Final

AIRPORT MASTER PLAN UPDATE

Prescott Municipal Airport
(Ernest A. Love Field)

Prepared for:

Prescott Municipal Airport
Airport Administration Building
6546 Crystal Lane
Prescott, Arizona 86301

Prepared by:

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December 2010

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TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

TABLE OF EXHIBITS

APPENDICES

Introduction to the Study

Updating an Airport Master Plan (AMP) is a standard industry practice. The need may be developed based on some dramatic change at the airport, but as a "rule of thumb" the Federal Aviation Administration (FAA) suggests that updates should be considered approximately every five to ten years to maintain the currency of the data, the airport standards, and reassess airport needs.

The airport master plan has basically two components; the Report which documents the analytical process and the Airport Layout Plan (ALP), which serves as the graphic representation for future development at the airport. It is the ALP which is approved by the FAA and the airport sponsor, in this case the City of Prescott.

In the case of Prescott Municipal Airport (Ernest A. Love Field), the last airport master plan study was conducted in 1998, ten years ago. Therefore, the development of this AMP and ALP is essential to establish an understanding of the future direction of the Airport.

This updated planning document will be used by the City of Prescott and FAA to direct implementation of capital improvement projects at the Airport from the short term (5 year) through the long term (20 year) planning period. In addition to meeting the needs of the airport created by the projected demand it will determine the ability of Prescott Municipal Airport to meet FAA design standards, which have changed since the last approved ALP and how best to bring the facilities that do not meet those criteria up to standard.

Alternative use of the AMP is to serve as a guide for the City when reviewing private investment at the Airport. Similarly it can be effective for the City of Prescott when reviewing land use development around the Airport to ensure compatibility with FAA airspace requirements and the environment.

The planning activity that was involved with this project was defined by a scope of work, which followed the guidelines provided by the FAA Advisory Circular 150-5070-6B, *Airport Master Plans*. The objectives of the study were to:

- Create an effective coordination and communication process to ensure input from all affected parties;
- Prepare a comprehensive inventory of airport and environmental conditions;
- Develop forecasts to assess the airport role and facility requirements;
- Conduct a comprehensive assessment of the Airport's ability to meet current FAA design standards;
- Conduct alternatives analysis to consider engineering, operational, environmental and financial factors;
- Identify the recommendations that result from the alternatives analysis; and
- Prepare and approve a new Airport Layout Plan.

The first objective was achieved through the creation of a Project Advisory Committee (PAC) that was established to discuss and provide comments on technical reports and recommendations developed during the planning process. Membership of the PAC represented a broad range of stakeholders, including airport users, local business, the community, and planning agencies. Project Documentation of these meetings is included in the Appendix of this Report.

In addition to five (5) PAC meetings, Public Information Meetings (PIM) were held at three key points in the process. The purpose of the PIM is to provide the general public with the opportunity to learn about the study and provide input into the process. Notification of these meetings was provided by publishing notices in local newspapers and the project website. Copies of the presentations given at these meetings are included in Appendix B. Finally, an airport website was created to provide project information including draft working papers, public notices, and the scope of work.

This Airport Master Plan was prepared and is presented in the following Chapters:

Chapter 1 – Baseline Conditions
Chapter 2 – Airport Forecasts
Chapter 3 – Facility Requirements
Chapter 4 – Alternatives Analysis
Chapter 5 – Environmental Evaluation
Chapter 6 – Capital Improvement Plan
Appendices

1.0 Baseline Conditions

This Chapter provides an overview, or inventory, of the City of Prescott's Ernest A. Love Field (PRC). It is a compilation of all pertinent data relative to the airport including airfield conditions, operational activity, environmental conditions, and economic conditions.

For this Master Plan Update, data was collected from an array of sources. These include:

- Site visits conducted on November 15th and 16th, 2007;
- Tenant and user surveys;
- Airport operation counts and administration records;
- Tower records and FAA 5010 forms;
- PRC Airport Master Plan (January 1998);
- Prescott Airport Economic Impact Study (May 2006); and
- Other pertinent data and studies from the Federal Aviation Administration (FAA), Arizona Department of Aviation (ADOT), Yavapai County, the City of Prescott and surrounding towns.

This Chapter is categorized into the following sections:

- Section 1 – Ernest Love Field;
- Section 2 – Operational Activity;
- Section 3 – Existing Facility Conditions;
- Section 4 – Airspace, Approaches and Air Traffic Control;
- Section 5 – Environmental Conditions; and
- Section 6 – Socio-Economic Conditions.

The collected data and the subsequent analysis provided in this chapter will be utilized throughout the master planning process to assess the current growth, forecast the future needs of PRC Airport, provide recommendations to stimulate new traffic and economic growth, and present an updated Master Plan and Airport Layout Plan (ALP) for the Airport.

1.1 Introduction to Ernest Love Field

The airport serves both the commercial and multi-faceted general aviation needs for the area, including the City of Prescott, Yavapai County and residents of the local Yavapai Reservation. Additionally, PRC serves as the flight training base for Embry-Riddle Aeronautical University.

PRC is classified by the FAA as a Class II Commercial Service public use airport, and is owned by the City of Prescott.

1.1.1 Airport Property and Vicinity

PRC is situated on approximately 760 acres of land located in the West-Central region of Arizona in Yavapai County, and is centrally located approximately 7 miles between the City of

Prescott, and the towns of Chino Valley and Prescott Valley. PRC's current surveyed elevation is 5,045 feet above Mean Sean Level (MSL).

PRC is accessible to I-40 via direct access from State Route 89. Access to I-17 from PRC is available via SR 89A.

Figures 1.1, Location Map, 1.2, Vicinity Map, and 1.3 Airport Layout provide the location and general layout of PRC.

1.1.2 Prescott Municipal Airport History

On July 4, 1926 the Yavapai County Chamber of Commerce celebrated the opening of an airstrip built by volunteers and pilots at the site of Prescott Municipal Airport. In 1928 the first City-owned hangar was built. In the same year on August 28th, the airport was renamed Ernest A. Love Field in honor of Ernest A. Love, First Lieutenant, United States Army Air Service. First Lieutenant Love was raised in Prescott and later served in World War I as an early Army Aviator. Love was shot down near Verdun, France on September 16, 1918 and died of his wounds shortly thereafter.

In 1934, aviation enthusiasts formed the Prescott Flying Club using an old boxcar as their terminal. Until the late 1930s the airport was primarily used for civilian pilot training.

In 1940, the Work Program Administration paved two dirt intersecting runways, and by 1941 the airport acreage had expanded to one square-mile with an operating budget of $2,000. The City of Prescott assumed management of the airport in 1942. Subsequently, the City built a second hangar, remodeled the airport, and added much-needed lighting.

By the end of 1943, three flight training schools were operating on the airport: Stinson Flying Corporation, Monrovia Flying Service and Colbach Flying Service.

The Civil Aeronautic Administration (CAA), the precursor of the FAA, established a Flight Service Station and an Air Traffic Control Tower at PRC in 1944. Additionally the U.S. Weather Bureau began its tenure at the airport along with U.S. Navy cadet training.

Air service from Prescott to Phoenix was established in 1946 with the introduction of Arizona Airways, and in the following years TWA, Frontier Airlines, Cochise Airlines and Bonanza Airlines all have offered commercial air service.

In the 1950's, several significant capital improvements took place: a 1,615 ft extension to Runway 3-21; expansion of the terminal facility; construction of a new parallel taxiway; and water system improvements.

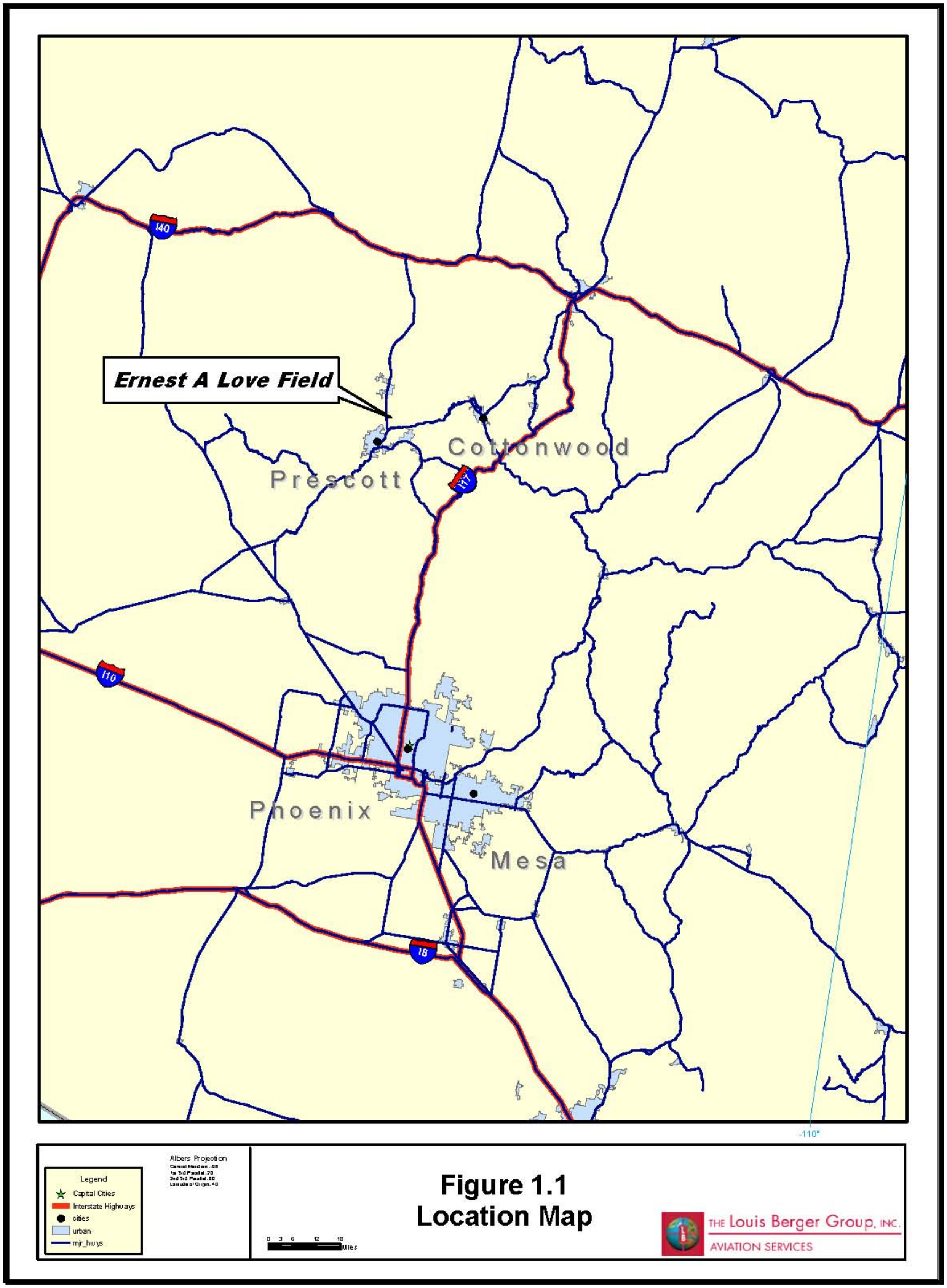


Figure 1.1
Location Map

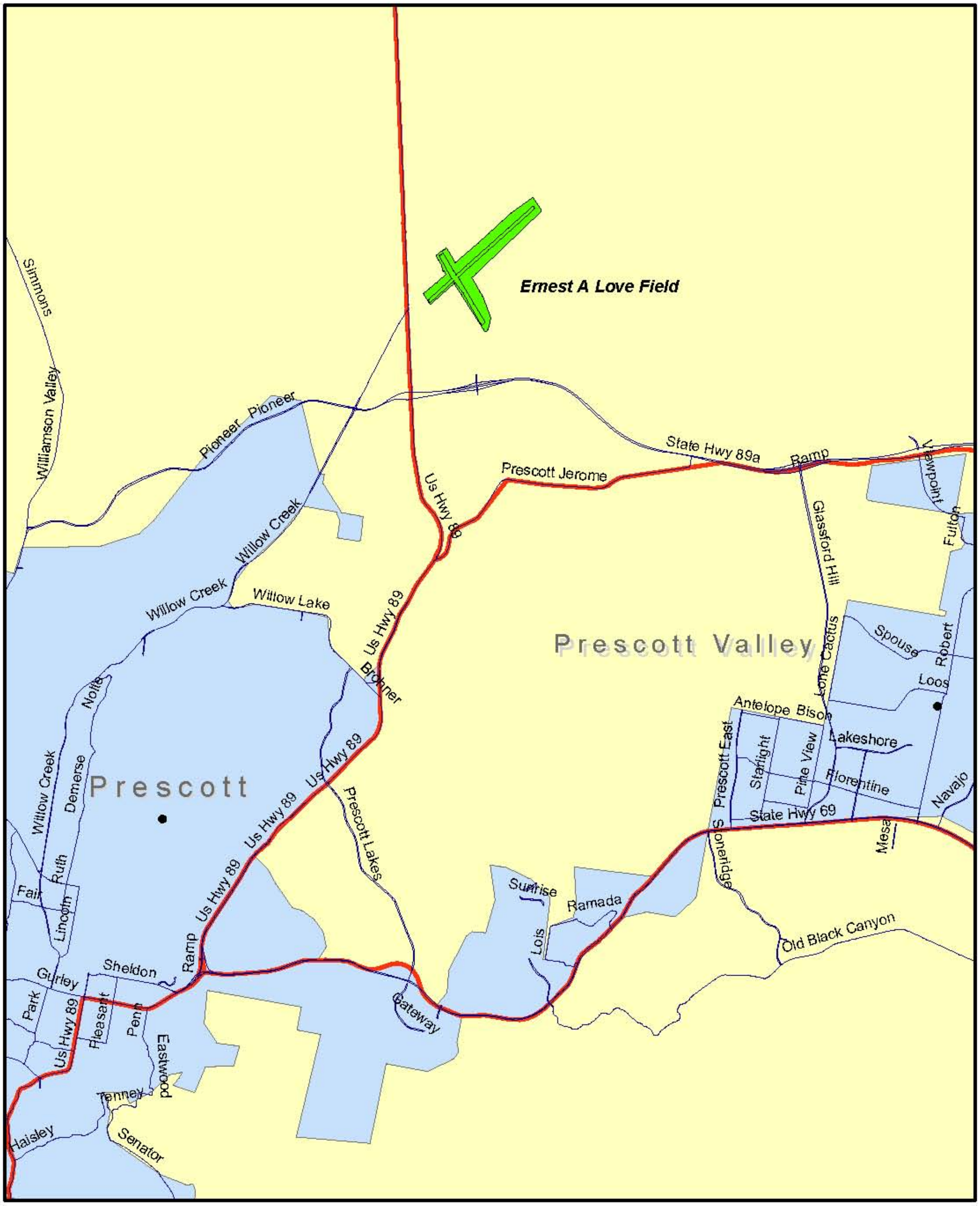
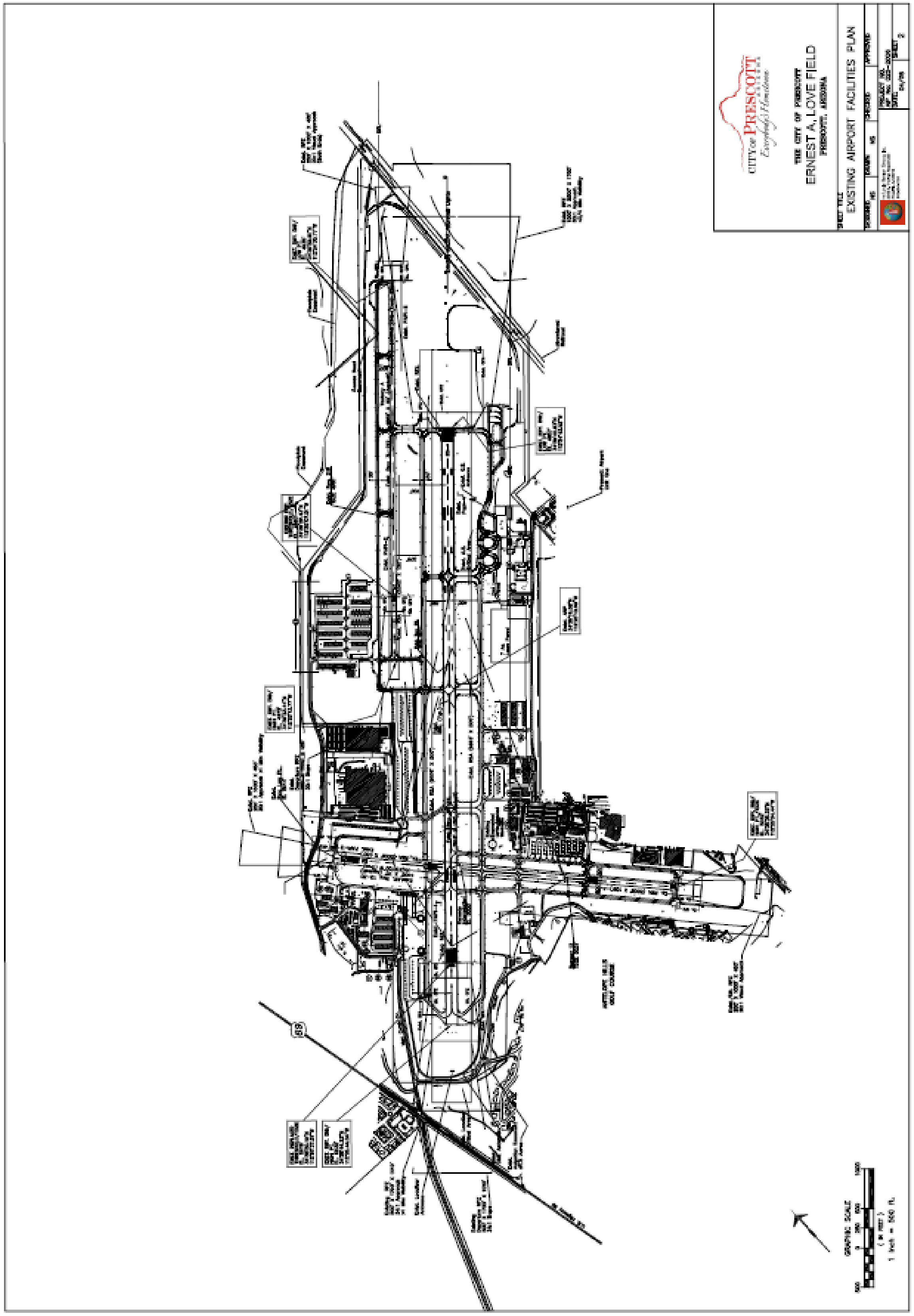


Figure 1.2
Ernest A Love Field Vicinity Map

FIGURE 1.3 – EXISTING AIRPORT LAYOUT



In 1959, 13 aircraft were based at the airport, and by 1971 more than 100 aircraft were based at PRC. In the 1970's, several major improvements occurred at the airport:

- Construction of a new Flight Service Station (FSS);
- Construction of a new 6,400 square feet terminal facility;
- Construction of Hangars A, B, C, and D;
- Development of T-hangars and shaded aircraft parking;
- Reconstruction of Runway 3-21;
- Acquisition of additional land; and
- Construction of additional apron space.

In the latter part of the 1970's Medium Intensity Runway Lighting System (MIRLs), Medium Intensity Taxiway Lighting (MITLs), and the Visual Approach Slope Indicator (VASIs) were all installed.

Another significant change at the airport was the establishment of flight instruction at PRC by Embry-Riddle Aeronautical University (ERAU) between 1977 and 1978, which continues to this day.

In the 1980's, an additional hangar was constructed and the U.S. Forest Service facility was completed on Melville Road.

In the 1990's, Runway 3L-21R was constructed, taxiway connectors were resurfaced, and the MIRLs and Precision Approach Path Indicators (PAPIs) were installed. By 1995, 265 aircraft were based at PRC and in 1999 airfield operations grew to more than 350,000.

By 2003, 17 hangars had been built, aircraft fuel sales exceeded one million gallons and plans were made to facilitate additional growth.

1.1.3 Previous Airport Planning, Development and Improvements Review

Master plans were previously completed for PRC in 1986 and 1998. The last FAA approved ALP on record for PRC is dated May 2000.

Other recent studies relevant to this Master Plan Update are:

- Prescott Municipal Airport Runway Safety Area Standards Evaluation (June, 2005);
- Ernest A. Love Field Pavement Management Report (January, 2007); and
- Prescott Airport Economic Impact Study (May, 2006).

Table 1.1 identifies the FAA funded improvements made at PRC between 1982 and 2006, the years for which FAA Grant History data is available.

Table 1.1
Airport Improvement Projects (1982-2006)

Year	Project Description	FAA Funds
1982	Land Acquisition for Approaches	$169,785
1983	Rehabilitate Aprons & Taxiway	$740,300
1984	Expansion of Runway & Aprons	$729,075
1985	Conduct Airport Master Plan Study	$80,098
1987	Improve Access Road	$369,532
1988	Construct New Apron, Terminal Building, & Taxiway	$650,000
1989	Acquire Security Equipment, Install Guidance Signs, Expand Apron, Land Acquisition for Development, Acquisition of ARFF Equipment, Construct New Taxiway	$904,956
1989	Conduct Airport Master Plan Study	$49,916
1990	Land Acquisition & Construct New Taxiway	$1,303,216
1991	Construct New Runways & Taxiway, Land Acquisition for Development & Approaches	$3,107,981
1992	Construct New Runway & Taxiway, Improve Airport Drainage	$4,481,727
1993	Rehabilitate Apron & Taxiway, Install Runway Vertical/Visual Guidance System	$809,952
1994	Rehabilitate Runway & Taxiway Lighting, Install Apron Lighting, & Construct Taxiway	$989,473
1995	Rehabilitate Runway & Land Acquisition for Approaches	$615,412
1996	Expand Apron	$383,697
1997	Rehabilitate Taxiway & Expand Apron	$467,887
1998	Improve Runway Safety Area	$500,000
2000	Acquire ARFF Equipment & Install Runway Vertical/Visual Guidance System	$374,107
2001	Improve Service Road & Improve Runway Safety Area	$1,585,250
2002	Improve Access Road	$150,000
2003	Conduct Environmental Study	$91,060
2004	Install Perimeter Fencing & Improve Runway Safety Area	$748,805
2005	Rehabilitate Taxiway Lighting & Improve Runway Safety Area	$872,114
2006	Update Airport Master Plan Study	$185,000
	Total:	**$20,356,343**

Source: FAA Grant History

1.2 Operational Activity

This section provides an overview of historical and current aircraft activity at PRC. In the forecast effort for this Master Plan Update, this information will be supplemented with other data to develop projected airport activity for a twenty-year planning period. Data sources for this section include City of Prescott records, FAA records, previous master planning efforts and other studies, and discussions with local officials.

The FAA distinguishes airport operations between local an itinerant and are further subdivided as follows:

- **Local Operations**: Generally, operations occurring within sight of the airport or 20 nautical miles; these are typically training operations. Local Operations are subdivided into two classes:
  - **Civil:** All operations other than military operations; and
  - **Military:** All operations performed by the military (ANG, USMA, etc.).

- **Itinerant Operations**: All aircraft operations other than local operations. Itinerant Operations are subdivided into three classes:
  - **Air Taxi:** Scheduled and non-scheduled passenger service;
  - **General Aviation:** Includes aircraft used for personal, recreational, or business use; and
  - **Military:** All operations performed by the military (Air National Guard, United States Military Academy, etc.).

Tables 1.2 and **1.3** identify the total number of operations at PRC between 1976 and 2007 and the percentage difference between itinerant and local operations.

Table 1.2
PRC Historic Aviation Activity (1976-2007)

Year	Total Operations		Year	Total Operations		Year	Total Operations
1976	58,700		1987	206,641		1998	335,392
1977	58,644		1988	238,102		1999	354,844
1978	131,480		1989	251,729		2000	329,862
1979	178,076		1990	287,736		2001	317,521
1980	229,326		1991	273,179		2002	337,362
1981	240,260		1992	285,914		2003	310,360
1982	237,326		1993	251,560		2004	299,481
1983	216,230		1994	296,758		2005	236,230
1984	216,230		1995	347,721		2006	227,541
1985	6,605		1996	346,295		2007	231,285
1986	163,964		1997	348,441			

Source: FAA Terminal Area Forecast

Table 1.3
PRC Historic Percentage of Itinerant vs. Local Operations (1996-2007)

Year	Itinerant Operations	Percentage of Operations	Local Operations	Percentage of Operations
1996	114,366	33%	231,929	67%
1997	113,363	33%	235,078	67%
1998	114,597	34%	220,795	66%
1999	122,999	35%	231,845	65%
2000	117,476	36%	212,386	64%
2001	112,600	35%	204,921	65%
2002	111,091	33%	226,271	67%
2003	99,904	32%	210,456	68%
2004	104,724	35%	194,757	65%
2005	85,785	36%	150,445	64%
2006	84,529	37%	143,012	63%
2007	85,785	37%	145,500	63%

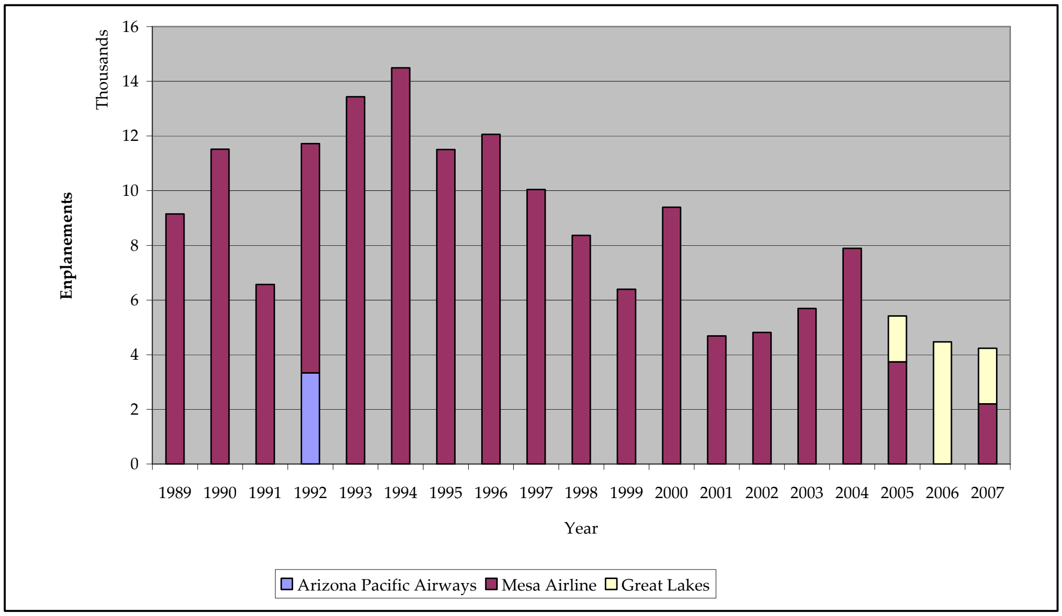
Source: FAA Terminal Area Forecast

Over the last 10 years more than 60% of operations at PCR have been local, highlighting the contribution of flight training operations to the airport.

Airline service is currently offered by Horizon Air and Great Lakes Airline, which operates under the provisions of a Essential Air Service (EAS) contract. The EAS is a program operated by the U.S. Department of Transportation that provides subsidies to airlines which agree to provide service on historically non-profitable routes to rural areas. In order to qualify for the EAS program, communities who want air service must submit a proposal package to USDOT, and approved airlines can then bid on the contract.

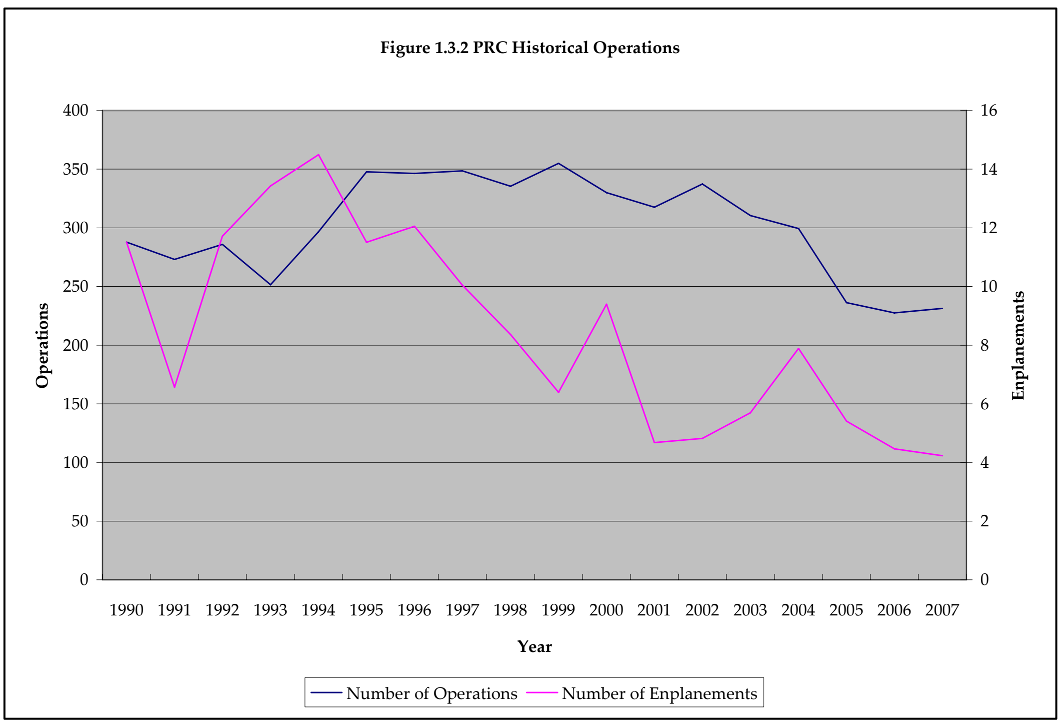
Figure 1.4 provides a summary of airline enplanements, and **Figure 1.5** provides a summary of aviation activity at PRC from 1990 to 2007.

Figure 1.4
PRC Airline Enplanements (1989 – 2007)



Source: FAA TAF & Airport Administration Records

Figure 1.5
PRC Historical Operations (1989 – 2007)



Source: FAA TAF &Airport Administration Records

1.2.1 Based Aircraft

Based aircraft are defined as non-transient aircraft that either hangar or tie down at the airport. These aircraft are one of the biggest factors in planning for future facility needs. The number of based aircraft correlates to the operational demands they place on airport facilities such as runways, taxiways, lighting and navigational/visual aids. Additionally, they directly relate to ground facilities, such as hangar storage, fueling facilities, and aircraft service and repair needs.

Based aircraft data for PRC was collected from the FAA Terminal Area Forecast (TAF) and FAA 5010 Form. **Table 1.5** identifies the based aircraft for each aircraft category dating from 1976.

Table 1.5
PRC Based Aircraft (1996-2007)

Year	Based Aircraft		Year	Based Aircraft
1996	258		2002	335
1997	290		2003	347
1998	290		2004	335
1999	312		2005	349
2000	312		2006	340
2001	312		2007	330

Source: FAA TAF & Airport Administration Records

Airport administration has indicated that in 2007 there were 337 people on a waiting list for non-commercial hangar space and shades and 34 for large hangar space at the airport. The first waiting list consists of 104 people that currently occupy a hangar or a shade and would like to upgrade to a newer or larger facility; 111 people that have requested to remain on the list but do not have an immediate need for hangar space; and 122 are currently waiting for available hangar space.

The current based aircraft fleet mix at PRC is identified in **Table 1.6**, as reported in the FAA Form 5010. This fleet mix includes 300 single-engine aircraft, 26 twin-engine aircraft, 2 jets, and 10 helicopters.

Table 1.6
Based Aircraft Fleet Mix Percentage (2007)

Aircraft Type	Number of Based Aircraft	Percentage of Total Aircraft
Single Engine	277	85.2%
Twin Engine	23	7.1%
Jet	8	2.4%
Helicopters	16	5.0%
Ultra-Light	1	0.3%
Total	**325**	**100%**

Source: FAA Form 5010, July 23, 2008

1.2.2 Flight Training Activity

Historically PRC has been intensively used for flight training operations. Today, flight training operations account for more than 70% of daily operations. **Table 1.7** provides a list of the current flight training schools and other operational details.

Table 1.7
PRC Flight Training Activity (2007)

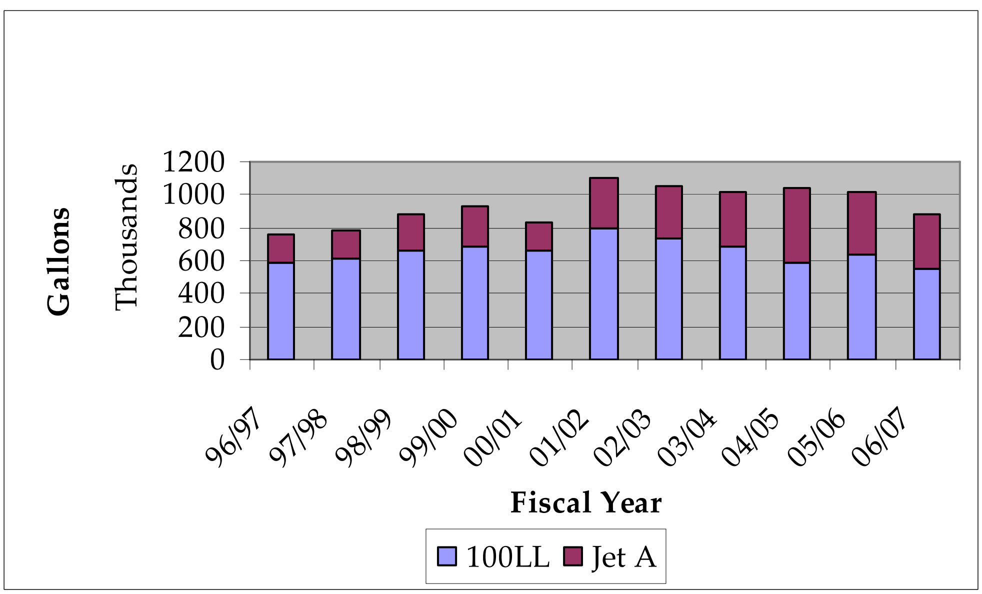
School	Number of Students	Number of Aircraft & Helicopters
Embry-Riddle Aeronautical University	600	30
Guidance Helicopters, Inc.	75	9
North-Aire Aviation, LLC.	100	11
Skyschool, Inc.	50	8

Source: FAA

1.2.3 Fuel Sale Activity

Fueling operations are currently conducted by Legend Aviation Fixed Base Operator (FBO). **Figure 1.6** provides a graphical summary of the annual fuel sale activity between 1996 and 2007 fiscal years.

Figure 1.6
Fuel Sale Activity (1996-2007)



Source: Airport Administration Records

1.3 Existing Facility Conditions

A complete inventory of the airport facilities at PRC was conducted, including airfield pavement, lighting and navigational aids (NAVAIDS); airport terminal and structures; airport access and parking; airport equipment; and airspace and approaches.

The conditions reported here are based upon a review of airport plans, reports and discussions with airport staff.

Basic guidelines for airport design are set forth in the FAA's Advisory Circular (AC) 150/5300-13, Airport Design. Each airport can be classified based on the aircraft which it is designed to serve using the Airport Reference Code (ARC). The ARC is established by two separate factors: Approach Category which group aircraft based on approach speed; and Design Group which group aircraft based on wingspan.

Aircraft approach categories are defined 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; and
- Category E: Speed 166 knots or more.

Airplane design groups are defined as follows:

- Group I: Up to but not including 49 feet (with a subcategory for small aircraft);
- Group II: 49 feet or more, but less than 79 feet;
- Group III: 79 feet or more, but less than 118 feet;
- Group IV: 118 feet or more, but less than 171 feet;
- Group V: 171 feet or more, but less than 214 feet; and
- Group VI: 214 feet or more, but less than 262 feet.

Operations at PRC are characterized mostly by single and twin-engine piston aircraft activity. **Table 1.8** identifies the ARC for each runway at PRC.

Table 1.8
PRC Runway Classification by ARC

Runway	3R-21L	3L-21R	12-30
ARC	C-III	B-I	B-II

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

As a part of this planning effort, the airport's designation will be reassessed to ensure its accuracy.

1.3.1 Airfield Pavement

PRC has three runways, designated as 12/30, 3R/21L and 3L/21R. Each runway is identified on the existing ALP in Figure 1.2. Runways are numbered based on their magnetic heading, to the nearest 10 degrees, and by removing the final “0”. For example, if an aircraft is on the end of the runway labeled “12” facing the “30” end, the magnetic compass for that aircraft should read 120°. Therefore, the difference in runway numbers will always be 18, or 180°. For aviation purposes, North is considered 360°, East is 90°, South is 180°, and West is 270°.

Table 1.9 summarizes the primary characteristics of each runway at PRC.

Table 1.9
Summary of Runway Characteristics

	Runway 3L-21R	Runway 3R-21L	Runway 12-30
Length	4,862	7,616	4,408
Width	60	150	75
Material	Asphalt	Asphalt	Asphalt
Strength*	12,500 lbs. (S)	60,000 lbs. (S) 80,000 lbs. (D)	12,500 lbs. (S)
Lighting	MIRL	MIRL	MIRL
Markings	Visual / Visual	Non-Precision / Precision	Non-Precision / Visual
Visual Aids	PAPI – 2 (Both)	ILS (21L) PAPI – 4 (Both) REIL	VORTAC PAPI – 2 (Both)
RSA	5,342 x 120 ft.	9,616 x 500 ft.	5,008 x 150 ft.
RPZ	250 x 1,000 x 450 ft.	500 x 1,700 x 1,010 ft.	250 x 1,000 x 450 ft.
Approach Slope	20:1 / 20:1	34:1 / 50:1	34:1 / 20:1

Acronyms: MIRLS – Medium Intensity Runway Lighting System; REIL – Runway End Identification Lights; RSA – Runway Safety Area; VASI – Visual Approach Slope Indicator; PAPI – Precision Approach Path Indicator; ILS – Instrument Landing System
*****Pavement strengths are expressed in Single (S), Dual (D), and/or Dual Tandem (DT) wheel loading capacity
Source: The Louis Berger Group, 1998 Airport Master Plan, & Airport Administration

The purpose of an airport’s taxiways system is to provide aircraft access to runways, ramps and aprons. At PRC, taxiways are typically 40 to 50 feet wide, with the exception of Taxiway A, which is 35 feet wide, and are equipped with either Light-Emitting Diode (LED) or Medium Intensity Taxiway Lights (MITLS). **Table 1.10** provides a detailed summary of the major taxiways at PRC.

Table 1.10
Summary of Taxiway Characteristics

	A	C	D	F	E
Dimensions	25 x 5,100	40 x 6,500	50 x 7,500	40 x 1,300	40 x 1,300
Type	Parallel to 3L/21R	Parallel to 3R/21L	Parallel to 3R/21L	Parallel to 12/30	Parallel to 12/30
Runway Centerline Separation	200 lf	325 lf	400 lf	200 lf	200 lf
Material	AC	AAC	AC	AC	AC
Lighting	MITLS	MITLS	LED	LED/MITLS*	Reflectors

Acronyms: MITLS – Medium Intensity Taxiway Lighting System; AC – Asphalt Concrete; AAC – Asphalt Overlay on AC; LED are installed only from F3 to Taxiway D

Source: The Louis Berger Group, 1998 Airport Master Plan, & Pavement Management Report (2006)

Aircraft aprons at PRC are accessed from the taxiways and are used for maneuvering, parking, and servicing of aircraft. PRC has five airport apron areas. Two defined aprons are located within the South Apron, with one in the North Apron, Apron-02 east on Runway 12 end, and Apron-04 in the southern corner of the field. All aprons are shown in **Figure 1.7 – PRC Apron Map**.

The aircraft aprons are of varied sizes, and are a combined 125,280 square yards in size. Two additional aprons are privately owned. **Table 1.11** provides additional apron inventory details.

Table 1.11
Summary of Apron Characteristics

	South Apron	Terminal Ramp	Commercial Terminal Apron	West Ramp	North Ramp	Clubhouse Ramp
Dimensions	1,200x200 ft.	400x300 ft.	300x300 ft.	950x150 ft.	1,550x300 ft	200x200 ft
True Area	240,000 ft^2	120,000 ft^2	90,000 ft^2	142,500 ft^2	495,000 ft^2	40,000 ft^2
Material	AC	AC	AC	AC	AC	AC

Source: The Louis Berger Group, 1998 Airport Master Plan, & Pavement Management Report (2006)

Pavement History and Condition Plan

Figure 1.8 – Pavement Condition provides a graphical representation the runways, taxiways, and aprons at PRC. This figure also provides the pavement rating.

FIGURE 1.7 – PRC APRONS

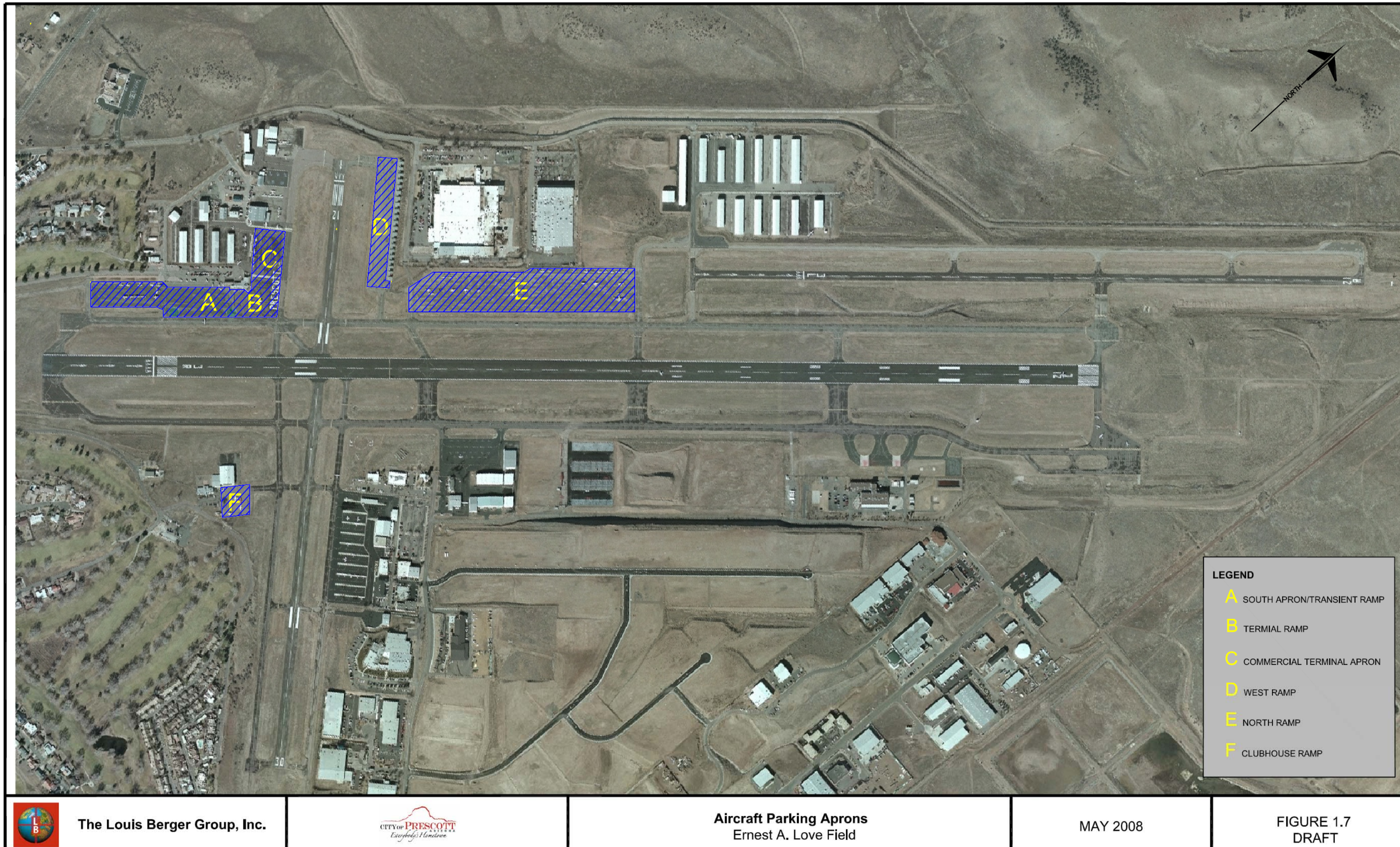
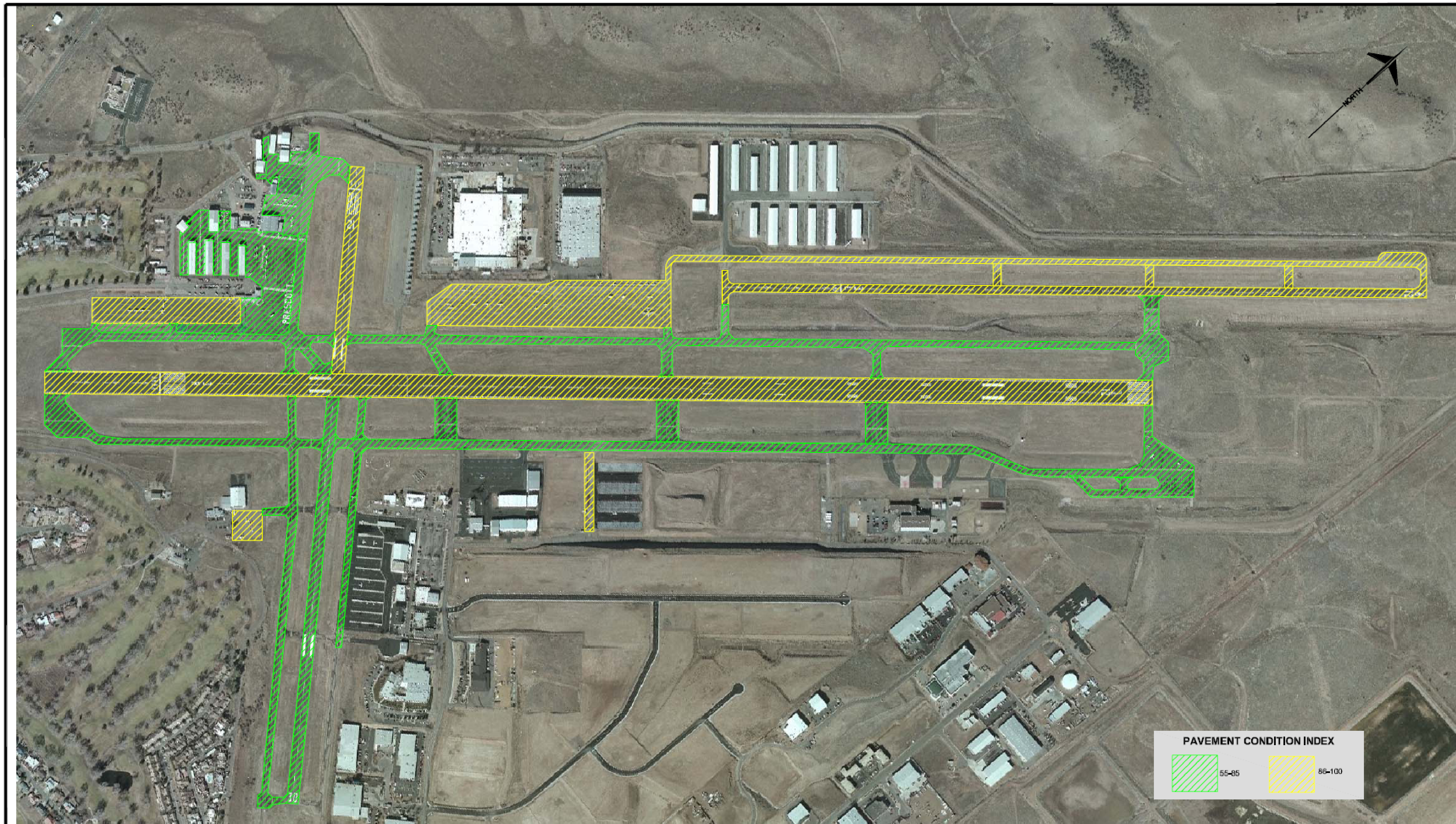


FIGURE 1.8 – PAVEMENT CONDITION



The Louis Berger Group, Inc.	City of Prescott	Pavement Condition Plan Ernest A. Love Field	MAY 2008	FIGURE 1.8

Using the Pavement Surface Evaluation and Rating (PASER) system established by the FAA, pavement ratings were established for the airside pavement at PRC. PASER uses visual inspection to evaluate pavement surface conditions for four major categories of pavement surface distress:

- Surface defects: loss of pavement, loss of pavement grooving, or excess asphalt caused by poor mix design;
- Surface deformation: ruts, pavement distortion;
- Cracks: includes but is not limited to thermal cracking, edge and joint cracks, and alligator cracks; and
- Patches and potholes: original surface repairs and pavement holes.

Based up on the results of the visual inspection, each pavement area is given a rating from 1-5, which is further described as follows:

- Rating 5 – Excellent: No maintenance is required;
- Rating 4 – Good: Minor routine maintenance, crack sealing as needed;
- Rating 3 – Fair: Preservative treatments, crack sealing and surface treatment is necessary;
- Rating 2 – Poor: Structural improvement and leveling is needed; and
- Rating 1 – Failed: Reconstruction is necessary.

1.3.2 Utilities, NAVAIDS and Lighting

Utilities

The following is a summary of the utilities serving PRC. Information on utilities was obtained from a review of airport files, on-site investigation, and discussions with airport personnel.

Electric Service

Electric power is provided to the airport from Arizona Public Service (APS) through a 69 kV transmission line. Service to airport buildings are through underground cables from the utility poles. The electrical vault, which controls the airfield lighting and houses the airport's generator, is located to the south corner of the field.

Water Service

The City of Prescott water service area is located within the Prescott Active Management Area (AMA). The main water supply comes from six production wells that tap into the Little Chino Sub-basin of the Prescott AMA, approximately 15 miles north of the Prescott City limits. Water is transported into the City via three transmission lines, including a 36" high-pressure main. The airport receives its water supply from an 8-inch water main. Approximately 460-3,100 gallons per minute of water per day were produced in 2004 at the well field. The water meets all applicable EPA standards.

Sanitary Sewer

Sewer service is provided by the City of Prescott. Sewage pipes that service the terminal and hangar facilities flow into the City sewage system, which is then treated at the Wastewater Treatment plant.

NAVAIDS

Navigational Aids, or NAVAIDS, are electronic facilities providing enroute or approach guidance information. They are used by pilots to navigate to and from an airport. NAVAIDS are generally used in concert with airport runway lighting and visual aids (such as approach lights, VASI's, etc.) which provide visual cues and orientation to the pilot.

PRC approaches are supported by four different kinds of NAVAIDS:

- Localizer (LOC);
- Very High Frequency Omni-Directional Range (VOR);
- Global Positioning System (GPS) approach (RNAV); and
- ILS/DME.

This section describes the types of NAVAIDS available at PRC, with a summary of the approaches provided later in the section.

Localizer (LOC)

A localizer provides horizontal alignment for approaches to R/W 21. Since a localizer alone cannot provide vertical alignment data, it is typically installed in conjunction with a glide slope (GS) to form an instrument landing system (ILS). That provides a precision approach. With the support of GS, the R/W 21 approach at PRC is identified as a precision approach. The LOC is on a frequency of 108.5 MHz and is identified by the Morse code of K-PRC.

Very High Frequency Omni-Directional Range (VOR)

The VOR provide pilots with bearing and distance (VOR/DME) information to/from the station. They are used to define a system of airways which helps pilots navigate from point to point. It can also be used in non-precision approaches by the pilot flying to/from the station directly over the airport. The VOR located about 1.5 nautical miles northwest of the airport provides guidance for the non-precision approach to R/W 12.

Global Positioning System (GPS) Approach (RNAV)

Global Positioning System (GPS) is one of the more recent developments in air navigation technology and is widely implemented. GPS works on a system of 24 satellites in orbit above the earth. A receiver in the plane accepts signals from multiple satellites and calculates its position and altitude based on the distance from each satellite. GPS technology (when not supported by ground-based error correction stations) has been approved for enroute navigation and non-precision approaches. GPS technology is available on R/W 12 and GPS/RNAV on R/W 21L.

Instrument Landing System (ILS)

Instrument Landing System (ILS) provides aircraft with precision vertical and horizontal navigation guidance information during approach and landing. The localizer generates and radiates signals to provide final approach azimuth navigation information to landing aircraft. The antenna sends 90-HZ and 150-HZ signals that the aircraft instruments determine as left and right of the centerline. The aircraft interprets the signal and displays them on the cockpit indicator guiding the pilot until the runway is in sight. In a similar manner as the localizer (just turned 90 degrees on axis), the glide slope sends two frequencies that aircraft instruments determine as above or below the desired glideslope. This is approximately three degrees to the horizon, which gives the aircraft a descent of approximately 500 feet per minute. The ILS for precision approach is available on R/W 21.

Lighting Systems

Lighting and visual aids are intended to help pilots when within site of the airport. This section identifies the lighting and visual aids on airport property, and a complete list is provided in **Table 1.12**.

Table 1.12
Summary of Runway Lighting Systems

Runway	PAPI (P2L)	PAPI (P4L)	REIL	MALSR	MIRL
3R	NO	YES	YES	NO	YES
21L	NO	YES	YES	YES	YES
3L	YES	NO	NO	NO	YES
21R	YES	NO	NO	NO	YES
12	YES	NO	YES	NO	YES
30	YES	NO	YES	NO	YES

Source: FAA FSS, Airport Administration, Site Inspection

All three runways are equipped with Medium Intensity Runway Lighting (MIRL) outlining each runway with white lights.

Runways 3R, 12, 21L and 30 are equipped with Runway End Identification Light Systems (REIL) providing a circle guidance and visual identification of the end of the runway for landing aircraft. The system consists of two omni-directional flashing light assemblies.

Runways 3R and 21L are equipped with identical 4-light unit Precision Approach Path Indicators (PAPI) located to the left of each runway. Runways 3L, 21R, 12 and 30 are equipped with identical 2-light unit Precision Approach Path Indicators (PAPI) to the left of each runway. PAPI primarily assist pilots by providing visual glide slope guidance in a non-precision approach environment. Light combinations of red and white indicate when an aircraft is slightly high, significantly high, slightly low and significantly low so that the pilot may adjust the approach accordingly.

Runway 21L is equipped with Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). It is a medium approach intensity lighting system (ALS) installed in airport runway approach zones along the extended centerline of the runway. The MALSR, consisting of a combination of threshold lamps, steady burning light bars and flashers, provides visual information to pilots on runway alignment, height perception, role guidance, and horizontal references for Category I weather conditions.

The airfield lights are activated by remote control by pilots “clicking” their microphone button to the CTAF frequency for primary runway and on frequency 128.75 to activate Medium Intensity Runway Lighting (MIRL) on Runway 12-30.

1.3.3 Prescott Municipal Airport Access and Parking

PRC is accessible via S.R. 89 at MacCurdy Drive. Airport traffic enters or exits the airport using Airport Drive. This road is marked by the intersection of Mac Curdy Drive (U.S. 89) and Willow Creek Road. Airport Drive becomes MacCurdy Drive, which leads to the terminal complex, airport administration building and other airport-related business.

Ruger Road provides access to the North Ramp and Hangar users. The FSS, ATCT and ERAU complexes can be accessed only by exiting S.R. 89A on Larry Caldwell Boulevard and proceeding to Wilkinson Drive.

Identifying Airport signs are located on both highways and local roads. Airport signage should be reviewed continually to assure that signs have not been taken down and that they are adequate for locating the Airport.

Auto parking areas are located in front of and adjacent to the main terminal entrance. There are 110 parking spaces adjacent to the terminal, with four handicapped spaces next to the terminal entrance.

1.3.4 Prescott Municipal Airport Terminal, Support and Service Facilities

This section describes the landside facilities at PRC. These facilities include the terminal building complex, administrative building, fuel storage, Flight Service Station (FSS), Air Traffic Control Tower (ATCT), Aircraft Rescue Firefighting Facility (ARFF), hangars, equipment building, and other structures.

Terminal Building

The terminal building at PRC is a single level structure that was originally constructed in 1948 and expanded in 1957. Its current size is approximately 3,800 sq. ft. The terminal is located west of the intersection between Runways 3R/21L and 12/30, and is accessible via MacCurdy Drive. The main terminal building is used for commercial passenger traffic. Within the terminal is the

Transportation Security Administration (TSA) check point for luggage and passenger screening. All general aviation traffic is directed to the General Aviation Terminal.

The terminal building is currently occupied by Mesa Airline, Skyway Restaurant, North-Aire, Inc. and Hertz Rental Cars.

Terminal Building (Interior)

Terminal Building (Exterior)

Administration Building

The City of Prescott Airport Administrative building was constructed in 1973. The building is a 4,800 sq. ft. two-story structure, located west of the Terminal. The first floor is used by airport administration, while the second remains leasable.

Administration Building

Airport Services

Several businesses on the airport provide a range of services. These services include fixed wing flight training, helicopter training, helicopter tours, air-taxi, aircraft maintenance and upholstery, skydiving, and car rental. Business providing services at the airport are identified in **Table 1.13**.

Skyway Restaurant

North –Aire, Inc.

Embry-Riddle Aeronautical University

Table 1.13
Airport Services

Service Type	Business
Charter, Flight Instruction, & Rental	• Arizona Skyways Airlines • Embry-Riddle Aeronautical University • Guidance Helicopters • North-Aire, Inc.
Aircraft Repairs, Avionics, & Service Support	• Arizona Air-Craftsman/Wing Nuts • Mile High Avionics • Nostalgaire • Prescott Aircraft • Prescott Aircraft Interiors • Powell Upholstery & Aircraft Interiors • Wing Waxers – Aircraft Dealing
Airline Service	• US Airways Express (Operated by Mesa Airlines)
Fixed Base Operator (FBO)	• Legend Aviation
Ground Transportation	• Hertz (Airport Terminal) • Enterprise Rental Car (Airport Terminal)
Miscellaneous	• Antelope Hills Golf Course • Arizona Aviation Supplies • Rittaire • Susie's Skyway Restaurant

Source: Airport Administration

Fuel Storage Facility

The fuel farm is composed of four - 20,000 gallon above-ground fuel tanks. Two tanks are used for Avgas and two for Jet-A fuel. Fuel is delivered approximately three times a week during normal operations, and approximately seven times if there is a forest fire in the area.

Fuel Farm Pump Station

Fuel Farm Storage Tanks

Flight Service Station (FSS) Building and Air Traffic Control Tower (ATCT)

FSS Building and ATCT are located on the east side of the field, and are accessible from Wilkinson Drive. The tower was built in 1987 and is operated by FAA Air Traffic Controllers from 6:00 am – 10:00 pm local time. The Flight Service Station was built in 1984.

Aircraft Rescue Firefighting Facility (ARFF)

The PRC ARFF is currently located south of the Runway 3R/21L and 12/30 intersection and it is accessible from Club House Drive. Sections 315-319 of FAA Federal Aviation Regulation (FAR) Part 139 – *Certification and Operations: Land Airports Serving Certain Air Carriers* sets forth both the ARFF index and the requirements that an airport with air carrier service must meet, in terms of ARFF equipment, firefighting agents, and operational requirements. Presently, PRC is categorized as Index A, which means that the primary air carrier aircraft that serves PRC is less than 90 feet in length or aircraft of longer size with less than 5 daily operations.

Structural Vehicle

E-One Titan ARFF Vehicle

Based upon Index A requirements, PRC is staffed with four firefighters, of which one is constantly on standby to respond to both structural and airfield emergency response needs. The facility is equipped with one E-One Titan ARFF vehicle and a structural vehicle.

Hangars and Shades

PRC offers a variety of hangar and shade areas suitable for aircraft parking and storage. **Table 1.14** is a complete summary of all City operated hangars and shades.

Shade Parking

T-Hangars

Table 1.14
PRC Hangars Inventory

Type	Identifier	Size (sq. ft.)		Type	Identifier	Size (sq. ft.
T-Hangar	A	954		T-Hangar	J	1,156
T-Hangar	B	1,195		Box	K	2,780
T-Hangar	C	985		T-Hangar	L	1,156
T-Hangar	D	1,724		T-Hangar	M	1,044
T-Hangar	F	985		T-Hangar	N	1,044
T-Hangar	G	1,127		T-Hangar	O	1,044
T-Hangar	H	1,036		Executive	P	3,900
T-Hangar	I	1,036				

Source: Airport Administration Records

Other Structures

The perimeter fence is composed of several different types of fencing: chain-link, wire, and iron bars. The chain-link fence is six feet tall supported by posts and topped with barbed wire. Currently, the fence covers 70% of the entire perimeter. Approximately 1,500 ft adjacent to the Antelope Hills Golf Course are secured with a three foot high iron bar fence and around R/W 30 the perimeter is secured by a 49 inch tall barbed wire fence or “cattle fence”.

Weather Conditions

Weather conditions can affect airfield capacity as well as volume of operations at the airport. For airport planning purposes, weather conditions are classified as either VFR or IFR conditions. Visual Flight Rules (VFR) occurs when cloud ceiling is at least 1,000 feet above ground level (AGL) and visibility is at least three statue miles. IFR conditions occur when the cloud ceiling is less than 1,000 feet AGL and visibility is less then three statue miles.

Climate Summary

As reported in the National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NWS WR-274: *Climate of Prescott, Arizona* (2007), Prescott's elevation of 5,200 feet assures a variety of weather including cool winters, warm summers, moderate humidity, and considerable daily temperature changes.

The average date of the first and last freeze (32°F) annually generally falls in the spring around May 16th (last freeze) and in the fall around October 10th (first freeze). The average annual precipitation for Prescott is 19.19 inches. Summers (June, July, and August) in Prescott have an average maximum temperature of 86.2°F. On average, only 37 days in the summer have maximum temperatures of 90°F or higher. Summer minimum temperatures are cool, with low temperatures mainly in the 50s.

The fall season averages a temperature range from 80°F during the early part of the season, 50°F by the end of the season and minimum temperatures normally falling below freezing by the middle of October.

Winter weather typically begins by November and becomes well entrenched by December, with increasingly colder weather. By December, minimum temperatures are generally in the low 20s; however, afternoon maximum temperatures still average in the 50s, due to the amount of sunshine the station receives. Spring in Prescott is typically breezy and dry with little precipitation occurring in May and early June.

There are two distinct periods of precipitation in Prescott. One occurs during the winter months from November through April when the jet-stream is located over the state, allowing moist Pacific storm systems to move over the area. The other distinct period is classified as the summer rainy season, or summer monsoon, which usually occurs during July and August when most of Arizona is subjected to widespread thunderstorm activity. These thunderstorms are extremely varied in intensity and location and occur mainly between the hours of 12 p.m. and 8 p.m.

Tables 1.15 and **1.16** provide a climate summary for Prescott AZ.

Table 1.15
PRC Weather Summary (1971 – 2000)

	Precipitation (in)		Snowfall (in)	
Month	**Normal**	**Record Max**	**Normal**	**Record Max**
January	1.58	7.79	4.1	53
February	1.87	10.59	4.6	37.50
March	1.91	7.11	5.7	34.20
April	0.76	6.90	1.5	9.80
May	0.64	2.35	0	6
June	0.40	2.46	0	0
July	2.87	8.80	0	0
August	3.28	10.51	0	0
September	2.07	10.02	0	0
October	1.28	7.82	0.20	5
November	1.25	8.68	1.40	21.30
December	1.28	6.96	2.70	46
Annual	19.19	39.47	20.40	97.4

Source: NOAA Technical Memorandum NWS WR-274

Table 1.16
PRC Temperature (°F) Summary (1971 – 2000)

Month	Record Max	Normal Max	Normal Avg	Normal Min	Record Min
January	73	50.9	37.1	23.3	-21
February	77	54.2	39.9	25.6	-12
March	81	57.9	43.8	29.7	2
April	87	65.2	50.2	35.2	11
May	97	73.8	58.3	42.8	20
June	103	84.6	67.9	51.2	25
July	105	88.3	73.4	58.5	34
August	102	85.7	71.4	57	32
September	98	80.8	65.5	50.1	26
October	92	71.4	55.3	39.1	13
November	83	59.6	44.1	28.5	-1
December	78	51.6	37.5	23.3	-9
Annual	105				-21

Source: NOAA Technical Memorandum NWS WR-274

Wind Rose

FAA Advisory Circular (A/C) 150/5300-13, *Airport Design*, states that an airport's runways should be oriented such that aircraft can take-off and land into the prevailing wind with minimal crosswind exposure. The A/C also states that a single runway, or a runway system, should provide 95% wind coverage. Thus, the goal is to achieve 95% coverage or better.

Wind coverage is calculated using a wind rose, which graphically depicts wind data collected from the National Oceanographic and Atmospheric Administration (NOAA). The wind rose is essentially a compass rose with graduated concentric circles representing wind speed. Each box in the wind rose represents a compass direction and, when filled, indicates the percentage of time wind travels in that direction at that speed.

Since prevailing wind patterns do not usually change, this master planning effort will utilize the existing wind data for PRC. The wind roses are computed based on the following three categories:

- **Visual Flight Rules (VFR) –** ceiling 1,000' and visibility three miles
- **Instrument Flight Rules (IFR)** – ceiling less than 1,000' and visibility less than three miles
- **All Weather** – VFR and IFR combined

Since aircraft characteristics and performance can vary, wind coverage data is presented for 14 and 17 knots. **Table 1.17** presents the percent All Weather Wind Coverage for each runway combined.

Table 1.17
Wind Analysis – Percent Coverage

Runway	Crosswind Speed (14 Kts)	Crosswind Speed (17 Kts)
3-21	96.35%	98.85%
12-30	92.30%	97.70%
Combined Coverage	99.20%	99.95%

Source: 1998 Master Plan and NOAA

Based on this wind data, and on the review of data provided by the National Climatic Data Center, the current runway configuration at PRC provides enough wind coverage to meet the FAA guideline of 95% all weather wind coverage. The VFR and IFR wind roses are depicted on the Airport Layout Plan.

1.4 Airspace, Approaches and Air Traffic Control

PRC is located in the Phoenix Aeronautical Chart within the Albuquerque (NM) ARTCC area of responsibility (128.5 MHz). Radar approach and departure controls are coordinated by the PRC Airport Traffic Control Tower (125.3 MHz), which operates from 6:00 am – 10:00 pm, local time. Ground communication is available on frequency 121.7 MHz.

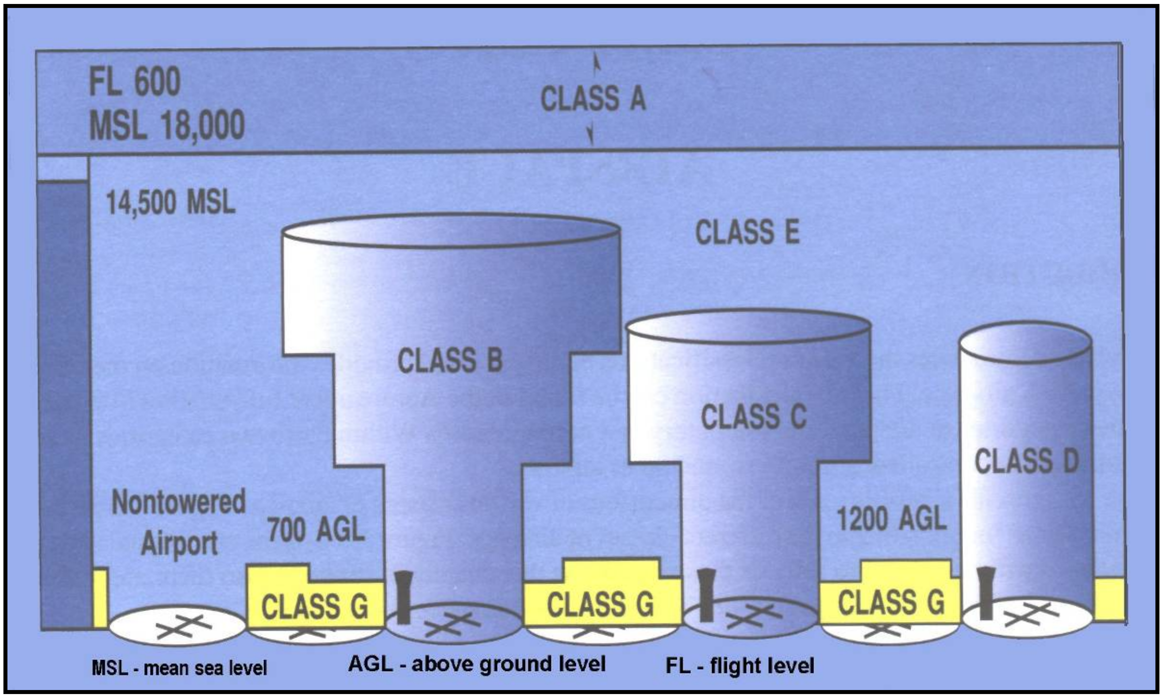
Weather, NAVAID status, and other pertinent airport information are available through the Prescott FSS on 122.4 MHz 122.2 MHz. The Airport operates as Class D airspace from 6:00 am – 10:00 pm local time and Class E 10:00 pm – 6:00 am local time.

CTAF, ATIS and UNICOM communications are transmitted respectively on 125.3 MHz, 127.2 MHz and 122.95 MHz.

1.4.1 Prescott Municipal Airport Airspace Structure

United States airspace is structured into controlled and uncontrolled areas. Controlled airspace, reclassified in 1993, is further delineated as Class A, B, C, D, or E. Uncontrolled airspace is referred to as Class G. Each class of airspace classifications is described below and identified in **Figure 1.9**.

Figure 1.9
Airspace Classifications



Source: FAA

Controlled Airspace

Class A airspace consists of that airspace from 18,000 feet above mean sea level (MSL) up to 60,000 feet MSL over the contiguous 48 states and Alaska. Only IFR flights are permitted in the Class A airspace, and aircraft must be equipped with an operable transponder – an electronic device which provides aircraft identification and performance information (e.g. altitude).

Specific airspace around major U.S. airports is protected by Class B airspace. Class B airspace typically extends from the ground to 10,000 feet above the elevation of the airport, and extends from 15 to 30 nautical miles around an airport.

Airports which have operational air traffic control towers (ATCT), are serviced by a radar approach control facility, and have a certain number of IFR operations or passenger enplanements are protected by Class C airspace. This airspace generally extends from the surface to 4,000 feet above the airport elevation for a radius of 5 nautical miles around an airport, and from 1,200 feet to 4,000 feet above the airport to out to a radius of 10 nautical miles. Airspace around any airport, at which a control tower is operating but without a designated Class B or C airspace, is classified as Class D airspace. Class D airspace generally consists of the airspace within a horizontal distance of 5 statute miles from the geographical center of an airport, and extends from the surface up to an altitude of 2,500 feet above the elevation of the airport.

Class E airspace is the controlled airspace which is not designated as Class A, B, C, or D. No special equipment is required to operate within Class E airspace.

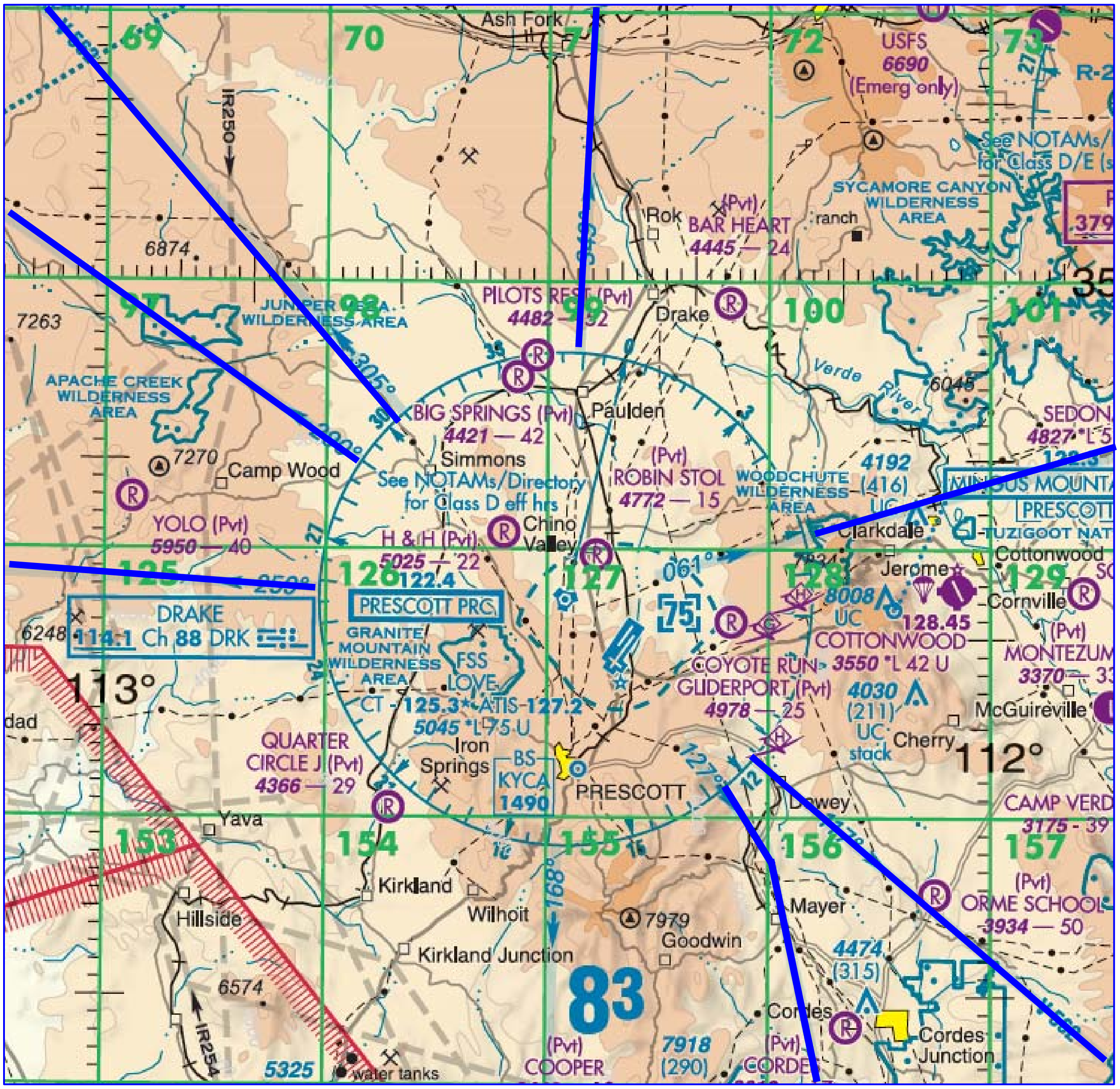
Uncontrolled Airspace

Class G airspace is that portion of the airspace that has not been designated at Class A, B, C, D, or E. No special equipment is required to operate within Class G airspace.

Victor Airways

The U.S. airspace below the Class A airspace is covered by a network of Victor airways, which connect adjacent VOR navigational aids, and provide a system of “highways” for air transportation. A VOR is a Very high Frequency Omni-directional Range, which provides line-of-sight magnetic compass bearing with an accuracy on the order of plus-minus one degree. VOR airways are usually eight nautical miles wide and extended from an altitude of 1,200 feet AGL up to the Floor of Class A airspace, 18,000 feet MLS. These airways are charted and identified (i.e. V 12, V 105, V 562, V 257, V 12-264, V 253, V 105-257) on VFR sectional Charts and IFR low-altitude enroute charts. The network of VOR’s is supplemented by lower-powered Non-Directional-Beacons, which transmit low-frequency radio signals on which a pilot can “home-in” on and fly directly to/from the station. The following **Figure 1.10** depicts the Prescott Aeronautical Section, with Victor vectors highlighted with a blue line.

Figure 1.10
PRC Aeronautical Sectional



Source: FAA

1.4.2 PRC Imaginary Surface (FAR 77) and Approach Categories

Regulations on the protection of an airport's airspace are defined by Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*. Part 77 establishes a requirement for anyone proposing to build a structure near an airport to report their intentions to FAA. Additionally, it defines a series of standards used for determining obstructions to an airport's navigable airspace. This is accomplished through the establishment of a set of airport imaginary surfaces, that if penetrated represent an obstruction to air navigation. In some instances they may be also classified by FAA as a “hazard”. Airport imaginary surfaces consist of the following elements:

- **Primary Surface:** This surface is longitudinally centered on each runway and extends 200 feet beyond each runway end (if the runway is paved). The elevation of the primary surface of a given runway is the same as that of the nearest point on the runway centerline.

- **Approach Surface:** The approach surface is a trapezoidal-shaped surface that begins at the primary surface of each runway end, upwards and outwards for a prescribed slope and distance based on the type of approach (visual, non-precision, or precision).

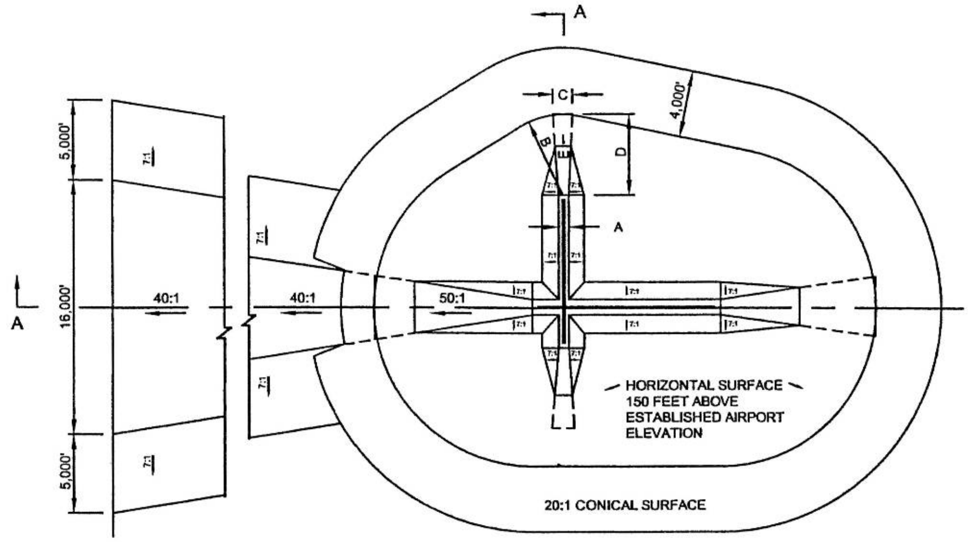
- **Transitional Surface:** This surface is a plane with a 7:1 slope (horizontal to vertical) that extends upwards, outwards, and at right angles from the primary and approach surfaces, terminating at the airport horizontal surface.

