taxilanes and automobile access roads leading to hangar development areas. Safety projects related to the airport transitioning to ARC B-II include the relocation of the segmented circle and wind cone and property acquisition adjacent to the north side of the airport as well as purchasing avigation easements for approach protection. Continued maintenance of airfield pavements is also included in the intermediate term.

Long term improvements relate to the airport fully transitioning to ARC B-II design standards. The remainder of parallel Taxiway A and a portion of Taxiway B are scheduled to be relocated to the south. In addition, a T-hangar complex is to be removed/relocated. Provisions for developing the southwest area of the airport and property adjacent to the northeast side of the airport are included in this planning horizon.

A primary assumption in the CIP is that all future hangar construction will be completed privately. The capital plan does provide for the airport to construct apron and taxilane improvements leading to proposed hangar development which is FAA and ADOT – Aeronautics Division grant eligible. This reduces the overall development costs for the private hangar construction.

SHORT TERM IMPROVEMENTS

The short term planning horizon considers 19 projects for the five-year planning period as presented on **Exhibit 5C** and illustrated on **Exhibit 5D**. The short term planning period is the only planning period separated into years. This is to allow the plan to be coordinated with the five-year planning cycle of the FAA and ADOT-Aeronautics programs. In later planning periods, actual demand levels will dictate implementation.

The first year of the CIP considers projects that may be accomplished in the 2009 federal funding cycle (October 2008 to September 2009). The first project is an EA to comply with NEPA and permit the acquisition of approximately 13 acres of land to the southwest of the airport for future aviation development. Projects such as land acquisition require an EA under FAA guidance. A Finding of No Significant Impact (FONSI) will be required prior to acquisition of land. Once the EA is conducted, the fee simple property acquisition can occur. It is desirable for the airport to gain control over this property as it can be utilized for future aviation development and a buffer to potential development farther south of the airport.

The next project involves the construction of aircraft parking apron space at the airport. Apron E, located east of the terminal area, is planned for expansion to include two helicopter hardstands. This will allow for better segregation of fixed-wing and rotary aircraft. Several areas of existing taxiway and apron pavement are scheduled for rehabilitation following this project. The conditions of these pavements at the time the grant is offered will determine the scope of rehabilitation.

Other projects in this planning period are focused on the existing terminal area. As previously discussed, forecasts of aviation demand predict that additional terminal building space will be needed for pilots and passengers utilizing the airport. Projects in this planning horizon include the design and construction of a new terminal building in the location currently occupied by the airport restaurant. This facility could provide space for several types of aviation-related activities. Additional automobile parking space is proposed in the terminal area during this same time.

As previously discussed, in order for the airport to comply with ultimate ARC B-II design standards, parallel Taxiway A will need to be relocated 90 feet. The relocation of this taxiway is separated into to several phases to reduce costs and impacts to airport operations during construction. The first phase of this project includes the construction of approximately 1,200 feet of taxiway on the west side of the air-

port. Prior to the closing of the existing parallel taxiway, this taxiway segment will provide access to aircraft storage hangars accessed by two taxilanes extending to the south from this taxiway. Constructing only this portion of the taxiway will ensure the proper placement of the T-hangars considering the ultimate Taxiway A location.

Additional taxilanes are programmed on the east side of the airport that would provide access to T-hangars. Similar to the project on the west side of the airport, approximately 1,100 feet of taxiway pavement would be constructed to serve the hangar development on the east side of the airport. Ultimately, this taxiway segment will become parallel Taxiway A. This is the second of three phases of projects associated with the relocation of Taxiway A.

In order to make best use of existing airport property, the airport campground is programmed to be relocated to the east side of the airport to allow for the expansion of Aprons A and B. This is desirable as additional aircraft parking space will accommodate the aircraft tiedowns that will need to be relocated when the parallel taxiway is shifted farther south. Several hangars are proposed adjacent to the south side of the parking aprons that could handle FBO operations, corporate flight departments, and aircraft storage. The construction of vehicle access roads leading to these landside areas are also programmed.

The FAA RSAT recommended the installation of distance remaining signs, runway edge stripes, elevated taxiway edge reflectors, and assigning new taxiway designations at the airport to increase airfield operational safety. Projects to implement these recommendations are programmed for FY 2010 and FY 2011.

The FAA RSAT also recommended the construction of additional service roads on the airport to better segregate automobiles and aircraft. The construction of additional automobile parking in the terminal area adjacent to Airport Road is programmed as well as the construction of a service road on the west side of the airport to comply with this recommendation.

The construction of hold aprons at the east and west ends of Taxiway A is programmed to allow a designated area for aircraft to prepare for departure as well as provide more efficient taxiing operations as aircraft can bypass those waiting for departure without delay.

Grading and drainage improvements within the existing and ultimate RSA and OFA are programmed. As demand dictates, additional taxilanes should be constructed to accommodate T-hangar development in the west area of the airport. Significant grading will be needed in this area to allow for airfield access.

The installation of a PAPI-2 to Runway 6 to compliment the PAPI-2 already serving Runway 24 is programmed toward the end of the short term program. REILs are also programmed to be installed on each runway end. Finally, the construction of apron pavement on the east side of Apron E would require the removal of

the existing helipad and public observation area and would serve to replace the aircraft parking space displaced on Apron D as a result the ultimate relocation of the parallel taxiway.

The total investment necessary for the short term CIP is approximately $10.74 million. Of this total, $8.53 million is eligible for FAA grant funding and approximately $541,000 is eligible for state funding. The remaining $1.67 million would need to be provided locally.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term planning horizon also considers 14 projects. Due to the fluid nature of aviation growth and the uncertainty of infrastructure and development needs more than five years into the future, the projects in the intermediate term were combined into a single project listing and not prioritized by year. However, the project listing is intended to depict a prioritization of projects as now anticipated to meet future demand.

The plan considers the acquisition of approximately 19.3 acres of land off each end of Runway 6-24 to protect the RPZ associated with ARC B-II design standards. In addition, the relocation of the AWOS-III north of Runway 6-24 outside the limits of the ultimate OFA is programmed. This will allow for additional landside development on the east side of the airport.

Other projects in the intermediate term include pavement rehabilitation of Runway 6-24 and all taxiways, taxilanes, and aircraft parking aprons. The construction of high-speed exit taxiways are also programmed. In addition, a taxiway extending south from the parallel taxiway is depicted on the west side of the airport that would provide airfield access to portions of the southwest area of the airport, further enhancing potential airport revenue support. The construction of a permanent airport maintenance/storage facility is also called for during this time.

Acquiring the ARC B-II OFA on the north side of the airport and the relocation of the segmented circle and wind cone outside the limits of the ultimate runway OFA are also included in this planning horizon. Finally, the construction of additional taxilanes serving potential hangar development on the east side of the airport is programmed.

Intermediate term projects have been estimated to cost approximately $5.56 million. Of this total, $4.97 million is eligible for FAA grant funding, $425,200 million is eligible for state funds, and the local share is projected to be approximately $163,500.

LONG TERM IMPROVEMENTS

The long term planning horizon considers 11 projects primarily focused on fully meeting ARC B-II design standards. This includes removing and replacing the ten-unit T-hangar complex adjacent to Apron C to allow for the relocation of Taxiway A. Also included in this planning horizon is the final phase of relocating parallel Taxiway A, which includes extending the

high-speed exit taxiways to the new parallel taxiway location, the removal of existing parallel Taxiway A pavement, and the relocation of Taxiway B on the west side of the airport.

Other projects in this planning horizon continue site development in the southwest portion of the airport to accommodate hangar development and other potential aviation-related development as well as the construction of an aircraft wash rack. The wash rack is planned to be located west of the airport fuel farm.

Other projects include the on-going maintenance of Runway 6-24, which could include partial reconstruction. In addition, an EA is programmed for the proposed acquisition of 50 acres of land on the northeast side of the airport. Finally, should potential aviation demand warrant its relocation, a project to relocate the Town Yard and construct airfield access for revenue support parcels is programmed.

Long term projects have been estimated to cost approximately $10.21 million. Of this total, $9.7 million is eligible for FAA grant funding and $255,300 is eligible for state funds. The remaining $255,300 is the local share.

CAPITAL IMPROVEMENTS FUNDING

Financing capital improvements at Payson Airport will not rely solely on the financial resources of the airport. Capital improvement funding is available through various grant-in-aid programs on both the federal and state levels. The following discussion outlines key sources of funding potentially available for capital improvements at Payson Airport.

Federal Grants

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. The most recent legislation is the Airport Improvement Program (AIP) of 1982. The AIP has been reauthorized several times, with the most recent legislation enacted in late 2003 and entitled the *Vision 100 – Century of Aviation Reauthorization Act*. *Vision 100's* enacted four-year program covered FAA fiscal years 2004, 2005, 2006, and 2007.

The source for AIP funds was the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts. Under the AIP program, examples of eligible development projects include the airfield, public aprons, and access roads.

Vision 100 expired at the end of fiscal year 2007. The *FAA Extension Act of 2008, Part II* authorizes the AIP

through March 31, 2009; however, the continuing resolution provides funds only through March 6, 2009. It directs the FAA to calculate the AIP formulas as though the AIP level is $3.9 billion for the full fiscal year. Further action by the United States Congress will be necessary to provide funding for the full fiscal year 2009. As of January 2009, a new multi-year AIP authorization and authority bill had not been passed.

Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to primary commercial service airports based upon enplanement (passenger boarding) levels. For those airports that do not meet the criteria for a primary commercial service airport, eligible airports could receive up to $150,000 of funding each year in Non-Primary Entitlement (NPE) funds. Eligible airports include those that are included in the *National Plan of Integrated Airport Systems* (NPIAS). Payson Airport is currently eligible for full NPE funding.

The remaining AIP funds are distributed by the FAA based upon the priority of the project for which they have requested federal assistance through discretionary apportionments. A national priority ranking system is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding. Whereas entitlement monies are guaranteed on an annual basis, discretionary funds are not assured. If the combination of entitlement, discretionary, and airport sponsor match does not provide enough capital for planned development, projects may be delayed.

Other funds can come through the Facilities and Equipment (F&E) section of the FAA. As activity conditions warrant, the airport will be considered by F&E for various navigational aids to be installed, owned, and maintained by the FAA.

State Funding Program

In support of the state aviation system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The Transportation Board establishes the policies for distribution of these state funds.

Under the State of Arizona's grant program, an airport can receive funding for one-half (currently 2.5 percent) of the local share of projects receiving federal AIP funding. The state also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding. The maximum amount the state can grant for any single airport project is ten percent of the annual Aviation Fund amount. In recent history, the total annual Aviation Fund amount was approximately $20 million.

The ADOT – Aeronautics Division's Airport Loan Program was established

to enhance the utilization of state funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition, planning studies, and the preparation of plans and specifications for airport construction projects; as well as revenue-generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program are considered if the project would enhance the airport's ability to be financially self-sufficient.

