COOLIDGE MUNICIPAL AIRPORT

Coolidge, Arizona

AIRPORT MASTER PLAN

AIRPORT MASTER PLAN

for

COOLIDGE MUNICIPAL AIRPORT
Coolidge, Arizona

Prepared for

THE CITY OF COOLIDGE

by

Coffman Associates, Inc.

Approved by
Common Council of the City of Coolidge
on
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COOLIDGE MUNICIPAL AIRPORT

Coolidge, Arizona

INTRODUCTION

AIRPORT MASTER PLAN

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

The Master Plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need. This is done to ensure that the City of Coolidge can coordinate project approvals, design, financing, and construction in a timely manner, prior to experiencing the negative effects of inadequate facilities.

An important result of the Master Plan is reserving sufficient areas for future facility needs. This protects development areas and allows the airport to readily meet future demands when required. The intended result is a detailed land use concept which outlines specific uses for all areas of airport property.

The preparation of this Master Plan is evidence that the City of Coolidge recognizes the importance of air transportation to the area and the associated challenges inherent in providing for its unique operating improvement needs. The cost of maintaining an airport is an investment which yields impressive benefits for the community. With a sound and realistic Master Plan, Coolidge Municipal Airport can maintain its role as an important link to the national air

transportation system for the community.

Coolidge Municipal Airport is located approximately five miles southeast of the City of Coolidge and serves as a vital economic asset for the City and surrounding areas. As such, it should be carefully and thoughtfully planned and subsequently developed in a manner which matches the development goals of the community. The City of Coolidge initiated this Master Plan as an update to the previous Master Plan for Coolidge Municipal Airport completed in 1997. Since that time, the City of Coolidge has invested considerable funds into the continued growth and development of the airport.

MASTER PLAN GOALS AND OBJECTIVES

The primary objective of the Coolidge Municipal Airport Master Plan is to develop a financially feasible, long term development program which will satisfy aviation demand and be compatible with area development, other transportation modes, and the environment. Accomplishing this objective requires an evaluation of the existing airport so as to make a determination of what actions should be taken to maintain adequate, safe, and reliable airport facilities. The completed Master Plan will provide a detailed development plan which will provide responsible officials with a schedule of future capital needs to aid in planning, scheduling, and budgeting.

An Airport Master Plan must be developed according to Federal Aviation Administration (FAA) requirements which contain specific components. These components, to be detailed in the following section, are guidelines which allow for a systematic and technical approach to reach the final development plan.

The Master Plan is to provide a vision for the airport covering the next 20 years and, in some cases, beyond. With this vision, the City of Coolidge can have advance notice of potential future airport funding needs so that appropriate steps can be taken to ensure that adequate funds are budgeted and planned.

Specific goals and objectives of the Coolidge Municipal Airport Master Plan Update are:

- **Preserve Public and Private Investments**

The City of Coolidge, the FAA, and the Arizona Department of Transportation (ADOT)-Aeronautics Group have made considerable investments in the airport's infrastructure. Private individuals and businesses have made investments in buildings and other facilities. The Master Plan provides for continued maintenance as well as necessary improvements to the airport's infrastructure to ensure maximum utility of public and private facilities at Coolidge Municipal Airport.

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

Coolidge Municipal Airport is a public facility serving the needs of the local residents and businesses. The Master Plan needs to be reflective of the goals and visions of the City, especially those related to quality of life, business and development, and land use. As a result, the Master Plan has incorporated existing planning efforts by the City of Coolidge into the ultimate design and use of the airport.

- **Maintain Safety**

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

- **Preserve the Environment**

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

- **Attract Public Participation**

To ensure that the Master Plan reflects the concerns of the public, the local community, airport tenants, airport users, and businesses throughout the region, the study process has included an active public outreach program. The intent of the program was to solicit comments and suggestions which then would be included in the final Master Plan report, as appropriate.

- **Strengthen the Economy**

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

MASTER PLAN TASKS

The Master Plan has accomplished these objectives by carrying out the following:

- Determine projected needs of airport users through the year 2030.

- Analyze socioeconomic factors likely to affect air transportation demand in the City of Coolidge and surrounding area.

- Evaluate existing and future aviation demand in order to provide a vision for future airport development that will optimize undeveloped airport property and promote aircraft safety.

- Consider improved instrument approach procedures to the runway system.

- Examine the need for additional runway length to accommodate the airport's critical design aircraft.

- Consider improved navigational and weather aids to aid pilots utilizing the airport.

- Identify existing and future general aviation facility needs.

- Develop land use strategies for the use of airport property that consider both aviation and non-aviation uses.

- Evaluate land acquisition requirements (if any) for future airport facility development and/or safety requirements.

- Develop a realistic, common-sense plan for the use and/or expansion of the airport.

- Present environmental considerations associated with any recommended development alternatives.

- Establish a schedule of development priorities and a program for improvements.

- Analyze the airport's financial requirements for capital improvement needs and grant options.

- Coordinate this Master Plan with local, regional, state, and federal agencies.

- Conduct active and productive public involvement throughout the planning process.

BASELINE ASSUMPTIONS

A study such as this typically requires some baseline assumptions to be used throughout the planning process. The baseline assumptions for the Coolidge Municipal Airport Master Plan are as follows:

- Coolidge Municipal Airport will continue to operate as a general aviation airport serving the City of Coolidge and surrounding area.

- Coolidge Municipal Airport intends to seek general aviation and commercial business aviation based tenants and transient operations.

- The aviation industry on the national level will grow as forecast by the FAA in its annual Aerospace Forecasts.

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

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

MASTER PLAN ELEMENTS AND PROCESS

The Coolidge Municipal Airport Master Plan Update is prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices. The Master Plan Update has six general elements that are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation. **Exhibit IA** provides a graphical depiction of the process and elements involved in the Coolidge

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COOLIDGE MUNICIPAL AIRPORT

MASTER PLAN PROJECT WORK FLOW

PAC

Inventory
- Airport Facilities
- Airspace and Air Traffic Activity
- Area Socioeconomic Data
- Local Planning and Land Use

Forecasts
- Based A/C and Fleet Mix
- Annual Operations

Facility Requirements
- Airside Needs
- Landside Needs

PHASE I REPORT

PAC

Development Alternatives
- Evaluate Development Needs

PHASE II REPORT

PAC

Airport Plans
- Computerized Airport Plans

Environmental Overview
- Evaluate current conditions and identify development that may require further study

Financial Management & Development Program
- Airport Development Schedule & Cost Estimates
- Financial Analysis of Recommended Development

PHASE III REPORT

PAC

PUBLIC INFORMATION MEETING

MASTER PLAN

MASTER PLAN

COOLIDGE MUNICIPAL AIRPORT

Exhibit IA
PROJECT WORK FLOW

Municipal Airport Master Plan Update.

Element One encompasses the inventory efforts. The inventory efforts were focused on collecting and assembling relevant data pertaining to the airport and the area it serves. Information was collected on existing airport facilities and operations. Local economic and demographic data was collected to define the local growth trends. Planning studies which may have relevance to the Master Plan were also collected. Information collected during the inventory efforts is summarized in Chapter One – Inventory.

Element Two examines the potential demand for aviation activity at the airport. This analysis utilized local socioeconomic information, as well as national air transportation trends, to quantify the levels of aviation activity which can reasonably be expected to occur at Coolidge Municipal Airport through the year 2030. This includes based aircraft and annual aircraft operations. The results of this effort were used to determine the types and sizes of facilities which will be required to meet the projected aviation demands for the airport through the planning period. The results of this analysis are presented in Chapter Two – Forecasts.

Element Three comprises the facility requirements analysis. The intent of this analysis was to compare the existing facility capacities to forecast aviation demand and determine where deficiencies in capacities (as well as excess capacities) may exist. Where deficiencies are identified, the size and type of new facilities to accommodate the demand were identified. The airfield analysis focused on improvements needed to serve the type of aircraft expected to operate at the airport in the future, as well as navigational aids to increase the safety and efficiency of operations. This element also examines aircraft storage hangars and apron needs. The findings of this analysis are presented in Chapter Three – Facility Requirements.

Element Four considers a variety of solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations to efficiently and effectively use the available airport property. A thorough analysis was completed to identify the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for ultimate development. These results are presented in Chapter Four – Airport Alternatives.

Element Five provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport based upon the alternatives analysis. These topics are included in Chapter Five – Recommended Master Plan Concept

Element Six focuses on the capital needs program. This program defines the schedules, costs, and funding sources for the recommended development projects. The capital improvement program (CIP) is also included in this element. The results of this analysis are presented in Chapter Six – Capital Improvement Program.

In addition to these six elements, a complete glossary further defining various terms used throughout the Master Plan is included as Appendix A. A review of the potential environmental impacts associated with proposed airport improvements as well as federal environmental requirements applicable to Coolidge Municipal Airport is presented in Appendix B. Finally, the official Airport Layout Plan (ALP) drawings used by the FAA and ADOT-Aeronautics Group in determining grant eligibility and funding is included as Appendix C in the Master Plan.

COORDINATION

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

To assist in the development of the Coolidge Municipal Airport Master Plan Update, a cross-section of interested persons were identified to act in an advisory role. As members of this Planning Advisory Committee (PAC), the committee members reviewed phase reports and provided comments throughout the study to help ensure that a realistic, viable plan was developed.

To assist in the review process, a series of draft phase reports were prepared at various milestones in the planning process, as shown on **Exhibit IA**. The draft phase reports allowed for input and review during each step of the Master Plan process to ensure that all Master Plan issues were fully addressed, as the recommended program developed.

One public information workshop was also included as part of the plan coordination. The public information workshop allowed the public to provide input and learn about general information concerning the Master Plan. The report was also available online at www.coolidgemp.airportstudy.com.

Chapter One

INVENTORY

COOLIDGE MUNICIPAL AIRPORT

Coolidge, Arizona

CHAPTER 1

INVENTORY

AIRPORT MASTER PLAN

The initial step in the preparation of the Airport Master Plan for Coolidge Municipal Airport is the collection of information pertaining to the airport and the area it serves. The information summarized in this chapter will be used in subsequent analyses in this study. It includes:

- Physical inventories and descriptions of the facilities and services currently provided at the airport, including the regional airspace, air traffic control, and aircraft operating procedures.
- Background information pertaining to the City of Coolidge, Pinal County, and surrounding areas, including descriptions of the regional climate and surface transportation systems.
- Coolidge Municipal Airport's role in the regional, state, and national aviation systems, and development that has taken place recently at the airport.
- Population and other significant socioeconomic data which can provide an indication of future trends that could influence aviation activity at the airport.
- A review of existing local and regional plans and studies to determine their potential influence on the development and implementation of the Airport Master Plan.

The information in this chapter was obtained from several sources, including on-site inspections, interviews with City staff and airport tenants, airport records, related studies, the

Federal Aviation Administration (FAA), the Arizona Department of Transportation (ADOT) – Aeronautics Group, and a number of internet sites. A complete listing of the data sources is provided at the end of this chapter.

AIRPORT CHARACTERISTICS

The purpose of this section is to summarize various studies and data collected to provide an understanding of the characteristics of the airport and the regional area. Within this section is a description of the airport setting, airport ownership and management, the airport's development and capital improvement history, the ground access systems near the airport, land use and zoning around the airport, the local climate, and the airport's role.

AIRPORT SETTING

As illustrated on **Exhibit 1A**, Coolidge Municipal Airport is located approximately five miles southeast of downtown Coolidge. Situated on approximately 1,268 acres of land at 1,574 feet above mean sea level (MSL), the airport serves as one of five general aviation public-use airport facilities in Pinal County.

The City of Coolidge is located in west-central Pinal County. Pinal County encompasses approximately 5,374 square miles of land in south-central Arizona. Coolidge, with an estimated population of 12,311 residents, made up 3.5 percent of the total County population of 350,558 in 2008. Pinal County contains part of the Tohono O'odham National Native American Reservation, Gila River Indian Reservation, San Carlos Apache Indian Reservation, and Ak-Chin Indian Community. The geography and economy of the County can be divided into two regions. The eastern portion is inhabitated with mountainous terrain lending itself to mining and milling. The western area, including the City of Coolidge, is made up primarily of desert valleys and irrigated agriculture.

The City of Coolidge has a diversified economic base that includes manufacturing, trade, and services. It is also the commercial center of Arizona's cotton industry. The recent expansion and diversification of the local area has been facilitated by its location in a major growth corridor between Phoenix and Tucson, near the junction of Interstate Highways 8 and 10. Coolidge is home to the Casa Grande Ruins National Monument, which preserves an ancient Hohokam farming community and "Great House." Created as the nation's first archeological reserve in 1892, the site was declared a National Monument in 1918.

OWNERSHIP AND MANAGEMENT

Coolidge Municipal Airport is owned, operated, and maintained by the City of Coolidge. The City's Aviation Planner is responsible for the day-to-day administration and operation of the airport.

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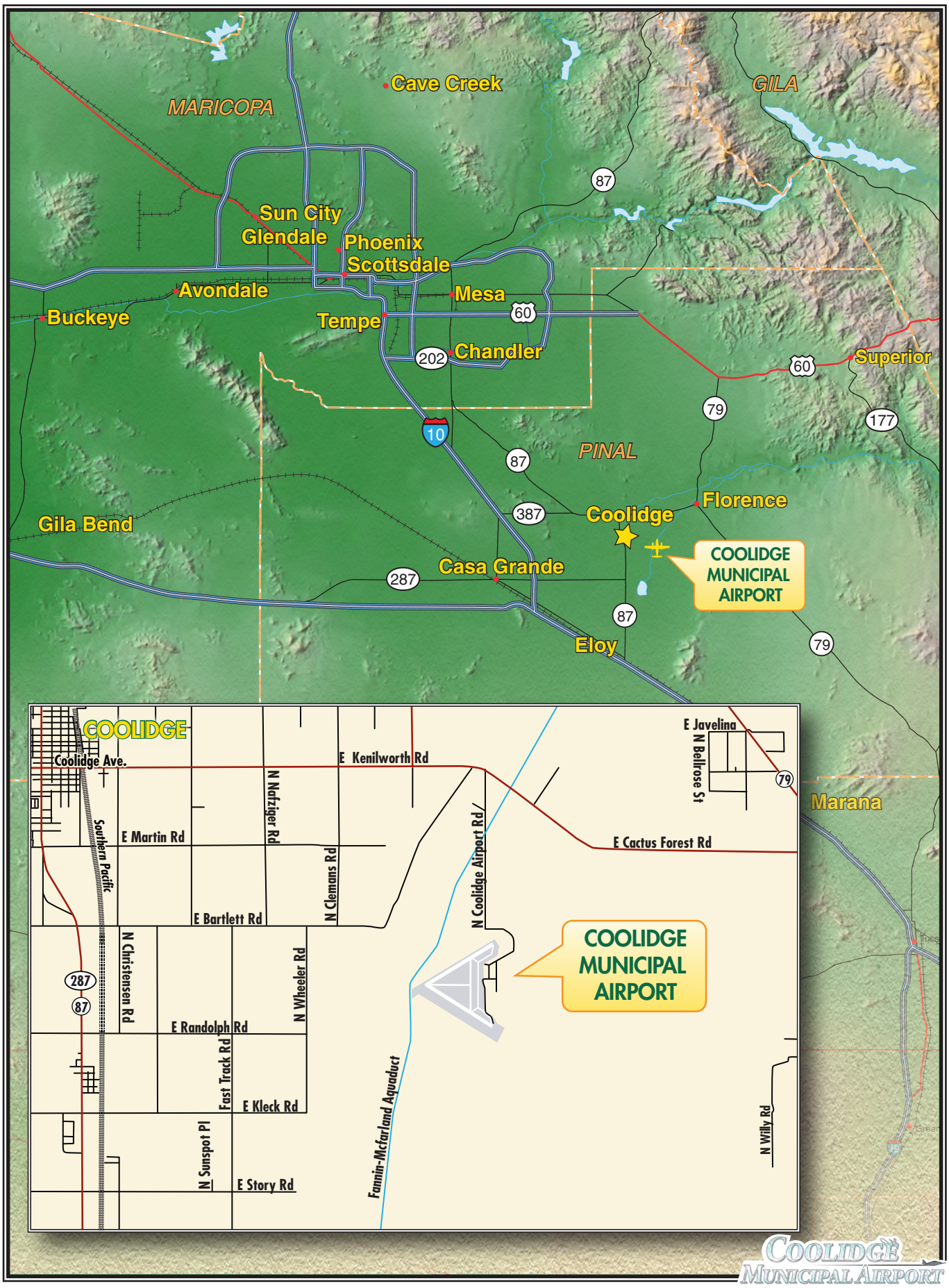

Exhibit 1A
LOCATION MAP

AIRPORT DEVELOPMENT HISTORY

Development of the present-day Coolidge Municipal Airport began in the early 1940s by the U.S. Department of the Army. Originally constructed as an air transport command base, Coolidge Army Airfield served as an auxiliary operating base for Williams Field during World War II. The original airfield was constructed with three runways in a triangular configuration. Of these three runways, two remain: Runway 17-35 and Runway 5-23. Numerous support facilities were constructed, of which a large conventional hangar still remains. On January 19, 1950, the airfield was transferred to Pinal County since the airfield was no longer needed by the U.S. Department of the Army. Pinal County owned and operated the airport until March 2, 1959, when the City of Coolidge officially obtained ownership of the airport from the County.

From 1962 until July 1992, operations at the airport were dominated by training activities of T-37 jet aircraft at Williams Air Force Base. The Air Force had a lease agreement with the City of Coolidge for four parcels of land and joint use of the main runways and taxiways in return for the continued maintenance and upkeep of the main runway and taxiway. In addition, they constructed several facilities along the runway and apron to support their operations. The Air Force lease was terminated in July 1992 and Williams Air Force Base was closed in 1993.

Today, Coolidge Municipal Airport has a full service fixed base operator (FBO) that provides a wide range of general aviation services. Coolidge Municipal Airport has also become a base for aviation businesses that specialize in parachute training operations as well as aerial disaster relief.

CAPITAL IMPROVEMENT HISTORY

To assist in funding capital improvements at Coolidge Municipal Airport, the FAA and ADOT – Aeronautics Group has provided funding assistance to the City of Coolidge through the Airport Improvement Program (AIP) and the Arizona Aviation Fund. The AIP is funded through the Aviation Trust Fund, which was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Trust Fund also finances a portion of the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts. The Arizona Aviation Fund is supplied by taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees.

Table 1A summarizes more than $1.1 million in capital improvement projects undertaken at Coolidge Municipal Airport since the completion of the previous Master Plan in 1997.

TABLE 1A
Recent Capital Improvement Projects
Coolidge Municipal Airport

AIP Grant Number	ADOT Grant Number	Project Description	Total Grant Funds
4	E6F52	Rehabilitate aircraft parking apron; Install PAPI; Miscellaneous airfield lighting; Demolition of VASI.	$969,424
5	E9F04	Airport master plan update.	$156,377
Total Grant Funds			$1,125,801

Source: Airport records

ACCESS AND CIRCULATION

The airport is located approximately six miles south of the Coolidge-Florence Highway (Arizona Highway 287), six miles east of Arizona Highway 87, and seven miles west of Arizona Highway 79. Interstate Highway 10, which connects Phoenix and Tucson, can be accessed from the airport by heading south on Highway 87 or heading northwest on Highway 287 and connecting with Highway 387.

Coolidge Airport Road, a two-lane roadway, provides vehicle access to the airport from the north, where it intersects with Kenilworth Road. Kenilworth Road is a two-lane roadway, which becomes Cactus Forest Road east of the intersection with Coolidge Airport Road. Kenilworth Road provides a transportation route to the City of Coolidge going west, where it turns into Coolidge Avenue and Arizona Highway 79 to the east.

According to the 2008 *Coolidge-Florence Regional Transportation Study*, the traffic flow along Kenilworth Road is typically unrestricted. Due to the projected urban sprawl of the Phoenix Metropolitan area, Kenilworth Road and a significant portion of Coolidge Airport Road are ultimately planned to be widened to six lanes to accommodate increased traffic flows. The ultimate recommended functional road classifications in the region are depicted on **Exhibit 1B**. According to this recommended road classification plan, a proposed north-south freeway corridor has been identified from Apache Junction to Coolidge. This proposed freeway is aligned immediately west of Coolidge Municipal Airport. If this freeway alignment were to become reality, along with easier roadway access to the airport, it could bring significant economic development to areas adjacent to the airport.