- **Horizontal Surface:** This is a horizontal plane 150 feet above the established airport elevation. This surface is defined by drawing semi-circles of a given radius from the ends of the primary surfaces. The radius of the circle is determined by the type of approach serving each runway end.

- **Conical Surface:** The conical surface is an enclosed plane that extends upward and outward from the horizontal surface at a 20:1 slope.

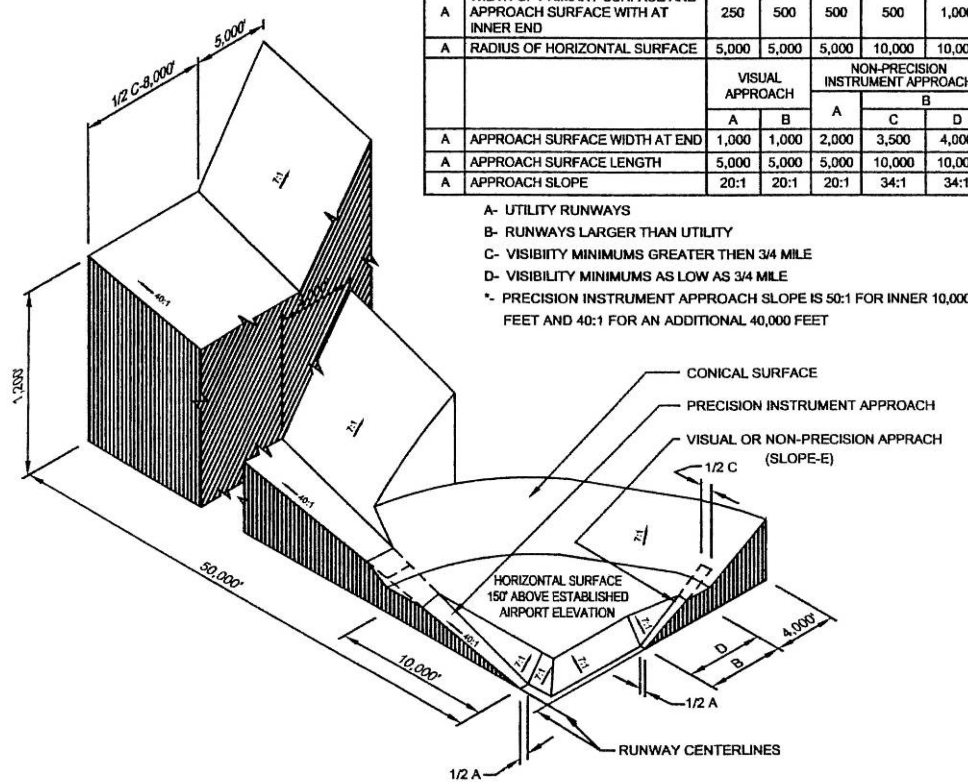
Typical FAR Part 77 surfaces are shown in **Figure 1.11** and defined later in this section.

Figure 1.11
Typical FAR Part 77 Surfaces



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

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



ISOMETRIC VIEW OF SECTION A-A

Source: FAA

All runway ends have an approach surface associated with them. This is an imaginary surface, as previously described, which no obstacles should protrude. This provides a clear area to allow a gradual descent to landing. There are three categories of approach surfaces: visual, non-precision and precision. The slope of the approach surface is based on the category. **Table 1.18** identifies the slope of each approach category.

Table 1.18

Category	Description	Slope
Visual	No instrument approach	20:1
Non-Precision	Served by a non-precision instrument approach (LOC, VOR, NDB, GPS, etc.)	34:1
Precision	Served by a precision instrument approach (ILS, GPS, CAT I, etc.)	50:1
Acronyms: LOC – Localizer; VOR – VHF Omni-directional Range; NDB – Non-Directional Beacon ; GPS – Global Positioning System; ILS – Instrument Landing System ; CATI – Category I		

Source: FAA FAR Part 77

Prescott Municipal Airport Approaches

An instrument approach is used by a pilot who is on an Instrument Flight Rules (IFR) flight plan, providing guidance to an airport or to a specific runway during good, marginal, or bad weather conditions. Instrument approaches utilize a specific NAVAID facility located on or off the airport.

Instrument approaches are categorized as either a precision approach, providing horizontal and vertical guidance; or a non-precision approach, giving horizontal guidance only. Instrument approach procedures require that a pilot fly a specific descent profile. Upon reaching an identified point, the pilot must have visual contact with the runway, or perform a missed approach. The missed approach takes the pilot away from the airport to a point where the approach may be initiated again. Each instrument approach has a ceiling and visibility limit, referred to as minimums. If the reported weather conditions fall below the approach minimums, the approach cannot be attempted. PRC currently has three visual, two non-precision and one precision approaches. **Table 1.19** identifies PRC approaches.

Table 1.19
PRC Approach Categories

Runway	Category	Slope
3L	Visual	20:1
21R	Visual	20:1
3R	Non-Precision	34:1
21L	Precision	50:1
12	Non-Precision	34:1
30	Visual	20:1

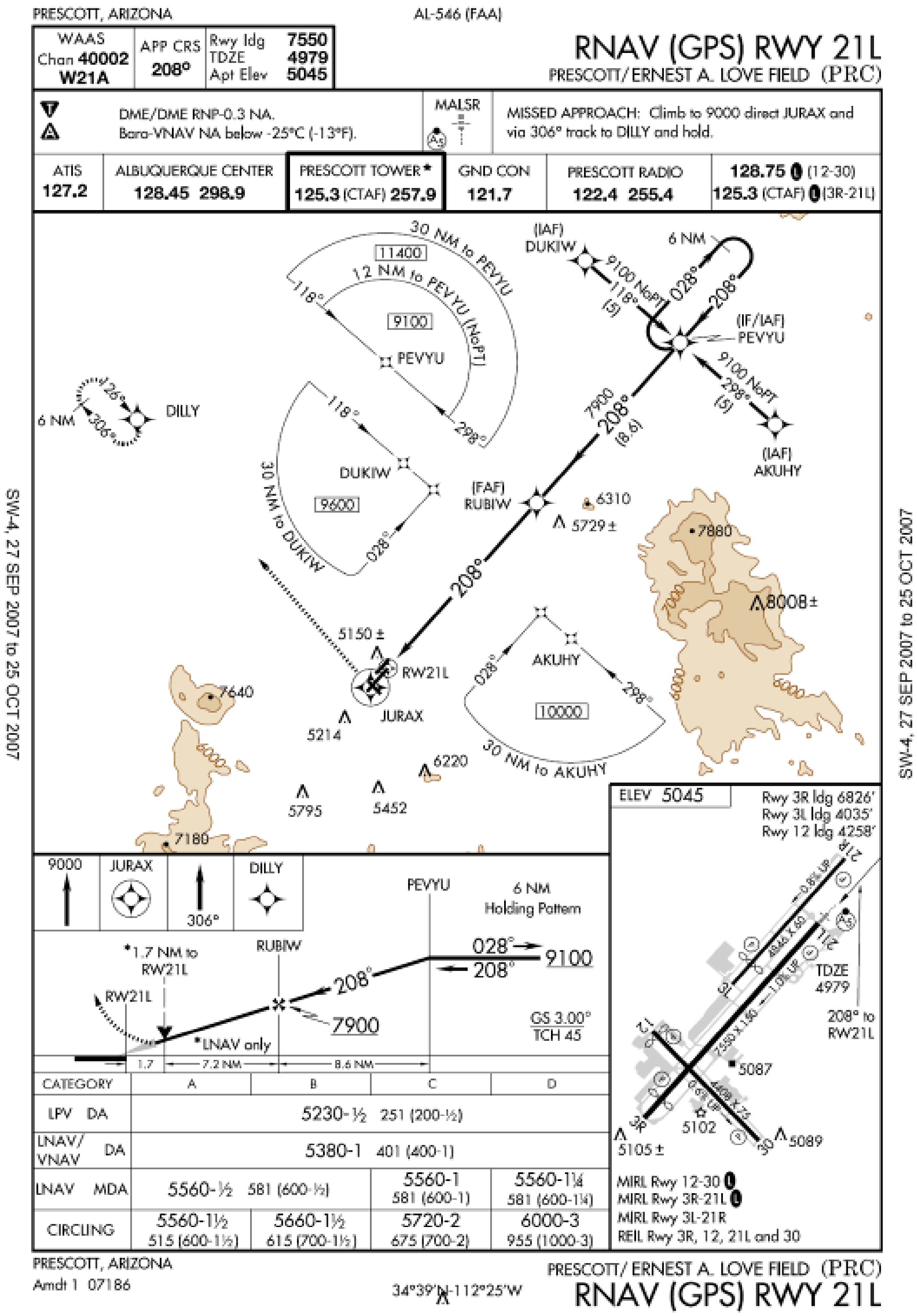
Source: FAA FAR Part 77 & FAA Form 5010: Airport Master Record

The current technology available on each runway is as follows:

- Runway 12 is equipped with VOR providing non-precision approaches;
- Runway 12 is equipped with Global Positioning System (GPS) for reroute navigation and non-precision approaches;
- Runway 21L is equipped for precision approach with a ILS/DME on channel 22 (not available when the tower is closed);
- Runway 21L is equipped for non-precision approach with a LOC on frequency 108.5; and
- Runway 21L is equipped with VOR/DME RNAV (GPS) for reroute navigation and CAT I precision approaches.

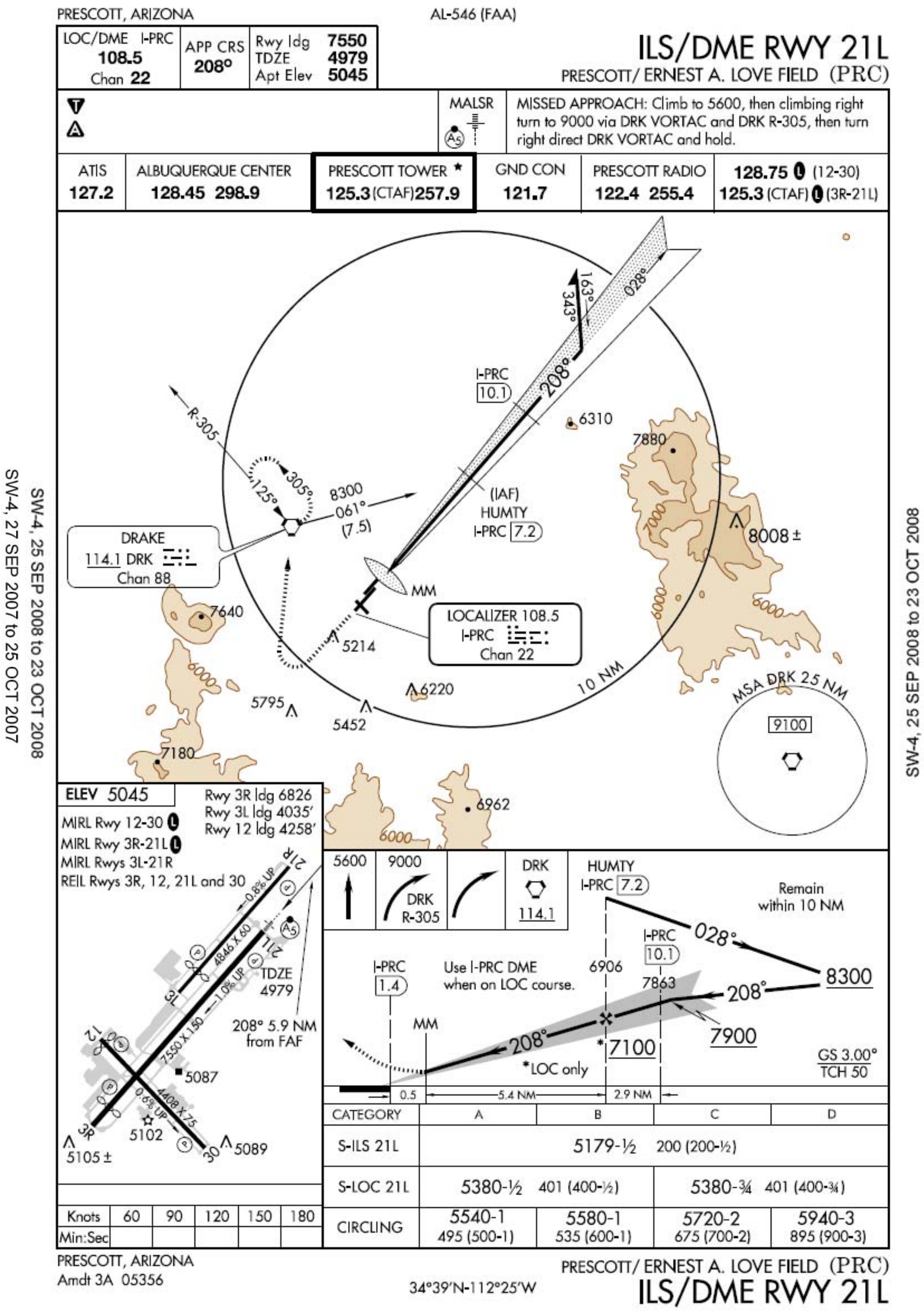
These approaches are shown in **Figures 1.12, 1.13, 1.14, and 1.15** on the following pages.

Figure 1.12
Runway 21L Approach Plate



Source: FAA

Figure 1.13
Runway 21L Approach Plate

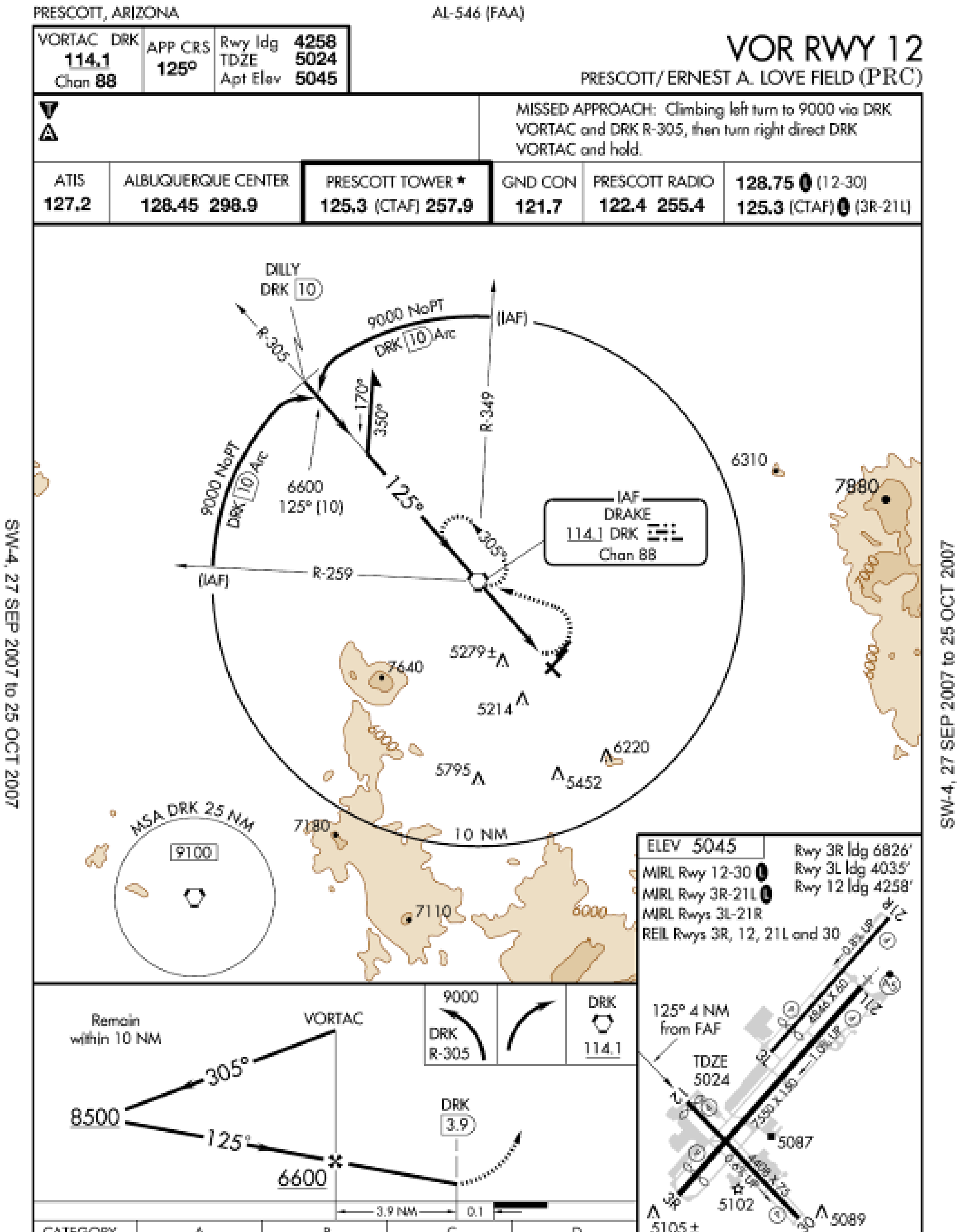


CATEGORY	A	B	C	D
S-ILS 21L	5179-½ 200 (200-½)			
S-LOC 21L	5380-½ 401 (400-½)		5380-¾ 401 (400-¾)	
CIRCLING	5540-1 495 (500-1)	5580-1 535 (600-1)	5720-2 675 (700-2)	5940-3 895 (900-3)

Knots	60	90	120	150	180
Min:Sec					

Source: FAA

Figure 1.13
Runway 12 Approach Plate



CATEGORY	A	B	C	D
S-12	5540-1	516 (500-1)	5540-1½ 516 (500-1½)	5540-1¾ 516 (500-1¾)
CIRCLING	5540-1 495 (500-1)	5580-1 535 (600-1)	5720-2 675 (700-2)	5940-3 895 (900-3)

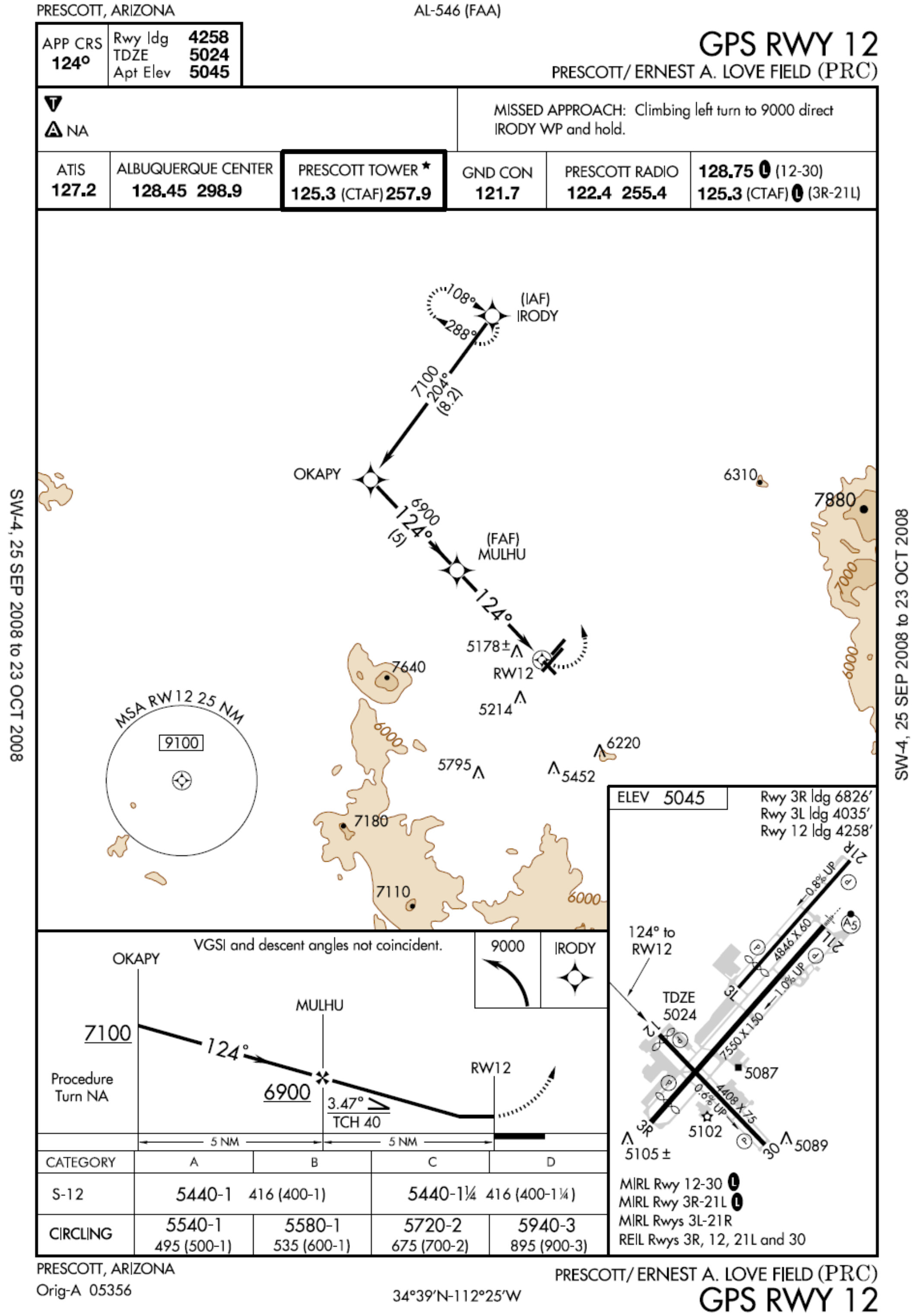
FAF to MAP 3.9 NM

Knots	60	90	120	150	180
Min:Sec	3:54	2:36	1:57	1:34	1:18

PRESCOTT, ARIZONA
Amdt 2A 05356
34°39'N-112°25'W
PRESCOTT/ ERNEST A. LOVE FIELD (PRC)
VOR RWY 12

Source: FAA

Figure 1.14
Runway 12 Approach Plate



Source: FAA

1.4.3 Airport Airspace Obstructions

The FAR Part 77 Surface for PRC is summarized in **Table 1.20**. These dimensions reflect the runway approach categories previously described. Any change in the category approach designated for a runway will change these dimensions.

Table 1.20
PRC Part 77 Surfaces (Feet)

Runway	3L	21R	3R	21L	12	30
Primary Surface Width	500	500	1,000	1,000	500	500
Approach Surface Length	5,000	5,000	10,000	10,000	5,000	5,000
Approach Surface Width	1,500	1,500	3,500	16,000	1,500	1,500
Approach Surface Slope	20:1	20:1	34:1	50:1	20:1	20:1
Horizontal Surface Radius	5,000	5,000	10,000	10,000	5,000	5,000

Source: FAA FAR Part 77& Airport Administration

1.5 Environmental and Land Use Review

This section provides an overview of the environmental conditions at PRC based the review of existing documentation provided in the Previous Master Plan, in the Airport Specific Area Plan (ASAP), in the City of Prescott General Land Use Plan and correspondence from federal, state and local environmental agencies. It is a compilation of pertinent environmental information relative to the airport, including physical setting, historical and cultural resources, and land use requirements.

1.5.1 General Setting

A description of the general settings for PRC was previously given in Section 1.1 Figure 1.5.1 identifies the location of PRC on a U.S. geological Survey topographic map for Prescott quadrangle.

Prescott climate is varied including cool winters, warm summers, moderate humidity, and considerable diurnal temperature changes. The average date of the last occurrence of 32°F in the spring is May 16 and that of the first 32°F temperature in the fall is October 10. The average precipitation for Prescott is 19.19 inches. Summers in Prescott have an average maximum temperature (average maximum for June, July and August) of 86.2°F (the all-time record high is105°F). On average, only 37 days in the summer have maximum temperatures of 90°F or higher. Summer minimum temperatures are with low temperatures mainly in the 50s.

According to the 2000 U.S. Census the population with in a 50 miles radius from the Airport was 177,135. The current estimate for 2007 is 211,935 which represent a 20% increase. The population in the area is currently increasing and projected to reach 243,888 by 2012.

1.5.2 Land Use

The area in which PRC is located is predominately dedicated to agriculture and ranching. The 2003 City of Prescott General Plan – **Figure 1.15** – describes the area as mix of residential, commercial, agricultural, and recreational areas. The City of Prescott Zoning Ordinance has designated the Airport as Zone LI, Light Industrial, IT, Industrial Transition, and BG, Business General, as adopted on the City of Prescott Land Development Code, Amended January 11, 2005. The airport includes a main terminal, hangar buildings, administration and additional structures leased and used by the United States Forest Service, Embry-Riddle and various aviation related business and services.

Section 2.2.4 - Airport, Heliport, Landing of Airplanes (Industrial Use Categories, Aviation and Surface Transportation Facilities**)** of the City of Prescott Land Development Code (LDC) states that: *"Aviation uses shall be subject to the following standards (See also Airport Noise Overlay District at Sec. 5.2):*

A. Documentation shall be submitted to the City showing that the site complies with all applicable state and federal requirements.
B. Setbacks, landscaping and fencing appropriate to the specific nature of the use proposed shall be established during the review process.
C. The site shall be located within the boundaries of the airport property, or shall have frontage on and access to a collector or arterial street, provided the authority with jurisdiction over the subject road may approve alternative access.
D. All areas proposed for active use, including fuel storage areas, shall be fenced.
E. Proposed take off and landing facilities shall be sited with consideration of potential impacts on residential areas".

The Land use for the areas east and north of the airport are classified in the General Plan as Commercial/Employment use for up to ½ mile followed by Recreational/Open Space.

The area east of the airport is classified as Commercial and it falls under the Commercial Corridor Overlay (CCO). The purpose of the CCO as described in the LDC in Section 5.3 is to:

"Promote quality commercial, industrial, and multi-family development that is compatible with surrounding natural areas and/or developed and developing residential neighborhoods. All new development in the CCO District should:

A. Minimize the impacts of new commercial development on nearby neighborhoods;
B. Protect and enhance the character of highway and arterial corridors, which are mainly defined by surrounding residential neighborhoods and scenic natural features;
C. Create pleasing places to view and experience through thoughtful building orientation, parking
D. placement, pedestrian access, landscaping and screening
E. Integrate new development, functionally, internally and externally to the site and to surrounding neighborhoods;
F. Preserve safe and logical access, and the carrying capacity of designated corridors;

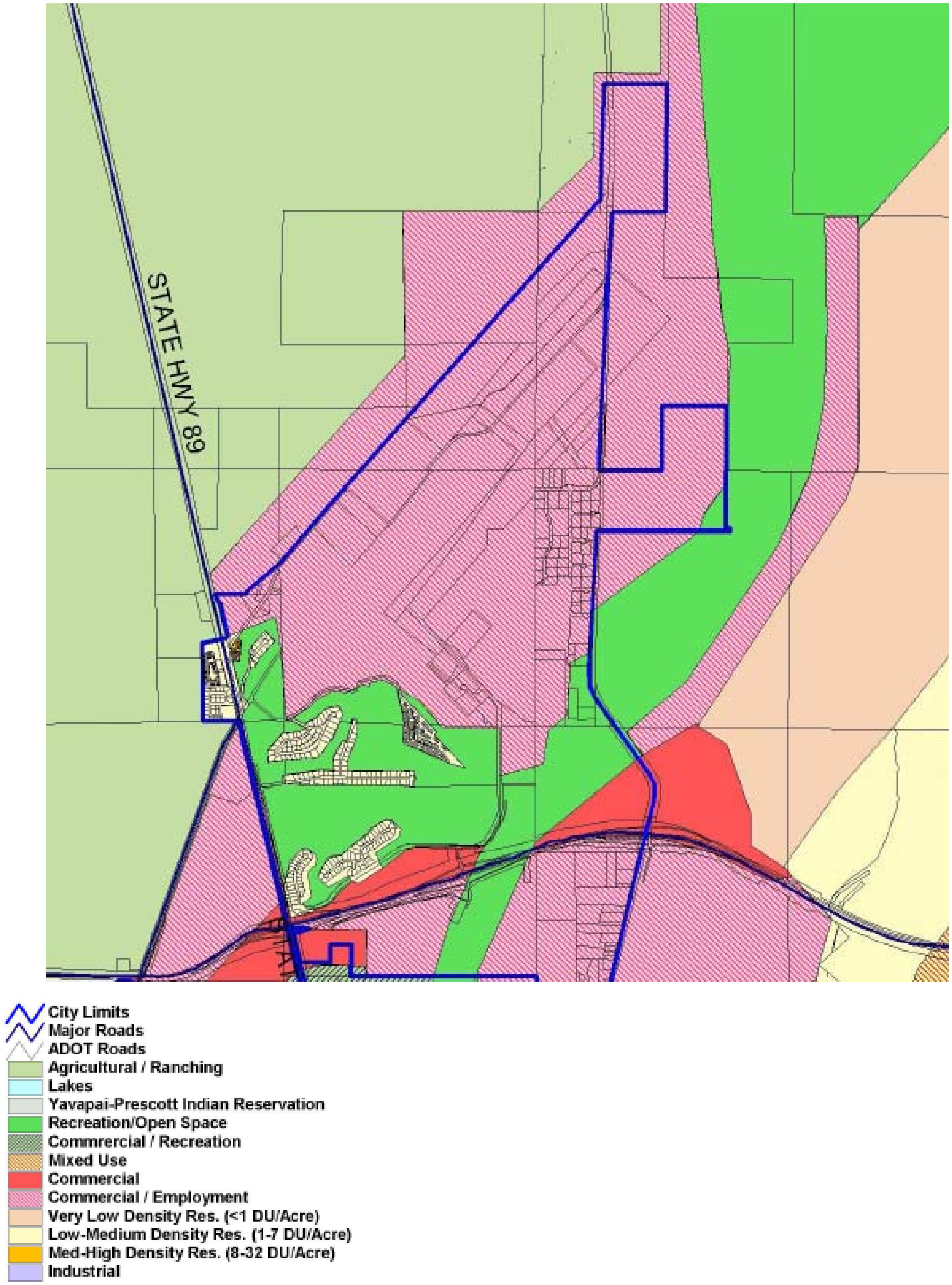
G. Promote the provision of usable pedestrian areas, such as plazas with street furniture, public art, and etc.; and

H. Ensure the provision of public services and facilities needed to accommodate planned land uses and population densities, as well as vehicular-, pedestrian- and bike- access."

The land use for the areas north and west is classified for Agriculture/Ranching. The area southwest and south of the airport is zoned Residential Single Family, Low-Medium Density Residential and Recreational Open Space. A traffic sensitive area along U.S. Highway 89 which provides direct access to the airport terminal area is located in this area. The Antelope Golf Resort and Community is located in this area.

The city of Prescott established a policy with regard to Open Space so that it may be: *"Preserved and managed in a manner consistent with low impact public use. Such lands can include scenic vistas, floodplains, trail corridors, historically recognized wildlife corridors wildlife corridors, farmlands, highly visible natural areas along arterial streets, and open space buffers at the City's perimeter."* Furthermore, it states that: *"Development within the preserved open space will be limited to features that enhance and encourage ecotourism."*

Figure 1.15
General Plan Land Use at PRC



Source: City of Prescott General Plan

1.5.3 Noise

Base Year Aircraft Operations and Noise Exposure

This section presents the aircraft operational parameters and associated exposure for flight operation at PRC for the base year conditions. Runway and flight track utilization by time period, and the aircraft flight profiles and noise data, respectively are presented next. Finally, the section presents the modeled average daily flight operations by aircraft type defined in the FAA's Integrated Noise Model (INM) and discusses the resulting noise exposure for the Base Year conditions.

Annual Flight Operations

The data required to conduct aircraft noise analysis includes:

- Aircraft operations by category (single engine, multiengine, jet, etc.);
- Performance characteristics;
- Flight paths and approach profiles; and
- Time of day when operations occur.

The number of aircraft operations and aircraft types for operations at PRC were determined from FAA's 2007 operations summary and follow up discussions with Air Traffic Control Tower (ATCT) staff.

Aircraft Fleet Mix

The FAA's INM includes data on a wide range of aircraft models; however, it does not include every type and model of aircraft. Thus, in some cases, it was necessary to identify an "equivalent aircraft" that could be modeled with the INM. When this was required, an approved equivalent aircraft was selected that generates equal or higher noise levels than the aircraft active on the airport to ensure a conservative assessment of the noise profile generated by this aircraft. The following table summarizes the aircraft types and their INM equivalent aircraft codes.

The fleet mix presented in **Table 1.21**, that is, the percent of daily activity by specific aircraft models, was estimated using the information obtained from ATC staff by Berger.

Table 1.21
Example Aircraft Types Using PRA and INM Equivalents

Aircraft Type	INM Type
Cessna Skyhawk	CNA172
Piper Archer	GASEPF
Piper Arrow	GASEPV
Diamond Star	BEC400
Piper Seminole	BEC58P
Beechcraft 1900	DHC6
Lockheed Hercules C130	C130
P3A Orion	P3A
Robinson 22 Helicopter	H500D
Bell Jet Ranger 206L	B206L

Source: FAA Integrated Noise Model, Version 6.1

The following table displays the operations and fleet mix percentages for each type of aircraft being modeled. The INM model code, number of daytime and nighttime operations and respective percentages of each, and the combined number of operations and fleet mix distribution are shown in **Table 1.22**.

Table 1.22
Calculation of Fleet Mix Percentages

Aircraft Type	No. Daily	Percent Daily
CNA172	173	17.78%
GASEPF	172	17.68%
GASEPV	172	17.68%
BEC400	172	17.68%
BEC58P	101	10.38%
DHC6	24	2.50%
C130	4	0.41%
P3A	4	0.41%
H500D	75	7.74%
B206L	75	7.74%
Note: Totals are rounded		

Source: The Louis Berger Group

Daily Operations

The INM analyzes airport noise by considering airport activity over a 24-hour period. The standard technique in noise contour development is to consider the annual average day. For this study, the ATCT operation counts were obtained and the fiftieth percentile daily total operations was used to as the annual average day. To determine the number of operations by aircraft type, it was only necessary to multiply the daytime fleet mix percentage by the total number of annual operations of 231,763, and then divide by 365 for the average daily count.

The following **Table 1.23** summarizes the aircraft fleet mix and average daily operations data. Due to the fact that INM models an annual average day, fractions of operations occur.

Table 1.23
Average Daily Operations (2007)

Aircraft Types	No. Daily	Daytime Ops	Night Ops	Arr/Day	Arr/ Night	Dep/Day	Dep/Night	TGO's
CNA172	112.00	144.00	0.80	36.00	0.40	36.00	0.40	72.00
GASEPF	112.00	144.00	0.80	36.00	0.40	36.00	0.40	72.00
GASEPV	112.00	144.00	8.00	36.00	4.00	36.00	4.00	72.00
BEC58P	64.00	62.00	0.80	29.45	0.40	29.45	0.40	3.10
DHC6	16.00	15.00	0.00	7.50	0.00	7.50	0.00	0.00
P2V	3.00	0.25	0.00	0.13	0.00	0.13	0.00	0.00
P3A	3.00	0.25	0.00	0.13	0.00	0.13	0.00	0.00
H500D	50.00	47.00	0.00	11.75	0.00	11.75	0.00	23.50
B206L	50.00	47.00	0.00	23.38	0.00	23.38	0.00	0.25
Total		603.50	10.40	180.33	5.20	180.33	5.20	242.85

Source: PRC Airport Staff, ATCT Staff & The Louis Berger Group Observations

Aircraft Performance

The performance (arrival descent and departure climb profiles) and noise information for all of the fixed-wing aircraft at the airport are provided in a database that is part of the INM. In the model, touch-and-go altitudes for training flights were set at the traffic pattern altitudes prescribed for the airport as indicated in the Airport Facility Directory. The traffic pattern altitude for helicopters used in the model was imported to the INM from another FAA program, the Helicopter Noise Model (HNM).

Flight Tracks and Runway Use

The arrival, departure, and touch-and-go flight tracks and traffic patterns for PRC were taken or estimated from the discussions with airport personnel, ATCT personnel and Berger's flight observations.

The runway utilization levels (i.e. the percent each runway is used for arrivals and departures) adopted for the baseline 2007 Noise Exposure Map are displayed in the following **Table 1.24**. These runway utilizations are derived from and adjusted according to information from airport staff, ATCT staff and observed flight operations.

Table 1.24

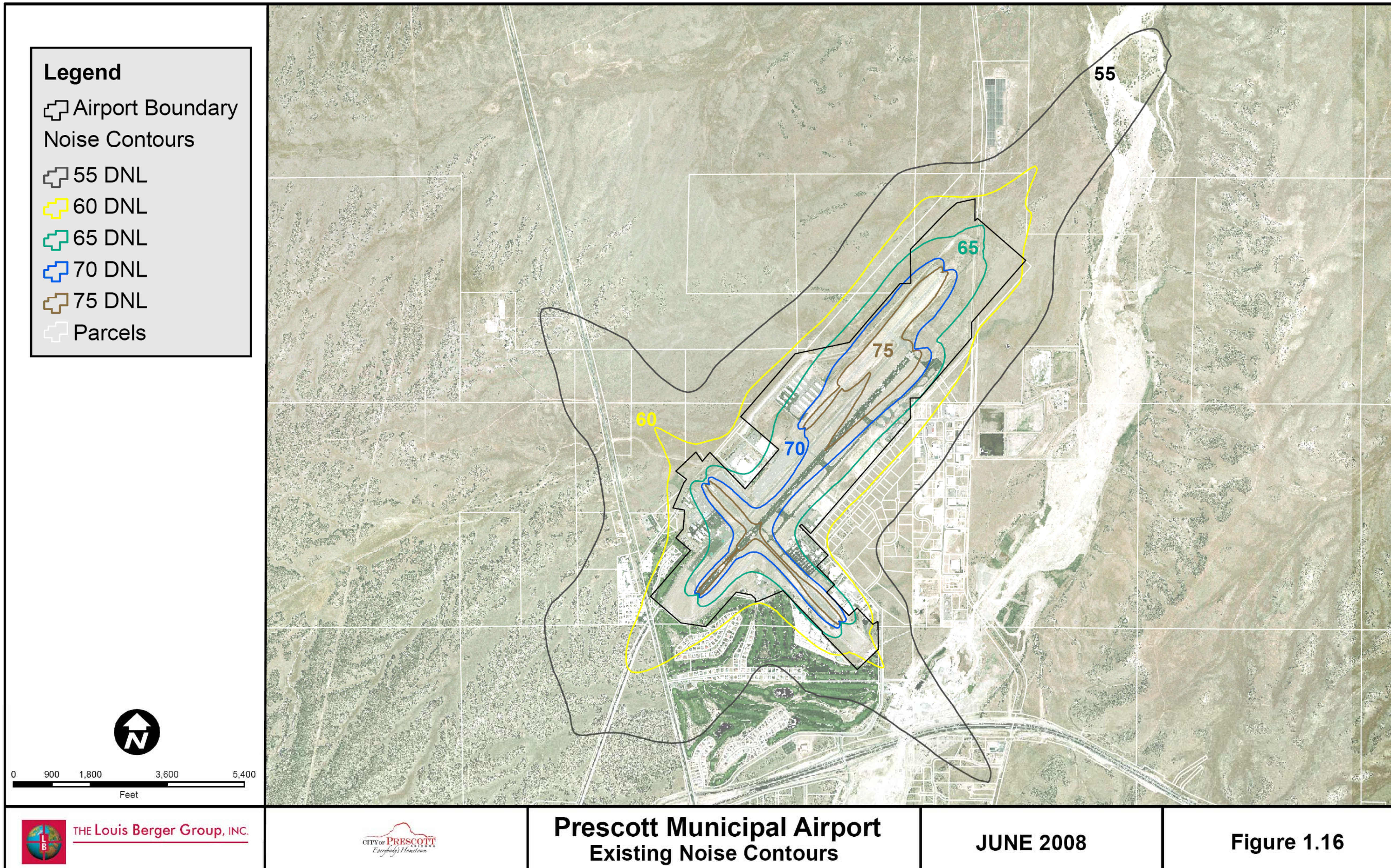
Runway Use by Percentage – Existing Conditions

Runway Use by Percentage (Total Operations)					
RY 3R	**RY 3L**	**RY 21R**	**RY 21L**	**RY 12**	**RY 30**
5%	5%	35%	35%	10%	10%

Source: PRC Airport Staff, ATCT Staff & The Louis Berger Group Observations

Base Year Average Daily Airport Contours

Using the operations information described above, DNL contours were generated for the 2007 Baseline Conditions at PRC. These contours are displayed on the following **Figure 1.16** for DNL levels of 55, 60, 65, 70, and 75 dB.



Prescott Municipal Airport
Existing Noise Contours

JUNE 2008

Figure 1.16

1.5.4 Environmental Review

As identified in the previous Master Plan any new major improvement planned for the airport will require compliance with the National Environmental Policy Act (NEPA) of 1969, as amended. Though the review of previous documentation the following environmental issues or sensitive areas were identified and will require careful planning: Noise, Water Quality, Water of the U.S., DOT Section 4f lands, Historic, Architectural, Archaeological and Cultural Recourses, Biotic Communities, Threatened and Endangered Species of Flora and Fauna.

Water Quality. Several factors make water quality very sensitive issues in Prescott. In 1998 the Prescott Active Management Area (AMA) was declared to no longer be in a state of “safe yield”, prompting restriction and limitations for residential, commercial and agricultural use. Also Granite Creek, an important component of the regional hydrology system is listed as impaired water for dissolved oxygen and is monitored for E coli and mercury levels.

Water of the U.S. Granite Creek and Bottleneck Wash are listed as Water of the U.S. and any project in their vicinity will require a Section 404 permit under the Clean Water Act. In addition to protect underground waters from spill, leaks and other hazardous substances in the stormwater systems, careful planning and design are necessary.

DOT Section 4f Lands. Section 4(f) land to the airport is the Antelope Hills Golf Course, owned by the City of Prescott, adjacent to the south airport boundary; based on FAA Order 5050.4B all future development alternatives must include all possible planning to minimize harm and the disruption of normal activity to the land.

SHPO. The Arizona State Preservation Office advised that the airport property has not been systematically surveyed, and recommended a cultural recourses specialist to inspect the project area, and that should be reviewed pursuant to Section 106 of the National Historic Preservation Act, as implemented by 36 CFR Part 800.

Biotic Communities Coordination with the US Fish and Wildlife Service and Arizona Game and Fish is required since the riparian habitat within Granite Creek supports mule deer, havalina and is prime pronghorn antelope habitat and several Special Status Species are reported within a 3 miles radius from the airport.

1.6 Socio-Economic Conditions

This section provides information regarding the economic contribution the airport provides to the region. Airport financial data is provided to understand the current and most recent airport finances. This is reviewed to understand the airport’s ability to undertake future capital improvements and its continued day-to-day operation. Data on population, employment, and income will be discussed in the forecast chapter of the master plan.

1.6.1 Airport Financial Data

The income statement for Prescott indicates that the airport derives revenue primarily from building and hangar rentals, ground leases, fuels sales, concession revenues, such as car rental, restaurant and other space rentals and non-operating revenues. The following table summarizes the revenues, expenses and net income for the airport in the last five years.

Table 1.25
Revenues, Expenses, Net Income – Prescott Municipal Airport

Fiscal Year	Total Revenue	Total Expenses	Net Income (Loss)
2007	$2,304,458	$2,261,973	$42,485
2006	$3,272,112	$2,262,676	$1,009,436
2005	$2,626,719	$2,197,635	$429,084
2004	$2,988,262	$2,061,565	$926,697
2003	$1,962,762	$2,090,156	$(127,394)

Source: FAA AAS-400: CATS: Report 127 & Airport Administration

1.6.2 Airport Economic Impact

According to the 2006 Prescott Economic Impact Study, the total economic impact of the airport on the local economy totals 738[1] jobs at the airport, with total direct impact of $25,373,538. The following summarize the impact PRC has in its local economy and surrounding communities, based on the 2006 data reported in the Prescott Economic Impact Study.

Table 1.26
Economic Impact – Prescott Municipal Airport

	Estimated amount
Total	$68,759,134
Direct	$25,373,538
Indirect	$10,815,480
Induced	$32,570,116

Source: 2006 Prescott Economic Airport Impact Study

[1] Note: This figure does not reflect the current number of jobs at the Airport. In 2007 the Flight Service Station moved it operation to an off airport location, and Great Lakes Aviation has been replaced by Mesa Air. In addition March 1, 2008 FBO operations were transferred to a private FBO operator which created additional new jobs and Embry-Riddle reported to the Chamber of Commerce the creation of more than 100 additional job since the study was prepared.

2.0 Aviation Demand Forecasts

This chapter presents the forecasts of aviation demand at Prescott Municipal Airport - Ernest A. Love Field (PRC). Aviation forecasts predict future aviation demands, and thus, the potential need for future facilities. The forecasts were derived based on a review of historical trends, market analysis, and other techniques including the application of professional judgment.

General Aviation is defined as that portion of aviation activity which encompasses all facets of aviation except commercial airline and military operations. This activity constitutes the majority of the aircraft activity at PRC. Consistent with airport planning practice, forecasts are presented for 5-10 year intervals (i.e., short-, intermediate-, and long-term), beginning with year 2007.

Forecasts are shown for:

- General Aviation (GA) Based Aircraft;
- GA Based Aircraft Fleet Mix;
- GA Aircraft Operations (i.e., take-offs and landings);
- Commercial Passenger Enplanements;
- Commercial Service Operations;
- Annual Instrument Approaches; and
- Peaking Characteristics

2.1 Socio-Economic Setting

2.1.1 Regional Economic Considerations

The Prescott Municipal Airport is an active airport that serves two primary operating roles. First, it accommodates the general aviation travel demands generated by aircraft owners located within its Airport Service Area (ASA). These users typically operate piston and turboprop aircraft. Second, it serves as a commercial service airport, which currently provides non-stop service to Phoenix and Las Vegas.

In 2006, an Economic Impact Study (EIS)[1] was conducted for the airport. It concluded that PRC is a vital and needed contributor to the economy of the area. It cited the need to develop a modern air terminal, more hangar space for private aircraft, and improved air carrier service. Furthermore, it revealed that operation of PRC appears to be in line with similar airports around the state when compared to the cost of fuel, hangar space, and other services.

The EIS strongly indicates that the PRC and its users, together with businesses that depend on the airport for their viability, account for a Total Economic Impact of $68,759,134. That total is derived by adding together the Direct Impact of approximately $25,373,538; an Indirect Impact of $10,815,480; and an Induced Impact of $ 32,570,116.

[1] Prescott Airport Economic Impact Study, William V. Cheeks and Associates – May 2006

2.1.2 Airport Service Area

The Airport Service Area (ASA) of an airport is defined by its proximity to other airports providing similar service to the flying public, rather than by any jurisdictional boundaries. PRC is located in central Arizona and primarily serves the population centers of the communities of the City of Prescott, Town of Prescott Valley and the Town of Chino Valley.

At the beginning months of 2008, PRC served as a base for 340 GA aircraft and enplaned over 4,000 passengers in 2007. Enplanement is defined as the total number of passengers boarding an aircraft. The location of the aircraft owners and population helps to define the ASA for the facility. Aircraft basing and the amount of enplaned passengers reflects consideration of such factors as convenience in terms of access, facilities and services available, and aircraft operating costs versus those associated with other airports.

The ASA for the purposes of this forecasting effort may be best identified as the Central Yavapai Metropolitan Region. The state-designated metropolitan planning organization responsible for coordinating transportation planning of local governments within this region is the Central Yavapai Metropolitan Planning Organization (CYMPO). The CYMPO encompasses the communities of Prescott, Prescott Valley, Chino Valley, Dewey-Humboldt, portions of Yavapai County and the Yavapai-Prescott Nation. Socioeconomic data gathered from the CYMPO were used to represent the characteristics of this ASA, and compared to Arizona and national statistics. Principal indicators of the socioeconomic setting of the ASA, State of Arizona and the United States are presented in Table 2.1.

Table 2.1
PRC Airport Service Area Socioeconomic Characteristics

	Central Yavapai Metropolitan Region	Arizona	United States
Population			
2000	65,490	5,130,632	281,421,906
2004	117,671	5,868,004	295,895,897
2007	124,477	6,163,869	301,621,157*
2010	146,600*	6,637,381	308,935,581
2015	192,500*	7,495,238	322,365,787
2020	252,800*	8,456,448	335,804,546
2025	332,000*	9,531,537	349,439,199
2030	438,000	10,712,397	363,584,435
Average Annual Growth Rate	5.9%	2.2%	.77%
Employment (% Distribution)			
Agriculture	n/a	n/a	2.8
Mining, Construction	9.0	9.6	5.5
Manufacturing	4.0	7.0	9.4
Transportation/Utilities/Trade	13.0	19.6	17.5
Finance, Insurance, and Real Estate	3.0	6.9	5.6
Services	58.0	41.6	44.6
Government	13.0	15.6	14.6
Total	100.0	100.0	100.0
Income (Effective Buying Income - 2006)			
Median Household	$34,901	$38,537	$48,201
Households by Percent Dist.			
<$25,000	29.78	22.3	22.3
$25,000 to $50,000	33.73	45.6	42.7
> $50,000	36.49	32.1	35.0
Total	100.0	100.0	100.0

Sources: US Department of Labor, US Census Bureau, Prescott Airport Economic Impact Study-May 2006
* Interpolated

Key features of Table 2.1 are:

1. Population growth rate in the ASA will be greater than that which will occur in Arizona and the United States.
2. The economic base of the ASA is generally comparable to that in Arizona and the United States with a higher proportion of jobs in Services sector at 58%.
3. The median household effective buying income, a measure of disposable income, in the ASA is less than that of Arizona and the United States. However, the percentage of households with effective buying income levels in excess of $50,000, a level that should

provide sufficient funds for discretionary purposes such as air transportation, illustrates a slightly higher percentage than Arizona and the United States

2.2 General Aviation Demand Forecast

Factors that influence the demand for aviation activity at an airport include the socioeconomic characteristics of the ASA, the level of service and facilities provided at the airport versus other airports in the region, and its location with respect to demand generators for originating or transient users and passengers.

First-class hangar facilities, combined with three runways (Runway 3R/21L measuring the longest at 7,616 with ILS capabilities) and major maintenance services attract corporate aircraft and aviation business to use PRC as an operations base. PRC also attracts local aircraft owners to use the facility as a base. These factors, combined with previous capital improvements at PRC and the socioeconomic characteristics of the ASA, suggest that the demand for aviation services at the PRC is being sustained and has the potential for growth.

The population growth of the ASA and the continued diversification of the economy and disposable income levels, support the continued reliance on PRC to provide air transportation services. This is especially relevant when the economic centers are distant from one another or involve excessive travel times to enable same-day ground transportation trips. General aviation air travel supports this user demand. Longer passenger processing times associated with scheduled airline travel and connections have contributed to the increased awareness and utility of general aviation aircraft and the airports they utilize. As discussed in the general aviation national trends, the advent of VLJs and the attractiveness of fractional ownership of business aircraft, both in jet and turboprop families, further support this trend. Availability of land for the construction of hangar facilities at PRC is a primary factor contributing to the continued attraction of aircraft to the facility. Barring an economic scenario that suggests poor performance in the dominant area businesses, both in the ASA and the Prescott municipal area, use of PRC is likely to continue and experience increasing frequency.

From a facilities perspective, PRC is well maintained and offers certain advantages over other area airports as highlighted in Table 2.2. PRC draws pilots and aircraft owners primarily from areas to its north, west and south based on the addresses of aircraft owners. Potential users in areas east of the Airport tend to operate from airports in the north area for reasons of accessibility and available facilities. As determined in the Passenger Leakage Analysis (Appendix A), PRC draws its commercial passengers primarily from Prescott, Prescott Valley, Chino Valley, and Dewey-Humboldt.

Table 2.2
Comparison with Other Area Airports

Airport	Number of Runways & Longest Length	Instrument Approach Capability	Fixed Based Operator	Operations	Based Aircraft	Commercial Passenger Service
Phoenix	3 – 11,489	Yes – P	Major	539,211[i]	93	Yes
Flagstaff	1 – 8,800	Yes – P	Major	36,837[i]	130	Yes
Goodyear	1 – 8,500	No	Major	136,274[i]	197	No
Deer Valley	2 – 8,208	Yes – NPI	Major	378,763[i]	1,125	No
Prescott	3 – 7,550	Yes – P	Major	231,285[i]	340	Yes*
Show Low	2 – 7,200	Yes – NPI	Minor	34,014	63	Yes*
Glendale	1 – 7,150	Yes – NPI	Major	132,735[i]	357	No
Kingman	2 – 6,827	Yes – NPI	Major	61,100	268	Yes*
Page	2 – 5,950	No	Major	23,007	68	Yes*
Payson	1 – 5,500	No	Minor	41,850	38	No
Sedona	1 – 5,129	No	Minor	50,000	100	No
Mesa	2 – 5,101	Yes – NPI	Major	270,084[i]	932	No
Chandler	2 – 4,870	Yes – NPI	Major	223,800[i]	425	No

***** Essential Air Service, [i] ATCT Provided, P = Precision Instrument, NPI = Non Precision Instrument
Note: All airports have 100LL, Jet A, Hangars, and Tiedown capabilities
Source: FAA 5010 Records & Prescott Airport Economic Impact Study-May 2006

Of the other airports, only Phoenix Sky Harbor and Flagstaff have precision instrument approach capabilities. Additionally, PRC has the seventh longest runway. Overall, the prospect for future aviation activity at PRC is considered positive and should advance at rates comparable to those expected nationally. Phoenix Sky Harbor, Show Low, Kingman, Flagstaff, and Page airports also provide scheduled airline or commuter service.

2.2.1 Summary of Forecast Methodology

The forecasts were derived from a comparison to the FAA's Terminal Area Forecast (TAF) in addition to an assessment of the Leakage Analysis (Appendix A), survey activities of based aircraft and aircraft operations (Appendix B), on-going and planned airport improvements, and anticipated trends in the general aviation market and commercial passenger travel. These findings are coupled with consideration of causal relationships as reflected in supply (competition) and demand (population, employment and income) factors. This forecast approach allows for differing projections of demand that could be anticipated at PRC. Initially, the forecasts address two key projections – based aircraft and aircraft operations – from which a series of derivative forecasts can be generated.

With the exception of enplaned passengers, the forecasts presented in this chapter will be unconstrained. Meaning, any existing physical or policy constraints at PRC will not be taken into consideration during the development of these forecast numbers. Chapter Four, Development Alternatives, will address any physical and policy constraints and will identify a "constrained" forecast, if warranted. However, the enplanement forecast will consider "what if" scenarios due to 'on-going' plans to build a new larger terminal facility at PRC. The specific methodology for each is documented in the sections below.

2.2.2 General Aviation Trends

The Federal Aviation Administration (FAA) publishes a national aviation forecast. The current document that will be used as a source is *FAA Aerospace Forecast Fiscal Years 2008–2025*. Included in this publication are forecasts for general aviation. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth.

The FAA forecasts the fleet and hours flown for single-engine piston aircraft, multi-engine piston, turboprops, turbojets, rotorcraft (piston, turbine), sport, experiment and other (glider, balloon). The FAA forecasts active aircraft (i.e. flies at least one hour during the year) not total aircraft. As the demand for business jets has grown over the past several years, the current forecast assumes that business use of general aviation aircraft will expand at a more rapid pace than that for personal/sport use. The business/corporate side of general aviation should also continue to benefit from a growing market for new Very Light Jets (VLJ). In addition, corporate safety/security concerns for corporate staff, combined with increasing flight delays at some U.S. airports have made fractional, corporate, and on-demand charter flights practical alternatives to travel on commercial flights. Below, a list is provided summarizing key FAA forecast components for general aviation through 2025.

- The active general aviation fleet is projected to increase at an average annual rate of 1.3 percent through the forecast period of 2025, growing from an estimated 225,007 in 2007 to 286,500 aircraft by 2025.

- The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow at an average of 3.7 percent a year over the forecast period with the turbine jet fleet increasing at 5.6 percent a year.

- The actual number of VLJ deliveries in 2007 fell short of FAA's assumption in last years forecast (143 vs. 350). However, the current forecast assumes that they will continue to enter the active fleet at a rate of 400 to 500 aircraft a year, reaching 8,145 aircraft by 2025.

- The number of active piston-powered aircraft (including rotorcraft) is projected to decrease from the 2006 total of 167,008 through 2008 and then increase gradually to 181,345 by 2025. Over the forecast period, the average annual increase in piston-powered aircraft is 0.5 percent.

- Starting in 2005, a new category of aircraft (previously not included in the FAA's aircraft registry counts) was created: "light sport" aircraft. At the end of 2006 a total of 1,273 aircraft were estimated to be in this category. The forecast assumes registration of 5,600 aircraft over a 5-year period beginning in 2005 including both newly built aircraft and conversions from ultralight trainers. By 2025 a total of 14,700 light sport aircraft are projected to be in the fleet.

- The number of general aviation hours flown is projected to increase by 3.0 percent yearly over the forecast period.

- The number of active general aviation pilots (excluding air transport pilots) is projected to be 507,930 in 2025, an increase of almost 61,000 (up 0.7 percent yearly) over the forecast period.

- The number of private pilots is projected to increase an average of 0.2 percent a year over the forecast period to total 220,550 in 2025.

2.2.3 General Aviation Based Aircraft Forecast

Post September 11, 2001 combined with a weakening economy has led to reductions in aviation travel. However, the "hassle factor" associated with scheduled airline travel, especially for frequent flyers, has stimulated additional interest in the general aviation industry. Corporate travelers have realized the convenience and improved affordability of using chartered general aviation aircraft or have joined fractional aircraft ownership programs. Fractional aircraft ownership involves the purchase of a predetermined share of an aircraft, which is then maintained and operated by a management company. These programs, initially involving business jet aircraft, now offer participation in turboprop aircraft such as the Beechcraft King Air. The ability of these aircraft to operate at airports located closer to the passengers' homes and suburban office locations have contributed to the success of these programs. As the economy improves, these positive forces are expected to return and stimulate the demand for this type of general aviation activity. This expectation is mirrored in the national FAA forecasts of general aviation activity presented in by the FAA in its "Aerospace Forecasts Fiscal Years 2008 – 2025”.

Contributing to this prospect for growth will be the introduction of lightweight, low noise, new technology personal and corporate jet aircraft. An example is the Eclipse 500 twin-engine jet. This aircraft has a maximum gross takeoff weight of 4,700 pounds and can transport 4 passengers and a crew of 2 some 1,600 nautical miles nonstop. The aircraft sells for a little over $1 million. The twinjet aircraft is specifically designed to operate from general aviation airports with runway lengths of at least 2,600 feet, thus making it attractive for use at most general aviation airports.

Existing published forecasts specifically for PRC are included in the FAA Terminal Area Forecast (TAF), the 1998 Airport Master Plan, and limited forecast in the Arizona Department of Transportation (ADOT) State Aviation Needs Study 2000 (SANS 2000). Valid regional forecasts are limited given that the Arizona State Aviation System Plan (SASP) is currently in progress. All three existing forecasts were reviewed as a preliminary step in generating forecasts for this Master Plan Update. Regional and local conditions (i.e., market share) were then reviewed to evaluate the reliability of the forecasts. Table 2.3 provides existing based aircraft forecasts for PRC. The based aircraft and operations forecast methodology and actual forecasts for PRC are described thereafter.

As shown in Table 2.3, the FAA TAF and the SANS 2000 forecast have identical average annual growth rates, while the 1998 Master Plan is slightly lower at 1.5%. To further compare, validate, and make an informed decision on the appropriate average annual growth rate to use in forecasting based aircraft through the planning period, historical data for based aircraft were collected from several sources, which included the FAA, and provided in Table 2.4. From this data, a trendline analysis[2] for the period of time shown (1989 to 2006) was performed. The correlation coefficient (R^2) determined was 0.92, which is a good correlation coefficient. This trendline analysis resulted in 595 aircraft in 2027, indicating a 2.6% average annual growth rate, which is comparable to both the FAA TAF and the SANS 2000.

Table 2.3
Comparison of Based Aircraft Forecast

Year	Airport-Specific		Regional
	FAA TAF	**1998 Master Plan**	**SANS (2000)**
1995	n/a	258	n/a
	x	**Forecast**	x
2000	312	280	n/a
	x	X	**Forecast**
2005	365	300	323
	Forecast	X	x
2010	391	325	360
2015	440	350	401
2020	494	374	446
2025	555	n/a	n/a
Average Annual Growth	**2.3%**	**1.5%**	**2.3%**

Table 2.4
PRC Historical Based Aircraft

Year	Based Aircraft	Year	Based Aircraft
1989	197	1998	290
1990	223	1999	312
1991	194	2000	312
1992	197	2001	312
1993	199	2002	335
1994	220	2003	347
1995	218	2004	335
1996	258	2005	349
1997	290	2006	357

After reviewing the resulting average annual growth rates for both the comparable forecasts and the trendline analysis, an average annual growth rate of 2.3% was selected for based aircraft through the planning period. Although the FAA's national projections of the active general aviation fleet indicate a modest 1.3 percent growth rate through 2025, it is anticipated that PRC

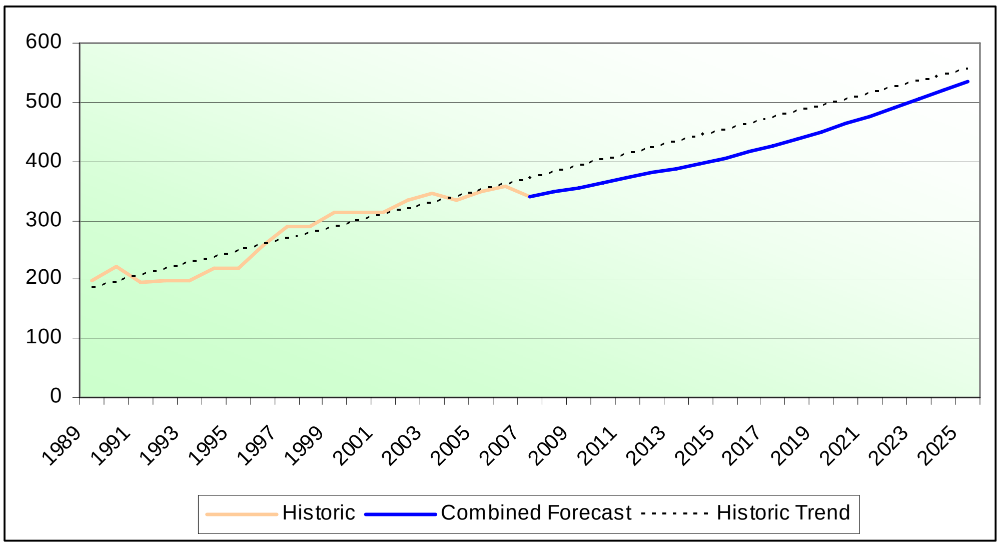
[2] Trendline analysis is a technique in taking historical data in effort to make predictions. Such analysis is also called regression analysis. The analysis produces a R^2 coefficient between 0 and 1. A trendline is more reliable when its R^2 value is at or near 1.

would experience more robust growth in terms of based aircraft due to the higher population growth rate within the ASA, compared to the growth rate nationally (as illustrated in Table 2.1). The resultant projection of based aircraft reflecting the selected growth rate of 2.3 percent is presented in Table 2.5 and illustrated in Exhibit 2.1.

Table 2.5
PRC Forecast Based Aircraft

Year	Based Aircraft
2007	340
2012	380
2017	425
2027	535

Exhibit 2.1
PRC Based Aircraft



2.2.4 Market Share Analysis of Based Aircraft

A market share analysis was also evaluated for PRC to reinforce the based aircraft projections provided in Section 2.2.3. The method used to determine market share was to develop a ratio of based aircraft per 1,000/population in the ASA region (see Table 2.1). Based aircraft per 1,000/ population is expected to decrease throughout the planning period as the population within the ASA increases at a greater growth rate than the number of based aircraft in the ASA. It is anticipated that by the end of the planning period (2027) the ratio will be 1.5. As a result, the projected based aircraft for the year 2027 is estimated to be 555, which is approximately 4 percent higher than the 2027 projection of 535 given in Table 2.7 (2.5% average annual growth rate vs. 2.3% average annual growth rate).

Because the average annual growth rates are within two-tenths of each other, the projected based aircraft of 535 is considered reliable, and will be used during the based aircraft fleet mix and aircraft operations forecast.

2.2.5 Based Aircraft Fleet Mix

The projections of based aircraft fleet mix were developed by using the fleet mix percentages located in Chapter 1, Table 1.6. However, the percentages were adjusted slightly to reflect the national trend forecast favoring an increased growth toward larger aircraft in the active general aviation fleet, notably those powered by turboprop and turbojet engines. In absolute numbers of aircraft nationally, however, the smaller piston-powered active aircraft greatly exceed these larger aircraft by a ratio of more than 10:1 today. Over time, this ratio may decrease to nearly 7:1. This growth rate projection through 2025 for each class of aircraft is presented in Table 2.6.

Table 2.6
National General Aviation Aircraft Fleet Projections

Period	Single-Engine Piston	Multi-Engine Piston/Turboprop	Turbojet	Rotorcraft
2008 – 2025	0.5	4.6	5.6	4.70
Source: "Aerospace Forecasts Fiscal Years 2008 – 2025"				

These same trends and characteristics can be expected at PRC. The resultant projection of based aircraft fleet mix, reflecting a slight adjustment to the current fleet mix percentages using the national growth rates, is presented in Table 2.7.

Table 2.7
PRC GA Aircraft Fleet Projections

Year	Single-Engine	Multi-Engine Piston/Turboprop	Business Jets	Rotorcraft	Total
2007[1]	301	26	3	10	340
Future	**86.5%**	**8%**	**2%**	**3.5%**	**100%**
2012	329	30	7	13	380
2017	368	34	8	15	425
2027	463	43	11	18	535
Source: Berger Calculations					[1]/ Base Year

2.2.6 General Aviation Aircraft Operations Forecast

An aircraft operation is defined as any takeoff or landing performed by an aircraft. There are two types of operations, local and itinerant. A local operation is a takeoff or landing performed by an aircraft that will operate within the local traffic, generally within a 20 nautical mile radius. Itinerant operations are all arrival and departures other than local. Usually, local operations are comprised of training operations and itinerant operations are those aircraft with a specific destination away from or to the airport. Typically, itinerant operations increase with business and industry use of the airport since business aircraft are used primarily to move individual from one location to another.

Aircraft operations were developed based on traffic counts provided by the FAA Air Traffic Control, which operates between the hours of 6:00 a.m. and 11:00 p.m. daily. The tower presents this information by type of operation (local or itinerant). Year 1997 was the first year of historical data used for this forecast effort total was 353,286 operations (takeoffs and landings). Of these recorded operations, 237,916 were local and 115,370 were itinerant. This level of activity, although accurate for the recording period, does not include or make allowance for aircraft operations that occur when the tower is closed. Consequently, it was appropriate to make an upward adjustment to the recorded tower activity data by 1% to account for this condition. Table 2.8 presents the historical itinerant and local operations at PRC.

Table 2.8
Historical Operations

Year	Itinerant	% of Total	Local	% of Total	Total +1%
1997	118,903	33%	237,916	67%	356,819
1998	125,419	35%	228,056	65%	353,475
1999	119,608	35%	220,432	65%	340,040
2000	116,291	37%	203,746	63%	323,237
2001	119,491	36%	211,833	64%	328,746
2002	111,183	32%	231,196	68%	342,379
2003	116,513	35%	217,017	65%	333,530
2004	97,778	35%	177,805	65%	275,583
2005	88,929	37%	150,236	63%	239,165
2006	87,410	37%	149,292	63%	236,702
2007	87,062	38%	142,563	62%	229,625
	Avg.	**35%**	**Avg.**	**65%**	
Source: FAA ATC Source Data 1997-2007					

Aircraft operations forecasts were developed by applying national growth rates and applying the Operations Per Based Aircraft (OPBA) methodology. The operations at PRC did not correlate well with any of the socioeconomic indicators; thus, regression analysis was not a useful technique. Each of the forecasts is presented in the following sub-sections.

2.2.6.a FAA National Growth Rates

The TAF provided growth rates for itinerant and local operations. The growth rates are based upon national growth expected to occur and are shown in Table 2.9.

Table 2.9
TAF GA Growth Rates

Period	Itinerant Growth Rate	Local Growth Rate
2007-2012	1.3	1.3
2013-2017	0.9	1.7
2018-2022	0.7	1.0
2023-2027	0.6	0.9
Source: PRC TAF FY 2007-2025		

These growth rates were applied to the 2007 local and itinerant operations and the results are summarized in Table 2.10.

2.2.6.b Operations Per Based Aircraft

The OPBA method is a ratio of operations per based aircraft. The OPBA ratio can be calculated and then applied to the forecasted based aircraft to generate an operation forecast. The OPBA ratio calculated for 2007 operations was 675. The OPBA ratio was applied to the forecast of based aircraft in Table 2.5. The forecast of operations is summarized in Table 2.10.

2.2.6.c Combined Forecast

The combined forecast was developed using parts of each forecast presented in the last two sections. For itinerant operations, the national growth rate was used. For the based aircraft, a new OPBA ratio was developed. The new OPBA was derived by taking the 2007 local operations and the 2007 based aircraft. The resulting OPBA was 419. This OPBA was then applied to the forecast of based aircraft to derive local operations. The forecast is summarized in Table 2.10.

2.2.6.d GA Operations Forecast Analysis

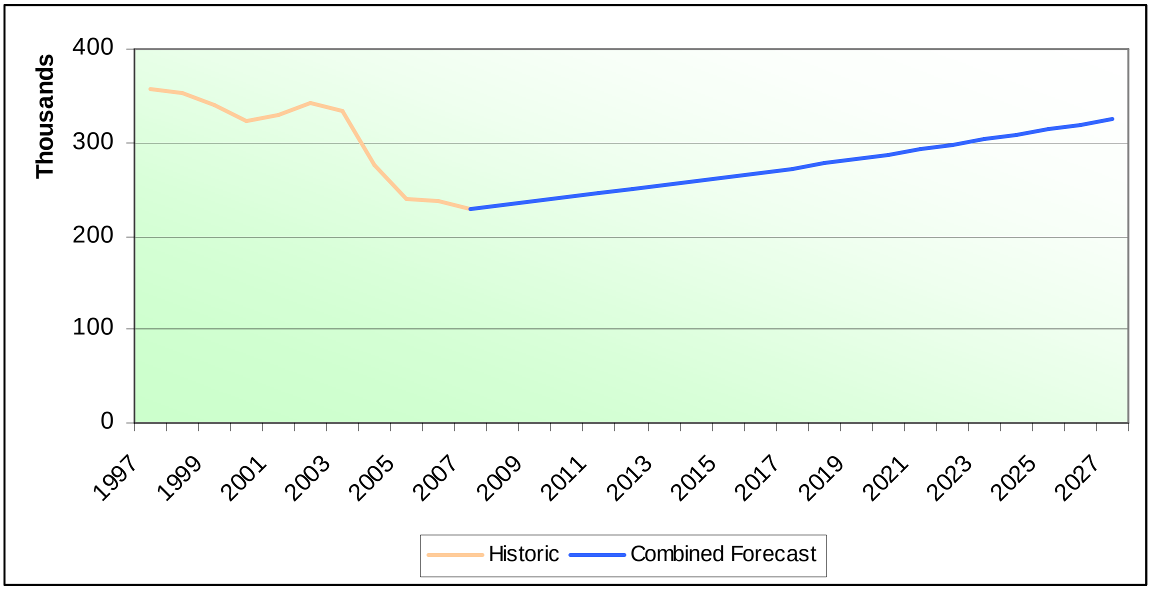
As shown in Table 2.10, the different forecast methodologies generate a range of operations scenarios. Analyzing the different forecasts, it was determined that the National Growth Rate method provides a very conservative estimate of operations, at best. The OPBA method generates a very high operations level. However, the OPBA is based on total local and itinerant operations. Although the OPBA represents a ratio based upon actual operations at the airport, it appears very optimistic. Given the knowledge of the region in previous discussions, it seems this forecast would not be appropriate.

The preferred forecast is the combined forecast. This forecast combines the itinerant growth rates from the National Growth Rates forecast with the OPBA generated specifically for the local operations. This forecast provides a good estimate as it addresses a level of growth from itinerant operations associated with the growth expected in the nation while addressing growth in the based aircraft specific to PRC. Furthermore, the Combined Forecast comes within 10% of the FAA TAF, which is within acceptable limits. Exhibit 2.2 illustrates both historical and forecasted total aircraft operations.

Table 2.10
GA Operations Forecast

Year	National Forecast	OPBA Forecast	Combined Forecast
2007[1]	229,625	229,625	**229,625**
2012	242,518	256,500	**249,664**
2017	260,035	286,875	**272,663**
2027	282,772	361,125	**325,084**
Source: Berger Calculations 1/Base Year			

Exhibit 2.2
PRC Total Aircraft Operations



2.2.7 GA Operations Forecast by Fleet Mix

Future aircraft operations by fleet mix were projected on the basis of using the Combined GA Operations Forecast (shown in Table 2.10) and applying the current fleet mix percentages obtained from reviewing the 5010 Data Sheet and past INM Noise Model data inputs. The current fleet mix operations, by percentages, are as follows:

- Single Engine (SE): 66%
- Multi-Engine (ME): 16%
- Business Jet (BJ): 10%
- Rotorcraft (RC): 8%

Subsequently, Table 2.11 depicts the GA operations forecast by fleet mix based upon the combined forecast in Table 2.10 and the fleet mix percentages listed above.

Table 2.11
GA Operations Forecast by Fleet Mix

Year	SE	ME	BJ	RC	Total
2007[1]	151,553	36,740	22,962	18,370	**229,625**
2012	164,778	39,947	24,966	19,973	**249,664**
2017	179,958	43,626	27,266	21,813	**272,663**
2027	214,556	52,013	32,508	26,007	**325,084**

Source: Berger Calculations 1/Base Year, Ref: Table 2.10

2.2.8 Local and Itinerant Operations

As discussed earlier, Local operations are performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport,
- Are departing for or arriving from flight in a local practice area located within a 20-mile radius of the airport, or
- Are conducting simulated instrument approaches or low pass at an airport.

Itinerant operations are all other operations. The average split at PRC between 1997 and 2007 is 65 percent local and 35 percent itinerant as shown in Table 2.8. Table 2.12 depicts the local/itinerant split expected to occur at PRC through the planning period. The itinerant percentages are anticipated to increase slightly over time as more business activity occurs.

Table 2.12
Local and Itinerant GA Operations Forecast

Year	Local Forecast	Itinerant Forecast	Total Forecast	Percent
2007[1]	149,256	80,369	229,625	65/35
2012	157,288	92,376	249,664	63/37
2017	169,051	103,612	272,663	62/38
2027	195,050	130,034	325,084	60/40

Source: Berger Calculations [1]/Base Year

2.3 Commuter Enplanements and Operations

This section provides the forecasts of commuter activity at PRC. The analysis was performed using a three step process to develop the forecasts. First, the airline industry in general and historical commuter activity at PRC was reviewed to identify previous levels of service and trends. Second, an air service assessment was conducted, which addressed current use at the airport, trends affecting air service at PRC, and their affects on future levels and activity. The Passenger Leakage Analysis was utilized as well. Last, a series of alternate forecasts were developed, based on historical data and future “what if” scenarios due to ‘on-going’ plans to build a new larger terminal facility at PRC. The preferred forecast was then selected. The following sections describe each step in detail, beginning with a short historical perspective of the airline industry

2.3.1 Airline Industry Trends

The Federal Aviation Administration (FAA) publishes a national aviation forecast. The current document that will be used as a source is *FAA Aerospace Forecast Fiscal Years 2008–2025*. Included in this publication are forecasts for commercial aviation. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth.

Commercial aviation was a study in contrasts in 2007. High jet fuel prices continued to plague carriers throughout the world but demand remained robust. The global industry, including the U.S., was able to record its first net profit since 2000. Airlines in the U.S. maintained capacity discipline in domestic markets, increased their international flying, and raised fares modestly. World airlines were not as affected by the high fuel prices because a relatively strong world economy and a weakening dollar allowed international carriers to pass on increased fuel costs to the traveling public through higher fares without dampening demand. In the U.S., higher load factors and modestly higher fares resulted in the first profit for the industry since 2000.

The U.S. commercial aviation industry consists of 36 mainline air carriers that use large passenger jets (over 90 seats) and 84 regional carriers that use smaller piston, turboprop, and regional jet aircraft (up to 90 seats) to provide connecting passengers to the larger carriers. Mainline and regional carriers provide both domestic and international passenger service between the U.S. and foreign destinations, although regional carrier international service is confined to border markets in Canada, Mexico, and the Caribbean.

Three distinct trends have occurred over the past several years that have helped shape today's U.S. commercial air carrier industry:

1. Major restructuring and shrinking by the mainline network carriers;

2. Rapid growth by low-cost carriers, particularly in nontraditional long-distance transcontinental markets; and

3. Exceptional growth among regional carriers.

Below, a list is provided summarizing key FAA forecast components for commercial aviation through 2025.

- Domestic capacity growth in FY 2008 is projected to be 0.6 percent. Mainline carrier capacity is forecast to rise just 0.3 percent following the 1.8 percent increase in 2007 as network carriers continue to shrink and low-cost carriers temper their growth because of continuing record high fuel prices.

- Regional carrier capacity is forecast to grow 2.5 percent in FY 2008 as increasing numbers of 70 and 90-seat regional jets enter service, while the number of smaller regional jets (50 seats or less) shrinks.

- Domestic commercial carrier capacity growth quickens in 2009 to 3.3 percent as mainline carriers grow 2.7 percent while regional carriers grow 7.8 percent.

- For the entire forecast period (2008–2025), domestic capacity is projected to increase at an average annual rate of 3.6 percent, slightly faster than economic growth, with mainline carrier growth lower (3.2 percent) than the regional carriers (5.9 percent).
- Following a 0.2 percent decline in 2006, passenger enplanement growth rebounded in 2007, up 3.1 percent. Passenger volume is expected to grow slowly in 2008 (up 1.0 percent) and speed up in 2009 (up 3.5 percent). During the entire forecast period, domestic enplanements are projected to grow at an average annual rate of 2.8 percent with mainline carriers growing slower than regional carriers (2.5 and 3.8 percent a year, respectively).

2.3.2 Historical and Current Commercial Air Service at PRC

The air service at PRC has always been subsidized by the U.S. Department of Transportation (USDOT) through the Essential Air Service (EAS) program. The EAS is a program operated by the U.S. Department of Transportation that provides subsidies to airlines who agree to provide service on historically non-profitable routes to rural areas, which were served by certified air carriers before the 1979 Airline Deregulation Act. Under EAS contract, Public Law 100-223 states that the airline must provide:

(a) Service to a hub airport, defined as an FAA-designated medium- or large-hub airport;

(b) Service with no more than one intermediate stop to the hub;

(c) Service with aircraft having at least 15 passenger seats at communities that averaged more than 11 passenger enplanements a day in any calendar year from 1976-1986;

(d) Under certain circumstances, service with pressurized aircraft; and

(e) Flights at reasonable times taking into account the needs of passengers with connecting flights.