Another program, the Arizona Pavement Preservation Program (APPP), has been established to assist in the preservation of the Arizona airport system infrastructure. The airport system in Arizona is a multi-million dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited and the State Transportation Board recognizes that need to protect and extend the maximum useful life of the airport system's pavement.

Public Law 103-305 requires that airports requesting federal AIP funding for pavement rehabilitation or reconstruction have an effective pavement maintenance program system. To this end, ADOT-Aeronautics maintains an Airport Pavement Management System (APMS). This system requires monthly airport inspections which are conducted by airport management and supplied to ADOT.

The Arizona Airport Pavement Management System uses the Army Corps of Engineers "Micropaver" program as a basis for generating a Five-Year APPP. The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement conditions in accordance with the most recent FAA Advisory Circular 150/5380-7, *Pavement Management System*, and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. Individual airport reports from the update are shared with all participating system airports. ADOT-Aeronautics ensures that the APMS database is kept current, in compliance with FAA requirements.

Every year, ADOT-Aeronautics utilizing the APMS will identify airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear in the State's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the State Transportation Board, the airport sponsor may elect to accept a state grant for the project and not participate in the APPP, or the airport sponsor may sign an Inter-Government Agreement (IGA) with ADOT-Aeronautics to participate in the APPP.

It should be noted that due to recent budget shortfalls, limitations have been placed on state funding programs. This has directly impacted the State of Arizona's Aviation Fund, as the amount of money dedicated to airport improvements has been signifi-

cantly reduced. It is projected that the Aviation Fund will return to normal levels within the next few years as the State's budget improves.

Local Funding

The balance of project costs, after consideration has been given to grants, must be funded through local resources. The goal for the operation of the airport is to generate ample revenues to cover all operating and maintenance costs, as well as the local matching share of capital expenditures.

There are several alternatives for local financing options for future development at the airport, including airport revenues, direct funding from the City, issuing bonds, and leasehold financing. These strategies could be used to fund the local matching share, or complete the project if grant funding cannot be arranged.

Local funding options may also include the solicitation of private developers to construct and manage hangar facilities at the airport. The capital improvement program has assumed that much of the landside facility development would be undertaken in this manner. Outsourcing hangar development can benefit the airport sponsor by generating land lease revenue and relieving the sponsor of operations and maintenance costs.

SUMMARY

The best means to begin implementation of the recommendations in this Master Plan is to first recognize that planning is a continuous process that does not end with completion and approval of this document. Rather, the ability to continuously monitor the existing and forecast status of airport activity must be provided and maintained. The issues upon which this Master Plan is based will remain valid for a number of years. The primary goal is for the airport to best serve the air transportation needs of the region while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the airport. In reality, however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate the development. Although every effort has been made to conservatively estimate when facility development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a usable Master Plan is in keeping the issues and objectives in the minds of the managers and decision-makers so that they are better able to recognize change and its effects. In addition to adjustments in aviation demand, decisions made as to when to undertake the improvements recommended in this Master Plan will impact the period that the plan remains valid. The format used in this plan is intended to reduce the need for

formal and costly updates by simply adjusting the timing. Updating can be done by the manager, thereby improving the plan's effectiveness.

Appendix A

GLOSSARY OF TERMS

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway

Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

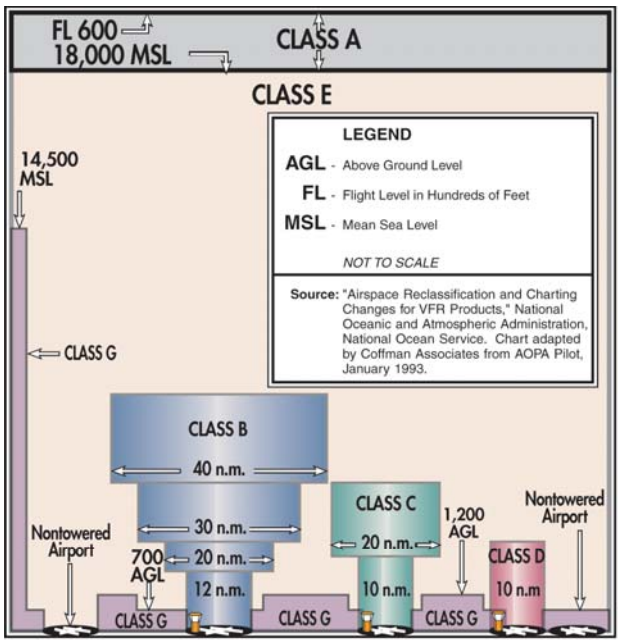
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

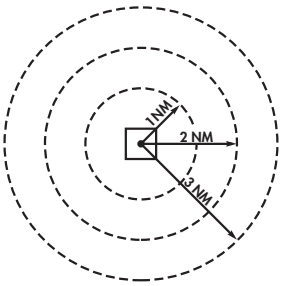
CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**: Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.



- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure . Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA)**: The runway length declared available and suitable for the ground run of an airplane taking off.
- **TAKEOFF DISTANCE AVAILABLE (TODA)**: The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)**: The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA)**: The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable

environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A designation for altitude within controlled airspace.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and

from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction- limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument

approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest clas- sification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the
timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety

area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.
PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

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 from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to

any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRPLANE: An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.

- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- **WARNING AREA**: Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees

of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

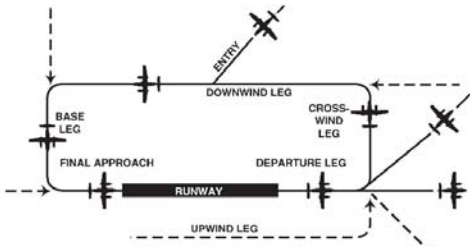
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



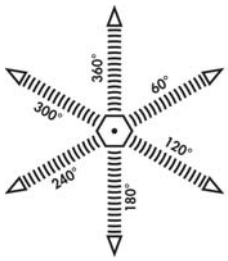
U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."



V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100L)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: midium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MLS: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TDZ: touchdown zone

TDZE: touchdown zone elevation

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

Appendix B

AIRPORT PLANS

Appendix B
AIRPORT PLANS

Per Federal Aviation Administration (FAA) requirements, an official Airport Layout Plan (ALP) has been developed for Payson Airport. The ALP is used in part by the FAA to determine funding eligibility for future development projects.

The ALP was prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys.

A number of related drawings, which depict the ultimate airspace and airfield development, are included with the ALP. The following provides a brief discussion of the drawings included with the ALP.

Airport Layout Plan (Sheet 1 of 9) – The Airport Layout Plan graphically presents the existing and ultimate airport layout.

Terminal Area Plans (Sheets 2 and 3 of 9) – The Terminal Area Plans provide greater detail concerning landside improvements on the east and west sides of the airport and at a larger scale than on the Airport Layout Plan.

Airport Airspace Drawing (Sheet 4 of 9) – The Airport Airspace Drawing is a graphic depiction of the Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, regulatory criterion. The Airport Airspace Drawing is intended to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. These plans should be coordinated with local land use planners.

Inner Portion of the Runway Approach Surface Drawing (Sheet 5 of 9) – The Inner Portion of the Approach Surface Drawing provides scaled drawings of the runway protection zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions as appropriate.

Runway Profile and Outer Approach Surface Profile Drawing (Sheet 6 of 9) – The Profile and Outer Approach Surface Profile Drawing provides both plan and profile views of 14 CFR Part 77 approach surfaces for each runway end. A composite profile of the extended ground line is depicted. Obstructions and clearances over roads are shown as appropriate.

Departure Surface Drawing (Sheet 7 of 9) – The Departure Surface Drawing provides information as it relates to the 40:1 departure surface on each runway end.

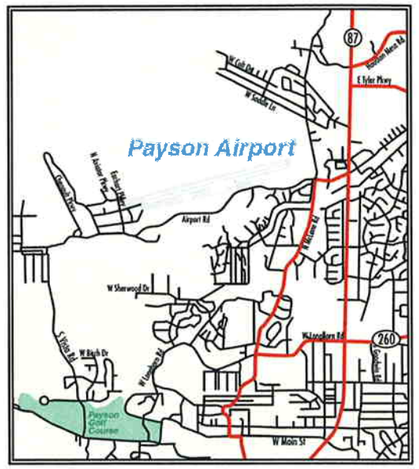
On-Airport Land Use Drawing (Sheet 8 of 9) – The On-Airport Land Use Drawing is a graphic depiction of the land use recommendations. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

Exhibit "A" Property Map (Sheet 9 of 9) – The Exhibit "A" Property Map provides information on the acquisition and identification of all land tracts under the control of the airport. Both existing and future property holdings are identified on the Property Map.

DRAFT ALP DISCLAIMER

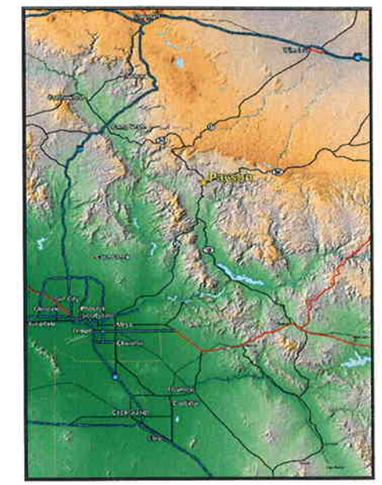
The ALP set has been developed in accordance with accepted FAA and Arizona Department of Transportation (ADOT) – Aeronautics Division standards. The ALP set has not been approved by the FAA and is subject to FAA airspace review. Land use and other changes may result.