LAND USE

The land surrounding Coolidge Municipal Airport is currently owned by the Arizona State Land Department or the Bureau of Land Management and is under the jurisdiction of Pinal County. A land use plan, shown on **Exhibit 1C**, was prepared in the 2007 *City of Coolidge General Plan*. This map shows the airport and immediate surrounding area designated for "Industrial" uses. Adjacent land uses include "Mixed Use," "Commerce Park,"

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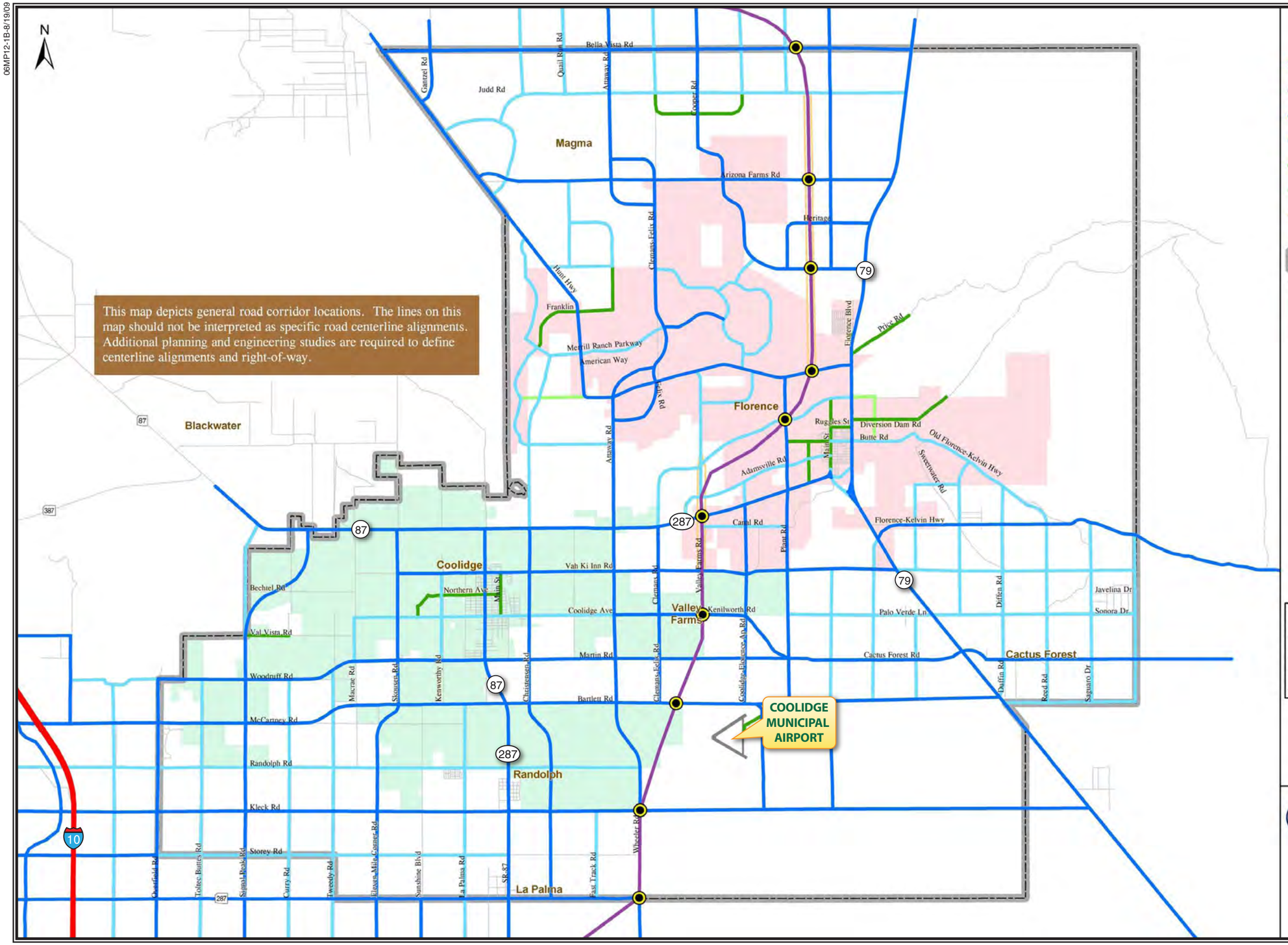

COOLIDGE MUNICIPAL AIRPORT

Exhibit 1B
RECOMMENDED FUNCTIONAL ROAD CLASSIFICATION

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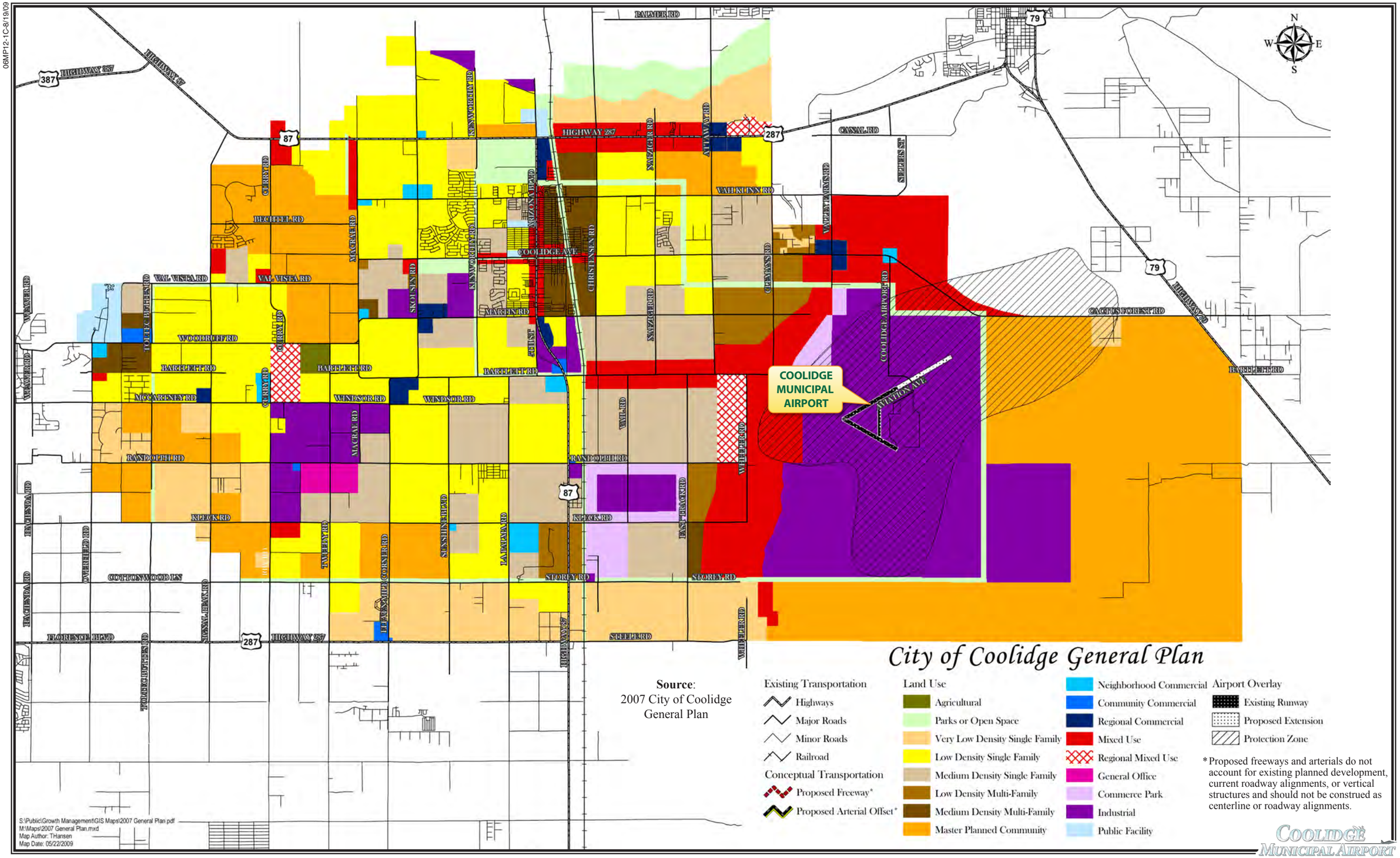

Source:
2007 City of Coolidge General Plan

S:\Public\Growth Management\GIS Maps\2007 General Plan.pdf
M:\Maps\2007 General Plan.mxd
Map Author: THansen
Map Date: 05/22/2009

City of Coolidge General Plan

Existing Transportation
- Highways
- Major Roads
- Minor Roads
- Railroad

Conceptual Transportation
- Proposed Freeway*
- Proposed Arterial Offset*

Land Use
- Agricultural
- Parks or Open Space
- Very Low Density Single Family
- Low Density Single Family
- Medium Density Single Family
- Low Density Multi-Family
- Medium Density Multi-Family
- Master Planned Community
- Neighborhood Commercial
- Community Commercial
- Regional Commercial
- Mixed Use
- Regional Mixed Use
- General Office
- Commerce Park
- Industrial
- Public Facility

Airport Overlay
- Existing Runway
- Proposed Extension
- Protection Zone

*Proposed freeways and arterials do not account for existing planned development, current roadway alignments, or vertical structures and should not be construed as centerline or roadway alignments.

COOLIDGE MUNICIPAL AIRPORT

Exhibit 1C
LAND USE PLAN

"Parks, or Open Space," and "Master Planned Community." The "Master Planned Community" is located east and south of the airport and is partially encompassed by a "Protection Zone," which would serve to protect the approach paths into the airport.

AIRPORT HEIGHT AND HAZARD ZONING

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

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

CLIMATE

Weather plays an important role in the operational capabilities of an airport. Temperature is an important factor in determining runway length required for aircraft operations. Temperatures typically range from 65 to 105 degrees Fahrenheit (F) during the summer months. The hottest month is typically July with an average high of 105.5 degrees. August is the wettest month averaging 1.4 inches of precipitation annually. January is the coldest month with average minimum temperatures around 37.3 degrees. A summary of mean monthly temperatures and precipitation is presented in **Table 1B**.

THE AIRPORT'S SYSTEM ROLE

Airport planning exists on many levels: local, regional, and national. Each level has a different emphasis and purpose. This Master Plan is the primary local airport planning document.

The previous *Coolidge Municipal Airport Master Plan* was approved in 1997. The previous Master Plan recommended maintaining the existing runway system as-is, meeting design standards to accommodate the most common business turboprop and turbojet aircraft. It was recommended that the abandoned taxiway leading to the Runway 35 threshold be

reconstructed so that aircraft would not be required to back-taxi on the runway. Precision approach path indicator (PAPI) approach lighting systems were recommended to replace the visual approach slope indicator lights in place on the ends of Runway 5-23. This project was completed in 2006. Landside improvements recommended included hangar developments and the installation of a self-service fuel island. Since the previous Master Plan, several new hangars have been constructed and the self-service fuel facility was installed in 2003.

TABLE 1B
Temperature and Precipitation Data
Coolidge, AZ

	Temperature (Fahrenheit)		
	Mean Maximum	**Mean Minimum**	**Precipitation (Inches)**
January	66.4	37.3	1.0
February	70.9	39.9	1.0
March	76.5	43.5	1.0
April	85.2	49.0	0.4
May	94.3	56.4	0.2
June	103.5	65.2	0.1
July	105.5	74.9	1.2
August	103.1	73.4	1.4
September	99.7	67.2	0.9
October	89.0	54.9	0.7
November	76.1	43.6	0.8
December	67.2	37.8	1.3
Annual	86.5	53.6	10.0

Source: Western Regional Climate Center
Note: Nearest weather data available from Florence, AZ

At the state level, Coolidge Municipal Airport is included in the 2008 *Arizona State Airports System Plan* (SASP). The purpose of the SASP is to provide a framework for the integrated planning, operation, and development of Arizona's aviation assets. The SASP defines the specific role of each airport in the state's aviation system and establishes funding needs. The SASP provides policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airport capital improvement needs, and identify resources and strategies to implement the plan. Coolidge Municipal Airport is one of 83 airports in the 2008 SASP, which includes nine Primary Commercial Service airports, three Commercial Service airports, eight Reliever airports, 38 General Aviation airports, and 24 non-NPIAS airports. Coolidge Municipal Airport is included in the General Aviation airports category.

At the national level, Coolidge Municipal Airport is a part of the FAA's *National Plan of Integrated Airport Systems* (NPIAS). Inclusion within the NPIAS is required to be eligible for Federal Airport Improvement Program (AIP) funding. Coolidge Municipal Airport is classified as a general aviation (GA) airport in the NPIAS. There are 3,356 existing and 55 pro-

posed airports included in the NPIAS. Coolidge Municipal Airport is one of 59 NPIAS Arizona airports, and one of 39 of the state airports with a GA classification.

AIRPORT FACILITIES

Airport facilities can be functionally classified into two broad categories: airside and landside. The airside category includes those facilities directly associated with aircraft operations. The landside category includes those facilities necessary to provide a safe transition from surface to air transportation and support aircraft servicing, storage, maintenance, and operational safety.

AIRSIDE FACILITIES

Airside facilities include runways, taxiways, airfield lighting, and navigational aids. Airside facilities are identified on **Exhibit 1D. Table 1C** summarizes airside facility data.

Runways[1]

Coolidge Municipal Airport is served by a dual asphalt runway system. Runway 5-23 is the longest at 5,562 feet long and 150 feet wide. Runway 5-23 is oriented northeast-southwest and has a strength rating of 80,000 pounds single wheel loading (SWL), 115,000 pounds dual wheel loading (DWL), and 210,000 pounds dual tandem wheel loading (DTWL). SWL refers to aircraft with a single wheel on each main landing gear, DWL refers to aircraft having dual wheels on each main landing gear, and DTWL refers to aircraft having two sets of dual wheels on each main landing gear. The runway slopes from its low point of 1,548 feet MSL on the southwest end, to a high point of 1,574 feet MSL on the northeast end. Thus, the runway gradient (elevation difference between runway high and low points divided by the length of the runway) is 0.5 percent.

Runway 17-35 is oriented north-south and has a length of 3,871 feet and a width of 75 feet. Runway 17-35 is strength rated at 17,000 pounds SWL. The slope of the runway rises from the north end to the south end resulting in a gradient of 0.3 percent.

Taxiways

The existing taxiway system (labeled Taxiways 1 through 5 for initial planning purposes per the previous Airport Layout Plan) at Coolidge Municipal Airport is shown on **Exhibit 1D**. Taxiway 1, which has a pavement width of 40 feet, runs parallel to the north half of Runway 17-35 at a runway/taxiway centerline separation distance of 525 feet. Taxiway 2 has a pavement width of 50 feet and serves as a connector

[1] During this study, it was revealed that the published runway lengths associated with Runway 5-23 and 17-35 vary depending on the particular publication. An official survey of the airport was conducted as part of the Master Plan that established primary and secondary airport controls. Based upon the survey results, Runway 5-23 is 5,562 feet long and Runway 17-35 is 3,871 feet long. For the remainder of this study, these runway lengths are used to reflect the official survey data gathered.

taxiway from Taxiway 1 to Runway 17-35. Taxiway 3 has a width of 50 feet and connects Taxiway 1 to the intersection of Runways 5-23 and 17-35. Taxiway 4 has a width of 50 feet and is essentially the continuation of Taxiway 2 on the west side of Runway 17-35 extending to the Runway 5 threshold. Taxiway 5 has a width of 40 feet and serves as a connecting taxiway from Taxiway 1 to the Runway 23 threshold. Taxiways 1, 3, and 5 provide direct access to the main aircraft parking apron at the airport. In addition to these taxiways, a portion of the closed northwest-southeast runway is utilized in order for aircraft to gain access to/from aviation-related landside facilities located on the southeast portion of the airport to be discussed later in this chapter. It should also be noted that site preparation has been completed for a proposed taxiway extending east from Taxiway 2 that would provide aircraft access to existing landside development east of the terminal area.

TABLE 1C
Airside Facility Data
Coolidge Municipal Airport

	Runway 5-23		Runway 17-35	
Length (ft.)	5,562		3,871	
Width (ft.)	150		75	
Surface Material	Asphalt		Asphalt	
Load Bearing Strength (lbs.)				
Single Wheel Loading (SWL)	80,000		17,000	
Dual Wheel Loading (DWL)	115,000		N/A	
Dual Tandem Wheel Loading (DTWL)	210,000		N/A	
Instrument Approach Procedures	VOR/DME (5), GPS (23)		None	
Runway Edge Lighting	Medium Intensity		None	
Pavement Markings	Non-Precision		Visual	
Taxiway Edge Lighting	Medium Intensity		None	
Approach Aids	**Rwy 5**	**Rwy 23**	**Rwy 17**	**Rwy 35**
Global Positioning System (GPS)	No	Yes	No	No
Precision Approach Path Indicator (PAPI)	Yes	Yes	No	No
Visual Approach Slope Indicators (VASI)	No	No	No	No
Runway End Identifier Lights (REIL)	No	No	No	No
Approach Lighting System (ALS)	No	No	No	No
End Elevation (ft. MSL)	1,548	1,574	1,563	1,573
Fixed-Wing Aircraft Traffic Pattern	Left	Right	Right	Left
Airport Traffic Pattern Altitude (ft. MSL)	2,574			
Weather or Navigational Aids	AWOS-III (at CGZ); Segmented Circle; Wind Cone; Rotating Beacon			

Source: ASIS Data Sheet Systems, 5010 Airport Master Record
VOR/DME – Very High Frequency Omnidirectional Range with Distance Measuring Equipment
GPS – Global Positioning System
AWOS – Automated Weather Observation System
MSL – Mean Sea Level
CGZ – Casa Grande Municipal Airport

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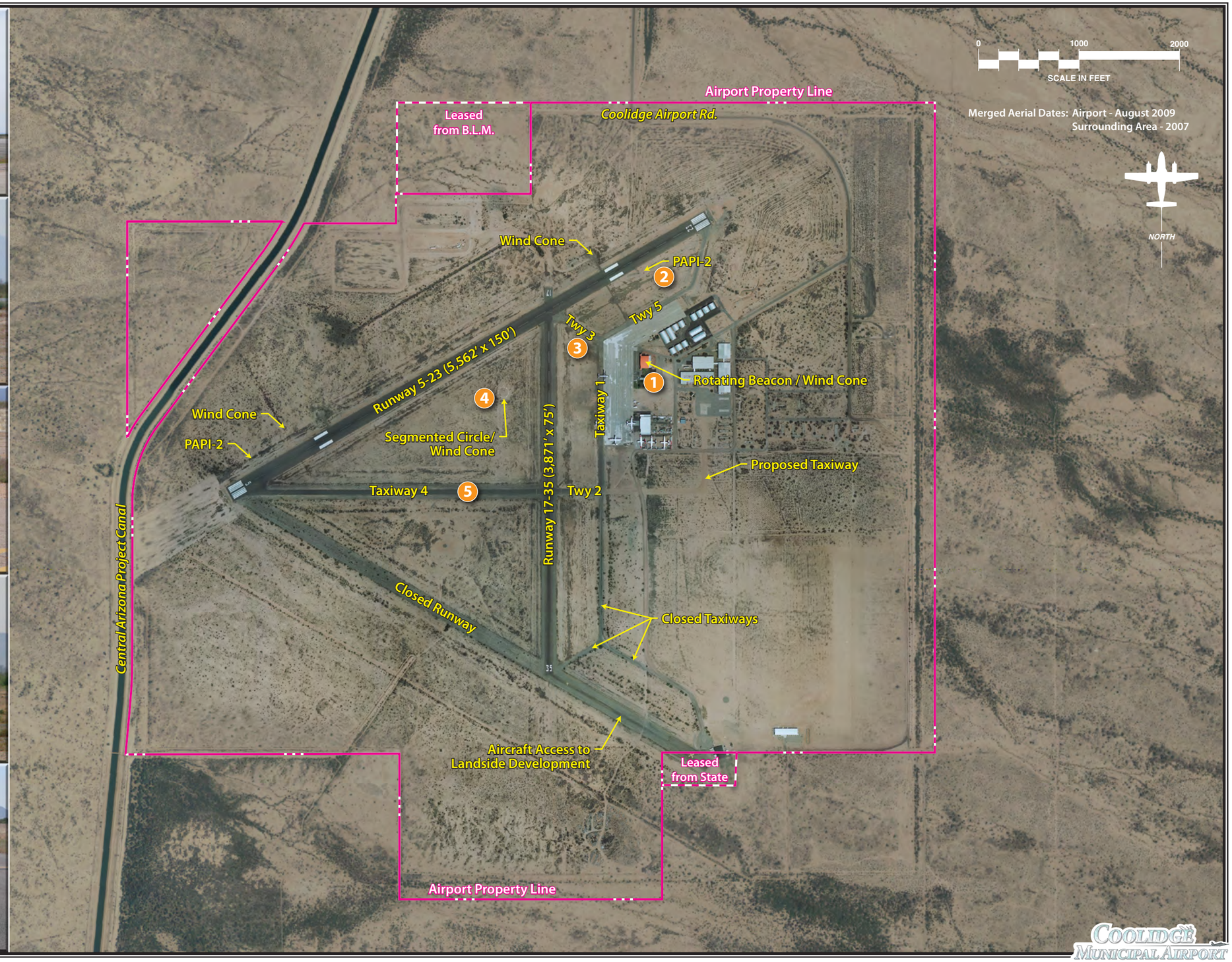
1 Rotating Beacon / Wind Cone atop Conventional Hangar

2 Precision Approach Path Indicator Lights

3 Taxiway Lighting and Markings

4 Segmented Circle / Wind Cone

5 Taxiway 4



COOLIDGE MUNICIPAL AIRPORT

Exhibit 1D
AIRSIDE FACILITIES

Pavement Condition

As a condition of receiving federal funds for the development of the airport, the FAA requires the airport sponsor receiving and/or requesting federal funds for pavement improvement projects to implement a pavement maintenance management program.