Mesa Airlines has provided continuous service since January 1989, with the exception of the period between May 2005 and October 2007, during which the EAS contract was awarded to Great Lakes Airlines. The number of passenger enplanement at PRC, as shown in Table 2.13, overall has been declining since 1994, from a high of 14,000 enplanements[3] per year to a low of 4,233 in 2007. The primary factors which account for the decline in enplanements were due to the September 11th terrorist attacks and the two year period when Great Lakes Airline operated in and out of Terminal 2 at Phoenix Sky Harbor (PHX). Passengers arriving in Terminal 2, and connecting to flights departing out of Terminal 3 and 4, had to exit Terminal 2 and repeat the check-in and screening process. Additionally, in some instances, passengers had to collect and recheck their luggage. This had effectively limited the ability of the passenger to select convenient connections, ultimately favoring ground transportation options to travel to PHX.

[3] An enplanement is when a passenger boards an aircraft at the airport. Industry standards typically identify enplanements as the measure of activity at an airport, as it is assumed that the individual that boards will also return to the airport.

Table 2.13
PRC Historical Enplanements

Year	Arizona Pacific	Mesa Airlines	Great Lakes	Total
1989		9,144		**9,144**
1990		11,510		**11,510**
1991		6,565		**6,565**
1992	3,337	8,381		**11,718**
1993		13,428		**13,428**
1994		14,493		**14,493**
1995		11,504		**11,504**
1996		12,055		**12,055**
1997		10,043		**10,043**
1998		8,366		**8,366**
1999		6,395		**6,395**
2000		9,393		**9,393**
2001		4,683		**4,683**
2002		4,818		**4,818**
2003		5,692		**5,692**
2004		7,889		**7,889**
2005		3,735	1,680	**5,415**
2006			4,469	**4,469**
2007		2,200	2,033	**4,233**
Source: PRC Airport Administration				

In May of 2008, Mesa Airlines indefinitely suspended commercial airline service at PRC. The cessation in operations was due to an increase in operating costs that can be attributed to the current high fuel costs. Mesa Airline operated a fleet of Beechcraft 1900 aircraft (19 seat configurations) out of PRC. Mesa Airline had offered flights to Phoenix arriving and departing from PHX at Terminal 4.

Currently, in effort to continue the EAS program, Prescott provides commercial air service through the operation of Great Lakes Aviation, Ltd. (Great Lakes). Service continues to be provided with a 19-seat Beech 1900 aircraft. Great Lakes Airlines provides daily flights to and from Phoenix Sky Harbor Airport (PHX) and Ontario, CA (ONT), through a code share agreement with United Airlines.

Additionally, in partnership with Alaska Airlines, Horizon Air provides daily flights to and from Los Angeles International Airport (LAX). This service is offered on a Bombardier Q-400 turboprop aircraft, which has a capacity to seat up to 79 passengers. The flight from Prescott will originate in Flagstaff. The early morning flight from Flagstaff will make a brief stop in Prescott and then continue nonstop to Los Angeles. The return flight will take the opposite route in the evening, stopping in Prescott before terminating in Flagstaff.

2.3.3 Enplanement Forecast

In this section, several alternative enplanement forecasts are derived, based on TAF historical and forecast data, population, trends, and the Passenger Leakage Analysis (Appendix A). From these alternatives, a recommended forecast was obtained and used to develop commercial operations forecasts.

Three enplanement growth scenarios were defined. These scenarios will be used in development and evaluation of the alternative forecast. These scenarios are:

- **Low Growth**: In this scenario, passenger activity at PRC will grow very slowly. Contributing factors to the low growth may include 1) no additional services provided through the EAS program; and, 2) no improvements to the existing terminal building and services offered. PRC will continue to be served by a single commuter airline, with limited service to one or two destinations.
- **Moderate Growth**: In this scenario, passenger activity at PRC will be more robust due to regional population growth and increased air service demand. Airline service would remain in the current terminal, but may include more than one commuter airline providing air service to potentially more destinations.
- **High Growth**: An aggressive campaign to increase passenger use is assumed in this scenario. Increased efforts will be made to capture those passengers identified as “leakage”. Two carriers would likely provide substantial service from PRC, possibly with regional jet service from a new terminal facility.

The choice of scenario is discussed later in this section.

2.3.3.a FAA Terminal Area Forecasts

The FAA’s TAF are airport-specific forecast based upon FAA Annual Forecasts. Thus, they are “top-down” forecasts; that is, forecasts for an airport derived from national forecasts. A review of the most current TAF for PRC (March 2007) show that the FAA slightly over estimates current airport enplanements. Accordingly, the TAF growth rates were applied to actual PRC enplanements (Table 2.13) to yield alternative forecasts. The TAF growth rate for PRC is about 0.8% annually over the planning period, virtually showing very little growth. Table 2.14 summarizes the adjusted TAF Enplanement Forecast.

Table 2.14
PRC Terminal Area Enplanement Forecast

Year	TAF Enplanements	Adjusted Enplanements
2007[1]	7,265	4,233
2012	7,546	4,405
2017	7,839	4,584
2027[2]	8,340	4,964
Source: TAF, FY 2007-2025 [1/]Base Year [2]/Interpolated		

2.3.3.b Population Growth Rate vs. Enplanement Model

The population growth rate model is predicated on a 5.9 percent average annual growth rate from the 2007 total of 4,233 enplanements to 13,322 enplanements in the year 2027. This annual growth rate is due to the anticipated population growth of the ASA for the same period (see Table 2.1). Table 2.15 depicts the population growth rate model.

Table 2.15
Population Growth Rate vs. Enplanements

Year	Enplanements
2007	4,233
2012	5,638
2017	7,509
2027	13,322
Source: Berger Calculations, ref: Table 2.1	

2.3.3.c Trendline

A trendline forecast based upon historical enplanement data between 1989 and 2007 (Table 2.13) resulted in a poor correlation (R^2 = 0.29) and a downward trend in enplanements. This was expected considering a relatively inconsistent and volatile enplanement pattern during the 1989 to 2007 period. Table 2.16 depicts the results from the trendline analysis the population growth rate model.

Table 2.16
Trendline Forecast

Year	Enplanements
2007	6,400
2012	6,000
2017	5,800
2027	5,000
Source: Berger Calculations, ref: Table 2.13	

2.3.3.d Market Share Analysis

Another technique for assessing and forecasting enplanement growth is a market share analysis. In this method, the historical enplanements at PRC are compared with the potential enplanements within the ASA. The trend in market share is examined, and future market share is estimated. Forecasts can then be developed based on future market share, and the ability for PRC to capture their market share based upon the various scenarios (low, medium, and high) presented.

As identified in the Passenger Leakage Analysis (Appendix A) and in the 1999 Arizona Rural Air Service Study, ADOT estimated that statewide enplanements per capita ratio was 3.10, lead by Phoenix with a 3.76 ratio and Tucson with 2.18. It was then realized that the unconstrained overall enplanement per capita rate for PRC was 0.87, concluding that Prescott could capture approximately 40% of its total unconstrained demand. A 40 percent capture rate is believed to be reasonable considering that all non regional and secondary airports are affected by passenger leakage. Therefore, a 40 percent capture rate is feasible through the long term planning period.

Table 2.17 summarizes the unconstrained demand at 40 percent capture rate through the planning period. It is important to note, that the enplanements shown in Table 2.15 are not the projected forecast for PRC as they relate to this Master Plan; rather, it quantifies the potential market. Actual capture rates of the PRC's potential market will be applied later as they relate to the various growth scenarios (low, medium, and high).

Table 2.17
Unconstrained PRC Market Share

Year	ASA Population	Unconstrained Demand	PRC ASA Market Share (40%)
2007	124,477	108,544	43,418
2012	163,614	142,671	57,068
2017	215,056	187,528	75,011
2027	371,546	323,988	129,595

Table 2.16 shows how PRC's potential market share will steadily increase over the planning period as the ASA population increases. In forecasting actual future enplanements for PRC, the key question becomes whether or not the airport's ability to capture the potential market share will come to be realized.

For this analysis, the three scenarios defined earlier were applied and corresponding market share capture rate estimates, as follows:

- **Low Growth**: For this scenario, it is assumed that the market share will remain at its current low levels (10 percent market share) and continue to lose passengers at it's current rate as described in the Passenger Leakage Analysis (Appendix A).
- **Moderate Growth**: In this scenario, an increase in market share is assumed (to 18 percent) based on the average of the last 10 years, and factoring in an additional airline providing more service options and destinations.
- **High Growth**: This scenario uses an increased market share to account for improved facilities and terminal gate capacity at PRC. A market share is assumed based on the average of the last 17 years. A market share of 28 percent was used.

Forecasts for PRC were developed using these market share assumptions. Table 2.18 summarizes the calculations.

Table 2.18
PRC Market Share Enplanement Forecast

Year	Low Growth	Medium Growth	High Growth
2007[1]	4,233	4,233	4,233
2012	5,564	10,272	15,979
2017	7,314	13,502	21,003
2027	12,636	23,327	36,287
Source: Berger Calculations [1]/Base Year			

2.3.3.e Selected Enplanement Forecast

The Low Growth scenario does not appear to be reasonable and may be too pessimistic. With the projected ASA population to increase at an Annual Growth Rate of 5.6% through the planning period, it is expected that the enplanements would favor a more moderate growth. However, consideration must be given to the potential of increasing PRC's profile and market share by way of the development of a new terminal facility and increased service options to multiple destinations.

For the purposes of estimating the commuter operations forecast, a combined scenario will be recommended and used. The combined scenario takes into account the three growth scenarios and progresses the various captures rates through the planning period. The progression of the capture rates, for the combined scenario, is intended to model the current service environment at little or no growth with the expectation that PRC's enplanements will progressively improve through the planning period. Table 2.19, summarizes the combined scenario.

Table 2.19
Combined Growth Scenario

Year	Combined Growth
2007	4,233
2012	7,262
2017	12,459
2027	36,673

Exhibit 2.3, PRC Passenger Enplanements (1989-2027), illustrates the historical and forecasted passenger's enplanements at PRC based on the Combined Growth scenario.

Exhibit 2.3
PRC Passenger Enplanements (1989-2027)

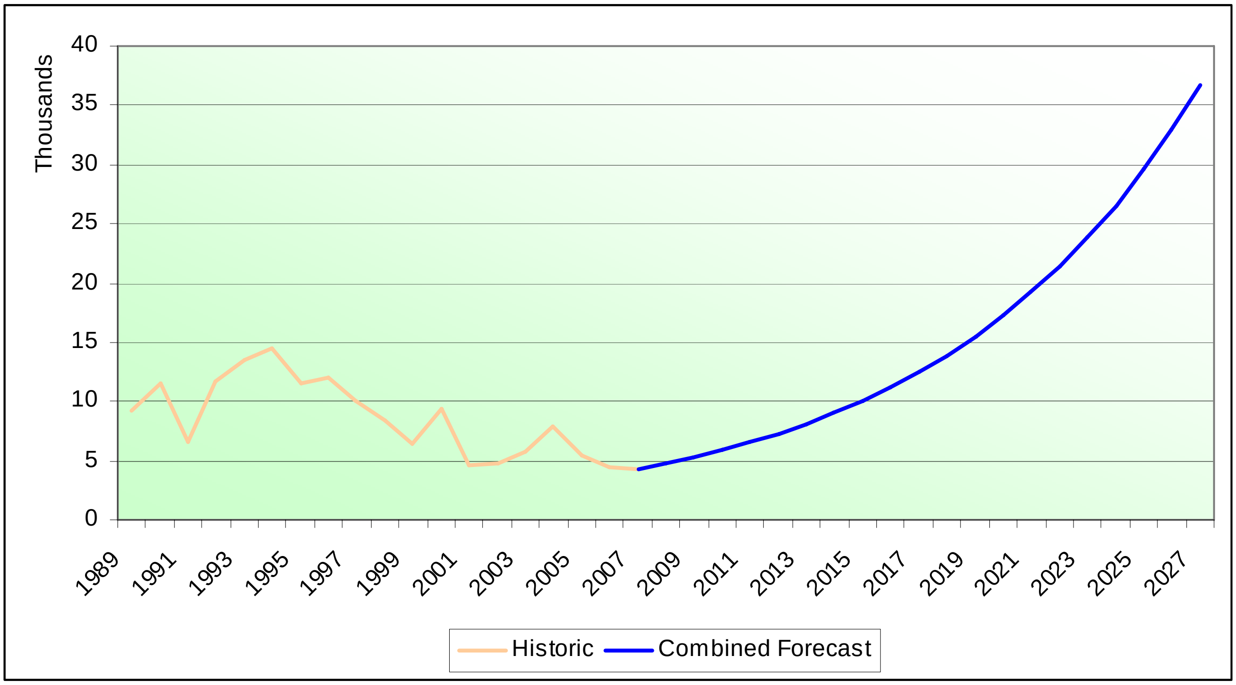
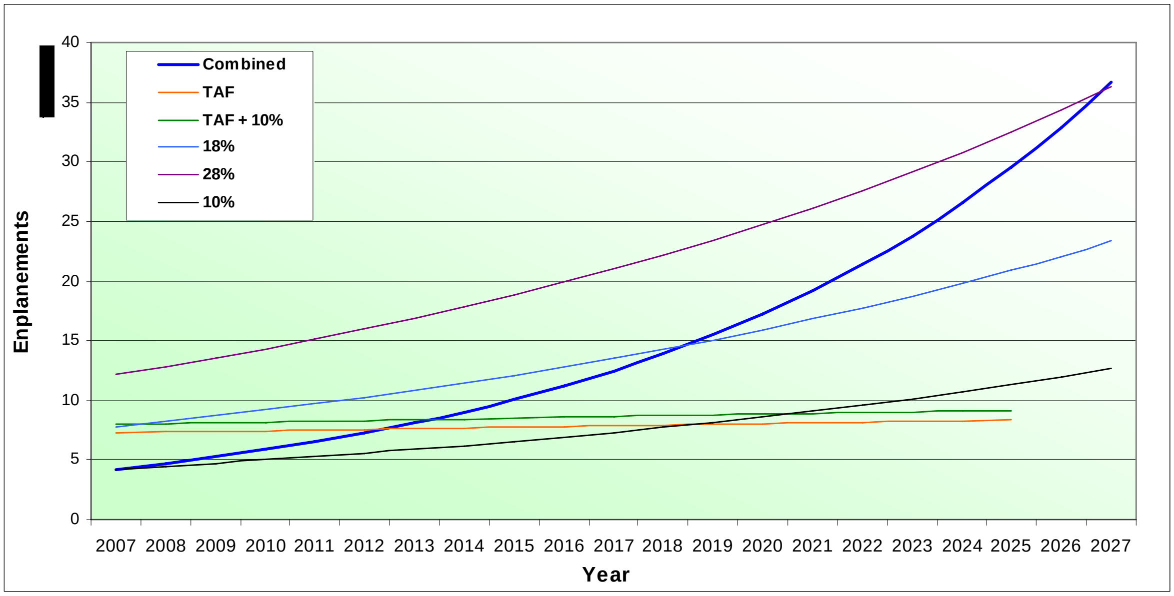


Exhibit 2.4, Enplanement Comparison, illustrates the Combined Growth scenario compared to the low (10 percent), medium (18 percent), and high (28 percent) growth scenarios, as well as the FAA TAF forecast and FAA TAF forecast plus 10 percent. As shown the Combined Growth scenario begins to bypass the FAA TAF forecast in 2012 and the FAA TAF plus 10 percent in 2013. Both the national economy and airline industry will be major factors that influence the combined enplanement forecast. Although the national, state, and local economies are slowing down and the airline industry is struggling with increased fuel prices, it's important to note that the most stable portion of the airline industry has occurred in the regional/commuter air carrier segment. As the economy begins to experience and upturn and the airlines begin to stabilize, enplanement growth at PRC is expected to increase at a more aggressive rate in the mid to latter parts of the planning period (i.e., 2014 through 2027).

Exhibit 2.4
Enplanement Comparison



2.3.3.f Summary of Enplaned Forecast Analysis

Table 2.19 was developed in effort to summarize the enplanement forecast, as well as compare the results to previous other studies providing PRC forecast information.

Table 2.19
Enplanement Forecast Summary

	2007	**2012**	**2017**	**2027**
FAA Terminal Area Forecast (TAF)				
FAA TAF	7,265	7,546	7,839	8,340[3]
FAA TAF Adjusted to Current Levels	4,233	4,405	4,584	4,964
Trendline				
1989-2007 (R^2 = 0.29)	6,400	6,000	5,800	5,000
Average Annual Growth Rate (Population Only)				
ASA Population Growth (5.9%)	4,233	5,638	7,509	13,322
Market Share[1]				
• Low: 10% (current)	4,233	5,564	7,314	12,636
• Moderate: 18% (10 yr. avg.)	4,233	10,272	13,502	23,327
• High: 28% (27 yr. avg.)	4,233	15,979	21,003	36,287
• **Combined**	**4,233**	**7,262**	**12,459**	**36,673**
Other Studies				
SANS 2000	15,160[3]	19,764[3]	26,495[3]	N/A
PRC Airport Master Plan 1998	24,533[3]	30,109[3]	36,799[3]	N/A
N/A – Not Available, [1] See Table 2.18 and 2.19, [3] Extrapolated				

2.3.4 Commuter Operations Forecast

In addition to passenger enplanements, there are other factors which affect forecasts of airline facilities. The number of commuter airline operations can be determined from the average ratio of passenger enplanements forecasted per departure. This ratio is dependent upon the size of the aircraft and the average percentage of seats that are filled for each departure. The percentage of enplanements to available seats is called Load Factor (LF).

According to the *FAA Aerospace Forecast Fiscal Years 2008–2025*, the regional carrier passenger fleet is forecast to increase by 6 aircraft in 2008. After 2008, the regional carrier fleet is expected to increase by an average of 37 aircraft (1.2 percent) over the remaining years of the forecast period, reaching 3,469 aircraft in 2025. The number of regional jets (90 seats or fewer) at regional carriers is projected to grow from 1,803 in 2007 to 3,114 in 2025, an average annual increase of 3.1 percent. All the growth in regional jets over the forecast period occurs in the larger 70 and 90-seat aircraft. During the forecast period, more than 1,000 regional jets of 50 or less seats are removed from the fleet. The turboprop/piston fleet, which is the aircraft currently servicing PRC, is expected to decline from 1,033 in 2007 to 355 in 2025. Turboprop/piston aircraft are expected to account for just 10.2 percent of the regional fleet in 2025, down from a 36.4 percent share in 2007. For this reason, the 30 seat turboprop and/or regional jet of 50 or less seats are factored into PRC's BRL equation.

The greater number of the larger 70 and 90-seat regional jets in the fleet coupled with 50-seat jet retirements increases the national load factor to 81.6 percent in 2025. However, due to the limited services offered through the EAS program, the LF at PRC has historically been lower than the national average and, according to the Arizona SANS 2000, has been projected to increase from 45 percent in 2007 to 50 percent in 2027.

Table 2.20 depicts the anticipated airline operations based upon various seating capacities of commercial aircraft.

Table 2.20
PRC Commercial Operations Forecast

Seating Capacities	2007	2012	2017	2027
= 19 (Beech 1900)	100%			
= 30 Brasilia		100%	50%	
= 50 (RJ)			50%	100%
Total	**100%**	**100%**	**100%**	**100%**
Average Seats, Enplanements, and Commercial Operations Forecasts				
Average Seats per Departure	19	30	40	50
Load Factor	45%	46.5%	48%	50%
Enplanements per Departure	8.55	13.95	19.2	25
Forecast Annual Enplanements	4,233	7,262	12,459	36,673
Annual Departures	495	521	649	1,467
Annual Commercial Operations	**990**	**1,042**	**1,298**	**2,934**
Source: Arizona SANS 2000 and Consultant Calculations				

2.4 Instrument Operations Forecast

Forecasts of Annual Instrument Approaches (AIA) provides guidance in determining an airport's requirements for navigational aid facilities. An instrument approach is defined as an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when the visibility is less than three miles and/or the ceiling is at or below the minimum initial approach altitude.

In determining the number of AIA's conducted at PRC, the number of itinerant operations must be reviewed. Utilizing all commuter operations and only itinerant general aviation operations, the number of AIAs was estimated.

According to historical FAA TAF data for the last 10 years, actual instrument approaches were approximately 2.4 percent of annual itinerant operations. The number of AIAs are expected to increase slightly throughout the planning period as itinerant operations increase. Table 2.21 depicts the AIA forecast through the planning period.

Table 2.21
PRC Annual Instrument Approach Forecast

Operations	2007[1]	2012	2017	2027
Annual Itinerant Operations	81,359	93,418	104,332	132,968
Annual Instrument Approaches	1,627	2,242	2,504	3,191
Source: FAA TAF; Berger Forecast Tables 2.12 and 2.20 [1]/Base Year				

2.5 Peaking Characteristics

Peak period forecast are required for airport capacity and facility analysis. Forecasts are required for: Peak Month and Average Day Peak Month (ADPM) for enplanements and operations. Table 2.22 summarizes the results.

- **Enplanements**: A review of monthly enplanement data over the last 5 years reveals that commuter peak months are in October and in the range of 10 percent. The peak year over the last five years was 2004. The peak month for 2004, which comprised about 10 percent, appears typical and will be used for planning purposes. The ADPM was calculated by dividing the peak month level by 31.

- **Operations**: As with enplanements, peak month operations over the last five years have varied, but range between eight to ten percent of total operations. For consistency, the 2007 peak month of 10 percent for November will be used for forecast purposes.

Table 2.22
Peak Period Forecast

		2007[1]	2012	2017	2027
Enplanements:	Annual	4,233	7,262	12,459	36,673
	Peak Month	794	726	1,245	3,667
	ADPM	25	23	40	118
Operations:	Annual	230,615	250,706	273,961	328,018
	Peak Month	23,061	25,070	27,396	32,801
	ADPM	744	809	884	1,058

2.6 Summary

The recommended forecasts for Prescott Municipal Airport are summarized below in Table 2.23. The forecast as presented in this chapter will be used throughout the remainder of the master planning effort. The next step in the Master Planning process is to assess the capacity of the existing facilities, including a clear description of the design aircraft, and to determine what facilities will be necessary to meet future aviation demand.

Table 2.23
Summary of Recommended Forecasts

Forecast	2007[1]	2012	2017	2027
Passenger Enplanements	4,233	7,262	12,459	36,673
Annual Operations	230,615	250,706	273,961	328,018
• **Commuter**	990	1,042	1,298	2,934
• **GA Operations**	229,625	249,664	272,663	325,084
- **Local**	149,256	157,288	169,051	195,050
- **Itinerant**	80,369	92,376	103,612	130,034
- **Single Engine**	151,553	164,778	179,958	214,556
- **Multi-Engine**	36,740	39,947	43,626	52,013
- **Business Jet**	22,962	24,966	27,266	32,508
- **Rotorcraft**	18,370	19,973	21,813	26,007
Annual Instrument Approaches	1,627	2,242	2,504	3,191
Based Aircraft	340	380	425	535
• **Single Engine**	301	329	368	463
• **Multi-Engine**	26	30	34	43
• **Business Jet**	3	7	8	11
• **Rotorcraft**	10	13	15	18
Source: Berger Calculations				[1]/Base Year

3.0 Facility Requirements

Determining facility requirements is the next essential step in the airport master planning process[1]. The purpose of this chapter, "Airport Facility Requirements" is to determine the needs of the airport based on demand identified in Chapter 2 – Forecast of Demand.

To the reader the title implies these are the facilities "required" to maintain a viable and safe airport. It is true that in an ideal world providing for the requirements to meet the projected demand is a reasonable expectation. On the other hand, the physical and/or financial resources available may not be allowed to fully develop under the circumstances. Nonetheless, before the planning can take place to achieve what is feasible it is important to understand the ultimate facility requirements scenario. To this end, this effort was conducted without consideration of any constraints, that is, to understand the requirements under an ideal situation. The physical, financial, and environmental impacts that may ultimately constrain the ability for achieving the requirements are considered in the future Alternative Analysis and Implementation Working Papers. For those areas that are determined to be inadequate, the Master Plan Update project will identify the required facilities to meet the demand, and the alternative methods to provide the necessary capacity. This Facility Requirements chapter compares the forecast to the latest airport industry standards and FAA design guidance[2].

The assessment of facility requirements includes the following major elements:

- Airfield System Capacity, including Design Aircraft;
- Airside Facility Requirements;
- Landside Facility Requirements;
- Airline Terminal Requirements;
- Airport Access; and
- Support Facilities.

Airport facility improvements are justified for several reasons:

- To meet the existing or forecasted demand of the facility, in term of level of activity and type of activity;
- To meet FAA design standards or criteria, most related to enhancing airport safety;
- To insure a well maintained facility; and
- To enhance operational efficiency.

The results of the analysis in this chapter produce a list of the facility requirements needs which are an integral part of the subsequent evaluation in Chapter 4 – Alternatives Analysis.

[1] Reference: FAA Advisory Circular 150-5070-6B *Airport Master Plans*, July 29, 2005
[2] Reference: FAA Advisory Circular 150-5300-13C *Airport Design*, March 2007

3.1 Airfield System Capacity

This section of the chapter will detail facility requirements for the Design Aircraft, Design Standards, Wind Coverage, Runway Safety Areas, Pavement, Pavement Markings, Airport Fencing and Runway Length.

3.1.1 Design Aircraft

The FAA uses the Airport Reference Code (ARC) to relate airport design criteria to operational and physical characteristics of the aircraft currently using or projected to use the airport. The critical aircraft is that aircraft with the most demanding (i.e. largest) critical dimensions and highest approach speed that consistently (at least 500 operation per year) uses the airport. These codes are summarized in Table 3.1.

Table 3.1
Airport Reference Codes

Approach Category	Minimum Speed	Maximum Speed (knots)
A	≤ 0	< 91
B	≤ 91	< 121
C	≤ 121	< 141
D	≤ 141	< 166
E	≤ 166	< N/A
Design Group	Minimum Wing Span (feet)	Maximum Wing Span (feet)
I	≤ 0	< 49
II	≤ 49	< 79
III	≤ 79	< 118
IV	≤ 118	< 171
V	≤ 171	< 214
VI	≤ 214	262
Source: FAA AC 150-5300, Airport Design		

The Airport Reference Code (ARC) for PRC is C-III. This indicates that aircraft with a wingspan of less than 118 feet and approach speeds slower than 141 knots are able to operate in safe conditions on Runway 3R- 21L. Runway 3R-21L has FAA dimensional standards to meet C-III, Runway 3L-21R meets ARC B-I, and Runway 12-30 meets ARC B-II. As part of this analysis the runway length meeting the critical aircraft requirements standards for Runway 3R-21L are assessed.

The 2007 operations data showed that the majority of the fleet operating at PRC fell within Category A and B and the forecast showed that this will be maintained in the future. Aircraft in these categories varies from Group I to Group III. Additionally, more than 1% of the total operations were attributed to aircraft in the C category, from Group I to Group III. At present, the Q-400, a C-III aircraft, has been introduced to the PRC fleet mix, and is expected to conduct more 1,460 operations per year. While the B-1900, a B-III aircraft, continues to conduct thousands of operations at PRC. Additionally, at PRC the United States Forest Service (USFS) Prescott Fire Center and Henry Y. H. Kim Aviation Facility continue to operate large aircraft tankers during the fire season, such as the P-3 Orion and C-130. Although, the number of operations conducted by the USFS fleet it is not sufficient to be considered the critical aircraft (i.e., at least 500 annual operations), their presence supports the need to continue to plan and maintain PRC as ARC C-III.

The 1997 Master Plan had identified the Boeing 737, a C-III aircraft, as the Design Aircraft for PRC. As part the planning process the critical aircraft was re-evaluated to determine if another aircraft more accurately addressed the aviation demand need of the airport.

While it is clear that PRC should continue to be an ARC C-III facility it important to identify the critical aircraft that reflects the true aviation planning need of PRC.

The commercial forecast for PRC identified that the number commuter aircraft and regional jet market will continue to grow in relation to the high growth of the population in the Prescott Metropolitan Service Area (MSA) and so will the seating capacity and range of the commercial flights offered at PRC.

Based upon the expectation that the B-1900 is soon expected to be replaced by more reliable and efficient aircraft, and on current trends in the regional carrier market, it is anticipated that regional jet will play a bigger role in PRC's future (specifically in the 40-70 seat capacity segment). In the Western region, the regional jet predominantly used in this category are the CRJ 200 and CRJ 700 currently operated by Mesa Airline, SkyWest, Delta Connections, Northwest Airlines, Midwest Connect, ASA, Horizon Air and others. Table 3.2 illustrates a few examples of the type of aircraft that will operate at PRC in the future.

After reviewing the demand forecast, the types of aircraft that currently use the airport and the existing dimensional layout of features such as runways, taxiways, and safety areas, it was determined that the ARC for PRC will remain C-III throughout the planning period. After discussions with airport representatives and performing a runway length analysis (see Appendix 2), it was determined that the CRJ 700 is the most airfield demanding aircraft expected to operate regularly in PRC. Therefore the critical design aircraft for Runway 3R-21L will be the CRJ 700 (ARC C-III). The runway requirement for this new critical aircraft will be evaluated.

Runway 3L-21R, as per the 1997 Master Plan will continue to be planned to meet ARC B-II criteria and Runway 12-30 will remain as ARC B-II.

Table 3.2
Sample of Future PRC Design Aircraft

Example	Aircraft Type	ARC
	Q-400 Wingspan:92.25 ft MTOW: 64,500 lbs Approach Speed: 125 knot	B-III
	CRJ 200 Wingspan:76.3 ft MTOW: 47,450 lbs Approach Speed: 130 knot	C-II
	CRJ 700 Wingspan:85.04 ft MTOW: 71,750 lbs Approach Speed: 140 knot	C-III
	ERJ 145 Wingspan: 65.9 ft MTOW: 48,400 lbs Approach Speed: 110 knot	C-II

3.1.2 Airfield Capacity Analysis

The airfield capacity analysis identifies potential capacity and delay issues associated with the airfield infrastructure and projected demand levels. The level of aircraft activity that can be accommodated at an airport is mainly a function of the runway configuration. The number, length, and orientation of the runways are important factors in determining an airport's operational capacity. The analysis determines whether the airport's existing runway/taxiway system has the capacity to meet forecasted demand. The analysis of the runway and taxiway system at PRC was based upon methodologies in FAA AC 150/5060-5 *Airport Capacity and Delay* as well as utilizing the results of the analysis conducted in the Arizona State Aviation Need Study (SANS 2000).

For PRC, the SANS 2000 identified 326,400 operations for their Annual Service Volume (ASV). Since the airport configuration has not changed since the SANS was completed, this Master Plan effort will utilize this ASV which is based on the current runway configuration, weighted hourly capacity, ratio of annual demand to average daily demand during peak month, and the ratio of average daily demand to average peak hour demand during the peak month.

As a result of the projected demand for this Master Plan effort, Table 3.3 presents the calculation of the Demand to Capacity Ratio during the planning horizon 2007 through 2027:

Table 3.3
PRC Demand to Capacity Ratio

Year	Operations	ASV Operations	Demand to Capacity Ratio
2007	230,615	326,400	70.6%
Forecast			
2012	250,706	326,400	76.8%
2017	276,961	326,400	84.8%
2027	328,018	326,400	100.4%

The FAA utilizes a demand to capacity ratio of an airport's estimated ASV of approximately 60% to determine when an airport may experience operational delays. When an airport approaches this 60% target, plans should be conducted to increase an airport's capacity. As is shown in Table 3.3, PRC's ratio is currently well above the 60% target throughout the planning period and is expected to reach 100% by 2027, therefore airport capacity improvements are recommended.

Improvements to the runways and taxiways are recommended to reduce the potential for runway incursions; and therefore, may also have the effect of improving capacity.

3.1.3 Airport Design and Operational Safety Standards

The inventory assessment, demand forecast, and review of current design standards will determine the runway and taxiway improvements needed. FAA Advisory Circular 150/5300-13 entitled, *Airport Design*, sets forth recommended runway and taxiway design standards for all airports. The design standards for the current and future airport facilities are set forth in Table 3.4 below. Included on this table are the existing conditions, the future runway dimensions for design aircraft. Also included are the existing conditions and the dimensions that will be in effect if the recommended improvements at the airport occur.

Also the airport must provide a safe operating environment for aircraft. The FAA establishes protection areas around the runways to help ensure such an environment. These areas are:

- **Runway Safety Areas (RSA)** – The RSA is a prepared surface that surrounds the runway (and extends a specified distance beyond it) that is clear of obstructions. Keeping the RSA clear helps minimize damage to aircraft in the event of an accident.

- **Runway Protection Zone (RPZ)** – The RPZ is a trapezoidal area located off each runway end. The RPZ should be clear of obstructions to the greatest extent possible, to enhance the protection of people and property on the ground.

- **Object Free Area (OFA)** – A ground area surrounding runways, taxiways and taxilanes which is clear of objects except for those whose location is required by function.

Table 3.4
PRC Design Standards

FAA Design Category	Runway 3R -21L	Runway 3L-21R	Runway 12-30
Approach Category and Design Group End	C-III	B-II	B-II
Runway Width (ft)	150	75	75
Percentage Effective Gradient	0-1.5%	0-2%	0-2%
Runway Shoulder Width (ft)	20	10	10
Runway Blast Pad Length (ft)	200	150	150
Runway Blast Pad Width (ft)	140	95	95
Runway Safety Area Width (ft)	500	150	150
Runway Safety Area - Distance Beyond Runway End (ft)	1,000	300	300
Runway Object Free Area Width (ft)	800	500	500
Runway Object Free Area – Distance Beyond Runway End (ft)	1,000	300	300
Runway Obstacle Free Zone Width (ft)	400	400	400
Runway Centerline to Taxiway Centerline Distance (ft)	400	300	300
Runway Centerline to Nearest Parking Area	500	400	400
Taxiway Width (ft)	50	35	35
Taxiway Shoulder Width (ft)	20	10	10
Taxiway Safety Area Width (ft)	118	79	79
Taxiway Object Free Area Width (ft)	186	131	131
Taxiway Centerline to Fixed or Moveable Object (ft)	93	65.5	65.5
Taxiway Centerline to Parallel taxiway	152	105	105
Building Restriction line Setback[3]	745	395	395

3.1.4 Wind Coverage

FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, states that an airport's runways should be oriented such that aircraft can take-off and land into the prevailing wind with minimal crosswind exposure. The AC also states that a single runway, or a runway system, should provide 95% wind coverage. Thus, the goal at PRC is to achieve 95% coverage or better.

Wind coverage is calculated using a wind rose, which graphically depicts wind data collected from the National Oceanographic and Atmospheric Administration (NOAA). The wind rose is essentially a compass rose with graduated concentric circles representing wind speed. Each box

[3] The BRL setbacks are based on providing 7:1 transitional slope, RVZ and protected areas clearance over 35 feet.

in the wind rose represents a compass direction and, when filled, indicates the percentage of time wind travels in that direction at that speed.

Since prevailing wind patterns do not usually change, this effort will utilize the existing wind data for PRC. The wind roses are computed based on the following three categories:

- Visual Flight Rules (VFR) – (ceiling 1,000' and visibility 3 miles)
- Instrument Flight Rules (IFR) – (ceiling less than 1,000' and visibility less than 3 miles)
- All Weather – VFR and IFR combined

Since aircraft characteristics and performance can vary, wind coverage data is presented for both 13 and 16 knots. Table 3.5 presents the percent of all weather wind coverage at PRC for each runway and combined. VFR conditions occur approximately ninety-eight (98) percent of the time and IFR conditions two (2) percent.

Table 3.5
PRC All Weather Wind Coverage

Runway Identifier	13 Knots	16 Knots
3/21	98.03	99.57
12/30	94.19	98.23
Combined 3/21 and 12/30	99.91	99.99

Source: Data from national Climatic Data Center. Output provided by FAA Airport Design Program, Standard Wind Analysis.

Based on this wind data, the current runway configuration at PRC provides enough wind coverage to meet the FAA guideline of 95% all weather wind coverage.

3.2 Airside Facility Requirements

This section contains information regarding airside improvements that should be considered for the entire airfield system at PRC. First, consideration was made as to the approximate runway length for PRC based upon the existing and future role of the airport, runway and taxiway standard compliance, followed by an analysis of the runway safety, protection and obstruction surfaces.

3.2.1 Runway Length Requirements

The runway length required for an airport is based on standards presented in FAA AC 150/5300-13, PRC Aviation Demand Forecast, and FAA AC 150/5325-4A, *Runway Length Requirements for Airport Design*. The recommended length for a primary runway at an airport is determined by considering either the family of airplanes having similar performance characteristics, or a specific aircraft requiring the longest runway.

The FAA mandates that for aircraft with a Maximum Takeoff Weight (MTOW) of less than 60,000 lbs, the recommended runway length is determined according to a family grouping of airplanes. However, for regional jets like the CRJ 700, the runway length recommended is a function of the most critical individual aircraft's takeoff and landing operating weights, which depends on wing flap settings, airport elevation and temperature, runway surface conditions (dry or wet), and effective runway gradient.

The runway length recommended by the FAA is obtained by the two conditions: (1) weight category of aircraft and (2) by performance charts provided or published by the aircraft manufacturers (i.e., Canadair's Airport Planning Manual). Both takeoff and landing runway length requirements must be determined with applicable length adjustments in order to determine the recommended runway length. The longest of the takeoff and landing runway length requirements for the critical design aircraft under evaluation becomes the recommended runway length. This design procedure must be applied to the information/performance charts (ref: FAR 150/5325-4b, par 402).

As part of the runway length analysis for PRC, the FAA Airport Design Computer Program 4.2D and procedures outlined in FAA AC 150/5300-13 were used to calculate the Runway 3R-21L length requirement for planning purposes. The program includes an aircraft fleet profile designed to be representative of the small and large aircraft that comprise the general aviation aircraft fleet in the United States. The runway length analysis was developed as part of a separate task and details are included in Appendix 2**.**

Table 3.6 presents the required runway lengths for PRC based on the FAA Airport Design Computer Program 4.2D.

Table 3.6
PRC Runway Length Analysis

Airport Input Data	
Airport Elevation (MSL)	5,045
Mean daily temperature of the hottest month	90°
Maximum difference in runway centerline elevation	62'
Runway Length Recommended for Airport Design	
Small airplanes with approach speeds of less than 30 knots	450
Small airplanes with approach speeds of less than 50 knots	1,200
Small airplanes with less than 10 passenger seats:	
75 percent of these small airplanes...	4,640
95 percent of these small airplanes...	6,240
100 percent of these small airplanes...	6,410
Small airplanes with 10 or more passenger seats	6,410
Large airplanes of 60,000 pounds or less:	
75 percent of these large airplanes at 60 percent useful load	7,300
75 percent of these large airplanes at 90 percent useful load	9,220
100 percent of these large airplanes at 60 percent useful load	11,400
100 percent of these large airplanes at 90 percent useful load	11,620

Source: FAA Airport Design Computer Program 4.2AD and FAA AC 150/5300-1.

In addition to the FAA Program, the Airport Planning Manual for the CRJ 700 was reviewed and its runway length requirements are summarized below in **Table 3.7**.

Table 3.7
Airport Planning Manual Specification for CRJ 700

Airport Input Data	
Mean Temperature (Hottest Month)	90°F
Airport Elevation above MLS	5,045 ft
Maximum Difference in Centerline Elevation	62'
Aircraft Weight Data	
Maximum Design Weight (landing)	67,000 lbs
Maximum Design Weight (takeoff)	75,000 lbs
Runway Length Recommended for Airport Design	
Landing Runway Length (wet)	6,200'
Landing Runway Length (dry)	5,400'
Takeoff Runway Length	10,570'
Source: Canadair CRJ 200 Airport Planning Manual	

Based upon the analysis performed, the existing primary Runway 3R-21L, currently 7,616 feet long, should be extended 2,954 feet. Runway 3R has a displaced threshold of 790 feet, leaving a landing distance of 9,780 feet. The feasibility of this runway extension and relative taxiway will be analyzed in the Alternative Analysis Chapter.

Runway 3L-21R should also be expanded 1,428 feet and widened 15 feet to satisfy the runway requirement of 100% of B-II fleet[4]. The feasibility of this runway extension and relative taxiway will be analyzed in the Alternative Analysis Chapter.

Runway 12-30 currently satisfies the separation standards for B-II class aircraft. However, it satisfies only the runway length requirement of 75% of the small aircraft fleet. At this time the current runway length for the crosswind runway is sufficient to meet the PRC airfield requirements.

3.2.2 Runway/Taxiway Design, Safety and Separation Standards

As discussed earlier, much of the infrastructure for the primary runway has been designed and constructed to meet C-III standards. The existing runway and taxiway infrastructure and separation requirements meet or exceed the required standards with only few exceptions. Tables 3.8 and 3.9 indicate which dimensional and separation criteria are met and which need improvements for each runway and relative taxiway. All rehabilitations and new construction will be designed to at least the required standards.

[4] FAA AC 150/5325-4B par 205 states that for airport above 3,000 feet, 100% of fleet chart must be used when determining runway length requirements.

Table 3.8
PRC Runway Design, Separation and Safety Standards Compliance

Runway	3R	21L	3L	21R	12	30
Category	Meets Planned Standards					
Approach Category and Design Group End	C-III	C-III	B-II	B-II	B-II	B-II
Runway Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Percentage Effective Gradient	Yes	Yes	Yes	Yes	Yes	Yes
Runway Safety Area Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Safety Area - Distance Beyond Runway End (ft)	**No**	Yes	**No**	**No**	**No**	Yes
Runway Object Free Area Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Object Free Area – Distance Beyond Runway End (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Obstacle Free Zone Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Obstacle Free Zone – Distance Beyond Runway End (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Centerline to Taxiway Centerline Distance (ft)	**No**	**No**	**No**	**No**	**No**	**No**
Runway Centerline to Nearest Parking Area	**No**	**No**	Yes	Yes	**No**	**No**
Source: FAA AC 150/5300-13 Airport Design						

Based upon the above separation standards, Runway 3R-21L does not satisfy all criteria. Runway 3L-21R currently does not meet ARC B-II standards. Additionally, Runway 12-30 does not satisfy all criteria. The feasibility of implementing airfield improvements required to meet the design standards will be explored in the Alternatives Analysis Chapter.

Table 3.9
PRC Taxiway Design, Separation and Safety Standards Compliance

Taxiway	A	B	C	D	E	F	H
Category	**Meets Planned Standards**						
Design Standard	B-II	B-II	C-III	C-III	B-II	B-II	C-III
Taxiway Width (ft)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Taxiway Safety Area Width (ft)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Taxiway Object Free Area Width (ft)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Taxiway Centerline to Fixed or Moveable Object (ft)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Taxiway Centerline to Parallel Taxiway	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source: FAA AC 150/5300-13 Airport Design							

With regard to the taxiway system, all standards were found to be satisfactory for Taxiway width, Safety Area width, and Object Free Area width. The previous Master Plan identified the need for high speed taxiway exits and connectors for capacity enhancements which will be explored in the Alternatives Analysis Chapter.

3.2.3 Runway /Taxiway Pavement Conditions, Marking and Lighting

Both Runway and Taxiway Pavement Conditions were found overall to be in good condition and well maintained under the ADOT Pavement Preservation Program. The load bearing capacity of the airfield was found sufficient to meet current and future demand. However, special consideration will be given to the feasibility to increase the pavement strength on the primary runway to 175 thousand pounds with dual tandem in the Alternatives Analysis Chapter.

Taxiway lighting was found insufficient in most of the taxiway system, especially for Taxiway E and H, which is inadequately equipped with reflectors. Taxiway F and D have been already partially equipped with LED lighting through an FAA pilot program. Due to the high volume of student operations and less experienced pilots, the use of LED taxiway lighting throughout the airfield and enhanced pavement markings are deemed necessary to increase airfield safety. The feasibility of implementing these safety enhancements will be explored in the Alternative Analysis Chapter.

3.2.4 Runway Safety Areas, Object Free Areas, and Runway Protection Zones

The Runway Safety Area (RSA) is a prepared surface that is clear of obstructions, structures, roads and parking areas. However, FAA equipment is permitted on frangible mounts (if required by function). The 2005 PRC Runway Safety Area Standards Evaluation Report identified several deficiencies summarized in **Table 3.10**.

Table 3.10
PRC Runway Safety Area Deficiencies

	Existing Conditions					
Runway	3R-21L		3L-21R		12-30	
ARC	C-III		B-II		B-II	
Approach	Non-Precision/ Precision		Visual/Visual		Non-Precision/Visual	
Runway End	3R	21L	3L	21R	12	30
RSA Width (ft)	500	500	120[4]	120[4]	150	150
RSA Length Beyond Runway End (ft)	588[1]	1000	80[2]	240[4]	220[3]	300

[1] Intersection with localizer antenna, perimeter fence at 640 ft, Club House Dr. at 650 ft and Golf Course
[2] Intersecting with rising terrain with a six percent slope
[3] Declining terrain and intersecting with perimeter fence
[4] Existing dimensions are base on ARC B-I standards.

The current RSA dimensions for Runway 3L-21R will need to be re-designed to meet the ARC B-II standards.

Additionally, the Object Free Area (OFA) should be clear of objects except for whose location is required by function. The OFA for Runway 3L-21R, Runway 3R and Runway 12 are found to be deficient due to terrain, fencing and other infrangibly non navigational objects.

The Runway Protection Zone (RPZ) should be clear of obstructions to the greatest extent possible, to enhance the protection of people and property on the ground. The FAA recommends that the RPZ be kept clear by purchasing the property within it, or by acquiring avigation easements. All RPZs are within airport property or the Airport Sponsor has acquired the appropriate avigation easements.

The Alternatives Analysis will evaluate the improvements required to meet all RSA, OFA, and RPZ standards.

3.2.5 NAVAID, Visual Aids, and Instrument Approaches

Airport navigational aids, or NAVAIDS, provide electronic navigational assistance to aircraft for approaches to an airport. NAVAIDS are either, visual approach aids or instrument approach aids. The types of approaches available at an airport are based on the NAVAIDS that are provided.

Instrument approaches are generally designed such that an aircraft, in poor weather conditions, by means of a radio, Global Positioning System (GPS), or an internal navigation system and with no assistance from air traffic control, can navigate to and land safely at an airport. Approach procedures are classified into various categories to include a precision approach, precision Approach Procedure with Vertical guidance (APV) and non-precision approaches. A precision approach is an instrument approach that provides the pilot with both lateral and vertical guidance information. An APV approach is an instrument approach that provides the pilot both course and vertical path guidance information, but does not conform to ILS system performance standards. A non-precision approach provides the pilot with course information only. By moving towards greater levels of precision and approach lighting, an airport can improve the margin of safety for the pilot under adverse weather conditions.

Several types of precision instrument approach technologies are available to airports. They include systems such as an Instrument Landing System (ILS), Microwave Landing System (MLS), GPS (with vertical navigation via Wide Area Augmentation System (WAAS)/Local Area Augmentation System (LAAS)). APV approach technologies include the WAAS based Localizer Performance with Vertical Guidance (LPV), Lateral Navigation/Vertical Navigation (LNAV/VNAV) and Barometric Vertical Navigation (Baro-VNAV) approaches. Non-precision approach technologies include the VHF Omni-directional Radio Range (VOR), Non-Directional Beacon (NDB), Localizer (LOC), LDA Simplified Directional Facility (SDF) or Radio Navigation (RNAV). All of these types of technologies have allowed the FAA to design a variety of approach procedures to help ensure the safety of aircraft during various phases of flight and poor weather conditions.

FAA funding for a new NAVAID and approach procedure is based upon demonstrating the associated need, practicality, safety benefits, and expected aviation activity at the airport. In developing a new approach procedure, the FAA considers the accuracy of the navigational aid, penetrations to the Part 77/TERPS airspace surfaces, an airport's landing surface (runway length, lighting, markings, design criteria, etc.), and other factors as outlined in the FAA's Advisory Circular 150/5300-13, Airport Design. It is important to note that the FAA indicates a significant reduction in minima (i.e., ¼ mile reduction in visibility and/or 50 foot reduction in decision altitude or minimum descent altitude) would constitute a new approach procedure.

GPS and other GPS augmented technology (e.g., WAAS/LAAS) can ultimately provide the airport with the capability of establishing new instrument approaches at minimal cost since there is not a requirement for the installation and maintenance of costly ground-based transmission equipment. To accommodate these type approaches, the airport landing surface must meet specific standards as outlined in FAA AC 150/5300-13, Airport Design. The FAA requires that the airport must have a minimum runway length of 3,200 feet, but states that airports having runways as short as 2,400 feet could support an instrument approach if the lowest Height Above Threshold (HAT) is based on clearing a 200-foot obstacle within the final approach segment. The following tables indicate the necessary HAT, runway length, runway markings, approach lighting, and design criteria required to implement a new instrument approach.

A more precise approach system usually results in lower operating minimums. Essentially, lower operating minimums are achieved by increasing precision of the navigational system.

Tables 3.11, 3.12, and **3.13** summarize NAVAID requirements for various approaches as described above. They are based on guidance contained in 150/5300-13, *Airport Design*, and F.A.A. Order 7031.2C, Airway Planning Standards Number One-Terminal Air Navigation Facilities and Air Traffic Control Services.

Table 3.11
Approach Procedure with Vertical Guidance – Approach Requirements

<table>
<tr><th>Visibility Minimums</th><th><3/4-statute mile</th><th><1-statute mile</th><th>1-statute mile</th><th>>1-statute mile</th></tr>
<tr><td>Height Above Touchdown (ft)</td><td>250</td><td>300</td><td>350</td><td>400</td></tr>
<tr><td>TERPS Paragraph 251</td><td>34:1 clear</td><td>20:1 clear</td><td colspan="2">20:1 clear or penetrations lighted for night minimums (see AC 70/7460-1)</td></tr>
<tr><td>Precision Object Free Zone</td><td>Required</td><td colspan="3">Recommended</td></tr>
<tr><td>Airport Layout Plan</td><td colspan="4">Must be on approved ALP</td></tr>
<tr><td>Minimum Runway Length</td><td>4,200 ft. paved</td><td>3,200 ft. paved</td><td colspan="2">3,200 ft.</td></tr>
<tr><td>Runway Marking</td><td colspan="2">Non-precision</td><td colspan="2">Non-precision</td></tr>
<tr><td>Runway Edge Lights</td><td colspan="2">HIRL/MIRL</td><td colspan="2">MIRL/LIRL</td></tr>
<tr><td>Parallel Taxiway</td><td colspan="2">Required</td><td colspan="2">Required</td></tr>
<tr><td>Approach Lights</td><td colspan="2">Required – ODALS/MALS,SSALS</td><td colspan="2">Recommended</td></tr>
<tr><td>Runway Design Standard</td><td colspan="4">APV OFZ Required</td></tr>
<tr><td colspan="5">Source: Federal Aviation Administration, Advisory Circular 150/5300-13, Chg 10, Airport Design, 9/29/06.</td></tr>
</table>

Table 3.12
Non-Precision Approach Requirements

Visibility Minimums	<3/4-statute mile	<1-statute mile	1-statute mile	>1-statute mile	Circling
Height Above Touchdown (ft)	300	340	400	450	Varies
TERPS Paragraph 251	34:1 clear	20:1 clear	20:1 clear or penetrations lighted for night minimums (see AC 70/7460-1)		
Airport Layout Plan	Required				Recommended
Minimum Runway Length	4,200 ft. paved	3,200 ft. paved	3,200 ft.		
Runway Marking	Precision	Non-precision			Visual (Basic)
Runway Edge Lights	HIRL/MIRL		MIRL/LIRL		MIRL/LIRL (Required only for night minima)
Parallel Taxiway	Required		Recommended		
Approach Lights	MALSR, SSALR, or ALSF Required	Required – ODALS/ MALS, SSALS, SALS	Recommended ODALS/MALS, SSALS, SALS		Not Required
Runway Design Standard	< ¾-statute mile approach visibility	≥ ¾-statute mile approach visibility minimums			Not Required
Source: Federal Aviation Administration, Advisory Circular 150/5300-13, Chg 10, Airport Design, 9/29/06.					

Table 3.13
Precision Approach Requirements

Visibility Minimums	<3/4-statute mile	<1-statute mile
Height Above Touchdown (ft)	200	
TERPS Paragraph 251	34:1 clear	20:1 clear
Precision Obstacle Free Zone (POFZ) 200'x'800'	Required	Not Required
Airport Layout Plan	Required	
Minimum Runway Length	4,200 ft. paved	
Runway Marking	Precision	Non-precision
Holding Position Signs & Markings	Precision	Non-precision
Runway Edge Lights	HIRL/MIRL	
Parallel Taxiway	Required	
Approach Lights	MALSR, SSALR, or ALSF Required	Recommended
Runway Design Standard	<¾-statute mile approach visibility	≥ ¾-statute mile approach visibility minimums
Source: Federal Aviation Administration, Advisory Circular 150/5300-13, Chg 12, Airport Design, 1/3/08.		

PRC offers precision and non-precision approaches through the use of an Instrument Landing System (ILS/DME) and GPS on Runway 21L and VOR/GPS on Runway 12. Based upon the current operations at PRC, the instrument landing equipment is sufficient to meet current demand. The FAA is currently investigating the feasibility of installing an instrument approach to Runway 3R. Additionally, in the future, as operations increase, providing VOR/GPS capability to Runway 21R could be necessary as well as Runway End Identification Lights (REILs). This recommendation will be evaluated as part of the Alternatives Analysis.

3.3 Landside Facility Requirements

This analysis examines landside facility support components. It will estimate the facility demand and compare it with existing facilities to determine future needs for:

- Apron and Hangar Space Requirements
- Passenger Terminal Building
- GA Terminal Building
- Support Facility and Utilities

3.3.1 Apron and Hangar Space Requirements

The analysis of this section assesses the adequacy of these facilities as compared with projected demand. Requirements for GA and corporate aviation rely on many different factors. The requirements in this section rely on the aviation demand forecast numbers from Chapter 2 of this Master Plan. This section will estimate the facility demand and compare it with existing facilities to determine the requirements for:

- Based Aircraft Parking Apron space;
- Itinerant Aircraft Apron space; and
- Aircraft Hangar space.

Aircraft Apron Parking Requirements

Apron requirements were developed for based and itinerant aircraft at PRC. Currently, the aprons are divided into nine areas.

The apron area requirements shown in this section were developed according to the recommendations given in FAA AC 5300-13, *Airport Design*. Consideration must be made to the overall apron requirements for aircraft parking, taxilanes, adjacent taxiways, proximity to buildings and fueling areas. The apron layout should be designed to accommodate all aircraft using the airport, including turbo-prop and jet aircraft. A planning criterion of 2,700 square- feet (300 SY) per based aircraft and 3,240 square-feet (360 SY) per transient aircraft was used, which includes aircraft taxilanes.

For planning purposes, 25 percent of the based aircraft, adjusted for ERAU and other commercial apron, will be used to determine the parking apron requirements specifically for based aircraft.

The aircraft apron parking requirements for based and itinerant aircraft are calculated in the Tables 3.14 and 3.15 respectively. These numbers are derived by using the combined growth forecast scenario (Scenario 2) in order to determine potential facilities required to meet projected demand.

Table 3.14
Based Aircraft Apron Parking Requirements

Based Aircraft	Planning Year			
	2007	**2012**	**2017**	**2027**
Single-Engine	301	329	368	463
Twin-Engine	26	30	34	43
Jet-Engine	3	7	8	11
Helicopters	10	13	15	18
Required No. Positions	78	87	97	122
Required Area (ft^2)	210,600	234,900	261,900	329,400
Existing Area[5] (ft^2)	195,000	195,000	195,000	195,000
Surplus/(Need) (ft^2)	(15,600)	(39,900)	(66,900)	(134,400)

Currently there is no need for additional apron space for based aircraft as the North Ramp is more than 495,000 $ft^{2.}$ However, more than 300,000 ft^2 of the North Ramp has been currently planned to be converted into box hangars, shades, a self fuel and wash rack. Based on future demand and the current waiting list there will be a need for additional tie-down apronspace in the 5-year planning horizon.

To derive the itinerant aircraft apron parking requirements, the Average Day of the Peak Month was used. November was determined to be the peak month, averaging 10.2% of the annual operations. This percentage was applied to the existing and future operations numbers and then divided by 31 to represent an Average Peak Day. Based on a split between historical local and itinerant operations data, Itinerant Peak Day operations were assumed to be 37% of the peak operations. It was then assumed that approximately 47% of the Peak Day Itinerant traffic will need apron parking and 2% hangar parking.

Table 3.15
Itinerant Aircraft Apron Parking Requirements

Requirements	Planning Years			
	2007	**2012**	**2017**	**2027**
Average Peak Day Itinerant Operations	266	305	342	430
Average Peak Day Itinerant Aircraft	142	149	163	194
Required Itinerant Apron (ft2)	460,080	482,760	528,120	628,560
Existing Area[6] (ft2)	240,000	240,000	240,000	240,000
Surplus/(Need) (ft2)	(220,080)	(242,760)	(288,120)	(388,560)

[5] North Ramp remaining area.
[6] South Apron/Transient Ramp. The new FBO apron to be completed in January 2009 was not included.

Currently only a portion of the South apron is available to itinerant aircraft. Based on current forecast there is an immediate need for additional apron space.

The feasibility of developing additional apron and its location will be considered in the Alternative Analysis Chapter. These aircraft apron requirements will be used when considering future hangar development.

Hangar Space Requirements

Hangar requirements for PRC depend upon the number of based aircraft, type of aircraft, and owner preference. Thus, hangar demand was based on the results of the based aircraft forecast, operational activity, a survey of on-airport aircraft owners, and planning estimates for hangar area requirements.

The trend in general aviation aircraft (single or multi-engine) is toward more sophisticated and consequently, more expensive aircraft. Therefore, many aircraft owners prefer enclosed hangar space to outside tie-downs.

Hangar space requirements by aircraft type can be found in Table 3.16 below.

Table 3.16
Hangar Requirements by Aircraft Type

Aircraft Type	SF per Aircraft	% of Aircraft to Require Hangar Space	T-Hangar	Conventional Hangar
Single Engine	1,200	70%	90%	10%
Multi-Engine	1,800	80%	75%	25%
Turbojet	3,500	100%	0%	100%
Helicopter	3,500	100%	0%	100%

Using the results of the based aircraft forecast, user survey, hangar waiting list, combined with experience at other airports, the number of aircraft that will use hangars was estimated. It is assumed that larger higher value aircraft are more likely to be stored in a hangar, as well as 80% of the based multi-engine aircraft fleet. The results were then adjusted to account for the strong demand of hangar space from approximately 200 people that have been placed on a waiting list and are not occupying a hangar at PRC at this time.

Determining the needs for itinerant aircraft storage can be difficult at most airports, since conditions can vary drastically from one airport to the next. It is hard to establish a realistic relationship between itinerant operations and the need for hangar space. Considering an IFR fleet mix established for PRC that includes high priced sophisticated aircraft, along with weather conditions, requirements for hangar storage throughout the forecast period were estimated and provide 38,500 square feet of itinerant storage by 2027 (as shown in Table 3.17).

Additionally, 10% of the total conventional hangar storage area was estimated for service and maintenance needs, which could include an area dedicated for aircraft washing. The feasibility of dedicating an area of apron for aircraft washing and service will be evaluated in the Alternative Analysis Chapter.

Table 3.17 shows the requirements of T-Hangar, Conventional Hangar, as it relates to the forecast based and itinerant aircraft numbers.

Table 3.17
PRC Based and Itinerant Aircraft Hangar Requirements

Requirements	Planning Years			
	2007	**2012**	**2017**	**2027**
Single Engine *	196	215	240	301
Multi-Engine *	15	17	19	24
Turbojet *	3	7	8	11
Helicopter *	10	13	15	18
Total T-Hagar positions	187	206	230	289
T-hangars/shade (ft^2)	224,400	247,200	276,000	346,800
Existing T-Hagar positions	175	175	175	175
Surplus/(Need) (ft2)	(14,400)	(37,200)	(66,000)	(136,800)
Total Conventional Positions	13	20	23	29
Conventional (ft^2)	45,500	70,000	80,500	101,500
Existing Conventional Positions	N/A	N/A	N/A	N/A
Surplus/(Need) (ft2)	(45,500)	(70,000)	(52,500)	(101,500)
Itinerant Hangar Positions	7	8	9	11
Itinerant Hangar Requirements# (ft^2)	24,500	28,000	31,500	38,500
Existing Itinerant Hangar Positions	N/A	N/A	N/A	N/A
Surplus/(Need) (ft2)	(24,500)	(28,000)	(31,500)	(38,500)
Aircraft Maintenance (ft^2)	7,000	9,800	11,200	14,000

* *Excluding ERAU*
\# *Itinerant aircraft can be accommodated in Conventional hangars*

3.3.2 Commercial Terminal Building

The existing commercial terminal building as identified in the Baseline Conditions chapter has exceeded its normal life cycle, and while it has undergone several remodels and recent additions the need for a new terminal facility is undisputed. The following terminal space requirements shown in **Table 3.18** are grouped in general classification and include items like food and beverages, restrooms, circulations, hold rooms and others that are typically listed in a terminal area study. These requirements for the various terminal areas were determined according to FAA A/C 150/5360-9, and 150/5660-13. Three scenarios were developed based on airline activity levels of operation rather than planning horizon years, and are based on current and forecasted airline operations and fleet mix. All calculations are based on 76% peak hour load factor. The numbers reported in the following table, for each category, represent total square feet needed.

Table 3.18
Terminal Area Requirements

Terminal Areas	**Planning Scenarios**		
	2007-2012 [1]	**2013-2017** [2]	**2018-2027** [3]
Design Peak Hour Enplanements	**86**	**130**	**153**
Peak Hour Passengers	**172**	**260**	**306**
Ticketing Lobby & Queue Area	1,000	2,200	3,000
Public Lobby	800	1,300	1,700
Public Circulation	1,600	2,600	3,500
Baggage Claim Area and Circulation	1,000	1,800	2,400
Restrooms	500	1,000	1,500
Total – Non Sterile Space	**4,900**	**8,900**	**12,100**
Hold Rooms & Circulation	2,900	4,300	5,000
Restrooms	500	800	1,000
Security Screening Area and Offices	3,000	3,200	3,500
Airline Operations and Offices	1,000	1,200	1,400
Baggage Make-up	1,000	1,800	2,400
Total – Sterile Space	**8,400**	**11,300**	**13,300**
Rental Car Counter and Office	600	600	800
Restaurant / Food and Beverage	1,600	1,800	2,500
Gift Shop	600	600	600
Other Lease Space	600	950	1200
Total Concession Tenant Space	**3,400**	**3,950**	**5,100**
Mechanical Rooms and Support Space	1,670	2,415	3,050
Airport Staff Office	300	300	500
Minimum Total Area	**18,370**	**26,565**	**33,550**

Note: All figures represent square feet unless otherwise noted.
All figures are based on 76% peak hour load factor.
[1] Fleet Mix Assumption: Two B1900 and One Q400
[2] Fleet Mix Assumption: One B1900, One CRJ and One Q400
[3] Fleet Mix Assumption: Two Q400 and One CRJ

Source: FAA A/C 150/5360-9, Planning and Design Guidelines for Airport terminal Facilities;
FAA 50/5660-13, Planning and Design of Airport terminal Facilities at Facilities at Non-Hub Locations.

Terminal Area Apron

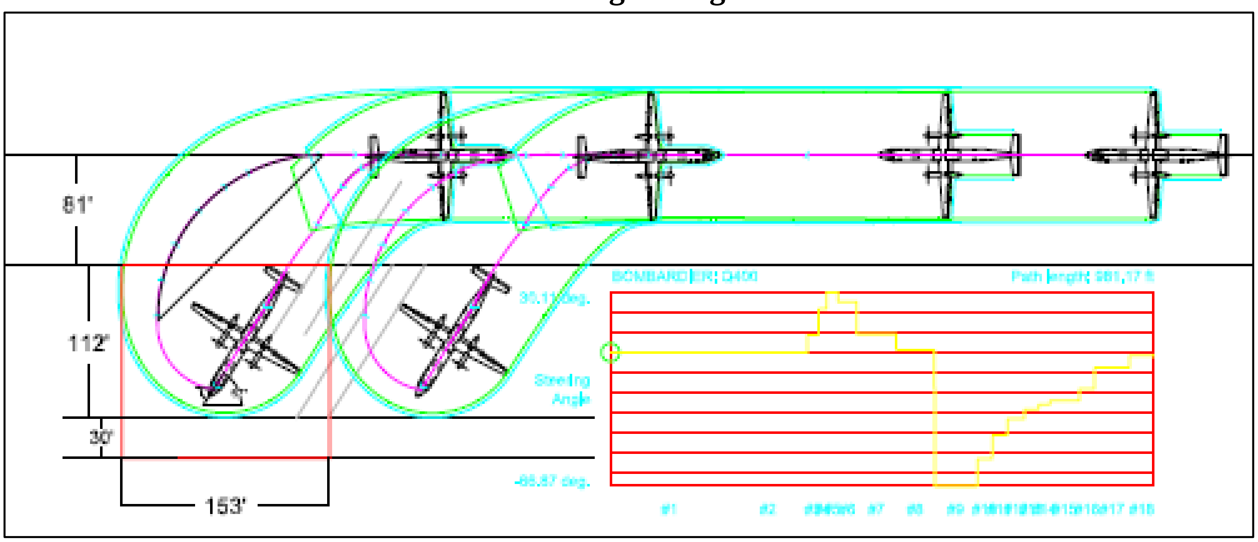
The terminal gate types and apron requirements relate to the wing spans and fuselage lengths of the aircraft which they accommodate and the type of gate operations used. The gate requirements are based on the current and expected fleet mix and activity at PRC type A gates with taxi-in and taxi-out procedures. The aircraft using this gate type are those found in Airplane Design Group

III, wing span between 79 feet (24 m) and 118 feet (36 m). With taxi-in and taxi-out operations aircraft use their own power to taxi into the gate positions and out. Although this type of operation it is less costly operationally, it requires much more apron area and permits a lower number of gates. A fleet mix composed by Dash 8 400 series (Q-400) and Regional Jet (CRG-200) was used to calculate the apron requirements for the terminal. The dimensions, shown in **Figure 1 – Gate Parking Configuration**, of the terminal apron where calculated based on standards found in FAA AC 150/5390-9 in a linear configuration, with parking gates at a 57 degree angle. The minimum terminal apron requirements are summarized in **Table 3.19**.

Table 3.19
Terminal Apron Requirements

Terminal Apron Needs	Planning Scenarios		
	2007-2012	**2013-2017**	**2018-2027**
Number of Gates	3	3	3
Terminal Apron Minimum Dimensions (ft^2)	362x223	418x223	430x223
Terminal Apron Area (ft^2)*	80,726	93,214	95,890

Figure 1
Gate Parking Configuration



Terminal Area Vehicular Parking

Adequate parking should be provided in proximity of the terminal building. At PRC parking should include short-term, long–term as well as parking for concessions and TSA's employees, rental cars and return spaces and a few space reserved for airport administration and maintenance vehicles. Table 3.20 presents the terminal parking requirement based on the current enplanement forecast and standards listed in FAA AC 150-5360-13 *Planning and Design of Airport terminal Facilities at Facilities at Non-Hub Locations.* The figures below are calculated using approximately 400 sf^2, including lanes, per parked automobile.

Table 3.20
Terminal Area Passenger Vehicles Parking

Terminal Vehicles Parking Needs	Planning Scenarios		
	2007-2012	2013-2017	2018-2027
Short Term Parking Positions	20	33	44
Long Term Parking Positions	62	100	133
Concessions	8	8	12
Restaurant Patrons	16	18	25
TSA	5	5	7
Rental Car	12	12	20
Administration and Maintenance	3	3	4
Total Number of Positions	126	178	245
Total Parking Area (ft^2)	50,400	71,200	98,000

3.3.3 General Aviation Terminal Building

The primary users of PRC are general aviation pilots. Therefore, it is appropriate to account for the facility requirement needs to accommodate them. A general aviation terminal building typically accommodates administrative offices, management offices, fix based operator offices, a pilot's lounge, flight planning area, meeting facilities, food services, restrooms and other various spaces. The FAA has developed methods of estimating general aviation terminal requirements. The method, found in FAA A/C 150/5300-13, Airport Design, relates peak period activity to the size of functional area within the building. The GA space requirements were based on providing 75 square-feet per design peak hour pilot/passenger.

The peak hour pilot/passenger was determined by adjusting the average peak hour operation to account for flight school operations that use independent facilities and by calculating an average of 2.5, 2.8 and 3.0 pilot/passenger for the respective 2012, 2017 and 2027 planning horizons as depicted in Table 3.21.

Table 3.21
Recommended Fixed Based Operator Building Area Requirements

FBO Building Needs	Planning Years			
	2007	2012	2017	2027
Avg. Peak Hour Operations	112	122	133	159
Peak Hour Pilot/Passengers	90	98	118	153
Terminal Building Area	3,800	7,350	7,875	9,600

3.3.4 Access Road and General Aviation Parking

Access Road

A description of the current airport roadway and parking areas is provided in Chapter One. As noted in Chapter One, PRC can be accessed via State Route 89. Access is fairly direct and current signage is sufficient. However, as the surrounding communities grow it will be necessary to enhance signage.

On-going concurrent transportation studies are evaluating capacity enhancement alternatives of State Route 89, the realignment of Ruger Road, and Willow Creek Road. Additionally the City of Prescott has recently begun an Airport Area Transportation Plan. Some of the alternatives will have a direct impact to the airport access. As part of the Alternative Analysis Chapter access improvements and the realignment of Ruger Road, which could ultimately provide direct access to the Terminal Area, will be examined.

General Aviation Parking

Based upon the previously discussed peak hour pilot/passenger, the number of based aircraft and transient operations, Table 3.22 lists the requirements for the GA vehicular parking area. The area was calculated on the assumption that one space will be required per peak hour pilot/passenger and that 20% of the based aircraft will require one parking position at any given time. Space requirement are calculated based on FAA AC 150/5360-13 and assume 400 (ft^2) per parking position and includes circulation lanes.

Based on conversations with Airport staff the current parking availability is very limited and has become a concern of many airport commercial tenants as well as for the airport administration. The sites available for additional parking will be identified during the Alternatives Analysis Chapter.

Table 3.22
Recommended GA Vehicular Parking Area Requirements

GA Parking Needs	Planning Years			
	2007	**2012**	**2017**	**2027**
Peak Hour Pilot/Passengers	90	98	118	153
Based Aircraft Positions	68	76	85	107
Total Parking Positions	158	174	203	260
Parking Area (ft2)	63,200	69,600	81,200	104,000

3.3.5 Support Facility Requirements and Utilities

The following section presents an analysis of the facility space requirements for PRC support facilities based upon current growth trend and forecast. This analysis includes:

- Airport Administration;
- Fuel Storage;
- Federal Facilities (ATCT);
- Airport Rescue and Firefighting (ARFF);
- Aircraft Maintenance and Storage;
- Airport Utilities;
- Airport Fencing; and
- Perimeter Road.

Airport Administration

The Airport Administration is located on the south-west side of the airfield and within a two story building. The overall condition of the building is fair and the office space on the first floor has been recently remodeled to accommodate additional administration and maintenance staff. However, the current facility will not be sufficient to support the staffing need of PRC for the next 20 years.

To properly accommodate the needs of the Airport Administration a facility of 5,950 square-feet is the minimum requirement. This facility will accommodate up to 20 employees and will include 6 offices, data storage, break and file/copy room, conference room and restrooms. The feasibility of building, possibly relocating, and combining a new Administration facility with the Maintenance facility will be reviewed in the Alternatives Analysis Chapter.

Airport Administration Parking

Table 3.23 lists the parking requirements based on anticipated staffing levels and additional spaces for visitors, handicap and deliveries. Space requirement are calculated based on FAA AC 150/5360-13 and assume 400 (ft^2) per parking position and includes circulation lanes.

Table 3.23
Recommended Administration Parking Area Requirements

Administration Parking Needs	Planning Years			
	2007	2012	2017	2027
Administration Parking Pos.	14	16	20	28
Parking Area (ft^2)	5,600	6,400	8,000	11,200

Fuel Storage Facility

There are four - 20,000 gallon above-ground fuel tanks. Two tanks contain Avgas (100LL) and two contain Jet-A fuel. Fuel is delivered approximately three times a week during normal operations, and approximately seven times if there is a forest fire in the area. These tanks are now operated by the current FBO.

Typically, fuel storage requirements are based on the average forecasted number of operations and a fuel ratio estimated by analyzing fuel flowage data and by dividing the annual consumption by the estimated annual operations. This results in the estimated average fuel consumption per operation. Table 3.24 shows the aviation fuel requirements for PRC based upon the forecast and the last five-year fuel sales which equals to 4.35 gallons of fuel per operation.

Requirements needed for the fuel farms are to maintain compliance CFR 14 Part 139, NFPA 407 code and with the Underground Storage Tank (UST) Regulation that states “Underground fuel storage tanks installed before December 31, 1988 must be modified or replaced to ensure corrosion, overfill and spill prevention by December 22, 1998”. PRC has met these requirements by removing the underground tanks and by installing 4 above ground tanks.

Table 3.24
Fuel Storage Requirements for PRC

Requirement	Planning Year			
	2007	2012	2017	2027
Operations	230,615	250,706	273,961	328,018
ADPM Operation	744	809	884	1,058
ADPM Fuel in Gallons	2,843	3,091	3,377	4,042
2 Weeks Fuel Storage Reserve	42,638	46,363	50,661	60,632
Existing Tanks Volume	80,000	80,000	80,000	80,000
Additional Fuel Storage Need	(20,000)	(20,000)	(20,000)	(40,000)
ADPM = Average Day, Peak Month				

Although calculations cannot be made that compute an average amount of fuel sold per operation, fuel sales data show that the current fuel capacity at PRC is sufficient to accommodate the number of forecasted operations throughout the planning period, if the current fuel delivery schedule is maintained. Additionally, self-fueling is common at several airports in the region. PRC based aircraft owners have expressed that having a self-fueling station at the airport would be beneficial. The feasibility of this will be considered in the Alternative Analysis Chapter.

Air Traffic Control Tower/Facilities (ATCT)

Since the need of improving the airfield and extending Runway 3R-21L has been identified and the fact that current line-of-sight issues that have prompted the installation of close circuit cameras at the end of Runway 3L-21R and 3R-21L, there is the need to further evaluate the relocation of the ATCT or possibly increase the height tower at its current location. The feasibility of this will be considered in the Alternative Analysis Chapter.

Airport Rescue and Firefighting (ARFF) Equipment and Garage

PRC currently meets the Airport Rescue and Fire (ARFF) Index A Part 139 requirements. Under this requirement, PRC should have at least one vehicle with 500 pounds of sodium- based dry chemical, halon 1211 or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFF application.

The airport has one Part 139 Index B compliant ARFF vehicle stored in at the fire station and one structural vehicle located at the south side of the airfield. The current facility meets the minimum requirements mandated by the FAA. However, FAA CFR 14 Part 139.317 states that: “Within 3 minutes from the time of the alarm, at least one required aircraft rescue and firefighting vehicle must reach the midpoint of the farthest runway serving air carrier aircraft from its assigned post or reach any other specified point of comparable distance on the movement area that is available to air carriers, and begin application of extinguishing agent”.

Currently PRC ARFF barely meets the response time requirement. The extension of the primary runway will move the midpoint further away and the ARFF vehicle will not be able to reach it under 3 minutes. The relocation of the ARFF station closer to the midpoint of the primary runway is recommended. In the Alternatives Analysis Chapter it will be identified as an area of 25,000 ft^2 able to accommodate a new ARFF facility (Index B), apron and employee parking providing a more efficient airfield response.

Airport Maintenance Equipment Storage

Currently most airport maintenance equipment is stored in a hangar adjacent to the Commercial Terminal Building. Due to its current location and space constraints, some of the equipment can not be stored and is parked outside nearby resulting in poor functionality. Additionally, the current facility lacks working space, offices, and common space (i.e., break room) for the maintenance staff.

Due to its current location and the recently developed plans for a new Commercial Terminal Building, Maintenance Building will be "boxed-in" with limited space for expansions and reduced access to the airfield. It is recommended that the maintenance facility be upgraded and relocated to an area that grants easier access to the airfield and out of sight of passengers. It is anticipated that a facility of 11,250 ft^2 should suffice the needs of the airport maintenance staff. The facility would include three (3) large vehicles bays and one (1) small vehicle bay, parts storage room, workshop room, lockers room, conference/training room, and restrooms. The feasibility of relocating the Maintenance Building and combining it with the Administration facility will be considered in the Alternatives Analysis Chapter.

Airport Utilities

As noted in Chapter 1, PRC has access to all appropriate utility services. These services would be readily available and adequate to support any future building constructed to meet future airport demands.

Airport Fencing

During the Airport Inventory inspection it was noted that a large section of the airport fence consisted of inadequate barbed-wired cattle fencing around the end of Runway 30, as well as an approximate 240 foot open gap in the perimeter fence next to the Embry-Riddle apron and the Wolfberg parking lot.

To satisfy Transportation Security Administration (TSA) requirements the open gap has since been enclosed with compliant chain-link fence (six feet tall supported by posts and topped with barbed wire). It is recommended to replace the cattle fence with the same type of compliant fencing. The feasibility of replacing the fence and any additional fencing improvements, with regards to new land acquisitions, will be considered in the Alternatives Analysis Chapter.

Perimeter Road

During the initial site visit it was noticed that the airfield lacks a complete perimeter road within the perimeter fence. Frequently, airport staff are required to utilize taxiways to reach areas located to the north of the airfield, and to cross active runways, increasing the risk for incursions accidents. Additionally, the lack of a proper and complete perimeter makes it difficult to frequently inspect, and to maintain, the security fence for damages or breaches caused by wildlife. While it is recommended to separate, or minimize, vehicular traffic from aircraft movement areas, the feasibility of completing the airport perimeter road will be examined in the Alternatives Analysis Chapter.

3.4 Facilities Requirement Summary

The following Table 3.25 and bulleted list summarizes the requirements, above existing conditions, to be addressed as part of the Alternatives Analysis Chapter of this master plan effort.