AIRPORT MASTER PLAN



Payson

AIRPORT LAYOUT PLAN SET



INDEX OF DRAWINGS

1. AIRPORT LAYOUT PLAN
2. WESTSIDE TERMINAL AREA PLAN
3. EASTSIDE TERMINAL AREA PLAN
4. AIRPORT AIRSPACE DRAWING
5. INNER PORTION OF THE RUNWAY 6-24 APPROACH SURFACE DRAWING
6. RUNWAY 6-24 PROFILE & OUTER APPROACH SURFACE PROFILE DRAWING
7. DEPARTURE SURFACE DRAWING
8. ON-AIRPORT LAND USE DRAWING
9. EXHIBIT "A" PROPERTY MAP

PREPARED FOR THE
TOWN OF PAYSON, ARIZONA

Coffman Associates
Airport Consultants

RUNWAY DATA

RUNWAY DATA	RUNWAY 6-24 EXISTING 6	EXISTING 24	ULTIMATE 6	ULTIMATE 24
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	B-I		B-II	
FAR PART 77 CATEGORY	VISUAL	VISUAL	NONPREC	NONPREC
APPROACH VISIBILITY MINIMUMS	1 Mile	1 Mile	1 Mile	1 Mile
DESIGN CRITICAL AIRCRAFT	BEACH BARON 58		KING AIR 200	
WINGSPAN OF DESIGN AIRCRAFT	37'		54'6"	
UNDERCARRIAGE WIDTH OF DESIGN AIRCRAFT	9'3"		13'	
APPROACH SPEED (KNOTS) OF DESIGN AIRCRAFT	96		103	
MAXIMUM CERTIFIED TAKEOFF WEIGHT (LBS) OF DESIGN AIRCRAFT	5,500		10,600	
RUNWAY EFFECTIVE GRADIENT	0.4%		SAME	
RUNWAY MAXIMUM GRADIENT	0.4%		SAME	
PAVEMENT DESIGN STRENGTH (in thousand lbs.) [1]	40(S) 50(D) 100(DT)		SAME	
APPROACH SLOPE	20:1	20:1	34:1	34:1
RUNWAY END ELEVATION (MSL)	5138.6'	5156.8'	SAME	SAME
RUNWAY TOUCHDOWN ZONE ELEVATION (MSL)	5130.0'	5156.8'	SAME	SAME
RUNWAY HIGH POINT ELEVATION (MSL)	5156.8'		SAME	
RUNWAY LOW POINT ELEVATION (MSL)	5138.6'		SAME	
LINE OF SIGHT REQUIREMENT MET	YES		SAME	
RUNWAY LENGTH	5500'		SAME	
RUNWAY WIDTH	75'		SAME	
RUNWAY BEARING (TRUE)	N 75.9751° E		SAME	SAME
RUNWAY SAFETY AREA LENGTH BEYOND STOP END OF RUNWAY	240'	240'	300'	300'
RUNWAY SAFETY AREA WIDTH	120'		150'	
RUNWAY OBJECT FREE AREA LENGTH BEYOND STOP END OF RUNWAY	240'	240'	300'	300'
RUNWAY OBJECT FREE AREA WIDTH	250'		500'	
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200'	200'	200'	200'
RUNWAY OBSTACLE FREE ZONE WIDTH	250'		400'	
DISTANCE FROM RUNWAY CENTERLINE TO HOLD BARS AND SIGNS	125'		200'	
RUNWAY MARKING	NP	NP	NP	NP
STANDARD SEPARATION - RUNWAY CL TO PARALLEL TAXIWAY CL	150'		240'	
STANDARD SEPARATION - TAXIWAY CL TO FIXED OR MOVABLE OBJECT	45'		66'	
RUNWAY THRESHOLD DISPLACEMENT	NONE	NONE	SAME	SAME
RUNWAY SURFACE/PAVEMENT MATERIAL	Asphalt		SAME	
RUNWAY PAVEMENT SURFACE TREATMENT	None		SAME	
RUNWAY LIGHTING	MIRL		SAME	
TAXIWAY WIDTH	35'		SAME	
TAXIWAY SURFACE MATERIAL	Asphalt		SAME	
TAXIWAY OBJECT FREE AREA WIDTH	89'		131'	
TAXIWAY SAFETY AREA WIDTH	49'		79'	
TAXIWAY WINGTIP CLEARANCE	20'		26'	
TAXIWAY MARKING	None		SAME	
TAXIWAY LIGHTING	MITL (entry/exit)		MITL	
RUNWAY NAVIGATIONAL AIDS	GPS-A (circling)		GPS(straight in)	
RUNWAY VISUAL AIDS	Airport Beacon PAPI-2 (24) NONE Segmented Circle Wind Cone		SAME PAPI-2 (6)(24) REILS SAME SAME	

[1] Pavement strengths are expressed in Single(S), Dual(D), and Dual Tandem (DT) wheel loading capacities.

AIRPORT DATA

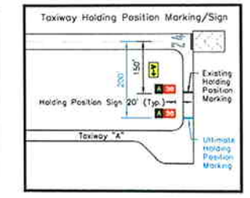
PAYSON AIRPORT (PAN)

OWNER: PAYSON, ARIZONA	AIRPORT NPIAS CODE: GENERAL AVIATION	
CITY: PAYSON, ARIZONA	COUNTY: GILA	
RANGE: R 10 E	TOWNSHIP: T 11 N	

		EXISTING	ULTIMATE
AIRPORT REFERENCE CODE		B-I	B-II
AIRPORT ELEVATION (MSL)		5156.8'	SAME
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		93.0° F JULY	SAME
AIRPORT REFERENCE POINT (ARP)	Latitude	34° 15' 24.611" N	SAME
COORDINATES (NAD 83)	Longitude	111° 20' 21.321" W	SAME
AIRPORT NAVAIDS		Airport Beacon PAPI-2 (24) NONE Segmented Circle Wind Cone	Airport Beacon PAPI-2 (6)(24) REILS Segmented Circle Wind Cone
GPS AT AIRPORT		GPS-A (CIRCLING)	GPS (STRAIGHT IN)

BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	EL.	ULTIMATE	DESCRIPTION
1	AGAINST THE WIND	5168.9'	20	AIRPORT MAINTENANCE
2	CROSSWINDS RESTAURANT	5166.0'	21	AIRCRAFT WASH RACK
3	PAYSON AVIATION	5149.6'	22	T-HANGARS
4	AIRPORT OPERATIONS	5151.6'	23	BOX HANGARS
5	T-HANGARS	5152.5'	24	LARGE BOX HANGAR
6	BOX HANGARS	5159.3'	25	TERMINAL
7	AIRPORT CAMPGROUND	5162.7'	26	RELOCATED AIRPORT CAMPGROUND
8	AUTO PARKING	NA	--	--
9	T-HANGARS	5152.0'	--	--
10	FUEL FARM	5191.0'	--	--
11	TOWN YARD	--		

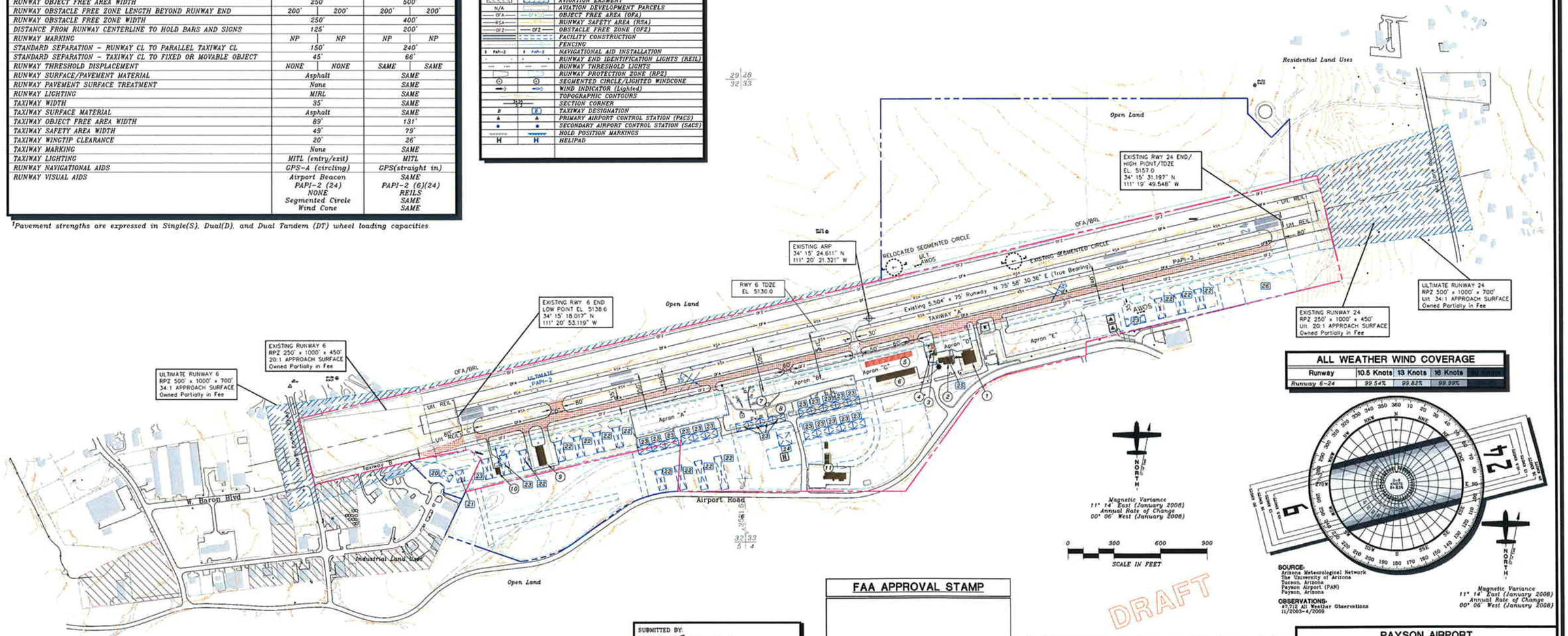


LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
N/A		BUILDING TO BE REMOVED
		BUILDING RESTRICTION LINE (BRL)
		AVIGATION EASMENT
N/A		AVIATION DEVELOPMENT PARCELS
OFA	OFA	OBJECT FREE AREA (OFA)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/LIGHTED WINDCONE
		WIND INDICATOR (Lighted)
5124		TOPOGRAPHIC CONTOURS
		SECTION CORNER
B	B	TAXIWAY DESIGNATION
		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD

RUNWAY END COORDINATES (NAD 83)

RUNWAY		EXISTING	ULTIMATE
Runway 6	Latitude	34°15'18.017" N	SAME
	Longitude	111°20'53.119" W	SAME
Runway 24	Latitude	34°15'31.197" N	SAME
	Longitude	111°19'49.548" W	SAME



ALL WEATHER WIND COVERAGE

Runway	10.5 Knots	13 Knots	16 Knots
Runway 6-24	99.54%	99.82%	99.99%

SOURCE:
Arizona Meteorological Network
The University of Arizona
Tucson, Arizona
Payson Airport (PAN)
Payson, Arizona

OBSERVATIONS:
47,712 All Weather Observations
11/2003-4/2009

Magnetic Variance
11° 14' East (January 2008)
Annual Rate of Change
00° 06' West (January 2008)

GENERAL NOTES:

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4. Detail concerning airport property are depicted on the AIRPORT PROPERTY MAP.
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6. Ultimate fence line extends around Existing/Ultimate Property Line except where shown
7. Base Map and Contours derived from 11/07/07 aerial photography and planometric mapping, surveyed by: Mapping Company.
8. Source for existing airport reference point coordinates and airport elevations: ASIS Datasheet Systems at www.ownwww.jccbi.gov/datasheet
9. All elevations are in NAVD 88 and all horizontal coordinates are in NAD 83
10. The airport has not been surveyed in accordance with FAA standard 405
11. No threshold sitng surface object penetrations.
12. All survey monuments enclosed in concrete casings

SUBMITTED BY:
Coffman Associates
FOR APPROVAL BY:

APPROVED BY: ON THE DATE OF:

Airport Manager

FAA APPROVAL STAMP

No.	REVISIONS	DATE	BY	APP'D.
5	ALP revised to show updated nested T-hangars and executive hangars, additional property purchased, future helipad locations and future Bravo Taxiway gate location.	10-03	RDG	
4	ALP revised to show updated T-hangar infrastructure construction, future portable hangars, and the reduction in size of the small Echo Apron.	02-03	RDG	
3	ALP revised to show updated location of generator and vault building, relocated beacon location, airport maintenance area; new Airport Road alignment. Dated February 8, 2001	02-01	BTH	
2	Echo Ramp Phase I, AWOS, & A/P Road added - Z & M Engineering, Inc	4-00	MHR	-
1	ALP completely revised to add planimetric details and reflect recommendations contained within the Master Plan, dated June 25, 1998	8-98	LDJ	CMH

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PAYSON AIRPORT

AIRPORT LAYOUT PLAN

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 SHEET 1 OF 9

Coffman Associates
Airport Consultants
www.coffmanassociates.com

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
N/A		BUILDING TO BE REMOVED
		BUILDING RESTRICTION LINE (BRL)
		AVIGATION EASEMENT
N/A		AVIATION DEVELOPMENT PARCELS
OFA	OFA	OBJECT FREE AREA (OFA)
RSA		RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
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		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/LIGHTED WINDCONE
		WIND INDICATOR (Lighted)
		TOPOGRAPHIC CONTOURS
		SECTION CORNER
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		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD

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6	BOX HANGARS	5159.9'
7	AIRPORT CAMPGROUND	5162.7'
8	AUTO PARKING	NA
9	T-HANGARS	5152.0'
10	FUEL FARM	5191.0'
11	TOWN YARD	--

BUILDINGS/FACILITIES

ULTIMATE	DESCRIPTION
20	AIRPORT MAINTENANCE
21	AIRCRAFT WASH RACK
22	T-HANGARS
23	BOX HANGARS
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25	TERMINAL
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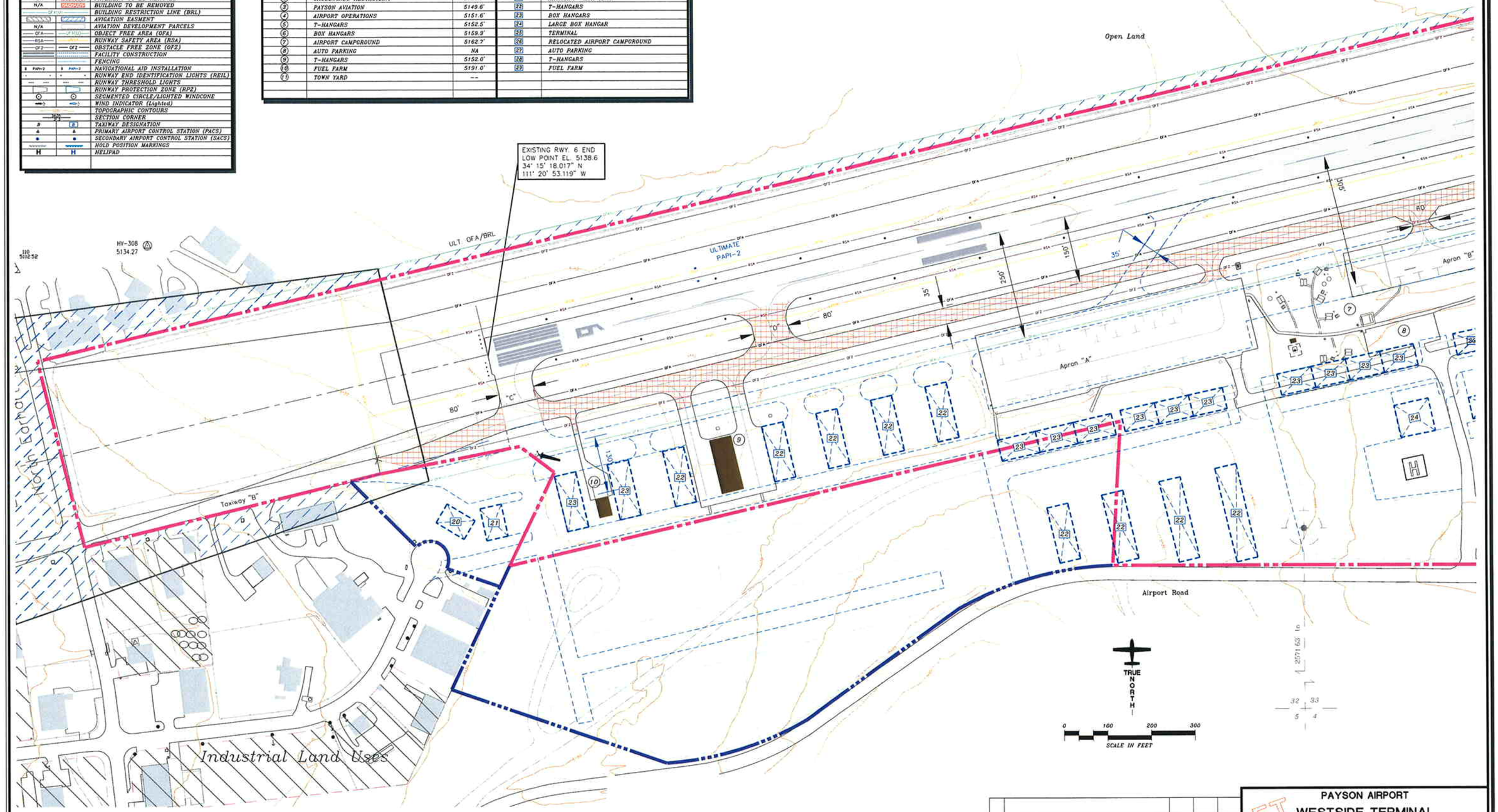

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No.	REVISIONS	DATE	BY	APP'D.
2	--	--		--
1	--	--	--	CMH

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DRAFT

PAYSON AIRPORT

WESTSIDE TERMINAL AREA PLAN

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 SHEET 2 OF 9

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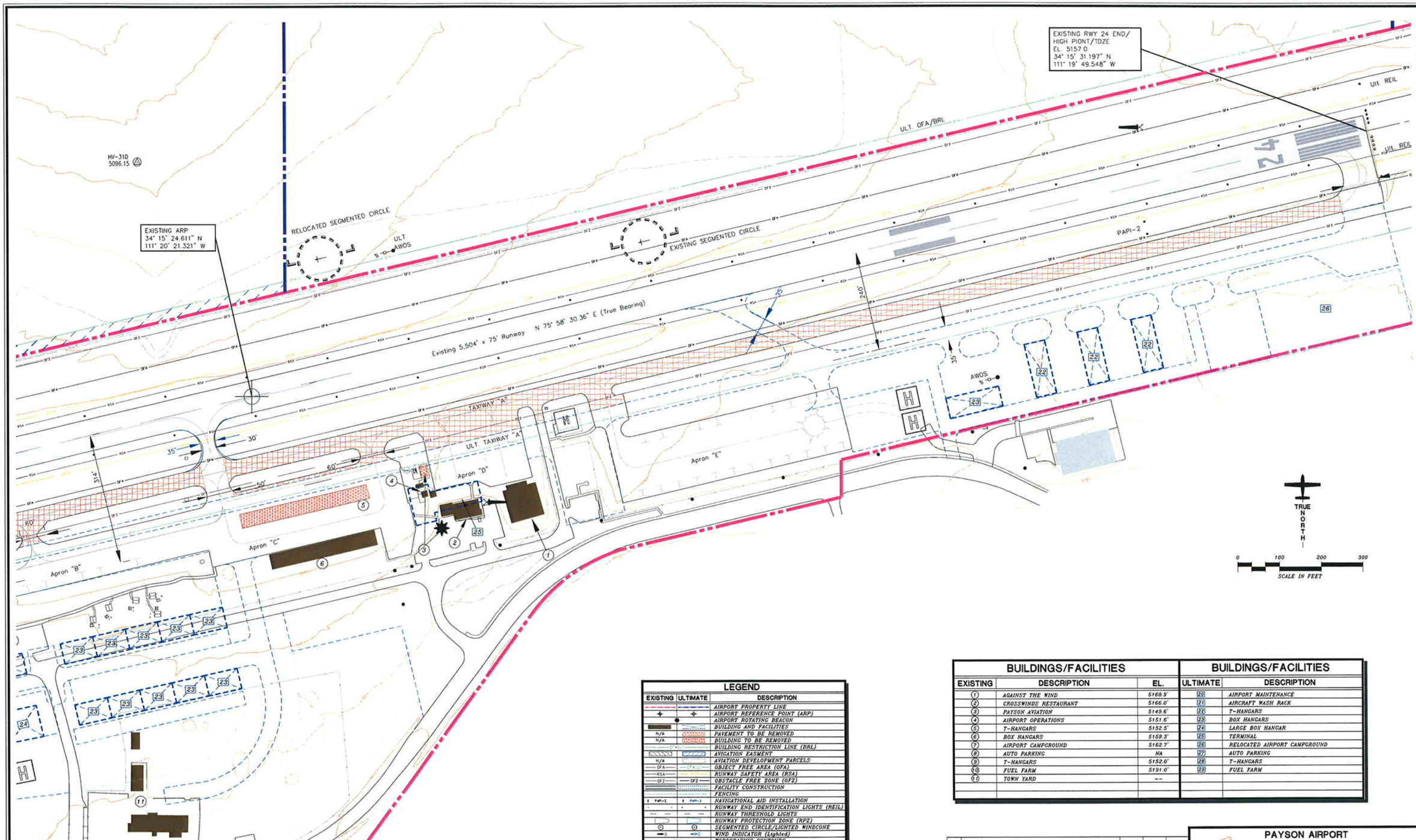

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N/A		BUILDING TO BE REMOVED
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N/A		AVIATION DEVELOPMENT PARCELS
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		WIND INDICATOR (Lighted)
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		SECTION CORNER
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		HOLD POSITION MARKINGS
H	H	HELIPAD

BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	EL.
1	AGAINST THE WIND	5168.9'
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4	AIRPORT OPERATIONS	5151.6'
5	T-HANGARS	5152.5'
6	BOX HANGARS	5159.3'
7	AIRPORT CAMPGROUND	5162.7'
8	AUTO PARKING	NA
9	T-HANGARS	5152.0'
10	FUEL FARM	5191.0'
11	TOWN YARD	--

BUILDINGS/FACILITIES

ULTIMATE	DESCRIPTION
20	AIRPORT MAINTENANCE
21	AIRCRAFT WASH RACK
22	T-HANGARS
23	BOX HANGARS
24	LARGE BOX HANGAR
25	TERMINAL
26	RELOCATED AIRPORT CAMPGROUND
27	AUTO PARKING
28	T-HANGARS
29	FUEL FARM