Part of the pavement maintenance management program is to develop a Pavement Condition Index (PCI) rating. The rating is based on the guidelines contained in FAA Advisory Circular 150/5380-6, *Guidelines and Procedures for Maintenance of Airport Pavements*.

The PCI procedure was developed to collect data that would provide engineers and managers with a numerical value indicating overall pavement conditions. It would also reflect both pavement structural integrity and operational surface condition. A PCI survey is performed by measuring the amount and severity of certain distresses (defects) observed within a pavement sample unit.

In March 2006, a pavement inspection was conducted at Coolidge Municipal Airport by the Arizona Department of Transportation. The center portion of Runway 5-23 was found to be in "good" condition with a PCI rating of 90 out of a possible 100. The outer portion of the runway was in "fair" condition and received a PCI rating of 64 with large amounts of low-severity block cracking reported.

Runway 17-35 was described as being in "relatively good condition" with a PCI rating of 78. Moderate amounts of weathering and raveling were reported along with small amounts of longitudinal and transverse cracking.

Taxiways 2, 4, and the southernmost portion of Taxiway 1 were found to be in "very good condition" receiving a PCI rating of 82. Taxiways 3, 5, and the northernmost portion of Taxiway 1 received a PCI rating of 42 and were described as being in "poor condition" with extensive amounts of block cracking, moderate amounts of raveling and weathering, and small amounts of patching and shoving. The apron was described as being in "fair condition" with large amounts of longitudinal, transverse, and diagonal cracking receiving a PCI rating of 66. The hangar apron located northeast of the FBO facilities had recently been constructed and was described as being in "excellent condition" receiving a PCI rating of 100.

The Arizona Pavement Preservation Program (APPP), which provides pavement repair recommendations, lists the following projects:

- Mill/replace PFC Runway 17-35
- PCC reseal/spall apron
- Seal coat Runway 5-23
- Seal coat hangar apron
- Seal coat portions of active taxiways

It should be noted that during the consultant's inventory trip to the airport, several portions of existing run-

way and taxiway pavement at the airport contained large cracks with foreign object debris (FOD) that will need to be addressed in the future.

Airfield Lighting

Airfield lighting systems extend an airport's usefulness into periods of darkness and/or poor visibility. A variety of lighting systems are installed at the airport and summarized as follows.

Identification Lighting: The location of an airport at night is universally identified by a rotating beacon. A rotating beacon projects two beams of light, one white and one green, 180 degrees apart. Coolidge Municipal Airport's beacon is located atop the original World War II conventional hangar as shown on **Exhibit 1D**.

Pavement Edge Lighting: Pavement edge lighting utilizes light fixtures placed to define the lateral limits of the pavement. This lighting is essential for safe operations at night and/or times of low visibility in order to maintain safe and efficient access to and from the runway and aircraft parking areas. Runway 5-23 is equipped with medium intensity runway lighting (MIRL). Runway 17-35 is not currently equipped with runway lighting.

Taxiways 3 and 5 are equipped with medium intensity taxiway lighting (MITL). The remainder of the taxiway system is not equipped with any type of lighting or reflective markings.

Pilot-Controlled Lighting: Airfield lighting systems can be controlled through a pilot-controlled lighting system (PCL). PCL allows pilots to turn on or increase the intensity of the airfield lighting systems from the aircraft with the use of the aircraft's radio transmitter. The Runway 5-23 MIRL and available taxiway lighting are connected to the PCL system at Coolidge Municipal Airport. This PCL system can be activated using the airport's common traffic advisory frequency (CTAF) 123.075 MHz.

Visual Approach Lighting: Two-unit precision approach path indicators (PAPI-2s) are available on each end of Runway 5-23. The PAPIs provide approach path guidance by giving the pilot an indication of whether their approach is above, below, or on-path, through a pattern of red and white lights visible from the light units.

Airfield Signs: Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. The airfield is not currently equipped with airfield signage.

Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 5-23 is equipped with non-precision instrument runway markings that identify the runway centerline, threshold, designation, touchdown point, and aircraft holding positions. Runway 17-35

is equipped with visual markings, which identify the runway centerline, designation, and aircraft holding positions.

Taxiway and apron taxilane centerline markings are provided to assist aircraft using these airport surfaces. Centerline markings assist pilots in maintaining proper clearance from pavement edges and objects near the taxilane/taxiway edges. Pavement markings also identify aircraft parking positions.

Aircraft hold positions are marked at each runway/taxiway intersection. All hold position markings for Runway 5-23 are located 250 feet from the runway centerline. Hold position markings for Runway 17-35 are located 125 feet from the runway centerline.

Weather Reporting

Coolidge Municipal Airport is not currently equipped with a weather reporting system. Pilots are recommended to receive weather briefings utilizing the automated weather observation system (AWOS) at Casa Grande Municipal Airport, which is located approximately 17 nautical miles to the west. The AWOS-III at Casa Grande Municipal Airport provides automated aviation weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The AWOS system reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting (barometric pressure), and density altitude (airfield elevation corrected for temperature).

Coolidge Municipal Airport is equipped with a wind cone and segmented circle. The wind cone provides wind direction and speed information to pilots. The segmented circle provides aircraft traffic pattern information. This equipment is located southwest of the intersection of Runways 5-23 and 17-35. Two additional wind cones are located at the approach ends of Runway 5-23 and another wind cone is located on top of the World War II conventional hangar.

LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support the aircraft and pilot/passenger handling functions. These facilities typically include aircraft storage/maintenance hangars, aircraft parking aprons, and support facilities such as fuel storage, automobile parking, and roadway access. Landside facilities are identified on **Exhibit 1E.**

Fixed Base Operator (FBO)

Coolidge Aviation currently operates as the airport's lone full-service FBO operator providing aircraft storage and fuel services. Coolidge Aviation's offices are located in a 2,000 square-foot facility along the eastern edge of the aircraft parking apron and south of the conventional hangar as identified on **Exhibit 1E**. Coolidge Aviation leases the 12,000 square-foot conven-

tional hangar adjacent to the office building. This conventional hangar is original to the airport and provides aircraft maintenance and shop hangar area. Coolidge Aviation also owns 17 individual aircraft storage hangars ranging in size from 3,600 square feet to 7,200 square feet, which are located northeast of the conventional hangar facility. Space within each of these aircraft storage hangars are leased to private aircraft owners.

Specialty Operators

There are two specialty operators at the airport that provide a variety of services. Each of these specialty operators is located on airport property and is identified on **Exhibit 1E**. Each specialty operator and a brief description of the business are listed below.

Complete Parachute Solutions (CPS) – provides military parachute training. Complete Parachute Solutions conducts approximately 4,000 operations annually utilizing an EADS Casa C-212 Aviocar, a Shorts Skyvan, a Shorts Sherpa, and a Lockheed C-130. Complete Parachute Solutions employs 12 full-time and six part-time employees. It operates out of two separate facilities totaling approximately 20,000 square feet that are located at the south end of the airport adjacent to the closed northwest-southeast runway. These facilities provide space for parachute equipment maintenance and storage, training and staging, classrooms, sleeping quarters, office space, and lobby.

International Air Response (IAR) – provides aerial disaster relief and contracts with the U.S. government to conduct research and development projects. IAR employs 35 people and operates seven Lockheed C-130s, two Douglas DC-8s, and one Douglas DC-7 aircraft. IAR's 24,000 square-foot hangar facility is located at the south end of the apron and includes space for 18,000 square feet for maintenance and shop hangar area and 6,000 square feet for office space.

It should be noted that a third specialty operator is planning to relocate to Coolidge Municipal Airport in the near future. **Air Response** has leased property at the airport in order to construct a building complex that will provide approximately 25,000 square feet of hangar and office space to support its business. It will provide maintenance, repair, restoration, and overhaul services to warbird aircraft to include the B-17 and B-25, among others. The company is currently located at Mesa-Falcon Field Airport and employs approximately 10 to 12 people.

Aircraft Hangar Facilities

Aircraft storage hangar facilities at Coolidge Municipal Airport are made up of two multi-aircraft storage conventional hangars and 17 individual aircraft storage hangars. Coolidge Aviation utilizes a 12,000 square-foot conventional hangar for aircraft storage purposes. IAR utilizes 18,000 square feet of its facility for aircraft

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1 Aircraft Storage Hangars (Coolidge Aviation)

2 World War II Conventional Hangar

3 Self-Service Fuel Facility / Fuel Farm

4 International Air Response

5 Complete Parachute Solutions

Airport Property Line

Coolidge Airport Rd.

Aircraft Storage Hangars (Coolidge Aviation)

Non-Aviation Development

Parachute Landing Area

Complete Parachute Solutions

Conventional Hangar and Office (Coolidge Aviation)

Aircraft Parking Apron

Self-Service Fuel Facilities/ Fuel Farm

International Air Response

Future Location of Air Response

Aircraft Parking Apron

Leased from State

Runway 17-35 (3,871' x 75')

Runway 5-23 (5,562' x 150')

NORTH

0 500 1000

SCALE IN FEET

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

COOLIDGE MUNICIPAL AIRPORT

Exhibit 1E
LANDSIDE FACILITIES

maintenance. This equates to 30,000 square feet of total conventional hangar storage space. Coolidge Aviation also leases out 13 single aircraft storage hangars totaling approximately 61,200 square feet of hangar space.

Apron and Aircraft Parking

Coolidge Municipal Airport has a 50,000 square-yard concrete apron with approximately five aircraft tiedown positions, which are used by local and transient aircraft for parking, as well as for activities related to Coolidge Aviation and IAR. Self-service fueling facilities are located on the eastern edge of the apron adjacent to the south side of the World War II conventional hangar. The apron is not equipped with pavement edge lighting; however, street-lamp style fixtures provide lighting to the eastern portion of apron pavement.

CPS has four designated aircraft parking positions adjacent to its facility at the southeast end of the closed runway. These parking positions are used exclusively by CPS aircraft, which utilize the closed runway to access the parking spaces.

Parachute Landing Area

Due to the high level of parachuting activities conducted at the airport, a designated parachute landing area has been established. This landing area, located south of the core landside facilities on vacant airport land, is identified on **Exhibit 1E**. The parachute landing area has a radius of 300 feet and is utilized by both CPS and IAR.

Fuel Farm Facilities

Fueling facilities at Coolidge Municipal Airport are located adjacent to the eastern edge of the main aircraft parking apron between the Coolidge Aviation conventional hangar and FBO office. Fuel storage capabilities consist of two underground 10,000-gallon storage tanks, one each for Jet A and 100LL Avgas storage. The fuel farm facility is owned by the City of Coolidge, but leased to and operated by Coolidge Aviation. The Jet A tank is made of fiberglass while the 100LL Avgas tank is made of steel. Self-service fueling facilities to include a credit card machine and receipt printer were installed in 2003.

Maintenance and Aircraft Rescue and Firefighting

Maintenance at Coolidge Municipal Airport is performed by the City of Coolidge personnel. City-owned equipment is transported to the airport and used to perform maintenance when needed. This equipment is stored at an off-airport location. There are no aircraft rescue and firefighting (ARFF) facilities located on the airport. The Coolidge Fire Department, located approximately nine driving miles northwest of the airport in the City of Coolidge, would respond to on-airport emergencies.

Utilities

The airport is equipped with on-site utilities including electricity, water, telephone, and internet services. Electric utilities are provided by the Bureau of Indian Affairs. Arizona Water Company is the airport's water provider. The water system at the airport consists of two wells located on the eastern edge of the airport with the capacity to provide 160 gallons of water per minute. Telephone and internet services are provided by Qwest. A 15-inch sewer line and septic tank serve the airport's sanitary sewer needs.

Security Fencing and Gates

Airport perimeter security fencing provides a physical and psychological deterrent to prevent access of airfield and landside facilities to unauthorized individuals who might cause property damage or create safety issues on active airfield movement areas. Coolidge Municipal Airport is not currently equipped with perimeter security fencing.

Other Facilities

The City of Coolidge leases an 8.8-acre parcel of land east of the FBO facilities to a private entity. This parcel of land is occupied by four warehouse facilities, which total approximately 120,000 square feet. It should be noted that there is currently no aircraft access afforded to this area. As previously mentioned, however, a taxiway extending east and north from the airfield operations area is proposed that would provide aircraft access to this area.

Automobile Parking

Paved parking lots are provided at each on-airport business. International Air Response has ten marked spaces, while the parking lots for Coolidge Aviation and Complete Parachute Solutions are unmarked. These parking lots are accessible via Coolidge Airport Road and other access roads on airport property.

AREA AIRSPACE AND AIR TRAFFIC CONTROL

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

AIRSPACE STRUCTURE

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

Class A Airspace: Class A airspace includes all airspace from 18,000 feet mean sea level (MSL) to flight level (FL) 600 (approximately 60,000 feet MSL). This airspace is designated in Federal Aviation Regulation (F.A.R.) Part 71.193 for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under IFR operations. The aircraft must have special radio and navigation equipment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.

Class B Airspace: Class B airspace has been designated around some of the country's major airports to separate arriving and departing aircraft. Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. This airspace is the most restrictive controlled airspace routinely encountered by pilots operating under visual flight rules (VFR) in an uncontrolled environment. The nearest Class B airspace to Coolidge Municipal Airport is located at Phoenix Sky Harbor International Airport.

In order to fly within Class B airspace, an aircraft must be equipped with special radio and navigational equipment and must obtain clearance from air traffic control. To operate within the Class B airspace of Phoenix Sky Harbor International Airport, a pilot must have at least a private pilot's certificate or be a student pilot who has met the requirements of F.A.R. Part 61.95, which requires special ground and flight training for Class B airspace. Helicopters do not need special navigation equipment or a transponder if they operate at or below 1,000 feet and have made prior arrangements in the form of a Letter of Agreement with the FAA controlling agency. Aircraft are also required to have and utilize a Mode C transponder within a 30-nautical-mile range of the center of the Class B airspace. A Mode C transponder allows the airport traffic control tower (ATCT) to track the location of the aircraft.

The Phoenix Terminal Radar Approach Control Facility (TRACON) controls all aircraft operating within the Phoenix Class B airspace. The TRACON operates 24 hours per day.

Class C Airspace: The FAA has established Class C airspace at 120 air-

ports around the country as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. In order to fly inside Class C airspace, the aircraft must have a two-way radio, an encoding transponder, and have established communication with ATC. Aircraft may fly below the floor of the Class C airspace or above the Class C airspace ceiling without establishing communication with ATC. Davis Monthan Air Force Base and Tucson International Airport are the nearest airports to Coolidge Municipal Airport with Class C airspace.

Class D Airspace: Class D airspace is controlled airspace surrounding airports with an ATCT. The Class D airspace typically constitutes a cylinder with a horizontal radius of four or five nautical miles from the airport, extending from the surface up to a designated vertical limit, typically set at approximately 2,500 feet above the airport elevation. If an airport has an instrument approach or departure, the Class D airspace sometimes extends along the approach or departure path.

The Phoenix metropolitan area has seven public-use airports in Class D airspace including: Chandler Municipal Airport, Phoenix-Mesa Gateway Airport, Mesa-Falcon Field Airport, Scottsdale Municipal Airport, Phoenix Deer Valley Airport, Glendale Municipal Airport, and Phoenix Goodyear Airport. The closest of these airports to Coolidge Municipal Airport is Phoenix-Mesa Gateway Airport, located 25 nautical miles northwest of the airport.

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

Class G Airspace: Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. Air traffic control does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and the overlying Class E airspace (700 to 1,200 feet above ground level [AGL]). Class G airspace extends below the floor of the Class E airspace transition area at Coolidge Municipal Airport.

While aircraft may technically operate within Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, federal regulations specify minimum altitudes for flight. F.A.R. Part 91.119*, Mini-*

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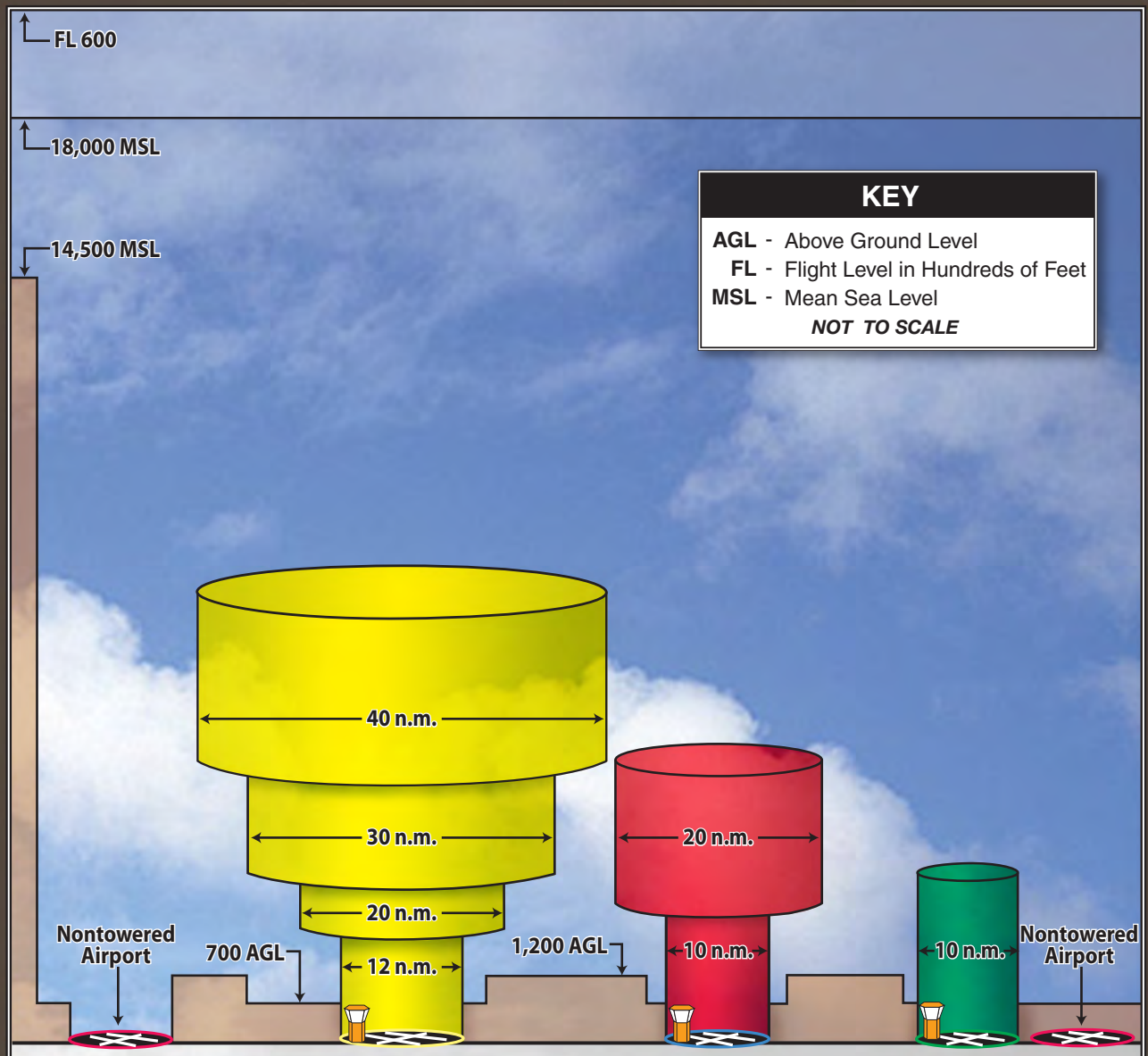

CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered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

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

COOLIDGE MUNICIPAL AIRPORT

Exhibit 1F
AIRSPACE CLASSIFICATION

mum Safe Altitudes, generally states that except when necessary for takeoff or landing, pilots must not operate an aircraft over any congested area of a city, town, or settlement, or over any open air assembly of persons, at an altitude of less than 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Over less congested areas, pilots must maintain an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. Finally, this section states that helicopters may be operated at less than the minimums prescribed above if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA.

Airspace in the vicinity of Coolidge Municipal Airport is depicted on **Exhibit 1G**. Coolidge Municipal Airport is in Class E airspace. This area of controlled airspace has a floor of 700 feet above the surface and extends to Class A airspace. This transition area is intended to provide protection for aircraft transitioning from enroute flights to the airport for landing.

SPECIAL USE AIRSPACE

Special use airspace is defined as airspace where activities must be confined because of their nature or where limitations are imposed on aircraft not taking part in those activities. These areas are depicted on **Exhibit 1G** by yellow and purple-hatched lines, as well as with the use of green shading.

Military Operating Areas (MOAs): MOAs are designated areas of airspace established outside of Class A airspace area to separate or segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted. While the FAA does not prohibit civilian VFR traffic from transiting an active MOA, it is strongly discouraged. Published times of use do not mean that an MOA is active during this entire time. Every effort is made to return the airspace to the controlling agency when not being utilized for military training. The status of an MOA may be obtained from the appropriate FAA Contract Flight Service Station (FSS) or en-route air traffic facility. Most MOAs have an accompanying airspace overlying the MOA. This airspace is Air Traffic Control Assigned Airspace (ATCAA) and starts at 18,000 feet MSL.

MOAs are depicted in **Exhibit 1G** with purple-hatched lines. MOAs in the vicinity of Coolidge Municipal Airport include the Outlaw MOA to the east and the Sells 1 and Sells Low MOAs to the southwest.