Table 3.25
Summary of Airport Facility Requirements

Identified Needs	Planning Years			
	2007	**2012**	**2017**	**2027**
Based Aircraft Apron Parking Positions	78	87	97	122
Based Aircraft Apron Parking Area (ft^2)	210,600	234,900	261,900	329,400
Itinerant Aircraft Apron Parking Positions	142	149	163	194
Required Itinerant Apron (ft^2)	220,080	242,760	288,120	388,560
Total T-Hangar positions	187	206	230	289
T-Hangars/shade (ft^2)	14,400	37,200	66,000	136,800
Total Conventional Positions	13	20	23	29
Conventional (ft^2)	45,500	70,000	80,500	101,500
Itinerant Hangar Requirements (ft^2)	24,500	28,000	31,500	38,500
Aircraft Maintenance (ft^2)	7,000	9,800	11,200	14,000
FBO GA Building Area	3,800	7,350	7,875	9,600
GA Parking Positions	158	174	203	260
GA Parking Area (ft^2)	63,200	69,600	81,200	104,000
Administration building (ft^2)	5,950			
Administration Parking Pos.	14	16	20	28
Parking Area (ft^2)	5,600	6,400	8,000	11,200
Airport Maintenance Equipment Storage	11,250			

Identified Needs	Planning Scenarios		
	2007-2012	**2013-2017**	**2018-2027**
Commercial Terminal (ft^2)	**18,370**	**26,565**	**33,550**
Terminal Apron Area (ft^2)	57,980	70,468	95,890
Commercial Terminal Parking Area (ft^2)	50,400	71,200	98,000

Additional items to be analyzed in the Alternative Analysis include:

- Administration Building relocation;
- Airport Access, roadway realignment;
- Airport Maintenance building relocation siting;
- Approach Lighting System to Runway 12 and 3R;
- ARFF building relocation siting;
- Commercial Terminal siting;
- Conventional Hangar siting and development;
- Expansion and development of new aprons;
- FBO/GA building siting and development;
- High speed taxiway exits;
- Itinerant Ramp relocation and expansions;
- Land acquisition;
- Lengthening of Runway 3L-21R;
- Lengthening of Runway 3R-21L;
- Lengthening of Taxiway A, C and D;
- Lighting improvements for taxiway E;
- Perimeter Fencing improvements;
- Perimeter Road;
- Runway 3L-21R widening;
- Runway Protection Zone Issues for Runway 3R and 3L; and
- T-Hangar and shades relocation.

4.0 Alternatives Analysis

In this chapter, the physical arrangement of future airport facilities is determined through an analysis of alternative airport layouts. The purpose of the analysis is to identify how projected facility requirements can be developed and accommodated on airport. The result of this process is a "preferred" conceptual alternative, which will serve as the basis to prepare the Airport Layout Plan.

Prescott Municipal Airport's (PRC) proximity to Prescott, Prescott Valley and Chino, makes the airport very convenient to private aircraft owners and local travelers. Maximizing the airport to accommodate the growth of general aviation, and commercial service, will help increase the economic benefit of the airport for not only the local area, but for the surrounding communities. It will also enhance safety of the airport by implementing projects which meet current FAA Design Standards presented in the previous chapter. At the same time, PRC is located near existing and planned residential areas, and it is acknowledged that additional development could impact these areas. Thus, the alternatives analysis must balance environmental effects, financial feasibility, and operational impacts to the airport, its users, and the surrounding communities.

The Alternatives Analysis was completed for both airfield and landside facilities. The airfield analysis, in Section 4.2, focuses on runway requirements, taxiways and navigational aids. Section 4.3 discusses the landside alternatives, which include aircraft apron, conventional hangars, T-hangars, Airport Rescue and Firefighting Facility (ARFF), Air Traffic Control Tower (ATCT), and other support facilities. Airport access and automobile parking are discussed in Section 4.4.

Thus, this chapter includes the following components:

- Airfield Alternatives
- Landside Alternatives
- Recommended Development Concept

4.1 Airfield Alternatives

The Facility Requirements (Chapter 3, Section 3.2) identified a number of potential facility improvements within the airfield area of PRC that could enhance airport safety and utility. These potential improvements are:

- Extend the primary runway (Runway 3R-21L) with relative taxiways;
- Extend the utility runway (Runway 3L-21R) with the relative taxiways;
- Runway separation and safety area improvements;
- Taxiway exists and connectors improvements;
- Taxiway lighting; and
- NAVAID.

The feasibility of these options is analyzed in this section.

4.1.1 Airport Development Constraints

Before developing an alternative concept, it is necessary to determine where such development could reasonably occur on the airport. The existing airport site is constrained by physical features and existing development. The constraints should be noted at the outset of the analysis, and those which effectively limit future development should be noted.

Constraints to airfield development:

- Antelope Gold Club, residential community, and State Route 89 to the West of PRC property;
- Existing development on both sides of Runway12-30 and a cemetery ground;
- Existing development south of Runway 3R-21L;
- Existing and planned development north of Runway 3L-21R;
- Bottleneck Wash to the north, affluent to Granite Creek to the East;
- Down sloping terrain toward Granite Creek with at 1.3% slope grade;
- Lack of adequate roadway access to the east of the airfield; and
- Land privately owned to the east of abandoned railroad tracks.

4.1.2 Airfield Alternative Development Assumptions

In developing the alternatives for this analysis, several assumptions were made. These assumptions are based on information gathered during the development of previous chapters, including the Aviation Demand Forecast and the analysis presented in Chapter 3:

- The alternative will meet appropriate FAA design criteria. These standards are presented in Chapter 3. As noted in that chapter, the primary runway is designed as Category C-III, and it is appropriate to maintain it as such, thus the proposed runway extension and taxiway will be designed to meet C-III standards.

- The alternative will meet appropriate FAA Runway Safety Area (RSA) standards. As noted in Chapter 3, multiple deviations from standards were identified.

- The alternative should provide clear Federal Aviation Regulation (FAR) Part 77 Surfaces. The FAR Par 77 surfaces are imaginary surfaces designated to protect the airport's airspace. The two surfaces of concern in this analysis are the Primary and Transitional surfaces. The Primary surface is a rectangular surface around the runway having a 1,000 foot width for Runway 3R-21L and 500 foot width for Runway 3L-21R, and extending 200 feet beyond each runway end. The primary surface is at the same elevation as the runway.

  The Transitional surface extends upwards and outwards, at a 7:1 slope, from the edge of the primary surface of the runway. Objects penetration these surfaces are considered obstructions and should be removed, if possible. These surfaces were used in this analysis to insure that there are no penetrations to Part 77 surfaces that include airport buildings, adjacent roads and aircraft parking areas.

4.1.3 Airfield Alternatives

Airfield infrastructure (e.g., runways, taxiways, safety areas) is generally the first consideration in developing airport alternatives because of their primary role in supporting and directing aircraft movements. Airfield development also tends to dominate airport land use; therefore, selection of an airfield concept will usually affect the amount and location of other types of land uses.

Runways and taxiways must be designed to safely and efficiently assist the flow of aircraft to and from the landside facilities. The primary considerations in airfield development are the runway orientation, operational capacity and runway length. Various airfield development alternatives were identified to satisfy the facility requirements presented in Chapter 3. The airfield alternatives focus on providing RSA improvements, additional runway length, taxiway efficiencies, and improving operations and safety. The airfield alternatives (A, B, and C) under consideration are illustrated on **Figures 4.1** through **4.3**.

A. Airfield Alternative A: As illustrated in **Figure 4.1**, this alternative addresses all the items listed at the beginning of this section according to design standards, constraints, and feasibility.

- **Runway Length**: As stated in Chapter 3, a primary Runway 3R-21L extension would provide commercial users the required infrastructure to expand and begin regional jet service. A runway length up to 10,570 feet would be ideal. However, any extension that would increase the runway length above the 9,300 feet could allow jet operation with some operational restrictions (see *Runway Length Analysis White Paper*). Additional runway length was also examined for parallel Runway 3L-21R. The parallel runway is currently 4,846 feet in length. Based on the examination in the previous chapter, it would appear that approximately 6,200 feet of runway length would be needed to adequately accommodate the fleet mix anticipated to utilize this runway. In addition, this runway should be widened to 75 feet in width in order to accommodate the existing and forecast aircraft fleet mix.

- **Runway Safety Areas (RSA)**: Alternative A addresses all non-standard RSA issues for the approach end of Runway 3R, Runway 3L, and 12. The non-standard RSA issues for Runway 3R and 12 are accomplished by implementing a runway shift by 940 feet and 150 feet respectively. Runway 3L's RSA has a non-standard positive slope (i.e., hump), which would be cut and graded to RSA standard.

- **Taxiways**: Additional capacity and efficiency is always improved with the addition of strategically placed taxiways. The two parallel runways are already equipped with parallel taxiways, which is one of the most efficient means of increasing capacity. Alternative A continues to provide the parallel taxiways with the proposed runway extensions. Another means of increasing capacity is to construct additional taxiway exits in key locations. Based upon criteria established in Advisory Circular 150/5300-13, Airport Design, up to eight new high-speed taxiway exits on the primary runway would provide additional airfield capacity. In addition, the extension of the partial parallel taxiway leading to and from the approach end of Runway 12 would also enhance the airport's overall operational capacity.

- **Runway Protections Zones & Land Acquisition:** In Alternative A, the following estimated land acquisitions would be required by the City in order to provide adequate control over the area encompassed by the Runway Protection Zones (RPZ):

Runway 12 RPZ	3.8 acres
Runway 30 RPZ	1.4 acres
Runway 21L and 21R RPZs	168 acres
Estimated Total	**173.2 acres**

FIGURE 4.1
AIRFIELD ALTERNATIVE A

B. **Airfield Alternative B**: As illustrated in **Figure 4.2**, this alternative also addresses all the items listed at the beginning of this section according to design standards, constraints, and feasibility.

- **Runway Length**: Runway extensions for Runway 3R-21L and Runway 3L-21R would also be provided in Alternative B, with runway lengths up to 10,570 feet and 6,200 feet respectively.

- **Runway Safety Areas (RSA)**: Alternative B addresses all non-standard RSA issues for the approach end of Runway 3R and Runway 12 in slightly different ways than Alternative A. The non-standard RSA issues for Runway 3R would continue to be accomplished by implementing a runway shift by 345 feet (not 940 feet as suggested in Alt. A). Runway 12's RSA would become standard by filling and grading the approach end of Runway 12 and relocating the airport service road and Ruger Road. Like Alternative A, Runway 3L's RSA would be cut and graded to RSA standard.

- **Taxiways**: The proposed taxiway layout would remain as described and illustrated in Alternative A

- **Runway Protections Zones & Land Acquisition:** In Alternative B, the following estimated land acquisitions would be required by the City in order to provide adequate control over the area encompassed by the Runway Protection Zones (RPZ):

Runway 12 RPZ	4.0 acres
Runway 3R RPZ	1.0 acres
Runway 21L and 21R RPZs	138 acres
Estimated Total	**143.0 acres**

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FIGURE 4.2
AIRFIELD ALTERNATIVE B

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C. **Airfield Alternative C**: As illustrated in **Figure 4.3**, this alternative also addresses all the items listed at the beginning of this section according to design standards, constraints, and feasibility.

- **Runway Length**: Runway extensions for Runway 3R-21L and Runway 3L-21R would also be provided in Alternative C, with runway lengths up to 10,570 feet and 6,200 feet respectively.

- **Runway Safety Areas (RSA)**: Alternative C addresses all non-standard RSA issues for the approach end of Runway 3R and 12 by installing Engineered Material Arresting Systems (EMAS) at each end. EMAS is an acceptable means of bringing safety areas into compliance, given that the benefits out way the costs of improving the safety areas by other methods (i.e., Alternatives A and B). Runway 3L's RSA would be cut and graded to RSA standard.

- **Taxiways**: The proposed taxiway layout would remain as described and illustrated in Alternative A and B.

- **Runway Protections Zones & Land Acquisition:** In Alternative C, the following estimated land acquisitions would be required by the City in order to provide adequate control over the area encompassed by the Runway Protection Zones (RPZ):

Runway 12 RPZ	4.0 acres
Runway 21L and 21R RPZs	118.0 acres
Estimated Total	**122.0 acres**

Land Acquisition For Runway Protection Zone (≈4 Acres)
Runway 3L-21R Extension
Perimeter Road
Taxiway A
Taxiway F
Ult. RWY 3L-21R (6,200'x75')
Taxiway C
Terrain To Be Graded
66'
RWY Extension (2,954'x150')
Ult. RWY 3R-21L (10,570'x150')
940'
EMAS (380'x180')
Taxiway D
Perimeter Road
Taxiway H
Surveyed Runway End
Land Acquisition For Runway Protection Zone (± 118 acres)
NORTH
MAG. NORTH
MAGNETIC VARIANCE – 11°36' E (JUNE 2008)
RATE OF CHANGE: 0.1' W
LEGEND
DESCRIPTION
RUNWAY EXTENSION
TAXIWAY IMPROVEMENTS
LAND ACQUISITION
PERIMETER FENCE ROAD
OFF AIRPORT ROAD IMPROVEMENT
RUNWAY/TAXIWAY DEMOLITION
EMAS
PROPERTY LINE
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FIGURE 4.3
AIRFIELD ALTERNATIVE C
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4.2 Landside Alternatives

The Facility Requirements (Chapter 3, Section 3.3) identified a number of potential facility improvements within the landside area of PRC that could enhance the level of service provided to general aviation users, passengers, and others. These potential improvements focused on seven areas:

- Commercial Terminal Building;
- Apron Areas;
- Hangars and Fixed Based Operator (FBO) Facility;
- Airport Rescue and Fire Fighting (ARFF) facility relocation;
- Air Traffic Control Tower (ATCT) relocation;
- Conventional and T-Hangars; and
- Land acquisition.

Each of these area where developed in three (3) different alternatives. The alternatives where based on space requirement identified in Chapter 3, FAA 150/5300-13, *Airport Design Standards*, and operational efficiency. Airport access issues are addressed in Section 4.4.

4.2.1 Landside Alternative 1

Commercial Terminal Building: As shown in **Figure 4.4**, Landside Alternative 1 redevelops the existing terminal area. This includes constructing a new commercial service terminal building that incorporates the functions of the existing terminal building and provides for expansion capabilities. The existing site would be reconfigured to accommodate the ultimate terminal building, additional auto parking, ground access and rental car parking.

Airport Administration & Maintenance Facility: Adjacent to the new terminal facility would be a new airport administration/maintenance facility (located specifically at the current airport administration location).

Fixed Based Operator (FBO): An FBO type development is shown in the area south of the runway intersections, along Club House Drive. This development area includes a 12,000 SF conventional hangar, 25,000 SY of apron area, and adjacent auto parking. A realignment of Club House drive would be required.

Air Traffic Control Tower (ATCT): The ATCT is currently located on the east side of the field and accessible from Wilkinson Drive. The tower was built in 1987 and is operated by FAA Air Traffic Controllers. Due to the height of the current tower and the well documented obstructed views of various critical areas of the airfield, an alternative location is to be considered. Alternative 1 centrally locates the ATCT on the east side off Melville Drive.

Airport Rescue and Fire Fighting Facility: The ARFF facility is currently located south of the Runway 3R/21L and 12/30 intersection and it is accessible from Club House Drive. In effort to meet the FAA FAR Part 139 Index-A emergency response requirements on the airfield, a new more central location is desired. This alternative places the ARFF facility at midfield on the east side off Melville Drive and adjacent to the proposed ATCT location.

Conventional & T-Hangars: The PRC requirements for conventional and T-hangar space were estimated from industry planning standards and through discussions with airport tenants and management. The analysis identified a current deficit of 12 T-hangar bays, which is anticipated to increase to 114 by 2027. Likewise, conventional hangar space is incorporated into each development scenario to satisfy the current deficit of 45,000sf and 101,500sf through 2027. To satisfy the facility requirements, several development locations and configurations were identified and illustrated on Figures 4.4, 4.5, and 4.6. As multiple layouts could be recommended, they are referred to as options instead of alternatives.

Land Acquisition: Approximately 160-acres of land are proposed to be acquired to allow for future airport expansion and development.

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FIGURE 4.4
LANDSIDE ALTERNATIVE 1

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4.2.2 Landside Alternative 2

Commercial Terminal Building: As shown in **Figure 4.5**, Landside Alternative 2 centrally locates the commercial terminal building with respect to the airfield on the east side of Runway 3R-21L. An available lot next to the USFS was identified as a potential site. While the site can accommodate the terminal and all other support facilities, the major constraint identified is access.

Airport Administration & Maintenance Facility: Like Alternative 1, this alternative places the administration & maintenance facility adjacent and just south of the new commercial terminal facility.

Fixed Based Operator (FBO): Similar to Alternative 1, the FBO development is shown in the area south of the runway intersections, along Club House Drive. However, the proposed aprons and auto parking are configured differently.

Air Traffic Control Tower (ATCT): In this scenario, the ATCT would remain at its current location and reconstructed at a higher elevation in effort to facilitate a more complete line-of-sight of the entire airfield.

Airport Rescue and Fire Fighting Facility: Alternative 2 also centrally locates the ARFF facility; however, its location would be on the west side and in proximity to the approach end of Runway 3L near the general aviation apron.

Land Acquisition: Approximately 160-acres of land are proposed to be acquired to allow for future airport expansion and development.


FUTURE AIRPORT DEVELOPMENT
(≈19 Acres)
(≈1 Acre)
REALIGNMENT OF
CLUB HOUSE DR.
FUTURE AIRPORT DEVELOPMENT
(≈19 Acres)
FUTURE AIRPORT
DEVELOPMENT
(≈119 Acres)
NORTH
MAG.
NORTH
MAGNETIC VARIANCE – 11°36' E (JUNE 2008)
RATE OF CHANGE: 0.1' W
LEGEND
DESCRIPTION
COMMERCIAL TERMINAL
COMMERCIAL TERMINAL APRON
T–HANGAR
CONVENTIONAL HANGAR
ARFF
AIRPORT TRAFFIC CONTROL TOWER
ADMINISTRATION/MAINTENENCE FACILITY
AUTO PARKING
GENERAL AVIATION APRON
LAND ACQUISITION
LAND AQUISITION FOR RUNWAY PROTECTION ZONE
EXISTING FBO LEASE HOLD AREA
SELF SERVE FUELING
COMMERCIAL AERONAUTICAL USE
ROAD
PROPERTY LINE
BUILDING RESTRICTION LINE
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FIGURE 4.5
LANDSIDE ALTERNATIVE 2
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4.2.3 Landside Alternative 3

Commercial Terminal Building: As shown in **Figure 4.6**, Landside Alternative 3 redevelops the existing terminal area (not unlike Alternative 1). This also includes constructing a new commercial service terminal building that incorporates the functions of the existing terminal building and provides for expansion capabilities. For this alternative, the commercial terminal building is shown approximately in the same location as presented in the previously prepared terminal design plans. The major constraint identified related to the limited space available for aircraft movement.

Airport Administration & Maintenance Facility: Unlike Alternatives 1 and 2, Alternative 3 separates the new commercial terminal building and the airport administration facilities. As such, under this scenario the facility would be located adjacent to the redeveloped FBO area off Club House Drive.

Fixed Based Operator (FBO): Once again, the FBO type development is shown in the area south of the runway intersections, along Club House Drive. This development area includes a 12,000 SF conventional hangar, 25,000 SY of apron area, and adjacent auto parking.

Air Traffic Control Tower (ATCT): Similar to Alternative 1, this alternative centrally locates the ATCT east of Runway 3R-21L, but further back and east of Mellville Drive on land not currently owned by the Airport.

Airport Rescue and Fire Fighting Facility: This alternative places the ARFF facility at midfield on the east side off Melville Drive, but further north than the proposed location presented in Alternative 1.

Land Acquisition: Approximately 160-acres of land are proposed to be acquired to allow for future airport expansion and development.

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FIGURE 4.6
LANDSIDE ALTERNATIVE 3

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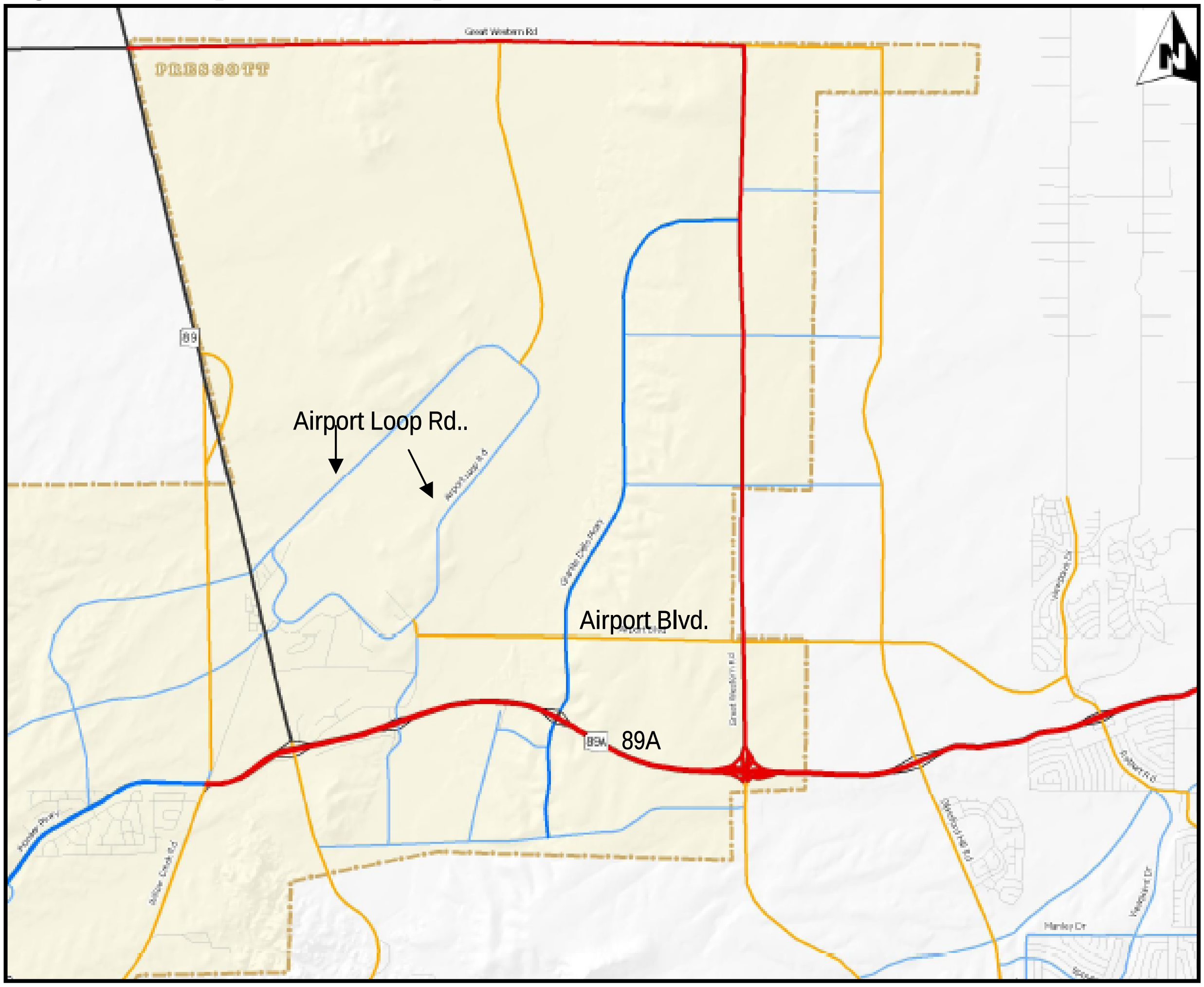
July 2009

4.3 Airport Access

The recommended 2030 airport roadway network was presented in the April 2009 Draft Final Airport Area Transportation Plan. Based on the results of the plan and the travel demand model and the more detailed subarea studies, the projected layout is presented in **Figure 4.7** on a broader scale and **Figure 4.7a**, which identifies specific lanes changes. Overall, the land uses surrounding the airport are anticipated to generate significant travel demands as they develop over the next 20 years. In order to adequately meet these demands, existing roadways in the area will need to be improved and new roadways will need to be constructed. The following major roadway improvements are recommended, as per documented in the Draft Final City of Prescott-Airport Area Transportation Plan, to meet the anticipated future growth in the study area:

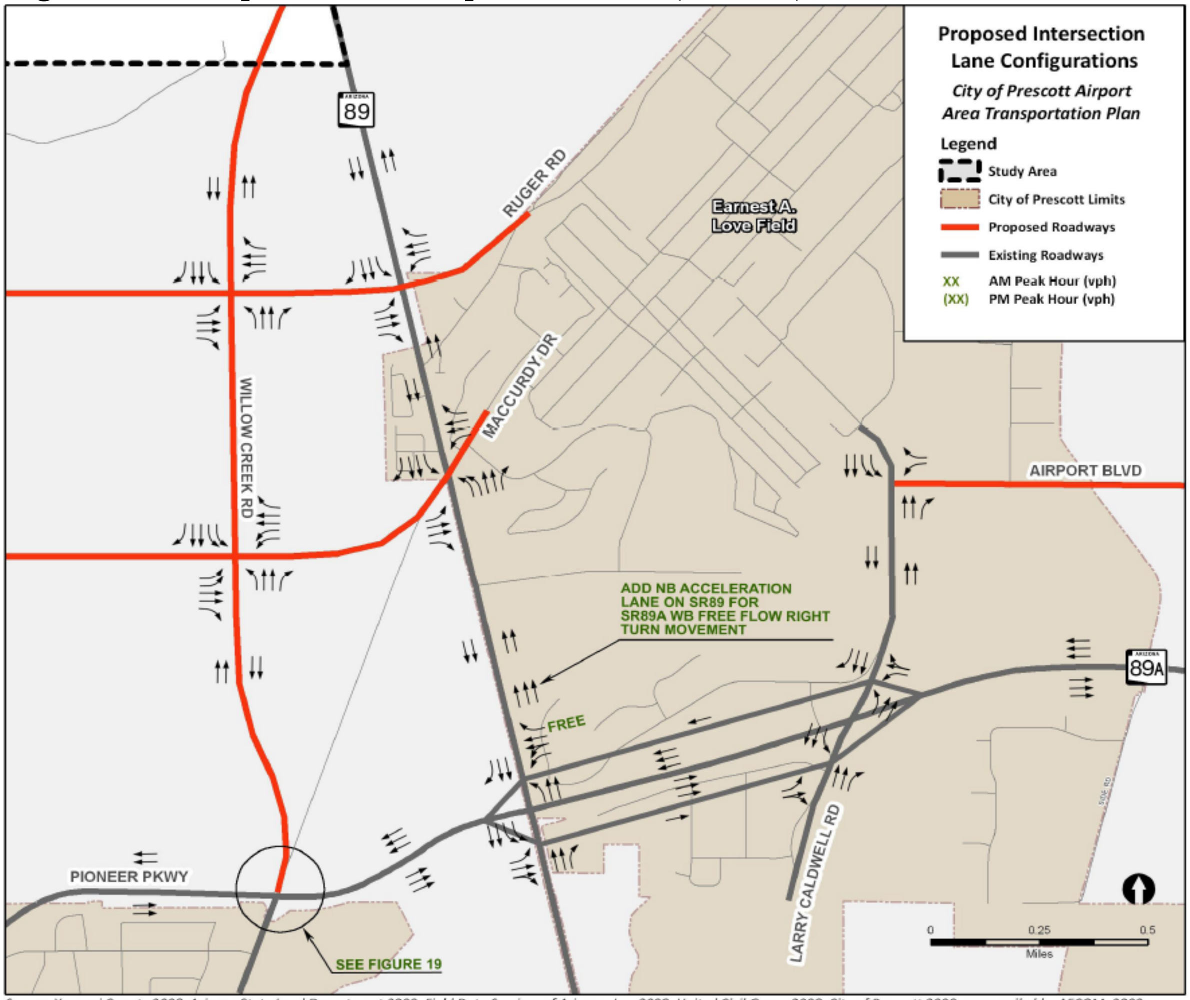
- Widen SR 89A to 6 lanes
- Realign Willow Creek Road north of SR 89A as a four-lane minor arterial
- Widen SR 89 to four lanes between SR 89A and Willow Creek Road
- Widen SR 89 to six lanes north of Willow Creek Road
- Widen Larry Caldwell Drive to four lanes north of SR 89A as adjacent development occurs
- Construct a new high speed limited access facility north-south near the Great Western section line and east-west near the Road 5
- South alignment with free flow connections to SR 89A
- Construct a new east-west minor arterial one mile north of SR 89A between Larry Caldwell Drive and Viewpoint Drive
- Construct a new north-south roadway providing access from Road 5 South to the airport
- Extend Glassford Hill Road north of SR 89A
- Extend Granite Dells Parkway north of SR 89A
- Extend Ruger Road realignment as a four-lane collector roadway west of SR 89 to serve the West Airport GPA area
- Extend MacCurdy Road as a 4-lane collector roadway west of SR 89 to serve the West Airport GPA area

Figure 4.7 – Airport Area Transportation Preferred Plan



Source: April 2009 Draft Final Airport Area Transportation Plan

Figure 4.7a – Airport Area Transportation Plan (Detailed)



Source: Yavapai County 2008, Arizona State Land Department 2008, Field Data Services of Arizona, Inc. 2008, United Civil Group 2008, City of Prescott 2008, as compiled by AECOM, 2009.

Source: April 2009 Draft Final Airport Area Transportation Plan

4.4 Alternatives Evaluation

The final issue to consider prior to alternative development is the creation of evaluation factors for the analysis. For this study, these factors were developed to ensure that the selected alternative was consistent with the role of Prescott Municipal Airport as follows:

- **Airport Utility and Efficiency**: The preferred alternative should provide the maximum possible utility and efficiency. By doing so, the Airport will achieve a key aspect of the airport' role, which is to develop and maintain facilities that meet the needs of its users and surrounding community. The appropriate runway length is a key factor in achieving this goal. Additionally, the overall configuration of the airport should be designed for maximum operational efficiency.

- **Airport and Community Safety**: This criterion is derived from the need to focus on safety for both airport users and local citizens. To accomplish this, the preferred alternative should meet all current FAA design standards, as defined by *AC 150/5300-13*, *Airport Design*; which incorporate the results of years of research conducted by the FAA on aircraft operating characteristics and accidents.

- **Environmental Impacts**: The best alternative will maintain or improve the Airport's effort to be a good neighbor. Thus, the preferred alternative will have minimal negative (and potentially positive) impacts to the community and the environment surrounding the airport. Factors such as potential noise impacts, land use compatibility, and other environmental issues will be broadly considered as part of this criterion. A more detailed environmental assessment will be completed in the next chapter.

- **Estimated Cost**: the relative cost of the alternatives will be a consideration in the evaluation.

4.4.1 Evaluation

To address the airfield need of PRC, several alternatives were presented, and thus an evaluation analysis is prudent in effort to formulate the best and most efficient preferred alternative concept. The following alternatives will be evaluated as listed below and analyzed in Table 4.1:

- No- Build- Status Quo: The No-Build – Status Quo Alternative is a baseline case that is used to compare the existing facilities to the other alternatives. Since no development takes place, there are no changes to the existing facilities and any design standards which currently do not fully conform.

- Airfield Alternatives A, B, and C

- Landside Alternatives 1, 2, and 3

Table 4.1 - Airport Alternatives Evaluation Analysis

Alternatives	Airport Utility & Efficiency	Airport & Community Safety	Environmental Impacts[1]	Cost Estimates (000)
No-Build	No improvement or impacts to utility and/or efficiency	No improvements to the RSAs, missed opportunity on economic benefits	None	$200 (annual pavement maintenance & upkeep)
Airfield Alt. A	Yes	Yes RSA's Improved to standard and **173-acres** of land required for acquisition for RPZ protection as a result of runway extensions	Increased Noise Footprint, Land Use Impacts, and Temporary Construction Impacts	$175,740
Airfield Alt. B	Yes	Yes RSA's Improved to standard and **143-acres** of land required for acquisition for RPZ protection as a result of runway extensions	Increased Noise Footprint, Land Use Impacts, and Temporary Construction Impacts	$173,510
Airfield Alt. C	Yes	Yes RSA's Improved to standard and **122-acres** of land required for acquisition for RPZ protection as a result of runway extensions	Increased Noise Footprint, Land Use Impacts, and Temporary Construction Impacts	$176,000
Alternatives	**Airport Utility & Efficiency**	**Airport & Community Safety**	**Environmental Impacts[1]**	**Cost Estimates (000)**
Landside Alt. 1	Yes	Not Applicable	Potential increase in light emissions.	$74,065
Landside Alt. 2	Yes	Not Applicable	Potential increase in light emissions.	$74,065
Landside Alt. 3	Yes	Not Applicable	Potential increase in light emissions.	$74,065

[1] An environmental overview is provided in Chapter 5. Prior to any development, a biological survey should be conducted to evaluate the types of native vegetation to be disturbed by the proposed development and to determine whether any impacts to the referenced species in Chapter 5 would be anticipated.

4.5 Recommended Development Concept & Summary

This chapter has attempted to outline alternative solutions to the key development issues at PRC. Those key issues involved a runway extension, the location of the commercial terminal facilities, the redevelopment of the general aviation area, and the adequacy of ground access to the landside facilities.

Overall, a combination of Airfield Alternative A and B, along with Landside Alternative 1 appears to be the consensus towards the preferred alternative, with several modifications. **Table 4.2** provides a summary of the preferred alternatives recommendation projects along with an estimated cost, which are also illustrated in **Figure 4.8**:

Table 4.2
Preferred Airport Alternative

Primary Airport Projects	Estimated Cost
1. Provide a 3,365 foot extension to Runway 3R-21L	$13,400,000
2. Provide a 1,354 foot extension to Runway 3L-21R with 15 feet of additional width	$7,320,000
3. Make standard all non-standard RSA for Runway 12-30 and Runway 3L-21R (RSA for Runway 3R-21L is corrected via the runway extension and shift provided in item #1 cost)	$1,370,000
4. Taxiway extensions with 15’ shoulders (Taxiways A, C, D, F, and H)	$26,770,000
5. Highspeed taxiways off Runway 3R-21L	$4,050,000
6. Construct a new combined use commercial terminal building within the existing terminal area footprint	$13,300,000
7. Relocate and construct a new ATCT	$12,300,000
8. Relocate and centralize the ARFF facility	$3,950,000
9. Construct a new Airport Administration/Maintenance facility	$5,570,000
10. Redevelop the existing general aviation areas (aprons and hangars)	$14,380,000
11. Install self-service fueling station	$20,000
12. Acquire land for runway extension and RPZ protection (145 acres)	$10,875,000
13. Acquire land for future east side airport development (138 acres)	$10,350,000
14. Design/construct airport perimeter road (58,470 s.y.)	$3,320,000
15. Install/relocate perimeter fence	$300,000
16. Environmental Assessment	$250,000
17. Provide ground access improvements	To Be Determined
Estimated Total	**$127,525,000**

Based upon these development recommendations, all of the "unconstrained" forecast could be accommodated. In an effort to move forward, preliminary recommended airside and landside concepts have been proposed to the Project Advisory Committee (PAC) and the public. Pending review of the preferred alternative and input from the PAC, as well as the public, the Capital Improvement Plan (Chapter 6) will present a refinement of this basic development concept into a final plan with recommendations and timing for the overall development program.

FUTURE AIRPORT DEVELOPMENT
(≈19 Acres)
Land Acquisition For Runway
Protection Zone (≈5.6 Acres)
(≈1.4 Acres)
300'
150'
Taxiway F
≈ 122,000 SQ. FT.
Perimeter Road
Runway 3L-21R Extension
1,354'
Taxiway A
Perimeter Road
Ult. RWY 3L-21R (6,200'x75')
Taxiway C
Terrain To Be
Graded
66'
Ultimate RWY 3R-21L (10,570'x150')
RWY Extension (3,365'x150')
Taxiway D
Perimeter Road
Taxiway H
≈ 120,000 SQ. FT.
345'
≈ 127,000 SQ. FT.
Surveyed Runway End
REALIGNMENT OF
CLUB HOUSE DR.
FUTURE AIRPORT DEVELOPMENT
(≈19 Acres)
FUTURE AIRPORT DEVELOPMENT
(≈119 Acres)
Land Acquisition For
Runway Protection Zone
(± 138 acres)
(≈1.4 Acres)
NORTH
MAG. NORTH
MAGNETIC VARIANCE – 11°36' E (JUNE 2008)
RATE OF CHANGE: 0.1' W
LEGEND
DESCRIPTION
RUNWAY EXTENSION
TAXIWAY IMPROVEMENTS
RUNWAY/TAXIWAY DEMOLITION
COMMERCIAL TERMINAL
COMMERCIAL TERMINAL APRON
T–HANGAR
CONVENTIONAL HANGAR
ARFF
AIRPORT TRAFFIC CONTROL TOWER
ADMINISTRATION/MAINTENENCE FACILITY
AUTO PARKING
GENERAL AVIATION APRON
LAND ACQUISITION
LAND ACQUISITION FOR RUNWAY PROTECTION ZONE
EXISTING FBO LEASEHOLD AREA
SELF SERVE FUELING
COMMERCIAL AERONAUTICAL USE
ROAD
PROPERTY LINE
BUILDING RESTRICTION LINE
CITY OF PRESCOTT
ARIZONA
Everybody's Hometown
THE CITY OF PRESCOTT
PRESCOTT MUNICIPAL AIRPORT
(ERNEST A. LOVE FIELD)
PRESCOTT, ARIZONA
FIGURE 4.8
DRAFT PREFERRED ALTERNATIVE
2345 E. Thomas Road # 220
Phoenix, AZ 85016
602-234-1124
DATE:
JULY 17, 2009

5.0 Environmental Evaluation

In the last chapter, a preferred airport development plan for the Airport was developed. This plan identified projects for airport improvements to meet anticipated demand throughout the planning period. The elements of the proposed development plan displayed on the Airport Layout Plan (ALP) include the following major projects:

Airside:

- Runway Extensions
- Runway Safety Area Improvements
- Taxiway System Improvements
- General Aviation Redevelopment

Landside:

- Passenger Terminal
- Land Acquisition

5.1 Environmental Evaluation

Any major improvements at the Prescott Municipal Airport require compliance with the National Environmental Policy Act (NEPA) of 1969, Compliance with NEPA is usually satisfied by preparing an Environmental Assessment (EA) or Environmental Impact Statement (EIS). This chapter of the Master Plan is not designed to satisfy NEPA, it provides a preliminary review of environmental factors to be considered in a subsequent environmental analysis such as an EA or EIS. This chapter serves as a compilation of pertinent environmental data relative to the Airport, including physical setting, noise, water resources, ecology, air quality, hazardous materials, and historical and cultural resource categories as defined in FAA Advisory Circular 150/5070-6A, Airport Master Plans, and FAA Order 5050.4B, Airport Environmental Handbook. This Section will review the NEPA environmental categories that would be thoroughly evaluated in an EA or EIS.

5.1.1 Noise Impacts

The Master Plan developed baseline noise contours for the Airport that are presented in Chapter 1 – Baseline Conditions and can be found in Section 1.5.3 and Figure 1.16. A runway extension will modify these noise contours and the follow-on Environmental Analysis should analyze the noise impacts associated with the Phase I projects to be considered for implementation.

In accordance with the compatible land use analysis, the results should look to identify any incompatible land uses in accordance with FAA regulations and guidelines.

5.1.2 Compatible Land Use

The Master Plan process developed a Land Use Plan that is included as an Appendix to this document. The follow-on environmental process should use the information developed in this document to further analyze compatible land use as it relates to the proposed Phase I airport development projects.

This review should also be coordinated with the EA's noise analysis to be used as a guide to determine potential incompatible land uses in the vicinity of the Prescott Municipal Airport.

5.1.3 Social Impacts

The proposed projects will require land acquisition of currently undeveloped property and will not require relocation of homes or businesses, or other associated impacts on the community (any noise impacts are evaluated under that category). Nor will the project adversely or differentially affect any group on the basis of ethnicity or race, income, or age.

Overall the social impacts of the projects are expected to be positive. According to the Master Plan, there will be a Phase I investment of approximately $53.4 million to implement the projects and that will result directly in employment related to design, construction and construction support.

The projects are anticipated to be funded in part with the FAA Airport Improvement Program (AIP) grants. Since the FAA distributes these grant monies based on a number of factors such as the type of project (with safety standards receiving the highest priority) and type of service (commercial, general aviation), it is anticipated that the projects described here will most likely take place over a number of years as funding becomes available. As a result, any perceived construction related impacts will be spread over several years rather then being condensed into one or two construction seasons.

The development on the Airport has no known direct off-airport impacts. In addition, there are no known areas of minority and low-income residents in the Airport vicinity. This should be confirmed during the follow-on environmental analysis, but as stated, the principles of environmental justice are not triggered here.

5.1.4 Induced Socioeconomic Impacts

Induced socioeconomic impacts are those impacts that are generally associated with large airport development projects that cause secondary impacts to the communities surrounding the airport. These impacts include:

- Increases in public service demands;
- Shifts in patterns of population movement and growth; and/or
- Changes in business and economic activity to the extent influenced by airport development.

The proposed projects would not significantly change the operational characteristics of the Airport. As such, these projects will not result in a substantial change in local business and economic activity, or public service demands. Although airport activity is anticipated to naturally grow over the next twenty years, the projects are primarily designed to enhance the safety and operational service limitations of the existing facilities.

Due to the nature of the projects, population movement and growth would not be affected. The proposed projects should have no adverse impact on the local and regional labor and housing markets. There is a sufficient supply of local construction laborers to fulfill the demand for construction employees.

The proposed projects would likely induce positive economic impacts for the surrounding communities. Local suppliers will likely see an increase in services and materials related to diesel and gasoline, hardware, food service, and lodging. The airport, with the proposed projects implemented would likely attract additional users and enhance the communities economic base. The socioeconomic impacts associated with the Master Plan projects are expected to be positive.

5.1.5 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air in Code of Federal Regulations 40, Part 50, as “that portion of the atmosphere, external to buildings, to which the general public has access”. In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Amendments (CAAA), the EPA has promulgated ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has established NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO2), particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), ozone (O3), nitrogen dioxide (NO2), and lead (Pb).

There are two types of standards: primary and secondary. Primary standards are designed to protect sensitive segments of the population from adverse health effects, with an adequate margin of safety, which may result from exposure to criteria pollutants. Secondary standards are designed to protect human health and welfare and, therefore, in some cases, are more stringent than the primary standards. Human welfare is considered to include the natural environment (vegetation) and the manmade environment (physical structures). Areas that are below the standards are in “attainment,” while those that equal or exceed the standards are in “non-attainment.” All of City of Prescott is an attainment area for the 8-hour ozone standard.

The region surrounding PRC is largely rural and agricultural. There are no obvious air pollution emission sources located in proximity to the Airport with non-point air pollution from automobile and airplane exhaust most likely the main source of air pollution emissions in the area. It is not anticipated that these emissions are of a level that warrants concern.

Given that Prescott Municipal Airport is a general aviation airport with more than 180,000 annual general aviation operations through the forecast period, in accordance with FAA Order 5050.4B, Airport Environmental Handbook (Section 47.e.(5)(c)1a), an air quality assessment for long term impacts is required for proposed projects that will increase these passenger and operations numbers.

5.1.6 Water Quality

Potential water quality impacts associated with airport expansion projects include increased surface runoff among others. Implementation of the Phase I airport improvements will increase impervious surfaces at the Airport increasing both the airside and landside stormwater runoff.

Recommendations in *FAA Advisory Circular 150/5370-10 Standards for Specifying Construction of Airports, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control* should be incorporated in project specifications.

Further, surface and underground water around the Airport are part of the Prescott Active Management Areas (AMA). Surface water in the vicinity includes Bottleneck Wash, to the north parallel to Runway 3L-21R, and Granite Creek to the south. Bottleneck Wash is usually a dry wash collecting water runoff from the hills to the north of the Airport, while Granite Creek has a larger role in the drainage of the area and its flow is partially regulated by Goldwater Reservoirs on Bannon Creek and by Willow Creek and Watson Reservoirs. Due to the limited surface water supply, most of its supply is drawn from deep wells into the Big Chino sub-basin of the Verde Basin. According to the Arizona Department of Water Resources and Prescott AMA, groundwater resources are overdrawn and the City of Prescott is actively engaged in water conservation and monitoring to reach a safe yield in water supply. The City of Prescott has proven the physical availability of up to 11,200 acre-feet per year of groundwater withdrawal within the Prescott AMA has the legal right to import up to 14,000 acre-feet per year from the Big Chino sub-basin.

All applicable regulations, requirements, and procedures should be applied including:

- National Pollution Discharge Elimination System (NPDES) General Permit
- Preparation of a Notice of Intent
- Preparation of a Stormwater Pollution Prevention Plan
- Construction Best Management Practices
- Army Corps of Engineers Permits
- Requirements of the Arizona Department of Environmental Quality

5.1.7 Waters of the U.S. and Wetlands

Surface and underground water around the Airport are part of the Prescott Active Management Areas (AMA). Surface water in the vicinity includes Bottleneck Wash, to the north parallel to Runway 3L-21R, and Granite Creek to the south. Bottleneck Wash is usually a dry wash collecting water runoff from the hills to the north of the Airport, while Granite Creek has a larger role in the drainage of the area and its flow is partially regulated by Goldwater Reservoirs on Bannon Creek and by Willow Creek and Watson Reservoirs. Due to the limited surface water supply, most of its supply is drawn from deep wells into the Big Chino sub-basin of the Verde Basin. According to the Arizona Department of Water Resources and Prescott AMA, groundwater resources are overdrawn and the City of Prescott is actively engaged in water conservation and monitoring to reach a safe yield in water supply. The City of Prescott has proven the physical availability of up to 11,200 acre-feet per year of groundwater withdrawal within the Prescott AMA has the legal right to import up to 14,000 acre-feet per year from the Big Chino sub-basin.

Granite Creek is listed as an impaired water for dissolved oxygen. Also data shows there may be future concerns regarding E coli and mercury levels. Any future activities near Granite Creek could not contribute to further any pollutants.

The proposed airport development activity may require a Department of the Army permit issued under Section 404 of the Clean Water Act. A Section 404 permit is required for the discharge of dredged or fill material into the “waters of the United States,” including adjacent wetlands. Examples of activities requiring a permit are placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling of land, constructing wiers or diversion dikes, constructing approach fills, and discharging dredged or fill material as part of any other activity.

Prior to any development activities, the Airport should request a jurisdictional delineation from the Department of the Army Corps of Engineers for the development area including the future proposed airport property. This delineation would identify any waters of the U.S., including wetlands and intermittent streams, under jurisdiction of this agency.

(See Department of the Army agency coordination letter in the Appendix of this Master Plan).

5.1.8 Historic, Architectural, Archaeological, and Cultural Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106), requires the Federal Aviation Administration (FAA) to evaluate potential effects on properties listed or eligible for listing in the National Register of Historic Places (National Register) prior to an undertaking. An undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including, among other things, processes requiring a Federal permit, license, or approval. In this case, the undertaking is the Prescott Municipal Airport Master Plan. Potential effects associated with improvements proposed in this Master Plan may include those resulting from ground disturbance, construction, or subsequent operation of the Airport.

Historic properties are cultural resources listed or eligible for listing in the National Register. Historic properties represent things, structures, places, or archaeological sites that can be either Native American or Euro-American in origin. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources also have to have enough internal contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible.

Section 106 also requires that the FAA seek concurrence with the State Historic Preservation Officer (SHPO) on any finding involving effects or no effects to historic properties, and allow the Advisory Council on Historic Preservation (Council) an opportunity to comment on any finding of effects to historic properties. If Native American properties have been identified, Section 106 also requires that the FAA consult with interested Indian tribes that might attach religious or cultural significance to such properties.

The follow-on environmental analysis of the proposed Phase I improvements should utilize a qualified cultural resources specialist to inspect the project area(s) to determine the presence or absence of cultural resources. (See agency coordination letters in the Appendix of this Master Plan).

5.1.9 DOT 4(f) Lands

PRC is located within an area of mixed commercial, residential and agriculture land use. There are many parks and recreational areas in the City of Prescott. There are no parks within the immediate vicinity of Prescott Municipal Airport with the exception of the golf resort south of the airport property.

5.1.10 Threatened or Endangered Species of Flora and Fauna

The United States Fish and Wildlife Service (USFWS) believes that no endangered or threatened species or critical habitat will be affected by this project; nor is the proposed development likely to jeopardize the continued existence of any proposed species or adversely modify any proposed critical habitat.

The Arizona Game and Fish Department (AGFD) accessed current records and indicates that there is no presence of special status species in the project vicinity (3-mile radius).

The follow-on environmental analysis should further coordinate with USFWS and AGFD regarding the specific plans of the Phase I projects to be environmentally evaluated. (See USFWS and AGFD agency coordination letters in the Appendix of this Master Plan).

5.1.11 Floodplains

According to the Federal Emergency Management Agency (FEMA) flood insurance Rate Maps (2001) for the City of Prescott, the Airport is outside of a mapped floodplain as "Zone A" which is related to Granite Creek.

According to the City of Prescott Land Development Code section 6.6 : "all developments within FEMA-delineated floodplain boundaries shall adhere to the Floodplain Regulations of the Prescott City Code, Title XIII. All drainage shall be designed by an Arizona licensed Professional Engineer following the City of Prescott Drainage Criteria Manual."

All Phase I of the follow-on environmental analysis should consult the information provided in the Yavapai County letter provided in the Appendix of this Master Plan as well as further coordination with the City of Prescott's Floodplain Administrator.

5.1.12 Coastal Zone Management Program

FAA Order 5050.4B requires that Federal actions be consistent with the objectives and purposes of approved State coastal zone management programs, if in effect. Arizona is not is not a costal state and is not subjected to the requirements of Section 6217 of the Coastal Zone Act to develop coastal zone management programs.

5.1.13 Coastal Barriers

The Coastal Barriers Act of 1982 does not apply to Arizona, and to Prescott Municipal Airport.

5.1.14 Wild and Scenic Rivers

The Wild and Scenic Rivers Act (16 U.S.C. 1271 as amended) protects rivers designated for their wild and scenic values from activities which may adversely impact those values. The only designated Wild and Scenic Rivers in Arizona is the Verde River, about 30 miles northeast of Prescott Municipal Airport.

5.1.15 Farmland

Soil types beneath the Airport were mapped by the U.S. Department of Agriculture Soil Conservation Service (now known as the Natural Resources Conservation Service), as described in Section 1.5.4, primary natural soil types at Prescott Municipal Airport are Lonti and Lynx soils.

Farmland is broken into the following categories by the Federal Farmland Protection Policy Act: prime farmland, unique farmland, and land of statewide or local importance. Prime farmland is defined by NRCS as land that has the best combination of physical and chemical characteristics for producing feed, forage, fiber, and oilseed crops, and is also available for these uses. The majority of land on the Airport and within a 2-mile radius of the Airport is not a prime land suitable farmland. The predominant non-hydric soils, on and adjacent to the Airport, are not considered suitable farmland soils. These soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat, and the main hazard is the risk of erosion unless close-growing plant cover is maintained.

The soils on the Airport are not protected under the Federal Farmland Protection Act, and it is not necessary to contact the U.S. Natural Resources Conservation Service (NRCS) for completion of a Farmland Conversion Impact Rating Form. (See NRCA agency coordination letter in the Appendix of this Master Plan).

5.1.16 Energy Supply and Natural Resources

The use of energy to support the proposed projects would largely involve the use of additional fuels in construction and demolition machinery, as well as small increase in energy demand through the use of additional electricity to power runway and taxiway lighting as well as the buildings and hangars proposed. The proposed Airport development projects do not require use of unusual materials in short supply; therefore, energy supplies and natural resources are not significantly affected by the proposed program.

5.1.17 Light Emissions

With the exception of the lighting (edge and approach) to support the runway and taxiway extensions, there are no significant changes to airport lighting associated with the preferred alternative. In the development of the landside projects, special care should be taken to ensure that light emissions do not impact adjacent properties through design specifications, including downward facing lights where appropriate.

The follow-on environmental assessment should review the final location of all lighting associated with Phase I projects.

5.1.18 Solid Waste Impact

Waste disposal during project implementation should be managed separately from normal airport solid waste management operations. The preferred development alternative will not significantly increase long term solid waste volumes; therefore, solid wastes are not expected to be affected by the proposed airport improvement program.

Wastes generated during the proposed projects should be managed on an individual basis. Demolition debris will be managed in accordance with federal, state, and local regulations and opportunities for recycling of these materials should be explored.

5.1.19 Construction Impacts

Potential impacts from construction and demolition equipment and activity may include noise and dust at the project sites and during delivery of equipment through local streets, creation of borrow pits and disposal of spoil, air pollution, and water pollution from erosion. These potential impacts, some of which were addressed in preceding sections on noise, air quality, and water quality, are expected to be short-term and temporary and largely limited to the areas of the project sites (with the exception of equipment transport to the site).

With regard to concerns about air and water quality resulting from the operation of construction equipment, the provisions of *FAA Advisory Circular 150/5370 10 Standards for Specifying Construction of Airports, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control* should be incorporated in project specifications.

5.1.20 Environmental Permitting in Arizona

The Arizona Department of Environmental Quality (ADEQ) Established by the Arizona Legislature in 1986 regulates activities that may affect the State’s natural resources and environment through multiple permitting programs, as well as other environmental policies. The

Federal and local governments also regulate activities that can affect the environment. Some of the permits that may be required for various potential projects as described in an FAA Advisory Circular for airport master planning (FAA, 2005) include:

- Clean Water Act, Section 404 Dredge and Fill Permit;
- Air Quality Permit for on-site batch plants or other construction-related activities;
- Local government construction permits;
- Growth Management Permits;
- United States Fish and Wildlife Service, National Marine Fisheries Service opinions, or State Wildlife and Game Commission permits, if protected and endangered species could be impacted; and
- Clean Water Act, National Pollution Discharge Elimination System Permits.

Many airport-related capital projects require Federal, State, or local environmental permits. A summary of some of the potential permitting requirements is provided here:

Arizona Pollutant Discharge Elimination System (AZPDES) Permit Program. As described in the Arizona Administrative Code at 18 A.A.C. 9, Art 9 all facilities that discharge pollutants from any point source into waters of the United States are required to obtain or seek coverage under an AZPDES permit.

Construction General Permit (AZG2003-001). The CGP authorizes stormwater discharges from large and small construction-related activities where those discharges have a potential to enter surface waters of the United States or a storm drain system. It includes ephemeral washes, intermittent streams, playas, and wetlands. To be covered by the CGP, applicants must submit a Notice of Intent (NOI) to the Stormwater Coordinator at ADEQ.

A Storm Water Pollution Prevention Plan (SWPPP) shall be developed for construction activities covered by the permit. The SWPPP shall identify potential sources of pollutants that may reasonably be expected to affect the quality of storm water discharges associated with the construction activity. In addition, the SWPPP shall describe and ensure the implementation of best management practices to be used to reduce or eliminate the pollutants in the storm water discharge at the site and assure compliance with the terms and conditions of the RIPDES permit. Upon completion of projects completed under the AZPDES permit, the airport's Facility SWPPP for Industrial Activities shall be amended to reflect the changes/alterations resulting from the construction activities.

An Aquifer Protection Permit, or APP, may be required for discharges of pollutants either directly to an aquifer or to the land surface or the vadose zone (the area between an aquifer and the land surface) in such a manner that there is a reasonable probability that the pollutant will reach an aquifer. A.R.S. §§ 49-241 through 49-252, and A.A.C. R18-9-101 through R18-9-403

Class II Permits. Class II permits are issued to sources that do not qualify for Class I permits and that meet the requirements of "A.A.C. Title 18, Chapter 2, Article 302(B)(2)" Such sources include: Sources that have the potential to emit significant quantities of regulated air pollutants as defined in "A.A.C. Title 18, Chapter 2, Article 101(104)(a)". It may be required from the AZPDES division of Air Quality to address temporary siting and emissions from a temporary batch asphalt plant should one be necessary for potential airport projects.

5.2 Airport Noise Abatement Review

In review of the Airport's noise abatement procedures, the existing plan was reviewed. The following information is taken directly from the Airport's website and is provided for context.

"Until recently, the airport was located away from the population centers of Prescott, Prescott Valley and Chino Valley. As the population of the tri-city area continues to grow, moving residential development closer to the airport, the natural buffer zone that once protected the airport is gradually disappearing. Adding to the aviation activity in our area is the weather. The abundance of clear skies in the Arizona area has fostered a worldwide reputation for excellent flying conditions. So the same reason that so many people decide to locate in the tri-city area has brought about a high level of aviation activity.

Much of the traffic comes from flight training activities conducted by Embry-Riddle Aeronautical University and other flight schools. Other activity includes personal aviation, scheduled airline service, corporate & business aviation, and the military. The community benefits of these activities include medical flights, search & rescue flights, law enforcement, fire bomber operations during the summer months, air tours to the Grand Canyon, etc.

The Prescott Municipal Airport is an integral part of the local, regional and national air transportation system providing essential aviation services. Regional population and economic growth are anticipated to increase all segments of aviation at the airport.

In an effort to help minimize the potential impact upon the airport from residential encroachment and to allow for the development of the surrounding areas, the Airport and the City of Prescott initiated an Airport Study Area Plan (ASAP). For further area information you may wish to contact the City's Planning Services office at 928-777-1207 and/or check the Arizona Department of Real Estate website.

For further information relating to the noise abatement policies of the airport, please feel free to contact airport management at 928-777-1114.

Noise Abatement Policies

The procedures described below are designed to minimize aircraft noise disturbance to homes near the Prescott Airport. Your compliance with our noise abatement procedures is extremely important in maintaining goodwill between the airport and the surrounding communities. These procedures as Voluntary - No noise abatement procedure should compromise safety. Please take a few moments to become familiar with the procedures, and keep this sheet in your flight case for future reference. Thank you for your cooperation and support.

Traffic Pattern Altitudes

Small Single-Engine & Multiengine Airplanes
(maximum certificated takeoff weight less than 12,500 lbs.)
1,000 Feet Above Ground Level (AGL) – ALL RUNWAYS
Turbojet & Large Multiengine Airplanes
(maximum certificated takeoff weight over 12,500 lbs.)
1,500 Feet Above Ground Level (AGL) – ALL RUNWAYS

The airport currently has the following noise abatement policies in place:

1. *Runway 21L is designated "calm wind" runway.*
2. *When Runway 21L is in use – Maintain runway heading until crossing Highway 89.*
3. *When Runway 30 is in use – Left traffic for aircraft in closed traffic.*
4. *When Runway 12 is in use – Right traffic for aircraft in closed traffic.*
5. *Departure from Runways 12, 30 and 03R will be discouraged during the following times:*
    - *Monday through Friday prior to 7:00 a.m.*

- *Weekends and holidays prior to 8:00 a.m*

6. *Piston aircraft operators are requested to use AOPA "Noise Awareness Steps"*
7. *Turbine/Jet aircraft operators are requested to use NBAA "Noise Abatement Program" procedures or comparable procedures of aircraft manufacturer.*
8. *Helicopter operators are requested to use HAI "Recommended Noise Abatement Measures"*

Complaints

To register an official aircraft complaint with the airport please call 928-777-1150 and leave the following information:

- *Your name, address and telephone number*
- *The date and time of the occurrence*
- *A brief description of the event including: Nature of complaint (noise, low flying, traffic, safety, etc.); Aircraft type (propeller, jet, helicopter); Aircraft description (color, number of engines, high wing/low wing, etc.); Type of operation (takeoff, landing, overflight, aerobatics, etc.)*
- *Please indicate if you would like a staff member to return your call*

Management staff is available to respond to complaints during normal business hours Monday through Friday, however, Airport Operations staff will investigate complaints received after normal business hours and weekends with airport traffic control tower staff and pass that information to Management for follow-up. Complaints that contain vulgar or threatening language will not be acted upon."

These noise abatement procedures are adequate for the activity levels that are currently experienced at the Airport. In conjunction with the noise impact analysis to be conducted as part of the Environmental Assessment and after implementation of the proposed projects, these procedures should continue to be reviewed and updated on a periodic basis.

5.3 Summary

The basis of this environmental review was to provide input into the required NEPA process through the subsequent planned Environmental Assessment. During this EA process, each NEPA impact category will be thoroughly analyzed to assess all impacts and determine any required mitigation efforts to offset the potential impacts that are identified.

The EA process will also provide an additional opportunity for engaging the input of public interests through coordination, consultation and public information meetings. At a minimum, subsequent environmental analyses and planning should place emphasis on the NEPA impact categories indicated in Table 5-1 with regard to the capital projects identified in this Master Plan. Of course all impact categories must be considered in environmental planning, but the Master Planning process has identified specific categories that may require greater documentation efforts than others.

Table 5-1
Known NEPA Emphasis Required

	Noise Impacts	Compatible Land Use	Social Impacts	Induced Socioeconomic Impacts	Air Quality	Water Quality	Waters of the U.S. and Wetlands	Historic, Architectural, Archaeological, and Cultural Resources	DOT 4(f) Lands	Threatened or Endangered Species of Flora and Fauna	Floodplains	Coastal Zone Management Program	Coastal Barriers	Wild and Scenic Rivers	Farmland	Energy Supply and Natural Resources	Light Emissions	Solid Waste Impact	Construction Impacts	Environmental Permitting in Arizona
Environmental Assessment	x					x	x	x												
Acquire land for runway extension and RPZ protection (145 acres)	x	x						x												
Non-standard RSA corrections for Runway 12-30 and Runway 3L-21R						x	x	x												
Construct a new Commercial Terminal Building within the existing terminal area footprint						x	x													
Relocate and centralize the ARFF facility																				
Runway Extension - 3,365 foot extension to 3R-21L	x	x				x	x	x												
Taxiway Extensions with 15' shoulders (Taxiways A, C, D, F, and H)						x	x	x												
Redevelop the existing general aviation areas (aprons and hangars)																				
Highspeed taxiways off Runway 3R-21L																				
Acquire land for future east side airport development (138 acres)		x						x												
Design/construct airport perimeter road (58,470 s.y.)																				
Install/relocate perimeter fence																				
Construct a new Airport Administration/Maintenance facility																				
Runway Extension - 1,354 foot extension to 3L-21R with 15 feet widening	x	x				x	x	x												
Relocate and construct a new ATCT																				
Install self-service fueling station						x	x													
Provide ground access improvements		x						x												

6.0 Capital Improvement Program

The Capital Improvement Program addresses the phased scheduling of projects identified in this Master Plan and their financial implications on the resources of the Airport and the City of Prescott. The phased Capital Improvement Plan (CIP) presented in this chapter estimates the costs of each project and identifies the potential sources of funding from the Federal Aviation Administration (FAA), the Arizona Department of Transportation (ADOT), and from other sources. The development shown on the Airport Layout Plan (ALP) is demand based and subject to available funding limitations. The CIP will be realistic and essential to airport maintenance and safety, and the longer term developments will be pursued as aviation demand warrants. There is no guarantee of if/when projects will be undertaken.

Final implementation of the recommendations made in this Chapter is subject to appropriate environmental evaluation and final approval by FAA, ADOT, and other regulations.

6.1 Capital Improvement Plan (CIP)

The Capital Improvement Program provides a schedule of development for the proposed projects identified in this master plan. The schedule is based on a twenty year planning period and separated into three phases:

- Phase 1 (2010 – 2015)
- Phase 2 (2016 – 2020)
- Phase 3 (2021 – 2030)

The Phase 1 projects identified in the Master Plan constitutes what is commonly referred to as the Airport Capital Improvement Plan (ACIP) by FAA. The Phase 2 projects are those more appropriately identified for inclusion in the FAA National Plan of Integrated Airport System (NPIAS). The 10-year outlook in the NPIAS report to Congress develops national airport needs on a broader scale. Finally, the last phase of development is a general range of projects for the 10 to 20-year period and obviously much more speculative. Both the Phase 2 and Phase 3 projects provide the Airport and FAA with an outlook of future needs, but as they move into the near term horizon they need to be re-assessed as demand changes or funding sources are better defined.

Order-of-magnitude engineering costs were developed for each of the master plan projects. The FAA will fund eligible projects, as defined under the Airport Improvement Program (AIP). Such projects include pavements, lighting, utilities, airport roadways, and some types of airport vehicles. Projects that are ineligible can include conventional hangars and t-hangars, and facilities run for profit. The projects are usually completed with either the Sponsor's funding or from funds from a private operator such as a Fixed Base Operator (FBO), Aviation Services Operator or local pilot's association.

There are some exceptions to the above. The FAA will partially participate in the development of terminals and Airport Rescue and Fire Fighting (ARFF) facilities. For terminals, the FAA participates only for public areas. Areas that are revenue producing are borne by the Airport.

It should be noted that the CIP is based on the assumption that the Airport's activity will grow consistent with the forecasts derived in this Master Plan, and that the facilities will be developed when required to meet demand. If actual activity does not meet forecast demand, the implementation of the project schedule should be modified as necessary.

The cost estimates associated with the Master Plan projects reflect allowances for Sponsor administration (2%), engineering/design (8% up to 12%), contingencies (15%), and construction management (12%). In addition, project costs will be required to be escalated to account for future inflation in Phase 2 and Phase 3 projects using the United States Consumer Price Index ratio for any given year. On average the CPI inflation has increased by 4 percent annually.

Airport development projects that meet the FAA's discretionary funds eligibility requirements could receive up to 91.06 percent of the project cost from the AIP. **Table 6.1** through **Table 6.3** provides the 20-year ACIP for Prescott Municipal Airport, organized into the following three phases:

- Phase 1 (0 to 5 years)
- Phase 2 (6 to 10 years)
- Phase 3 (11 to 20 years).

6.1.1 Phase 1 Development (2010 – 2015)

Phase 1 development consists of the following capital projects:

1-A: Environmental Assessment (EA)
1-B: Acquire land for runway extensions and RPZ protection (145 acres)
1-C: Non-standard RSA corrections for Runway 12-30 and Runway 3L-21R
1-D: Construct a new Commercial Terminal Building
1-E: Relocate and centralize the ARFF facility
1-F: Runway 3R-21L extension (Phase 1 extension to 9,300 feet)

1-G: Taxiway ‘D’ extension with 15 foot shoulder
1-H: Taxiway ‘C’ extension with 15 foot shoulder
1-I: Taxiway ‘F’ realignment
1-J: General aviation area: 122,000 s.f. apron (bottleneck area)
1-K: General aviation area: 60 T-hangars (includes pads and taxilanes)
1-L: General aviation area: 1 conventional hangar (bottleneck area)
1-M: Install self-service fuel station (bottle neck area)

Table 6.1
Phase 1 (2010 – 2015) Project Cost

Project	Cost	FAA	ADOT	Airport	Other
1-A: EA	$ 250,000	$227,650	$11,175	$11,175	
1-B: Land Acquisition -145 acres total					
-Runway 21L & 21R RPZs (138 acres)	$10,350,000	$9,424,710	$462,645	$462,645	
- Runway 30 RPZ (1.4 acres)	$105,000	$95,613	$4,693	$4,694	
-Runway 12 RPZ (5.6 acres)	$420,000	$383,452	$18,274	$18,274	
1-C: Non-Standard RSAs					
-Runway 12-30 Shift (150 feet) & Add Shoulders	$2,795,000	$2,545,127	$124,936	$124,937	
-Runway 3L RSA Grading	$220,000	$200,332	$9,834	$9,834	
1-D: Commercial Terminal Bldg.	$13,300,000	$9,975,000	$1,189,020	$2,135,980	
1-E: ARFF Facility	$3,950,000	$3,596,870	$353,130	$353,130	
1-F: RWY 3R-21L Partial Extension	$5,595,000	$5,094,807	$250,096	$250,097	
1-G: Taxiway ‘D’ Extension (partial)	$4,129,000	$3,759,868	$184,566	$184,566	
1-H: Taxiway ‘C’ Extension (partial)	$3,654,000	$3,327,332	$163,334	$163,334	
1-I: Taxiway ‘F’ Realignment	$2,647,000	$2,410,358	$118,321	$118,321	
1-J: 122,000 s.f. apron	$1,650,000	$1,502,490	$73,755	$73,755	
1-K: 60 T-hangars	$1,800,000				$1,800,000
1-L: 1 Conventional Hangar	$7,500,000				$7,500,000
1-M: Self service fuel station	$20,000				$20,000
Total – Phase 1:	**$58,385,000**	**$42,543,609**	**$2,963,779**	**$3,910,742**	**$9,320,000**

6.1.2 Phase 2 Development (2016 – 2020)

Phase 2 development consists of the following capital projects:

2-A: Runway 3R-21L extension (Phase 2 to 10,570 feet)
2-B: Taxiway 'C' extension
2-C: Taxiway 'D' extension
2-D: Highspeed taxiways of Runway 3L-21R
2-E: Acquire land for future east side airport development (138 acres)
2-F: Design/construct airport perimeter road (58,470s.y.)
2-G: Install/relocate perimeter fence
2-H: Construct a new Airport Administration/Maintenance facility
2-I: General aviation area: 224,000 s.f. apron (adjacent to Taxiway F extension) rehab
2-J: General aviation area: 36 T-hangars (includes taxilanes) construct
2-K: General aviation area: 1 conventional hangar (bottleneck area) construct

Table 6.2
Phase 2 (2016 – 2020) Project Costs

Project	Cost	FAA	ADOT	Airport	Other
2-A: Runway 3R-21L extension	$7,805,000	$7,107,233	$348,883	$348,884	
2-B: Taxiway C extension	$4,939,000	$4,497,453	$220,773	$220,774	
2-C: Taxiway D extension	$5,581,000	$5,082,058	$249,471	$249,471	
2-D: Highspeed taxiways	$4,050,000	$3,687,930	$181,035	$181,035	
2-E: Acquire land (east side)	$10,350,000	$9,424,710	$462,645	$462,645	
2-F: Airport perimeter road	$3,320,000	$3,023,192	$148,404	$148,404	
2-G: Perimeter fence	$300,000	$273,180	$13,410	$13,410	
2-H: Admin./maintenance facility	$5,570,000	$5,072,042	$248,979	$248,979	
2-I: 224,000 s.f. apron	$2,447,000	$2,228,238	$109,381	$109,381	
2-J: 36 T-hangars	$1,080,000				$1,080,000
2-K: 1 Conventional hangar	$7,500,000				$7,500,000
Total – Phase 2:	**$52,942,000**	**$40,396,036**	**$1,982,981**	**$1,982,983**	**$8,580,000**

6.1.3 Phase 3 Development (2021 – 2030)

Phase 3 development consists of the following capital projects:

3-A: Runway 3L-21R extension/widening (1,354' additional length & 15' add'l width)
3-B: Taxiway 'A' extension
3-C: Taxiway 'H' extension
3-D: Relocate and construct a new Air Traffic Control Tower (ATCT)
3-E: General aviation area: 147,000 s.f. additional (adjacent to Club House Road) construct
3-F: General aviation area: 1 conventional hangar w/apron (adjacent to Embry Riddle) construct
3-G: General aviation area: 48 additional T-hangars (bottleneck area) construct

Table 6.3
Phase 3 (2021 – 2030) Project Costs

Project	Cost	FAA	ADOT	Airport	Other
3-A: Runway 3L-21R extension	$7,260,000	$6,610,956	$324,522	$324,522	
3-B: Taxiway A extension	$3,727,000	$3,393,806	$166,597	$166,597	
3-C: Taxiway H extension	$ 4,188,000	$3,813,592	$187,204	$187,204	
3-D: ATCT construction	$12,332,000	$11,229,519	$551,241	$551,241	
3-E: 247,000 s.f. aprons	$3,216,000	$2,928,489	$143,756	$143,756	
3-F: 1 conventional hangar w/ apron	$4,455,000				$4,455,000
3-G: 48 T-hangars (bottleneck)	$2,400,000				$2,400,000
Total – Phase 3:	**$37,578,000**	**$27,976,362**	**$1,373,320**	**$1,373,320**	**$6,855,000**

6.2 Funding Sources

There are various sources of funding available to airports. Specifically, Prescott Municipal Airport has the following available:

- FAA Airport Improvement Program
  - Entitlement Funds
  - Discretionary Funds
- FAA Facilities and Equipment
- Passenger Facility Charge Program
- Arizona Aviation Fund
- State Airport Loan Program
- Local Funding

FAA Airport Improvement Program – The legislation that currently authorizes the FAA to issue Airport Improvement Program (AIP) grants for airport eligible projects expired September 30, 2007. The FAA has been operating on continuing resolutions since 2007 and the FAA reauthorization legislation is currently being debated in Congress and it is too speculative to determine the outcome of the new legislation that will ultimately be passed by Congress and approved by the President. For the purpose of this Chapter it is assumed that the existing AIP requirements and funding sources will continue.

AIP monies are distributed to airports in two ways: in the form of entitlements (based upon actual levels of passenger enplanements), and through discretionary grants. The City is currently eligible for both discretionary and entitlement grants and it is anticipated that will continue throughout the planning period. In Arizona, airport development projects that meet the FAA's discretionary funds eligibility requirements, could receive up to 91.06 percent of the project cost from the AIP.

- **AIP Entitlement Funds –** The AIP provides entitlement grants for eligible commercial and general aviation airports. Funding for commercial service airports is based on a formula using the airport’s passenger enplanements reported two calendar years prior to the current grant year. Specifically, commercial service airports are given entitlement funding based on a graduated method developed by the FAA that equates to a lower per enplanement entitlement for an airport as the total enplanement level increases. This process is used to offset funding disparity, to the extent possible, resulting from the vastly different levels of enplanements that occur at US airports, from less than 10,000 enplanements per year at small airports, such as Prescott, to tens of millions of enplanements at major hub airports. AIP provides eligible primary commercial service airports (those with at least 10,000 annual enplanements) with a minimum amount of $1,000,000 per year.

The FAA evaluates airport grant requests using a published priority ranking system that is weighted toward safety, airfield pavement and airfield capacity projects, although other non-airfield projects such as terminal buildings and main access/entrance roads, are also eligible. Within the entitlement amount granted, up to 95% (as opposed to the up to 91.06% associated with the Discretionary program below) of eligible project costs are funded, with the remaining 5% provided from other non-Federal, local airport sources. Prescott Municipal Airport will be eligible to receive AIP commercial service entitlement grants if commercial passenger service is sustained.

- **AIP Discretionary Funds –** Additional funds from the discretionary apportionments under the AIP are desirable. The primary feature of AIP discretionary funds that must be recognized is that these funds are distributed on a priority basis. These priorities are established on a national basis following criteria established by the FAA. Since the AIP program funds up to 91.06 percent of eligible projects, it is essential to most public airport development programs. As a result, the airport will be competing with other airports in Arizona, the FAA Western Pacific Region, as well as the remainder of the country for discretionary funds. Whereas entitlement monies are guaranteed on an annual basis, discretionary funds are not assured.

- **FAA Facilities and Equipment –** Within the FAA's budget appropriation, funding is available in the Facilities and Equipment (F&E) Fund to purchase navigational aids and air safety-related technical equipment for use at commercial service airports in the national airport system. F&E funds are provided on a discretionary basis by the FAA.

- **Passenger Facility Charges –** The Passenger Facility Charge (PFC) Program allows the collection of PFC fees up to $4.50 for every enplaned passenger at commercial airports controlled by public agencies. Airports use these fees to fund FAA-approved projects that enhance safety, security, or capacity; reduce noise; or increase air carrier competition. If this program is implemented at an Airport, the FAA provides a formula that reduces the AIP entitlement funding.

- **Arizona Aviation Fund** – Another source of funds available for airports in the State of Arizona 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. These funds have the dual objective of maximizing the effective use of the Fund's dollars for Arizona airport improvements, while attracting maximum federal AIP funds.

  The Transportation Policy Board establishes the policies for distribution of these State dollars. Projects are considered within the priorities established for each of four airport categories: Commercial Service and Reliever Airports, airports in the Primary system, airports in the Secondary system and special projects. Prescott Municipal Airport is currently considered a Commercial Service facility. The City can obtain one half (up to 4.47 percent) of the local share from the aviation fund for eligible federal AIP projects or 90 percent on state-local projects. Given the current state of the economy and the Arizona state budget shortfalls, the future of this program is unknown. Recent state activity swept monies for this program into the general fund.

  State Airport Loan Program – The Arizona Department of Transportation - Aeronautics Division (ADOT) has an Airport Loan Program. This program establishes the enhancement and utilization of the State funds. It is designed to be a flexible funding mechanism to assist eligible airport projects. Eligible airport related projects include runways, taxiways, aircraft parking aprons, hangars, fuel storage facilities, terminal buildings, utility services, land acquisition, planning studies, and preparation of plans and specifications for airport construction projects. Some projects, which are not currently eligible for state funding, would be considered under the loan program if the project would enhance the airport's ability to be self-sufficient. Given the current state of the economy and the Arizona state budget shortfalls, the future of this program is also unknown.

  There are three ways in which the loan funds can be used: Grant Advance, Matching Funds, or Revenue Generating Projects.

  - **Grant Advance**: these funds are provided when the airport can demonstrate the ability to accelerate the development and construction of a multi phase project. The project(s) must be compatible with the Airport Master Plan and included in the ADOT 5-year Airport Development Program.

  - **Matching Funds**: these funds are provided to meet the local matching fund requirement for securing federal airport improvement grants or other federal or state grants.

  - **Revenue Generating**: these funds are provided for airport related construction projects that are not eligible for funding under another program. Although the Loan Program is an option for receiving funding, the availability of funds through this program is subject to the aviation revenue generated in the State.

- **Local Funding –** The City will need to consider other sources of funding for obtaining the local share of its capital improvement projects. In addition to the revenues derived from airport operations, several other methods are available for financing the local share of airport development costs. The more common methods involve debt financing which amortize the debt over the useful life of the project or a specified period. Methods of financing available to the City are discussed below.

  - **Third Party Financing:** Many airports use private, third-party financing for planned, revenue producing improvements that will be primarily used by private business or other organizations. Such projects are not ordinarily eligible for federal funding, although limited elements could be (i.e. taxiways, aprons, etc.). Projects of this kind typically include aircraft hangars, FBO facilities, fuel storage, air cargo facilities, exclusive aircraft parking aprons, industrial development areas, non-aviation commercial areas, and various other revenue producing projects.

  - **Revenue Bonds**: Revenue Bonds are retired solely from the revenue of a particular project or from the operating income of the issuing agency, such as the City. Generally, they fall outside statutory limitations on public indebtedness and, in many cases, do not require voter approval. Because of the limitations on other public bonds, airport sponsors are increasingly turning to revenue bonds whenever possible. Revenue Bonds, however, normally carry a higher rate of interest because they lack the security of tax supported General Obligation (GO) bonds issued by other government bodies. Revenue Bonds are more suited to airports that have sufficient cash flow and income to retire the debt in a reasonable time period.

- **Airport Operating Fund:** It is assumed that airport revenues over and above that utilized to cover airport operating and maintenance expenses will be the primary source of the "local" capital improvement dollars. **Table 6.4** presents the summary of the cash flow analysis for the airport through the planning period. The intent of the cash flow analysis is to examine the airport's financial structure and the ability of the Airport Fund to contribute to future airport capital needs.