No.	REVISIONS	DATE	BY	APP'D.
1	--	--	--	--
2	--	--	--	--

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DRAFT

PAYSON AIRPORT

EASTSIDE TERMINAL AREA PLAN

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 SHEET 3 OF 9

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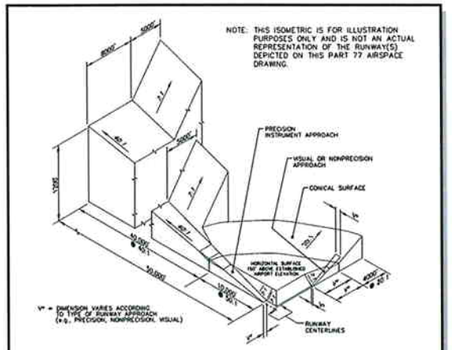


ISOMETRIC VIEW OF SECTION THRU CENTERLINE OF RUNWAYS

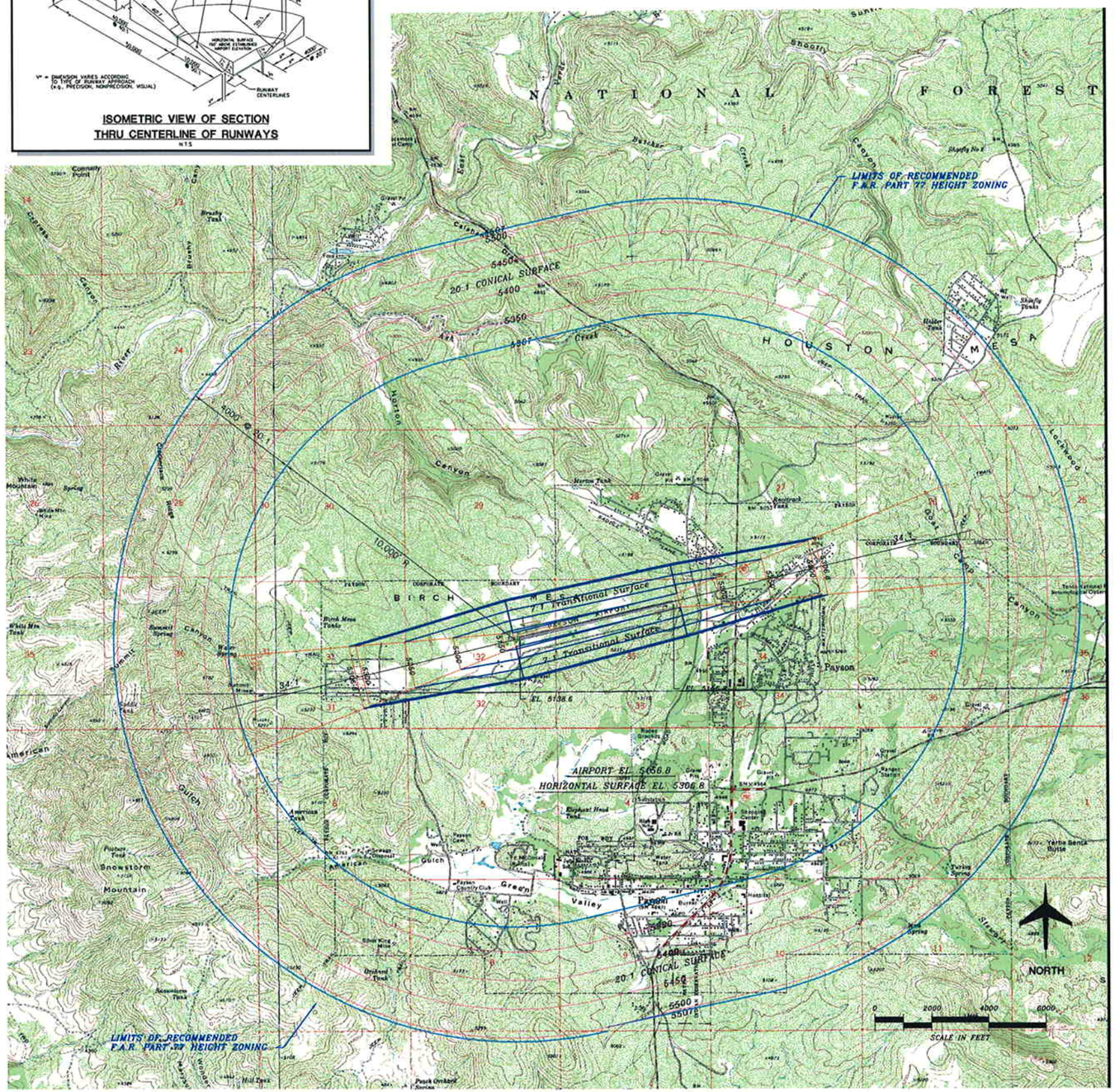
NTS

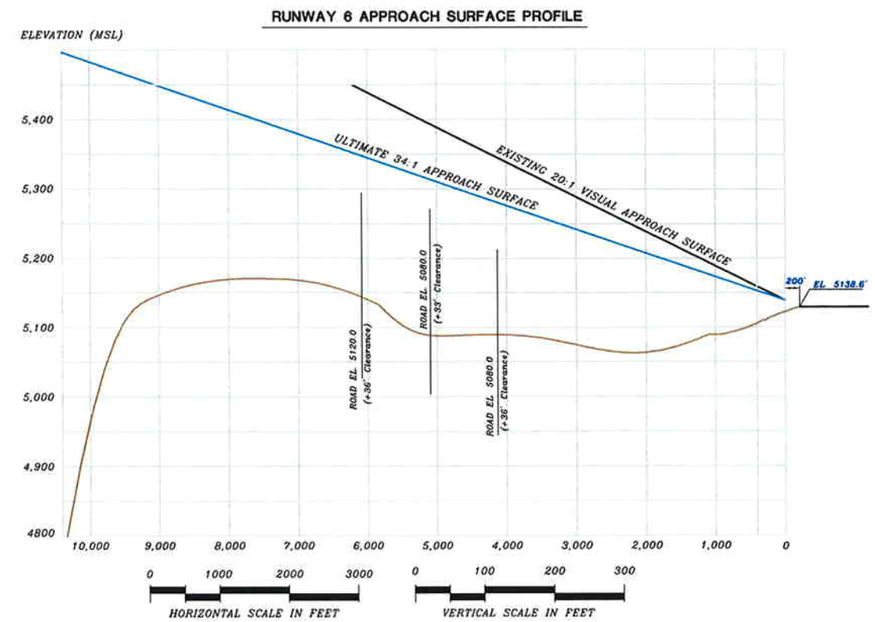
OBSTRUCTION LEGEND

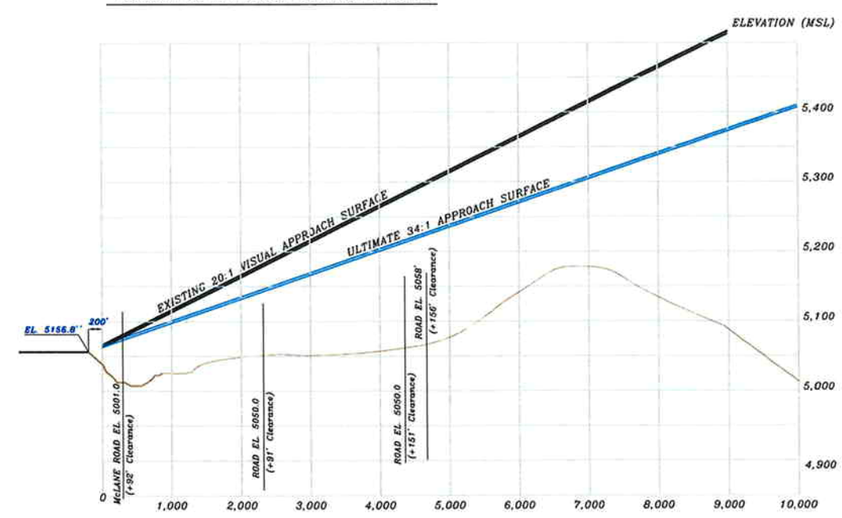
- OBSTRUCTION
- GROUP or MULTIPLE OBSTRUCTIONS

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, are illustrated on the AIRPORT AIRSPACE PLAN, this sheet.
3. Depiction of features and objects within the inner portion of the approach surfaces, are illustrated on the PROTECTION ZONES PLAN, Sheet 6 of these plans.
4. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the APPROACH ZONES PROFILES, Sheet 5 of these plans.
5. Additional obstruction data is illustrated on National Ocean Survey document OC 5945, AIRPORT OBSTRUCTION CHART.







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DRAFT

PAYSON AIRPORT
AIRPORT AIRSPACE DRAWING
PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 — SHEET 4 OF 9

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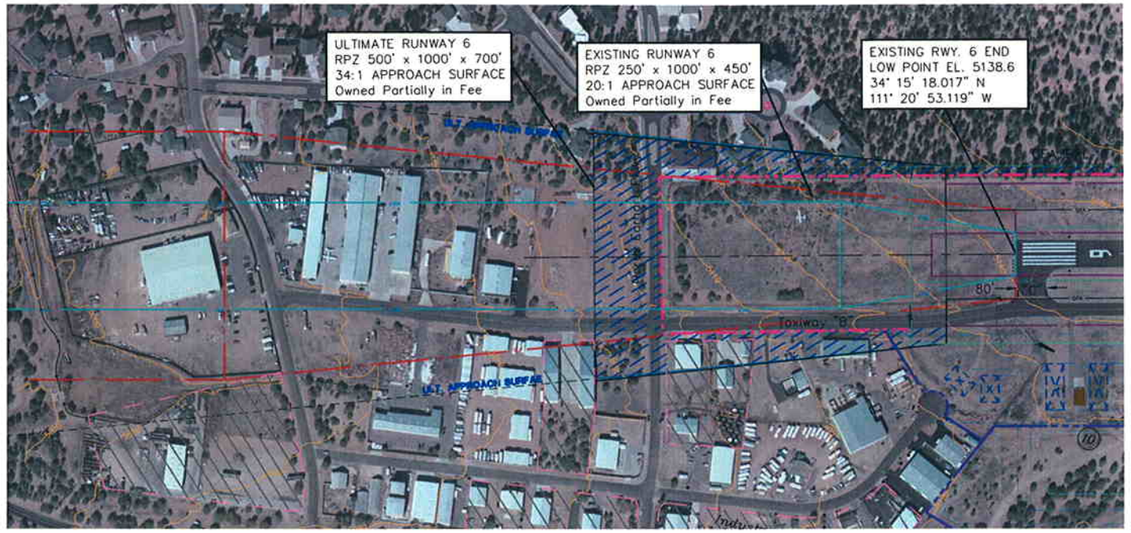