The Outlaw MOA is under scheduling and operational control by the 162nd Fighter Wing of the Tucson Air National Guard. This MOA airspace extends from an altitude of 8,000 feet MSL or 3,000 AGL, whichever is higher up to flight level (FL) 180 (18,000 feet MSL). The ATCAA extends from

FL 180 to FL 510. Its scheduled use can fluctuate from 7:00 a.m. to 6:00 p.m., and 6:00 p.m. to 10:00 p.m. (notification by Notice to Airmen [NOTAM] Monday through Friday, with intermittent weekend use (notification by NOTAM). Operational activity within the Outlaw MOA includes subsonic basic flight maneuvers, air combat tactics, formation training, instrument training, intercept training, low altitude tactical navigation training, and night vision lights-out training. Active aircraft within the Outlaw MOA include primarily the F-16, F-18, F-15, and A-10.

The Sells MOAs scheduling and operations are controlled by the 56th Fighter Wing based at Luke Air Force Base. Sells 1 MOA is used at 10,000 feet MSL from 6:00 a.m. to 7:00 p.m., Monday through Friday. The Sells Low MOA is used at 3,000 feet AGL up to but not including 10,000 feet MSL from 6:00 a.m. to 7:00 p.m., Monday through Friday. The ATCAA extends from FL 180 to FL 510. Activity within the Sells MOAs include supersonic operations above 10,000 feet MSL, intensive F-16 and A-10 student training, air combat tactics, air-refueling, formation training, intercept training, and instrument training. Other aircraft utilizing this airspace includes the F-5, C-130, UH/HH-60, KC-135, and F-18. The air refueling operations occur from 10,000 feet MSL up to 29,000 feet MSL.

Military Training Routes: Military training routes are used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000 feet MSL at airspeeds in excess of 250 knots indicated air speed (IAS). Military training routes near Coolidge Municipal Airport are identified with the letters VR and a four-digit number or with IR and a three-digit number. The arrows on the route show the direction of travel.

Wilderness Areas: As depicted on **Exhibit 1G**, several wilderness areas exist around the Coolidge area. Aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park areas, which includes wilderness areas and designated breeding grounds. FAA Advisory Circular (AC) 91-36C defines the "surface" as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley.

Victor Airways: For aircraft arriving or departing the regional area using very high frequency omnidirectional range (VOR) facilities, a system of Federal Airways, referred to as Victor Airways, has been established. Victor Airways are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational facilities. Victor Airways are shown with solid blue lines on **Exhibit 1G**.

Restricted/Alert Areas: Restricted and alert areas are depicted on **Exhibit 1G** with yellow-hatched lines. Restricted airspace is off-limits for public-use unless granted permission from the controlling agency. The restricted

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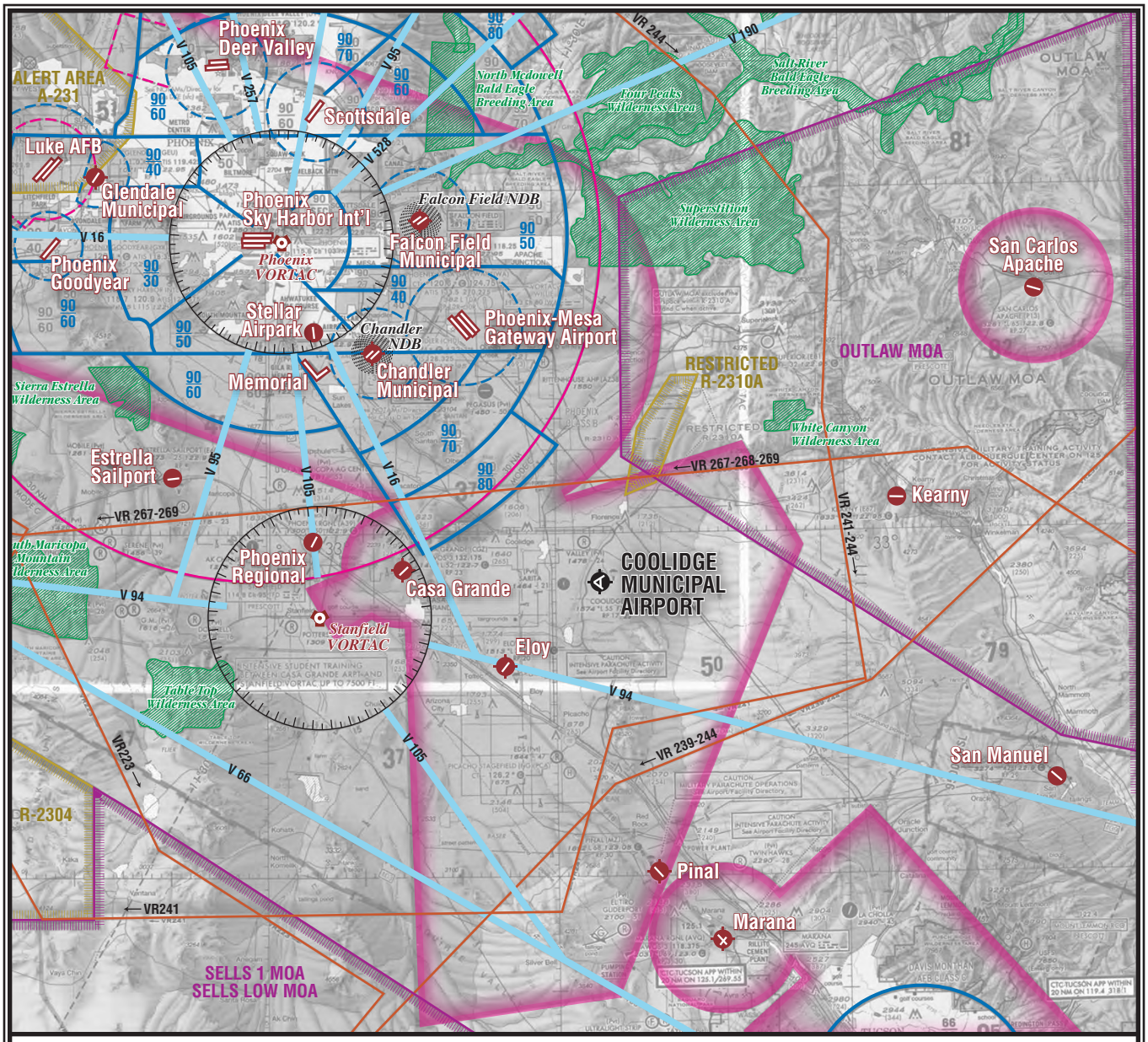


LEGEND

- Airport with other than hard-surfaced runways
- Airport with hard-surfaced runways 1,500' to 8,069' in length
- Airports with hard-surfaced runways greater than 8,069' or some multiple runways less than 8,069'
- VORTAC
- Non-Directional Radiobeacon (NDB)
- Compass Rose
- Military Operations Area (MOA)
- Prohibited, Restricted, Warning and Alert Areas
- Wilderness Areas
- Mode C
- Military Training Routes
- Victor Airways
- Class B Airspace
- Class C Airspace
- Class D Airspace
- Class E Airspace with floor 700' above surface

NORTH

NOT TO SCALE

Source:
Phoenix Sectional Charts,
US Department of Commerce,
National Oceanic and
Atmospheric Administration 7/03/08

COOLIDGE MUNICIPAL AIRPORT

Exhibit 1G
VICINITY AIRSPACE

areas in the vicinity of Coolidge Municipal Airport are used by the military for training purposes. The controlling agency for each of these restricted areas is the Albuquerque Air Route Traffic Control Center (ARTCC).

Restricted area R-2304, located southwest of Coolidge, is used up to FL 240 from 7:00 a.m. to 10:00 p.m. daily. Restricted area R-2310A, located north of Coolidge, is used up to 10,000 feet MSL intermittently by (Notice to Airmen) NOTAM 48 hours in advance of use. Alert area A-231 is located around Luke Air Force Base northwest of Coolidge. It is in use from 500 feet AGL to 6,500 feet MSL continuously.

AIRSPACE CONTROL

The FAA is responsible for the control of aircraft within the Class A, Class C, Class D, and Class E airspace described above. The Albuquerque ARTCC controls aircraft operating in Class A airspace. The Albuquerque ARTCC, located in Albuquerque, New Mexico, controls IFR aircraft entering or leaving the Coolidge Municipal Airport area. The area of jurisdiction for the Albuquerque center includes most of the states of New Mexico and Arizona, and portions of Texas, Colorado, and Oklahoma.

A letter of agreement between the Albuquerque ARTCC and Complete Parachute Solutions has been established to simplify and standardize coordination between the jump aircraft and air traffic control. Coolidge Municipal Airport is located approximately one mile east of an IFR arrival route into the Phoenix metropolitan area, which is heavily used by jet and turboprop aircraft. These inbound aircraft typically fly over Coolidge Municipal Airport from 9,000 feet MSL to 14,000 feet MSL. The letter of agreement standardizes the procedures and coordination for both controllers and pilots to enhance safety.

NAVIGATIONAL AIDS

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

The VOR provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility to provide distance as well as direction information to the pilot. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots. The Stanfield VORTAC, located approximately 24.5 nautical miles west of the airfield, serves Coolidge Municipal Airport. This facility is identified on **Exhibit 1G**.

Loran-C is a ground-based enroute navigational aid which utilizes a system of transmitters located in various locations across the continental United States. Loran-C allows pilots to navigate without using a specific facility. With a properly equipped aircraft, pilots can navigate to any airport in the United States using Loran-C.

GPS was initially developed by the United States Department of Defense for military navigation around the world. However, GPS is now used extensively for a wide variety of civilian uses, including civil aircraft navigation.

GPS uses satellites placed in orbit around the globe to transmit electronic signals, which pilots of properly equipped aircraft use to determine altitude, speed, and navigational information. This provides more freedom in flight planning and allows for more direct routing to the final destination.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. Coolidge Municipal Airport has two published non-precision instrument approaches which provide course guidance to the designated runway.

The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for the pilot to complete the approach. If the observed visibility or cloud ceilings are below the minimums prescribed for the approach, the pilot cannot complete the instrument approach. **Table 1D** summarizes instrument approach minima for Coolidge Municipal Airport.

VISUAL FLIGHT PROCEDURES

Many flights into and out of Coolidge Municipal Airport are currently conducted under VFR. Under VFR flight, the pilot is responsible for collision avoidance. Typically, the pilot will make radio calls announcing his/her intentions and the position of the aircraft relative to the airport.

In most situations, under VFR and basic radar services, the pilot is responsible for navigation and choosing the arrival and departure flight paths to and from the airport. The results of individual pilot navigation for sequencing and collision avoidance are that aircraft do not fly a precise flight path to and from the airport. Therefore, aircraft can be found flying over a wide area around the airport for sequencing and safety reasons.

TABLE 1D
Instrument Approach Data
Coolidge Municipal Airport

	WEATHER MINIMUMS BY AIRCRAFT TYPE							
	Category A		Category B		Category C		Category D	
	CH	VIS	CH	VIS	CH	VIS	CH	VIS
GPS RWY 23								
Straight-In	486	1.0	486	1.0	N/A	N/A	N/A	N/A
Circling	526	1.0	526	1.0	N/A	N/A	N/A	N/A
VOR/DME RWY 5								
Straight-In	452	1.0	452	1.25	N/A	N/A	N/A	N/A
Circling	526	1.0	526	1.25	N/A	N/A	N/A	N/A

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

Category A 0-90 knots (Cessna 172)
Category B 91-120 knots (Beechcraft KingAir)
Category C 121-140 knots (Canadair Challenger)
Category D 141-165 knots (Gulfstream IV)

Abbreviations:
CH: Cloud Height (in feet above ground level)
DME: Distance Measuring Equipment
GPS: Global Positioning System
VIS: Visibility (in statute miles)
VOR: Very-high Frequency Omnidirectional Range

Source: U.S. Terminal Procedures, Southwest Volume 4 of 4, March 12, 2009.

While aircraft can be expected to operate over most areas of the airport, the density of aircraft operations is higher near the airport. This is the result of aircraft following the established traffic patterns for the airport. The traffic pattern is the traffic flow that is prescribed for aircraft landing or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

a. Upwind Leg - A flight path parallel to the landing runway in the direction of landing.

b. Crosswind Leg - A flight path at right angles to the landing runway off its upwind end.

c. Downwind Leg - A flight path parallel to the landing runway, in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.

d. Base Leg - A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

e. Final Approach - A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway.

Essentially, the traffic pattern defines the side of the runway on which aircraft will operate. For example, at Coolidge Municipal Airport, Runways 5 and 35 have established left-hand traffic patterns. For these runways, aircraft make a left turn from base leg to final for landing. Runways 17 and 23 have established right-hand traffic patterns. Therefore, the established traffic pattern for both runways keeps aircraft to the north and west of the landside facilities and the parachute landing area at the southeast end of the airport.

While the traffic pattern defines the direction of turns that an aircraft will follow on landing or departure, it does not define how far from the runway an aircraft will operate. The distance laterally from the runway centerline that an aircraft operates, or the distance from the end of the runway, is at the discretion of the pilot, based on the operating characteristics of the aircraft, number of aircraft in the traffic pattern, and meteorological conditions. The actual ground location of each leg of the traffic pattern varies from operation to operation for reasons of safety, navigation, and sequencing, as described above. The distance that the downwind leg is located laterally from the runway will vary based mostly on the speed of the aircraft. Slower aircraft can operate closer to the runway as their turn radius is smaller.

The traffic pattern altitude (TPA) for the airport has been established at 2,574 feet MSL or 1,000 feet AGL. The TPA is the altitude at which aircraft operating in the traffic pattern fly when on the downwind leg. The TPA is established so that aircraft have a predictable descent profile on base leg to final for landing.

AREA AIRPORTS

A review of public-use airports within the vicinity of Coolidge Municipal Airport has been made to identify and distinguish the type of air service provided in the area surrounding the airport. Information pertaining to each airport was obtained from FAA records.

Eloy Municipal Airport (E60), located approximately 11 nautical miles southwest of Coolidge Municipal Airport, is owned and managed by the City of Eloy. E60 is equipped with a single asphalt runway that measures 3,900 feet long and 75 feet wide. E60 experiences approximately 19,800 operations annually and has 42 based aircraft. E60 has both 100LL Avgas and Jet A fuel available for purchase. Other general aviation services offered include transient hangar and tiedown storage.

Casa Grande Municipal Airport (CGZ), located approximately 17 nautical miles west of Coolidge Municipal Airport, is owned and managed by the City of Casa Grande. CGZ is equipped with a single asphalt runway system. Runway 5-23 has a length of 5,200 feet and a width of 100 feet. CGZ currently experiences approximately 119,000 operations annually and has 114 aircraft based at the airport. 100LL Avgas and Jet A fuel are available for purchase at the airport. Transient tiedown storage is available

as well as major airframe and powerplant maintenance services.

Phoenix-Mesa Gateway Airport (IWA), located approximately 25 nautical miles northwest of Coolidge Municipal Airport, is owned and managed by the Williams Gateway Airport Authority. IWA is equipped with three parallel runways. The concrete Runway 12R-30L is the longest at 10,401 feet long and 150 feet wide. IWA has 96 based aircraft and experiences approximately 296,700 operations annually. General aviation services include: 100LL Avgas, Jet A, transient hangar and tie-down storage, minor airframe service, bottled oxygen, and aircraft charters and rentals.

Phoenix Regional Airport (A39), located approximately 25 nautical miles west of Coolidge Municipal Airport, is privately owned and operated by the Ak Chin Indian Community. A39 has a single asphalt runway measuring 5,000 feet in length and 50 feet wide. There are 12 based aircraft at A39 with most activity limited to ultra-light aircraft operations. Currently, no general aviation services are provided at A39.

Kearney Airport (E67), located approximately 27 nautical miles east of Coolidge Municipal Airport, is owned and operated by the Town of Kearney. E67 has a single concrete runway with a length of 3,400 feet and a width of 60 feet. E67 experiences approximately 2,400 operations annually and has four based aircraft. 100LL Avgas is available at the airport in emergency situations only. Transient parking spaces are available as well as major airframe and powerplant aircraft maintenance services.

Chandler Municipal Airport (CHD), located approximately 28 nautical miles northwest of Coolidge Municipal Airport, is owned and managed by the City of Chandler. CHD has a parallel asphalt runway system, the longest of which, Runway 4R-22L, measures 4,870 feet in length and 75 feet in width. CHD is also equipped with a concrete helipad. CHD has 362 based aircraft and experiences approximately 265,400 operations annually. A full range of general aviation services are available at CHD including: 100LL Avgas, Jet A, transient tie-downs, major airframe and powerplant services, bottled oxygen, and aircraft charters and rentals.

Stellar Airpark (P19), located approximately 33 nautical miles northwest of Coolidge Municipal Airport, is open to public-use but privately owned and operated by the Stellar Runway Utilizers Association, Inc. P19 has a single asphalt runway that measures 3,913 feet in length and 60 feet in width. P19 currently experiences approximately 39,000 annual operations and has 161 based aircraft. 100LL Avgas and Jet A fuel is available for purchase. Other general aviation services available include transient tie-down spaces, minor airframe and powerplant service, and aircraft rentals.

Phoenix Sky Harbor International Airport (PHX), located approximately 42 nautical miles northwest of Coolidge Municipal Airport, is owned and managed by the City of Phoenix. PHX is equipped with three parallel con-

crete runways, the longest, Runway 8-26, measures 11,498 feet in length and 150 feet in width. PHX was the 9th busiest airport in the United States in 2008 with 19.4 million enplanements. PHX has 109 based aircraft and experiences approximately 539,200 operations annually. PHX offers a full range of commercial airline services as well as general aviation services.

SOCIOECONOMIC PROFILE

The socioeconomic profile provides a general look at the socioeconomic makeup of the community that utilizes Coolidge Municipal Airport. It also provides an understanding of the dynamics for growth and the potential changes that may affect aviation demand. Aviation demand forecasts are often directly related to the population base, economic strength of the region, and the ability of the region to sustain a strong economic base over an extended period of time. Current demographic and economic information was collected from Pinal County, the Arizona Department of Commerce, the Arizona Department of Economic Security, the U.S. Department of Commerce, and the U.S. Census Bureau.

POPULATION

Population is a basic demographic element to consider when planning for future needs of the airport. The State of Arizona has been one of the fastest growing states in the country in recent history. **Table 1E** shows the total population growth since 1960 for the State of Arizona, Pinal County, and the City of Coolidge. Since 2000, the population growth rate for both the County and the City has accelerated to its fastest pace during the represented time period. Since 2000, the State of Arizona has grown at a slower annual average rate (3.3 percent) than Pinal County and the City of Coolidge (8.7 and 5.9 percent, respectively). Much of this growth can be attributed to the urban sprawl of the Phoenix metropolitan area. Continued growth of the metropolitan area into Pinal County and the Coolidge area is expected to continue into the future.

Population forecasts for the state and county have been prepared by the Arizona Department of Commerce. These forecasts show population growth ultimately slowing over the course of the next 22 years. It is evident from these figures that population growth in the Coolidge area is anticipated to be greater than at the county and state levels. Local population growth could create more jobs, housing, and aviation activity.

EMPLOYMENT

Employment opportunities affect migration to the area and population growth. As shown in **Table 1F**, the City of Coolidge has been hit hard by the recent economic conditions with its unemployment rate reaching 17.9 percent. If employment conditions in Coolidge do not improve, migration to the local area will likely be affected.

TABLE 1E
Coolidge Area Population Trends

Year	State of Arizona	Avg. Annual % Change	Pinal County	Avg. Annual % Change	City of Coolidge	Avg. Annual % Change
1960	1,302,161	--	62,673	--	4,946	--
1970	1,770,900	3.1%	67,916	0.8%	4,651	-0.6%
1980	2,718,215	4.4%	90,918	3.0%	6,851	4.0%
1990	3,665,228	3.0%	116,379	2.5%	6,927	0.1%
2000	5,130,632	3.4%	179,727	4.4%	7,786	1.2%
2008	6,629,455	3.3%	350,558	8.7%	12,311	5.9%
Forecast						
2015	7,915,629	2.6%	486,363	4.8%	18,558	6.0%
2020	8,779,567	2.1%	609,720	4.6%	24,949	6.1%
2025	9,588,745	1.8%	732,282	3.7%	31,332	4.7%
2030	10,347,543	1.5%	852,463	3.1%	37,609	3.7%

Sources:
Historical - U.S. Census Bureau (1960-2000)
Arizona Department of Commerce (2008)
Forecast - Arizona Department of Commerce Population Projections, 2006

TABLE 1F
Historical Unemployment Rate
United States, State of Arizona, Pinal County, City of Coolidge

Year	United States	State of Arizona	Pinal County	Coolidge
2000	4.0%	4.0%	4.6%	8.4%
2001	4.7%	4.7%	5.3%	9.7%
2002	5.8%	6.0%	7.2%	13.0%
2003	6.0%	5.7%	7.0%	12.4%
2004	5.5%	4.9%	5.9%	10.7%
2005	5.1%	4.6%	5.5%	10.0%
2006	4.6%	4.1%	5.0%	8.8%
2007	4.6%	3.8%	4.8%	8.3%
2008	5.8%	5.5%	6.8%	12.2%
2009*	8.7%	7.8%	10.3%	17.9%

Source: Arizona Department of Economic Security
* Average through June.