Table 6.4
Airport Cash Flow Analysis

	Actual Fiscal Year 2009	Budget Fiscal Year 2010	Annual Averages Fiscal Years 2011-2015	Annual Averages Fiscal Years 2016-2020	Annual Averages Fiscal Years 2021-2030
Revenues	$ 1,313,240	$ 1,502,347	$ 1,580,621	$ 1,781,724	$ 2,120,807
Expenses	$ 1,487,332	$ 1,501,898	$ 1,566,829	$ 1,766,431	$ 2,083,026
Income (Loss)	$ (174,092)	$ 449	$ 13,792	$ 15,293	$ 37,781

Source: Data from the City of Prescott; Projections calculated by the Airport and The Louis Berger Group.

The information presented in Table 6.4 above is not intended to provide a detailed analysis or business plan for the Airport. Information was obtained from the most recent fiscal year as well as the Airport's projected five year budget to determine expected revenues and expenses of the Airport. There are various items that can change an Airport's revenue stream like new development/leases, as well as unexpected expenses as buildings age, such as the terminal building. A Master Plan provides a snapshot in time.

This table presents the annual average of expected revenues and expenses considering a conservative approach to both, utilizing average annual growth rates of less than 3 percent.

6.3 Summary and Implementation

A list of capital improvement projects has been assembled from the facility requirements documentation previously presented in Chapter 3. The project list must be coordinated with the Airport Layout Plan (ALP) drawing set and the Capital Improvement Program (CIP) that is continuously updated by PRC Airport Management, ADOT, and the FAA.

The total Capital Improvement Program for Prescott Municipal Airport, as discussed in this Master Plan, is approximately $146 million. With such a large program, the planning process requires the City of Prescott to consistently monitor the progress of the airport in terms of total enplanements, total aircraft operations, total based aircraft, and overall aviation activity. Analysis of aircraft demand is critical to the exact timing and need for new airport facilities. The information obtained from this continuous monitoring process will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

APPENDIX 2

Runway Length Analysis
Prescott Municipal Airport

May 11, 2009
Version 2 (draft)

Table of Contents

INTRODUCTION

In addition to examining airside facility requirements as part of the Facility Requirement section of the current Master Plan Update, Berger has developed this technical White Paper to address the Purpose and Need for the Prescott Municipal Airport (PRC) proposed Runway 3R-21L extension. The following Runway Length Analysis was prepared to determine the runway length requirement for the regional air carrier passenger service, United States Forest Service Firefighting aircraft operations and general aviation for Runway 3R-21L at PRC.

The proposed Runway 3R-21L extension was initially planned in the 1997 Airport Master Plan. In addition to the current airfield characteristics, design standards, current and future operational and safety requirements, Berger has examined all the information gathered from the previous Master Plan, the Draft Environmental Assessment (EA) for the proposed runway extension, and the Prescott Municipal Airport *Runway Safety Area Standards Evaluation (2005)*.

PRC is a Class I, Federal Aviation Regulation (FAR) Part 139 certified airport assisted by federal airport improvement grants. Under FAA Order 5190.6A, *Airport Compliance Requirements* it is required that the airport is safely and properly maintained and operated in a manner which protects the public interests and as stated in Order 5190.6A paragraph 4-17j "any facility developed with grants funds must be constructed to the then current applicable FAA design standards". Therefore all applicable requirements and directives reported in the following documents have been applied on the Runway 3R-21L length analysis:

- FAA Advisory Circular 150/5325-4B - Runway Length Requirements for Airport Design;
- FAA AC 150/5300-13
- FAA Order 5090.3C - Field Formulation of the National Plan of Integrated Airport Systems (NPIAS); and
- Aircraft manufacturer's characteristics manuals and charts.

SECTION 1 – PURPOSE & NEED

Runway 3R-21L is PRC's primary runway. The runway is surfaced with asphalt, and is 7,616 feet long and 150 feet wide. The primary purpose of the Runway 3R-21L improvements identified in this Runway Length Analysis is to provide a safe operating environment for the range of aircraft that regularly utilize PRC, and to those that are expected to use the airport in the future.

The Forecast in the current Master Plan Update (2009) indicates that the PRC Airport Service Area (ASA) can support the demand for additional air service to new markets. The PRC Passenger Leakage Study and the new Arizona State Airports System Plan (SASP) have anticipated a robust potential demand of air service to other markets mostly due to the rapid population growth in the airport ASA. Various populations' forecast suggests that this growth will continue over the next 20 years.

Historically, PRC has not been served by regional jets due to its runway length limitations. In turn, this has effectively stunted the airport's marketing and air service development efforts. As the more modern regional jets (RJs) enter the market to replace older equipment, PRC will need to provide additional runway length to provide adequate air service to its community. Additionally, the runway extension is needed because PRC, a Commercial Service Airport in the NPIAS, is only able to accommodate less than 75 percent of the large aircraft fleet (more than 60,000 lbs) at 60 percent useful load, while a reliever airport for other commercial service airports should be able to accommodate 75% of large aircraft at 90% useful load.

Furthermore, safety concerns have been voiced with regards to the operations of the U.S. Forest Service (USFS). During the fire season, which spans through the hottest months in Arizona, the USFS utilizes the Lockheed P-3 Orion and Lockheed C-130. A longer runway will provide for the additional pavement necessary in case of an aborted take-off.

SECTION 2 – DESIGN STANDARDS

Guidelines for airport design standards are set forth in the FAA's Advisory Circular (AC) 150/5300-13, *Airport Design*. Each airport can be classified based upon the aircraft which it is designed to serve using the Airport Reference Code (ARC). The ARC is established by two separate factors: Approach Category (which group aircraft based on approach speed) and Design Group (which group aircraft based on wingspan).

Aircraft approach categories are defined 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; and
- Category E: Speed 166 knots or more.

Airplane design groups are defined as follows:

- Group I: Up to but not including 49 feet (with a subcategory for small aircraft);
- Group II: 49 feet or more, but less than 79 feet;
- Group III: 79 feet or more, but less than 118 feet;
- Group IV: 118 feet or more, but less than 171 feet;
- Group V: 171 feet or more, but less than 214 feet; and
- Group VI: 214 feet or more, but less than 262 feet.

PRC'S Runway 3R-21L is currently designated as C-III.

SECTION 3 - METHODOLOGY & ASSUMPTIONS

To determine the required runway length for PRC's primary runway the procedure detailed in FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides guidelines for airport designers and planners to determine recommended runway lengths for new runways or extensions to existing runways. This AC makes the following recommendations: "*When the Max Take-Off Weight (MTOW) of listed aircraft is over 60,000 pounds, the recommended runway length is determined according to individual aircraft. The design objective for the main primary runway is to determine a recommended runway length that serves all aircraft without operational weight restrictions. The design objective for the length of crosswind runways for scheduled transport service is to equal 100% of the primary runway.*"

With regards to airport dimensional standards, FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, states that "*Airport dimensional standards (such as runway length and width, separation standards, surface gradients, etc.) should be selected which are appropriate for the critical aircraft that will make substantial use of the airport in the planning period. Substantial use means either 500 or more annual itinerant operations, or scheduled commercial service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft.*"

The other factors to be considered include critical aircraft approach speed, maximum certificated takeoff weight, useful load and length of haul, the airport's field elevation above mean sea level (MSL), density altitude, the mean daily maximum temperature at the airfield, and typical runway surface conditions, such as wet and slippery.

The required departure runway length can be defined as the longest of the following three distances:

- ✈ Accelerate-Takeoff Distance—The total distance needed for the aircraft to accelerate to the critical takeoff speed (V1), takeoff, and climb to an altitude of 35 feet above the ground, with one engine failing when the aircraft reaches V1;

- ✈ Accelerate-Stop Distance - The distance needed for the aircraft to accelerate to V1 and then brake to a full stop; and
- ✈ All-Engine Takeoff Distance - 115 percent of the distance needed for the aircraft to accelerate to V1, takeoff, and climb to an altitude of 35 feet above the ground with all engines operating normally.

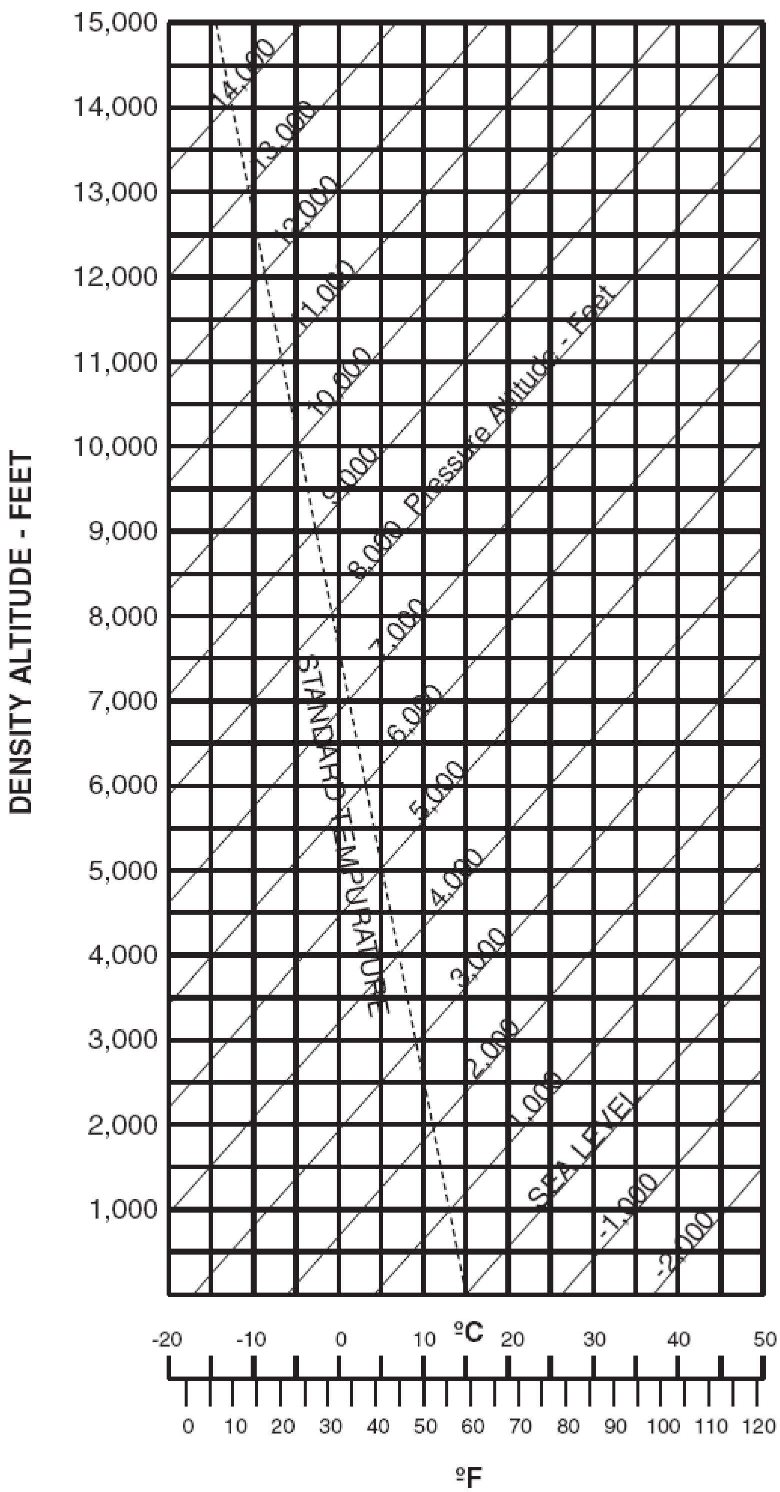
Based on these definitions, it can be noted that as the critical takeoff speed is increased, the accelerate-takeoff distance decreases while the accelerate-stop distance increases. The methodology described in FAA AC 150/5325-4A provides for the "balanced field length" runway design, or the runway length at which the tradeoff between the reduced accelerate-takeoff distances approximately equals the increased accelerate-stop distance.

PCR primary Runway 3R-21L is at 5,045' MSL. Therefore, density altitude was factored in the determination of the runway length. Density altitude is pressure altitude corrected for nonstandard temperature and at which the density of the International Standard Atmosphere (ISA) is the same as the density of the air being evaluated. The temperature at ISA is 15°C (or 59°F). Typically increased density altitude, during period of high temperature, decreases operational performances of both propeller and jet engine aircrafts. Such loss in performance requires longer takeoff distances and faster ground speeds during landings, in turn resulting in longer runway length requirements.

At PRC, the average maximum daily temperature in the hottest month of July is 90°F. As shown in Figure 1 the density altitude for PRC at 90°F is approximately 8,000 feet. Wind speed was assumed to be zero. The flap setting configuration was assumed to be optimal. The runway gradient was assumed to be the same of the existing runway condition at 0.96%. The procedure assumes that there are no obstructions that would preclude the use of the full length of the runway.

Figure 1:

Density Altitude Chart



Altimeter Setting ("Hg)	Pressure Altitude Conversion Factor
28.0	1,824
28.1	1,727
28.2	1,630
28.3	1,533
28.4	1,436
28.5	1,340
28.6	1,244
28.7	1,148
28.8	1,053
28.9	957
29.0	863
29.1	768
29.2	673
29.3	579
29.4	485
29.5	392
29.6	298
29.7	205
29.8	112
29.9	20
29.92	0
30.0	-73
30.1	-165
30.2	-257
30.3	-348
30.4	-440
30.5	-531
30.6	-622
30.7	-712
30.8	-803
30.9	-893
31.0	-983

SECTION 4 – PRC RUNWAY LENGTH DETERMINATION

Following FAA guidelines in AC150/5325-4B, a five step procedure was used to determine the recommended length for the critical design airplane.

Step #1: Identify the Critical Design Aircraft or Category

The 2007 operations data shows that the majority of the fleet operating at PRC fell within Category A and B, with forecasts showing that this will be maintained in the future. Aircraft in these categories varies from Group I to Group III. Additionally more than 1% of the total operation was attributed to aircraft in the C category, from Group I to Group III. At present, the Q-400 (a C-III aircraft) has been introduced to the PRC fleet mix, and is expected to conduct more than 1,400 operations per year. While the B-1900, a B-III aircraft, continues to conduct thousands of operations at PRC. Additionally, at PRC the USFS Prescott Fire Center and Henry Y. H. Kim Aviation Facility continue to operate large aircraft tankers during the fire season, such as the P-3 Orin and C-130. Although, the number of operations conducted by the USFS fleet is not sufficient to be considered the critical aircraft (i.e., 500 annual operations or more), their presence supports the need to continue to plan and maintain PRC as ARC C-III.

The 1997 Master Plan had identified the Boeing 737, a C-III aircraft, as the Design Aircraft for PRC. As part the planning process, this aircraft was re-evaluated to determine if possibly another aircraft more accurately depicts the design standard requirement at the airport. While it is clear that PRC should continue to be an ARC C-III facility, it is important to identify the critical aircraft that reflects the true aviation planning need of PRC.

The commercial forecast for the PRC market identified that the RJ utilization will be introduced and continue to grow in relation to the high growth of the population in the Prescott Metropolitan Service Area (MSA). Additionally, seating capacity and range of the commercial flight service offered at PRC will increase.

Based upon the expectation that the B-1900 is soon expected to be replaced by more reliable and efficient aircraft in addition to current increasing trends in the regional carrier market, it is anticipated that RJ will play a bigger role in PRC's future (specifically in the 40-70 seat capacity segment). In the Western Region, the RJs predominantly used in this category are the CRJ-200 and CRJ-700, which are currently operated by Mesa Airlines, SkyWest, Delta Connections, Northwest Airlines, Midwest Connect, ASA, Horizon Air and others. Table 1 illustrates a few examples of the type of aircraft that are expected to operate at PRC in the future.

Table 1 - Sample of Future PRC Design Aircraft

Example	Aircraft Type	ARC
	Q-400 Wingspan:92.25 ft MTOW: 64,500 lbs Approach Speed: 125 knot	B-III
	CRJ-200 Wingspan:76.3 ft MTOW: 47,450 lbs Approach Speed: 130 knot	C-II
	CRJ-700 Wingspan:85.04 ft MTOW: 71,750 lbs Approach Speed: 140 knot	C-III
	ERJ-145 Wingspan: 65.9 ft MTOW: 48,400 lbs Approach Speed: 110 knot	C-II

Step #2: Identify the Aircraft That Will Require the Longest Runway Lengths at Maximum Certificated Takeoff Weight.

Typically, the standard FAA process is to break down the potential range of aircraft design identified in Step #1 into relevant weight groups or categories:

1) MTOW of 12,500 pounds or less;
2) MTOW Over 12,500 pounds, but less than 60,000 pounds;
3) MTOW of 60,000 pounds or Regional Jets.

Regional Jets, regardless of their MTOW, are assigned to the 60,000 pound or more weight category. Although a number of RJs have a MTOW less than 60,000 pounds (27,200 kg), the exception acknowledges the long range capability of the RJs and the necessity to offer these operators the flexibility to interchange RJ models according to passenger demand without suffering operating weight restrictions. When the MTOW of listed aircraft is over 60,000 pounds (27,200 kg), the recommended runway length is determined according to the individual aircraft. Therefore, given that the majority of the aircraft indentified in Step #1 are RJs, the recommended runway length for PRC will be determined according to individual aircraft.

Step #3: Determine the Method That Will be Used for Establishing the Recommended Runway Length

Based upon the information contained in Step #2, the standard FAA design approach for RJs and those aircraft with a MTOW of more than 60,000 pounds (27,200 kg) was used. Therefore, PRC Runway 3R-21L calculations are based upon:

1. The performance charts published by airplane manufacturers (i.e., Airport Planning Manuals); or
2. By contacting the airplane manufacturer; and/or
3. By contacting the air carriers for the information.

Both takeoff and landing runway length requirements were determined with applicable length-adjustments in order to determine the recommended runway length. The longest of the takeoff and landing runway length requirements for the critical design aircraft under evaluation then becomes the recommended runway length.

The first two options and the FAA Airport Design Computer Program 4.2D were used to calculate the Runway 3R-21L length requirement for planning purposes. The program includes an aircraft fleet profile designed to be representative of the small and large aircraft that comprise the general aviation aircraft fleet in the United States. The results are summarized in Table 2 and Table 3.

Table 2 presents the required runway lengths for PRC based upon the FAA Airport Design Computer Program 4.2D.

Table 2 - PRC Runway Length Analysis

Airport Input Data	
Airport Elevation (MSL)	5,045’
Mean daily temperature of the hottest month	90°
Maximum difference in runway centerline elevation	62’
Runway Length Recommended for Airport Design	
Small airplanes with approach speeds of less than 30 knots	450’
Small airplanes with approach speeds of less than 50 knots	1,200’
Small airplanes with less than 10 passenger seats:	
75 percent of these small airplanes...	4,640’
95 percent of these small airplanes...	6,240’
100 percent of these small airplanes...	6,410’
Small airplanes with 10 or more passenger seats	6,410’
Large airplanes of 60,000 pounds or less:	
75 percent of these large airplanes at 60 percent useful load	7,300’
75 percent of these large airplanes at 90 percent useful load	9,220’
100 percent of these large airplanes at 60 percent useful load	11,400’
100 percent of these large airplanes at 90 percent useful load	11,620’
Source: FAA Airport Design Computer Program 4.2D and FAA AC 150/5300-1.	

In addition to the FAA Program, the Airport Planning Manual for the CRJ-200, CRJ-700 and ERJ-145 was obtained. Additionally, the manufacturer Bombardier Inc. was contacted to validate the initial calculation and to use their simulation programs to run performance scenarios based on PRC environmental conditions. The results are summarized in Table 3.

Table 3 - Operational Characteristics

Aircraft Type and Engine	MTOW	Runway Length	Max Range at Max Payload
CRJ 200	47,450 lbs	8,700 feet	550 nm
CRJ 700 (CF34-8C1)	71,750 lbs	9,950 feet	1,434 nm
ERJ 145 (A1/1)	48,400 lbs	8,200 feet	900 nm

Step #4: Select the Recommended Runway Length

The recommended runway length is selected by reviewing the operational characteristics identified in Step #3. FAA AC150/5325-4B established that the longest runway length required at MTOW should become the recommended runway length. As shown in Table 3, at MTOW, the CRJ-700 requires a runway length of 9,950 feet at hot and dry conditions.

Step #5: Apply Any Necessary Adjustment to the Obtained Runway Length

The final step provides for adjustment to the obtained runway length based upon local circumstances. This includes any adjustments due to centerline elevation differences. FAA AC 150/5325-4B recommends increasing the runway length an additional 10 feet for each foot of centerline elevation difference. By maintaining the current runway gradient of 0.96%, the runway will have a difference of 62 feet in centerline elevation. Therefore, an additional 620 feet should be added to the length identified in Step #4 totaling a runway length of 10,570 feet.

SECTION 5 – SUMMARY & CONCLUSIONS

Based on the five step runway length analysis, the operationally preferred runway length for Runway 3R-21L is 10,570 feet. This result will be incorporated in the Facility & Standards Analysis and in the Alternative Analysis with regards to airfield improvement and land acquisitions.

It should be noted that the EA for the proposed runway extension will determine if such an extension will result in adverse impact to the natural and social resources surrounding the airport. The EA will determine whether it will be necessary to adjust the proposed length with respect to the Purpose and Need of the proposed improvement.

APPENDIX 3

Land Use Plan
Prescott Municipal Airport

INTRODUCTION

The primary objective of the Airport Land Use Plan is to provide a review of the current land use and to develop guidelines for the future land use at and surrounding Prescott Municipal Airport (PRC). The guidelines are formulated in agreement with the need of maintaining the viability of PRC (a.k.a., Earnest A. Love Field), Federal Aviation Administration (FAA) guidelines, industry standards with regards to noise and safety and same land use planning's goals and objectives stipulated in the Prescott General Plan and Airport Specific Area Plan (ASAP).

This document is intended as a tool to assist City Officials and Airport Management in the evaluation and creation of adequate and compatible airport land uses, which will guarantee the future viability of PRC and foster the economic development of nearby communities. This document supplements, but does not replace the current ASAP.

As a tool to determine the appropriate land use around the airport, the use of specific Airport Impact Zones is introduced. The Airport Impact Zones (AIZ) are widely adopted and recommended by the FAA to protect airports from encroaching non-compatible land uses.

Furthermore, specific focus is given to the parcels identified in the ASAP as "Ranching Holding Designation" west of the airport. For those parcel, this plan indicates a variety of compatible land uses that gives the adjacent land owner the opportunity to develop their lands according to market demands and economic value.

The following criterion was used as guidelines during the preparation of this Airport Land Use Plan:

- ✈ Minimize the number of people exposed to frequent and/or high levels of airport noise or high cumulative noise levels of which airport noise is one component by identifying typical land uses that are particularly sensitive to noise;

- ✈ Preserve the airport airspace to minimize the risk of potential aircraft accidents in the vicinity of the Airport by avoiding the development of land uses and land use conditions, which pose hazards to aircraft in flight;

- ✈ Provide sufficient information to prospective airport area land users on the activity at the Airport with its associated noise and safety impacts allowing them to make an informed decision as to whether or not they wish to live and/or work in the Airport area; and

- ✈ Adhere to the goals and objectives stipulated in the Prescott General Plan and Airport Specific Area Plan (ASAP) and follow FAA land use requirements and guidelines.

The study is based on the review of relevant planning and zoning documents including:

- ✈ City of Prescott General Plan ;
- ✈ Airport Specific Area Plan (ASAP);

- ✈ City of Prescott land use and zoning ordinances;
- ✈ Airport noise contours maps;
- ✈ FAA Airport Land Use Compatibility Guide;
- ✈ FAA 14 CFR Part 150;
- ✈ FAA Advisory Circular 150/5020-1
- ✈ California Airport Land Use Planning Handbook;
- ✈ Washington state Airport Land Use Compatibility Guidebook; and
- ✈ Related other FAA Advisory Circulars.

The following Land Use Plan is organized in the following sections:

Section 1 Coverage Area;
Section 2 Definition of Sensitive Land Uses;
Section 3 Inventory of Existing Condition;
Section 4 Airport Safety Impact Zones;
Section 5 Airport Impact Zones Impact on Future Development; and
Section 6 Ranching (Holding Designation) Parcels.

SECTION 1 COVERAGE AREA

Geographic Coverage

The Airport Land Use Plan encompasses a geographic area defined by a combination of factors that include the ultimate runway layout, as per the 1997 Airport Master Plan, as well as the application of Airport Impact Zones and by current noise contours. The Airport Land Use Impact Zones Boundaries encompasses approximately 17 square miles.

Noise contours are determined by using the Federal Aviation Administration's (FAA) Integrated Noise Model (INM). This land use plan has defined the 65 dB Community Noise Equivalent Level (CNEL), at the capacity of the airfield, as a noise standard; however, do to the rural nature of the area the 55 db CNEL is also shown for information purposes. CNEL measurements are a weighted average of sound levels gathered throughout a 24-hour period. This is essentially a measure of ambient noise. Different weighting factors apply to day, evening, and nighttime periods. This recognizes that community members are most sensitive to noise in late night hours and are more sensitive during evening hours than in daytime hours. CNEL depends not only on the noise level of individual approaches, but also on the number of approaches during the measurement period.

Airport Setting

Prescott Municipal Airport (PRC) is situated on approximately 760 acres and located in the West-Central Region of Arizona in Yavapai County, Sections 24 and 25, Township 15 North, Range 2 West, and Section 19, Township 15 North, Range 1 West.

Highway 89 is adjacent to and west of the airport property, and approximately 2,300 feet from the threshold of Runway 3R-21L; and Highway 89A is directly south of Runway 12-30.

In 2007, PRC recorded 231,285 operations on three active runways, two of which are parallel runways, Runway 3L-21R and Runway 3R-21L. The other is a crosswind runway, Runway 12-30 (see Table 1.9: Summary of Runway Characteristics of 2008 Airport Master Plan).

City of Prescott General Plan, Airport Specific Area Plan and Zoning Ordinances

PRC and the surrounding area are identified in the General Plan as an economic engine for the City of Prescott and the region. To assure the protection of the Airport's economic vitality, the City adopted the Airport Specific Area Plan (ASAP). The ASAP focuses on the land use in a planning area approximately 50 square-miles around the Airport, and is mostly undeveloped and devoted to cattle ranching. According to the General Plan, the Town of Prescott Valley and Yavapai County have each voluntarily accepted ASAP as the basis of their future land use decisions for lands near the Airport, but within their jurisdictions and planning areas. The ASAP provides specific land use and zoning guidance. Additionally, it identifies issues caused by existing and planned developments and the potential issues that may rise when the designation of the lands to the west of the Airport will change from the current "*Ranching*" designation.

Furthermore, boundary agreements between the City of Prescott and the Town of Prescott Valley and the Town of Chino Valley have set the stage for a large annexation, encompassing approximately 11,000 acres of land east and south of PRC. This annexation has the potential for both major residential and commercial development over the next 20 years. Currently, one of the largest areas set aside for industrial uses is near the Airport.

One goal of the General Plan is to keep Prescott competitive in the regional marketplace and to attract higher paying jobs by creating additional commercial and industrial areas through the anticipated annexation of the large area east of the Airport.

Both the General Plan and the ASAP emphasizes the need to expand the opportunities for appropriate commercial, industrial land use and zoning in proximity to the Airport, and to protect the Airport from encroachment of incompatible land uses through enforcement of land use designations, policies, and zoning designations. The current plan designated the land near the Airport for manufacturing and industrial uses, as well as other intense commercial operation. However, subdivisions, both within the City and in unincorporated areas, are already being planned and built near the Airport.

Specific land use and zoning ordinance are found in the City of Prescott Land Development Code (LDC). LDC Article 2 specifies permitted land use per zoning categories, and the establishment of overlay corridors, such as the Airport Noise Overlay, which is further discussed in LDC Article 5.

The land use categories and designation found in the LDC as well as in the General Plan are used and referred in this Land Use Plan.

SECTION 2 DEFINITIONS OF SENSITIVE LAND USES

The FAA 14 CFR Part 150 defines criteria to indentify the sensitivity to noise pollution of the major land use categories in an effort to mitigate the impact of aircraft noise on nearby communities and to prevent the non-compatible development of such lands. The following section contains a broad description of extremely sensitive, moderately sensitive, and non sensitive land uses.

Extremely Sensitive Land Uses

Extreme Sensitive Land Uses are defined as land areas for which the receptor's, customary or anticipated, activities may be disrupted to a significant degree by aviation noise impacts in excess of 65 DNL, for which sufficient mitigation to ensure compatibility with current or future airport operations is not feasible.

The following land uses categories are typically considered extremely sensitive receptors:

- Low density residential areas, other than mobile home and transient lodging, where there is an expectation of a quiet surrounding and where it is difficult to provide sufficient noise mitigation to achieve outdoor and indoor Noise Level Reduction (NLR).
- Outdoor theatres, amphitheaters, and public assembly areas;
- Campgrounds (with overnight sleeping facilities);
- Schools, libraries, where measures to achieve outdoor and indoor NLR cannot be incorporated; and
- Medical facilities, such as hospitals and nursing homes, assisted living facilities, where measures to achieve outdoor and indoor NLR cannot be incorporated.

Moderately Sensitive Land Uses

Moderately Sensitive Land Uses are land areas for which the receptor's, customary or anticipated, activities may be disrupted to a significant degree by aviation noise impacts in excess of 70 DNL, for which sufficient mitigation to ensure compatibility with current or future airport operations is feasible by the incorporation of special design features and construction techniques. Also, activities associated with the land use are confined exclusively or almost exclusively to indoor areas.

The following land uses categories are typically considered moderately sensitive receptors:

- Schools and libraries;
- Medical facilities, such as hospitals and nursing homes, assisted living facilities;
- Mortuaries and funeral parlors;
- Churches, auditoriums and concert halls;
- Governmental services;

- Offices, business and professional services;
- Wholesale and retails;
- Hotels and motels;
- Indoor theatres, music halls, meeting halls, and other indoor public assembly facilities;
- Studios - radio, television, recording, rehearsal, and performance facilities;
- Schools and day care centers (excluding aviation related); and
- Museums (excluding aviation related).

Non Sensitive Land Use

Non Sensitive Land Uses are land areas for which the receptor, customary or anticipated, activities are not disrupted by aviation noise impacts.

The following land use categories are typically considered non-sensitive receptors:

- Mining, fishing and resources production and extraction;
- Transportation facilities: railroad, rapid rail transit, street railway transportation, motor vehicle transportation, aircraft transportation, highway and street right-of-way; and
- Agriculture (except livestock).

Land use compatibility with regards to noise exposure is summarized in Table 3 - FAA Land Use Compatibility with Yearly Day-Night Average Sound Levels.

Table 3
FAA Land Use Compatibility with Yearly Day-Night Average Sound Levels

LAND USE	Yearly Day-Night Average Sound Level in Decibels					
	< 65	65-70	70-75	75-80	80-85	> 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoria, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware, and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communications	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, state, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute Federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise-compatible land uses.

KEY TO TABLE A-1

SLUCM = Standard Land-Use Coding Manual.

Y (YES) = Land Use and related structures compatible without restrictions.

N (No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land Use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structures.

NOTES FOR TABLE A-1

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dB; thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems. (2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low. (3) Measures to achieve NLR 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low. (4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where the normal noise level is low. (5) Land-use compatible provided special sound reinforcement systems are installed. (6) Residential buildings require an NLR of 25. (7) Residential buildings require an NLR of 30. (8) Residential buildings not permitted.

Source: FAA 14 CRF Part 150 *Airport Noise Compatibility Planning*

SECTION 3 INVENTORY OF EXISTING CONDITION

The following section provides an overview of the current land use designations adopted by the City of Prescott's General Plan and their application in the current planning study area.

Land Use Designations

The following definitions directly relate to the designations used on the General Plan (ratified in May 2004), its Land Use Map, and other additional land uses.

Government/Institutional

This designation denotes areas dedicated for public or semi-public uses which may include government centers, police and fire substations, schools, libraries, community centers, water plants, wastewater treatment plants, as well as college or university campuses and related uses and activities, including student dormitories. In general these areas are not intended for residential uses other than student housing.

Recreation/Open Space

This designation denotes areas that are to be precluded from development except for active and passive public recreational facilities or natural preserves. Open space areas are intended to be left in a natural state due to topographic, drainage, vegetative, and landform constraints or the need to provide buffers between incompatible land uses or to protect viewsheds.

Agricultural/Ranching

The Agricultural/Ranching designation denotes areas intended to remain in agricultural or ranching production over the long-term. However, these areas are anticipated to transition to other land uses over time. Agricultural/Ranching land may allow residential development of up to one dwelling unit per acre depending upon zoning classification. Public service demands are not anticipated to be as great as in residential designations. No commercial or industrial development is anticipated.

Commercial/Recreation

The Commercial/Recreation designation is intended to allow a mix of retail commercial uses, but with an emphasis on recreation related uses such as resorts, campgrounds, equestrian facilities, lodges, hotels/motels, RV parks, fishing camps and swimming pools. This category may also include civic and office uses. Residential uses are not anticipated with this designation.

Mixed-Use

Mixed-Use areas are generally located at an existing or anticipated circulation nexus and/or placed between higher intensity uses and adjoining residential land uses. The Mixed-Use designation is intended to be compatible with the surrounding area while providing a mix of commercial, employment, public and residential uses. It is anticipated that these areas will support neighborhood oriented commercial uses and may include master-planned and developed mixed communities intended to replicate the traditional downtown mixture of commercial and residential uses of all density categories. Residential uses are permitted, but subject to density and buffering standards set out by the overlying zoning districts.

Commercial

The Commercial designation denotes typical community or regional commercial uses. Intended uses include office, retail, service, civic, lodges, health related and other similar uses as permitted by the appropriate zoning designations. Residential uses of all density categories are permitted, but subject to density and buffering standards set out by the overlying zoning districts.

Commercial/Employment

The Commercial/Employment designation refers to areas where professional offices, tourism, recreation, service uses, warehousing, and light industrial uses are generally appropriate. This use requires appropriate buffering considerations from adjoining residential areas. The specific allowable uses are determined based upon the zoning of each particular site and will consider adjacent land uses, traffic impacts and the intensity of any proposed development. Residential uses are not anticipated in this designation.

Industrial

The Industrial designation is intended to include manufacturing, fabrication and processing of durable goods, wholesaling, warehousing, and distributing, printing and publishing and freight terminals. This category may also include civic and office uses. Residential uses are not anticipated in this designation.

Residential

In the General Plan the Residential designation includes three (3) sub-categories: Very Low Density Residential (<1 DU/AC), Low-Medium Density Residential (1-7 DU/AC), and Medium-High Density Residential (8-32 DU/AC).

- *Very Low Density Residential (<1 DU/AC).* The Very Low Density Residential category is intended for large-lot single-family housing in a rural setting. Development in these areas will consist mainly of detached single-family homes on 2-acre minimum sized lots or larger. The basic character of development is rural, with most natural features of the land retained. Typically, keeping of horses or other livestock is permitted, possibly in association with pre-existing and ongoing farming or ranching. Public services demands are not as great as in higher density, more urban development. No commercial or industrial development is anticipated.
- *Low-Medium Density Residential (1-7 DU/AC).* The Low-Medium Density Residential category is intended for predominantly single-family detached residential development.

Residential densities of up to seven dwelling units per acre are typical of this category. In general these areas are quiet residential single-family neighborhoods but in some areas a mix of single-family, duplexes and townhouses would also be appropriate. This designation may also include such supporting land uses as neighborhood shops and services, parks and recreation areas, religious institutions, and schools. A full range of urban services and infrastructure is required. The Low-Medium Density Residential category would also allow residential development as described for the Very Low Density Residential category.

- *Medium-High Density Residential (8-32 DU/AC).* The Medium-High Density Residential category may include duplexes, manufactured and modular homes, apartments, town homes, and other forms of attached or detached housing on smaller lots. The density range for this category is 8 to 32 dwelling units per acre. This category may also include such supporting land uses as neighborhood shops and services, parks and recreation areas, religious institutions, and schools. A full range of urban services and infrastructure is required. The Medium-High Density Residential category would also allow residential development as described for the Low-Medium Density and Very Low Density Residential categories.

Resources Extraction

The Resources Extraction designation is intended to include mining and quarrying activities of material such as sand, gravel, fill dirt and other varied minerals. This category may also include civic and office uses. Residential uses are not anticipated in this designation.

Vacant

The Vacant designation includes all Arizona State and Bureau of Land Managements vacant lands, as well as parcels purposely designated as vacant by the City of Prescott or by the Yavapai County.

Inventory of Existing Land Use

Existing land uses, whether or not such uses are compatible with the Airport, are described below.

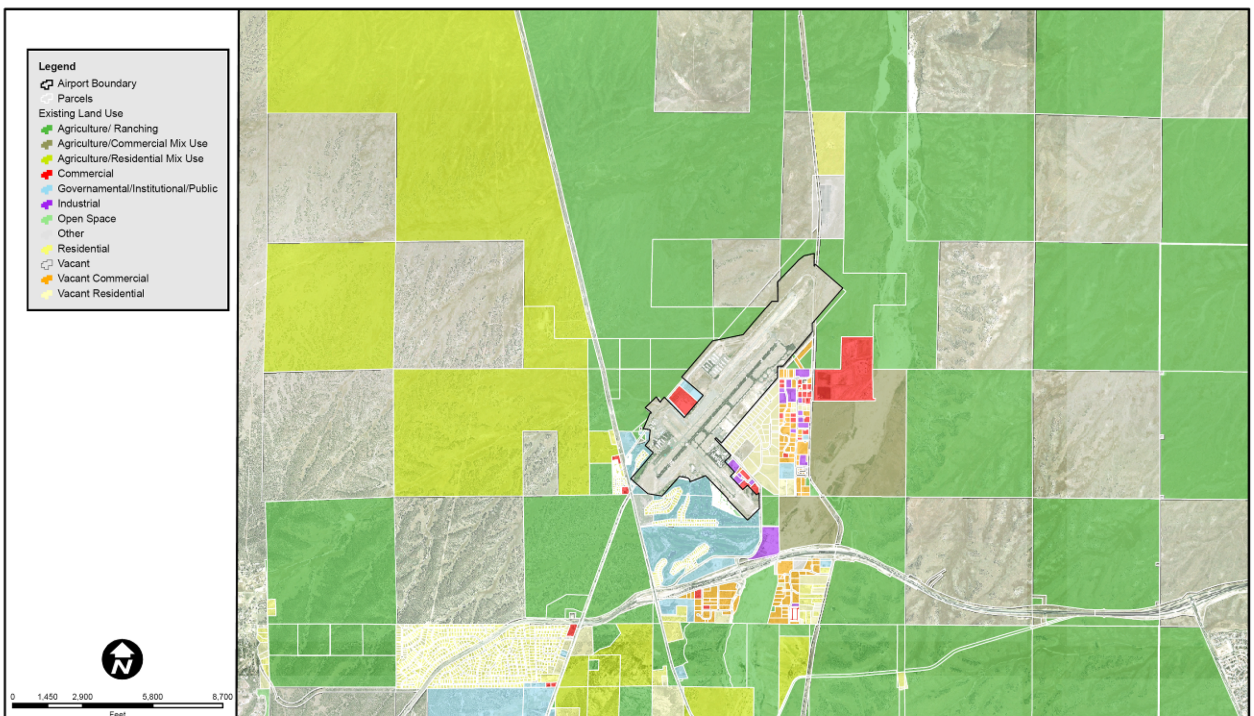
A land use is considered to be “existing” if substantial construction investments, by the landowner, make it infeasible for the property to be used for anything other than its current or proposed use; or if the land use physically exists. Existing land uses that are “incompatible” based on the Land Use Plan and the matrix will be considered “non-conforming” uses.

The area surrounding PRC is predominately dedicated to agriculture and ranching. The 2003 City of Prescott General Plan describes the area as mix of residential, commercial, agricultural, and recreational areas. The City of Prescott Zoning Ordinance has designated the Airport as Zone Light Industrial (LI), Industrial Transition (IT), and Business General (BG), as adopted in the City of Prescott Land Development Code, amended January 11, 2005. The Airport includes a main terminal, hangar buildings, administration and additional structures leased and used by the United States Forest Service, Embry-Riddle and various aviation related businesses and services.

The land use for the areas east and north of the Airport are classified in the General Plan as Commercial/Employment use for up to ½ mile followed by Recreational/Open Space.
The area east of the Airport is classified as Commercial and it falls under the Commercial Corridor Overlay (CCO).

The land use for the areas to the north and to the west of the Airport is classified for Agriculture/Ranching. The area southwest and south of the airport is zoned Residential Single Family, Low-Medium Density Residential and Recreational Open Space. Located in this area is a traffic sensitive area along U.S. Highway 89, which provides direct access to the Airport's terminal area. Additionally, this area includes the Antelope Golf Resort and Community.

Figure 1.1 – Airport Land Use Plan Existing Conditions – illustrates the current land uses within the planning area. The designations listed in the legend represent the major land use categories adopted in the General Plan.



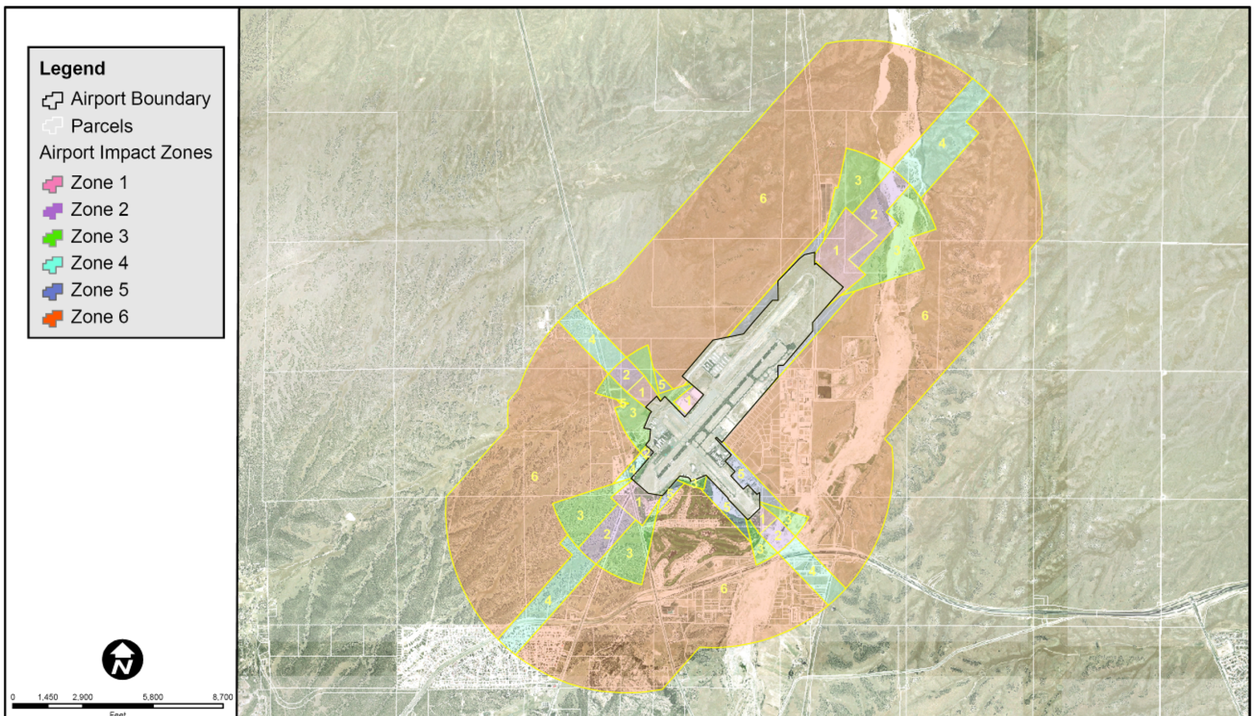
Prescott Municipal Airport
Existing Land Use
JUNE 2008
Figure 1.1

SECTION 4 AIRPORT IMPACT ZONES

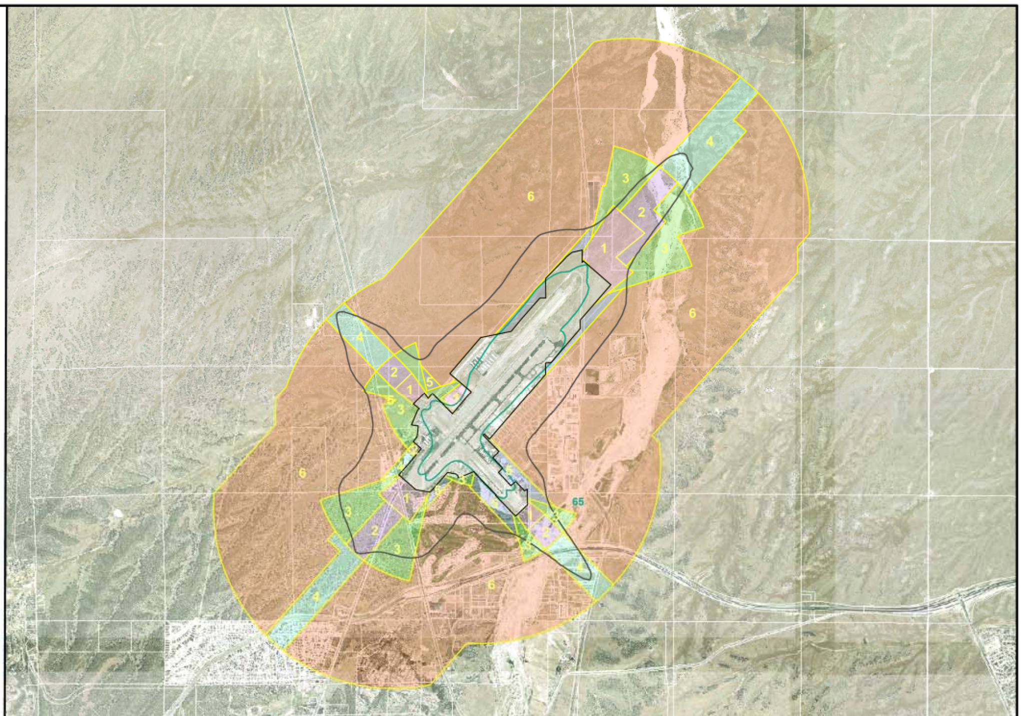
The ASAP identified an official Airport Influence Area as the primary and only method of airport protection. It extends three to five miles from the runway intersection based on the length and activity level of each of runway, creating a one mile wide approach/departure corridor where residential use is not generally allowed.

This methodology was adopted by the City of Prescott, Yavapai County and Town of Prescott Valley, to further identify the proper land use for the properties directly and potentially affected by airport operations, in addition to the noise contours.

As per current Federal Administration Aviation (FAA) guideline standards, Airport Impact Zones (AIZ) are identified for each runway in use at PRC. AIZs are widely adopted by airports nationwide, and adopted by states as a standard to limit the damages caused by an aviation accident, to protect the viability of the airport, and to limit the impact of noise on residential areas (see Figure 1.2 – *Airport Impact Zones*; and Figure 1.3 – *Airport Impact Zone and 55 & 65 DNL Contours*).



THE Louis Berger Group, INC. | CITY of PRESCOTT | **Prescott Municipal Airport** Airport Impact Zones | **JUNE 2008** | **Figure 1.2**



Prescott Municipal Airport
Airport Impact Zones and 55 & 65 DNL Contours
JUNE 2008
Figure 1.3

The following section describes each Airport Impact Zone and provides their dimensions based on each runway configuration.

Airport Impact Zone 1 – Runway Protection Zone

The Runway Protection Zones (RPZ) is trapezoidal in shape and centered about the extended runway centerline. It extends from 200 feet beyond the end of the area usable for takeoff and landing. The narrower end of each RPZ is the closest to the runway end. The most critical segment of flight occurs within the RPZ. In this zone aircraft are the most vulnerable and the risk of accident is very high.

Airport Impact Zone 2 – Inner Safety Zone

The Inner Safety Zone is rectangular in shape and centered about the extended runway centerline extending from the wider edge of the RPZ. The Inner Safety Zone together with the RPZ encompasses 30% to 50% of all near-airport accident sites.

Airport Impact Zone 3 – Inner Turning Zone

The Inner Turning is conical in shape which is encompassed by a 30 degree angle to either side of the extended runway centerline, and a radius of 5,000 feet. Its vertex is situated on the runway centerline 200 feet off the runway end. It encompasses location where especially general aviation aircraft are turning from their final approach legs of the standard traffic pattern and are descending from pattern altitudes, as well as the area where departing aircraft normally complete their transition from takeoff power and flap setting to a climb mode and have begun turning to their en route heading.

Airport Impact Zone 4 – Outer Safety Zone

The Outer Safety Zone is rectangular in shape and centered about the extended runway centerline. It extends from the outer edge of the Inner Safety Zone. At airports with high-activity levels, like PRC, it encompasses the areas used by approaching aircraft at an altitude typically less that traffic patterns, also it is applicable to airports with straight-in instrument approach procedures.

Airport Impact Zone 5 – Sideline Safety Zone

The Sideline Safety Zone is rectangular in shape and centered on the runway centerline. It is defined by a 1,000 foot centerline offset on each side of the runway that connects the Inner Turning Zone on each end of the runway. While this zone is typically within airport boundaries, and it is not overflow, it is designed to mitigate the damages that could be caused by an aircraft losing directional control on takeoff.

Airport Impact Zone 6 – Traffic Pattern Zone

The Traffic Patter Zone is defined by an area 5,000 feet wide, centered on the runway centerline, extending from the Sideline Safety Zone to the edges of the Outer Safety Zone. It encompasses all other portions of regular traffic patterns and pattern entry routes. While the risk of an accident within this zone is low, potential consequences can be severe.

Table 4 provides dimensions for each AIZ according to each runway configuration.

Table 4
Airport Impact Zones Dimensions

Airport Impact Zones	Runway 12-30	Runway 3R-21L	Runway 3L-21R
Zone 1	250 ft x 1,700 ft x 500	500 ft x 2,500 ft x 875 ft	500 ft x 2,500 ft x 875 ft
Zone 2	2,800 ft x 1,000 ft	2,500 ft x 1,000 ft	2,500 ft x 1,000 ft
Zone 3	60° Sector, x 4,500 ft Radius	60° Sector, x 5,000 ft Radius	60° Sector, x 5,000 ft Radius
Zone 4	3,000 ft x 1,000 ft	5,000 ft x 1,000 ft	5,000 ft x 1,000 ft
Zone 5	1,000 ft wide	1,000 ft wide	1,000 ft wide
Zone 6	5,000 ft wide	5,000 ft wide	5,000 ft wide

SECTION 5 AIZ IMPACTS ON FUTURE DEVELOPMENT

The following section presents the Land Use Airport Compatibility Matrix, which was created based on current Federal and State guidance and regulations. The references used to define the criteria and used to compile this matrix are the following:

- Arizona ARS Title 28 – Chapter 25 Article 7: Airport Zoning and Regulations;
- FAA Airport Land Use Compatibility Guidebook;
- FAA 14 CFR Part 150 Airport Noise Compatibility Planning;
- California Airport Land Use Planning Handbook; and
- Washington State Airport Land Use Compatibility Program.

Land use identified as "Compatible" are not considered to present a significant risk to the safety of persons on the ground or to persons in aircraft overflying the land, and the anticipated aircraft noise or frequent aircraft overflight is considered to be acceptable by FAA, State and local standards and regulations.

Land uses identified as "Non-Compatible" are considered to present a significant risk to the safety of person on the ground or to persons in aircraft overflying the land, and/or the anticipated aircraft noise or frequent aircraft overflight is considered not to be acceptable by FAA, State and local standards and regulations.

Typically the level of risk is correlated with population density, where higher densities pose a higher statistical risk to the safety of persons in the event of an accident. Therefore, land use with high population densities are discouraged in the vicinity of the airport. Table 5: *Recommended Land Use Densities and Open Space* presents the maximum recommended density for each of the Airport Impact Zones.

Based on the criteria mentioned above, Table 6: *Land Use Airport Compatibility Matrix,* is proposed to the City of Prescott as recommended land uses for the parcels within each AIZ from the airport compatibility prospective. Land use groups are identified as being "compatible" or "non-compatible". Compatible land uses are designated by the letter "Y"; while non-compatible land uses are designated by the letter "N".

Table 5
Recommended Land Use Densities and Open Space

Airport Impact Zones	Maximum Recommended Land Use Density (persons/acre)	Maximum Recommended Single Acre Land Use Density (persons/acre)	Minimum Recommended Percent Open Space (% gross area)
Zone 1	0	0	100
Zone 2	20	40	30
Zone 3	60	120	25
Zone 4	40	120	20
Zone 5	150	450	10
Zone 6	150	450	10

Table 6
Prescott Municipal Airport
Airport Impact Zones Land Use Compatibility Matrix

LAND USE	Zone 1#	Zone 2#	Zone 3#	Zone 4#	Zone 5#	Zone 6#
AGRICULTURE/RANCHING						
Crop production including dry and irrigated farming	Y	Y	Y	Y	Y	Y
Truck Farming, Specialty Crops, Orchards, Vineyards, Landscape Nurseries, Greenhouses	N	Y	Y	Y	Y	Y
Crop Processing & Packaging, Wineries	N	Y	Y	Y	Y	Y
Pasture and Rangeland Grazing	Y	Y	Y	Y	Y	Y
Hogs, Dairies, Bee Keeping	N	Y	Y	Y	Y	Y
Commercial Poultry	N	N	Y	Y	Y	Y
Fish Farms, Game Preserves	N	Y	Y	Y	Y	Y
Feed Lots, Stockyards, Sales Yards	N	Y	Y	Y	Y	Y
Animal Hospital, Veterinary Clinic, Kennels, Pet Boarding, Equestrian Facilities, Exotic Animals	N	Y	Y	Y	Y	Y
Roadside Stands, Farmers Markets	N	Y	Y	Y	Y	Y
COMMERCIAL						
Aircraft Fuel, Aircraft Sales and Aircraft Repairs, Flying Schools	N	N	Y	Y	Y	Y
Vehicles and Parts Sales, Building Materials, Food and Beverage Sales	N	Y	Y	Y	Y	Y
Shopping Centers	N	N	N	N	Y	Y
Banks	N	N	Y	Y	Y	Y
Gasoline Service Stations	N	Y	Y	Y	Y	Y
Restaurant and Food Take-Out, General Retail Stores, Tasting Rooms	N	N	Y	Y	Y	Y
Convention Centers	N	N	Y	Y	Y	Y
Fuel Dealers, Fuel Storage	N	Y	Y	Y	Y	Y
Mini-Storage	N	Y	Y	Y	Y	Y
Warehouse, Wholesale and Distributing	N	Y	Y	Y	Y	Y
Petroleum and Chemical Products – Bulk Storage	N	Y	Y	Y	Y	Y
COMMERCIAL/EMPLOYEMENT						
Office Buildings, Public Buildings, Research Laboratories	N	N	Y	Y	Y	Y

Appliance and Equipment Repair, Car Wash	N	Y	Y	Y	Y	Y
Personal Services, Health Clinics	N	N	Y	Y	Y	Y
Recycling	N	Y	Y	Y	Y	Y
Vehicle Storage and Parking	N	Y	Y	Y	Y	Y
Taxi Stands, Bus Stations/Terminals	N	Y	Y	Y	Y	Y
Truck Terminals	N	Y	Y	Y	Y	Y
COMMERCIAL/RECREATIONAL						
Arcades, Bowling Alleys, Skating Rinks, Dance and Pool Halls, Card Rooms, Gyms, Health Spas, Indoor Theaters and Auditoriums	N	N	Y	Y	Y	Y
Outdoor Theaters, Amusement Parks, Carnivals, Fairs	N	N	Y	Y	Y	Y
Golf Courses, Tennis Courts	N	Y	Y	Y	Y	Y
Swimming Pools, Water Slides	N	N	Y	Y	Y	Y
Hotels and Motels,	N	N	Y	Y	Y	Y
RV Parks	N	N	N	N	N	Y
GOVERNAMENTAL/INSTITUTIONAL (PUBLIC & QUASI-PUBLIC)						
All Schools, Hospitals, Correctional Facilities	N	N	N	N	N	Y
Libraries, Day Care Centers, Social Clubs/Lodges, Churches	N	N	N	N	N	Y
Athletic Fields	N	Y	Y	Y	Y	Y
Cemeteries – People or Pets	N	Y	Y	Y	Y	Y
Public Utility Facilities (except Electric Plants)	N	Y	Y	Y	Y	Y
Electric Power Plants and overhead transmission lines	N	N	N	N	N	N
INDUSTRIAL						
Indoor Processes	N	N	Y	Y	Y	Y
Outdoor Fabrication Yards	N	N	Y	Y	Y	Y
RECREATIONAL OPEN SPACE						
Parks, Playgrounds, Picnic Areas	N	Y	Y	Y	Y	Y
RESIDENTIAL † #						
Single Family Residential	N	N	N	Y*	Y*	Y*
Multi-Family Residential, Mobile Home Parks	N	N	N	Y*	Y*	Y*
Group Homes, Convalescent Facilities, Nursing Homes	N	N	N	Y*	Y*	Y*
Secondary Residence (1,200 square feet or less)	N	N	N	Y*	Y*	Y*
Caretaker Unit (1,200 square feet or less)	N	Y	Y	Y*	Y*	Y*
RESOURCE EXTRACTION						
Mining – Sand, Gravel, Fill Dirt	N	N	N	N	Y	Y

† All residential development occurring within the Airport Impact Zones shall be clustered as far away from the airport as possible.

*Residential development within the Airport Impact Zones 4, 5 and 6 outside of the 55 DNL line is permissible

#Avigation easements ensuring the right of flight and noise generation over every parcel and property within the Airport Impact Zone will be granted at no cost to the City by the property owners. All development in the Airport Impact Zone is to be sound insulated to a 45dnl rating or lower. All development must comply with 14 CFR Part77 reporting requirements and no development will penetrate an established 14 CFR Part 77 surface of the Prescott Municipal Airport as exists or may exist in the future.

SECTION 6 RANCHING (HOLDING DESIGNATION) PARCELS

This section addresses the special concerns of the City of Prescott with regards to the future land use designation of the parcels of land located to the west of the Airport, which will be annexed to the City of Prescott.

Currently, the land use designation of the parcels west of the airport is “Ranching”. Based on the Airport Land Use Compatibility Matrix previously presented, Table 7: *Land Use Compatibility for Future Development of Ranching (Holding Designated) Parcels* identifies for each parcels, within the planning area, which land use designation will create the condition for highest economic development, while satisfying the airport’s compatibility’s criteria.

The land use for all the other parcels outside the planning area will follow the land use criteria established by the City of Prescott as specified in the General Plan and other City of Prescott zoning ordinances.

Table 7
Land Use Compatibility for Future Development of Ranching (Holding Designated) Parcels

Parcel No.	Airport Impact Zones*	Agriculture Ranching*	Commercial*	Commercial Employment*	Commercial Recreational*	Governmental Institutional*	Industrial *	Recreational Open Space*	Residential[#]	Resource Extraction*
13-102-01-001-02-0	4,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-01-002-01-4	2,3,6	Y [1]	Y [2,3,4]	Y [5,6, 13]	N [7]	Y [9,10,11]	N	Y	Y	N
13-102-01-002-02-3	4,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-01-002-02-3	4,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-01-213-14-4	6	Y	Y	Y [13]	Y	Y	Y	Y	Y	Y
13-102-01-213-14-4	6	Y	Y	Y [13]	Y	Y	Y	Y	Y	Y
13-102-04-001-01-0	2,3,4	Y [1]	Y [2,3,4]	Y [5,6, 13]	N [7]	Y [9,10,11]	N	Y	Y	N
13-102-04-010-01-6	3,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-04-001-02-9	3,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-04-001-02-9	3,4	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-04-010-02-5	6	Y	Y	Y [13]	Y	Y	Y	Y	Y	Y
13-102-05-324-08-4	4,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N
13-102-05-324-10-9	3,4,6	Y	Y [2]	Y [13]	Y [8]	Y [9,10,11]	Y	Y	Y	N

* The land use compatibility for the above listed parcels is determined by applying criteria based on the most restrictive airport impact zones, regardless of size of actual land impacted by the specific zone.

Exceptions:

1. Commercial Poultry;
2. Shopping Centers;
3. Restaurant and Food Take-out, General Retail Stores, Tasting Rooms;
4. Convention Centers
5. Office Buildings, Public Buildings, Research Laboratories;
6. Personal Service Health Clinics;
7. Golf Courses and. Tennis Courts;
8. RV Park;
9. All Schools, Hospitals, Correctional Facilities;
10. Libraries, Day Care Centers, Social Clubs/Lodges, Churches;
11. Electric Power Plant.

[#] Residential development subject to compliance with Table 6 *Airport Impact Zones Land Use Compatibility Matrix.*

APPENDIX 4

Passenger Leakage Analysis
Prescott Municipal Airport

Table of Contents

SECTION 1 - BACKGROUND

The City of Prescott requested the Louis Berger Group, Inc. to develop a Passenger Leakage Analysis for the Prescott Municipal Airport – Ernest A. Love Field (PRC) as part of the Airport Master Plan Update.

The City initiated this Passenger Leakage Study in order to: a) identify the volume of passenger generated in the Prescott area; b) to quantify the number of passengers lost to other airports; and c) to identify which alternative transportation modes are used by travelers to begin their air travel.

This analysis was prepared in correlation with the passenger Forecast Analysis for the Prescott Master Plan Update. The primary objectives include:

A. Provide a quantifiable estimate of the unconstrained demand for air travel in the airport catchment area;

B. Estimate the current passenger leakage from Prescott Municipal Airport (PRC) towards other airports;

C. Provide supporting socio-economic data;

D. Provide enplaned passenger, and airline service data;

E. Identify and describe the airport service area; and

F. Identify and describe comparable airport service area.

SECTION 2 - INTRODUCTION

For this study, the term “passenger leakage” defines the passengers that choose ground transportation modes to reach their destination or other distant airports.

The majority of the current of air travel demand in PRC is generated by passengers traveling to Phoenix for business or connecting at Phoenix Sky Harbor International Airport (PHX) to another flight. In the last ten years PRC has experienced high enplanement volatility, suggesting that the population in the Prescott area perceives the use of personal vehicle and shuttle services to reach PHX and other airports as a competitive alternative to air travel from PRC.

Three methodologies are used to estimate the unconstrained and potential passenger demand of air service at PRC. The first method is based upon population estimates and estimated enplanement per capita ratios. The second method estimates passenger demand based upon comparisons with other airports. The last method considers data from three surveys, which are: a) Phoenix Sky Harbor O’Neil’s Passenger Intercept Survey, b) 2005 Phoenix Sky Harbor Survey, and c) Business Surveys.

Data from an array of sources was collected to support this study. The following list is a sample of the data reviewed:

- Historical airport and regional data, including airport operations, number of enplanements/deplanements passenger data;
- USDOT O&D data;
- Airline charges;
- Airport shuttle van service data, including ridership estimates, destination, schedule and cost;
- Catchment area population and demographics figures;
- Comparable airports in the southwest; and,
- Survey data.

Additionally, other previous studies that have examined PRC passenger leakage were reviewed. These studies include:

- Arizona Rural Air Service Study, Arizona DOT 1999;
- Arizona State Aviation Need Study, 2000;
- Intercity public transportation services: an assessment of the I-10, I-17, and I-19 corridors in Arizona, ADOT 2006;
- Regional Transit Need Study, CYMPO 2006
- Metropolitan Transportation Plan, CYMPO 2006

This study is categorized in the following sections:

- Historical Airport Activity;
- Airport Service Area;
- Socioeconomics & Demographics of ASA
- Comparable Airport Service Areas;
- Common Passenger Leakage Modes;
- Surveys;
- Analysis of Findings; and
- Summary of Findings.

SECTION 3 - HISTORICAL AIRPORT ACTIVITY

Prescott Municipal Airport – Ernest A. Love Field is situated on approximately 760 acres of land located in Yavapai County, in the West-Central region of Arizona. Centrally located approximately eight to ten miles between the City of Prescott, and the towns of Chino Valley and Prescott Valley, PRC's current surveyed elevation is 5,045 feet above Mean Sean Level (MSL).

Interstate 40 is accessible from PRC through US Highway 89 northbound on Mac Curdy Drive. Interstate 17 is accessible from PRC through US Highway 69 eastbound.

Prescott Municipal Airport was inaugurated on July 4, 1926, and renamed Ernest A. Love Field in 1928. The airport is classified by the FAA Class I commercial service public use airport, and is owned by the City of Prescott. The airport serves both the commercial and multi-faceted general aviation needs of the area, including the City of Prescott, Yavapai County and residents of the local Yavapai Reservation.

The terminal building at PRC is a single level structure that was originally constructed in 1948 and expanded in 1957. Its current size is approximately 3,800 sq. ft. The terminal is located west of the intersection between Runways 3R/21L and 12/30, and is accessible via Mac Curdy Drive. The main terminal building is used for commercial passenger traffic. Within the terminal is the Transportation Security Administration (TSA) check point for luggage and passenger screening.

Currently, the air service is subsidized by the U.S. Department of Transportation (USDOT) through the Essential Air Service (EAS) program. The EAS is a program operated by the U.S. DOT that provides subsidies to airlines who agree to provide service on historically non-profitable routes to rural areas, which were served by certified air carriers before the 1979 Airline Deregulation Act. Under EAS contract, Public Law 100-223 states that the airline must provide:

(a) Service to a hub airport, defined as an FAA-designated medium- or large-hub airport;

(b) Service with no more than one intermediate stop to the hub;

(c) Service with aircraft having at least 15 passenger seats at communities that averaged more than 11 passenger enplanements a day in any calendar year from 1976-1986;

(d) Under certain circumstances, service with pressurized aircraft; and

(e) Flights at reasonable times taking into account the needs of passengers with connecting flights.

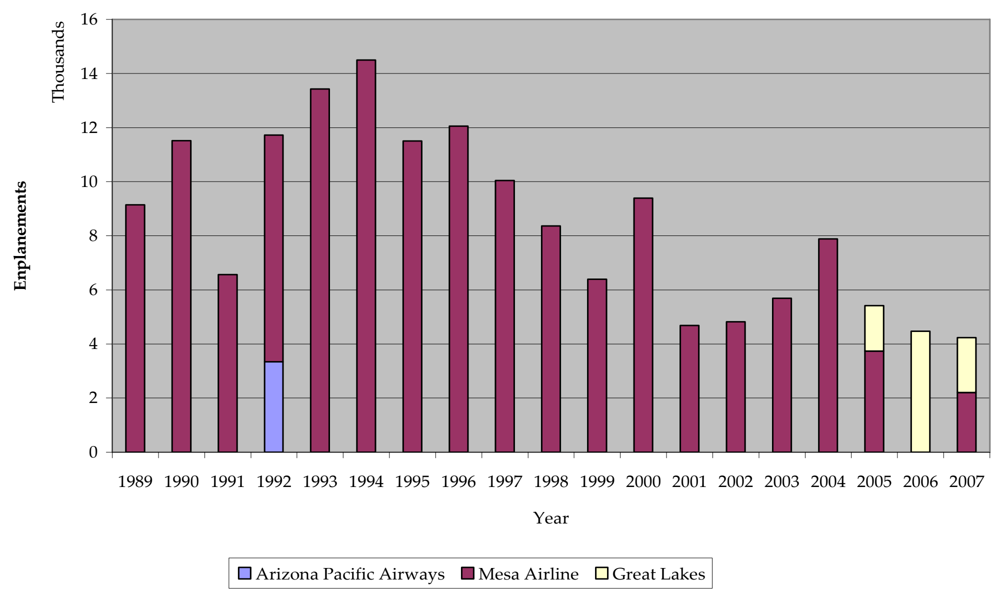
In order to qualify for the EAS program, the City of Prescott submitted a proposal package to USDOT, and upon approval, the airlines were then permitted to bid on the contract. To maintain the subsidy however, the average subsidy per passenger for the community must not exceed $200.

Under the program, airline service is currently offered by Mesa Airlines, which has provided continuous service since January 1989, with the exception of the period between May 2005 and October 2007, during which the EAS contract was awarded to Great Lakes Airlines.

The number of passenger enplanements at PRC, as shown in **Figure 3.1**, has been declining since 1994, from a high of 14,000 enplanements per year to a low of 4,233 in 2007. Several factors can be accounted for this decline in enplanements, which are further detailed in the 2008 Master Plan Update. However, the level of aviation activity and general aviation (GA) operations has remained overall stable with only a slight decline in recent years. This is mainly due to higher fuel and operating costs. **Figure 3.2** provides a summary of aviation activity at PRC from 1990 to 2007.

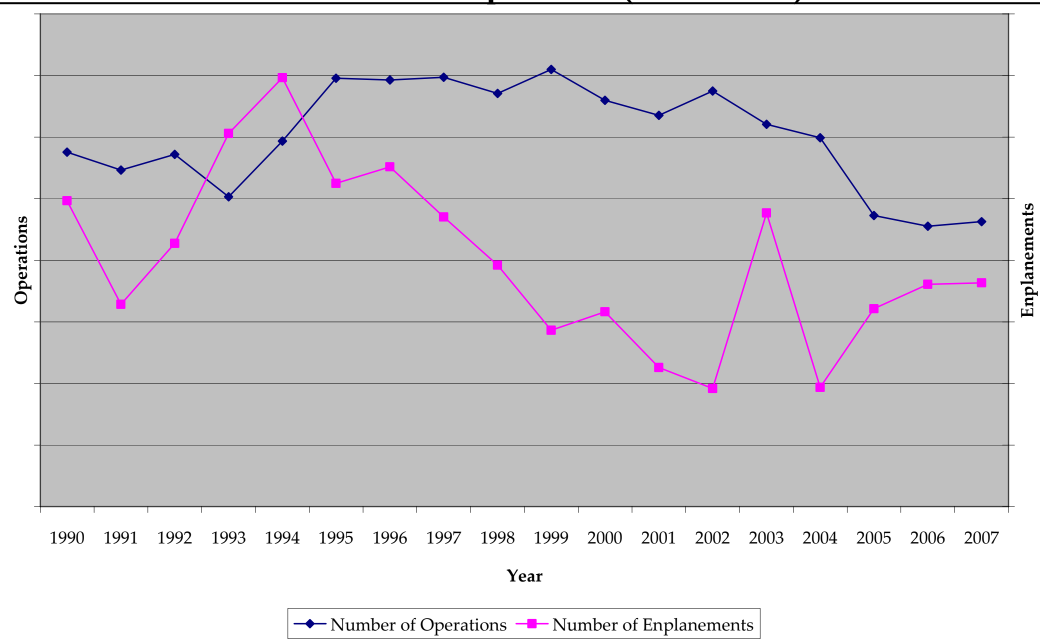
Figure 3.1

PRC Airline Enplanements (1989 – 2007)



Source: Airport Administration Records

Figure 3.2
PRC Historical Operations (1989 – 2007)



Source: FAA TAF & Airport Administration Records

As previously mentioned, Mesa Airlines is currently the only commercial airline operator at PRC, which operates under the US Airways Express logo. The partnership with US Airways provides code-sharing and direct connection to the US Airways domestic and international route system. Mesa Airlines offers flights to PHX arriving and departing from Terminal 4 and to Las Vegas McCarran International (LAS). Responses gathered during a recent Business Survey suggests that the opportunity to arrive and connect to flights in Terminal 4, occupied by US Airways and Southwest, is perceived to be more advantageous by passengers in Prescott. Indicating that in the two year period (2005-2007) Great Lakes Airline was operating in and out of Terminal 2, and therefore, the number of enplanements dropped rapidly. By arriving in Terminal 2, all connecting passengers to flights departing from Terminal 3 and 4 had to exit the terminal and repeat the check-in and screening process, and in some instances collect and recheck their luggage. This had effectively limited the ability of the passenger to select convenient connections, ultimately favoring ground transportation options to reach PHX.

However, despite the improvements, business traveler's main concerns with the service provided at PRC are the reliability problems of Mesa Airline equipment. The majority stated that they have been turned away by Mesa because of the lack of sufficient seating and/or equipment failures. During those occurrences, Mesa Airlines had to reroute passenger on ground shuttles to PHX.

Currently, Mesa Airline operates in Prescott with a fleet of Beechcraft 1900, in a 19 seats configuration. The average flight time between Prescott and Phoenix is 40 minutes, compared to 1 hour and 45 minutes of driving time[*]. Generally, the airlines fare structure is very complex and it is subject to continuous changes in response to the market demands. However, base airfare cost between PRC and PHX currently varies between $79 with advance purchase each way and $99 plus tax. It was noted when connecting at PHX for some destination the average lowest airfare increased only $42 in average, and for some other cases decreased $32 on average. **Table 3.1** presents a summary of the average and lowest airfare cost, with 14-days advance purchase, for a one-way direct flight from PHX to its top five most popular destinations: Denver, Los Angeles, Chicago, San Diego and Dallas Forth Worth, compared to a one-way direct flight from Prescott with one connection in Phoenix.

The average airfare for those city pairs was computed by the US Department of Transportation (USDOT) by averaging the cost of sold tickets for the selected city pairs, and it included Southwest Airline's tickets sales. Because Southwest does not have inter-airline agreement with other airlines, it was not included in the computation of the average airfare cost from/to Prescott.

[*] Travel time on I-17 from Prescott to Phoenix varies significantly. The 2007 ADOT I-17 Alternative Study points out that travel demand south of Anthem currently exceeds capacity, mountainous terrain and high truck volumes currently cause substantial delay from trucks slowing on grades, crashes often close I-17 resulting in long, unpredictable delays, no practical alternates exist for I-17 traffic from Flagstaff and Phoenix, and ultimately, travel delay and unreliability disrupts other transportation modes such as airports.

Table 3.1 – Average Airfare

Destination	Average Airfare From		
	PHX	PRC	Lowest (PRC)
Denver , CO (DEN)	$157	$222	$141
Los Angeles, CA (LAX)	$80	$150	$127
Chicago, IL (ORD)	$141	$235	$205
San Diego CA, (SAN)	$79	$131	$108
Dallas Forth Worth, TX (DFW)	$237	$209	$185

Source: USDOT and web airfares sale sites

Table 3.2 provides the current PRC flight schedule:

Table 3.2 – PRC Flight Schedule

Departure	Arrival	Departure Time	Arrival Time	Frequency
Prescott (PRC)	Phoenix (PHX)	8:30 AM	9:10 AM	Daily
Prescott (PRC)	Phoenix (PHX)	6:42 PM	7:22 PM	Sunday - Friday
Phoenix (PHX)	Prescott (PRC)	9:45 AM	10:25 AM	Sunday - Friday
Phoenix (PHX)	Prescott (PRC)	2:10 PM	2:50 PM	Saturday Only
Phoenix (PHX)	Prescott (PRC)	8:55 PM	9:35 PM	Sunday - Friday
Prescott (PRC)	Las Vegas (LAS)	10:35 AM	11:00 AM	Sunday - Friday
Las Vegas, (LAS)	Prescott (PRC)	4:02 PM	6:27 PM	Sunday - Friday

Source: Airport Administration

SECTION 4 - AIRPORT SERVICE AREA

Generally the Airport Service Area (ASA) refers to the airport passenger's catchment area. The ASA is defined by the surrounding communities' accessibility to the airport in terms of travel time by means of ground transportation. In 1999, The Arizona Department of Transportation (ADOT) in the Arizona Rural Air Service Study (SASP) defined the Prescott Municipal Airport theoretical market service area and an actual market service area.

The SASP acknowledged that on average, commercial service passengers are willing to travel 120-minutes to a major hub airport that can provide frequent direct national and international flights and 60-minutes to an airport with regional commuter service with a major hub airport.

Based on 60-minute driving times, the SASP identified that PRC theoretical service area would include an area spanning from Wickenburg to Williams and Camp Verde – **Figure 4.1** (theoretical service area). It was noted that actual diving times can vary, based upon weather, traffic, and terrain characteristics.

The SASP defined the actual market service area from the collection of information gathered through a travel agent survey, travel agent ticket logs, and passenger surveys. The actual market service area was found to be much smaller than the theoretical service area. PRC was found to attract passenger from only from Prescott and nearby community including Prescott Valley and Chino Valley. This finding reduced the ASA to a 20-miles radius from Prescott Municipal Airport. Several communities that fell within the PRC theoretical service area were attributed to the Flagstaff actual service area with the premise that Flagstaff had a higher level of service than Prescott **– Figure 4.2** (actual service area)

PRC's actual ASA in the SASP is found to be consistent with the definition of airport service areas provided in the National Plan for Integrated Airport Systems (NPIAS). The NPIAS criteria states that the airport system should be extensive, providing as many people as possible with convenient access to air transportation, typically not more than 20-miles travel to the nearest NPIAS airport.