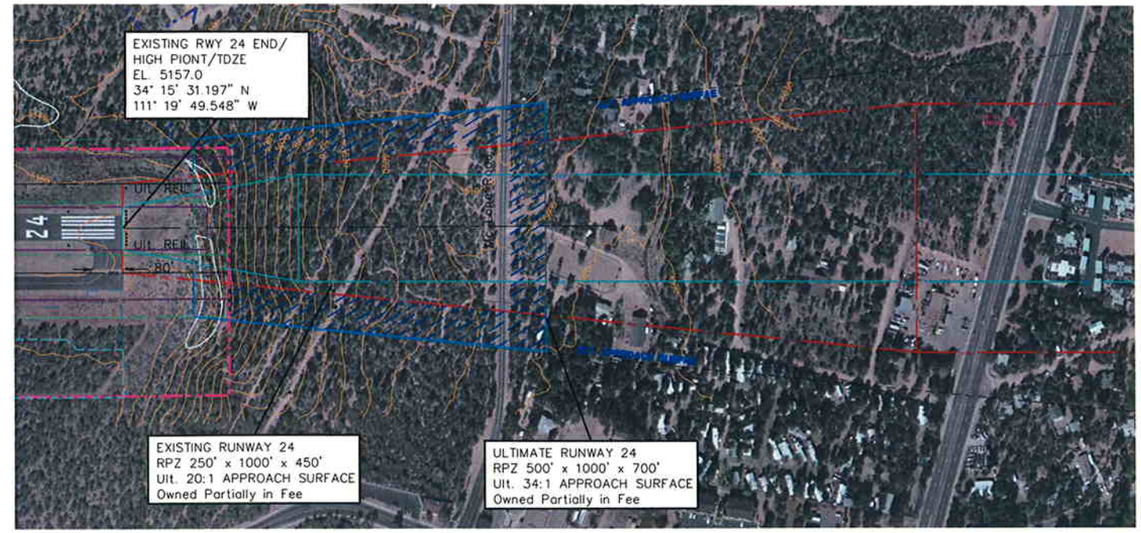

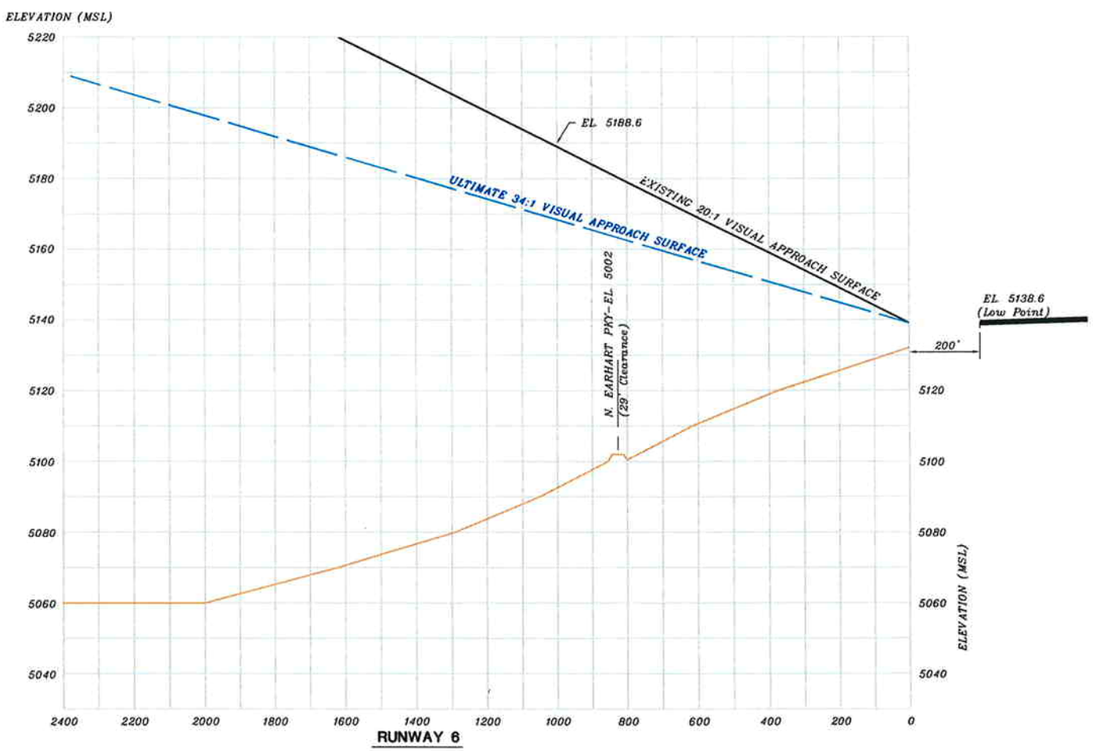

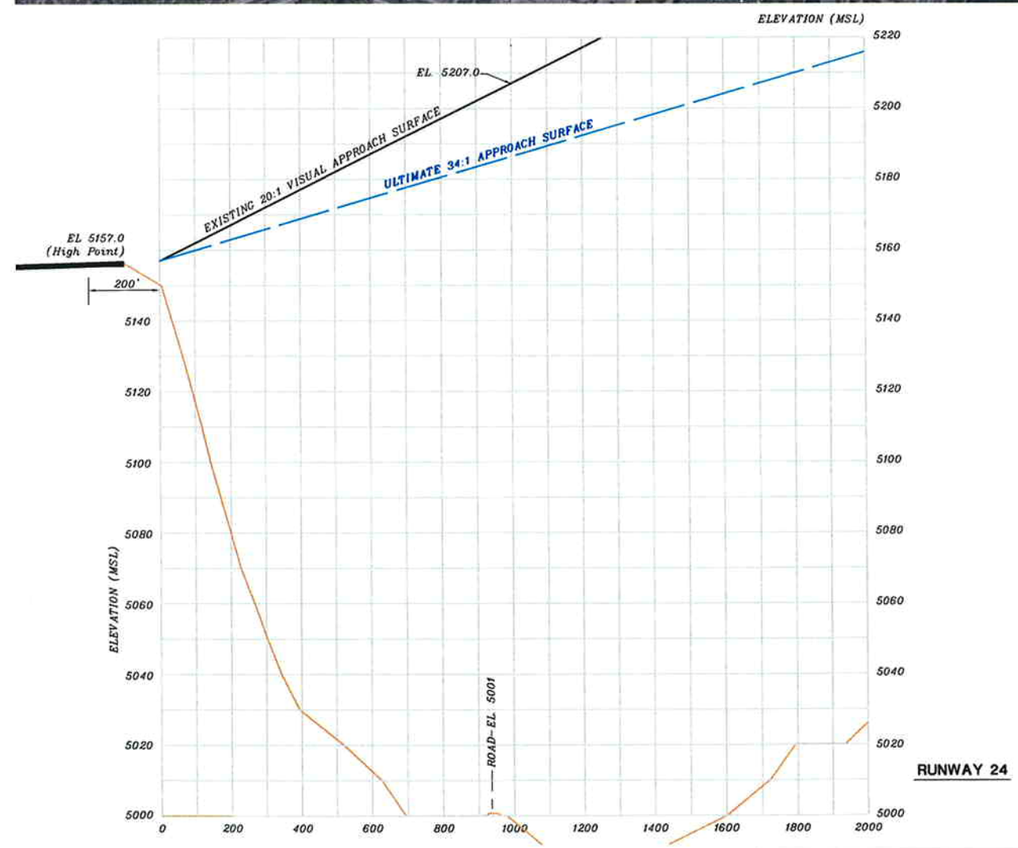

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. All in Primary surface	--	--	--	--	--
--	--	--	--	--	--
--	--	--	--	--	
--	--	--	--	--	--

0 20 40
VERTICAL SCALE IN FEET

0 200 400
HORIZONTAL SCALE IN FEET

DRAFT

No.	REVISIONS	DATE	BY	APP'D.
2		-	-	-
1	-	-	-	-

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PAYSON AIRPORT
INNER PORTION OF THE RUNWAY 6-24 APPROACH SURFACE DRAWING
PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.
May 19, 2009 SHEET 5 OF 9

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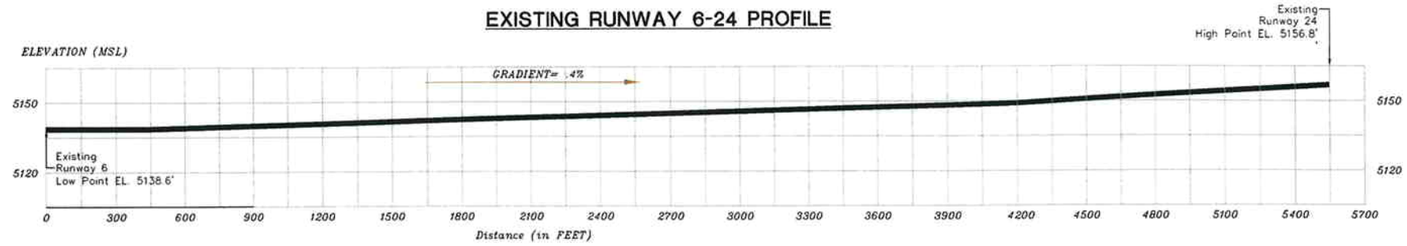
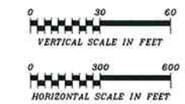
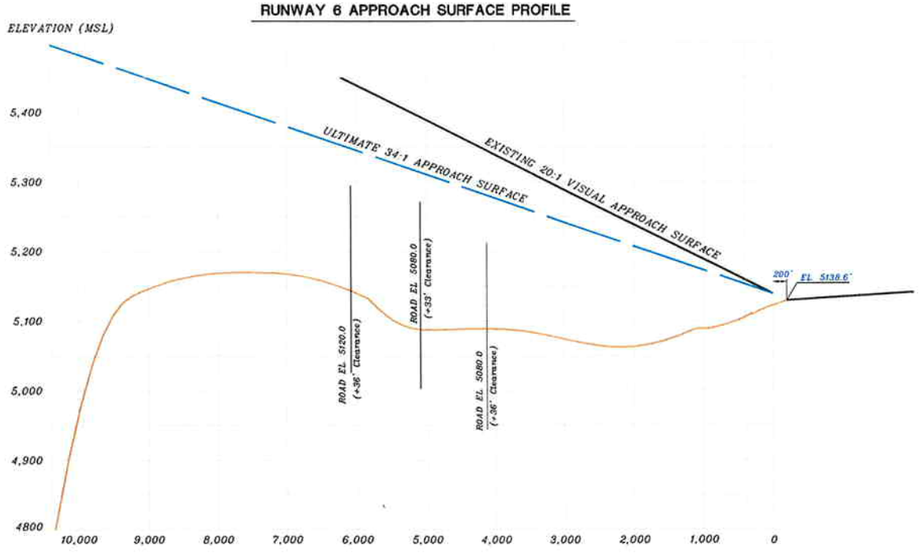
EXISTING RUNWAY 6-24 PROFILE