Table 1G summarizes total employment by sector for Pinal County from 1970 to 2008. As shown in the table, total employment in the County has experienced steady growth over this timeframe with an average annual growth rate of 3.4 percent. The sectors that experienced the greatest growth were the "Services" sector (5.6 percent); the "Finance, Insurance and Real Estate" sector (4.8 percent); and the "Wholesale Trade" sector (5.0 percent). The "Farm Employment" and "Mining" sectors both experienced negative growth rates at -0.6 and -4.5 percent, respectively.

TABLE 1G
Pinal County Employment by Sector

Sector	1970	1980	1990	2000	2008	Avg. Annual % Growth
Farm Employment	3,430	2,250	2,090	2,110	2,678	-0.6%
Agricultural Services, Other	550	890	1,350	1,070	735	0.8%
Mining	6,090	6,200	4,110	1,410	1,043	-4.5%
Construction	2,120	790	1,370	2,050	3,818	1.6%
Manufacturing	1,480	2,720	3,680	3,420	3,924	2.6%
Trans., Comm., Util.	590	980	1,520	1,070	1,461	2.4%
Wholesale Trade	210	600	850	1,350	1,022	4.3%
Retail Trade	3,080	4,070	6,100	7,920	7,681	2.4%
Finance, Ins. & Real Estate	680	1,400	1,900	2,480	4,036	4.8%
Services	2,510	3,450	6,790	11,240	19,947	5.6%
Government	5,260	8,560	11,820	16,160	18,731	3.4%
Total	**25,980**	**31,900**	**41,580**	**50,260**	**65,076**	**2.4%**

Source: Woods & Poole CEDDS 2008

PER CAPITA PERSONAL INCOME

Per capita personal income (PCPI) for the United States, the State of Arizona, and Pinal County is summarized in **Table 1H**. PCPI is determined by dividing total income by population. For PCPI to grow significantly, income growth must outpace population growth. As shown in the table, PCPI average annual growth in Pinal County (0.9 percent) has been outpaced by PCPI growth in the state (1.3 percent) and nationally (1.6 percent) since 1970. Historic PCPI figures for Pinal County have also been considerably lower than the state and national levels.

TABLE 1H
Historical Per Capita Personal Income (2004 $)
United States, State of Arizona, Pinal County

Year	United States	Arizona	Pinal County
1970	$19,888	$18,671	$15,238
1980	$23,186	$21,834	$17,622
1990	$28,150	$24,577	$17,621
2000	$32,742	$28,144	$19,382
2008	$35,180	$29,913	$20,931
Average Annual Growth Rate	1.6%	1.3%	0.9%

Source: United States Department of Commerce, Bureau of Economic Analysis

ENVIRONMENTAL INVENTORY

Available information about the existing environmental conditions at Coolidge Municipal Airport has been derived from internet resources, agency maps, and existing literature. The intent of this task is to inventory potential environmental sensitivities that might affect future improvements at the airport.

AIR QUALITY

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

The airport is located in Pinal County which has been classified by the EPA as being in non-attainment for 8-hour ozone, Particulate Matter (PM_{10}), and Sulfur Dioxides (SO_2). A nonattainment classification indicates that the area has pollution levels which consistently exceed the NAAQS.

FISH, WILDLIFE, AND PLANTS

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

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

The native vegetation in the area is described as Lower Colorado Sonoran Desert Scrub. A search of the Arizona Heritage Data Management System online environmental review tool did not indicate any occurrences of special status species or critical habitat within two miles of the airport.

According to the U.S. Fish and Wildlife Service, numerous threatened, endangered, and candidate species have suitable habitat within Pinal County. These species are identified in **Table 1J**.

FLOODPLAINS

Floodplains are defined in Executive Order 11988, *Floodplain Management*, as "the lowland and relatively flat areas adjoining inland and coastal waters…including at a minimum, that

area subject to a one percent or greater chance of flooding in any given year" (i.e., that area would be inundated by a 100-year flood). Federal agencies, including the FAA, are directed to "reduce the risk of loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains." According to the Federal Emergency Management System (FEMA), Federal Insurance Rate Map (FIRM), panel number 04021C1250E, the airport is not located within a 100-year floodplain. Flood zones and washes in the immediate vicinity of Coolidge Municipal Airport are identified on **Exhibit 1H**.

TABLE 1J
Federally Listed Threatened, Endangered, and Candidate Species with Habitat in Pinal County

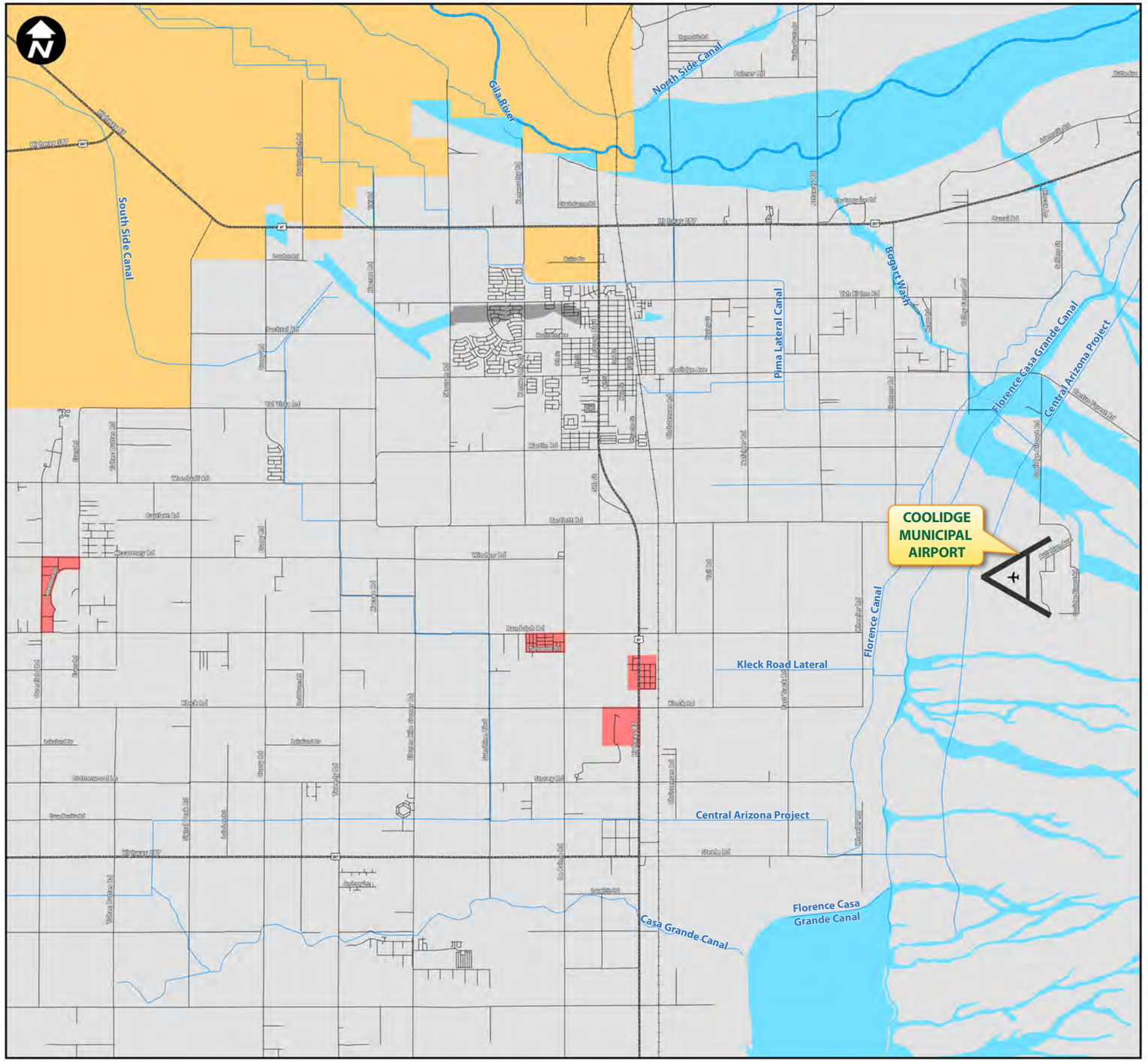
COMMON NAME	SCIENTIFIC NAME	HABITAT	STATUS
Arizona Hedgehog Cactus	Echinocereus triglochidiatus var. arizonicus	Ecotone between interior chapparal and madrean evergreen woodland.	Endangered
Desert Pupfish	Cyprinodon macularius	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Endangered
Gila Chub	Gila intermedia	Pools, springs, cienegas, and streams.	Endangered
Lesser Long-nosed Bat	Leptonycteris curasoae yerbabuenae	Desert scrub habitat with agave and columnar cacti present as food plants.	Endangered
Loach Minnow	Tiaroga cobitis	Small to large perennial streams with swift shallow water over cobble and gravel.	Threatened
Mexican Spotted Owl	Strix occidentalis lucida	Nests in canyons and dense forests with multilayered foliage structure.	Threatened
Nichol Turk's Head Cactus	Echinocactus horizonthalonius var. nicholii	Sonoran desert scrub.	Endangered
Razorback Sucker	Xyrauchen texanus	Riverine and lacustrine areas, generally not in fast moving water and may use backwaters.	Endangered
Southwestern Willow Flycatcher	Empidonax traillii extimus	Cottonwood/willow and tasmarisk vegetation communities along rivers and streams.	Endangered
Spikedance	Meda fulgida	Moderate to large perennial streams-with gravel substrates and moderate to swift velocities over sand and gravel substitutes.	Threatened
Yuma Clapper Rail	Rallus longirostris yumanensis	Fresh water and brackish marshes.	Endangered
Acuna Cactus	Echinomastus erectocentrus var. acunensis	Well drained knolls and gravel ridges in Sonoran desertscrub.	Candidate
Northern Mexican Garter snake	Thamnophis eques megalops	Found in source-area wetlands, large river riparian woodlands and forests, and streamside gallery forests.	Candidate
Yellow-billed Cuckoo	Coccyzus americanus	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Candidate

Source: U.S. Fish and Wildlife Service, Pinal County Species List, December 2007

06MP12-1H-8/19/09

Flood Zone Map

for Coolidge, Arizona



Legend

Transportation	Hydrology	Flood Zones*	
Highways	River	Zone A	0.2% Annual Chance Flood Hazard
Roads	Wash	Zone D	Zone X per LOMR 08-09-0417P
Railroad	Canal	Zone X	

Map Author: THansen Map Date: 03/03/2008 M:\Maps\FloodZones\Flood Map.mxd

0 1 2 3
Miles

Source: City of Coolidge

Coolidge Municipal Airport

Exhibit 1H
FLOOD ZONE MAP

WETLANDS AND WATERS OF THE U.S.

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

Several canals are located immediately west of Coolidge Municipal Airport including the Central Arizona Project canal, the Florence Casa Grande canal, and the Florence canal. These canals along with the location of washes in the vicinity of the airport are identified on **Exhibit 1H**.

HISTORICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

Determination of a project's impact to historical and cultural resources is made in compliance with the *National Historic Preservation Act* (NHPA) *of 1966*, as amended for federal undertakings. Two state acts also require consideration of cultural resources. The NHPA requires that an initial review be made of an undertaking's *Area of Potential Effect* (APE) to determine if any properties in, or eligible for inclusion in, the National Register of Historic Places are present in the area.

Arizona State Parks indicated in the *Coolidge Municipal Airport Master Plan Environmental Assessment*, conducted in 1987, that the likelihood is good that cultural resources may be located within the project area and that archaeological sites are present in nearby areas. Surveys of previously undisturbed areas are recommended to locate and evaluate any existing cultural remains.

DEPARTMENT OF TRANSPORTATION ACT: SECTION 4(f)

Section 4(f) properties include publicly owned land from a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance; or any land from a historic site of national, state, or local significance. There are no Section 4(f) resources located on airport property.

SUMMARY

The information discussed on the previous pages provides a foundation upon which the remaining elements of

the planning process will be constructed. Information on current airport facilities and utilization will serve as a basis, with additional analysis and data collection, for the development of forecasts of aviation activity and facility requirement determinations. The inventory of existing conditions is the first step in the process of determining those factors which will meet projected aviation demand in the community and the region.

DOCUMENT SOURCES

A variety of sources were used in the inventory of existing facilities. The following listing presents a partial list of reference documents. The list does not reflect some information collected by airport staff or through interviews with airport personnel.

AirNAV Airport information, website: http://www.airnav.com

Airport/Facility Directory, Southwest U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July 2, 2009 Edition

Arizona Department of Commerce

Arizona Department of Economic Security; 2009

Arizona Department of Transportation

Arizona Online Environmental Review Tool, 8/7/2009

ASIS Datasheet Systems, retrieved from: http://avnwww.jccbi.gov/datasheet/

Coolidge Municipal Airport Master Plan, 1997

Coolidge-Florence Regional Transportation Plan, April 2008

City of Coolidge General Plan, 2007

Department of the Air Force, 56th Range Management Office (AETC), Luke Air Force Base, Arizona

FAA 5010 Form, Airport Master Record; 3/12/2009

National Plan of Integrated Airport Systems (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 2009-2013

U.S. Census Bureau

U.S. Department of Commerce, Bureau of Economic Analysis

U.S. Fish and Wildlife Service, *Pinal County Species List*, July 2009

U.S. *Terminal Procedures*, Volume 4 of 4, Department of Transportation, Federal Aviation Administration, March 12, 2009 Edition.

Western Regional Climate Center; 2009

Woods & Poole Economics, *The Complete Economic and Demographic Data Source*, 2008

Chapter Two

FORECASTS

COOLIDGE MUNICIPAL AIRPORT

Coolidge, Arizona

CHAPTER 2

FORECASTS

AIRPORT MASTER PLAN

An important factor in facility planning involves a definition of demand that may reasonably be expected to occur during the useful life of the facility's key components. For Coolidge Municipal Airport, this involves projecting potential aviation demand for a 20-year timeframe. In this Master Plan, forecasts of based aircraft, based aircraft fleet mix, aircraft operations, peaking characteristics, and instrument approaches will be considered which will serve as the basis for facility planning.

The aviation demand forecasts presented in this chapter have been prepared using airport-specific data provided by airport management, as well as data compiled by the Federal Aviation Administration (FAA). Updated national forecasts in the publication *FAA Aerospace Forecast - Fiscal Years 2009-2025* were also referenced for industry trends.

The FAA has oversight responsibility to review and approve aviation forecasts that are submitted to the agency in conjunction with airport planning, including Master Plans. The FAA reviews such forecasts with the objective of including them in its *Terminal Area Forecasts* (TAF) and the *National Plan of Integrated Airport Systems* (NPIAS). In addition, aviation activity forecasts are an important input to the benefit-cost analyses associated with airport development, and the FAA reviews these analyses when federal funding requests are submitted.

As stated in FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems, dated December 4, 2004, forecasts should be:

- Realistic.
- Based on the latest available data.
- Reflective of current conditions at the airport.
- Supported by information in the study.
- Capable of providing adequate justification for airport planning and development.

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

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

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

NATIONAL AVIATION TRENDS

Each year, the FAA updates and publishes a national aviation forecast. Included in this publication are forecasts for passengers, airlines, air cargo, general aviation, and FAA workload measures. The forecasts are prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public.

The current edition when this chapter was prepared was *FAA Aerospace Forecast - Fiscal Years 2009-2025*, published in March 2009. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

Following more than a decade of decline, the general aviation industry was revitalized with the passage of the *General Aviation Revitalization Act* in 1994, which limits the liability on gen-

eral aviation aircraft to 18 years from the date of manufacture. This legislation sparked an interest to renew the manufacture of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry. The high cost of product liability insurance had been a major factor in the decision by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

In the seven years prior to the events of September 11, 2001, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. The economic climate and aviation industry had been recovering until early 2008 when it became clear that an economic downturn was underway. High oil prices and an economic recession caused general aviation activity at FAA air traffic facilities to fall sharply in 2008, declining by 5.6 percent. The downturn in the economy has dampened the near-term prospects for the general aviation industry. As the U.S. and world economy recovers, general aviation demand is anticipated to rebound and grow.

The National Bureau of Economic Research announced that the U.S. economy entered into recession in December 2007. The U.S. economy is undergoing significant structural changes, particularly in the housing and banking sectors as the true prices of assets are being revealed. The combination of the nearly $800 billion fiscal stimulus package and the aggressive monetary policies that have been undertaken are projected to lead the economy out of the recession in the second half of 2009. The Administration calls for the U.S. recession to end by the third quarter in fiscal year 2009 followed by a relatively modest recovery over the next six quarters. Between 2010 and 2013, U.S. economic growth is projected to range between 2.4 and 4.5 percent. Beyond 2013 through the balance of the forecast period, U.S. economic growth is projected to slow to around 2.6 percent per year.

In 2008, there were an estimated 234,015 active general aviation aircraft in the United States. **Exhibit 2A** depicts the FAA forecast for active general aviation aircraft. The FAA projects an average annual increase of 1.0 percent through 2025, resulting in 275,230 active aircraft. Active piston-powered aircraft are expected to decline through 2013, then gradually increase to 170,475 by 2025 for an overall average annual increase of 0.1 percent. This is driven primarily by a 3.9 percent annual increase in piston-powered rotorcraft and growth in experimental and sport aircraft, as single engine fixed-wing piston aircraft are projected to increase at just 0.1 percent annually, and multi-engine fixed-wing piston aircraft are projected to decrease by 1.0 percent per year. This is due, in part, to declining numbers of multi-engine piston aircraft and the expectation that the new, light sport aircraft and the relatively inexpensive microjets will dilute or weaken the replacement market for piston aircraft.

New models of business jets are also stimulating interest for the high-end market. The FAA expects the busi-

ness segment to expand at a faster rate than personal/sport flying. Safety and security concerns combined with increased processing time at commercial terminals make business/corporate flying an attractive alternative. Turbine-powered aircraft (turboprop and jet) are expected to grow at an average annual rate of 3.2 percent over the forecast period. Even more significantly, the jet portion of this fleet is expected to almost double in size in 14 years, with an average annual growth rate of 4.8 percent. The total number of jets in the general aviation fleet is projected to grow from 11,400 in 2008, to 25,165 by 2025.

A significant portion of the turbine aircraft growth is anticipated to occur within the very light jet (VLJ), or microjet aircraft, market. Microjets entered the active fleet in 2007, with the delivery of 143 new aircraft. VLJs are commonly defined as a jet aircraft that weighs less than 10,000 pounds and include aircraft such as the Eclipse 500 and Adams 700 jets. While not categorized by Cessna Aircraft as a VLJ, the Cessna Mustang is a competing aircraft to many of the VLJs expected to reach the market. These jets cost between $1 and $2 million, can takeoff on runways less than 3,000 feet, and cruise at 41,000 feet at speeds in excess of 300 knots. The VLJ manufacturing industry has fallen on hard times in 2008 due to the global economic crisis with Adams Aircraft, Eclipse Aviation, and DayJet filing for bankruptcy and halting operations. Despite these hardships, the VLJ is still expected to have a significant impact on the business jet segment by expanding business jet flying and offering operational costs that can support on-demand air taxi point-to-point service. They are forecast to grow by 200 aircraft per year through 2011 and then increase to a rate of 270 to 300 a year through 2025, contributing a total of 4,875 aircraft to the jet forecast.

Owners of ultralight aircraft began registering their aircraft as "light sport" aircraft in 2005. Light sport aircraft may be operated by holders of a sport pilot certificate. Pilots with a private, recreational, or higher pilot certificate may also fly light sport aircraft, even if their medical certificates have expired, so long as they have a valid driver's license. There are less restrictive maintenance requirements for light sport aircraft as well. These factors have made this aircraft category more popular over the past several years. At the end of 2008, a total of 6,965 aircraft were estimated to be in this category. The FAA estimates this fleet will increase by approximately 930 aircraft per year until 2013, and then taper off to about 300 per year. By 2025, a total of 15,865 light sport aircraft are projected to be in the fleet.