Figure 4.1
Theoretical Service Area

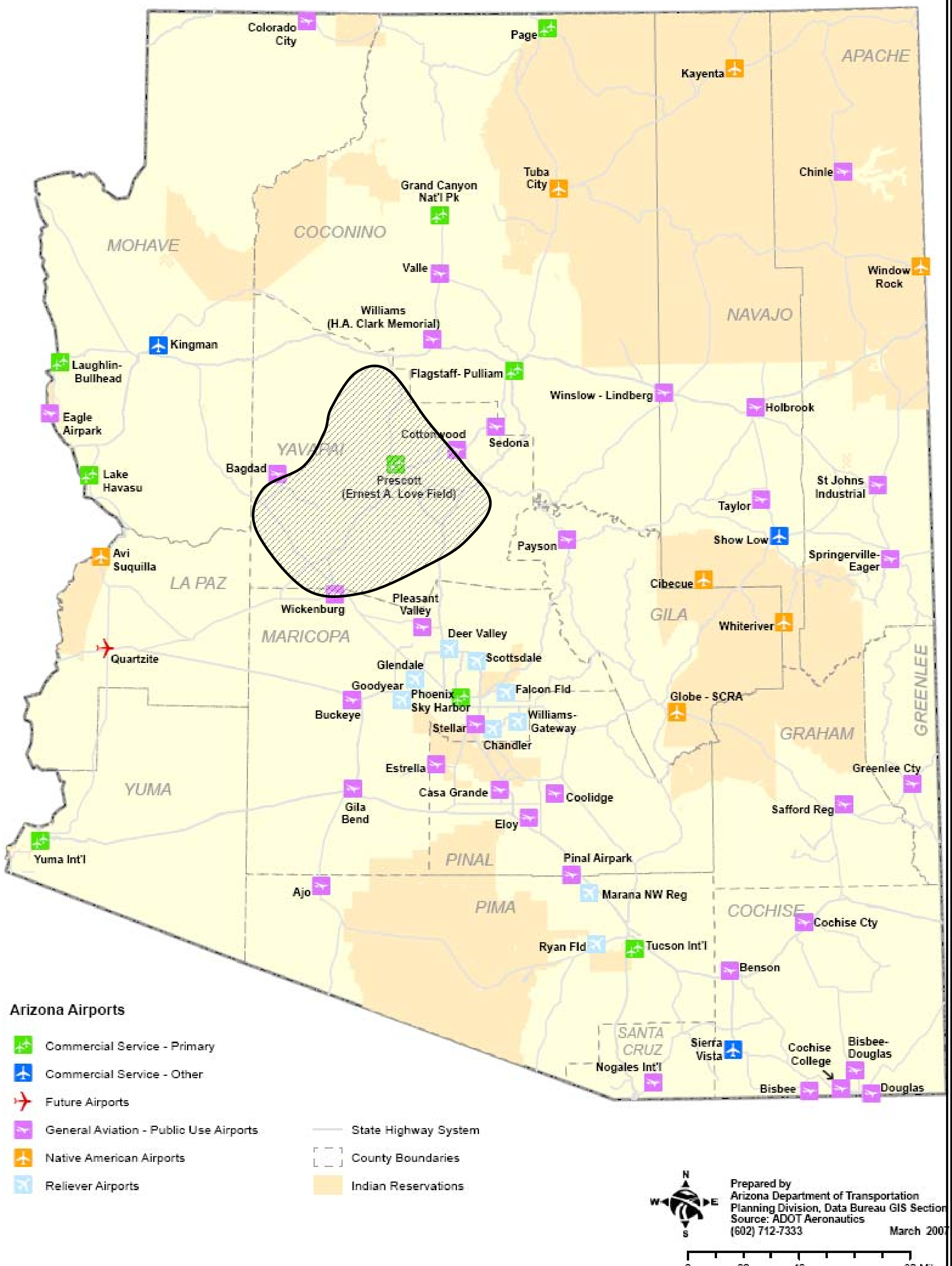
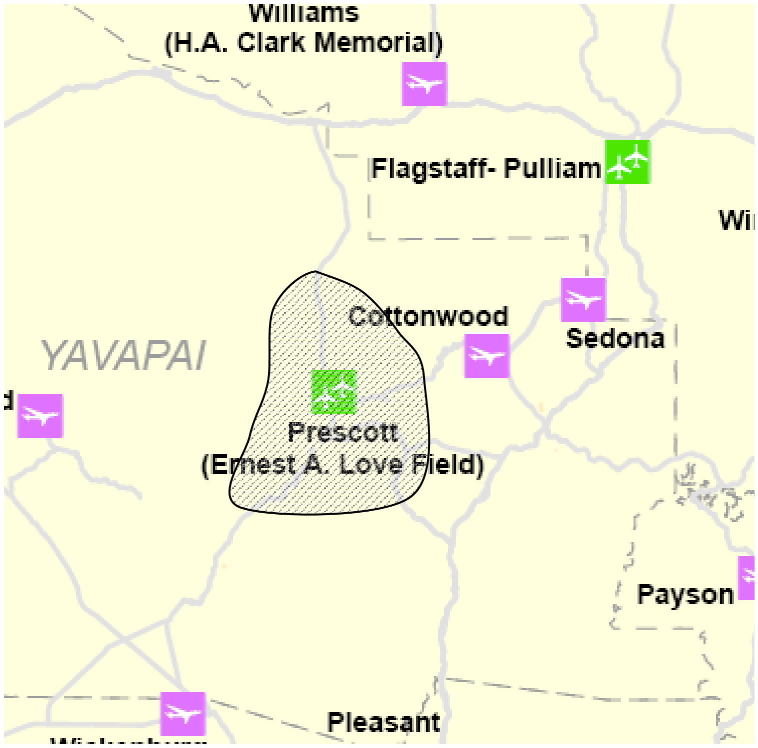


Figure 4.2
Actual Service Area



Therefore, for the purpose of this study, the Prescott Municipal ASA boundaries are set by a 20-miles travel distance radius from the airport, in line with NPIAS criteria and SASP findings.

Based upon the above definition of the Prescott ASA will include the following incorporated communities and zip codes, as shown in **Table 4.1**:

Table 4.1 – Communities & Zip Codes

City	Zip Code
Prescott	86301; 86302; 86303; 86304; 86313; 86314
Prescott Valley	86612; 86314
Chino Valley	86326
Dewey-Humboldt	86314; 86327; 86329

Some unincorporated residential areas of Yavapai County on the south and northwest side of Prescott as well west of Chino Valley are included in the ASA.

SECTION 5 – SOCIOECONOMICS & DEMOGRAPHICS OF ASA

To understand the air service needs in Prescott and to estimate the level of demand, it is useful to explore the characteristics of the communities served by PRC. To estimate demand for air service the following demographical characteristics have been reviewed: a) population, b) density, c) employment, d) taxable sales and e) income.

5.1 - Population

Prescott is identified by the US Census Bureau as a Metropolitan Statistical Area (MSA), defined by the US Office of Management and Budget (OMB) as a "geographic entity…for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics". According to the 2007 Census Bureau estimate, more than 208,000 people live in the Prescott MSA. According to the Department of Economic Security (DES) 2007 population estimates, it is estimated that about 60% of the MSA population, 124,477 people live within the 20 miles ASA radius, with the highest population density in the City of Prescott. The recent rapid growth of the region as prompted the Central Yavapai Metropolitan Planning Organization (CYMPO) Long Range Transportation to forecast the population within the tri-city area (Prescott, Prescott Valley and Chino) to be approximately 438,000 by 2030, representing a 5.6% overall annual growth rate in the ASA. Table 5.1 shows the population distribution in the entire ASA.

Table 5.1

ASA Population Estimates			
City	**2007**		**2030**
Chino Valley	13,098		30000
Dewey – Humboldt	4,434		88000
Prescott	43,217		102,000
Prescott Valley	38,357		30,000
Unincorporated	25,371		188,000
Total	**124,477**		**438,000**

5.2 - Taxable Sales

As shown in **Table 5.2**, taxable sales are a strong indicator of economic activity in a region. A high level of taxable sales indicates the existence of potential demand for air service. In 2006 $2.3 billion in total taxable sales were reported in the ASA of which 1.5 billion were spent in Prescott alone. Knowing that Prescott has an estimated population of about 43,217, its taxable sales per capita is equal to $32,455, which is about 30% higher than Phoenix, with $22,587 and 36% higher than Yuma with $20,600 taxable sales per capita. The overall taxable sale per capita in the ASA is 3% higher Phoenix with $23,300[†]. The high taxable sales highlights the role of Prescott as an economic drive for the area and that it benefits from tourist spending and from people that travel to Prescott on a regular basis for every day needs.

Table 5.2

2006 ASA Taxable Sales (million)	
Chino Valley	184.6
Dewey – Humboldt	37.8
Prescott	1,500
Prescott Valley	586.4
Unincorporated areas	Not available
Total	**2,300**
Phoenix	34,400
Yuma	1,900

5.3 - Employment Statistics

It is estimated, based on AZ Department of Economic Security data, that in 2007 the total labor force in the Prescott metropolitan area was over 40,500 with an average 3.2% unemployment rate.

The region employment spectrum is diverse, encompassing different industries and sectors such as education, medical, manufacturing, retail and tourism. A large number of employers are located in city of Prescott, including the Yavapai Regional Medical Center, Yavapai Community College, Embry-Riddle University, Veteran Administration Medical Center, Wal-Mart, Frontier Village and Prescott Gateway Mall, Prescott Municipal Airport and related services, several manufacturing companies and governmental offices. Other employers in the area are the casinos, resorts, various school districts, USPS, and retail stores.

[†] Taxable sales and population numbers for unincorporated areas were not included in the computation of the ASA taxable sale per capita. However it is expected that they contributed in the taxable sales totals of Prescott and other incorporated communities.

5.4 – ASA Income Statistics

The Population Trend Report prepared for the City of Prescott by ABC Demographic Consultants estimates 50,802 households in 2007 are within a 20-mile radius of the Prescott Municipal Airport. The estimated average household income for 2007 was estimated at $56,153, the median income was estimated at $41,348 and the per capita income was estimated at $26,434. Additionally, the report estimated in 2007 41% of the population was between the ages of 20 and 54 years old, while 21.4% of the population was estimated to be above 65 years old. The median age of 43.4 years and an average age of 42.76 years. **Table 5.3** depicts the ASA income distribution.

Table 5.3

ASA Income Distribution	
$250,000 or more	2.54%
$150,000 to $249.999	2.50%
$100,000 to $149,999	7.80%
$75,000 to $99,999	9.22%
$50,000 to $74,999	18.23%
$35,000 to $49,999	18.75%
$25,000 to $34,999	14.36%
$15,000 to $24,999	14.31%
Under $14,999	12.29%

SECTION 6 – COMPARABLE ASA

It is commonly estimated that the annual passenger enplanements demand is strongly correlated to the size of the population that it serves. However, individual markets vary from one another. The regional distribution of air service demand is heavily influenced by low cost carries, routes availability, flights frequency and hub and spoke systems.

The market characteristics and enplanements of four communities and airports in the southwest were reviewed to estimate the market potential of PRC. The selection process was based upon factors such as a) geographical location, b) proximity to a major hub, c) population in the Metropolitan Statistical Area (MSA), d) level of service, and e) enplanements.

- **a) Geographical Location:** The selection of the airports was limited to the south-western region of the United States to maintain analogous population and geographical characteristics.
- **b) Proximity to a Major Hub:** Since PRC market share is affected by PHX, only airports that are directly affected by major hubs were selected.
- **c) Population in the Metropolitan Statistical Area (MSA):** The MSA is designed to provide a nationally consistent set of standards for collecting, tabulating and publishing federal statistic for geographic areas in the United States. Prescott MSA population was estimated to be about 208,000 with a density estimated to be about 1200 people per square mile; hence only cities with a population density similar to Prescott MSA were selected. Population and population density in the area Metropolitan Statistical Area were obtained from the US Census Bureau
- **d) Level of Service**: Only airport with more than one commercial air carrier options were selected.
- **e) Enplanements:** Only airport with average capture rate above 35%, reflecting 50,000 or more enplanements were selected.

Based on the criteria mentioned above, the airports in the following cities were selected: St. George, Utah; Redding, California; Yuma, Arizona; and Abilene, Texas. Overall, these cities have similar statistic characteristics. **Table 6.1** provides a summary of their enplanements per capita ratios.

Table 6.1

Enplanement per Capita	
SGU – St. George, Utah	0.42
RDD – Redding, California	0.37
YUM – Yuma, Arizona	0.36
ABI – Abilene, Texas	0.71
Average	**0.46**

Table 6.2 presents a snapshot of pertinent information of the selected cities.

Table 6.2

SGU – St. George, Utah			
Enplanements	53,663	Destinations	LAX, SLC
Nearest Major Hub	LAS	MSA Population	126,000
Distance in Miles	131	Population Density	771
Daily Flights	Up to 20	Taxable Sales	1.8 Billion
Airlines	United Express Sky West	Household Median Income	49,000
RDD – Redding, California			
Enplanements	66,695	Destinations	SFO, LAX, PDX
Nearest Major Hub	SMF	MSA Population	180,000
Distance in Miles	148	Population Density	1383
Daily Flights	Up to 22	Taxable Sales	2.1 billion
Airlines	United Express Horizon Air	Household Median Income	$41,682
YUM – Yuma, Arizona			
Enplanements	67,684	Destinations	PHX, LAX, SLC
Nearest Major Hub	PHX	MSA Population	185,000
Distance in Miles	188	Population Density	880
Daily Flights	Up to 14	Taxable Sales	1.9 billion
Airlines	United Express, Delta Sky West, US Airways	Household Median Income	35,374
ABI – Abilene, Texas			
Enplanements	88,327	Destinations	IAH, DFW
Nearest Major Hub	DFW	MSA Population	124,000
Distance in Miles	175	Population Density	1100
Daily Flights	Up to 10	Taxable Sales	2.1 billion
Airlines	American Eagle Continental express	Household Median Income	39,821

SECTION 7 – COMMON PASSENGER LEAKAGE MODES

Prescott's proximity to other airports such as Flagstaff Pulliam Municipal Airport and Phoenix Sky Harbor (PHX), a major hub, makes ground transportation options (e.g., personal vehicles, shuttle vans, taxis and limos) via interstate I-17 attractive. The use of personal vehicles is very common. According to the CYMPO Regional Transit Need Study, more than 2% of the Prescott tri-city area workforce commutes daily to Phoenix. I-17 offers direct connections to the Phoenix freeway loop system and to the PHX Airport. Taxi services from Prescott to PHX, while available, are limited by regulations imposed at by Sky Harbor. Others like limousine or door-to-door services are also available by reservation only, their prices range from $49 to $75/hour or $40 to $125 one-way.

Another popular mode of transportation dedicated mainly to transfer passenger from the tri-city area directly to PHX are shuttle vans. Nationwide operators have been seizing on the opportunity to transport passengers from rural and outlying area directly to major hubs. According to the CYMPO Regional Transit Need Study, six private companies offer service between the Central Yavapai region and Phoenix Sky Harbor, of which three offer daily trips with scheduled and on-call with pick-ups at private residences. However, two companies control the majority of the market share of this flourishing business, Prescott Transit Authority and Shuttle-U. Combined, they provide 32 daily round trips between Prescott and PHX with prices starting at $21 one-way up to $56 round trip. Both operate commercial Ford minivans and lift-equipped shuttle vans, with a capacity respectively of 8 and 12 passengers. The maximum daily capacity for Prescott Transit is 128 and 180 for Shuttle U. Combined, they have the potential to serve 308 passengers per- day or 112,420 passengers per year. **Table 7.1** provides their current schedule and fare structure.

Table 7.1 – Passenger Shuttle Fare Structures

Prescott Transit Authority						
Departures from Prescott		**Departures from Phoenix**		**Purchase Type**	**One-Way Cost**	**Round Trip**
4:00am	12:00pm	6:30am	2:30pm	Regular	$29.95	$49.95
5:00am	1:00pm	7:30am	3:30pm	At Sky Harbor Airport	$32	n/a
6:00am	2:00pm	8:30am	4:30pm	Child 4-15	$18.95	$29.95
7:00am	3:00pm	9:30am	5:30pm	Child under 4	Free	Free
8:00am	4:00pm	10:30am	6:30pm	Advance Purchase 20 trip	$21	$42
9:00am	5:00pm	11:30am	7:30pm	Advance Purchase 10 trip	$22	$44
10:00am	6:00pm	12:30pm	8:30pm	Advance Purchase 6 trip	$23	$46
11:00am	8:00pm	1:30pm	10:30pm			

Shuttle U								
Departures from Prescott		**Departures from Prescott Valley**		**Departures from Phoenix**		**Purchase Type**	**One-Way Cost**	**Round Trip**
4:00am	12:00pm	4:20am	12:20pm	7:30am	3:30pm	Regular	$34	$56
5:00am	1:00pm	5:20am	1:20pm	8:30am	4:30pm	Child 4-15	$18	$30
6:00am	2:00pm	6:20am	2:20pm	9:30am	5:30pm	Child under 3	Free	Free
7:00am	3:00pm	7:20am	3:20pm	10:30am	6:30pm	Frequent Rider	$22	$44
8:00am	4:00pm	8:20am	4:20pm	11:30am	7:30pm			
9:00am	5:00pm	9:20am	5:20pm	12:30pm	8:30pm			
10:00am	6:00pm	10:20am	6:20pm	1:30pm	10:30pm			
11:00am	8:00pm	11:20am	7:20pm	2:30pm				

SECTION 8 - SURVEYS

In the effort to estimate the potential passenger demand in the Prescott Airport Service Area, the data from two passenger's surveys and one business survey was reviewed.

8.1 - O'Neil's Passenger Intercept Survey

To understand their market composition, Phoenix Sky Harbor conducts a quarterly passenger intercept survey on a random sample of 750 passengers. As part of the survey, demographic data and ZIP codes of origin are collected. The results are sorted based upon the ZIP Code of origin. ZIP Codes starting with 85 and 86 are commonly used for Arizona. The surveys conducted in the third and fourth quarter of 2007 revealed that 47.1% of the sample had a home address in the

Mountain-West region (AZ, NM, NV, UT, CO, ID, WY) and 3% of the sample originated from Prescott in the 863XX zip code area (see **Table 8.1**).

Table 8.1

2007 3rd & 4th Qt O'Neil Passenger Survey	
City and Communities	**% of traffic**
Phoenix	9.9%
East Valley Communities	14.1%
West Valley Communities	6.4%
Tucson	1.6%
Northern Arizona	1.4%
Prescott	**3%**
Other	10.7
Total	**47.1%**

The second survey reviewed is the 2005 Phoenix O&D Passenger Survey, which aimed to collect demographic data, purpose of travel and other airport pertinent information. As part of the demographic data ZIP codes of the participant passengers were also collected (see **Table 8.2**). The survey was administered to departing passengers only.

The results showed that 2.83% of the sample was composed of residents in the Prescott MSA, which includes Sedona, and 1.69% was composed just of residents of the Prescott ASA. In 2005, Sky Harbor reported 24.7 million O&D passengers.

Table 8.2

2005 Phoenix Passenger Survey – ZIP Codes		
86301	Prescott	Yavapai
86303	Prescott	Yavapai
86305	Prescott	Yavapai
86314	Prescott Valley	Yavapai
86322	Camp Verde	Yavapai
86323	Chino Valley	Yavapai
86324	Clarkdale	Yavapai
86325	Cornville	Yavapai
86327	Dewey	Yavapai

The third survey was conducted by The Louis Berger Group, Inc., as part of the Prescott Municipal Airport Master Plan. The survey was aimed to local business that benefits or may benefit from additional air service in Prescott, to understand their business travel preferences. While the results of the survey did not produce any demand estimates, valuable information about quality of existing service and passenger's preference were recorded. The survey showed that the majority of the business travel would use PRC more for their travel needs if quality and consistency of the current air service is improved. Until then, many prefer using personal, rental vehicles or shuttles to satisfy their travel need.

SECTION 9 – ANALYSIS OF FINDINGS

Passenger leakage is very common in small communities, especially in communities where local air service is viewed by potential customers as not attractive. The same can be said for medium size airports when located within driving distance from a major hub airport.

When large segments of the population are on a fixed income, the demand for airfare is elastic (i.e., sensitive to price change). The choice of using the local airport or drive to a larger one is determined by the lowest overall cost. Prescott has a large number of retirees with 20 percent of its population above 65 years of age, which typically will opt for the cheapest travel solution. In addition, Prescott is approximately 105 miles north of Phoenix Sky Harbor, which is one of the busiest major hubs in the nation, with hundreds of daily direct flight and destination. PHX is also home to US Airways, and Southwest Airline has a heavy presence. Southwest Airline is known for its low cost fare and for the so called "Southwest Effect", where competing airlines lower their fares on markets served by Southwest; consequently passengers are willing to drive considerably more to reach an airport served by Southwest.

Nevertheless, when comparing airfares from Prescott to the top five PHX city pairs, it was found that average airfares increased less than the cost of the connection between PRC and PHX. In some instances some travel sites quoted lower prices from PRC than from PHX. This shows that the complexity of the airfare system, and the frequent changes, in response to demand and competitors, makes it very difficult to grasp the airfare structure from/to PRC.

At this time, with more than 32 daily round trips, and a daily capacity of 308 passengers, shuttle van companies have been identified to be PRC's primary competitor. For this study, we were unable to obtain ridership data, nevertheless all documentation and research indicates that morning departure from Prescott are typically full and so returns in the afternoon from PHX, mimicking airline departure and arrival peaking characteristics. Shuttle companies often advise to call and reserve in advance. Therefore, it was believed appropriate to develop three ridership scenarios. As shown in **Table 9.1**, Low, Likely, and High ridership scenarios depict the yearly passenger loads of the shuttle companies.

Table 9.1

Yearly Shuttle Passenger Load Scenarios		
Low	Likely	High
56,100 – 61,800	73,000 - 78,700	89,850 – 95,550

Based upon the above estimates, shuttle companies have likely achieved a demand capture rate of about 70% of unconstrained demand, while the airport is currently capturing less than 6%, with the remaining 24% still likely to choose to personally drive directly to Phoenix or elsewhere.

In the 1999 Arizona Rural Air Service Study, ADOT estimated that statewide enplanements per capita ration was 3.10, lead by Phoenix with a 3.76 ratio and Tucson with 2.18. It was then concluded that the unconstrained overall enplanement per capita rate for the 13 study airports was equal to 2.06 and for Prescott 0.87, estimating that Prescott could capture approximately 40% of its total unconstrained demand.

Knowing that demographic characteristic in the areas have not significantly changed in the last ten years, it is reasonable to believe that the same ratio of enplanement per capita is still valid. As previously described, the population of the Prescott Municipal Airport Service Area was estimated at 124,477, applying the same enplanement per capita ratio calculated in the Arizona Rural Air Service Study the total unconstrained enplanement demand would be 108,295 per year. Applying the 40% capture rate calculated in the SASP to the total unconstrained demand, Prescott could capture 43,318. The 40% capture rate is believed to be reasonable considering that all non regional and secondary airports are affected by passenger leakage. The 2000 Arizona State Aviation Need Study (SANS) pointed out that even lager markets lose 40-50% of their passengers.

Comparing Prescott to the selected comparable airports and MSA, it was noted that Prescott has similar taxable sales and a higher median income than three of the four in the MSA. The average enplanement per capita was found to be equal to 0.46 of the total MSA population. Prescott MSA is larger than any of the 4 MSA reviewed, with an estimated population of about 208,000. Applying their average enplanement per capita, Prescott could draw up to 95,680 enplanements per year from its MSA and 57,260 enplanements from the 20-miles radius ASA. This estimated capture rate is 6% higher than the capture rate in the SASP.

The third estimate comes from the survey results of the Sky Harbor passenger's intercepts surveys and the Prescott Municipal Airport Business survey. The quarterly Passenger Intercept Survey, while not intended specifically for O&D passenger traffic tell us that 3% of the random sample, which capture all passenger traffic, both O&D and connecting, originated in the Prescott area. The second survey, the 2005 Passenger Survey tells us that 2.83% of the sample, which was composed only by O&D departing passenger, originated from the Prescott MSA and 1.69% from the Prescott Airport Service Area previously identified.

Considering that in 2007 Sky Harbor served more than 40 million passengers, it is estimated that more than 152,000 enplanements were from passenger living in the Prescott MSA, with a rate of enplanements per capita of 1.36, still below the national average of 1.53, and below the State average of 3.87.

SECTION 10 – SUMMARY OF FINDINGS

Finding the precise number of passengers that choose not to use PRC is very difficult and elusive. The shuttle van companies are careful not to divulge their ridership numbers. Possibly the only way to find exactly how many passengers begins their air travel in a different airport would be to access each airline reservation systems, a task very difficult to accomplish.

Based upon the review of previous studies, available information, comparables and surveys data, **Table 10.1** shows the following estimates for unconstrained and potential demand of air service. In 2007, PRC reported approximately 4,000 enplanements, which shows that currently the airport is experiencing between a 90.7% to 93.4% passenger leakage of its potential demand to primary airports.

Table 10.1

Summary of Findings			
Estimation Methods	**Unconstrained Demand**	**Potential Demand**	**Leakage**
SASP	108,295	43,318	90.7%
Comparable ASA	95,680	57,260	93.0%
Survey	152,000	60,800	93.4%
Average	118,658	53,792	92.5%

Lease Rates Analysis
Prescott Municipal Airport

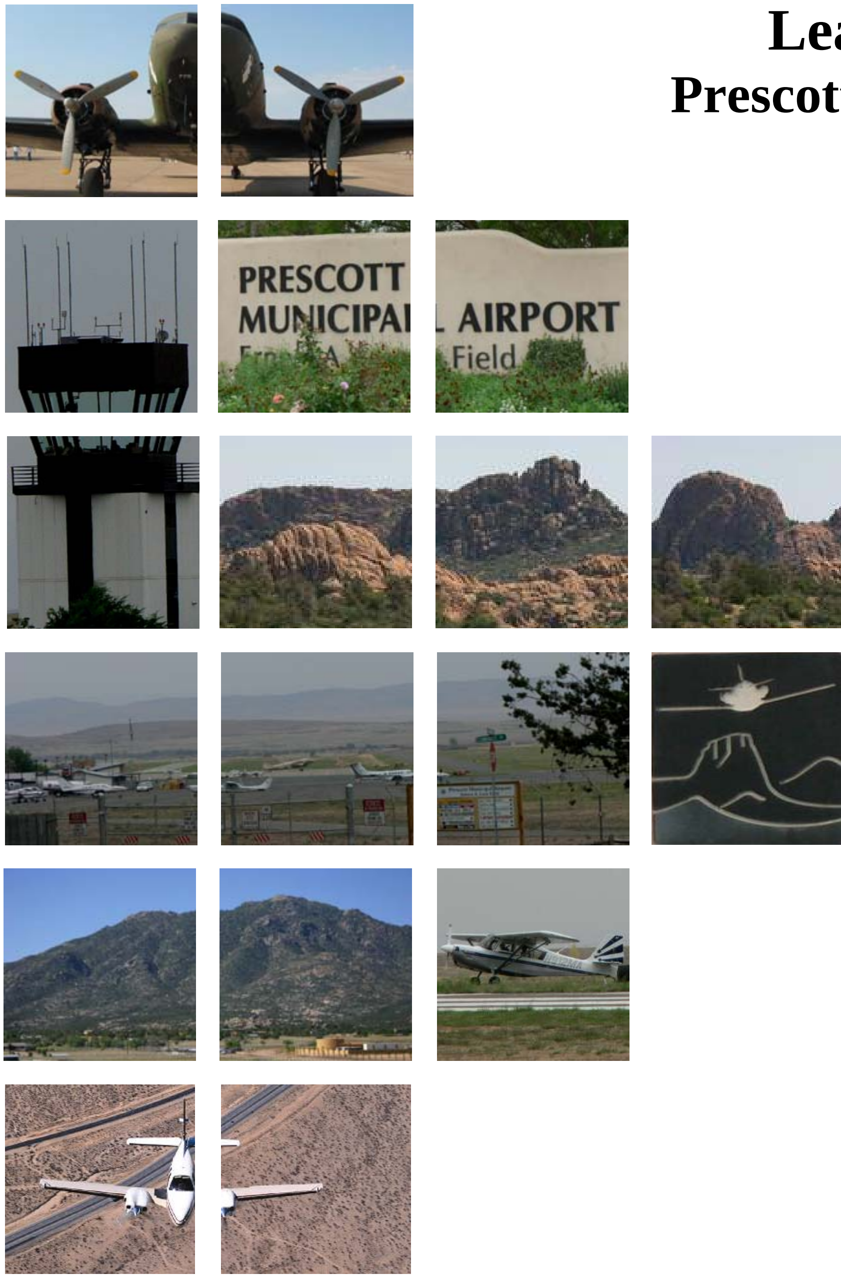


TABLE OF CONTENTS

INTRODUCTION

The purpose of this White Paper is to determine if Prescott Municipal Airport's (PRC) current lease rates and policy are competitively established and adequate. This White Paper reviews existing airport lease rates and compares results of a lease rates and structures survey of similar airports to that of PRC. It identifies PRC's overall market position, ascertains the adequacy of the airport's leasing structure and policy, and recommends where improvements may need to be considered.

The key objective of this White Paper is to analyze lease rates at comparable airports. This analysis provides a "snap shot" of airport lease rates from similar airports. It allows PRC to gauge it's existing lease rates and provides assistance with the establishment of future rates within the context of the airport's market environment. It should be stated that a lease rates analysis does not supplement a property appraisal for specific lease negotiations.

The goals set forth for this analysis were accomplished through the following steps:

- Obtain and review existing leases from the City through meetings with City and Airport staff to identify current lease issues, concerns and needs;

- Establish a reasonable list of comparable airports to be researched for this effort. Lease rates for similar services and operations at similar airports was collected to achieve this goal; and

- Through market research and historical data collection, identify potential changes to current lease rates, landing fees and the use of lease inflators and their applicability, as well as a review of other techniques commonly used in the industry.

This White Paper is categorized into the following sections:

- Section 1 – Airport Market Profile
- Section 2 – Comparable Airports
- Section 3 – Summary of Key Findings
- Section 4 – Observations and Recommendations

SECTION 1 – AIRPORT MARKET PROFILE

PRC is a general aviation airport located in Yavapai County, and is centrally located approximately 8 to 10 miles between the City of Prescott, the towns of Chino Valley and Prescott Valley. The airport is owned and operated by the City of Prescott.

PRC is situated on approximately 760 acres of land. The airport serves both the commercial and multi-faceted general aviation needs for the area, including the City of Prescott, Yavapai County and residents of the local Yavapai Reservation. Additionally, PRC serves as the flight training base for Embry-Riddle Aeronautical University (ERAU).

There are currently 350 aircraft based at PRC including 300 single engine aircraft, 26 twin engine aircraft, 3 jets, 10 helicopters, and one ultra-light aircraft.

There are several businesses located at the Airport. The following table identifies each type of service provided at the Airport and the name of the businesses that provide those services.

Table 1
PRC Airport Businesses

Service Type	Business
Charter, Flight Instruction, & Rental	▪ Air Grand Canyon ▪ Arizona Skyways Airlines ▪ Embry-Riddle Aeronautical University ▪ Guidance Helicopters ▪ North-Aire, Inc. ▪ Sky School
Aircraft Repairs, Avionics, & Service Support	▪ Arizona Air-Craftsman/Wing Nuts ▪ Mile High Avionics ▪ Nostalgaire ▪ Prescott Aircraft ▪ Prescott Aircraft Interiors ▪ Powell Upholstery & Aircraft Interiors ▪ Wing Waxers – Aircraft Dealing
Airline Service	▪ US Airways Express (Operated by Mesa Airlines)
Fixed Base Operator (FBO)	▪ Legend Aviation[1]
Ground Transportation	▪ Hertz (Airport Terminal)
Miscellaneous	▪ Antelope Hills Golf Course ▪ Arizona Aviation Supplies ▪ Rittaire ▪ Susie's Skyway Restaurant

Source: Draft PRC Airport Master Plan (2008)

These businesses are housed in several facilities at the Airport, including the Commercial Terminal Building, General Aviation Terminal Building, and various other buildings on Airport property.

[1] Legend Aviation has recently become the Airport's FBO. Prior to Legend providing these services, the City of Prescott provided FBO services at PRC

SECTION 2 – COMPARABLE AIRPORTS

To collect and review lease rates for similar services and operations at comparable airports to PRC, criteria were developed to determine a list of potential comparable airports. The following broad criteria were used to develop the long list of potential comparable airports:

- Location of the airport, with preference given to those airports within the State of Arizona, southwest region, and a competitor of PRC;
- Similar size and scope in terms of acreage, runway length, use, ownership, and type; and
- Similar type of activity: training, ATCT, based aircraft level, Part 139 certification.

Table 2
Airports Considered for Comparison

Airport	Acres	Ownshp/ Use Type	Airport Type	Longest Runway	Part 139	# of Based A/C	ATCT	EAS	Comp
Prescott	**760**	**Pu/Pu**	**CS-Primary**	**7,550’**	**Yes**	**318**	**Yes**	**Yes**	**Yes**
Flagstaff Pulliam	795	Pu/Pu	CS-Primary	8,800’	Yes	130	Yes	Yes	Yes
Grand Canyon	859	Pu/Pu	CS-Primary	8,999’	Yes	9	Yes	Yes	No
Kingman	4,200	Pu/Pu	CS-Other	6,827’	Yes	268	No	Yes	No
Laughlin	650	Pu/Pu	CS-Primary	7,520’	Yes	61	Yes	No	No
Lake Havasu	646	Pu/Pu	CS-Primary	8,001’	Yes	288	No	No	Yes
Sedona	220	Pu/Pu	GA-Public	5,129’	No	100	No	No	Yes
Glendale	720	Pu/Pu	GA-Reliever	7,150’	No	357	Yes	No	Yes
Cottonwood	210	Pu/Pu	GA-Public	4,250’	No	49	No	No	Yes
Bagdad	91	Pu/Pu	GA-Public	4,575’	No	5	No	No	No
Phoenix-Mesa Gateway	3,020	Pu/Pu	CS-Other	10,401	Yes	94	Yes	No	Yes
Show Low	691	Pu/Pu	CS-Other	7,200’	Yes	63	No	No	Yes
Page	536	Pu/Pu	CS-Primary	5,950’	Yes	68	No	Yes	Yes
Yuma	3,100	Gv/Pu	CS-Primary	13,300’	Yes	167	Yes	Yes	No
Williams (H A Clark Memorial)	303	Pu/Pu	GA-Public	5,992’	No	16	No	No	No
Daytona Beach Int’l (FL)	1,800	Pu/Pu	CS-Primary	10,500’	Yes	204	Yes	No	Yes
Nashua (NH)	400	Pu/Pu	GA-Public	5,501’	No	432	Yes	No	No
St. Louis Dwnt Airport (IL)	940	Pu/Pu	GA-Public	6,997’	No	268	Yes	No	No

Sources: FAA 5010 Airport Master Records dated 12/20/2007; USDOT EAS Determinations.
Abbreviations: Pu = Public; CS = Commercial Service; GA = General Aviation; A/C = Aircraft; ATCT = Air Traffic Control Tower; EAS = Essential Air Service; Comp = Comparable Airport.

Based upon the criteria identified above and review of the data in the table, the comparable airports selected for review are shaded blue in the table above. While the airports selected are not necessarily comparable across all criteria categories, the nine (9) airports selected provide a diverse cross representation of activity at PRC and provide the best results for this analysis.

Each airport was contacted to collect relevant lease information in Spring, 2008. The airports were provided with a matrix designed to gather information in ten (10) areas of interest with respect to leases, fees, investments, lease clauses, inflators, and any additional information that the airport could provide that would assist with the analysis.

The result of this information collection effort for each comparable airport is provided in Table 3 on the following page.

Table 3
Comparable Airport Lease Information

Airport	Land Lease (sq. ft.)	"Wholesale" Hangar Rental Rate (sq. ft.)	"Retail" Hangar Rental Rate (sq. ft.)	Office Rent	% of Gross Receipts	Fuel Flowage Fee (gal)	Required Investment	Length of Leases and Reversion Clause	Inflator Used/Time
Prescott	**$0.09 to 0.30**	**$0.09/SF - $0.16/SF**	**$0.22/SF - $0.40/SF**	**$10.00 - $24.85**	**1.5% of gross income 20% of gross snack mach.**	**AvGas: $0.25 - 0.10 JetA: $0.35 - 0.10**	**varies**	**25 yr term**	**CPI**
Cottonwood	$0.42	$5.28	N/A	None	N/A	$0.05	None	25 yr initial term w/15 yr option. Reverts to airport at end of 25 yr	10% increase each 4 YR period
Daytona Beach	7%- 10% of appraisal	No DAB owned Hangars	--	% of appraisal	None	$0.07	n/a	20-30 yrs	Appraisal every 5 yrs
Glendale	$0.1375 to $0.2291	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Annual CPI
Lake Havasu	$0.28 - $0.95	$300 - $400/month Shade ports: $155/month	N/A	$30.00	10% monthly	$0.09	Case-by-case	35 years with a 10 yr option Subleases are a right of redemption Buildings revert to the airport	CPI every other year
Page	$0.34	N/A	N/A	$2.78/SF for upstairs terminal $5.56/SF for downstairs terminal	None	$0.035	None	15 yr initial term with 2 – 5 yr extension for a 25 yr total lease	Annual CPI
Phoenix-Mesa Gateway	$0.50	$10.50	$15.50	$23.00	5% concessionaire agreements only	$0.11	In minimum standards	30 yr plus two five yr options, then reverts back to airport	CPI every 3 years
Sedona	$0.48	$2.50		Main Terminal - $5.00 Terminal Annex - $3.00	2.5% of gross for all commercial leases	Self fueling $0.20	1 month's rent	20 yr initial with 2 yr options All land reverts back to the City unless optioned	CPI every 3 years
Show Low	$.3085 for all leases, com. operators pay a monthly fee	9,000 sq ft hgr = $6,000 month 3-8,100 sq ft hgrs = $3,500 month	n/a	Approx $33.00	None	$0.10	As required by minimum standards	Private hangars are 25 yrs w/10-yr option. Com. leases max of 10 yrs.	Annual CPI

Other general observations include:

Cottonwood

The FBO is the only commercial hangar rental. It is referred to as wholesale because it's very basic. The airport also has T-hangars for storage at $250.00/mo. ($0.217/SF/MO).

Flagstaff

The airport was not available to participate.

Glendale

Non-Premium Space:
With Infrastructure: $0.1718/SF
Without Infrastructure: $.0.1375/SF

Premium Space:
With Infrastructure: $0.2291/SF
Without Infrastructure: $0.1948/SF

Sedona

There are currently are 40 people on the waiting list for hangar space. That waiting list is broken down into 20% who currently use tie-downs and 80% people moving in from out of state. T-hangars are anticipated to be built in 3-5 years, once a water issue is resolved. There are currently 105 based aircraft: 2 small jets, 5 twins, and the remainder are single engine aircraft.

SECTION 3 – SUMMARY OF KEY FINDINGS

Based upon the information gathered from the comparable airports listed in Table 3, the ranges and approaches for each lease area category considered by the comparable airports in their leasing policies are identified below and compared to rates at PRC.

Table 4
Summary of Key Findings

Lease Area	Range of Comparables	PRC
Land Lease	$0.13 to $0.50 s.f. or 7% to 10% of appraised value	$0.09 to $0.30 s.f.
Wholesale Hangar Rental	$2.50 to $10.50 s.f.	$0.09 to $0.16 s.f.
Retail Hangar Rental	$15.50 s.f.	$0.22 to $0.40 s.f.
Office Rent	$2.78 to $33.00 per square foot or percent of appraised value	$10.00 to $24.85 s.f.
Percentage of Gross Receipts	2.5% to 10%	1.5 to 20.0%
Fuel Flowage Fee	$0.035 to $0.20	$0.10 to $0.35 (sliding scale)
Required Investment	Varies; minimum standards; or 1 month's rent	Varies
Length of Lease	15 to 35 year initial terms and offer option years	25 year term
Inflator	Appraisal or various term CPI	CPI

SECTION 4 – OBSERVATIONS AND RECOMMENDATIONS

PRC has many activities and existing policies in place related to property leasing. These activities are incorporated into this lease analysis as they relate to the information obtained from the comparable airports and the recommendations of this effort. Observations and recommendations for PRC regarding this lease rates analysis include the following areas:

- Leasing, including the recent lease contracts with Legend Aviation;
- Use of Property Appraisals; and
- Airport Minimum Standards.

The following discussion provides leasing observations and recommendations, the use of property appraisals for lease rate setting, along with general industry considerations to develop and implement Airport Minimum Standards for PRC as they relate to providing a "level playing field" for businesses looking to conduct commercial aeronautical activity at the Airport.

Leasing

While some variation exists at each airport, PRC is within the range of findings in most of the comparable areas considered in this analysis. As an example, a summary of the recent lease contracts signed with Legend Aviation was incorporated to this effort also. These include:

- **Prescott Aviation Land, LLC. (Legend Aviation): Contract 2008-067**
  Ground Lease for 7.17 acres; $0.30 s. f.; 25 year term; CPI

- **Prescott Aviation Fuel, LLC. (Legend Aviation); Contract 2008-179**
  Ground Lease 1 (existing) for 1.02 acres; $0.30 s. f.; 25 year term; CPI
  Ground Lease 2 (expansion) for 0.25 acres; $0.09 s. f.; 25 year term; CPI
  Fuel Flowage 100LL (Year 1 – $0.25 to Year 4+ – $0.10)
  Fuel Flowage Jet-A (Year 1 – $0.35 to Year 5+ – $0.10)
  Fuel Flowage ERAU (Year 1 – $0.12)

Table 5 on the next page identifies leasing observations and recommendations for PRC based upon the identified areas from the comparable airports and general industry practices.

Table 5
Leasing Observations and Recommendations

Lease Area	Observation	Recommendation
Land Lease	Within range, PRC may be low compared to nearby other airports	Utilize Appraisal
Wholesale Hangar Rental	Low	Investigate cause of low rates, utilize appraisal
Retail Hangar Rental	Low	Investigate cause of low rates, utilize appraisal
Office Rent	Within range	Continue as-is; Utilize Appraisal
Percentage of Gross Receipts	Within range	Look to maximize this method of revenue collection
Fuel Flowage Fee	High compared to nearby other airports	Investigate cause of high fee
Required Investment	Within range	Continue as-is, incorporate into rate setting based on size of investment
Length of Lease	Within range	Continue as-is
Inflator	Within range	Utilize CPI and/or Appraisal

PRC should continue its existing leasing policies and maximize revenues by implementing the use of airport property appraisals, minimum standards, and appropriate lease rates review from time-to-time. Developing effective airport lease agreements provides airport users with the services required while allowing the Airport to operate in a more financially self-sufficient manner. The recent leases with Legend Aviation indicate that the Airport is already implementing the observations and recommendations identified in this effort and confirms this activity.

Property Appraisals

Berger has facilitated the development of property appraisals at numerous airports to aide in the setting of market rental rates for various airport tenants including Fixed Base Operators (FBO’s), corporate tenants, and others. The following are some of the activities undertaken in developing an appraisal report. This list is not meant to be comprehensive as each appraisal will be customized to the unique property.

- Physically inspect the subject property and improvements;

- Review various technical data, site plans and any other pertinent structural information available with regard to land and improvements on the subject property;

- Examine various documents pertaining to the subject property and review general data relating to the airport itself and the general aviation environment which surrounds the subject property's immediate area;

- Research and analyze the market for airport real estate in the vicinity of the subject property, and interview various real estate, airport and aviation personnel regarding current market conditions, current pricing practices and the specific costs relating to the subject property and its position within the market place;

- Evaluate the subject property for specific physical items of wear and tear, depreciation, and valuate the competitive position of the subject within the specific local market for related properties;

- Uncover and confirm pertinent market data with relation to the sale and/or lease of relevant comparable property which are similar to and are useful in estimating a value for the subject; and

- Engage in a methodical and systematic analysis of all the data collected and place it within proper context for related properties in order to develop an estimate of market value for the subject property.

The overall purpose of an appraisal is to estimate the Market Rental Rate in Fee Simple as of a given date. The value derived for the property, and the information which is used as part of the appraisal methodology, is employed as a basis for a rental rate to be paid in connection with ground rental rates charged by the airport owner, (i.e., the City of Prescott).

PRC’s current initiative soliciting for Airport Property Appraisal Services (RFQ# 08AIR0430) is inline with the recommendations of this report.

Airport Minimum Standards

Airport Minimum Standards are a mechanism that provides an airport the ability to lease facilities and deliver aeronautical services in a fair and equitable manner. While no examples of unfair and inequitable commercial operating practices have been found at PRC as part of this analysis, there are numerous examples that occur at various airports due to the lack of having established and enforceable Airport Minimum Standards in place. The fundamental concept for implementing and enforcing Minimum Standards is to assure that all commercial operators are treated equally by the airport proprietor with no one entity having more favorable business terms than another. In addition to providing for this “level playing field,” Minimum Standards also help an airport proprietor to assure that operations are being conducted in a safe and efficient manner and that the services being offered to the general public meet the airport owner’s, users’, and the general public’s expectations.

Below are two example scenarios that demonstrate the need to implement, maintain and enforce Airport Minimum Standards.

- **Scenario 1 – FBO Service Provider versus Independent Mechanic:** As a privilege of providing FBO services, Example Airport requires their FBO to provide a full suite of services to the public including fuel sales, line services; aircraft maintenance; flight training; and charter services. As a condition of its lease arrangement with the Airport, the FBO is required to assure that airport users have the services needed to maintain their aircraft at the Airport. For maintenance specifically, this FBO is required to employ three full-time, FAA certified mechanics, provide services Monday through Friday from 8AM to 5PM, and be able to provide emergency services during non-regular service hours. In addition, they are also required to maintain a designated portion of their on-airport facility for aircraft maintenance along with meeting insurance requirements established by the Airport.

  An independent mechanic is operating at the same Airport out of a truck in the FBO parking lot. The mechanic may or may not be certified, does not carry the required insurance, and does not pay rent or fees associated with the privileges of doing business at the Airport. In addition, the reliability and availability of services to the public is questionable given the nature of the operation.

  It is clear how this scenario, which is not too uncommon, creates an unfair competitive practice that can weaken the financial viability of the FBO tenant. Further, the independent mechanic may be operating on the airport without the proper training and insurance, among other issues.

- **Scenario 2 – Aircraft Self-Fueling:** At public use airports that receive federal funding from the FAA, the FAA asserts that the airport proprietor has an obligation to permit an aircraft owner to self-fuel their aircraft with their own fuel. This does not mean that the owner can fuel any aircraft other than their own, and it does not mean that the owner of an aircraft who wishes to fuel their own aircraft should have any less of an obligation to adhere to the policies set forth by the airport with regard to safety, location, training, storage, handling, environmental permitting, insurance, or other reasonable requirements that are established in the interest of the public.

As such, in today's operating environment, the typical small aircraft owner finds it both impractical and too expensive to meet necessary operational and safety criteria in order to be permitted to self-fuel. Where the issue more typically comes into play however, is with regard to corporate aircraft operators who wish to self-fuel.

In this scenario, a corporate aircraft owner purchases fuel from a fuel supplier, stores the fuel in its own facilities, and maintains equipment to safely transfer the fuel into their own aircraft and in accordance with all airport policies and procedures concerning fueling. As such, the practice would fall within the FAA's criteria for self-fueling and must be permitted by the airport proprietor. However, once the aircraft owner uses their fuel, or fuel equipment to fuel any other aircraft that are not owned directly and used exclusively by them, they are not covered by FAA policy and are subject to the same regulatory and administrative requirements to store, sell and dispense fuel as an FBO would be, including paying the airport a fee for the privilege of providing such services whether or not the corporate entity argues it is providing such services gratuitously.

These two scenarios demonstrate a couple examples where the development and adoption of Minimum Standards come into play at an airport. In more extreme cases, the circumstances allowing unfair competition to develop, or allowing one operator to have more favorable business terms than another, can ultimately leave some airports without legitimate, safe and reliable services for the public.

FAA Grant Assurances (Obligations) – When developing Minimum Standards, FAA Grant Assurances must be considered. FAA Grant Assurances are obligations imposed on an airport sponsor when funds are accepted from the FAA to complete a project for the airport. These obligations, or assurances, require the airport sponsors to maintain and operate their facilities safely and efficiently and in accordance with 39 separate assurances. Those that relate to Airport Minimum Standards include:

- ***Grant Assurance 22. Economic Nondiscrimination.***
- ***Grant Assurance 23. Exclusive Rights.***

FAA Advisory Circular Guidance – The Minimum Standards development process takes into account guidance provided by the Federal Aviation Administration (FAA). This guidance is prepared by the FAA to ensure that airport sponsors who receive FAA grant funding for capital improvements at airports continue to meet their grant assurances which includes running the airport in a fair and equitable manner without granting a tenant an exclusive right to provide a service. The recently updated FAA advisory circular guidance includes:

- ***Exclusive Rights at Federally Obligated Airports***
  Advisory Circular (AC) 150/5190-6, Released January 4, 2007

- ***Minimum Standards for Commercial Aeronautical Activities***
  Advisory Circular (AC) 150/5190-7, Released August 8, 2006

The information provided in these two guidance documents should be used during the development of the Airport Minimum Standards process to assure consistency with FAA policies and recommendations.

From the information gathered as part of this Lease Rates Analysis, it is understood that PRC is currently in the process of approving Airport Minimum Operating Standards pending City Council approval. The City is encouraged to move forward and approve these Minimum Operating Standards and to periodically review and update them to assure that they are inline with the business goals and objectives of the Airport. Included in any update process, PRC is encouraged to involve the existing tenants/stakeholders of the Airport who these standards apply to get their "buy-in" on any proposed changes. Building an Administrative Record of this involvement helps to reduce FAA Part 16 formal complaints on unfair airport business practices.

Summary

Utilizing the observations and recommendations presented above will allow PRC to further refine its general airport business practices with regard to providing a fair and equitable platform for businesses to conduct activity, while providing the users of the Airport with a high level of safe, efficient and secure aviation services. In summary, these activities include:

1. **Leases –** Maximize the Airport's revenue through effective airport lease agreements.

2. **Property Appraisals** – Follow through with the selection of a firm for airport property appraisals and utilize accordingly.

3. **Airport Minimum Standards** – Approve, adopt and maintain Airport Minimum Standards.

APPENDIX 6 – PROJECT DOCUMENTATION

The contents of Appendix 6 include the following materials:

- PAC Meeting #1 Minutes – February 27, 2008
- PAC Meeting #2 Minutes – June 25, 2008
- PAC Meeting #3 Minutes – September 29, 2008
- PAC Meeting #4 Minutes – December 17, 2008
- PAC Meeting #5 Minutes – July 22, 2009
- PIM Meeting #1 Presentation – September 29, 2008
- PIM Meeting #2 Presentation – January 21, 2009
- PIM Meeting #3 Presentation – July 22, 2009

City of Prescott – Ernest A. Love Field
Airport Master Plan
Planning Advisory Committee Meeting Minutes
February 27, 2008

I. **Introduction:** David Sperling with Louis Berger began Planning Advisory Committee Meeting #1 on Wednesday, February 27 at approximately 2:11 PM with opening comments and introductions of the various group represented in the meeting. Each individual present introduced themselves and who they were representing (please see attached attendance sheet).

II. **Review of Master Plan Scope of Work:** A detailed *Scope of Work* was provided to each Planning Advisory Committee (PAC) Member within their Master Plan workbook.

- ***Task 1: Project Initiation and Coordination:*** Project Coordination will continue throughout the project and include: Planning Advisory Committee (PAC), Public Information Meetings, Local Office and City Council Meetings, Project Website, Mailings and other Outreach. Meeting schedule for the project is as follows:
  - Meeting #1 – Project Kickoff
  - Meeting #2 – PAC Meeting
  - Meeting #3 – Public Information Meeting
  - Meeting #4 – PAC Meeting
  - Meeting #5 – Project Status Report
  - Meeting #6 – PAC Meeting
  - Meeting #7 – Public Information Meeting
  - Meeting #8 – PAC Meeting
  - Meeting #9 – Public Information Meeting
  - Meeting #10 – Task Results Review
  - Meeting #11 – Exhibit "A" Discussion
  - Meeting #12 – Exhibit "A" Discussion with FAA/ADOT
  - Meeting #13 – Exhibit "A" Discussion with FAA/ADOT
  - Meeting #14 – Task Results Review
  - Meeting #15 – PAC Meeting
  - Meeting #16 – Public Information Meeting
  - Meeting #17 – Prescott City Council Meeting

- ***Task 2: Grant Administration:*** Administration services provided for grants associated with the Master Plan Update including development of a comprehensive file for the life of the grants for the Airport's records.

- ***Task 3: Baseline Conditions:*** Airport Inventory including Airport Facilities and Activity, Environmental and Land Use and Noise.

- ***Task 4: Forecasts of Demand:*** Estimation of future aircraft activity for a twenty year period, in five, ten an twenty year increments.

- ***Task 5: Facility & Standards Analysis:*** A facilities assessment to determine if the capacity of the existing airport facilities can meet the forecasted demand. If not, facility requirements necessary to meet that demand will be identified.

- ***Task 6: Land Use Planning:*** Review and develop a land use plan that is satisfactory to both Prescott Municipal Airport (PRC) and the City of Prescott.
  - Q Craig McConnell with the City of Prescott Public Works asked when an updated schedule would be provided. They City of Prescott would like to expedite the Land Use Planning portion of the Master Plan Project due to other upcoming city projects which are contingent on that portion of the Master Plan.
  - A David Sperling with Louis Berger stated a revised schedule would be provided by the end of the week.

- ***Task 7: Alternatives Analysis:*** Development of potential alternatives in consultation with PRC, FAA, ADOT and the PAC.

- ***Task 8: Airport Master Plan Environmental Review:*** Provision of a general assessment of the environmental effects of the preferred alternative and define the potential extent of future environmental analyses and regulatory issues that will be required to implement the airfield improvements shown on the Airport Layout Plan (ALP).

- ***Task 9: Airport Layout Plan:*** Development of an Airport Layout Plan (ALP) that can be accepted by PRC, submitted to the FAA for approval and used as a guide for all future airport development.

- ***Task 10: Action Plan:*** Development of a Capital Improvement Plan and a Financial Plan.

- ***Task 11: Project Documentation:*** Submittal of various working papers and support documentation to PRC throughout the course of the project.

- ***OPTIONAL TASKS:*** First proposed as "Optional Tasks", the following are now included in the consultants contracted *Scope of Work.*
  - ***OT 1: Passenger Leakage Analysis:*** Estimation of the extent of passenger leakage that is occurring from PRC. This task is anticipated to be completed as part of the forecasting effort (Task 4).

- *OT 2: Airport Lease Rate Analysis:* Analysis determining if PRC's lease rates and policy are competitively established and adequate.
- *OT 3: Runway Length Analysis:* Addressing the purpose and need for the airport's proposed runway extension which was already established through previous planning efforts at PRC and accepted on the ALP by the FAA.

III. **Project Schedule:** From the Notice to Proceed date a Draft Master Plan is anticipated to be submitted in 18 months and the Final Master Plan to be completed in 20 months. Work on the *Task 4: Forecast of Demands* has begun.

IV. **Task 3: Baseline Conditions Progress:** Information collected during the evaluation of Airport Operational Activity; Existing Facility Conditions; Airspace, Approaches and Air Traffic Control; Environmental and Land Use Review; and Socio-Economic Conditions was used for the Baseline Conditions Report.

V. **Task 4: Forecast of Demand Progress:**

- **Based Aircraft Owner Survey:** A Based Aircraft Owner Survey was distributed to collect information on the Based Tenant's opinion of the airport. Of the 230 surveys distributed, 107 have been returned. Copies of the survey with the survey results preliminary summary were provided at the meeting. Placement of the information collected from this survey within the *Forecast of Demands* has not yet been determined, however it will most likely be utilized when addressing facility requirements.

- **Local Business Survey:** This survey will involve contacting of businesses within the area who will/do use aircraft to conduct business and question if they would or wouldn't use the *Prescott Municipal Airport* and why.
  - Q Ab Jackson with the Chino Valley Chamber of Commerce asked what is defined as "local" by the Master Plan Project.
  - A David Sperling with Louis Berger stated that an area larger than just the City of Prescott is being surveyed. The consultant group continues to identify the appropriate "local" area. Thus far, a list of 30 businesses within the general area, not just local Prescott has been compiled. Collection of information from a larger area, and a well documented approach with numbers to support the information is necessary for FAA budget support.

VI. **Ongoing Optional Tasks:**

- **OT 2: Airport Lease Rate Analysis:** Leasing structure and rates information has been collected from comparable airports such as Glendale, Cottonwood, Page, Gateway, Show Low and Daytona Beach. A draft report of this information will be submitted in the near future.

- **OT 1: Passenger Leakage Analysis:** Information from local vehicle shuttle companies; survey data from the City of Phoenix Aviation Department for passengers from the Prescott area flying out of Phoenix Sky Harbor over use of Prescott Airport; and evaluation of comparable airports to Prescott socioeconomically and population size has been collected to identify passenger leakage. Passenger intercept surveys will be used to identify passengers via zip code that travel from the Prescott area to Phoenix to fly. The objective of compiling this information is not to gain this market back but to evaluate the size.

VII. Open Discussion:

Q Craig McConnell with the City of Prescott Public Works commented the Task 6: Land Use Planning is very critical to the City of Prescott because of the impact on other future city growth plans. Such issues and future projects for the City of Prescott are:

1. Prescott Municipal Airport – Master Plan – Lane Use Plan
2. City of Prescott General Plan Update
3. Evaluation of existing and upcoming projects for transportation and utility infrastructure
4. Financing and Continual Dialogue with Property Owners

McConnell also requested specific information be provided on what commercial growth would be appropriate and compatible within the land use plan map. Additionally, McConnell suggested to take a look at the main runway, runway length and use in comparison to the impacts of lengthening the runway to the discouragement of other city growth such as residential which will in turn strain economical development.

A David Sperling with Louis Berger stated it is understood what information the city needs to address these issues however, answers to runway changes are not obtainable early in the project. Processes such as forecast demands need to be completed prior to suggested answers to runway growth concerns. Sperling continued by asking McConnell if the commercial growth identification specifics he would like to see within the land use map be city zoning categories. McConnell confirmed zoning categories should be illustrated on this map along with airport master plan land use guidelines and what can be put into these zoning areas.

Q John Olsen with the Airport Users Association suggested a County representative be involved with the Prescott Municipal Airport Master Plan Project.

A Ben Vardiman with Prescott Municipal Airport affirmed the County was invited to PAC Meeting #1 and multiple attempts have been made to the County with no response. Olsen stated he would also work on gaining County involvement.

Q Kathi DeFreitas with Air Midwest Airlines asked when comparing airport leakage analysis are only airports within a 100-mile radius being evaluated. Flagstaff is an important comparison due the ½ hour difference and expected high volume of passenger traffic lost to this airport.

A David Sperling with Louis Berger confirmed that all airports within the area near the description of the Prescott Municipal Airport are being evaluated, however, this has not included Flagstaff Airport.

Q Ron James with Deep Well Ranch expressed concern regarding they city and master plan project telling property owners what do with their property.

A David Sperling with Louis Berger confirmed adjacent land owners have been involved in conversation during past projects. Additionally, the PAC meetings allow represented land owners to be heard and for their concerns to be taken into consideration when comprising a land use plan.

Q Ab Jackson with Chino Valley Chamber of Commerce asked to what degree will other city projects be considered and the willingness of this project to share information with those projects.

A David Sperling with Louis Berger confirmed the consultants desire to understand adjacent projects and encourage more dialogue on what project Jackson has in mind.

Q John Stonecipher with Guidance Helicopters suggested rotary craft length be considered during the Master Plan Project.

Q John Solomon with Experimental Aircraft Association sitting in for David Roy asked what period of time is the project forecast.

A David Sperling with Louis Berger stated the project will forecast 20 years and be broken down into 5, 10 and 20 year reports.

Q Solomon continued with asking one of the land requirement dilemmas is lack of developable land, is this being looked at.

A Sperling confirmed this subject is begin considered and will arise in the future of the project and will be discussed; however there is not a concentrated effort towards this matter.

A Rick Severson with the Prescott Municipal Airport added that this subject will arise and be looked at when runway relocation and extension issues are discussed.

Q James Dunn with North-Aire Aviation asked where the Prescott Airport falls in priority rating for funding from ADOT for the upcoming projects:

A Kent Potts and Tammy Martelle sitting in for Margie Drilling with ADOT Aeronautics explained ADOT funding allotment for airport projects is decided by the evaluation of the airport and its projects. These airport projects are rated on a priority scale considering six different categories. Airports ranking highest on the priority point scale get funded first until funding runs out. Airports must apply each year for this funding.

- A Ben Vardiman added Prescott Municipal Airport ranks 54^{th} busiest in the Nation and 7^{th} busiest in the State.

- Q John Olsen with the Airport Users Association questioned what happened to the plans for runway extension.
- A Rick Severson with the Prescott Municipal Airport stated they have the inventory however do not have approach load and land. 61.3 acres would need to be acquired for approach to proceed with the runway extension plan.

- Q John Stonecipher with Guidance Helicopters asked if airspace usage for helicopters is being considered.
- A Rick Severson with the Prescott Municipal Airport commented the helicopter provider has been ran separate from the Runway and Taxiway system and has run well this way.
- A David Sperling with Louis Berger commented ATCT and FAA will need to consider for airspace usage however this matter will be taken into consideration.

- A Rick Severson with the Prescott Municipal Airport commented that the Airport Master Plan Project is an opportunity for the community to get involved in creating a snapshot of how the airport will look and be used the future. All information will be comprised to develop an answer for airport growth to address community wants and needs. Growth within the area is expected to increase soon and an established airport is necessary to meet future needs and not be dominated by other transportation methods.

- Q Kathi DeFreitas with Air Midwest Airlines asked if the airport can go to Mesa Airlines requesting larger capacity aircraft for larger enplanement.
- A Ben Vardiman with the Prescott Municipal Airport stated this is possible however, Mesa Airlines will not provide larger aircraft to the airport if the plane can not be filled.
- Q Lora Lopas with the City of Prescott asked what can be done to increase enplanement with the future withdrawal of the Mesa 1900 aircraft.
- A Vardiman answered that Mesa Airlines continues to be not very forthcoming with their plans for servicing Prescott and its answer to the removal of the 1900 aircrafts. This airport continues to address this concern.

- Q John Solomon with the Experimental Aircraft Association asked if the price of service is being considered in the leakage survey.
- A David Sperling with Louis Berger confirmed price of service is being considered.
- A Solomon commented those passengers who are experienced with using a ground transportation provider to get to a different airport and then are able to fly with a desired air carrier are hard to regain.

- A Kathi DeFreitas with Air Midwest Airlines commented that a good core business market was regained. Mesa Airlines needs a different aircraft now to service the Prescott demand.
- A David Sperling with Louis Berger stated a list of PAC Meeting #1 attendees will be distributed to all present for those who would like to continue any dialogue regarding the issues presented.

VIII. Next Steps:

- Finalize Baseline Conditions
- Complete Leakage Analysis
- Complete Lease Rates Analysis
- Complete Forecasts
- Begin and Complete Land Use Analysis – *Land Use Analysis will be reprioritized and a schedule will be submitted by the end of the week to the City of Prescott*
- Begin Facility Requirements
- Obtain Base Mapping and Current Aerial – *Awaiting base mapping and current aerial to begin developing plans*

- Next Planning Advisory Committee (PAC) Meeting will be held in mid-May 2008. Notification of this meeting will be sent and process of the Mater Plan Project and future meeting schedules can be checked on the website www.prescottairportmasterplan.com

City of Prescott
Prescott Municipal Airport Master Plan
Planning Advisory Committee Meeting #2 Minutes
June 25, 2008

I. **Introduction:** Ben Vardiman with Prescott Municipal Airport and David Sperling with The Louis Berger Group, Inc. (Berger) began Planning Advisory Committee Meeting #2 on Wednesday, June 25 at approximately 2:06 PM with opening comments and introductions. Each individual present introduced themselves and who they were representing (please see attached attendance sheet).

The following items were distributed to the Project Advisory Committee (PAC) members present:

- Meeting Agenda
- PAC Meeting #2 Presentation
- Master Plan Revised Schedule
- Prescott Municipal Airport – Existing Noise Contours Map
- Prescott Municipal Airport – Airport Impact Zones Map
- Updated Demand Forecast (PAC Binder Tab #4)
- Updated Airport Lease Rates Analysis (PAC Binder Tab #13)

II. **Project Progress to Date:**

- Baseline Conditions – *Draft Completed*
- Forecast – *Draft Completed*
- Passenger Leakage Analysis – *Draft Completed*
- Lease Rates Analysis – *Draft Completed*
- Land Use Analysis – *Ongoing*
- Environmental Review – *Ongoing*
- Airport Layout Plan – *Ongoing*

III. **Baseline Conditions:** The *Baseline Conditions* inventory has been updated since the last meeting to include *Land Use Review* and *Baseline Noise Contours.*

- **Land Use Review:** The *Land Use Review* includes the City of Prescott General Plan, City of Prescott Zoning Ordinance, City of Prescott Land Development Code and Open Space Policy.
- **Baseline Noise Contours:** (map provided)

IV. **Forecast:** A draft of the *Forecast* has been completed. The purpose of the *Forecast* is to predict future aviation demand at Prescott Municipal Airport and to provide basis for facility requirements. Methodologies used to complete the *Forecast* include standard statistical modeling techniques, market share analysis, socioeconomic analysis, adjustment of FAA Terminal Area Forecasts (TAF), qualitative/judgment forecasts, combined statistical modeling/judgment forecasts. Changes at Prescott Municipal Airport have taken place since the *Forecast* portion of the project began. Project team will return to the *Forecast* to address these changes.

- Q Bob Luzius with the City of Prescott asked when the airport is expecting two or more carriers to compete as David Sperling with Louis Berger mentioned was considered while doing the *Forecast* draft?
- A David Sperling with Louis Berger answered the airport expects competitive carriers in September with Great Lakes signing its agreement to continue EAS and Horizon beginning service.
- Q Bob Luzius commented that the mentioned carriers would not be competing.
- A David Sperling answered that competition would depend on passengers' origins and destinations and operations of these carriers.

- Q Bob Luzius with the City of Prescott asked if 10,000 enplanements is the number for the FAA funding.
- A Ben Vardiman with Prescott Municipal Airport confirmed it was. (note: this is the passenger enplanement level required to obtain a non-hub air carrier entitlement of $1 million under previous AIP legislation)

- Q Ryan Smith with the City of Prescott asked if the number of retirees within the area was considered while analyzing the levels of economic income for the *Forecast.*
- A David Sperling with Louis Berger confirmed it was considered and that levels of discretionary income was considered as part of this.
- A Stephane Frijia with Louis Berger added the number of retirees within the area was considered along with what economic bracket these retirees fall within.

- Q Ken Potts with ADOT Aeronautics asked if it was considered while doing the *Forecast* that the EAS Program could go away with the continuation of Great Lakes service and the addition of Horizon.
- A David Sperling with Louis Berger answered that while doing the *Forecast* it was assumed this program would continue.

- Q Bob Luzius with the City of Prescott asked if the project team has heard that a representative with the Department of Transportation wanted to eliminate the program.
- A David Sperling with Louis Berger and Ken Potts with ADOT Aeronautics confirmed they had heard of the desired program elimination.
- A Ben Vardiman with Prescott Municipal Airport added he has heard of several proposals for the program elimination.

V. **Passenger Leakage Analysis:** A draft of the *Passenger Leakage Analysis* has been completed. Methodology used for the *Passenger Leakage Analysis* includes estimated enplanements per capita, comparisons with other airports (St. George, UT; Redding CA; Yuma, AZ; Abilene, TX) and survey data collected from

Phoenix Sky Harbor O'Neil Passenger Intercept Survey, 2005 Phoenix Sky Harbor Survey and Business Survey.

- **Q** David Maurer with Prescott Chamber of Commerce asked how the leakage analysis compared to other airports.
- **A** David Sperling with Louis Berger answered it is difficult to compare and it depends on the airport and its location. The leakage analysis will be posted to the project website for member review.

VI. **Lease Rates Analysis:** A draft of the *Lease Rates Analysis* has been completed. The goals of the *Lease Rates Analysis* include determining competitive position of Prescott Municipal Airport current lease rates and policy, identify Prescott Municipal Airport's overall market position and identify areas of improvements. Louis Berger has made some lease rate recommendations to Prescott Municipal Airport and will continue with assisting them on making these changes.

- **Q** M.C. Tennant with Prescott Municipal Airport asked if the lease charges would apply to storage hangars and commercial business.
- **A** David Sperling with Louis Berger confirmed it would be applied to all.
- **Q** Gordon Ritter with Rittaire asked if the city had their own appraisal service of if they go out to contract.
- **A** Ben Vardiman with Prescott Municipal Airport answered the city goes out for contract.
- **A** David Sperling with Louis Berger added there are appraisal consultants who specialize in the airport sector.
- **A** Ben Vardiman continued the airport just closed the Request for Qualifications (RFQ) process for airport appraisal and anticipates to issue a contract within the next month.

VII. **Land Use Analysis:** The *Land Use Analysis* is ongoing. An Airport Impact Zone map was provided showing recommended land use zones. The noise contours will be laid over the impact zones to show effects on future land use. Louis Berger is currently working on recommended land use activities and will submit the draft to the Prescott Municipal Airport within two-weeks.

VIII. **Environmental Review:** The *Environmental Review* is ongoing. Louis Berger has begun this phase by coordinating with the following agencies with letters sent to the stakeholders asking for input. All will get documented in the environmental section of the Master Plan:

- US Fish and Wildlife Service
- AZ Game and Fish
- National Resources Conservation Service
- AZ State Park, State Historic Preservation Office
- Army Corps of Engineers
- Yavapai County
- Arizona Department Environmental Quality

IX. **Airport Layout Plan:** The *Airport Layout Plan* is ongoing. Louis Berger received new survey data from the airport in February 2008, plotted and compared against the old plan to result in the draft current layout. This layout will be reviewed by the Airport, ADOT and the FAA for comments and approval. The *Airport Layout Plan Set* items are as follows:

- Title Sheet – *Draft Ongoing*
- Data Sheet – *Draft Ongoing*
- Existing Facilities Plan – *Draft Ongoing*
- Airport Layout Plan – *Template Completed*
- Runway Plans and Profiles – *Template Completed*
- FAR Part 77 Surfaces Plan – *Template Completed*
- Terminal Area Plan – *Template Completed*
- Lane Use and Access Plan – *Template Completed*
- Airport Property Map "Exhibit A" – *Template Completed*

Q Bob Luzius with the City of Prescott asked what the environmental impacts will have on the runway extension project.

A David Sperling with Louis Berger answered as the runway project moved forward, the environmental process will need to be completed in order for the runway extension to continue.

A Ben Vardiman with Prescott Municipal Airport added that a grant was issued and the airport will pursue a consultant within the next month and a half to look at future runway extension.

A David Sperling added that the Master Plan does consider the runway extension and will address runway length analysis and proper length of the runway for future airport operations.

X. **Project Schedule:** A revised project schedule was distributed showing the status of all project scope items. The project is currently in month nine.

XI. **Next Steps:** Public Information Meetings and additional Planning Advisory Committee Meetings in the future. Louis Berger will continue to work on the following items in the mean time:

- Finalize Leakage Analysis
- Finalize Lease Rates Analysis
- Finalize Forecast
- Review Forecast with Prescott Municipal Airport, ADOT and the FAA
- Finalize Land Use Analysis
- Complete Facility Requirements
- Complete Runway Length Analysis
- Begin and Complete Alternatives Analysis
- Complete Environmental Review
- Complete Airport Layout Plan

XII. Open Discussion:

Q David Maurer with Prescott Chamber of Commerce commented that what has been done so far within the project looks completed and asked what is not there yet, in the planning of this project is was discussed to address who to be the governing body for the airport and it was not addressed.

A David Sperling with Louis Berger answered this was not part of the scope of work for Louis Berger in the Airport Master Plan development.

Q David Maurer added whether it is a part the scope of work or not it needs to be addressed. This subject is why the Mayor invited out-of-town guest. People are interested in who is to govern the airport in the future.

Q Lora Lopas with the City of Prescott asked how Louis Berger would recommend investigating the airport authority issue.

A David Sperling with Louis Berger answered there are a number of ways it can be done. The city should begin to research what it would gain by relinquishing partial control of what they control completely today. Analysis can be done on other airports that have gone from municipal to other models. Many discussions need to take place and to look at the operating standpoint and the financial standpoint of the issue. By giving up part control of the airport it can relieve the town of financial burden and assist the airport in growing for the future.

Q David Sperling asked Ken Potts with ADOT Aeronautics if he has experience with airport authority changes.

A Ken Potts answered he has seen it done and has seen it go both ways from one authority to multiple and from multiple authorities to one. Much discussion needs to take place if this is the direction Prescott Municipal Airport wants to go in.

Q Gordon Ritter with Rittaire asked Rick Severson's thoughts on the airport authority issue.

A Rick Severson with Prescott Municipal Airport answered the city needs to show that the airport is a benefit to entire community not just those there. This message needs to be brought to council to encourage the city to put forth grants for the Capital Improvement Projects (CIP) general fund. An airport authority serving a region could be beneficial, Kingman is an example of this. However, funding is going to be the problem especially with the economic issues today.

A Larry Tarkowski with Prescott Valley added that this issue needs to be discussed in a different forum because it is not part of the Airport Master Plan Scope of Work, however the formation of a task group within the tri-city area can be done. Conversation needs to be engaged regarding the airport authority matter.

A Bob Luzius with the City of Prescott added he is on the Executive Board of CYMPO and the subject of airport authority changes was not accepted well. Other entities would be happy to share in the profits but not in the expenses.

A Larry Tarkopski answered there is an opportunity there and should be revisited with CYMPO.

XIII. **Future PAC Meetings:** Future PAC Meetings are currently scheduled to be held in September 2008, January 2009 and April 2009. It is intended for the Public Information Meetings to be held on the same days as the future PAC Meetings at a different time.

Anyone may contact David Sperling with Louis Berger throughout the project with any questions. David Sperling can be reached at (602) 234-1124 or by e-mail at dsperling@louisberger.com. Louis Berger continues to give Ben Vardiman with Prescott Municipal Airport regular updates throughout the project.

Project materials and meeting minutes will be posted to the project website under the member login as they are released. An e-mail message will be sent for each new material added to the website for viewing. Website: www.prescottairportmasterplan.com

Planning Advisory Committee Meeting #2 ended at approximately 3:20 PM

City of Prescott
Prescott Municipal Airport Master Plan
Planning Advisory Committee Meeting #3 Minutes
September 29, 2008

I. **Introduction:** Ben Vardiman with Prescott Municipal Airport and David Sperling with The Louis Berger Group, Inc. (Berger) began Planning Advisory Committee Meeting #3 on Monday, September 29 at approximately 3:04 PM with opening comments and introductions. Each individual present introduced themselves and who they were representing (please see attached attendance sheet).

The following items were distributed to the Project Advisory Committee (PAC) members present:

- Meeting Agenda
- PAC Meeting #3 Presentation
- Airport Master Plan Update – Land Use Plan
- Prescott Municipal Airport – Facility and Standards Analysis

II. **Project Progress to Date:**

- Forecast – *Received FAA Approval*
- Land Use Analysis – *Draft Completed*
- Environmental Review – *Agency Coordination Completed*
- Facility Requirements – *Draft Ongoing*
- Airport Layout Plan – *Ongoing*

III. **Forecast:** FAA approval was issued September 22, 2008

Q Dudley Potter with the AHOA asked if we are spinning our wheels with the airport master plan proceeding with the economy in the decline the way it is.

A Ben Vardiman with Prescott Municipal Airport answered that we are not spinning our wheels with proceeding with the airport master plan because the span of the plan is for 20-years. Although we cannot be certain, we do not forsee the economic down turn to last that long. Additionally, the forecast was done conservatively.

IV. **Land Use Analysis:** The Prescott Municipal Airport Existing Noise Contours Map, FAA Land Use Compatibility with Yearly Day-Night Average Sound Levels Table, Airport Impact Zone Map and Airport Impact Zones Table showing the maximum recommended allowable non-residential land use densities and minimum recommended open space, were presented.

Q Ron James with Deep Well Ranch asked if the information within the table reflects business land only.

A David Sperling with Louis Berger confirmed the information reflected non-residential only.

Q Ron James commented he assumed the city will buy this land.

- A Ben Vardiman with Prescott Municipal Airport confirmed the land would be obtained through annexation.
- Q Ron James continued that what was being shown today as part of the progress for the Airport Master Plan does not reflect what was discussed for annexation and what has been worked and agreed upon on thus far. The plan being presented today does not reflect what the General Plan is showing and it should.
- A Ben Vardiman answered he has been working on the annexation and compatible land uses with Ron James. What is shown today reflects the criteria from the FAA. The General Plan Amendment will be addressed and differences between the two plans will be reconciled.
- A David Sperling added that the progress of the Airport Plan is being presented to the Planning Advisory Committee in the manor so discrepancies such as this can be pointed out, discussed and corrected if needed prior to the final plan product.
- A Bob Luzius with the City of Prescott stated he agrees with Ron James and should be brought up at the new General Plan Committee Meeting (October 2, 2008). Ron James is invited to attend to further discuss the issue.
- Q David Maurer with the Prescott Chamber commented he thought the issue of the two plans was brought up at the last General Planning Meeting and asked if the conflicts could be pointed out.
- A Ron James answered the *Land Use Analysis* of the Airport Master Plan shows there will never be residential area which is not what was discussed.
- Q Al Bradshaw with Bradshaw PR/Cavan asked if the FAA guidelines were flexible.
- A David Sperling answered the guidelines were good guidelines to preserve the airport.
- A The Honorable Lora Lopas with the City of Prescott commented that the Prescott Municipal Airport does not want to get into a situation like that at Luke Air Force Base with no fly zones.
- A Ben Vardiman and David Sperling agreed and answered the Airport Master Plan would be aligned with the General Plan for this effort. However, all must keep in mind that if the plans are updated at different times during a later date the plans again may reflect different information.
- A All agreed the Airport Master Plan and the General Plan will be coordinated and neither will be taken before City Council or approved by City Council until they are coordinated.

V. Airport Property Map – Exhibit “A”: Focus on grants assurances obligations. The Project has been in the process of reconciling Exhibit “A”. Airport staff has been researching airport history to obtain information regarding the property line changes over time. The project is also in process of preparing a new airport property map to reflect the airport property as it is legally owned to date.

VI. Facility Requirements: Draft of the *Facility Requirements* working paper were distributed to all those attending the PAC Meeting #3 today.

- Airfield Requirements – Airport Reference Code has been identified as C-III. Planned runway extension for Runway 3R/21L and Runway 3L/21R are still being considered as needed. Additionally, future Runway Safety Area Improvements to meet FAA standards will be needed. Other necessary future improvements include taxiway upgrades, lighting and separation improvements, Navigational Aids improvements, additional aircraft parking and hangars.
- Terminal Requirements – Project has been coordinating with TransSystems during the new facility planning.
  - Q Al Bradshaw with Bradshaw PR/Cavan asked if the work on a possible Terminal location has begun.
  - A David Sperling with Louis Berger answered the location portion would come out during the Alternatives Evaluation portion of the plan.
  - Q David Maurer with Prescott Chamber asked if the project team knows how much of the current Terminal design plans can be salvaged.
  - A Ben Vardiman with Prescott Municipal Airport answered the project team would be taking a look at what can be salvaged from the last generated 60% Terminal design documents. However, they do not anticipate being able to use much of these documents due to many operations issues these documents have.
  - A David Sperling added the project would not be taking a look at the Terminal building design but at the building footprint to ensure the space is allotted along with airside and landside access with the Airport Master Plan.
- Landside and Access Requirements – The project team has been kept informed of the ADOT SR89 project which is being taken into consideration throughout the Airport Master Plan Project. Project objectives are to ensure wherever the Terminal is planned to be placed that adequate access and egress is provided.
  - Q David Maurer with Prescott Chamber asked if it is part of the project to recommend the best time for the new Terminal.
  - A David Sperling with Louis Berger answered the determination of this is actually tied back to the forecast and airport activity level rather than a finite year. Additionally, the City's economic conditions and priorities also would have weight in the decision of when a new Terminal is to begin which actually turns into a terminal planning study rather than a master plan.
- Support Facilities Requirements – This will look at the General Aviation Terminal facility, Fuel Farm and maintenance and storage and evaluate if all are in the right location and if additional are necessary.