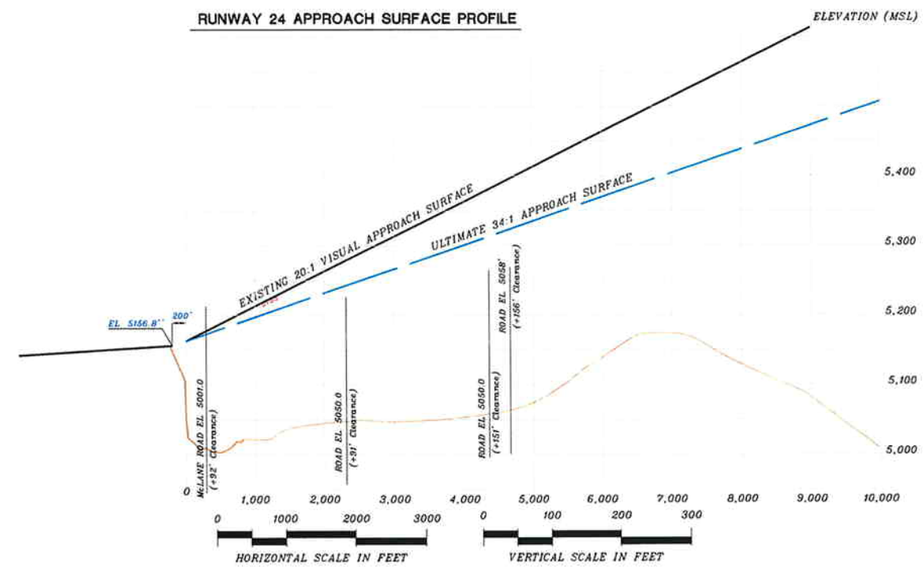




RUNWAY 6 APPROACH SURFACE PROFILE



RUNWAY 24 APPROACH SURFACE PROFILE



OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. NONE	--	--	--	--	--

No.	REVISIONS	DATE	BY	APP'D.
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2	-	-	-	-
1	-	-	-	-

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PAYSON AIRPORT

RUNWAY 14-32 PROFILE & OUTER APPROACH SURFACE DRAWING

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 SHEET 6 OF 9

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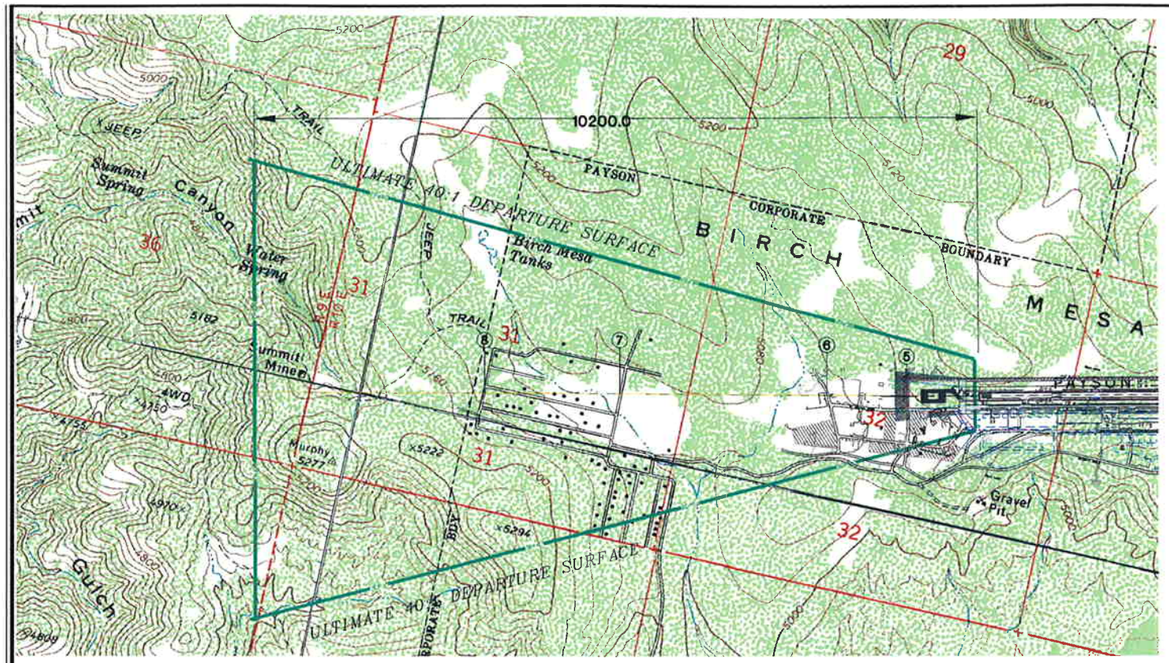
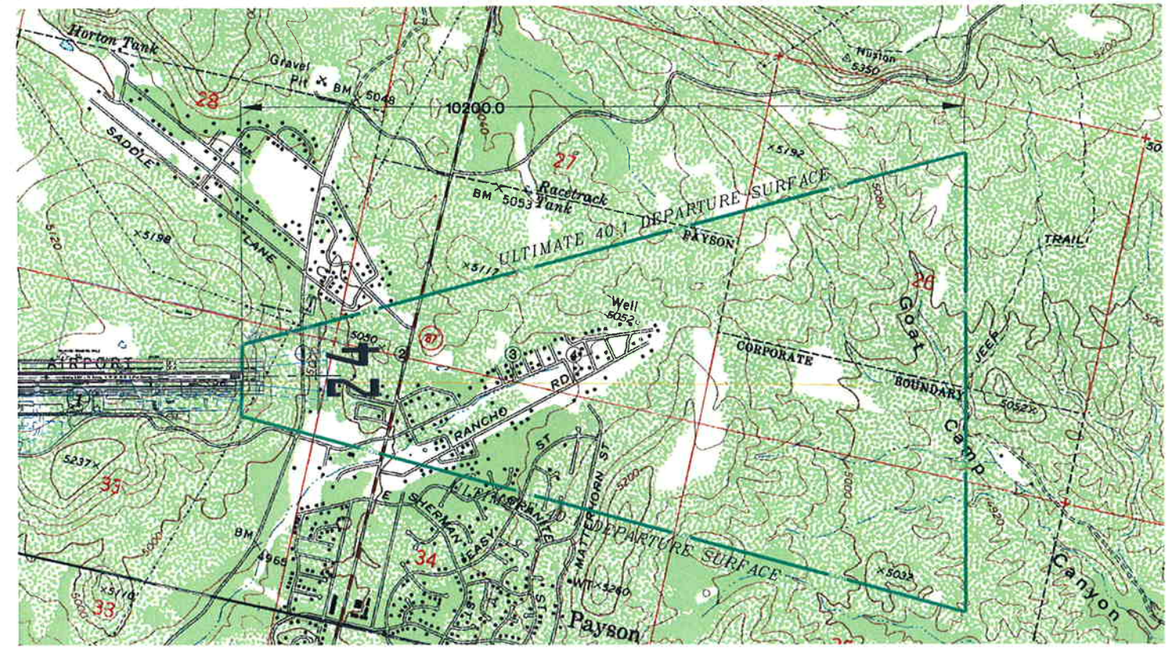
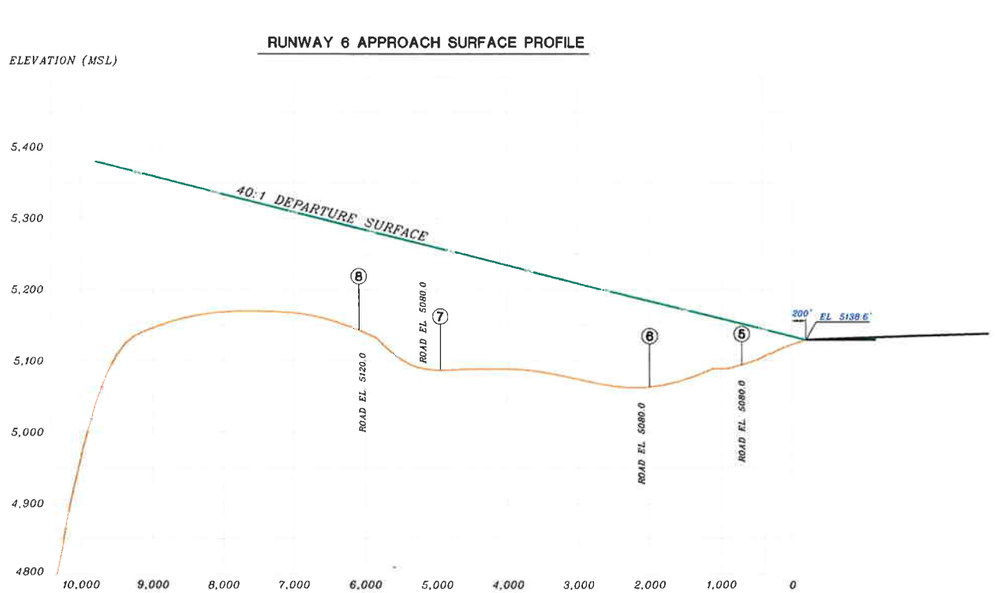
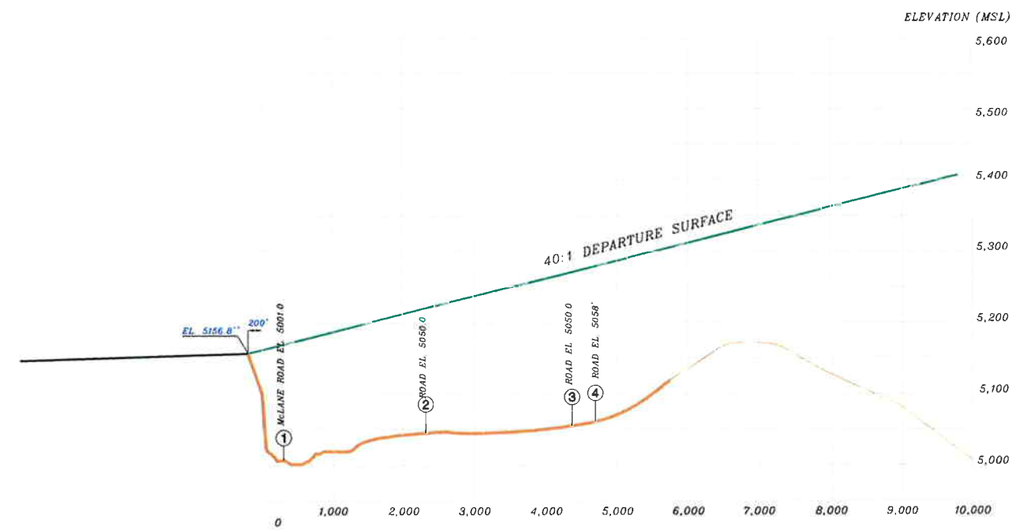




RUNWAY 24 APPROACH SURFACE PROFILE

RUNWAY 6 APPROACH SURFACE PROFILE





OBSTACLE IDENTIFICATION SURFACE (OIS)

Object Description/Elevation	40:1 Departure Surface Elevation	40:1 Departure Surface Penetrations	Obstacle Clearance Requirements (Remove, Relocate, or Lower Object)
- None	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-
- -	-	-	-

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt roads or private roads, 15' for noninterstate roads, 17' for interstate roads, and 23' for railroad.
2. Standard in AC 150/5300-13 CHG 11 Appendix 2, Runway End Siting Requirements are not applicable for identifying objects affecting navigable airspace. See CFR Part 77 Title 14.
3. Roads and Buildings Clearance of more than 50 feet AGL are not detail in Departure Surface Profiles.