Aircraft utilization rates are projected to increase through the forecast period. The number of general aviation hours flown is projected to increase at 1.8 percent annually. Similar to active aircraft projections, there is projected disparity between piston and turbine aircraft hours flown. Hours flown in turbine aircraft are expected to increase at 3.6 percent annually, compared with 0.4 percent for piston-powered aircraft. Jet aircraft hours flown are projected to increase at 5.2 percent annually over the next 17 years, second only to the sport aircraft

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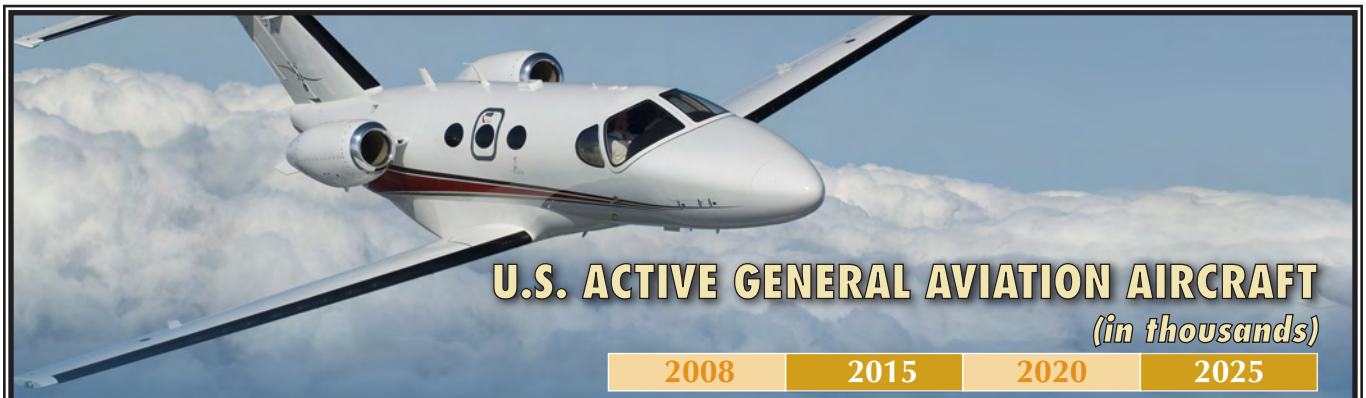
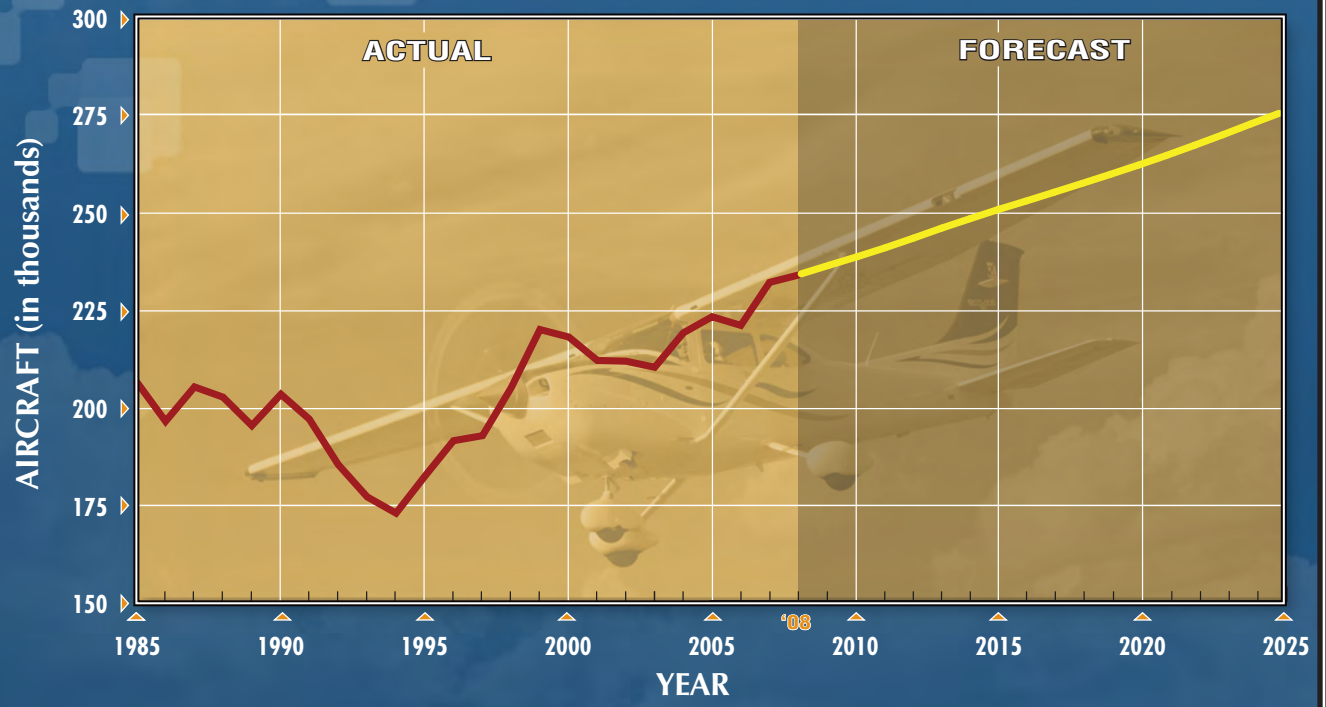


U.S. ACTIVE GENERAL AVIATION AIRCRAFT

(in thousands)

	2008	2015	2020	2025
FIXED WING				
PISTON				
Single Engine	146.6	143.5	144.9	148.5
Multi-Engine	19.1	17.9	17.0	16.0
TURBINE				
Turboprop	9.6	10.5	11.5	12.2
Turbojet	11.4	17.1	20.9	25.2
ROTORCRAFT				
Piston	3.1	4.6	5.3	5.9
Turbine	7.1	9.0	9.9	10.9
EXPERIMENTAL	24.1	29.1	32.0	34.6
SPORT AIRCRAFT	7.0	12.7	14.4	15.9
OTHER	6.0	6.1	6.0	6.0
TOTAL	234.0	250.5	261.8	275.2



Source: FAA Aerospace Forecasts, Fiscal Years 2009-2025.

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

COOLIDGE MUNICIPAL AIRPORT

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

fleet which represents the largest increase in any one category for total aircraft hours flown at 7.1 percent.

The total pilot population is projected to increase by 43,000 in the next 17 years, from an estimated 466,000 in 2008 to 509,900 in 2025, which represents an average annual growth rate of 0.5 percent. The student pilot population is forecast to increase at an annual rate of 0.4 percent, reaching a total of 86,600 in 2025. Growth rates for other pilot categories over the forecast period are as follows: recreational pilots and private pilots remaining constant; commercial pilots increasing 0.6 percent; airline transport pilots increasing 0.3 percent; rotorcraft-only pilots increasing 1.2 percent; and glider-only pilots increasing 0.4 percent. The sport pilot is expected to grow significantly through 2025 at 12.9 percent annually.

Over the past several years, the general aviation industry has launched a series of programs and initiatives whose main goals are to promote and assure future growth within the industry. Several programs are intended to promote growth in new pilot starts and introduce people to general aviation. "Project Pilot," sponsored by the Aircraft Owners and Pilots Association (AOPA), promotes the training of new pilots in order to increase and maintain the size of the pilot population. The Experimental Aircraft Association (EAA) promotes the "Young Eagles" program which introduces young children to aviation by offering them a free airplane ride courtesy of aircraft owners who are part of the association. Over the years, programs such as these have played an important role in the success of general aviation and will continue to be vital to its growth in the future.

AIRPORT SERVICE AREA

In determining the aviation demand for an airport, it is necessary to identify the role of that airport. Coolidge Municipal Airport is classified as a general aviation airport in the NPIAS. As such, the primary role of Coolidge Municipal Airport is to serve the needs of general aviation in the area. General aviation is a term used to describe a diverse range of aviation activities, which includes all segments of the aviation industry except commercial air carriers and military. General aviation is the largest component of the national aviation system and includes activities such as pilot training, recreational flying, and the use of sophisticated turboprop and jet aircraft for business and corporate use. The airport does not currently serve nor is it expected to serve scheduled commercial activity in the future.

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

Typically, the service area for a rural general aviation airport can extend up to 30 miles. The proximity and level of general aviation services are largely the defining factors when describing the general aviation service area. A description of nearby airports was previously completed in Chapter One. Coolidge Municipal Airport is one of several airports in the region, and one of seven public-use airports in Pinal County. Six airports are located within 30 miles of Coolidge Municipal Airport including Eloy Municipal Airport, Casa Grande Municipal Airport, Phoenix-Mesa Gateway Airport, Phoenix Regional Airport, Kearney Airport, and Chandler Municipal Airport. Several other airports are located within 50 miles of Coolidge.

All of the above-mentioned airports present competitive services for aviation demand in the immediate region by providing aircraft fuel, hangars, and maintenance. Eloy Municipal Airport and Casa Grande Municipal Airport, however, present the most competitive facilities in terms of aviation services and facilities in respect to their close proximity to Coolidge Municipal Airport. 100LL Avgas and Jet A fuel, aircraft maintenance, storage hangars, and tiedowns are among several types of aviation services offered at these airports. Eloy Municipal Airport and Casa Grande Municipal Airport, as well as the other airports in the region, will limit the reaches of the Coolidge Municipal Airport general aviation service area.

When discussing the general aviation service area, two primary demand segments need to be addressed. The first component is the airport's ability to attract based aircraft. Almost universally, aircraft owners choose to base at an airport nearer their home or business. Convenience is the most common reason for basing in close proximity. According to airport records, a large percentage of Coolidge Municipal Airport tenants possess an address in Coolidge or the immediate surrounding area. The remaining tenants are located in adjacent cities and towns nearby. The second segment is itinerant aircraft operations. In most cases, transient aircraft operators will also elect to utilize airports nearer their intended destination. This, however, is highly dependent on the airport's capabilities to accommodate the aircraft operator. As a result, the more attractive the facility, the more likely an airport will be to attract a larger portion of the region's itinerant aircraft operations.

Given these considerations, the primary general aviation service area for Coolidge Municipal Airport includes the City of Coolidge. The secondary service area extends into the surrounding areas, especially those with limited general aviation services and/or for areas nearer to Coolidge Municipal Airport. The Town of Florence, located approximately ten miles east-northeast of Coolidge, would be included in the secondary service area for Coolidge Municipal Airport. With a population of approximately 20,800 people and no public-use general aviation airport nearby, the Town of Florence derives a need for general aviation services that could be accommodated at Coolidge Municipal Airport, a relatively short distance away.

The potential for increased aviation demand for Coolidge Municipal Airport lies in the growing population and promising service and business growth within the City of Coolidge and surrounding areas. The forecast analyses conducted in the following sections take into consideration the expected local and regional growth.

FORECASTING APPROACH

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

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

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

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

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

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

It is important to note that one should not assume a high level of confidence in forecasts that extend beyond five

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

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

The following forecast analysis examines each of the aviation demand categories expected at Coolidge Municipal Airport through 2030. Each segment will be examined individually, and then collectively, to provide an understanding of the overall aviation activity at Coolidge Municipal Airport during the next 20 years.

GENERAL AVIATION FORECASTS

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

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

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

BASED AIRCRAFT

The number of based aircraft is the most basic indicator of general aviation demand. By first developing a forecast of based aircraft, other demand elements can be projected based upon this trend. An effective method of forecasting based aircraft at an airport is to first examine aircraft ownership in the surrounding area. The forecasting effort will begin by analyzing historical trends and projecting future demand for registered aircraft in Pinal County. As a result, this information can then be related to the historical trends at Coolidge Municipal Airport and future based aircraft projections can be made.

Registered Aircraft Forecasts

Historical records of aircraft ownership in Pinal County, presented on **Table 2A**, were obtained from the U.S. Census of Civil Aircraft for the years 1989 through 1992, Aviation Goldmine for the years 1993 through 2000, and Avantext, Inc., Aircraft & Airmen for the years 2001 to 2007, and the FAA for years 2008 and 2009. Since 1989, registered general aviation aircraft in the county have grown from 236 to 433, for an annual average growth rate of 3.1 percent.

TABLE 2A
Registered Aircraft and Independent Variables
Pinal County

Year	Registered Aircraft	U.S. Active Aircraft	% of U.S. Market	Population	PCPI (2004 $)	AC Per 1,000 Residents
1989	236	N/A	N/A	112,200	18,503	2.10
1990	245	N/A	N/A	116,379	17,621	2.10
1991	228	N/A	N/A	119,650	17,849	1.91
1992	235	185,650	0.127%	122,600	17,601	1.92
1993	231	177,120	0.130%	127,225	17,739	1.82
1994	243	172,935	0.141%	132,225	17,659	1.84
1995	251	182,605	0.137%	139,050	17,488	1.81
1996	259	187,312	0.138%	144,150	17,739	1.80
1997	277	189,328	0.146%	150,375	17,962	1.84
1998	268	205,700	0.130%	157,675	18,706	1.70
1999	293	219,500	0.133%	165,400	19,198	1.77
2000	310	217,533	0.143%	179,727	19,143	1.72
2001	305	211,446	0.144%	186,795	20,278	1.63
2002	307	211,244	0.145%	192,395	20,201	1.60
2003	305	209,606	0.146%	201,565	20,372	1.51
2004	327	219,319	0.149%	219,780	20,831	1.49
2005	335	224,262	0.149%	246,660	21,987	1.36
2006	356	221,942	0.160%	299,875	21,284	1.19
2007	407	231,606	0.176%	327,670	20,258	1.24
2008	416	234,015	0.178%	350,558	20,396	1.19
2009	433	236,235	0.183%	N/A	20,577	N/A
Constant Market Share of U.S. Active Aircraft						
2015	458	250,450	0.183%	486,363	22,205	0.94
2020	479	261,840	0.183%	609,720	24,021	0.79
2025	504	275,230	0.183%	732,282	26,223	0.69
2030	529	289,305	0.183%	852,463	28,813	0.62
Constant Aircraft Registrations Per 1,000 Population						
2015	579	250,450	0.231%	486,363	22,205	1.19
2020	726	261,840	0.277%	609,720	24,021	1.19
2025	871	275,230	0.317%	732,282	26,223	1.19
2030	1,014	289,305	0.351%	852,463	28,813	1.19

Sources:
Registered Aircraft – U.S. Census of Civil Aircraft (1989-1992), Aviation Goldmine (1993-2000), Avantext, Inc., Aircraft & Airmen (2001-2007), FAA (2008-2009).
U.S. Active Aircraft – *FAA Aerospace Forecast – Fiscal Years 2009-2025*
Population – Arizona Department of Commerce (1989, 1991-1999, 2001-2008, 2015-2030); Census Bureau (1990, 2000)
PCPI – U.S. Department of Commerce, Bureau of Economic Analysis (1987-1999), Woods & Poole *CEDDS*, 2008 (2000-2009, 2015-2030).

Table 2A also compares registered aircraft to active general aviation aircraft in the United States. The method used by the FAA to tabulate active general aviation aircraft changed in 1992, which is why annual counts before this time were not included in this study. The Pinal County share of the U.S. market of general aviation aircraft has grown from 0.127 percent in 1992 to 0.183 percent in 2009.

Socioeconomic Trends

Pinal County historical trends for key socioeconomic variables provide an indicator of the potential for creating growth in aviation activities at an airport. Typical variables used in evaluating potential for traffic growth include population and per capita personal income (PCPI). This data is readily available on an annual historic basis at the county level.

Table 2A presents historical population data for Pinal County from 1989 to 2008. It should be noted that 2009 population estimates for Pinal County have not been released as of the time of this study and, therefore, are not included in the table. Population growth has been strong over the past several years with an increase of 238,358 residents from 1989 to 2008 equating to an average annual percentage increase of 6.2 percent. Much of the recent growth can be attributed to the urban sprawl of the Phoenix metropolitan area.

Historical and projected PCPI for the County is also presented on **Table 2A** and are inflation-adjusted to year 2004 dollars. Inflation-adjusted PCPI for the County has been growing slowly at an annual average of 0.5 percent over the last 20 years. Projected numbers through 2030 show PCPI growing at an increased average annual rate of 1.6 percent.

Registered Aircraft Projections

Based on the historical registered aircraft, U.S. active aircraft, County population, and PCPI data, projections of registered aircraft in Pinal County have been prepared and are shown in **Table 2A**. Several analytical techniques were examined for their applicability to projecting registered aircraft in Pinal County. These included market share analysis, time-series extrapolation, and regression analyses.

First, a market share analysis was developed, which keeps Pinal County's share of U.S. active aircraft constant through 2030 at 0.183 percent, resulting in a 1.0 percent annual growth rate. This constant market share projection yields 529 registered aircraft in Pinal County by 2030. Historical records indicate, however, that Pinal County's market share of U.S. active aircraft has consistently grown over the 20-year period. As a result, an increasing market share forecast was also analyzed internally which yields 650 registered aircraft by 2030.

The population of Pinal County was also used as a comparison with registered aircraft in the County. The forecast examines the history of registered aircraft as a ratio of residents in Pinal County. The 2008 estimated population for the County was 350,558, re-

sulting in a ratio of 1.19 registered aircraft per 1,000 residents. Maintaining the current ratio would yield a projection of 1,014 registered aircraft in Pinal County by 2030. It should be noted that the ratio of County registered aircraft per 1,000 residents has gradually declined since 1989, as depicted on **Table 2A**. A decreasing ratio projects 725 registered aircraft in Pinal County by 2030.

A time-series extrapolation of registered aircraft was developed based upon the period from 1989 to 2009. The correlation coefficient, (r^2), was determined to be 0.97 for this trend line projection, which yields 592 registrations by 2030. As previously discussed, the correlation coefficient (Pearson's "r") measures the association between changes in the dependent variable (registered aircraft) and the independent variable(s). An "r^2" greater than 0.90 generally indicates good predictive reliability. A lower value may be used with the understanding that the predictive reliability is lower.

Several other regression analyses were also prepared to determine the association between U.S. active aircraft, socioeconomic indicators (population and PCPI), and registered aircraft growth. This association is represented by the correlation coefficient. The separate regression analyses project registered aircraft in Pinal County to increase to between 742 and 802 aircraft through 2030. **Table 2B** presents the resulting regression projections for comparison with the market share and ratio projections previously discussed.

The results of the regression analysis indicate that the socioeconomic factor that associates closest with registered aircraft change is population. The time-series analysis resulted in a projection that was considerably lower than the other four regressions and projects a 1.5 percent annual increase through 2030. The multiple regression that analyzed the independent variables of population, U.S. active aircraft, and PCPI since 1992 produced the highest "r^2" at 0.98 and equates to a 2.5 percent annual growth rate for registered aircraft.

Registered Aircraft Summary

Table 2B and the top half of **Exhibit 2B** provide a summary of all registered aircraft forecasts previously discussed. It is determined that the constant market share of U.S. active aircraft and constant ratio of registered aircraft per County population represent a high and low range of projected registered aircraft in the County by 2030. As depicted on **Exhibit 2B**, the constant market share of U.S. active aircraft forecast understates growth potential, as the historical trend in recent years points to a more aggressive registered aircraft forecast. Conversely, the constant ratio of registered aircraft per 1,000 residents may overstate growth potential by having a stronger growth rate than experienced in the past 20 years. Considering that aircraft registrations have grown at 3.1 percent annually during this timeframe, the selected forecast projects registered aircraft in Pinal County increasing to 800 by 2030. This forecast closely mirrors the regression analysis comparing County population and PCPI to registered aircraft, which yielded an "r^2" value of 0.96. As a result, registered aircraft are projected to grow 3.0 percent annually.

TABLE 2B
Registered Aircraft Projections
Pinal County

	r^2	2009	2015	2020	2025	2030	Avg. Annual Growth Rate
Market Share Projection							
Constant Market Share of U.S. Active Aircraft		433	458	479	504	529	1.0%
Constant Aircraft Registrations Per 1,000 Population		433	579	726	871	1,014	4.1%
Regression Analysis Projections							
Time-Series 1989-2009	0.97	433	450	497	545	592	1.5%
US Active Aircraft & Population 1992-2008	0.97	433	502	582	663	742	2.6%
Population 1989-2008	0.96	433	522	617	710	802	3.0%
Population & PCPI 1989-2008	0.95	433	516	608	702	795	2.9%
Population, US Active Aircraft & PCPI 1992-2008	0.98	433	505	581	656	730	2.5%
Selected Forecast		**433**	**500**	**615**	**710**	**800**	**3.0%**

Based Aircraft Forecasts

Determining the number of based aircraft at an airport can be a challenging task. With the transient nature of based aircraft due to the availability and cost of aircraft storage, it can be hard to arrive at an exact number of based aircraft. As a result, airports often do not keep records of based aircraft. Coolidge Municipal Airport maintains a current count based on hangar storage utilization. Unfortunately, an exact count does not exist for previous years. Thus, historical data from the FAA was utilized. While this data is not as accurate as the data maintained by the airport, it is reasonable for use in this study as it presents the FAA's estimate arrived at by on-site visits to prepare the Airport Master Record (FAA Form 5010).

Before preparing new forecasts for based aircraft, previous based aircraft projections were reviewed for current validity. These included the 2008 FAA TAF, 2008 *Arizona State Airports System Plan* (SASP), and the previous *Coolidge Municipal Airport Master Plan* from 1997. Each of the previous forecasts use different base years as well as projection years. For comparison, these forecasts were interpolated and extrapolated to correlate with this Master Plan's projection years. Each of these previous based aircraft forecasts are presented in **Table 2C**. It should be noted that, at the time of this writing, the 2008 Arizona SASP Update is in draft format and currently being finalized by the Arizona Department of Transportation (ADOT) – Aeronautics Group.