VII. Runway Length Analysis: The project is tasked with justifying the runway lengthening project in a sufficient manner for environmental approval. In doing so the project is looking at the Air Canada regional jet which many are using, the CRJ200 which requires additional runway. The project will also look at the aircraft that is expected at the airport. Lastly, economic conditions of airlines are also being considered.

VIII. Airport Layout Plan Set:

- Title Sheet – *Draft Ongoing*
- Data Sheet – *Draft Ongoing*
- Existing Facilities Plan – *Draft Ongoing*
- Airport Layout Plan – *Template Completed*
- Runway Plans and Profiles – *Template Completed*
- FAR Part 77 Surfaces Plan – *Draft Ongoing*
- Terminal Area Plan – *Template Completed*
- Lane Use and Access Plan – *Template Completed*
- Airport Property Map "Exhibit A" – *Draft Ongoing*

IX. Next Steps:

- Complete Facility Requirements
- Complete Runway Length Analysis
- Begin and Complete Alternative Analysis
- Complete Airport Layout Plan
- Revisit Land Use Plan and Coordinate With Other Ongoing City Efforts – *added during PAC Meeting #3 today*
  - Q Ron James with Deep Wall Ranch asked if the General Circulation is included under the Airport Layout Plan.
  - A David Sperling with Louis Berger answered the Airport Layout Plan is the preferred plan for this to be reflected, and that will be submitted to the FAA for approval. The plan will not be completed by next meeting and is actually one of the last things to be completed within the project.

X. Future PAC Meetings:

The next PAC meeting is expected to be scheduled in December 2008 to January 2009 and the one following to be scheduled in March to April 2009. Specific dates of these upcoming meetings to be determined. The project team will be presenting alternatives at the December 2008 to January 2009 PAC Meeting #4.

Anyone may contact David Sperling with Louis Berger throughout the project with any questions. David Sperling can be reached at (602) 234-1124 or by e-mail at dsperling@louisberger.com. Louis Berger continues to give Ben Vardiman with Prescott Municipal Airport regular updates throughout the project.

Meeting minutes will be posted to the project website. An e-mail message will be sent for each new material added to the website for viewing. Website: www.prescottairportmasterplan.com

XI. **Public Information Meeting Overview:** A Public Information Meeting will be held that night, Monday, September 29 at 7:00 PM to brief the public on the project scope and progress. Review of what will be presented at this public meeting was show to all PAC Members present. Additionally, it will be stated at the Public Information Meeting that the airport plan documents are to be updated and reconciled in effort to mitigate any further confusion.

Planning Advisory Committee Meeting #3 ended at approximately 3:55 PM.

City of Prescott
Prescott Municipal Airport Master Plan
Planning Advisory Committee Meeting #4 Minutes
December 17, 2008

Introduction: Ben Vardiman with Prescott Municipal Airport and David Sperling with The Louis Berger Group, Inc. (Berger) began Planning Advisory Committee Meeting #4 on Wednesday, December 17 at approximately 3:06 PM with opening comments and introductions. Each individual present introduced themselves and who they were representing (please see attached attendance sheet).

Old Business: Land use planning documents have been aligned to match the land use planning that is ongoing with the City of Prescott General Planning Committee. Comments were requested no comments have been received to date.

The following items were distributed to the Project Advisory Committee (PAC) members:

- Meeting Agenda
- Facility & Standards Analysis Draft Working Paper
- Alternatives 1
- Alternative 2
- Alternative 3

3 alternatives have been developed from the analysis and input from this group and Public Meeting in January will help further develop the alternatives.

David Sperling reviewed the Airport Facility Requirements, Airfield System Capacity, Airside Facility Requirements and Landside Facility Requirement.

Taxiway improvement analysis were presented.

Q Bob Luzius with the City of Prescott asked if it was true that Commercial Airlines get off the runway quicker that it saves fuel.
A David Sperling replied with no it is not true.

David continued with how the runway extension is based on performance requirements of a CRJ-700 also takes into account the elevation of the airfield, climate and slope.

Q Dudley Potter asked if the property line extension is at the current property line.
A Stephane answered yes
David added this also includes 155 acres for land acquisition required for the runway protection zone.
Dudley Potter suggested the use of approach lights.
The PAC Team agreed.

The demand can be satisfied within the airport boundaries as they are today but eventually the boundaries will limit usage.

Three maps were displayed representing Draft Alternatives 1, 2 and 3.
Some of the concepts are the same as previous Master Plan studies but the alternatives are based on brand new analysis. Taxiway extension is needed to improve the operational efficiencies. Access from proposed development on the north side does not keep the facility from being usable or accessible.

The alternatives separate Commercial operations from General Aviation operations. The airport has developed this over time. These areas need to be taken into consideration and worked around. Site planning in areas needs to be done. Customer service enhancement for tenants, such as a self service fueling station would be considered.

Alternative 1 Terminal configuration was discussed by the Committee.

Q Al Bradshaw asked if there is a process for terminal planning.
A David Sperling replied the airport will plan the terminal.

Q Al Bradshaw asked if there is a timeline for a new terminal.
A Ben Vardiman stated there is not a definite timeline.

Q Bob Luzius asked if airplane parking would be considered.
A David Sperling replied with yes.

Q Ryan Smith asked how the airplanes taxi to the terminal.
A David Sperling confirmed Taxiway Charlie.

Q Al Bradshaw confirmed that we do not have to decide right now where the terminal will be located.
A Ben Vardiman agreed.

Q Lora Lopas asked how the Transportation Plan is going to tie into the Master Plan
A Ben Vardiman stated that is it is going to be a cooperative agreement. Ben is involved in the transportation planning and will make sure their plan accommodates the future of the airport. Ben showed the continuous arterial feed around the airport with feeders and connectors coming off the road. Then inner roads will be used for circulation routes.

Q Bob Luzius asked if the road would be closed off from the golf course once Ruger Road is opened up to the airport.
A Ben Vardiman stated he would suggest keeping it open as a circulation road.
A David Sperling added that traffic on this section of the road would be local traffic only.

Q Bob Luzius suggested keeping the planning of the Chino bypass east road coming up Great Western under consideration to join the other access road.
A Ryan Smith stated the access point would be maintained, and discussion of a circular road is ongoing.
A Ben Vardiman added we are talking about a major road and access into the airport as part of the future plan.

David Sperling continued outlining the Alternatives stating that new FBO and General Aviation areas have a lot of potential for apron space and segregation of addition hangar activity. More than one FBO can be supported.

Each Alternative shows the ARFF Station relocated from its current location to alternative locations.

Q Bob Luzius stated that in reality you should have your emergency services centrally located for better response.
A David Sperling added that the station also serves other portion of the community and that also needs to be considered in its location determination on the airport. The ability to get to passengers in the terminal needs to be considered as well.

The FAA Tower location preferences were discussed by the group. David Sperling continued with the alternatives showing the top of hill as an opportunity for some airport expansion such as a new tower. David added that the preferred alternative will show a future tower. Location will be shown on the airport layout plan and the space would become reserved for that use in the future.

Q Ryan Smith asked how many feet would the runway be extended to.
A David Sperling stated 10,500 feet.
Q Ryan Smith asked what type of aircraft the extension would accommodate.
A Ben Vardiman replied with small air carrier 50 to 70 passenger aircraft and regional jets such as CRJ-700 would be able to utilize it

Q Lora Lopas asked if it is preferred to have smaller aircraft running all day than one large plane per day.
A Ben Vardiman replied with larger aircraft we would have to extend the runway further.
A David Sperling added runway length requirement doesn’t necessarily increase because you have bigger aircraft.
A Ben Vardiman stated you have to go wider at some point which results in more land requirements. Prescott does not own the property south of the airport. It is all privately owned.

Ben Vardiman explained to the PAC members the alternatives show land acquisition, and room for buildings that generate revenue. The acquisition is justified. Federal funding is not typically used for revenue generating land acquisitions, but is for safety needs such as runway projects. These alternatives are showing a lot of land acquisition.

The airport relies on funds generated on the airport to be able to operate. There is potential for additional businesses on airport. Property that can be leased out generates funds that are critical. Office buildings can drive income. We need to look at becoming independent from needing general fund monies to match grants so that we can move forward with projects. All construction will be demand and cost based.

- **Q** Ben Vardiman asked if the Committee agreed with generating income and reserving land for future use.
- **A** The Committee agreed.
- **A** Al Bradshaw asked when the runway extension would begin.
- **A** Ben stated it is a 2 phase runway extension in the 20 year build out.

David Sperling asked for the Committees first impressions of the Alternatives presented. Documentation of the advantage to one of these plans is coming next. Analysis of plan alternatives will begin after this meeting. All 3 alternatives will be presented to the public at the January 20th Public Meeting.

The Committee asked to see more location options for the terminal.

- **Q** Lora Lopas stated the Alternative 1 terminal location boxes you in; if you place the terminal where it shows in Alternative 2 where the development will evenutally have more options and room for growth.
- **A** Ben Vardiman reminded the Committee of Embry Riddle’s use of the taxiway near that location and this may limit access. Embry Riddle moved to their current location to be removed from all other activity. At one point they were looking at leaving the airport because it was so busy.
- **A** David Sperling added General Aviation parking is easy to relocate.
- **Q** Lora Lopas suggested there may be room for Embry Riddle to lease space once the tower is relocated.
- **Q** Al Bradshaw asked how much Embry Riddle’s traffic has changed since they began to use simulators.
- **A** Ben replied Embry Riddle has the largest number of students this year on campus they have ever had. They did decrease flights, but it was short term and they have returned to their most recent higher numbers.

- **Q** Ryan Smith suggested we start acquiring land outlined in red on the Alternatives. Ryan also inquired to why there no development shown in the upper portion of the Alternatives.
- A Ben Vardiman stated that some of the land is privately owned and Bottle Neck Wash is controlled by the CORP of Engineers. It is not feasible to buyout and develop.

A MC Tennant added there is a big grade difference as well.
A Ben Vardiman stated they would like to take the property all the way out to Ruger Road once its ultimate alignment is determined.

Ben Vardiman reviewed comments from the Airport Manager's Aviation Working Group (AMAWG) Members meeting that was held earlier in the day. Their concerns were interior road circulation and adding capacity to the runway.

Summary of Alternative Review Comments from the Committee

- Alternative 1 and 2 are favored because they allow FBO Commercial business development
- The Committee wants to ensure space for hangar growth
- FAA Tower on the hill is preferred
- ARFF Station is preferred on the lower side of the airport, close to runway and perimeter road access

David Sperling reminded the Committee the perimeter roads are part of the alternative analysis. Traffic volume numbers are looked at and determination and improvements are made.

David stated the preferred Alternative would be presented to the FAA then negotiations of what they are willing to absorb and allocations will take place.

Q Dudley Potter asked about the timing of events, is the runway extension completed first.
A Ben replied the City of Prescott could build a terminal first. It is whether or not you can entice additional flights with a new terminal or a longer runway.
Q Dudley Potter asked if there is funding for a runway project.
A Ben stated there is hope after the first of the year the FAA will turn over the multi-year authorization that will allow long term multi level funding.
A David added when you are completing a capital project you are talking about a lot of money.

Q Ryan Smith asked if a terminal is determined by how many passengers the airport has.
A Ben stated 10,000 passengers' results in $1,000,000 annual entitlement funds from the FAA, compared to the $150,000 we currently receive.

A Lora Lopas stated Airport growth is contingent on City policy priority.
Q Al Bradshaw asked if Master Plan final report can include a marketability report.
A David Sperling replied this information is typically not part of a Master Plan.

A Ben Vardiman added that this information would be part of the strategic business plan.

David Sperling recapped the process; the next step is to work towards a more focused Alternative. David reminded the Committee of the Public Open House which is scheduled for Tuesday, January 20, 2009 at Golf Course Old Clubhouse from 7:00 pm until 9:00 pm.

The meeting closed with the Committee agreeing the Alternatives discussed and suggestions made are headed in the right direction for Prescott Airport's future.

The Public Advisory Committee Meeting #4 ended at approximately 4:45 pm.

City of Prescott
Prescott Municipal Airport Master Plan
Planning Advisory Committee Meeting #5 Minutes
July 22, 2009

I. **Introduction:** Ben Vardiman with Prescott Municipal Airport and Mark Champigny with The Louis Berger Group, Inc. (Berger) began the Planning Advisory Committee Meeting #5 on Wednesday, July 22nd at approximately 1:06 pm with opening comments and introductions. Each individual present introduced themselves and who they were representing (please see attached attendance sheet).

The following items were distributed to the Project Advisory Committee (PAC) members present:

- Meeting Agenda
- Notes Sheet
- Copy of Draft Working Paper: Alternatives Analysis Prescott Municipal Airport

II. **Overview of Preferred Alternative:** An aerial map of the preferred alternative was presented. Important information regarding locations and details regarding various items on the preferred alternative were reviewed.

Q Bob Luzius, Prescott City Council member asked where the fire station will be located.

A Ben Vardiman, Airport Manager, answered by pointing out the fire station's location on the map and stating the Preferred Alternative meets the FAA 3 minute response time requirement. He also explained the past drill response times and the FAA requirements.

Q The Honorable Lora Lopez, Prescott City Council member asked whether consideration had been given to the rotation of the terminal building as the sun would impact heating and cooling.

A Ben Vardiman, Airport Manager, informed the PAC members of the orientation of the building for better utilization of the ramp area and also explained the team will look into windows and walls made from materials that would block thermal heat.

Q Margie Drilling, FAA, noted a small dip in the Airport's property line where a service road is planned. She asked to either acquire that small piece of land or identify it otherwise appropriately..

A Ben Vardiman, Airport Manager, clarified the City of Prescott has access to the property through an easement.

Q Margie Drilling, FAA, asked if the airport had all of their RPZs and stated that prior to moving forward Avigation easements need to be acquired.

A Ben Vardiman, Airport Manager, stated the City of Prescott has dedicated Avigation easements and is addressed in Part 77.

Q Margie Drilling, FAA, asked the team to document the easement agreements in the Airport Master Plan. Margie also stated prior to a

Runway Extension the RPZ must be protected, the FAA does not build extension unless the RPZ is protected.

A Ben Vardiman, Airport Manager, agreed and stated the easement notation will be added to the Master Plan.

Q Al Bradshaw, Bradshaw PR & Cavan Real Estate Investment, asked if the land acquisition of approximately 138 acres for the north runway extension was a reduced amount.

A Ben Vardiman, Airport Manager, reported that was correct. It would have been close to 160 acres previously. The plan is to only do half of the extension at first and then do the rest when it is fully justified. Ben also informed the PAC of the effort to resolve land issues and document the ownership history. Land issues research has been done and an additional FAA Grant will be presented to City Counsel in August.

Q Margie Drilling, FAA, asked for the time frame for the control tower.

A Ben Vardiman, Airport Manager, reported it is in the 10 to 20 year planning range.

Q Margie Drilling, FAA, informed the team the FAA Air Traffic Organization (ATO) will complete site study to determine tower location, this takes time. Margie will provide contact information and recommended getting started with as much as possible in regards to the control tower as much as possible early on.

Q Bob Luzius, Prescott City Council member, asked what was special about the needed runway length.

A Ben Vardiman, Airport Manager, responded with it is what meets their critical design for the CRJ 700 aircraft.

Q Bob Luzius, Prescott City Council member, asked if there was consideration of the impact of the proximity of the solar farms to the runway.

A Ben Vardiman, Airport Manager, because of its location significantly off centerline propeller wash should be disbursed and they have not had any comments from pilots regarding glare.

III. Environmental Review: Within this section projects were identified for inclusion in the Environmental Assessment (EA). Assessment is expected to begin in August of 2009. The Master Plan's purpose was to provide general review. Once final project plans are complete all National Environmental Policy Act (NEPA) categories will be reviewed.

Q Margie Drilling, FAA asked if they had finalized their scope of work. It is very important to have construction start within the first three years of the EA acceptance date. An extension can be filed if construction does not start within the 3 years.

A Ben Vardiman, Airport Manager, confirmed that they had finalized the scope of work, but that they were not sure if construction would start within the three year time range.

IV. Airport Layout Plan Set: This is the item that the city will sign. Once this is done and the project is on the list it will be open to receive FAA funding. This is still being developed however, below are the current items and their progress.

- Title Sheet Draft Completed
- Data Sheet Draft Completed
- Existing Facilities Plan Draft Completed
- Airport Layout Plan Draft Ongoing
- Runway Plans and Profiles Draft Ongoing
- FAR Part 77 Surfaces Plan Draft Ongoing
- Terminal Area Plan Draft Ongoing
- Land Use and Access Plan Draft Completed
- Airport Property Map “Exhibit A” Draft Completed

V. Capital Improvement Program: This program was developed for the Preferred Alternative Plan. There are 3 phases within this program, 5, 10 and 20 years.

- Funding Sources
- Airport Improvement Program (AIP)
- Entitlement and Discretionary
- Passenger Facility Charge (PFC) Program
- Arizona State Funding Sources
- Third Party Funding
- Airport Operating Fund
- Presented as Chapter in draft Master Plan

Ben Vardiman, Airport Manager, explained cost estimates have not been broken out by FAA contribution and the Phase 1 planning is a 5 year period. 5 year projects would include Environmental Assessments, Land Acquisition, Correction of non-standard runway safety areas, Commercial Terminal Building and the fire station. We continue to refine these items.

Q Margie Drilling, FAA, asked if the CIP would be broken out to show FAA funding versus local.

A Marc Champigny confirmed the funding sources would be identified in the Master Plan.

Ben Vardiman, Airport Manager continued with an explanation of the Passenger Facility Charge process and were the coordination effort that continues with Arizona Department of Transportation and Arizona Airports Association in an effort to regain State funding.

VI. Next Steps:

- Finalize Environmental Review
- Finalize Capital Improvement Program
- Finalize ALP Set Based on Preferred Alternative
- Submit Draft Master Plan and ALP for review to:
  - –*Airport Management*
  - –*Project Advisory Committee (PAC)*
  - –*Federal Aviation Administration*
  - –*Posted on Project website for public review*

Mark Champigny with Louis Berger Group reviewed the August 6th deadline to create the Master Plan and ALP. At that point they will submit to the Airport Management, FAA, PAC and post on the Master Plan website for public review.

Ben Vardiman, Airport Manager, added the 30 day Public Comment period will commence on August 11th. They will bring this back to City Council for final adoption after receiving approval from FAA.

- **Q** Jerry Lawyer, Legend Aviation, addressed the team thanking them for listening to their comments and added that the working group would like to have a place for helicopters to land, this is an up and coming business. Jerry also expressed concerned about the fuel tank being built near the northeast end of the airport and asked that this be shown on the preferred alternatives map.
- **A** Ben Vardiman, Airport Manager, thanked Jerry for his comments and proceeded to explain the the current use of the facility leased by North Aire is not anticipated to change, therefore it will not be reflected on the preferred alternatives map.
- **Q** The Honorable Lora Lopez, Prescott City Council member, asked if it had been discussed as to whether or not an airport authority would be brought into the picture and if so, when would be an appropriate time to begin to look at that.
- **A** Ben Vardiman, Airport Manager, suggested once the Master Plan is approved this should be a discussion within the City of Prescott. What control do they want over the airport? What funding they want to contribute to the airport and at what level of importance do they feel the airport plays in the City are all questions to be addressed They would have to look at some statutes as well as sit down with City authorities and figure out what will be their return on that kind of investment.
- **Q** Craig McConnell, Prescott City Council member, added a governance system would have to be established. Craig suggested showing the Airport Authority as a funding source in the Master Plan.
- **Q** The Honorable Lora Lopez, Prescott City Council member, closes her remarks with Prescott Valley would be very interested. We need to protect the Airport for the future, if we bring the other communities to the table hopefully we protect it and add potential funding sources.
- **A** Ben Vardiman, Airport Manager, closed the meeting with a reminder of the 3rd Public Meeting at 7:00 pm, focusing on the Preferred Alternative, Environmental Review and Capital Improvement Plan.

Project materials and meeting minutes will be posted to the project website as they are released. An e-mail message will be sent for each new material added to the website for viewing. Website: www.prescottairportmasterplan.com

Planning Advisory Committee Meeting #5 ended at approximately 2:16 PM

Public Information Meeting

Prescott Municipal Airport
Master Plan

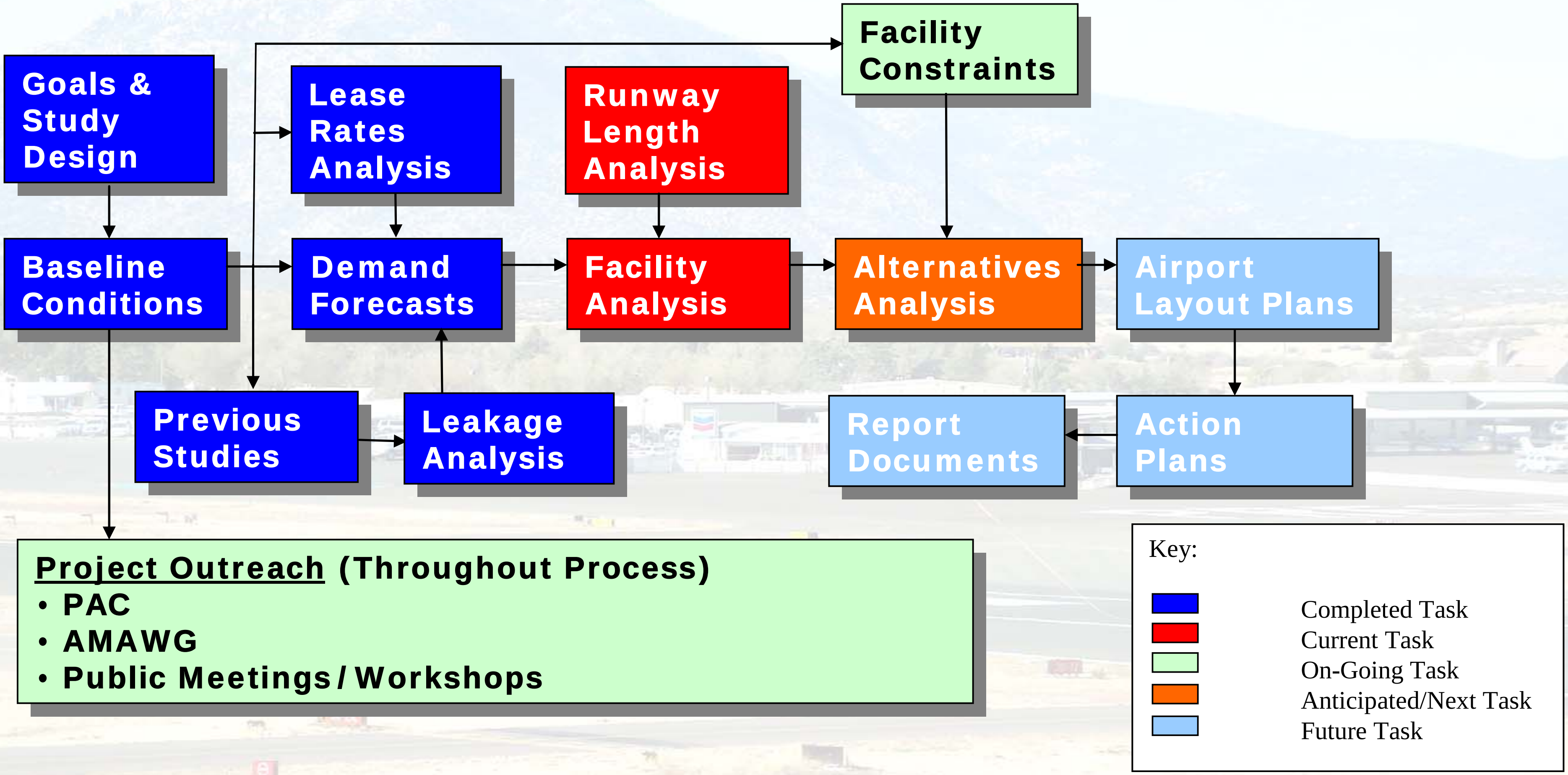
Monday
September 29, 2008
7 PM to 9 PM

Antelope Hills Golf Course
Old Clubhouse

AGENDA

- **Introductions**
- **Review of Master Plan Process, Scope of Work and Progress to Date**
- **Next Steps**
- **Breakout Session**
- **Adjourn**

PROJECT FLOW CHART



PROJECT PROGRESS TO DATE

• Baseline Conditions	Draft Completed
• Forecast	Draft Completed
• Leakage Analysis	Draft Completed
• Lease Rates Analysis	Draft Completed
• Land Use Analysis	Ongoing
• Facility Requirements	Ongoing
• Runway Length Analysis	Ongoing
• Alternatives Development	Ongoing
• Environmental Review	Ongoing
• Airport Layout Plan	Ongoing
• Capital Improvement Plan	Not initiated

BASELINE CONDITIONS

- **Introduction to Ernest A. Love Field**
- **Operational Activity**
- **Existing Facility Conditions**
- **Airspace, Approaches and Air Traffic Control**
- **Environmental and Land Use Review**
- **Socio-Economic Conditions**

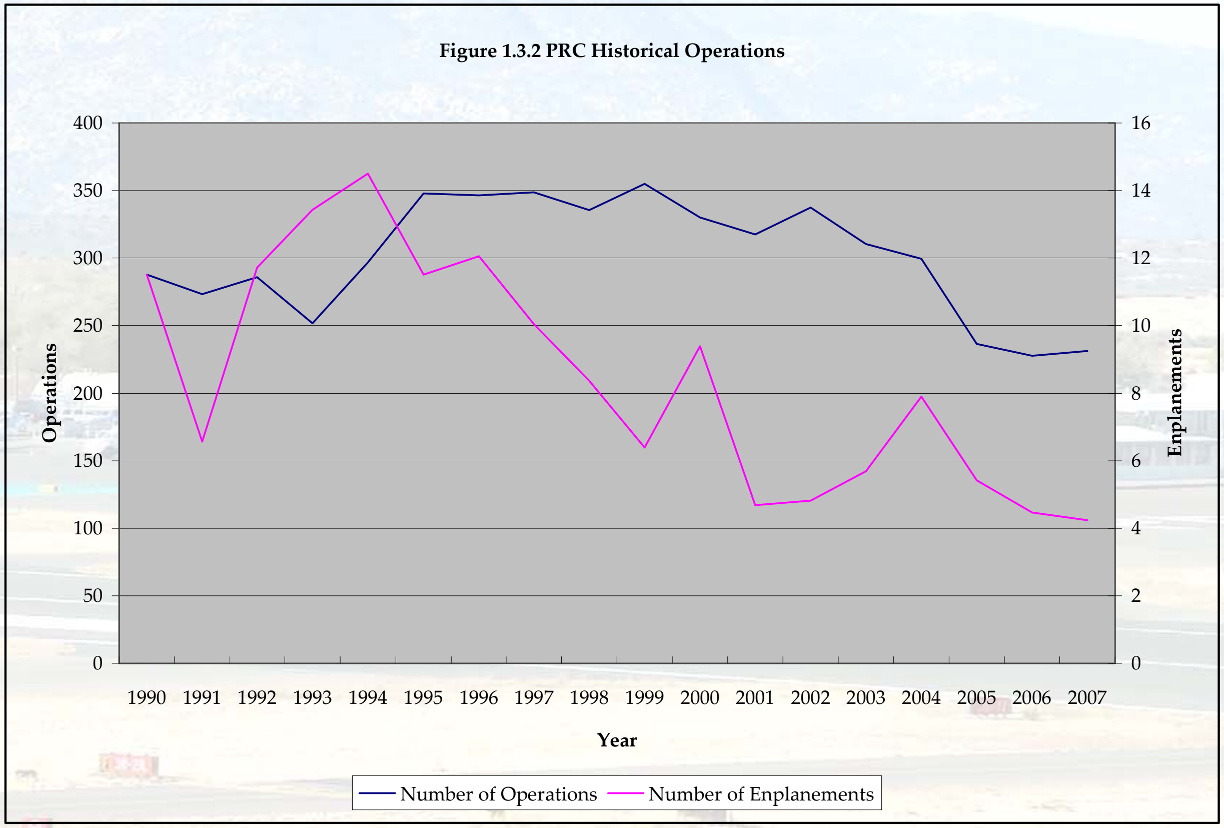
BASELINE CONDITIONS

Sources include:

- Site visits
- Tenant and user surveys
- Airport operation counts and administration records
- Tower records and FAA 5010 forms
- PRC Airport Master Plan (January 1998)
- Prescott Airport Economic Impact Study (May 2006)
- Other pertinent data and studies from the Federal Aviation Administration (FAA), Arizona Department of Aviation (ADOT), Yavapai County, the City.

BASELINE CONDITIONS

Operational Activity



BASELINE CONDITIONS

Based Aircraft

Year	Based Aircraft
1996	258
1997	290
1998	290
1999	312
2000	312
2001	312
2002	335
2003	347
2004	335
2005	349
2006	340
2007	330

Aircraft Type	Number of Based Aircraft	Percentage of Total Aircraft
Single Engine	300	88.2%
Twin Engine	26	7.6%
Jet	3	0.9%
Helicopters	10	3.0%
Ultra-Light	1	0.3%
Total	**340**	**100%**

BASELINE CONDITIONS

Runway Data

	Runway 3L-21R	Runway 3R-21L	Runway 12-30
Length	4,862	7,616	4,408
Width	60	150	75
Material	Asphalt	Asphalt	Asphalt
Strength*	12,500 lbs. (S)	60,000 lbs. (S) 80,000 lbs. (D)	12,500 lbs. (S)
Lighting	MIRL	MIRL	MIRL
Markings	Visual / Visual	Non-Precision / Precision	Non-Precision / Visual
Visual Aids	PAPI – 2 (Both)	ILS (21L) PAPI – 4 (Both) REIL	VORTAC PAPI – 2 (Both)
RSA	5,342 x 120 ft.	9,616 x 500 ft.	5,008 x 150 ft.
RPZ	250 x 1,000 x 450 ft.	500 x 1,700 x 1,010 ft.	250 x 1,000 x 450 ft.
Approach Slope	20:1 / 20:1	34:1 / 50:1	20:1 / 20:1

Acronyms: MIRLS – Medium Intensity Runway Lighting System; REIL – Runway End Identification Lights; RSA – Runway Safety Area; VASI – Visual Approach Slope Indicator; PAPI – Precision Approach Path Indicator; ILS – Instrument Landing System

*****Pavement strengths are expressed in Single (S), Dual (D), and/or Dual Tandem (DT) wheel loading capacity

BASELINE CONDITIONS

Aircraft Parking

The Louis Berger Group, Inc.		Aircraft Parking Aprons Ernest A. Love Field	MAY 2008	FIGURE 1.7 DRAFT

BASELINE CONDITIONS

- Landside: Access, Parking
- General Aviation: FBO, Aircraft Parking (tie-downs, hangars)
- Support Facilities: Fuel Farm, Service Equipment & Storage

Shade Parking

T-Hangars

Administration Building

Box Hangars

Landside Access

Fuel Farm Storage Tanks

BASELINE CONDITIONS

– Terminal: Hold Rooms, Ticket Counters, Passenger Screening

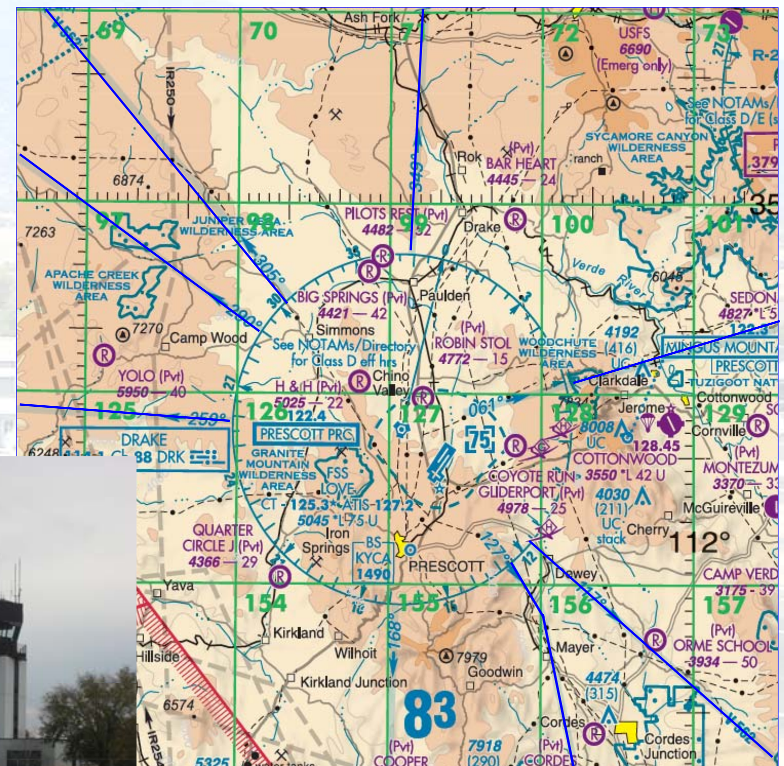
Terminal Building (Interior)

Terminal Building (Exterior)

BASELINE CONDITIONS

Airspace, Approaches and Air Traffic Control

- **Class D Airspace**
- **FAA ATCT (0600 to 2300)**
- **Precision & Non-precision Instrument Approaches (VOR, GPS, ILS)**



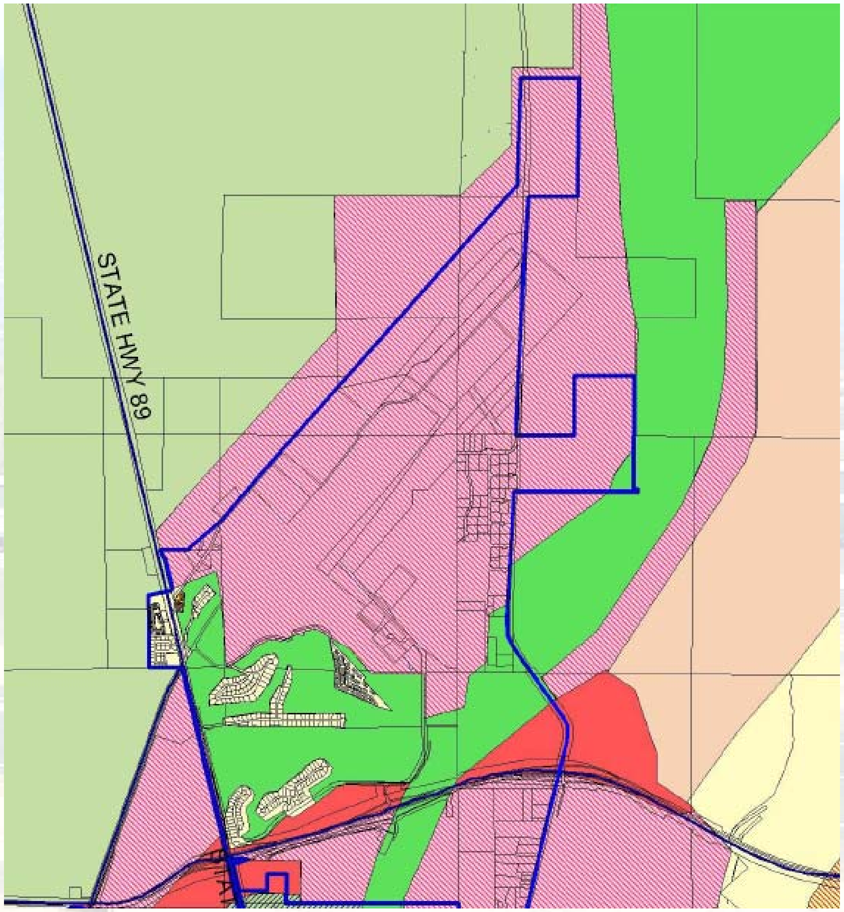
ENVIROMENTAL AND LAND USE REVIEW

- Noise Impacts
- Biotic Communities
- Social Impacts
- Compatible Land Use
- Induced Socioeconomic Impacts
- Air Quality
- Water Quality
- DOT 4(f) Lands
- Endangered and Threatened Species of Flora and Fauna
- Historic, Architectural, Archaeological, and Cultural Resources
- Wetlands
- Floodplains
- Coastal Zone Management Program
- Coastal Barriers
- Wild and Scenic Rivers
- Farmland
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impact
- Construction Impacts

ENVIROMENTAL AND LAND USE REVIEW

Land Use Review includes:

- City of Prescott General Plan
- City of Prescott Zoning Ordinance and Overlay
- City of Prescott Land Development Code
- Open Space Policy



PASSENGER LEAKAGE ANALYSIS

Methodology:

- Estimated enplanements per capita
- Comparisons with other airports
  - St. George, UT
  - Redding, CA
  - Yuma, AZ
  - Abilene, TX
- Survey data
  - Phoenix Sky Harbor O'Neil Passenger Intercept Survey
  - 2005 Phoenix Sky Harbor Survey
  - Business Survey

PASSENGER LEAKAGE ANALYSIS

- Airport Service Area (ASA) population: **124,477**
- Estimated potential demand: **43,000 to 68,000** annual enplanements
- Estimated **70,000** people per year use inter-city airport shuttles

Summary of Findings			
Estimation Methods	Unconstrained Demand	Potential Demand	Leakage
Rural Air Service Study	108,295	43,318	90.7%
Comparable ASA	95,680	57,260	93.0%
Survey	152,000	60,800	93.4%
Average	118,658	53,792	92.5%

FORECAST METHODOLOGIES

Standard Statistical Modeling Techniques (i.e. trend analysis; single- or multi-variant regression)

- Market Share Analysis
- Socioeconomic Analysis
- Adjustment of Existing Forecasts
- Adjustment of FAA Terminal Area or National Aviation Forecasts
- Qualitative/Judgment Forecasts (e.g., User Surveys)
- Combined Statistical Modeling/Judgment Forecasts

FORECAST

Enplanements Forecast

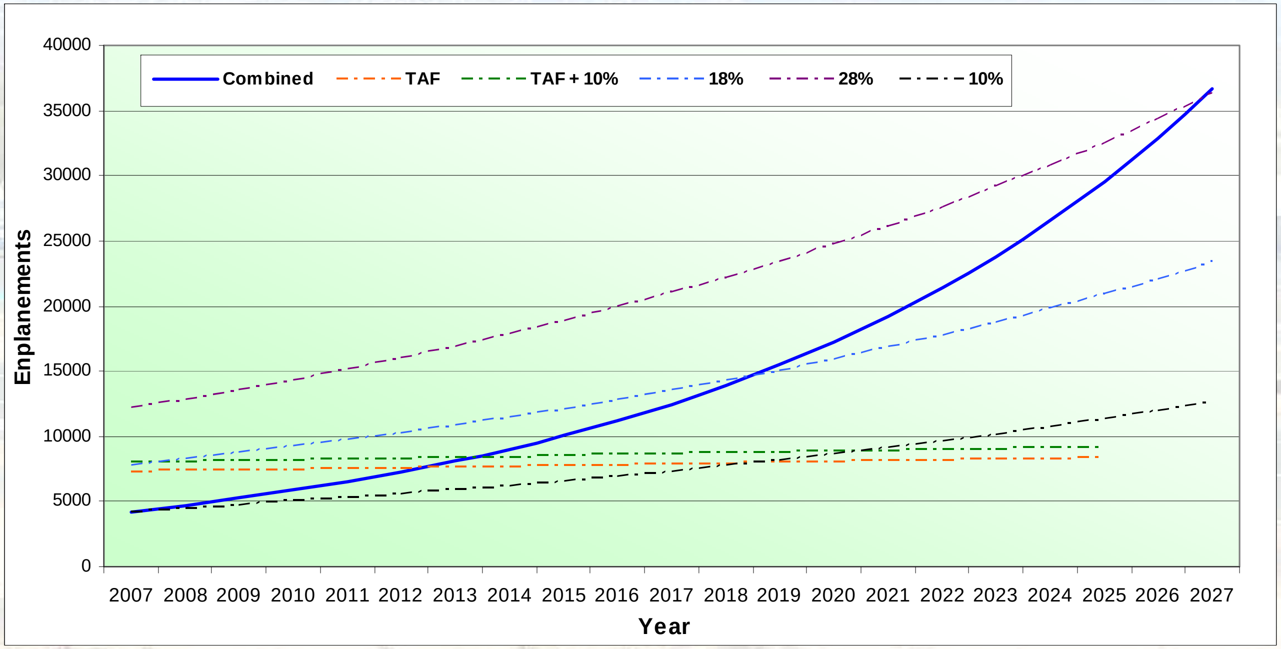
	2007	2012	2017	2027
FAA Terminal Area Forecast (TAF)				
FAA TAF	7,265	7,546	7,839	8,340[3]
FAA TAF Adjusted to Current Levels	4,233	4,405	4,584	4,964
Trendline				
1989-2007 ($R^2 = 0.29$)	6,400	6,000	5,800	5,000
Average Annual Growth Rate (Population Only)				
ASA Population Growth (5.9%)	4,233	5,638	7,509	13,322
Market Share[1]				
• Low: 10% (current)	4,233	5,564	7,314	12,636
• Moderate: 18% (10 yr. avg.)	4,233	10,272	13,502	23,327
• High: 28% (27 yr. avg.)	4,233	15,979	21,003	36,287
• **Combined**	**4,233**	**7,262**	**12,459**	**36,673**
Other Studies				
SANS 2000	15,160[3]	19,764[3]	26,495[3]	N/A
PRC Airport Master Plan 1998	24,533[3]	30,109[3]	36,799[3]	N/A

N/A – Not Available, [1] See Table 2.18 and 2.19, [3] Extrapolated

FORECAST

Enplanements Forecast: Market Share Analysis

- Based Upon Leakage Analysis
- Compared to FAA TAF
- Slow Growth in Short Term, Paradigm Shift Expected



FORECAST

Aviation Activity

Forecast	2007	2012	2017	2027
Passenger Enplanements	4,233	7,262	12,459	36,673
Annual Operations	230,615	250,706	273,961	328,018
• Commuter	990	1,042	1,298	2,934
• GA Operations	229,625	249,664	272,663	325,084
– Local	149,256	157,288	169,051	195,050
– Itinerant	80,369	92,376	103,612	130,034
– Single Engine	198,626	215,960	235,853	281,198
– Multi-Engine	18370	19,973	21,813	26,007
– Business Jet	4,593	4,993	5,453	9,544
– Rotorcraft	8,036	8,738	9,544	11,377
Annual Instrument Approaches	1,627	2,242	2,504	3,191
Based Aircraft	340	380	425	535
• Single Engine	301	329	368	463
• Multi-Engine	26	30	34	43
• Business Jet	3	7	8	11
• Rotorcraft	10	13	15	18

LEASE RATES ANALYSIS

- Determined competitive position of PRC current lease rates and policy
- Identified PRC's overall market position
- Identified area of improvements

Lease Area	Observation	Recommendation
Land Lease	Within range, PRC may be low compared to nearby other airports	Utilize Appraisal
Wholesale Hangar Rental	Low	Investigate cause of low rates, utilize appraisal
Retail Hangar Rental	Low	Investigate cause of low rates, utilize appraisal
Office Rent	Within range	Continue as-is; Utilize Appraisal
Percentage of Gross Receipts	Within range	Look to maximize this method of revenue collection
Fuel Flowage Fee	High compared to nearby other airports	Investigate cause of high fee
Required Investment	Within range	Continue as-is, incorporate into rate setting based on size of investment
Length of Lease	Within range	Continue as-is
Inflator	Within range	Utilize CPI and/or Appraisal

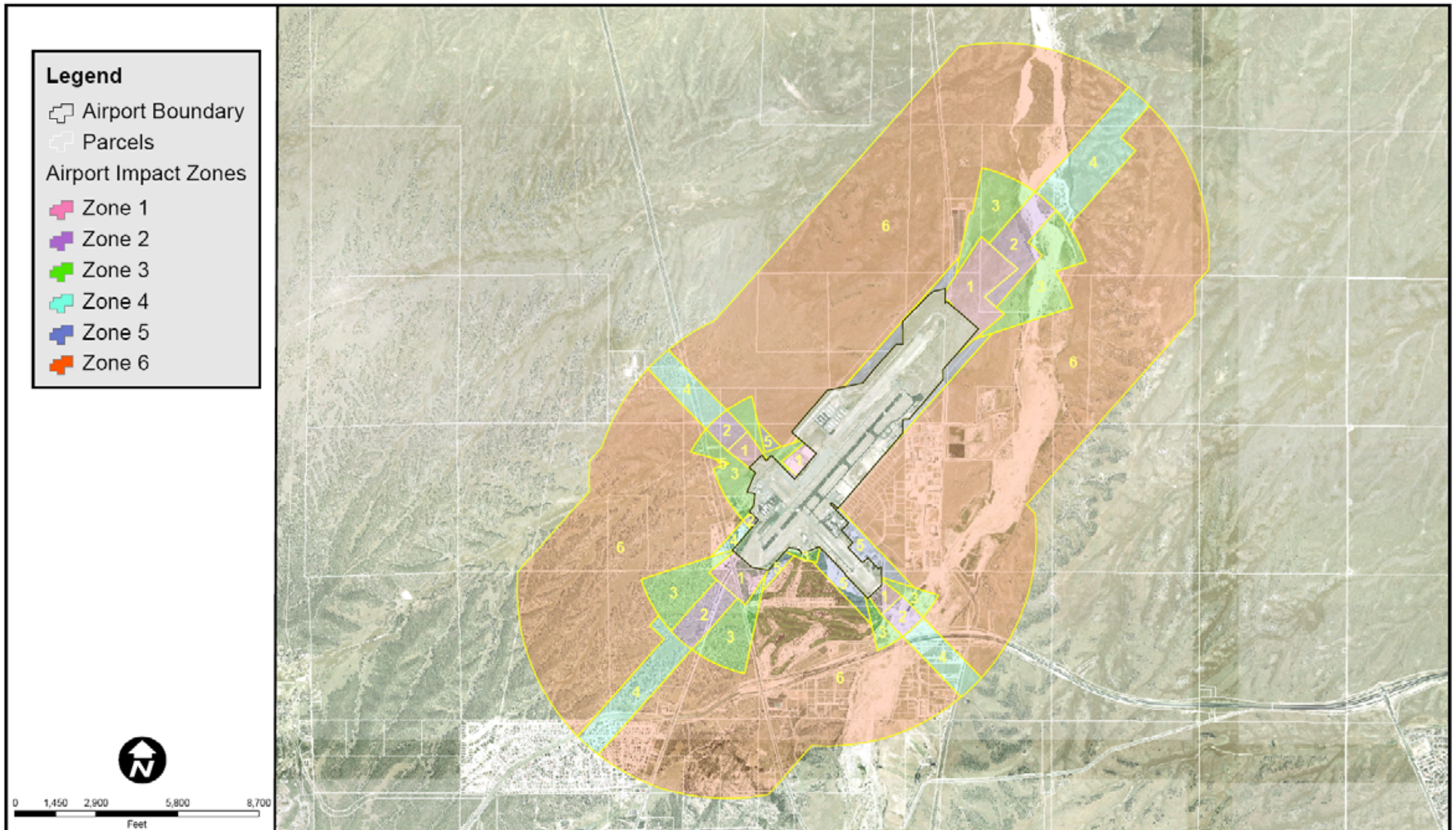
LAND USE PLAN

The purpose is to develop a satisfactory land use plan, to both PRC and the City, which allows for planned development of the airport's surroundings while ensuring protection of airport operations and surrounding population.

- Considerations
  - Noise
  - Safety
  - Continued Airport Viability as Regional Economic Engine

Ernest A. Love Field
Prescott Municipal Airport Master Plan

AIRPORT IMPACT ZONES

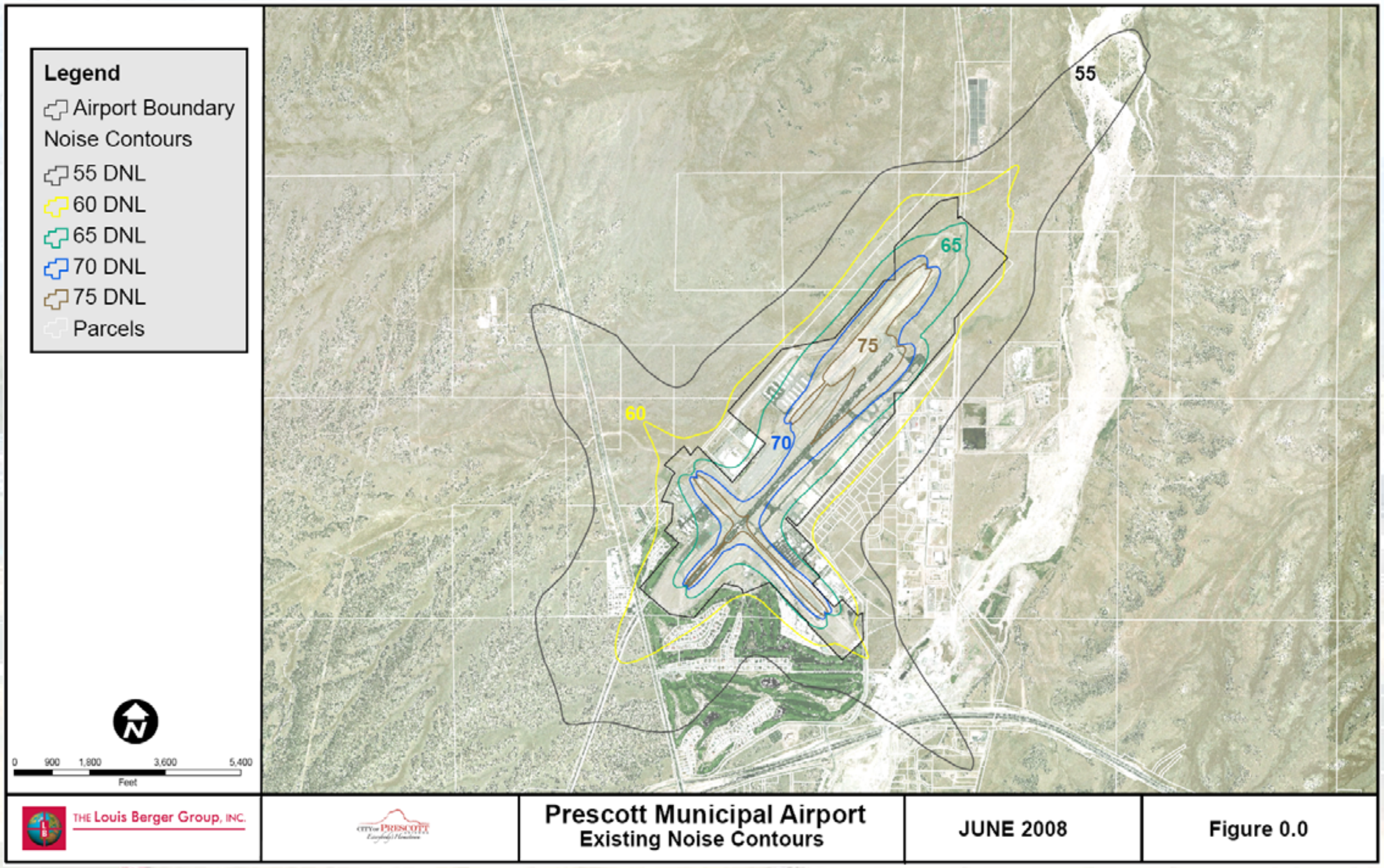


THE Louis Berger Group, INC.	City of Prescott Arizona Everybody's Hometown	**Prescott Municipal Airport** Airport Impact Zones	**JUNE 2008**	**Figure 0.0**

THE Louis Berger Group, INC.

Ernest A. Love Field
Prescott Municipal Airport Master Plan

NOISE CONTOURS



THE Louis Berger Group, INC.

ENVIRONMENTAL REVIEW

To provide a general assessment of the environmental effects of the preferred alternative and to define the potential extent of future environmental analyses and regulatory issues that will be required to implement the airfield improvements shown on the ALP.

ENVIRONMENTAL REVIEW

Agency Coordination:

- U.S. Fish and Wildlife Service
- AZ Game & Fish
- National Resources Conservation Service
- AZ State Park, State Historic Preservation Office
- Army Corps of Engineers
- Yavapai County
- Arizona Department Environmental Quality

FACILITY REQUIREMENTS

Requirements are based on:

- FAA Advisory Circular 150/5300-13; 150/5360-9,13
- Existing Facilities
- Aviation Demand Forecast

Critical Areas:

- Airfield
- Terminal
- Landside & Access

ALTERNATIVES ANALYSIS

3 to 5 alternatives will be developed for the areas determined in the facility requirements.

Alternatives will be identified and evaluated for the following airport elements:

- Airfield
- Terminal Area
- Aircraft Parking and Storage
- Access
- Non-aeronautical Development

ALTERNATIVE ANALYSIS

Alternatives will be evaluated in terms of the following criteria:

- *Operational Efficiency and Safety*
- *Engineering Feasibility*
- *Environmental Impacts*
- *Land Use Impacts*

The "preferred alternative" will reflect a balance between engineering feasibility, aeronautical safety and practicality, minimal environmental impacts, and financial responsibility

RUNWAY LENGTH ANALYSIS

Establish purpose and need for the Airport's proposed runway extension

- Review operational constraints and safety considerations, critical/design aircraft, current fleet mix and associated operational data.
- Analysis of historical and current airfield performance based on demand factors.

Data sources may include:

- Airport operations data from the Airport or the Air Traffic Control Tower
- National Oceanographic and Atmospheric Administration (NOAA)
- Airlines currently operating at PRC
- FAA/DOT Sources

AIRPORT LAYOUT PLAN SET

• Title Sheet	Draft Ongoing
• Data Sheet	Draft Ongoing
• Existing Facilities Plan	Draft Ongoing
• Airport Layout Plan	Template Completed
• Runway Plans and Profiles	Template Completed
• FAR Part 77 Surfaces Plan	Draft Ongoing
• Terminal Area Plan	Template Completed
• Land Use and Access Plan	Template Completed
• Airport Property Map “Exhibit A”	Draft Ongoing

CAPITAL IMPROVEMENT PLAN

- Prioritize recommendation for airport improvements
- Order of magnitude cost estimates for the recommended improvements (in current year dollars) shall be prepared
- These results will be combined to present a comprehensive Capital Improvement Program for the 5, 10 and 20-year planning horizons

CAPITAL IMPROVEMENT PLAN

- A comprehensive financial plan will be developed based on the recommended improvement projects
- Methods for financing airport improvements will be provided
- Historical financial data will be reviewed
- A 20-year revenue-expenses and cash flow analysis will be performed
- Alternative financing implementation plans may be identified

NEXT STEPS

- Complete Facility Requirements
- Complete Runway Length Analysis
- Complete Alternatives Analysis
- Complete Environmental Review
- Complete Airport Layout Plan

BREAKOUT SESSION

Your questions and input are greatly valued.

Please feel free to approach freely project team members and ask questions about the project and the material presented.

Thank you.

CITY OF PRESCOTT ARIZONA
Everybody's Hometown

Prescott Municipal Airport
Airport Master Plan

Public Information Meeting

Prescott Municipal Airport
Master Plan

Wednesday, January 21, 2009

7 PM to 9 PM

Antelope Hills Golf Course

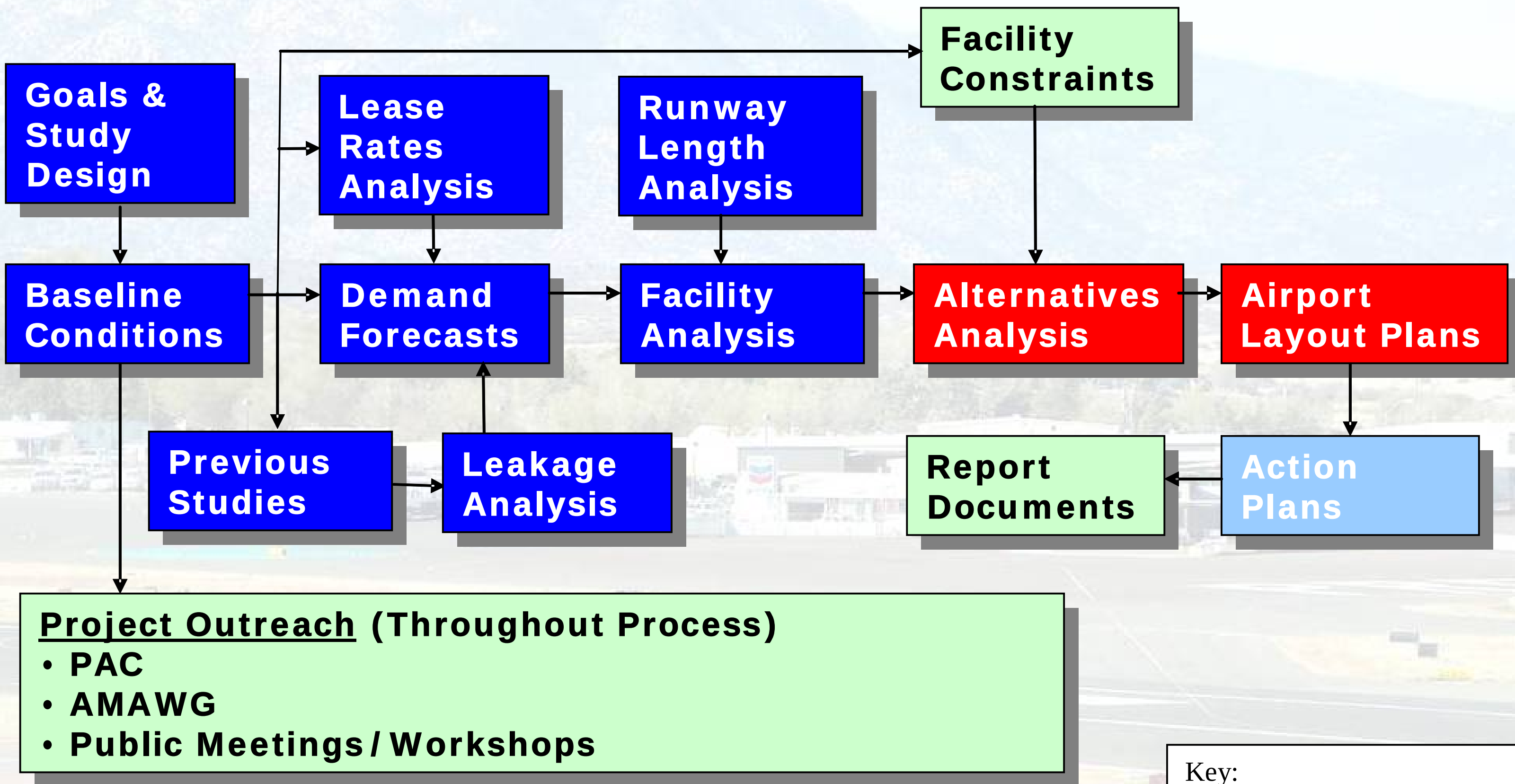
Old Clubhouse

THE Louis Berger Group, INC.

MEETING AGENDA

- **Introductions**
- **Review of Master Plan Process, Scope of Work and Progress to Date**
- **Next Steps**
- **Breakout Session**
- **Adjourn**

MASTER PLAN PROCESS



Key:

- Completed Task
- Current Task
- On-Going Task
- Anticipated/Next Task
- Future Task

FORECAST SUMMARY

Forecast	2007	2012	2017	2027
Passenger Enplanements	4,233	7,262	12,459	36,673
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FACILITY REQUIREMENTS

- **Airfield System Capacity**
- **Airside Facility Requirements**
- **Landside Facility Requirements**

FACILITY REQUIREMENTS

Airfield System Capacity

- Design Aircraft
- Airfield Capacity Analysis
- Airport Design and Operational Safety Standards
- Wind Coverage

FACILITY REQUIREMENTS

Airside Facility Requirements

- **Runway Length Requirements**
- **Runway/Taxiway Design, Safety and Separation Standards**
- **Runway /Taxiway Pavement Conditions, Marking and Lighting**
- **Runway Safety Areas, Object Free Areas, and Runway Protection Zones**
- **NAVAID, Visual Aids, and Instrument Approaches**

AIRSIDE FACILITY REQUIREMENTS

PRC Runway Length Analysis (FAA Model)

Airport Input Data	
Airport Elevation (MSL)	5,045
Mean daily temperature of the hottest month	90°
Maximum difference in runway centerline elevation	62’
Runway Length Recommended for Airport Design	
Small airplanes with approach speeds of less than 30 knots	450
Small airplanes with approach speeds of less than 50 knots	1,200
Small airplanes with less than 10 passenger seats:	
75 percent of these small airplanes	4,640
95 percent of these small airplanes	6,240
100 percent of these small airplanes	6,410
Small airplanes with 10 or more passenger seats	6,410
Large airplanes of 60,000 pounds or less:	
75 percent of these large airplanes at 60 percent useful load	7,300
75 percent of these large airplanes at 90 percent useful load	9,220
100 percent of these large airplanes at 60 percent useful load	11,400
100 percent of these large airplanes at 90 percent useful load	11,620
Source: FAA Airport Design Computer Program 4.2AD and FAA AC 150/5300-1.	

AIRSIDE FACILITY REQUIREMENTS

PRC Runway Length Analysis
Bombardier Airport Planning Manual Specification for CRJ 700

Airport Input Data	
Mean Temperature (Hottest Month)	90°F
Airport Elevation above MLS	5,045 ft
Maximum Difference in Centerline Elevation	62’
Aircraft Weight Data	
Maximum Design Weight (landing)	67,000 lbs
Maximum Design Weight (takeoff)	75,000 lbs
Runway Length Recommended for Airport Design	
Landing Runway Length (wet)	6,200’
Landing Runway Length (dry)	5,400’
Takeoff Runway Length	**10,570’**
Source: Canadair CRJ 700 Airport Planning Manual	

AIRSIDE FACILITY REQUIREMENTS

PRC Runway Design, Separation and Safety Standards Compliance

Runway	3R	21L	3L	21R	12	30
Category	**Meets Planning Standards**					
Approach Category and Design Group End	C-III	C-III	B-II	B-II	B-II	B-II
Runway Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Percentage Effective Gradient	Yes	Yes	Yes	Yes	Yes	Yes
Runway Safety Area Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Safety Area - Distance Beyond Runway End (ft)	**No**	Yes	**No**	**No**	**No**	Yes
Runway Object Free Area Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Object Free Area – Distance Beyond Runway End (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Obstacle Free Zone Width (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Obstacle Free Zone – Distance Beyond Runway End (ft)	Yes	Yes	**No**	**No**	Yes	Yes
Runway Centerline to Taxiway Centerline Distance (ft)	**No**	**No**	**No**	**No**	**No**	**No**
Runway Centerline to Nearest Parking Area	**No**	**No**	Yes	Yes	**No**	**No**

AIRSIDE FACILITY REQUIREMENTS

PRC Runway Safety Area Deficiencies

	Existing Conditions					
Runway	**3R-21L**		**3L-21R**		**12-30**	
ARC	C-III		B-II		B-II	
Approach	Visual/ Precision		Visual/Visual		Non-Precision/Visual	
Runway End	3R	21L	3L	21R	12	30
RSA Width (ft)	500	500	120[4]	120[4]	150	150
RSA Length Beyond Runway End (ft)	588[1]	1000	80[2]	240[4]	220[3]	300

[1] Intersection with localizer antenna, perimeter fence at 640 ft, Club House Dr. at 650 ft and Golf Course
[2] Intersecting with rising terrain with a six percent slope
[3] Declining terrain and intersecting with perimeter fence
[4] Existing dimensions are base on ARC B-I standards.

FACILITY REQUIREMENTS

Landside Facility Requirements

- Apron and Hangar Space Requirements
- Commercial Terminal Building
- General Aviation Terminal Building
- Access Road and General Aviation Parking
- Support Facility Requirements and Utilities

FACILITY REQUIREMENTS

Identified Needs	Planning Years			
	2007	2012	2017	2027
Based Aircraft Apron Parking Positions	78	87	97	122
Based Aircraft Apron Parking Area (ft^2)	210,600	234,900	261,900	329,400
Itinerant Aircraft Apron Parking Positions	142	149	163	194
Required Itinerant Apron (ft^2)	220,080	242,760	288,120	388,560
Total T-Hagar positions	187	206	230	289
T-hangars/shade (ft^2)	14,400	37,200	66,000	136,800
Total Conventional Positions	13	20	23	29
Conventional (ft^2)	45,500	70,000	80,500	101,500
Itinerant Hangar Requirements (ft^2)	24,500	28,000	31,500	38,500
Aircraft Maintenance (ft^2)	7,000	9,800	11,200	14,000
FBO GA Building Area	3,800	7,350	7,875	9,600
GA Parking Positions	158	174	203	260
GA Parking Area (ft^2)	63,200	69,600	81,200	104,000
Administration building (ft^2)	5,950			
Administration Parking Pos.	14	16	20	28
Parking Area (ft^2)	5,600	6,400	8,000	11,200
Airport Maintenance Equipment Storage	11,250			

FACILITY REQUIREMENTS

Identified Needs	Planning Scenarios		
	2007-2012	2013-2017	2018-2027
Commercial Terminal (ft^2)	**18,370**	**26,565**	**33,550**
Terminal Apron Area (ft^2)	57,980	70,468	95,890
Commercial Terminal Parking Area (ft^2)	50,400	71,200	98,000

FACILITY REQUIREMENTS

Additional items:

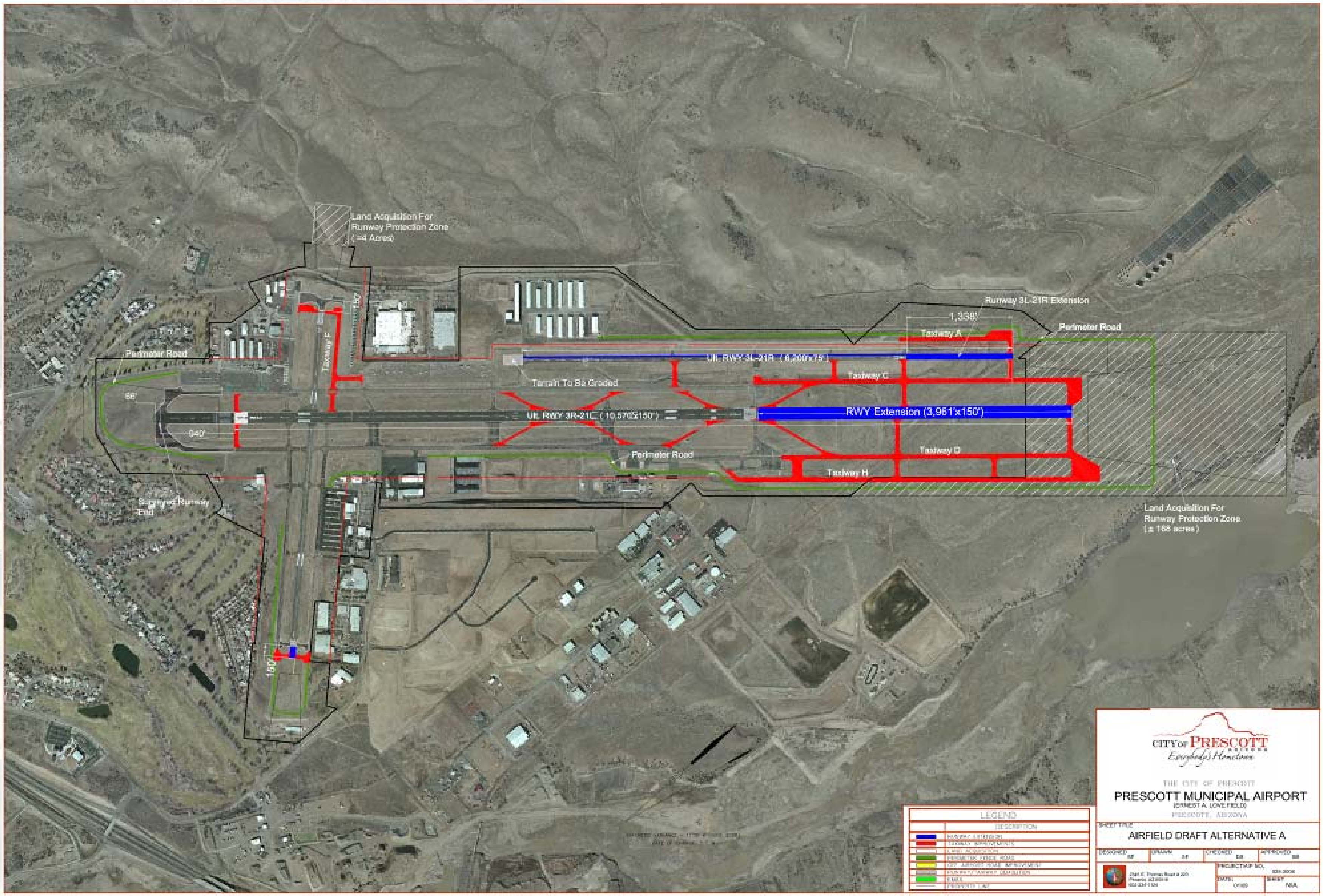
- **Administration Building relocation;**
- **Airport Access, roadway realignment;**
- **Airport Maintenance building relocation siting;**
- **Approach Lighting System to Runway 12 and 3R;**
- **ARFF building relocation siting;**
- **Commercial Terminal siting;**
- **Conventional Hangar siting and development;**
- **Expansion and development of new aprons;**
- **FBO/GA building siting and development;**
- **High speed taxiway exits;**
- **Itinerant Ramp relocation and expansions;**
- **Land acquisitions;**
- **Lengthening of Runway 3L-21R;**
- **Lengthening of Runway 3R-21L;**
- **Lengthening of Taxiway A, C and D;**
- **Lighting improvements for taxiway E;**
- **Perimeter Fencing improvements;**
- **Perimeter Road;**
- **Runway 3L-21R widening;**
- **Runway Protection Zone Issues for Runway 3R & 3L;**
- **T-Hangar and shades relocation.**

MASTER PLAN ALTERNATIVES

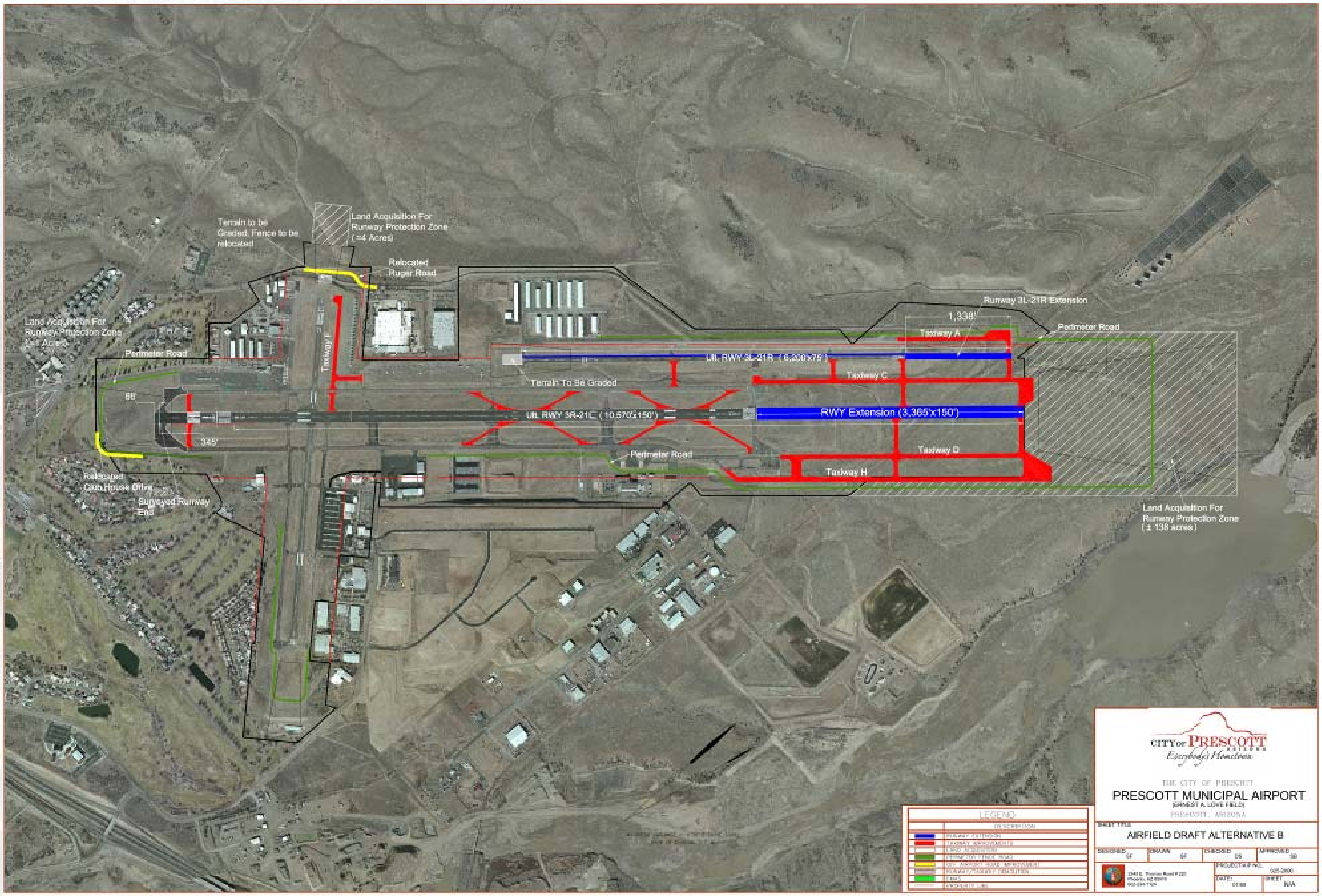
- **Facility Alternatives**
  - **Aircraft Parking & Storage**
  - **Passenger Terminal**
  - **Fixed Base Operator(s)**
  - **Support Facilities**
  - **Etc.**
- **Airfield Alternatives**
  - **Runways & Taxiways**
  - **Runway Safety Areas**