HORIZONTAL SCALE: 0 — 1000 — 2000 — 3000
SCALE IN FEET

VERTICAL SCALE: 0 — 100 — 200 — 300
SCALE IN FEET

DRAFT

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PAYSON AIRPORT

RUNWAY 6-24 DEPARTURE SURFACE DRAWING

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.

May 19, 2009

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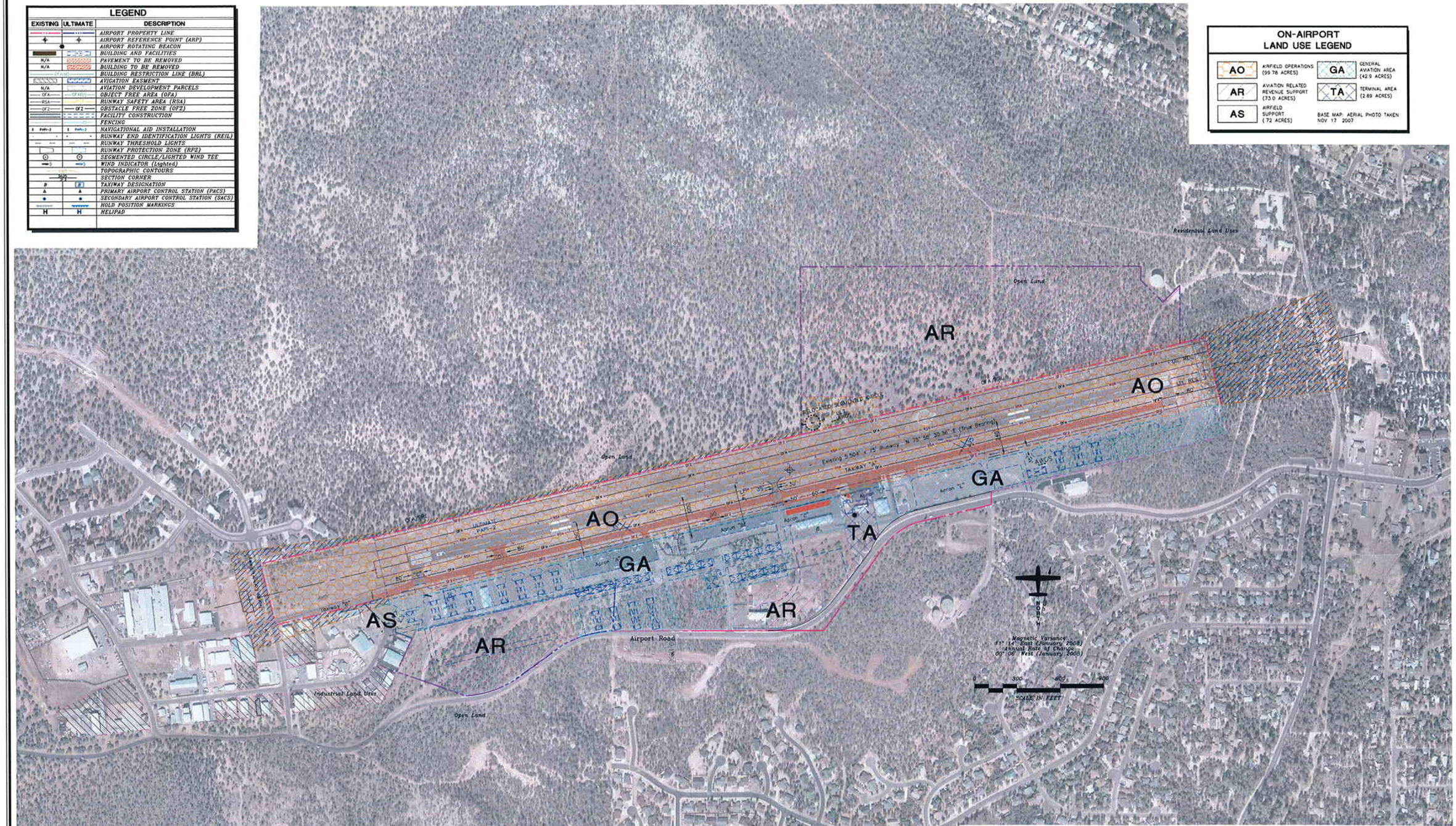
LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
N/A		BUILDING TO BE REMOVED
(BRL)	(BRL)	BUILDING RESTRICTION LINE (BRL)
		AVIGATION EASMENT
N/A		AVIATION DEVELOPMENT PARCELS
OFA	(OFA)	OBJECT FREE AREA (OFA)
RSA		RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
5420		TOPOGRAPHIC CONTOURS
		SECTION CORNER
D	D	TAXIWAY DESIGNATION
A	A	PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD



ON-AIRPORT LAND USE LEGEND

AO	AIRFIELD OPERATIONS (99.78 ACRES)	GA	GENERAL AVIATION AREA (42.9 ACRES)
AR	AVIATION RELATED REVENUE SUPPORT (73.0 ACRES)	TA	TERMINAL AREA (2.89 ACRES)
AS	AIRFIELD SUPPORT (.72 ACRES)		BASE MAP: AERIAL PHOTO TAKEN NOV 17 2007

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DRAFT

PAYSON AIRPORT

ON-AIRPORT LAND USE PLAN

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.

May 19, 2009 | SHEET 8 OF 9

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LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
N/A		BUILDING TO BE REMOVED
OFA(U)		BUILDING RESTRICTION LINE (BRL)
		AVIGATION EASMENT
N/A		AVIATION DEVELOPMENT PARCELS
OFA	OFA(U)	OBJECT FREE AREA (OFA)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		FACILITY CONSTRUCTION
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
		TOPOGRAPHIC CONTOURS
		SECTION CORNER
B	B	TAXIWAY DESIGNATION
		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS
H	H	HELIPAD

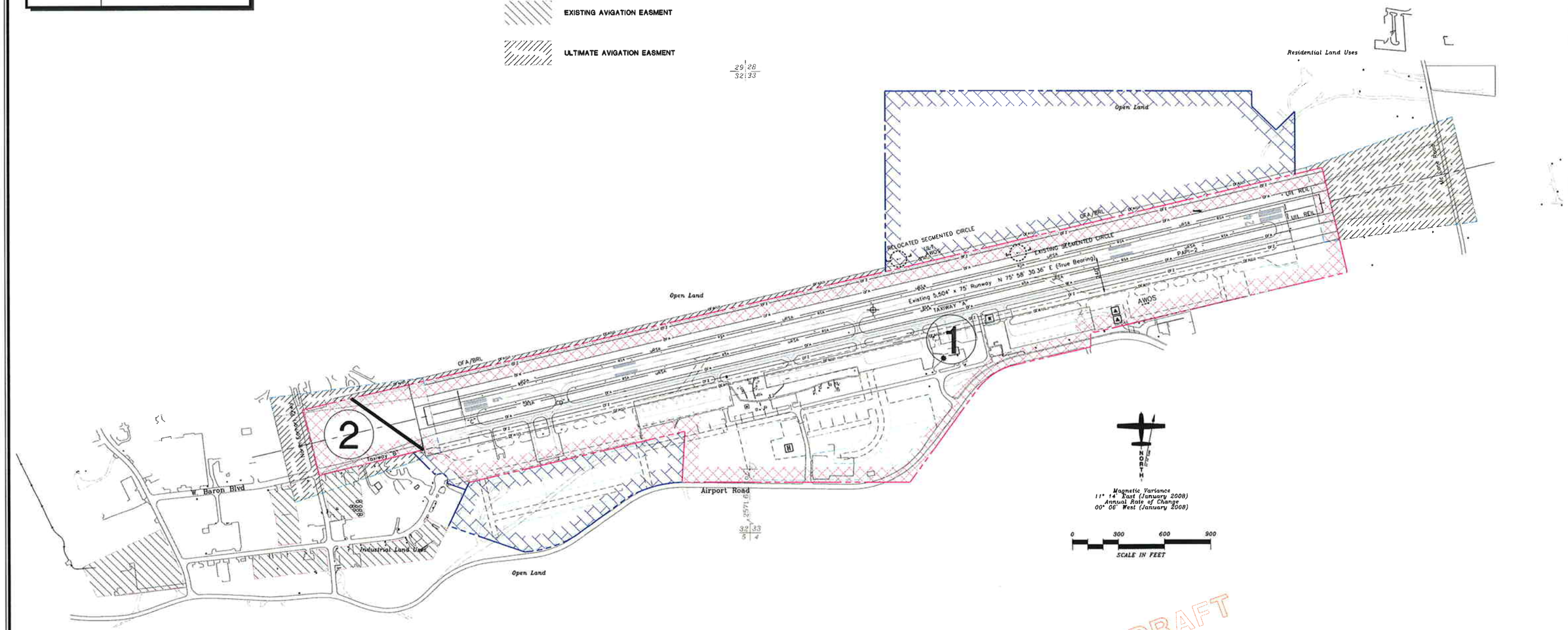
LEGEND:

- EXISTING AIRPORT PROPERTY
- PROPERTY TO BE ACQUIRED
- PARCEL LINE
- EXISTING AVIGATION EASMENT
- ULTIMATE AVIGATION EASMENT

RECORDING INFORMATION (County Assessor - Gila County, Arizona.)

Parcel	Owner:	Acreage	Date Recorded	Recording Information	Grantor/Method	Notes:
1	Payson Arizona	±94.67	6/30/1997	Parcel # --	U.S. Forest Service Quick Claim Deed	
2	Payson Arizona	±8.74	3/15/1993	Parcel # --	Gila County Quick Claim Deed	
Total Acreage		± 103.61				

Please note: The total acreage shown in this table is the cumulative sum of the above described parcels, whose individual acreages were obtained from the County of Gila, Arizona Graphic Information Systems



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PAYSON AIRPORT

EXHIBIT "A"
AIRPORT PROPERTY MAP

PAYSON, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris, P. E.
May 19, 2009
SHEET 9 OF 9

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