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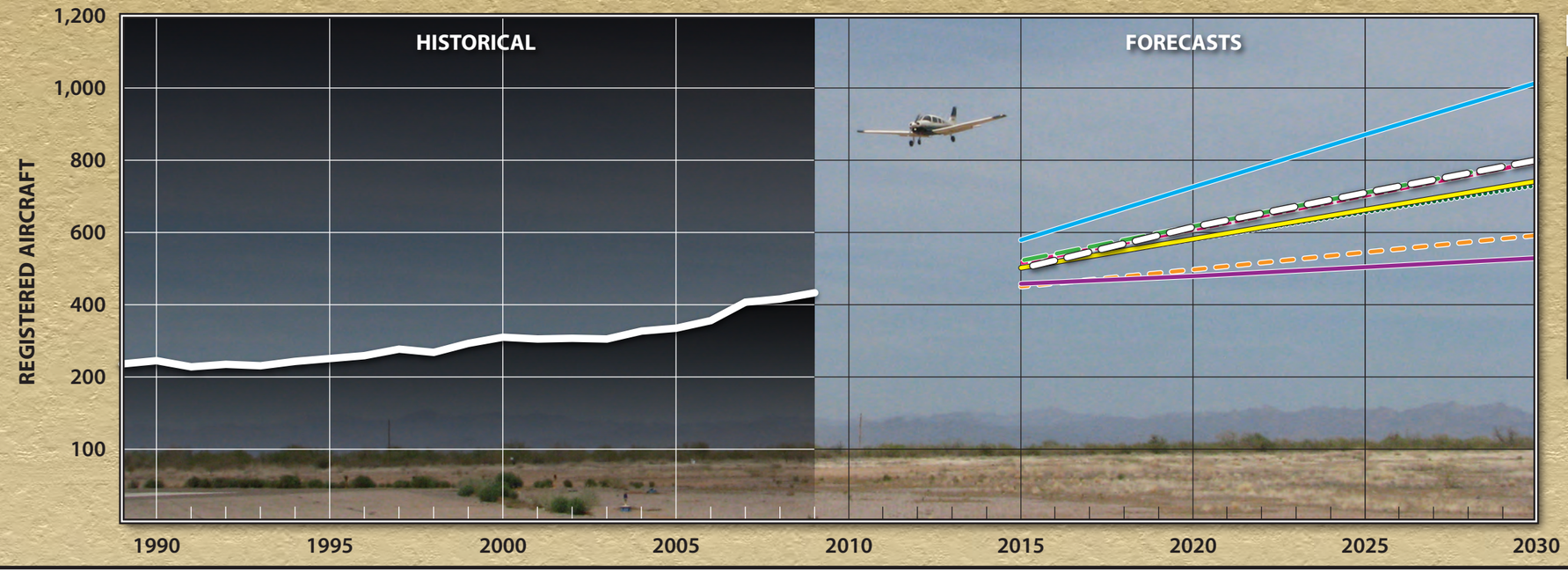
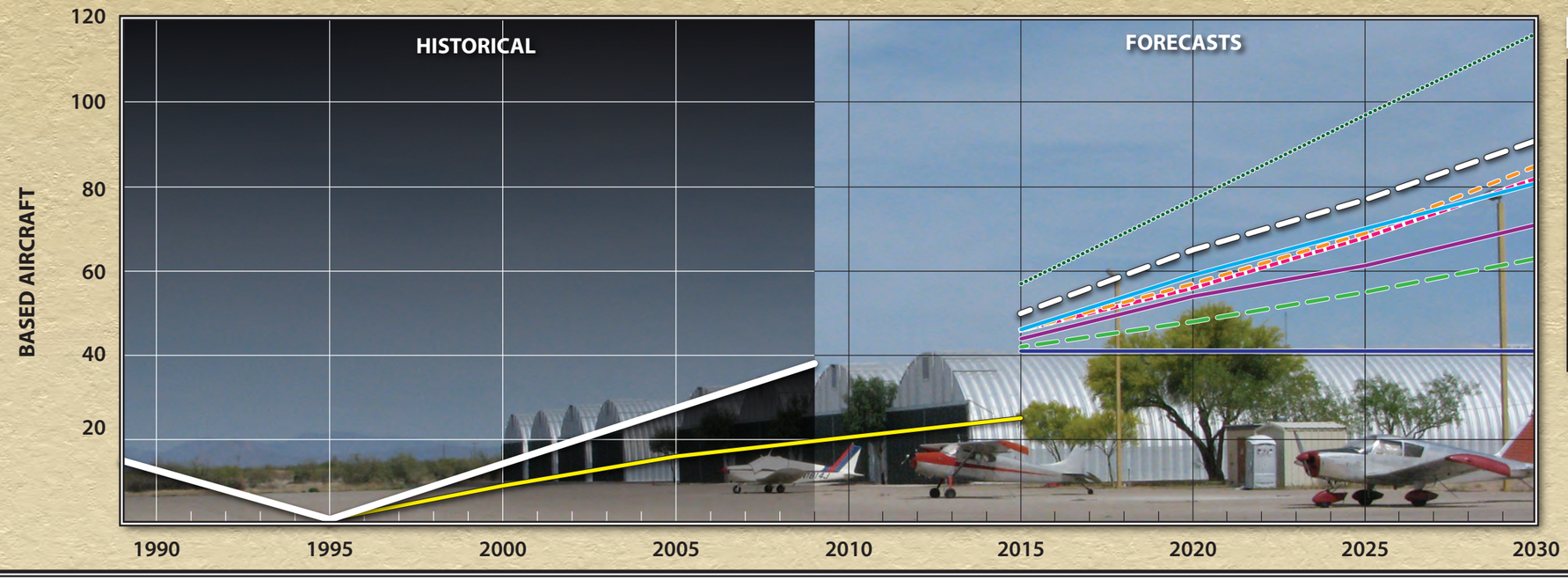
PINAL COUNTY REGISTERED AIRCRAFT



COOLIDGE MUNICIPAL AIRPORT BASED AIRCRAFT



COOLIDGE MUNICIPAL AIRPORT

Exhibit 2B
PINAL COUNTY REGISTERED AIRCRAFT/
COOLIDGE MUNICIPAL AIRPORT BASED AIRCRAFT

TABLE 2C
Previous Based Aircraft Projections
Coolidge Municipal Airport

	Current	Base Year	2015	2020	2025	2030
Airport Records	38					
2008 FAA TAF 2008		41	41	41	41	41**
2008 Arizona SASP – High		34	46*	57*	69*	85
2008 Arizona SASP – Medium		34	46*	56*	68*	82
2008 Arizona SASP – Low		34	42*	48*	55*	63
1997 Airport Master Plan		1	25	N/A	N/A	N/A

*Interpolated; **Extrapolated

Since each of these comparative studies was prepared at different times, it is expected that they will be different from each other and may not match recent historical counts. According to airport records, the current based aircraft count is 38. The 2008 SASP considered 34 aircraft for its base year, which is lower than the actual 2009 based aircraft count. The FAA TAF projection has based aircraft at Coolidge Municipal Airport remaining constant at 41 through the planning period. Finally, the previous Master Plan Update identified only one based aircraft at the airport during its base year of 1996.

Having forecast the aircraft ownership demand in Pinal County, the historic based aircraft figures at Coolidge Municipal Airport were reviewed to examine the change in market share over the years. **Table 2D** examines Coolidge Municipal Airport's historical share of County registered aircraft.

Between 1989 and 2009, Coolidge Municipal Airport based aircraft grew from 15 to 38 at a rate of 4.8 percent annually. As presented in the table, however, the increase in based aircraft did not follow a gradual increasing trend. According to previous records, an active skydiving operation was located at the airport during the late 1980s and early 1990s that supported approximately 15 aircraft that were considered to be based at the airport during this time. Due to a large number of military aircraft operations that were being conducted at Coolidge Municipal Airport during the early 1990s, the skydiving operation vacated the airport, and as a result, the number of based aircraft declined significantly in the mid 1990s to one aircraft. Since this time, several hangars have been constructed at the airport that support an increasing trend in based aircraft and an array of aviation services accommodates the general aviation presence on the field.

During the time period, Coolidge Municipal Airport's share of registered aircraft in the County has grown from 6.4 percent in 1989 to 8.8 percent in 2009. Three market share projections were generated based from historical trends. The first projection keeps the current market share static at 8.8 percent, resulting in 70 based aircraft by 2030 and an annual average growth rate of 3.0 percent.

TABLE 2D
Updated Based Aircraft Projections
Coolidge Municipal Airport

Year	County Registered Aircraft	Coolidge Based Aircraft	% of Registered Aircraft	Coolidge Population*	AC per 1,000 Residents
1989	236	15	6.4%	6,945	2.16
1995	251	1	0.4%	7,055	0.14
2009	433	38	8.8%	12,311	3.09
Average Annual Increase		4.8%		3.1%	
Constant Market Share Projection					
2015	500	44	8.8%	18,558	2.37
2020	615	54	8.8%	24,949	2.17
2025	710	62	8.8%	31,332	1.99
2030	800	70	8.8%	37,609	1.87
Average Annual Increase		3.0%		5.5%	
Increasing Market Share Projection					
2015	500	46	9.1%	18,558	2.45
2020	615	58	9.4%	24,949	2.32
2025	710	70	9.8%	31,332	2.22
2030	800	82	10.2%	37,609	2.17
Average Annual Increase		3.7%		5.5%	
Constant Based Aircraft Per 1,000 Population Projection					
2015	500	57	11.5%	18,558	3.09
2020	615	77	12.5%	24,949	3.09
2025	710	97	13.6%	31,332	3.09
2030	800	116	14.5%	37,609	3.09
Average Annual Increase		5.5%		5.5%	
Selected Forecast					
2015	500	50	10.0%	18,558	2.69
2020	615	65	10.6%	24,949	2.61
2025	710	77	10.8%	31,332	2.46
2030	800	90	11.3%	37,609	2.39
Average Annual Increase		4.2%		5.5%	

Source: Based Aircraft – FAA TAF, 2008 (1989); Coolidge Municipal Airport Master Plan, 1997 (1995); Airport Records, (2009).
Coolidge Population – Arizona Department of Commerce
*2009 estimate for City of Coolidge population was not available; therefore, the 2008 estimate was used.

A second forecast was prepared, which maintains the trend of an increasing market share. This forecast represents a projection based on positive socioeconomic growth in the region and that other regional general aviation airports do not absorb as much of the market growth. This forecast results in 82 based aircraft by 2030.

A third forecast was prepared, which maintains Coolidge Municipal Airport's ratio of based aircraft per 1,000 residents. This results in a healthy

5.5 percent annual growth rate which yields 116 based aircraft by 2030.

Based Aircraft Summary

Future based aircraft at Coolidge Municipal Airport will depend on several factors, including the state of the economy, fuel costs, available airport facilities, and competing airports. Forecasts assume a reasonably stable and growing economy after a short term decline, as well as reasonable development of airport facilities necessary to accommodate aviation demand. Competing airports will play a role in deciding regional demand shifts; however, Coolidge should fare well in this competition as it is served by a crosswind runway system and is fully capable of being expanded to meet future demand.

Deciding which forecast or combination of forecasts to use to arrive at a final based aircraft forecast involves more than just statistical analysis. Consideration must be given to the current and future aviation conditions at the airport in the short term. For example, Coolidge Municipal Airport has improved in a manner to be more attractive to aircraft owners. Several new aircraft storage hangars have been constructed in recent years to better serve the aviation community, and existing airport businesses have experienced growth in activity.

The city has given every indication that it plans to continue strong support of its airport and, as such, the constant market share projection appears to be too conservative given that the market share of registered aircraft has increased over the previous 20 years. The City of Coolidge has made a concerted and successful effort to position the airport to accommodate and accept growth. As a result, the airport should be fully capable of maintaining at least an increasing market share trend. The constant ratio of based aircraft per 1,000 residents' projection appears to be too aggressive given the short term economic outlook and resultant strong market share return when compared to the historical trend.

The selected based aircraft forecast is presented in **Table 2D** and depicted on the bottom half of **Exhibit 2B**. The projection most closely follows the increasing market share of the county's registered aircraft. As detailed, the forecast considers 50 aircraft by 2015, 65 aircraft by 2020, 77 aircraft by 2025, and 90 aircraft by 2030. This equates to a 4.2 percent average annual growth rate.

BASED AIRCRAFT FLEET MIX

Knowing the aircraft fleet mix expected to utilize the airport is necessary to properly plan for facilities that will best serve the level of activity and the type of activities occurring at the airport. The existing based aircraft fleet mix is comprised of 22 single engine aircraft, two multi-engine aircraft, eight turboprop aircraft, four jets, one helicopter, and one ultralight.

As detailed previously, the national trend is toward a larger percentage of sophisticated turboprop aircraft, jet aircraft, and helicopters in the nation-

al fleet. Active multi-engine piston aircraft are expected to be the only category of aircraft which shows a decrease in annual growth. Growth within each based aircraft category at the airport has been determined by comparison with national projections (which reflect current aircraft production) and consideration of local economic conditions.

The based aircraft fleet mix at Coolidge Municipal Airport, as shown on **Table 2E**, was compared to the existing and forecast U.S. general aviation fleet mix trends as presented in *FAA Aerospace Forecast - Fiscal Years 2009-2025*. The FAA expects business jets will continue to be the fastest growing general aviation aircraft type in the future. The number of business jets in the industry fleet is expected to almost double in the next 15 years. Single engine piston aircraft (including sport aviation and experimental aircraft), helicopter, and turboprop aircraft are expected to grow at slower rates. The number of multi-engine piston aircraft in the U.S. will actually decline slightly as older aircraft are retired, according to FAA forecasts.

TABLE 2E
Based Aircraft Mix Forecast
Coolidge Municipal Airport

	2009		2015		2020		2025		2030*	
	#	%	#	%	#	%	#	%	#	%
Coolidge Municipal Airport Based Aircraft										
Single Engine Piston	22	57.9%	30	60.0%	40	61.6%	49	63.6%	57	63.3%
Multi-Engine Piston	2	5.3%	3	6.0%	3	4.6%	4	5.2%	4	4.4%
Turboprop	8	21.1%	9	18.0%	11	16.9%	12	15.6%	14	15.6%
Jet	4	10.5%	5	10.0%	7	10.8%	8	10.4%	10	11.1%
Rotorcraft	1	2.6%	2	4.0%	3	4.6%	3	3.9%	4	4.4%
Other	1	2.6%	1	2.0%	1	1.5%	1	1.3%	1	1.2%
Totals	**38**	**100.0%**	**50**	**100.0%**	**65**	**100.0%**	**77**	**100.0%**	**90**	**100.0%**
U.S. Active Aircraft (from FAA Aerospace Fiscal Years [2009-2025])										
Single Engine Piston	178,460	75.5%	185,320	74.0%	191,270	73.0%	199,035	72.3%	206,356	71.3%
Multi-Engine Piston	18,965	8.0%	17,910	7.2%	16,965	6.5%	16,005	5.8%	15,099	5.2%
Turboprop	9,665	4.1%	10,540	4.2%	11,480	4.4%	12,245	4.4%	13,061	4.5%
Jet	12,325	5.2%	17,100	6.8%	20,945	8.0%	25,165	9.1%	30,235	10.5%
Rotorcraft	10,760	4.6%	13,520	5.4%	15,170	5.8%	16,795	6.1%	18,594	6.4%
Other	6,060	2.6%	6,060	2.4%	6,010	2.3%	5,985	2.2%	5,960	2.1%
Totals	**236,235**	**100.0%**	**250,450**	**100.0%**	**261,840**	**100.0%**	**275,230**	**100.0%**	**289,305**	**100.0%**

Note: Experimental and sport aircraft are included under single engine piston.
Total percentages may not equal 100.0 due to rounding.
*2030 U.S. Active Aircraft figures were extrapolated.

ANNUAL OPERATIONS

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

Coolidge Municipal Airport operations are comprised mainly of general aviation operations. Since Coolidge Municipal Airport is not a towered airport, precise operations records are

not available. Sources for estimated operational activity at Coolidge Municipal Airport such as the FAA Form 5010, Airport Master Record, the FAA TAF, and the SASP have largely varying accounts of operational traffic. Therefore, for this study, an FAA-approved statistical methodology for estimating general aviation operations using local variables was utilized to update the operations count.

This method, the *Model for Estimating General Aviation Operations at Non-Towered Airports*, was prepared for the FAA Statistics and Forecast Branch in July 2001. This report develops and presents a regression model for estimating general aviation operations at non-towered airports. The model was derived using a combined data set for small towered and non-towered general aviation airports and incorporates a dummy variable to distinguish the two airport types. In addition, the report applies the model to estimate activity at 2,789 non-towered general aviation airports contained in the FAA *Terminal Area Forecast*. The estimate of annual operations at Coolidge Municipal Airport was computed using the recommended equation (#15) for non-towered airports. Independent variables used in the equation include airport characteristics (i.e., number of based aircraft, number of flight schools), population totals, and geographic location. This equation yields an annual general aviation operations estimate of approximately 16,700 for 2009. This estimate does not take into account an estimated 4,000 annual local general aviation operations conducted by Complete Parachute Solutions, related to specialty military parachute training operations. With these estimated specialty operations included, a baseline general aviation operations count of 20,700 can be established. Local and itinerant operation percentages for 2009 were derived from the FAA TAF estimates (61 percent and 39 percent, respectively). The inclusion of the estimated specialty operations results in a general aviation local/itinerant operational split of 70 percent and 30 percent, respectively.

Itinerant Operations

Table 2F depicts estimated general aviation itinerant operations at Coolidge Municipal Airport for 2009. This data shows a market share of 0.038 percent of all general aviation itinerant operations reported at airports with an airport traffic control tower. This also equates to 163 itinerant operations per based aircraft.

In *FAA Aerospace Forecast - Fiscal Years 2009-2025*, the FAA projects itinerant general aviation operations at towered airports. **Table 2F** presents this forecast, as well as a projection for Coolidge Municipal Airport, based upon maintaining its current share of the itinerant general aviation operations market. This forecast has itinerant operations reaching 8,493 by 2030.

TABLE 2F
General Aviation Itinerant Operations Forecast
Coolidge Municipal Airport

Year	Itinerant Operations	U.S. ATCT GA Itinerant (millions)	Coolidge Market Share	Coolidge Based Aircraft	Itinerant Ops Per Based Aircraft
2009	6,200	16.16	0.038%	38	163
Constant Market Share Projection					
2015	6,584	17.33	0.038%	50	121
2020	7,106	18.70	0.038%	65	101
2025	7,768	20.44	0.038%	77	93
2030	8,493	22.35	0.038%	90	87
Constant Operations Per Based Aircraft Projection					
2015	8,150	17.33	0.047%	50	163
2020	10,595	18.70	0.057%	65	163
2025	12,551	20.44	0.061%	77	163
2030	14,670	22.35	0.066%	90	163
2008 Arizona State Airports System Plan – High Range					
2015	7,877	17.33	0.045%	41	192
2020	9,563	18.70	0.051%	51	188
2025	11,558	20.44	0.057%	69	168
2030	13,968	22.35	0.063%	85	164
2008 Arizona State Airports System Plan – Medium Range					
2015	7,162	17.33	0.041%	41	175
2020	8,191	18.70	0.044%	50	164
2025	9,349	20.44	0.046%	68	137
2030	10,670	22.35	0.048%	82	130
2008 Arizona State Airports System Plan – Low Range					
2015	6,129	17.33	0.035%	39	157
2020	6,317	18.70	0.034%	44	144
2025	6,502	20.44	0.032%	55	118
2030	6,693	22.35	0.030%	63	106
FAA Terminal Area Forecast					
2015	2,470	17.33	0.014%	41	60
2020	2,470	18.70	0.013%	41	60
2025	2,470	20.44	0.012%	41	60
2030	2,470	22.35	0.011%	41	60
Master Plan Forecast					
2015	7,500	17.33	0.043%	50	150
2020	8,900	18.70	0.048%	65	137
2025	10,500	20.44	0.051%	77	136
2030	12,500	22.35	0.056%	90	139

Note: The 2008 SASP figures were interpolated by Coffman Associates.

The table also displays the findings of an analysis that examined the relationship of annual operations to based aircraft. The second projection in **Table 2F** reflects the itinerant operational levels that could be expected if the operations per based aircraft ratio were to remain constant into the future. This forecast results in 14,670 itinerant general aviation operations by 2030.

The 2008 SASP produced three scenarios for operational growth at Coolidge Municipal Airport based on low, medium, and high range operations enve-

lopes. The annual itinerant operations are projected to range from a low of 6,693 to a high of 13,968. For comparison, the FAA TAF projections are also presented and keep annual itinerant operations static at 2,470 through 2030.

The selected Master Plan itinerant general aviation operations forecast takes into account the growth potential associated with the Coolidge community and surrounding areas. As the area's population and economy grow, Coolidge Municipal Airport's market share of itinerant general aviation operations should also grow. Also, as the airport facilities and services improve over the planning period, it can be expected that more itinerant general aviation aircraft will choose to utilize Coolidge Municipal Airport over other airports in the region. In addition, as the based aircraft level rises, the ratio of itinerant general aviation operations to based aircraft should lower to a level more relative to general aviation airports in the region. The selected Master Plan forecast, shown at the bottom of **Table 2F**, has itinerant general aviation operations at Coolidge Municipal Airport growing to 7,500 by 2015; 8,900 by 2020; 10,500 by 2025; and 12,500 by 2030. This equates to a 3.5 average annual growth rate.