Prescott Municipal Airport
Airport Master Plan

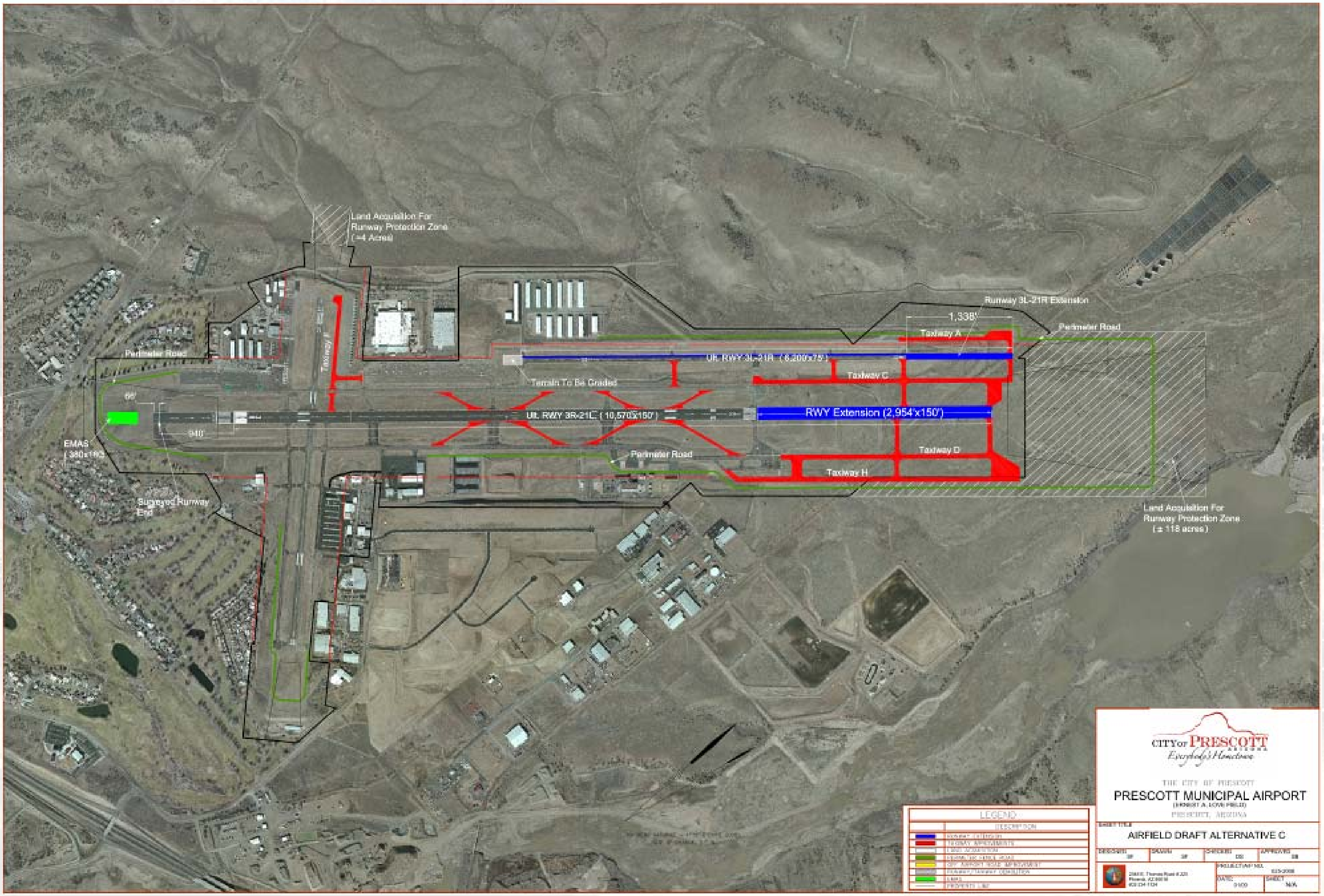
MASTER PLAN ALTERNATIVES



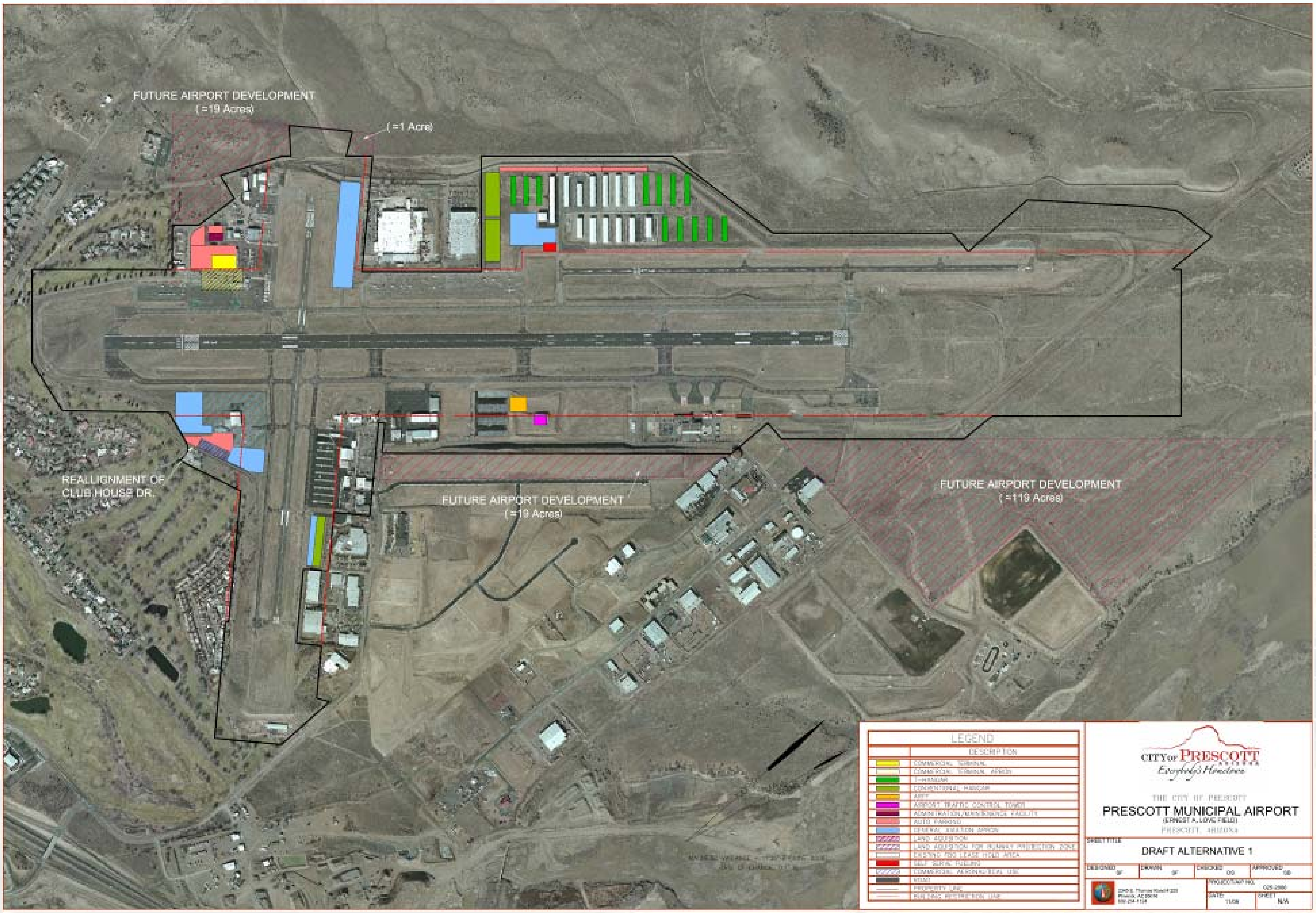
MASTER PLAN ALTERNATIVES



MASTER PLAN ALTERNATIVES

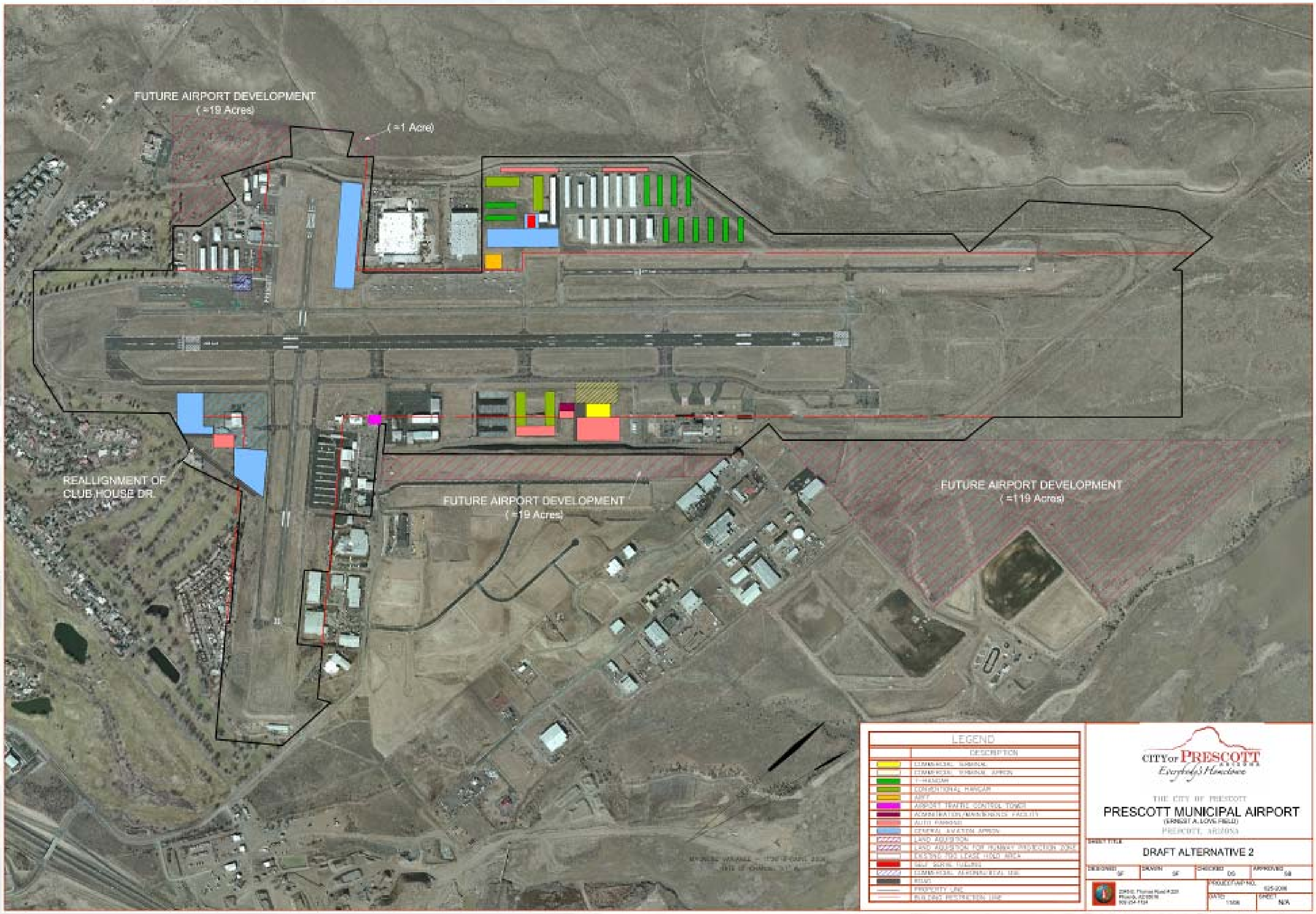


MASTER PLAN ALTERNATIVES

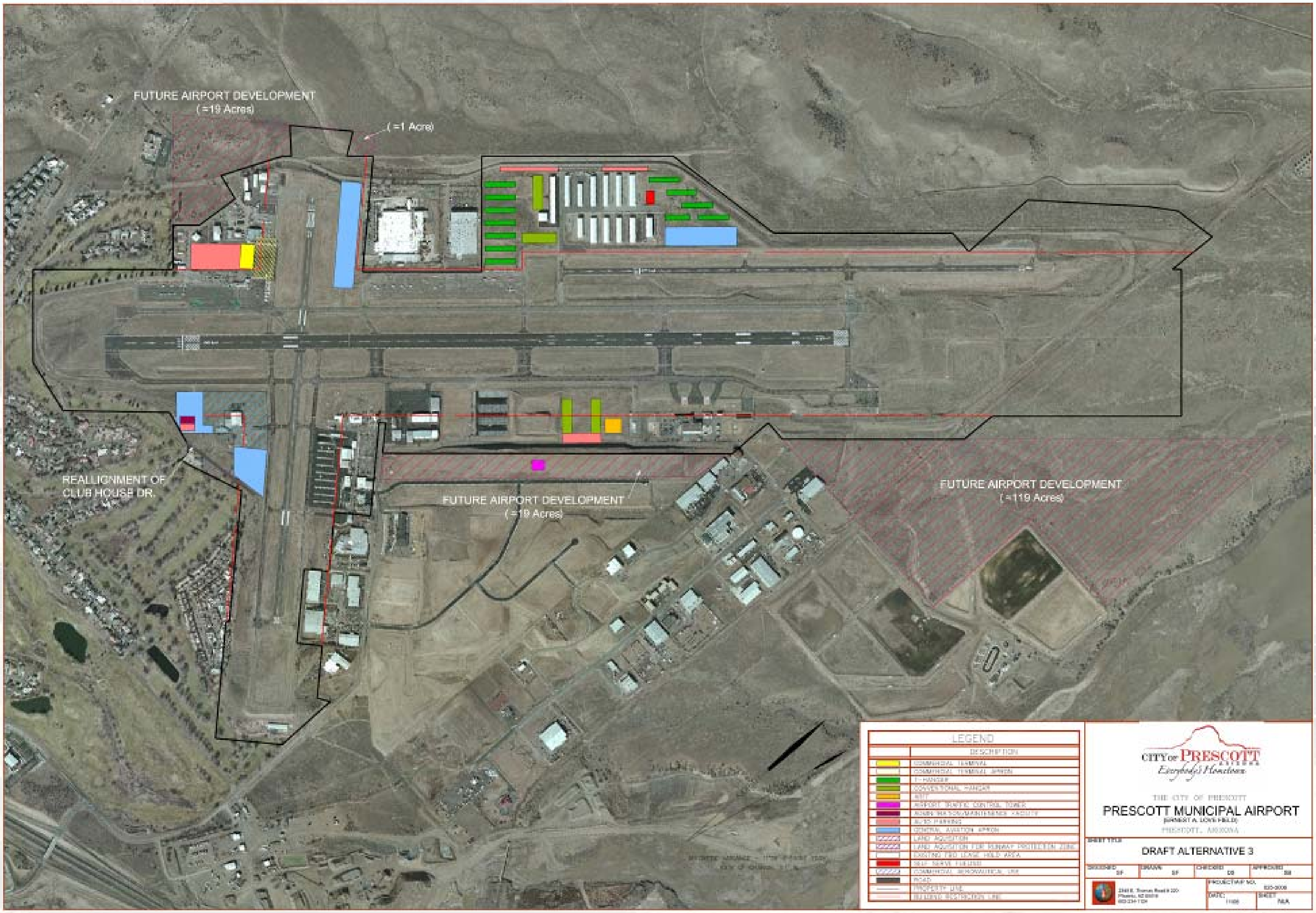


Prescott Municipal Airport
Airport Master Plan

MASTER PLAN ALTERNATIVES

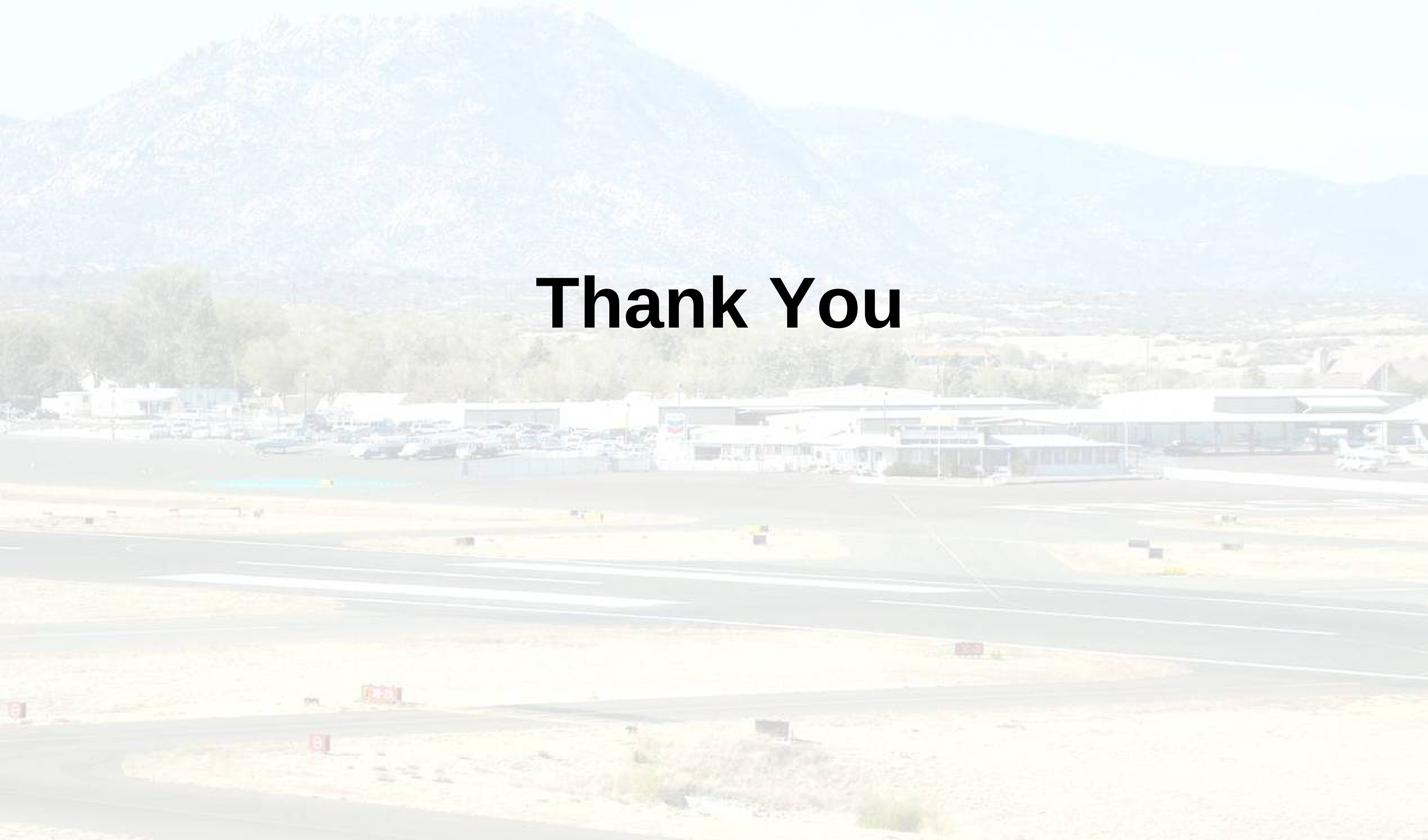


MASTER PLAN ALTERNATIVES



NEXT STEPS

- Complete Alternatives Analysis & Select Preferred Alternative
- Complete Airport Layout Plan
- Continue Report Documentation



Thank You

Public Information Meeting

Ernest A. Love Field
Master Plan

Wednesday
July 22, 2009
7 PM to 8 PM

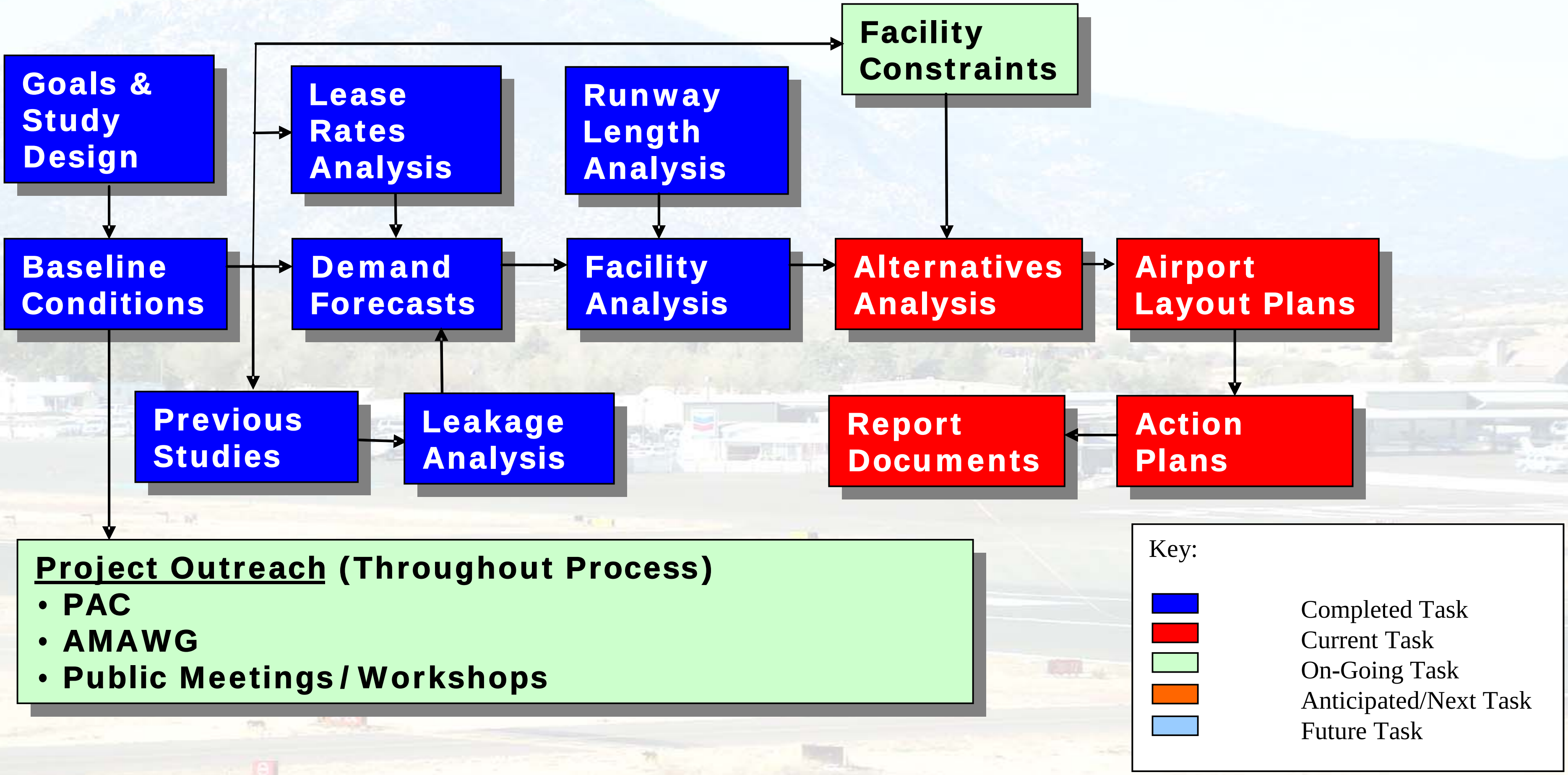
Embry-Riddle
Aeronautical University
Davis Learning Center
Auditorium

AGENDA

- **Introductions**
- **Review Project Process**
- **Review of Preferred Airport Alternative**
- **Next Steps**
  - **Complete and Submit Draft Master Plan for FAA Review**
  - **Complete and Submit Airport Layout Plan Set for FAA Review**
- **Adjourn**

Ernest A. Love Field
Prescott Municipal Airport Master Plan

PROJECT FLOW CHART



PROJECT PROGRESS TO DATE

• Baseline Conditions	Draft Completed
• Forecast	Draft Completed
• Leakage Analysis	Draft Completed
• Lease Rates Analysis	Draft Completed
• Land Use Analysis	Draft Completed
• Facility Requirements	Draft Completed
• Runway Length Analysis	Draft Completed
• Alternatives Development	Draft Completed
• Environmental Review	Ongoing
• Airport Layout Plan	Ongoing
• Capital Improvement Program	Ongoing

ALTERNATIVES ANALYSIS

Alternatives were developed for the areas determined in the facility requirements.

Alternatives identified and evaluated for the following airport elements:

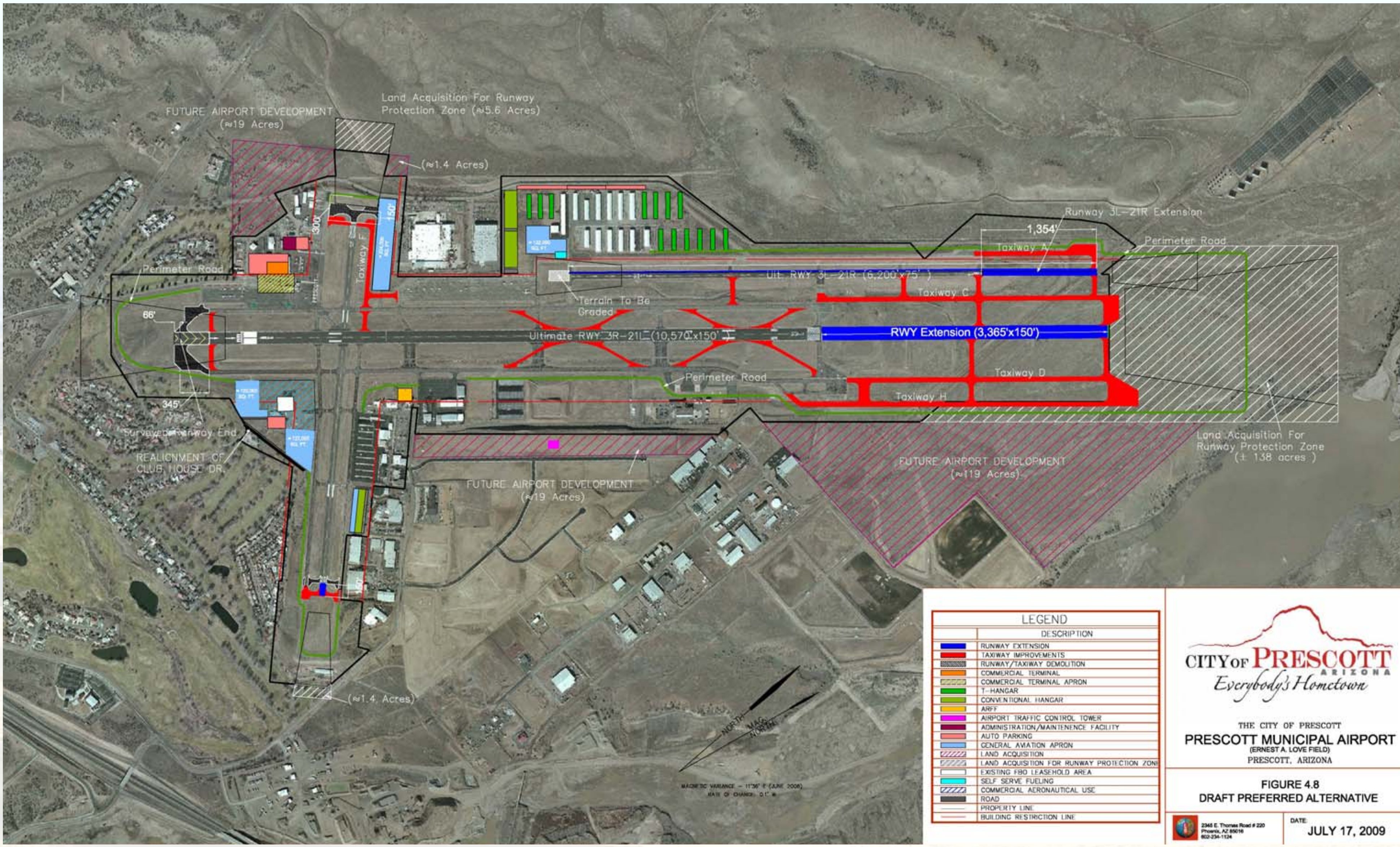
- Airfield components
- Landside components
- Airport Access

ALTERNATIVE ANALYSIS

Alternatives were evaluated in terms of the following criteria:

- *Operational Efficiency and Safety*
- *Engineering Feasibility*
- *Environmental Impacts*
- *Land Use Impacts*

The "preferred alternative" reflects a balance between engineering feasibility, aeronautical safety and practicality, minimal environmental impacts, and financial responsibility. And meet the needs of the Airport's Future.



FUTURE AIRPORT DEVELOPMENT (≈19 Acres)
Land Acquisition For Runway Protection Zone (≈5.6 Acres)
(≈1.4 Acres)
Perimeter Road
Taxiway F
300'
150'
Runway 3L-21R Extension
1,354'
Taxiway A
Perimeter Road
Ult. RWY 3L-21R (6,200'x75')
Taxiway C
Terrain To Be Graded
66'
Ultimate RWY 3R-21L (10,570'x150')
RWY Extension (3,365'x150')
Perimeter Road
Taxiway D
Taxiway H
345'
Surveyed Runway End
REALIGNMENT OF CLUB HOUSE DR.
FUTURE AIRPORT DEVELOPMENT (≈19 Acres)
FUTURE AIRPORT DEVELOPMENT (≈119 Acres)
Land Acquisition For Runway Protection Zone (± 138 acres)
(≈1.4 Acres)
NORTH
MAG. NORTH
LEGEND
DESCRIPTION
RUNWAY EXTENSION
TAXIWAY IMPROVEMENTS
RUNWAY/TAXIWAY DEMOLITION
COMMERCIAL TERMINAL
COMMERCIAL TERMINAL APRON
T-HANGAR
CONVENTIONAL HANGAR
ARFF
AIRPORT TRAFFIC CONTROL TOWER
ADMINISTRATION/MAINTENENCE FACILITY
AUTO PARKING
GENERAL AVIATION APRON
LAND ACQUISITION
LAND ACQUISITION FOR RUNWAY PROTECTION ZONE
EXISTING FBO LEASEHOLD AREA
SELF SERVE FUELING
COMMERCIAL AERONAUTICAL USE
ROAD
PROPERTY LINE
BUILDING RESTRICTION LINE
CITY OF PRESCOTT
ARIZONA
Everybody's Hometown
THE CITY OF PRESCOTT
PRESCOTT MUNICIPAL AIRPORT
(ERNEST A. LOVE FIELD)
PRESCOTT, ARIZONA
FIGURE 4.8
DRAFT PREFERRED ALTERNATIVE
2345 E. Thomas Road # 220
Phoenix, AZ 85016
602-234-1124
DATE:
JULY 17, 2009

INC.

ENVIRONMENTAL REVIEW

- Identify Projects to be included in Environmental Assessment (EA)
- EA is expected to commence in August of 2009
- Purpose in Master Plan is to provide general review
- All NEPA Categories will be reviewed in detail in the EA based on final project plans
- Presented as Chapter in draft Master Plan

AIRPORT LAYOUT PLAN SET

• Title Sheet	Draft Completed
• Data Sheet	Draft Completed
• Existing Facilities Plan	Draft Completed
• Airport Layout Plan	Draft Ongoing
• Runway Plans and Profiles	Draft Ongoing
• FAR Part 77 Surfaces Plan	Draft Ongoing
• Terminal Area Plan	Draft Ongoing
• Land Use and Access Plan	Draft Completed
• Airport Property Map "Exhibit A"	Draft Completed

CAPITAL IMPROVEMENT PROGRAM

- Cost Estimates Developed for Preferred Airport Alternative
- Project Prioritization
  - Phase I – 5 years
  - Phase II – 5 to 10 years
  - Phase III – 10 to 20 years

CAPITAL IMPROVEMENT PROGRAM

- Funding Sources
  - Airport Improvement Program (AIP)
    - Entitlement and Discretionary
  - Passenger Facility Charge (PFC) Program
  - Arizona State Funding Sources
  - Third Party Funding
  - Airport Operating Fund
- Presented as Chapter in draft Master Plan

NEXT STEPS

- Submit draft Airport Master Plan and Airport Layout Plan (ALP) Set to:
  - Airport Management
  - Project Advisory Committee (PAC)
  - Federal Aviation Administration
  - Posted on Project website for public review

Comment Period

Your questions and input are greatly valued.

Please feel free to approach freely project team members and ask questions about the project and the material presented.

Thank you.

Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Stephen A. Owens
Director

February 19, 2008

Bernardita Calinao, Ph.D., Environmental Manager
The Louis Berger Group, Inc.
2345 E. Thomas Road, Suite 220
Phoenix, AZ 85016-7818

Dear Ms. Calinao:

We received your January 18, 2008 inquiry regarding sensitive environmental resources within the Prescott Municipal Airport and its general vicinity. The only information we are able to provide is that Granite Creek is listed as an impaired water for dissolved oxygen. Also data shows there may be future concerns regarding E coli and mercury levels. Any future activities near Granite Creek could not contribute to further any pollutants.

Without specifying what information you are seeking or the possible future activities, the Water Qualify Division is unable to provide further information.

Sincerely,

Linda Taunt, Deputy Director
Water Quality Division

ER08-0006

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

January 22, 2007

Bernardita Calinao, Ph.D.
The Louis Berger Group, Inc.
2345 E. Thomas Road, Suite 220
Phoenix, Arizona 85016

Re: Prescott Municipal Airport

The Arizona Game and Fish Department (Department) has reviewed your request, received January 18, 2007, regarding special status species information associated with the above-referenced project area. The Department's Arizona On-Line Environmental Review Tool (Tool) has been accessed and current records indicate the presence of no special status species in the project vicinity (3-mile radius).

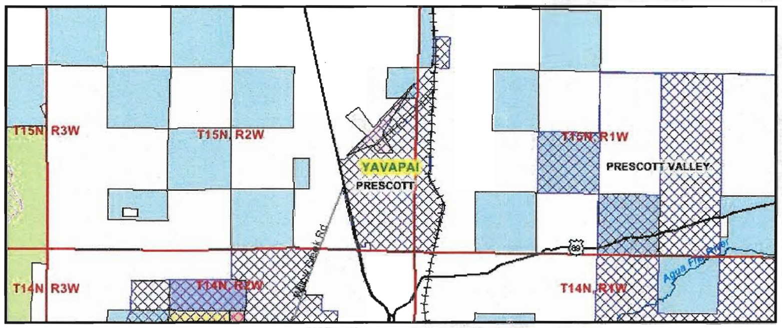
This information can now be provided to you almost instantaneously and is designed to replace the need for requests via writing by fax, mail, or email for most projects. The information is generated utilizing an interactive on-line tool, which can be accessed via the Internet at http://www.azgfd.gov/hgis/. The Tool allows you to submit land and water projects on-line by following a few simple steps.

The Department has no further comments at this time. Please refer to the project receipt for general project type concerns. If you have any questions regarding this letter, please contact me at (623) 236-7513. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

Sincerely,

Daniel E. Nelson
Project Evaluation Program Specialist

Project Location



Project Name: Prescott Municipal Airport
Submitted By: PEP Project Evaluation Program
On behalf of: CONSULTING
Project Search ID: 20080122005004
Date: 1/22/2008 12:06:08 PM
Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities
Project Coordinates (UTM Zone 12-NAD 83): 369509.382, 3836061.023 meter
Project Area: 202.519 acres
Project Perimeter: 7678.238 meter
County: YAVAPAI
USGS 7.5 Minute Quadrangle ID: 850
Quadrangle Name: CHINO VALLEY SOUTH
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Cicindela oregona maricopa	Maricopa Tiger Beetle	SC	S	S	
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle	SC	S		WSC
Megaceryle alcyon	Belted Kingfisher				WSC
Phlox amabilis	Arizona Phlox		S		

 APPLICATION INITIALS: ___________

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities

Project Type Recommendations:

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with State Historic Preservation Office may be required http://www.pr.state.az.us/partnerships/shpo/shpo.html#anchor561695

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

Consider designs and tower modifications that reduce or eliminate impacts to migratory birds. Please refer to the U.S. Fish and Wildlife Service's page on cellular towers in Arizona http://www.fws.gov/arizonaes/CellTower.htm. On this page there are guidelines for tower siting, construction, operation, and decommissioning. Also see the Service's Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning, http://www.fws.gov/habitatconservation/communicationtowers.htm.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using

 APPLICATION INITIALS: ___________

this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:____________________________

Date: ____________________________

Proposed Date of Implementation: ________________

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_________________

Contact Name: ____________________

Address: _______________

City, State, Zip: _________________

Phone: _________________

E-mail: ______________________

Person Conducting Search (if not applicant)

Agency/organization:_________________

Contact Name: ____________________

Address: _______________

 APPLICATION INITIALS: __________

City, State, Zip: ____________________

Phone: ____________________

E-mail: __________________________

 APPLICATION INITIALS: ____________

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

REPLY TO
ATTENTION OF:

January 30, 2008

Office of the Chief
Regulatory Division

Bernardita Calinao, Ph.D.
Environmental Manager
The Louis Berger Group, Inc.
2345 East Thomas Road, Suite 220
Phoenix, Arizona 85016-7818

File Number: 2008-00132-DE

Dear Dr. Calinao:

It has come to our attention that the City of Prescott plans to expand the existing Prescott Municipal Airport in the vicinity of Bottleneck Wash located within Sections 24 & 25, T15N, R2W, Prescott, Yavapai County, Arizona.

This activity may require a Department of the Army permit issued under Section 404 of the Clean Water Act. A Section 404 permit is required for the discharge of dredged or fill material into the "waters of the United States," including adjacent wetlands. Examples of activities requiring a permit are placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling the land, constructing weirs or diversion dikes, constructing approach fills, and discharging dredged or fill material as part of any other activity.

Enclosed you will find a permit application form and a pamphlet that describes our regulatory program. If you have questions, please contact Daisy Eldridge at (602) 640-5385, x268. Please refer to file number 2008-00132-DE in your reply.

Sincerely,

Sallie McGuire

for Cindy Lester, P.E.
Chief, Arizona Branch
Regulatory Division

Enclosures

YAVAPAI COUNTY

Development Services
Prescott - (928) 771-3214 Fax: (928) 771-3432
Cottonwood - (928) 639-8151 Fax: (928) 639-8153

Flood Control District
Prescott -(928) 771-3197 Fax: (928) 771-3427
Cottonwood - (928) 639-8151 Fax: (928) 639-8118

500 S. Marina Street, Prescott, AZ 86303 and 10 S. 6th Street, Cottonwood, AZ 86326
Addressing – Building Safety – Customer Service & Permitting – Environmental – Flood Control District – Land Use – Planning & Design Rev

Mr. Bernardita Calinao, PhD
Louis Verger Group, Inc.
2345 E. Thomas Road, Suite 220
Phoenix, Arizona 85016

RE: City of Prescott Municipal Airport – Floodplain Information

Dear Bernardita:

I've enclosed the following information:

1. GIS Map Detailing Floodplain, Parcel, Roads and 2007 Aerial Photograph
2. Copy of FEMA Flood Insurance Rate Map Panel 04025C1710 F.
3. Copy of Centerpointe South Letter of Map Revision Letter and Annotated FIRM Map.

I would recommend contacting Richard Mastin at the City for additional information at (928) 777-1273. Richard is the City's Floodplain Administrator and may have more detailed information than I've provided.

If you have any questions, please contact me at (928) 442-5414.

Sincerely,
YAVAPAI COUNTY FLOOD CONTROL DISTRICT

Jeff M. Low

Jeffrey Low, CFM
Floodplain Unit Manager

Richard Mastin, City of Prescott Development Services

Flood Map

Yavapai County assumes no responsibility for errors, omissions, and/or inaccuracies in this mapping product.

LEGEND

Road Centerlines
Parcels
FEMA Floodplain Zones
Zone A or AE
Zone AE Floodway
Zone D
Zone Shaded X
Zone Unshaded X

N
W E
S

0 1000 2000

1 in. = 2000 ft.

January 31, 2008

here elevations or depths have been established.

mine if flood insurance is available, contact an insurance agent or National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

1000 0 1000

1720

NATIONAL FLOOD INSURANCE PROGRAM

JLOW

FIRM

FLOOD INSURANCE RATE MAP

YAVAPAI COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 1720 OF 3925

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

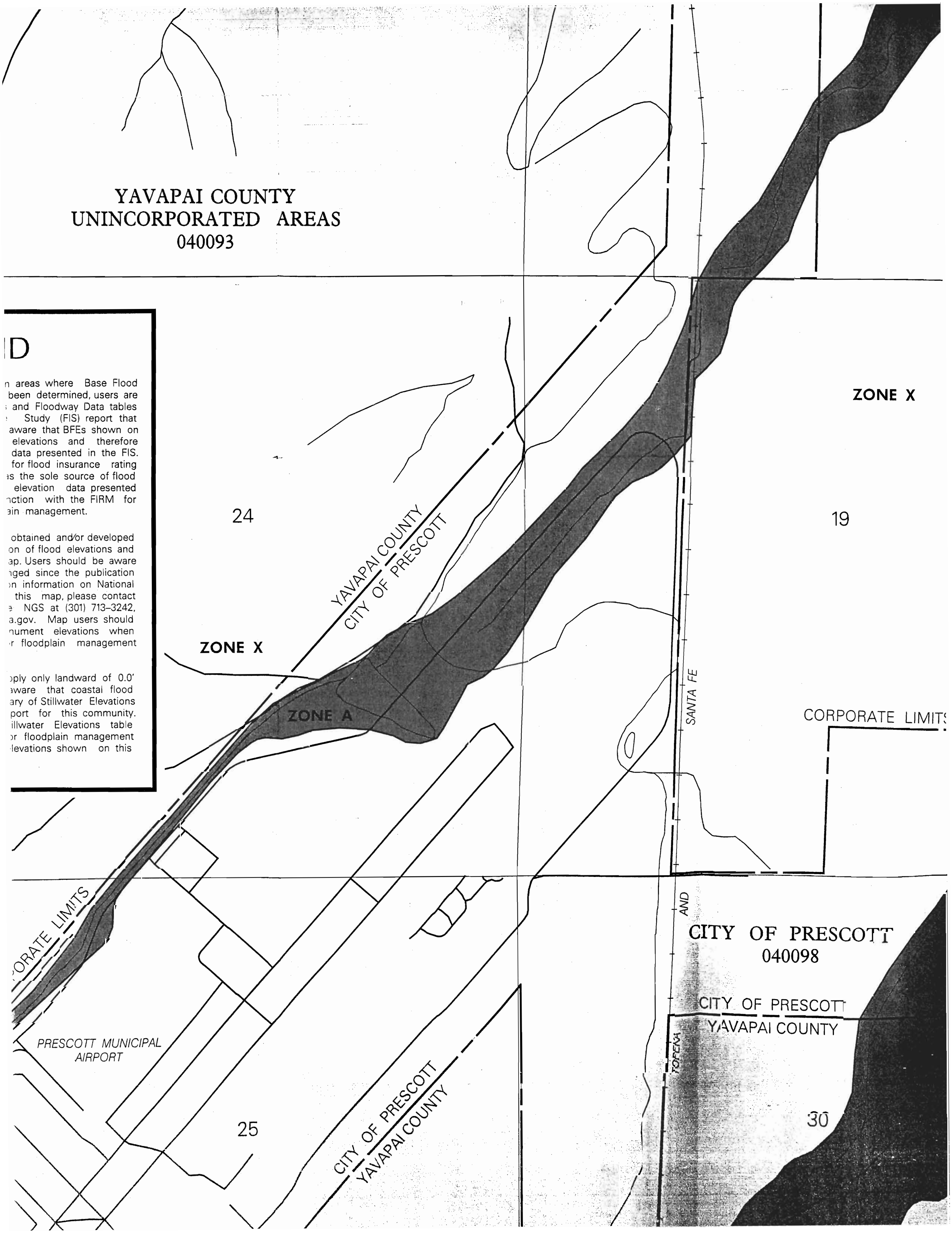
COMMUNITY	NUMBER	PANEL	SUFFIX
PRESCOTT VALLEY, TOWN OF	040121	1720	F
PRESCOTT, CITY OF	040098	1720	F
YAVAPAI COUNTY, UNINCORPORATED AREAS	040093	1720	F

MAP NUMBER
04025C1720 F

EFFECTIVE DATE:
JUNE 6, 2001

FEDERAL EMERGENCY MANAGEMENT AGENCY

Federal Emergency Management Agency


YAVAPAI COUNTY
UNINCORPORATED AREAS
040093
D
n areas where Base Flood
been determined, users are
and Floodway Data tables
Study (FIS) report that
aware that BFEs shown on
elevations and therefore
data presented in the FIS.
for flood insurance rating
as the sole source of flood
elevation data presented
nction with the FIRM for
ain management.
obtained and/or developed
on of flood elevations and
ap. Users should be aware
nged since the publication
on information on National
this map, please contact
NGS at (301) 713-3242,
a.gov. Map users should
nument elevations when
r floodplain management
pply only landward of 0.0'
aware that coastal flood
ary of Stillwater Elevations
port for this community.
illwater Elevations table
or floodplain management
elevations shown on this
ZONE X
ZONE A
24
19
YAVAPAI COUNTY
CITY OF PRESCOTT
SANTA FE
AND
CORPORATE LIMITS
PRESCOTT MUNICIPAL
AIRPORT
CITY OF PRESCOTT
040098
CITY OF PRESCOTT
YAVAPAI COUNTY
TOPEKA
25
30

LYON ENGINEERING
Civil Engineers • Land Surveyors

July 23, 2007

FEMA National Service Provider
3601 Eisenhower Avenue
Alexandria, VA 22304-6425

Re: Request for Letter of Map Revision (LOMR) of Granite Creek for Centerpointe South

MT-2 Division Reviewer,

This is a request for a LOMR of Granite Creek for Centerpointe South. There is no Flood Insurance Study (FIS) for this location and the creek is an approximate Zone A on the effective Flood Insurance Rate Maps (FIRMs). There is no fee for this LOMR since it is based solely on submission of more detailed data.

Please refer to FEMA LOMA Case # 05-09-0850A for the floodplain analysis just downstream of this reach. This LOMA was completed for Granite Creek between Centerpointe East and West subdivisions. Because this analysis was accepted by FEMA, we are matching the locations of cross-sections 24 and 25, and we have used the 100-year base flood elevation (BFE) of cross-section 24 as the downstream known water surface elevation for this subcritical reach. Furthermore, to update the FIRMs, it is Lyon Engineering's recommendation that FEMA include the analysis results from the aforementioned approved LOMA from Case # 05-09-0850A in this LOMR.

As with the aforementioned LOMA, the hydrology for this LOMR has been completed by DAVA & Associates, Inc. in the Hydrology Report for Airport Connector and Willow Creek Road, March 1998. This hydrology was accepted by FEMA, and a 100-year discharge of 15,500 cfs was determined.

Please note that the effective FIRM shows this reach is in the unincorporated area of Yavapai County (Community # 040093). However, this area has now been completely annexed into the City of Prescott (Community # 040098). Lyon Engineering recommends that FEMA update their corporate boundaries in this area.

Also note that the effective FIRMs are on vertical datum NGVD 1929. All of Lyon Engineering's analyses and exhibits are shown on vertical datum NAVD 1988. The most accurate conversion in the area is NGVD 1929 + 3.058' = NAVD 1988.

Furthermore, both the upstream and downstream floodplain limits of this detailed study do not tie into the effective Zone A floodplain limits. This study has been extended as far as possible with the available topography, but still does not tie in. We find this acceptable since the effective Zone A limits are grossly inaccurate.

3623 Crossings Drive • Prescott, Arizona 86305 • Phone 928-776-1750 • Fax 928-776-0605

The following information is submitted in support of the LOMR:

1. This letter requesting a LOMR
2. FEMA MT-2 Form 1 (2 pages)
3. FEMA MT-2 Form 2 (2 pages)
4. Current Fee Tables and Payment Information Form
5. General project location map
6. HEC-RAS profile and cross-section results
7. Effective FEMA FIRMs (Maps 04025C1720F and 04025C2085F, Date 6/6/2001)
8. Annotated FEMA FIRMs (Maps 04025C1720F and 04025C2085F, Date 6/6/2001)
9. Pictures of the site
10. CD containing HEC-RAS existing model
11. Certified topographic map with effective and existing floodplain boundaries

Please provide the LOMR to Centerpointe South Development, LLC and Lyon Engineering. If additional information is required, please contact Brian Bucholtz, E.I.T., CFM with Lyon Engineering at 928-776-1750 or bbucholtz@cableone.net.

Respectfully submitted,

Ty Myers, Developer
Centerpointe South Development, LLC

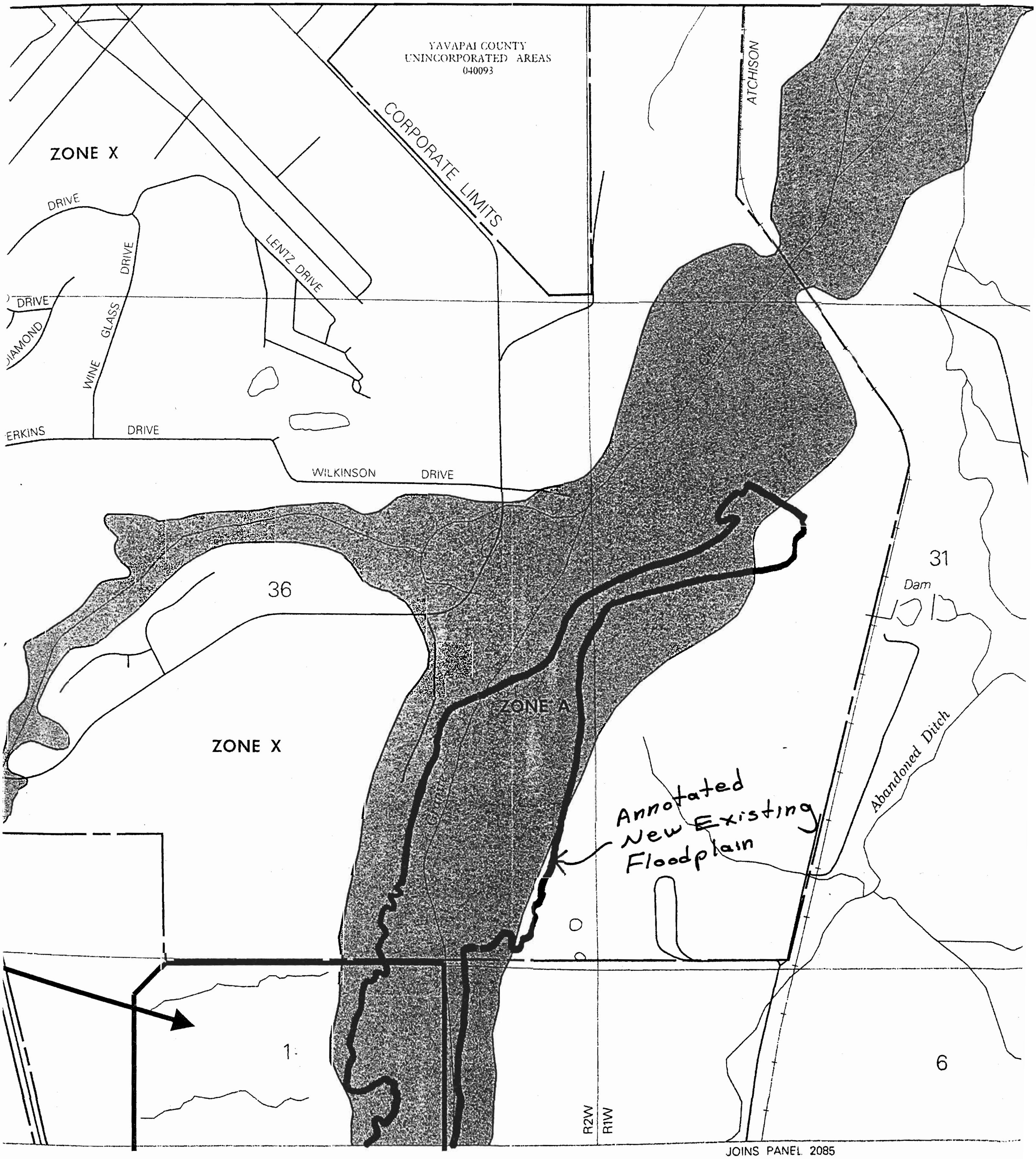
Brian A. Bucholtz, E.I.T., CFM, Project Engineer
Lyon Engineering

Scott A. Lyon, P.E., R.L.S., Vice President
Lyon Engineering

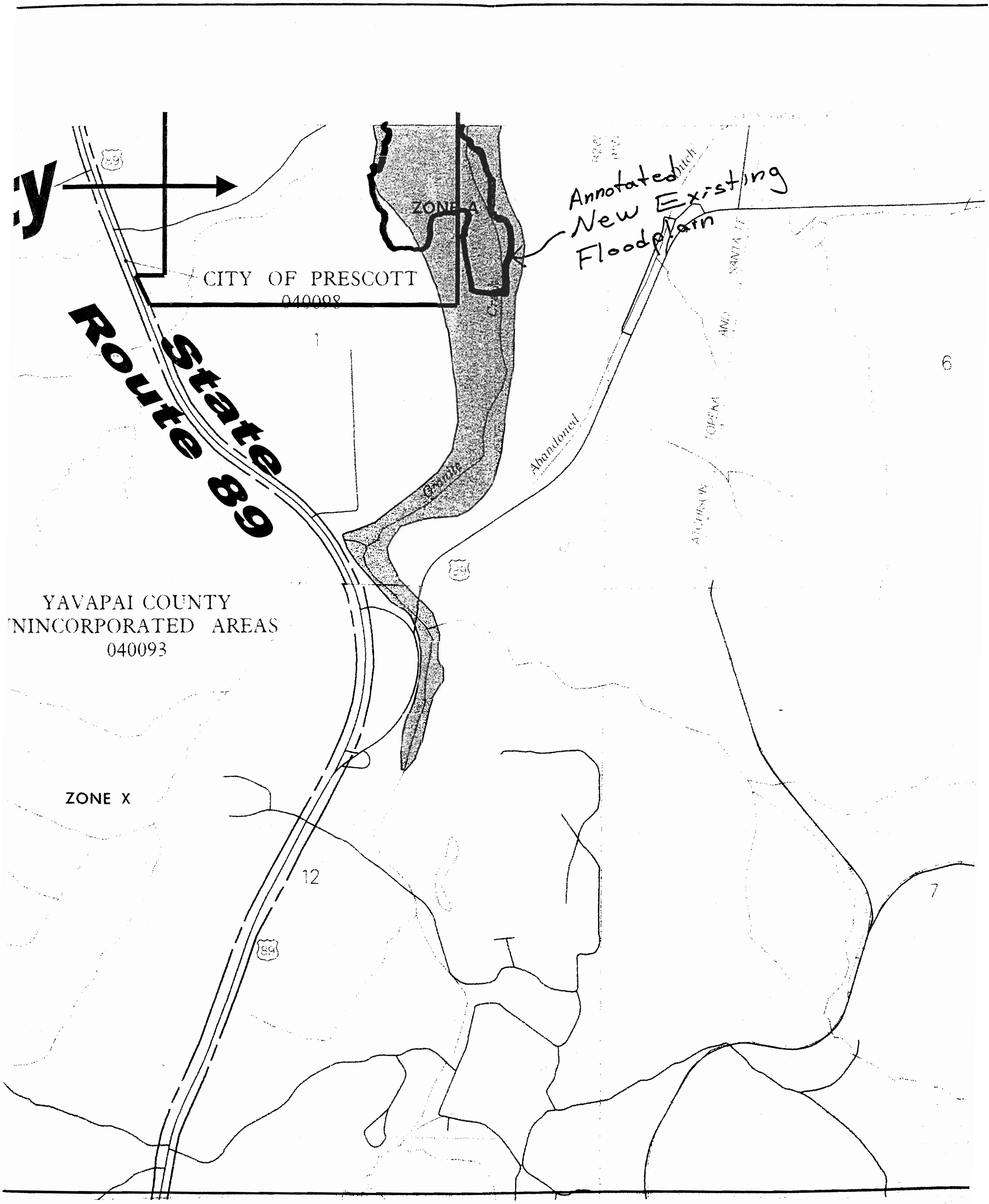
Enclosures

Registered Professional Engineer (Civil)
Certificate No
35898
SCOTT A.
LYON
Date Signed 7/23/07
ARIZONA, U.S.A.

3623 Crossings Drive • Prescott, Arizona 86305 • Phone (928) 776-1750 • Fax (928) 776-0605



YAVAPAI COUNTY
UNINCORPORATED AREAS
040093
CORPORATE LIMITS
ATCHISON
ZONE X
DRIVE
LENTZ DRIVE
WINE GLASS DRIVE
DRIVE
DIAMOND
ERKINS DRIVE
WILKINSON DRIVE
36
31
Dam
ZONE A
ZONE X
Abandoned Ditch
Annotated New Existing Floodplain
1
6
R2W
R1W
JOINS PANEL 2085



State Route 89
CITY OF PRESCOTT
040098
ZONE A
Annotated New Existing Floodplain
YAVAPAI COUNTY
UNINCORPORATED AREAS
040093
ZONE X
Abandoned
Granite
1
6
12
7
89

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
U.S. Courthouse – Federal Building
230 N. First Avenue, Suite 509
Phoenix, Arizona 85003-1733
(602) 280-8801

JAN 2 8 2008

The Louis Berger Group, Inc.
Attention: Bernardita Calinao, Ph.D.
2345 East Thomas Road, Suite 220
Phoenix, Arizona 85016-7818

Dear Ms. Calinao:

This is in response to your letter dated January 18, 2008, regarding the Master Plan for the Prescott Municipal Airport.

The USDA Natural Resources Conservation Service is responsible for coordinating the activities related to the Farmland Protection Policy Act (FPPA). The law requires NRCS to assist other agencies during their planning processes in making determinations of prime farmland. We also have responsibility to assist in analyzing project effects on agricultural wetlands.

In a letter dated October 29, 1996, we made a determination that your project was exempt from the requirements of the FPPA. We have taken another look at the project area defined in your letter and have made the determination that no prime farmland or agricultural wetlands exist within the proposed project area. Therefore, the project is still exempt from the FPPA and there is no need to coordinate your planning activities with NRCS.

If you have any further questions, please feel free to contact Steve Smarik at 602-280-8785 or steve.smarik@az.usda.gov.

Sincerely,

Eric B. Banks

ERIC B. BANKS
Assistant State Conservationist (Financial Programs)

"Managing and conserving natural, cultural, and recreational resources"

Arizona State Parks

Arizona State Parks
1300 W. Washington
Phoenix, AZ 85007

Tel & TTY: 602.542.4174
www.azstateparks.com

800.285.3703 from
(520 & 928) area codes

General Fax:
602.542.4180

Director's Office Fax:
602.542.4188

February 15, 2008

Bernardita Calinao
Environmental Manager
The Louis Berger Group, Inc.
2345 East Thomas Road, Suite 220
Phoenix, AZ 85016-7818

RE: Environmental Assessment for Proposed Airport Development, Prescott Municipal Airport Master Plan, Prescott, Arizona; SHPO-2008-0107 (35308)

Dear Ms. Calinao:

Thank you for advising the State Historic Preservation Office (SHPO) regarding planning efforts involving the above project. We appreciate your cooperation with this office in considering the impacts of federal development on cultural resources situated in Arizona. We recommend a qualified cultural resources specialist inspect the project area to determine the presence or absence of historic properties (i.e., any prehistoric or historic district, site, building, structure, traditional cultural place, or object included in, or eligible for inclusion in the National or State Registers of Historic Places).

According to our records [and as stated in the SHPO letter dated November 14, 1996, referred in your letter], the area of the Prescott Municipal Airport has not been systematically surveyed. If the preparation and implementation of this master plan require approval from the Federal Aviation Administration, then this project should be considered a federal undertaking and should be reviewed pursuant to Section 106 of the National Historic Preservation Act as implemented by 36 CFR Part 800.

If you have any questions or comments, please contact me at (602) 542-7140 or electronically via djacobs@azstatepparks.gov.

Sincerely,

David Jacobs
Compliance Specialist/Archaeologist
State Historic Preservation Office

United States Department of the Interior

U.S. Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
Telephone: (602) 242-0210 Fax: (602) 242-2513

In Reply Refer to:

AESO/SE
22410-2008-TA-0191

February 28, 2008

Ms. Bernardita Calinao, Ph.D.
Environmental Manager
The Louis Berger Group,Inc.
2345 East Thomas Road, Suite 220
Phoenix, Arizona 85016

Dear Ms. Calinao:

Thank you for your January 18, 2008, correspondence, requesting our review of the Master Plan for the Prescott Municipal Airport project in Prescott, Arizona, in compliance with section 7 of the Endangered Species Act of 1973 (ESA) as amended (16 U.S.C. 1531 et seq.).

You are requesting that we provide you with any available information regarding rare, endangered, and threatened species at the Prescott Municipal Airport and its immediate general vicinity. Based on the information that you have provided, the Fish and Wildlife Service believes that no endangered or threatened species or critical habitat will be affected by this project; nor is this project likely to jeopardize the continued existence of any proposed species or adversely modify any proposed critical habitat. No further review is required for this project at this time. Should project plans change or if additional information on the distribution of listed or proposed species becomes available, this determination may need to be reconsidered.

We appreciate your coordination with us on this matter. We also encourage you to coordinate the review of these projects with the Arizona Game and Fish Department. Should you require further assistance or if you have any questions, please contact Brian J. Wooldridge (x105) or Brenda Smith (x101) of our Flagstaff Suboffice at (928) 226-0614.

Sincerely,

Delbert T. Bills

for Steven L. Spangle
Field Supervisor

cc: Chief Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ

W:\Brian Wooldridge\Prescott Airport Master Plan.doc: jkey

APPENDIX 8 – GLOSSARY OF TERMS

ADVISORY CIRCULAR (AC) - Federal Aviation Administration Advisory Circular. This is a FAA document, which provides guidance on aviation issues.

AIRCRAFT APPROACH CATEGORY - An aircraft approach category is a FAA grouping of aircraft based on approach speed. The aircraft approach categories are:

(1) Category A: Speed less than 91 knots;
(2) Category B: Speed 91 knots or more but less than 121 knots;
(3) Category C: Speed 121 knots or more but less than 141 knots;
(4) Category D: Speed 141 knots or more but less than 166 knots.

AIR NAVIGATION AID FACILITY (NAVAID) - Any facility used or available for use as an aid to air navigation, including landing areas; lights; any apparatus or equipment for disseminating weather information, for signaling, for radio direction-finding, or for radio or other electronic communication; and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or during the landing or takeoff of aircraft.

AIRPLANE DESIGN GROUP (PHYSICAL CHARACTERISTICS) - The FAA airplane Design Group subdivides airplanes by wingspan. The airplane Design Groups are:

(1) Group I: Wingspan up to but not including 49 feet (15 m);
(2) Group II: Wingspan 49 feet (15 m) up to but not including 79 feet (24 m);
(3) Group III: Wingspan 79 feet (24 m) up to but not including 118 feet (36 m);
(4) Group IV: Wingspan 118 feet (36 m) up to but not including 171 feet (52 m);
(5) Group V: Wingspan 171 feet (52 m) up to but not including 197 feet (60 m)
(6) Group VI: Wingspan 197 feet (60 m) up to but not including 262 feet (80 m).

AIRPORT HAZARD - An airport hazard is any structure or natural object located on or in the vicinity of a public airport, or any use of land near such airport, that obstructs the airspace required for the flight of aircraft in landing or taking off at the airport or is otherwise hazardous to aircraft landing, taking of, or taxiing at the airport.

AIRPORT IMPROVEMENT PROGRAM (AIP) – FAA program that is the primary source of funding for airport projects as grants. This funding is provided at specific levels, with the funding priority based on the airport's Capital Improvement Program (CIP)

AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A facility providing airport traffic control service to an airport and its associated airspace area.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting system designed to assist pilots in finding the runway during instrument approaches for landing. The lights extend from the runway end outwards along the extended centerline for a certain distance, depending on the type of runway.

ATC - AIR TRAFFIC CONTROL SERVICE - A service provided for the purpose of promoting the safe, orderly, and expeditious flow of air traffic, including airport, approach, and enroute air traffic control services. ATC is provided by the Federal Aviation Administration, a branch of the federal government under the Department of Transportation.

APPROACH END OF RUNWAY - The approach end of runway is the near end of the runway as viewed from the cockpit of a landing airplane.

APPROACH SURFACE - An imaginary surface extending out from the end of the Primary Surface at a slope and width defined in FAR Part 77, above which the airspace must be free of obstacles as aircraft approach or depart the runway.

BASED AIRCRAFT - An aircraft permanently stationed at an airport by agreement between the airport owner (management or FBO) and the aircraft owner.

CAPITAL IMPROVEMENT PROGRAM (CIP) – The Capital Improvement Program provides a schedule of development for the proposed projects identified in an Airport Master Plan.

CATEGORY I, II, AND III LANDINGS -

- Category I: 200 foot ceiling and 2400 foot RVR;
- Category II: 100 foot ceiling and 1200 foot RVR;
- Category IIIA: zero ceiling and 700 root RVR;
- Category IIIB: zero ceiling and 150 foot RVR;
- Category IIIC: zero ceiling and zero RVR.

To make landing under these conditions, aircraft must be equipped with special avionics, pilot must be qualified to land under specified conditions for that category, and aircraft must have proper ground equipment for conditions.

CEILING - The height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken" "overcast", or "obscured" and not classified as "thin" or "partial". The ceiling is reported in feet above the surface in a given location.

CLEAR ZONE - Defined by FAR Part 77 as an area off each runway end to be void of trees and other obstacles. The FAA has replaced this area with the Runway Protection Zone (RPZ).

CLEARWAY - A clearway is an area beyond the stop end of runway, not less than 500 feet (150 m) wide, centered on the extended centerline of the runway, and controlled by the airport authorities. -The clearway is expressed in terms or a geometric plane extending from the end of the runway, with an upward slope not exceeding 1.25 percent, above which no object nor terrain may protrude. Threshold lights, however, may protrude above the clearway plane if their height above the end of the runway is 26 inches (66 cm) or less and if they are located to each side of the runway. A clearway increases the allowable operating takeoff weights of turbine-powered airplanes. For most airplanes, the maximum usable length of the clearway is less than 1,000 feet (300 m).

DECISION HEIGHT (DH) - The height above the highest runway elevation in the touchdown zone at which a missed approach shall be initiated if the required visual reference has not been established. This term is used only in procedures where an electronic glide slope provides the reference for descent, as in ILS.

DECLARED DISTANCE - Declared distances are the runway distances that limit turbine-powered airplane operations and thus the airport operational capacity. The distances are the accelerated stop -distance available (ASDA), the Landing Distance Available (LDA), the Takeoff Distance Available (TODA), and the Takeoff Run Available (TORA).

(1) ASDA is equal to TORA plus the length of the stopway (SWY), if provided.
(2) LDA is equal to the length of runway available and suitable for the landing ground run of airplanes.
(3) TODA is equal to TORA plus the length of the clearway (CWY) if provided.
(4) TORA is equal to the length of runway available and suitable for the takeoff ground run of airplanes.

DESIGN AIRCRAFT - The Design Aircraft is an aircraft whose dimensions and/or other requirements make it the most demanding aircraft for an airport's facilities (i.e. runways and taxiways). The Design Aircraft is used as the basis for airport planning and design; because if the airport's facilities are designed to accommodate the Design Aircraft, they can accommodate less demanding aircraft as well. An aircraft can be utilized as the Design Aircraft for an airport if it will (has) conduct (ed) 500 or more annual operations (250 landings) at that airport.

DISPLACED THRESHOLD - A displaced threshold is a threshold located at a point on the runway other than at the runway end. Except for the approach standards defined in FAR Part 77, approach surfaces are associated with the threshold location.

DISTANCE MEASURING EQUIPMENT (DME) - Equipment (airborne and ground) used to measure, in nautical miles, the distance of an aircraft from a NAVAID.

DME FIX - A geographical position determined by reference to a NAVAID, which provides distance and azimuth information. The DME fix is defined by a specified distance in nautical miles and a radial in degrees magnetic from that aid.

FEDERAL AVIATION REGULATION (FAR) - Regulations developed by the FAA in order to maintain safety, define standards, and institute uniform practices throughout the industry.

FINAL APPROACH FIX (FAF) - The fix from or over which final approach (IFR) to an airport is executed.

FINAL APPROACH - A flight path of a landing aircraft in the direction of landing along the extended runway centerline from the base leg to the runway. For instrument approaches, the final approach begins at the final approach fix (FAF).

FIX - A geographical position determined by visual reference to the surface by reference to one or more radio NAVAIDs, by celestial plotting, or by another navigational device.

FIXED BASE OPERATION OR FIXED BASE OPERATOR (FBO) - A sales and/or service facility located at an airport, or the person who operates such a facility.

GENERAL AVIATION (GA) - All civil aircraft and aviation activity except that of the certified air carriers and military operations. GA includes corporate flying and private flying (recreation or personal).

GLIDESLOPE - Vertical guidance provided by a ground based radio transmitter to an aircraft landing by use of an Instrument Landing System. This guidance informs the pilot if the aircraft is either too high or too low as it flies its approach to the runway for landing.

GLOBAL POSITIONING SYSTEM (GPS) - GPS is a navigational system based on the use of multiple satellites strategically placed in the earth's orbit. GPS is used by aircraft equipped with the proper GPS receiving equipment for enroute navigation, as well as instrument approaches to airports for landing. GPS allows aircraft to fly more freely and set waypoints (destinations) without the need or reliance on ground based radio navigation facilities such as VORs.

HAZARD TO AIR NAVIGATION - Any object which has a substantial adverse effect upon the safe and efficient use of navigable air-space by aircraft or on the operation of air navigation facilities is a hazard to air navigation. The FAA will conduct an aeronautical study of any object to determine whether or not the object is a hazard to air navigation. As part of the airport layout plan approval process, the FAA con-ducts aeronautical studies of all obstructions to air navigation identified on the Airport Layout Plan. Hazards or potential hazards to air navigation are eliminated by either altering the existing or proposed object or adjusting the aviation operation to accommodate the object, in that order of priority.

HEIGHT ABOVE AIRPORT (HAA) - Indicates the height of the MDA above the published airport elevation. This is published in conjunction with circling minimums.

HOLDING - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

HOLDING FIX - A specified geographical point or NAVAID used as a reference point in establishing and maintaining the position of an aircraft while holding.

IFR CONDITIONS - Weather conditions below the minimum prescribed for flight under VFR.

INITIAL APPROACH - The segment of a standard instrument approach procedure between the initial approach fix and the intermediate fix, or the point where the aircraft is established on the intermediate segment of the final approach course.

INITIAL APPROACH ALTITUDE - The altitude prescribed for the initial approach segment of an instrument approach.

INSTRUMENT FLIGHT RULES (IFR) - Aircraft operation rules as pre-scribed by Federal Aviation Regulations for flying by instruments.

INSTRUMENT LANDING SYSTEM (ILS) - A system of electronic devices whereby the pilot guides his aircraft to a runway solely by reference to instruments in the cockpit. In some instances the signals received from the ground can be fed into the automatic pilot for automatically controlled approaches. The ILS consists of a Localizer, Glideslope and Marker Beacons (and Approach Light System).

ITINERANT OPERATIONS - All aircraft operations other than local operations.

LOCAL OPERATION - Operations performed by an aircraft that:
(a) operates within the local traffic pattern or within sight of the airport;
(b) are known to be departing for or arriving from an Airport within a 20 mile radius of the Airport in question;
(c) execute practice maneuvers such as touch and goes or simulated instrument approaches at the airport.

The majority of local operations are conducted by based aircraft.

LOCALIZER TYPE DIRECTIONAL AID (LDA) - A facility of comparable utility and accuracy to a localizer but which is not part of a complete ILS and will not be aligned with the runway.

LOCALIZER - A ground based radio transmitter which provides pilots with course guidance as they approach a runway for landing utilizing a Instrument Landing System. The course guidance is known as “azimuth”.

MEDIUM INTENSITY APPROACH LIGHT SYSTEM (MALS) - An airport approach light system of medium intensity.

MARKER BEACON - An instrument, which provides aural and/or visual identification of a specific position along a Instrument Landing System approach to a runway.

MEDIUM INTENSITY RUNWAY LIGHTS (MIRL) - An airport runway lighting system of medium intensity.

MOVEMENT AREA - The runways, taxiways, and other areas of an airport which are used for taxiing, takeoff, and landing of aircraft, excluding loading ramps and parking areas.

NAUTICAL MILE (NM) - The unit measure of distance in both nautical and aeronautical context. A nautical mile equals 1.15 statute miles (6,080 feet). The measure of speed in regards to nautical miles is known as KNOTS (nautical miles per hour).

NON DIRECTIONAL BEACON (NDB) -
A radio beacon transmitting non directional signals whereby an aircraft equipped with direction finding equipment can determine headings to or from the radio beacon and “home” in on a track to or from it.

NATIONAL AIRSPACE SYSTEM (NAS) - The common system of air navigation and air traffic control encompassing communications facilities, air navigation facilities, airways, controlled airspace special use airspace, and flight procedures authorized by FAR's for domestic and international aviation.

NON-PRECISION APPROACH - A standard instrument approach procedure in which no electronic glide slope is provided. A localizer, NDB, or VOR is often used.

NON PRECISION INSTRUMENT RUNWAY - A non precision instrument runway is one with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight in non precision instrument approach procedure has been approved or planned, and no precision approach facility of procedure is planned or indicated on an FAA or DOD approved Airport Layout Plan, or on other FAA of DOD planning documents.

NOTICE TO AIRMEN (NOTAM)- A notice identified either as a NOTAM or an Airmen Advisory 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 essential to personnel concerned with flight operations.

(1) NOTAM : A Notice to Airmen in message form requiring expeditious and wide dissemination by telecommunications means.

(2) AIRMEN ADVISORY : A Notice to Airmen normally only given local dissemination, during pre-flight or in--flight briefing, or otherwise during contact with pilots.

OBSTACLE FREE ZONE (OFZ) - An OFZ is an area:

(1) Comprised of the runway OFZ, the approach OFZ, and the inner-transitional surface OFZ.

(A) Runway OFZ: The runway OFZ is the volume of space above a surface longitudinally centered on the runway. The elevation of any point on the surface is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet (60 m) beyond each end of the runway and its width is:

1) 120 feet (36 m) for visual runways serving or expected to serve only small airplanes with approach speeds less than 50 knots.

2) 250 feet (75 m) for non precision instrument and visual runways serving or expected to serve small airplanes with approach speeds of 50 knots or more and no large airplanes.

3) 300 feet (90 m) for precision instrument

runways serving or expected to serve only small airplanes.

4) 180 feet (54 m), plus the wingspan of the most demanding airplane, plus 20 feet (6 m) per 1,000 feet (300 m) or airport elevation; or, 400 feet (120 m), whichever is greater, for runways serving or expected to serve large airplanes.

(B) Approach OFZ: The approach OFZ is the volume of space above a surface which has the same width as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) away from the runway into the approach area. It begins 200 feet (60 m) from the runway threshold at the same elevation as the runway threshold and it extends 200 feet (60 m) beyond the last light unit in the approach lighting system. The approach OFZ applies only to runways with an approach lighting system.

(C) Inner-Transitional Surface OFZ: The inner-transitional surface OFZ is the volume or space above the surfaces which slope 3 (horizontal) to 1 (vertical) laterally from the edges of the runway.

1) OFZ and approach OFZ end at the height of 150 feet (45 m) above the established airport elevation. The inner-transitional surface OFZ applies only to precision instrument runways.

2) Free of all fixed objects. FAA approved frangible equipment, which provides an. essential aviation service may be located in the OFZ, provided the amount of penetration is kept to a practical minimum.

3) Clear of vehicles as well as parked, holding, or taxiing aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff' or departure.

OBSTRUCTION TO AIR NAVIGATION - An existing object, including a mobile object, is, and a future object would be, an obstruction to air navigation if it is of a greater height than any of the heights or surfaces defined in FAR PART 77.23.

OPERATION - Generally thought of as either a take-off or a landing of an aircraft. FAA ATCT operations include all radio contacts with an aircraft, regardless of whether or not they are taking off or landing. Operations used for planning purposes include only takeoffs, landings and touch and goes.

PRECISION APPROACH PATH INDICATOR (PAPI) - An airport approach light aid to pilots. See GVGI.

PRECISION INSTRUMENT RUNWAY - A precision instrument runway is one with an instrument approach procedure utilizing an Instrument Landing System (ILS), microwave landing system (MLS), or precision approach radar (PAR). A planned precision instrument runway is one for which a precision approach system or procedure is indicated on an FAA or DOD approved airport layout plan, or on other FAA or DOD planning documents.

PRIMARY SURFACE - An imaginary horizontal surface extending out an equal distance on each side of the runway centerline a width as defined in FAR Part 77.

R/W - Runway.

RUNWAY ALIGNMENT INDICATOR LIGHTS (RAIL) - (usually part of a MALS system).

RADAR (RADIO DETECTION AND RANGING) - A device which, by measuring the time interval between transmission and reception of radio pulses, provides information on range, azimuth and/or elevation of objects in the path of the transmitted pulses.

RADAR SERVICE - A term which encompasses aircraft separation, navigation guidance, and/or flight track monitoring services based on the use of radar which can be provided by a controller to a pilot of a radar-identified aircraft.

RADAR SURVEILLANCE - The radar observation of a given geographic area for the purpose of performing some radar function.

RADIAL - A magnetic bearing extending from a VOR, a VORTAC, or a TACAN navigational facility.

RUNWAY END IDENTIFIER LIGHTS (REIL) - Flashing strobe lights (usually white) which indicate the end or a runway. They are located at each end of the runway.

RELIEVER AIRPORT - An airport designated as having the primary function of relieving congestion at a commercial airport and providing more general aviation access to the overall community. Reliever Airports are allowed to receive AIP (federal) funds for improvement.

RUNWAY - A runway is a defined rectangular area on an airport prepared for the landing or takeoff of airplanes.

RUNWAY PROTECTION ZONE (RPZ) - A trapezoidal area centered about the extended runway centerline beginning 200 feet beyond the end of the area usable for takeoff or landing. The dimensions are a function of the approach visibility minimum and the type of aircraft. Refer to AC 150/5300-13 for specific dimensions and land use guidelines.

RUNWAY SAFETY AREA - A runway safety area is a rectangular area, centered on the runway centerline, which includes the runway (and stopway, if present) and the runway shoulders. The portion abut-ting the edge of the runway shoulders, runway ends, and stopways is cleared, drained, graded and usually turfed. Under normal conditions, the runway safety area is capable of supporting snow removal, firefighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

RUNWAY VISUAL RANGE (RVR) - An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end.

SAFETY AREA - An actual graded area surrounding the runway that can be safely negotiated in case of an emergency by an aircraft that will be using that runway.

SEPARATION - Spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.

SEPARATION MINIMA - The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.

SMALL AIRCRAFT - A small aircraft is an aircraft of 12,500 pounds (5,700 kg) or less maximum certificated takeoff weight.

STATUTE MILE - A regular "highway" mile measuring 5,280 feet.

STOP END OF RUNWAY - The stop end of runway is the far runway end as viewed from the cockpit of a landing airplane.

STOPWAY - A stopway is an area beyond the stop end of the takeoff runway which is no less wide than the runway and is centered on the extended centerline a' the runway. It is able to support an airplane during an aborted takeoff without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

STRAIGHT-IN APPROACH - Entry into the traffic pattern by interception of the extended runway centerline (final approach) without executing any other portion of the traffic pattern.

T/W - Taxiway.

TAXI - To operate an airplane under its own power on the ground, except the movement incident to actual takeoff and landing.

TAXILANE - A taxilane is the portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc. A taxilane is outside the movement area, and is normally not controlled by the Air Traffic Control Tower.

TAXIWAY - A taxiway is a defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

TAXIWAY SAFETY AREA - A taxiway safety area is an area centered on the taxiway centerline, which includes the taxiway and taxiway shoulders. The portion abutting the edge of the taxiway shoulders is cleared, drained, graded, and usually turfed.

Under normal conditions, the taxiway safety area is capable of sup-porting snow removal, fire fighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

THRESHOLD - The threshold is the beginning of that portion of the runway available and suitable for the landing of airplanes.

THRESHOLD CROSSING HEIGHT (TCH) - The height of the straight line extension of the visual or electronic glide slope above the runway threshold.

TOUCH AND GO - A training operation in which a landing approach is made, the aircraft touches-down on the runway, but does not fully reduce speed to turn off the runway. Instead, after the landing, full engine power is applied while still rolling and a takeoff is made, thereby practicing both maneuvers as part of one motion. It counts as two separate aircraft operations.

TRACK - The flight path of an aircraft over the surface of the earth.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The usual traffic pattern consists of five segments, or "legs". These components are the upwind leg, crosswind leg, downwind leg, base leg, and the final approach. Traffic patterns are followed by aircraft in order to exit the airport area after takeoff in an orderly fashion, and to enter an Airport area and ultimately land, also in an orderly fashion.

TRANSITION ZONE - An imaginary surface extending upward at a 7 -to 1 slope (i.e. up one foot for every seven feet moved horizon-tally) from the Primary Surface and Approach Surface defined in Federal Aviation Regulations (FAR) Part 77.

TURBINE - A mechanical device or engine that spins in reaction to fluid flow through or over it. This device is used in turbofan, turbojet, and turboprop-powered aircraft.

TURBOFAN - A turbojet engine whose thrust has been increased by the addition of a low-pressure compressor fan.

TURBOJET - An engine that derives power from a fanned wheel spinning in reaction to burning gases escaping from a combustion chamber. The turbine in turn drives a compressor and other accessories.

TURBOPROP - A turbine engine in which the rotating turbine turns a propeller.

UTILITY AIRPORT - A utility airport is an airport designed, constructed, and maintained to serve airplanes in Aircraft Approach Category A and B. For discussion on airport type, see paragraph 5.

VFR CONDITIONS - Basic weather conditions prescribed for flight under Visual Flight Rules; usually implies a ceiling of at least 1000 feet and a forward visibility of three miles or more.

VERY HIGH FREQUENCY OMNI DIRECTIONAL RANGE (VOR) - A ground radio station that provides a pilot of a properly equipped air-craft with his radial location in reference to that station. A VORTAC is an electronic air navigation facility combining a VOR and a TACAN.

VISIBILITY, PREVAILING - The horizontal distance at which targets of known distance are visible over at least half of the horizon. It is normally determined by an observer on or close to the ground viewing buildings or other similar objects during the day and ordinary city lights at night.

VISUAL APPROACH SLOPE INDICATOR (VASI) - The VASI is a device used by pilots to determine their position in regard to the recommended approach path for a particular airport. See also GVGI.

VISUAL FLIGHT RULES (VFR) - "See and be seen" flight rules. Each pilot is responsible for the safe spacing and proper operation of his aircraft. Under VFR, a pilot is not required to file a flight plan or be in constant radar and communication contact with air traffic control. Visual flight rules are determined by weather and require a ceiling of at least 1,000 feet and visibility of at least 3 miles.

VFR TRAFFIC - Aircraft traffic operated solely in accordance with Visual Flight Rules.

VISUAL APPROACH - A VFR approach granted to an IFR flight by air traffic control under special circumstances. Visual approaches are normally conducted by aircraft operating under visual flight rules.

VISUAL RUNWAY - A visual runway is a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA or Department of Defense (DOD) approved layout plan, or, on other FAA or DOD planning documents.

VORTAC - A combination of the civil VOR/DME and the military TACAN which can provide both distance and direction of an aircraft from the station.

WAKE TURBULENCE - The air turbulence caused by a moving aircraft, originating at the tips of the wings. The turbulence is caused by vortices generated by an aircraft's wingtips as it travels through the air. This turbulence is greatest when the aircraft is taking off and landing.

WIND COVERAGE - Wind coverage is the percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.