Local Operations

A similar methodology was utilized to forecast local general aviation operations. **Table 2G** depicts estimated local operations at Coolidge Municipal Airport in 2009 and examines its market share of general aviation local operations at towered airports in the United States. In 2009, Coolidge Municipal Airport experienced 0.110 percent of all local general aviation operations at towered airports. This also equates to 382 local general aviation operations per based aircraft. Typically, airports with active flight training schools can average up to 500 local operations per based aircraft. Coolidge Municipal Airport does not have an active flight school located on the field; however, the number of local aircraft operations conducted by Complete Parachute Solutions, related to its military parachute training operations, plays a direct role in maintaining a rather high number of local operations per based aircraft.

Table 2G presents a market share projection based upon carrying forward a constant share of 0.110 percent. This projection results in 16,268 local general aviation operations by 2030.

The second projection in **Table 2G** examines local operations based on the operations per based aircraft remaining static at 382 through the planning period. This projection results in 34,380 local operations by 2030.

TABLE 2G
General Aviation Local Operations Forecast
Coolidge Municipal Airport

Year	Local Operations	U.S. ATCT GA Local (millions)	Coolidge Market Share	Coolidge Based Aircraft	Local Ops Per Based Aircraft
2009	14,500	13.18	0.110%	38	382
Constant Market Share Projection					
2015	14,642	13.31	0.110%	50	293
2020	14,953	13.59	0.110%	65	230
2025	15,596	14.18	0.110%	77	203
2030	16,268	14.79	0.110%	90	181
Operations Per Based Aircraft Projection					
2015	19,100	13.31	0.143%	50	382
2020	24,830	13.59	0.183%	65	382
2025	29,414	14.18	0.207%	77	382
2030	34,380	14.79	0.232%	90	382
FAA Terminal Area Forecast					
2015	3,970	13.31	0.030%	41	97
2020	3,970	13.59	0.029%	41	97
2025	3,970	14.18	0.028%	41	97
2030	3,970	14.79	0.027%	41	97
Master Plan Forecast					
2015	16,800	13.31	0.126%	50	336
2020	19,900	13.59	0.146%	65	306
2025	22,500	14.18	0.159%	77	292
2030	25,300	14.79	0.171%	90	281

Although not depicted in **Table 2G**, the 2008 SASP was used for comparison purposes. As with itinerant operations, this study projected a low, medium, and high range operations envelope for local operations at Coolidge Municipal Airport. These projections ranged from 207 to 432 annual local operations at the airport by 2030. Due to the fact that the airport is already experiencing annual local operations well above these projected numbers, the SASP will not be further considered in reaching a selected forecast for annual local operations. The FAA TAF also projects annual local operations. As with forecast itinerant operations, the TAF shows no growth in local operations through 2030.

It is anticipated that Coolidge Municipal Airport will continue to be used by Complete Parachute Solutions in order to conduct parachute training operations and, thus, play a major role in contributing to the number of local operations at the airport. The level of local activity will also be dependent upon the number of aircraft basing at the airport and potential flight schools that could potentially utilize the facility. The selected Master Plan local general aviation operations forecast, shown at the bottom of **Table 2G**, has local operations growing to 16,800 by 2015; 19,900 by 2020; 22,500 by 2025; and 25,300 by 2030. This is a growth rate of 2.7 percent annually.

Annual General Aviation Operations Summary

Table 2H depicts estimated 2009 general aviation operations at Coolidge Municipal Airport, as well as the updated Master Plan projections. Total general aviation operations are projected to reach 37,800 annually by 2030. This yields a growth rate of 3.0 percent over the planning period. Itinerant operations are projected to increase to 33 percent of total operations by the end of the planning period. This is consistent with the type of activity at the airport.

TABLE 2H
General Aviation Operations Forecast Summary
Coolidge Municipal Airport

Year	Total Operations	Itinerant Operations	Local Operations	Based Aircraft	Itinerant Ops/BA	Local Ops/BA
2009	20,700	6,200	14,500	38	163	382
Master Plan Forecast						
2015	24,300	7,500	16,800	50	150	336
2020	28,800	8,900	19,900	65	137	306
2025	33,000	10,500	22,500	77	136	292
2030	37,800	12,500	25,300	90	139	281

Military

Military operations account for the smallest portion of the operational traffic at Coolidge Municipal Airport. Military activity has been estimated at approximately 100 operations annually. Unless there is an unforeseen mission change in the area, a significant change from these military operational levels is not anticipated. Therefore, annual military operations have been projected at 100 throughout the planning period. This is consistent with typical industry practices for projecting military operations.

PEAKING CHARACTERISTICS

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

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

Without an ATCT, adequate operational information is not available to directly determine peak operational activity at the airport. Therefore, peak period forecasts have been determined according to trends experienced at similar airports and by examining the operational counts estimated at the airport in 2009.

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

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

TABLE 2J
Peak Period Forecasts
Coolidge Municipal Airport

	2009	2015	2020	2025	2030
Annual Operations	20,800	24,400	28,900	33,100	37,900
Peak Month	2,496	2,928	3,468	3,972	4,548
Design Day	83	98	116	132	152
Busy Day	104	123	145	165	190
Design Hour	12	15	17	20	23

Source: Coffman Associates analysis

ANNUAL INSTRUMENT APPROACHES

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

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

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

SUMMARY

This chapter has provided demand-based forecasts of aviation activity at Coolidge Municipal Airport over the next 20 years. An attempt has been made to define the projections in terms of short (1-5 years), intermediate (6-10 years), and long (11-20 years) term expectations. Elements such as local socioeconomic indicators, anticipated regional development, and historical aviation data, as well as national aviation trends, were all considered when determining future conditions.

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

	2009	2015	2020	2025	2030
OPERATIONS FORECASTS					
Itinerant Operations					
General Aviation	6,200	7,500	8,900	10,500	12,500
Military	100	100	100	100	100
Total Itinerant	*6,300*	*7,600*	*9,000*	*10,600*	*12,600*
Local Operations					
General Aviation	14,500	16,800	19,900	22,500	25,300
Total Operations	***20,800***	***24,400***	***28,900***	***33,100***	***37,900***
Peak Period Forecasts					
Peak Month	2,496	2,928	3,468	3,972	4,548
Design Day	83	98	116	132	152
Busy Day	104	123	145	165	190
Design Hour	12	15	17	20	23
BASED AIRCRAFT FORECASTS					
Single Engine Piston	22	30	40	49	57
Multi-engine Piston	2	3	3	4	4
Turboprop	8	9	11	12	14
Jet	4	5	7	8	10
Rotorcraft	1	2	3	3	4
Other	1	1	1	1	1
Total Based Aircraft	***38***	***50***	***65***	***77***	***90***
ANNUAL INSTRUMENT APPROACHES					
	NA	75	90	105	125

COOLIDGE MUNICIPAL AIRPORT

Exhibit 2C
FORECAST SUMMARY

Chapter Three

FACILITY REQUIREMENTS

COOLIDGE MUNICIPAL AIRPORT

Coolidge, Arizona

CHAPTER 3

FACILITY REQUIREMENTS

AIRPORT MASTER PLAN

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

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

PLANNING HORIZONS

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

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

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

TABLE 3A
Planning Horizon Activity Levels
Coolidge Municipal Airport

	2009	Short Term	Intermediate Term	Long Term
Itinerant Operations				
General Aviation	6,200	7,500	8,900	12,500
Military	100	100	100	100
Total Itinerant	6,300	7,600	9,000	12,600
Local Operations				
General Aviation	14,500	16,800	19,900	25,300
Total Local	14,500	16,800	19,900	25,300
TOTAL OPERATIONS	**20,800**	**24,400**	**28,900**	**37,900**
TOTAL BASED AIRCRAFT	**38**	**50**	**65**	**90**

AIRFIELD PLANNING CRITERIA

The selection of appropriate Federal Aviation Administration (FAA) design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or are expected to use the airport. The critical design aircraft is used to define the design parameters for the airport. The critical design aircraft is defined as the most demanding category of aircraft, or family of aircraft, which conducts at least 500 operations per year at the airport. Planning for future aircraft use is of particular importance since design standards are used to plan many airside and landside components. These future standards must be considered now to en-

sure that short term development does not preclude the long range potential needs of the airport.

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

According to FAA Advisory Circular (AC) 150/5300-13, Change 14, *Airport Design*, an aircraft's approach category is based upon 1.3 times its stall speed in landing configuration at that aircraft's maximum certificated weight. The five approach categories used in airport planning are as follows:

Category A: Speed less than 91 knots.
Category B: Speed 91 knots or more, but less than 121 knots.
Category C: Speed 121 knots or more, but less than 141 knots.
Category D: Speed 141 knots or more, but less than 166 knots.
Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon either the aircraft's wingspan or tail height, whichever is greater. For example, an aircraft may fall in ADG II for wingspan at 70 feet, but ADG III for tail height at 33 feet. This aircraft would be classified under ADG III. **Table 3B** describes the six ADGs used in airport planning.

TABLE 3B
Airplane Design Groups

Airplane Design Group	Tail Height (feet)	Wingspan (feet)
I	Less than 20	Less than 49
II	Greater than 20, but less than30	Greater than 49 but less than 79
III	Greater than 30 but less than 45	Greater than 79 but less than 118
IV	Greater than 45 but less than 60	Greater than 118 but less than 171
V	Greater than 60 but less than 66	Greater than 171 but less than 214
VI	Greater than 66 but less than 80	Greater than 214 but less than 262

Source: FAA AC 150/5300-13, Change 14, *Airport Design*

The FAA recommends designing airport functional elements to meet the requirements for the most demanding ARC for that airport. The majority of aircraft currently operating at the airport are small single engine aircraft weighing less than 12,500 pounds. The airport also has recorded a num-

ber of turboprop and jet aircraft operations to include the King Air 100 and Cessna Citation family. In addition, larger aircraft to include the Lockheed C-130 utilize the airport on a regular basis in association with aviation activities conducted by International Air Response, a specialty business operator located at Coolidge Municipal Airport.

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

CRITICAL AIRCRAFT

As previously discussed, the critical design aircraft is defined as the most demanding category or family of aircraft which conducts at least 500 annual operations at the airport. In some cases, more than one specific make and model of aircraft comprises the airport's critical design aircraft. For example, one category of aircraft may be the most critical in terms of approach speed, while another is most critical in terms of wingspan. Smaller general aviation piston-powered aircraft within approach categories A and B and ADG I conduct the majority of operations at Coolidge Municipal Airport. Turboprops and jets with longer wingspans and higher approach speeds also utilize the airport, but less frequently. While the airport is also utilized by helicopters, they are not included in this determination as they are not assigned an ARC.

There are currently 38 based aircraft at Coolidge Municipal Airport. The majority of these are single engine piston-powered aircraft which fall within approach category A and ADG I. There are eight turboprop aircraft which are also based at the airport. They include a Cessna 210, King Air 100, TBM 700, and five Lockheed C-130s. These aircraft range from ARC A-I through C-IV. In addition, four jets are based at the airport to include a Cessna 525, L-29, A-37, and Mig 17. These aircraft belong in ARCs B-II, B-I, B-I, and C-I, respectively. Before making a final determination of the critical aircraft family, an examination of the transient turboprop and jet aircraft using the airport should also be considered.

A wide range of transient turboprop and jet aircraft operate at the airport. In order to discern the number and type of turboprop and jet operations at Coolidge Municipal Airport, an analysis of instrument flight plan data was conducted. Flight plan data was acquired for this study from the subscription service, *Airport IQ*. The data available includes documentation of flight plans that are opened or closed on the ground at the airport. Flight plans that are opened or closed from the air are not credited to the airport. Therefore, it is likely that there are more turboprop and jet operations at the airport that are not captured by this methodology. Additionally, some turboprops and jets may conduct operations within the traffic pattern at the

06MP12-3A-8/19/09

A-I

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

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

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

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

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

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

- Super King Air 350
- Beech 1900
- Jetstream 31
- Falcon 10, 20, 50
- Falcon 200, 900
- **Citation II**, III, IV, V
- Saab 340
- Embraer 120

A-III, B-III

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

C-I, D-I

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

C-II, D-II

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

C-III, D-III

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

C-IV, D-IV

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

D-V

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

Note: Aircraft pictured is identified in bold type.

COOLIDGE MUNICIPAL AIRPORT

Exhibit 3A
AIRPORT REFERENCE CODES

airport. These local operations are also not captured on instrument flight plans. From these records, approximately 50 combined operations by turboprop and jet aircraft in ARCs B-I and B-II were conducted at Coolidge Municipal Airport during a one-year timeframe from August 2008 to August 2009. The ARC B-I classification included the King Air 100 and Eclipse 500. The lone ARC B-II aircraft that was reported at the airport was a Cessna Citation 525.

Another segment of corporate aviation users operate under Federal Aviation Regulation (F.A.R.) Part 135 (air taxi) rules for hire and through fractional-ownership programs. Air taxi operators are governed by the FAA rules which are more stringent than those required for private aircraft owners. For example, aircraft operating under Part 135 rules must increase their calculated landing length requirements by 20 percent for safety factors. Fractional-ownership operators are actual aircraft owners who acquire a portion of an aircraft with the ability to use any aircraft in the program's fleet. These programs have become quite popular over the last several years, especially since 9/11. Some of the most notable fractional ownership programs include NetJets, Bombardier Flexjet, Citation Shares, and Flight Options. During the one-year timeframe from August 2008 to August 2009, *Airport IQ* recorded no air taxi operations at Coolidge Municipal Airport. As previously discussed, it is possible that these types of operations did occur at the airport during this time and were not recorded due to the fact that an aircraft may not have opened or closed a flight plan while on the ground at the airport.

Critical Aircraft Design Conclusion

Coolidge Municipal Airport is currently utilized by all types of general aviation aircraft ranging from small single engine piston-powered aircraft up to large turboprop and business jet aircraft. The largest based aircraft in terms of ARC will often account for the design standard to be applied to the airport. The largest aircraft currently based at Coolidge Municipal Airport is the Lockheed C-130, which is categorized as an ARC C-IV aircraft. As previously discussed, there are five C-130s currently based at the airport, all of which are associated with International Air Response. According to company management, there is an average of ten C-130 operations conducted at the airport on a weekly basis. As a result, annual operations by C-130 aircraft would exceed the 500 annual operations threshold as determined by the FAA to define the critical aircraft.

The analysis also examined the itinerant aircraft operating at the airport. At non-towered airports, determining a reasonable operational count by aircraft type can be difficult. Data provided by *Airport IQ* gives a good representation of the types of aircraft utilizing the airport. As previously discussed, this database recorded several transient operations by turboprop and jet aircraft in ARC B-I and B-II; however, not to the magnitude of 500 operations during the one-year time-

frame. In addition, none of the aircraft recorded were as demanding as the C-130 aircraft that are currently based at the airport. Given these considerations, the current critical aircraft at Coolidge Municipal Airport is the Lockheed C-130 that falls into ARC C-IV design criteria.

The aviation demand forecasts indicate the potential for continued growth in business jet and turboprop aircraft activity at the airport. This includes the addition of four based turboprops and four based jets through the long term planning period. Itinerant business jet and turboprop activity can also be expected to increase at the airport due to the types of specialty aviation business operators based on the field and the potential for increased support of aviation use in the airport's service area to include the City of Coolidge and Town of Florence.

Coolidge Municipal Airport is capable of serving the full breadth of piston-powered and turboprop general aviation aircraft. The airport is also capable of serving a large percentage of business jet aircraft in the fleet today. Future business jet and turboprop aircraft which could base and/or operate at the airport will likely mirror current conditions, however, in higher volumes. Furthermore, higher levels of aircraft operations by larger and more sophisticated aircraft such as the Cessna 650 and 750 (Citation X), Challenger 600, and Gulfstream family could utilize the airport on a more frequent basis in the future. These aircraft are included in approach categories C and D.

In addition, it is expected that International Air Response will continue to conduct business at the airport that will involve the Lockheed C-130 turboprop aircraft. According to the company, future aircraft including the Douglas DC-8, an ARC C-IV design aircraft, could also utilize the airport in the event that additional runway length was provided. Considering the based aircraft fleet mix forecast as well as the future transient aircraft mix, ultimate planning should continue to conform to ARC C-IV design standards.

While the airport in general should be positioned to meet ARC C-IV standards, each runway should be individually considered based on function. Primary Runway 5-23 is the airport's longest runway and is served by two non-precision instrument approaches. As such, Runway 5-23 should be planned to conform to all applicable ARC C-IV design standards. Runway 17-35 serves to accommodate small aircraft, especially when crosswinds prohibit the use of Runway 5-23. It can also provide a vital role of serving all aircraft operations when the primary runway is closed for maintenance or emergencies. As such, crosswind Runway 17-35 should be designed to conform to full ARC B-II design standards.

The airfield facility requirements outlined in this chapter correspond to the design standards described in FAA's AC 150/5300-13, Change 14, *Airport Design*. The following airfield facilities are outlined to describe the scope of facilities that would be necessary to accommodate the airport's role throughout the planning period.

AIRFIELD CAPACITY

Airfield capacity is measured in a variety of different ways. The **hourly capacity** of a runway measures the maximum number of aircraft operations that can take place in an hour. The **annual service volume (ASV)** is an annual level of service that may be used to define airfield capacity needs. **Aircraft delay** is the total delay incurred by aircraft using the airfield during a given timeframe. FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, provides a methodology for examining the operational capacity of an airfield for planning purposes. This analysis takes into account specific factors about the airfield.

- **Runway Configuration** – The existing airfield configuration consists of a crosswind runway system with taxiways serving both runways. Primary Runway 5-23 is 5,562 feet long by 150 feet wide, while crosswind Runway 17-35 is 3,871 feet long by 75 feet wide.

- **Runway Use** – Runway use in capacity conditions will be controlled by wind and/or airspace conditions. For Coolidge Municipal Airport, the direction of take-offs and landings are generally determined by the speed and direction of the wind. It is generally safest for aircraft to take-off and land into the wind, avoiding a crosswind (wind that is blowing perpendicular to the travel of the aircraft) or tailwind components during these operations. Based upon information received from wind data obtained for the area, Runway 5-23 is more favorably oriented for predominant winds. Runway 5-23 is also served by published instrument approach procedures. Crosswind Runway 17-35 is primarily utilized by small aircraft during times when high crosswind components dictate.

- **Exit Taxiways** – Exit taxiways have a significant impact on airfield capacity since the number and location of exits directly determines the occupancy time of an aircraft on the runway. Based upon mix, only taxiways between 2,000 feet and 4,000 feet from the landing threshold count in the exit rating. Runways 5-23 and 17-35 are credited for one exit in each direction under this analysis.

- **Weather Conditions** – The airport operates under visual meteorological conditions (VMC) a large majority of the time. For purposes of this study, it was determined that VMC conditions prevailed approximately 99 percent of the time. As a result, instrument meteorological conditions (IMC) and poor visibility conditions (PVC) combined occur one percent of the time.

- **Aircraft Mix** – Aircraft mix for the capacity analysis is defined in terms of four aircraft classes. Classes A and B consist of small and medium-sized propeller and some jet aircraft, all weighing 12,500 pounds or less. These aircraft are associated primarily with general aviation activity, but do include some air taxi, air cargo, and commuter aircraft. Class C consists

of aircraft weighing between 12,500 pounds and 300,000 pounds. These aircraft include most business jets and some turboprop aircraft. Class D aircraft consists of large aircraft weighing more than 300,000 pounds. The airport does not experience operations by Class D aircraft; however, Class C operations are estimated to be about five percent of total annual operations. The remainder is operations by Class A and B aircraft.

- **Percent Arrivals** – Percent arrivals generally follow the typical 50/50 percent split.

- **Touch-and-Go Activity** – Current local operations account for approximately 70 percent of total annual operations. This figure will likely decrease through the planning period due to a projected increase in itinerant operations. Local activity is projected to decrease as a percentage of total airport operations to 65 percent by the long term planning period.

- **Peak Period Operations** – For the airfield capacity analysis, average daily operations and average peak hour operations during the peak month, as calculated in the previous section, are utilized. Typical operations activity is important in the calculation of an airport's annual service volume as "peak demand" levels occur sporadically. The peak periods used in the capacity analysis are representative of normal operational activity and can be exceeded at various times throughout the year.

CAPACITY ANALYSIS CONCLUSIONS

Given the factors outlined above, the airfield ASV will range between 150,000 and 200,000 annual operations. The ASV does not indicate a point of absolute gridlock for the airfield; however, it does represent the point at which operational delay for each aircraft operation will increase exponentially. The current operation level estimated for the airport represents 12 percent of the airfield's ASV, if the ASV is considered at the low end of the typical range of 150,000 annual operations. By the end of the planning period, total annual operations are expected to represent only 23 percent of the airfield's ASV.

FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), indicates that improvements for airfield capacity purposes should begin to be considered once operations reach 60 to 75 percent of the annual service volume. This is an approximate level to begin the detailed planning of capacity improvements. At the 80 percent level, the planned improvements should be made. Based on current and projected operations developed for this study, improvements specifically designed to enhance capacity should not be needed.

AIRSIDE REQUIREMENTS

Airside requirements include the need for those facilities related to the arrival and departure of aircraft. The adequacy of existing airside facilities at

Coolidge Municipal Airport has been analyzed from a number of perspectives, including:

- Runways
- Safety Area Design Standards
- Taxiways
- Airfield Lighting, Marking, and Signage
- Navigational Aids and Instrument Approach Procedures
- Weather Reporting Aids
- Air Traffic Control

RUNWAYS

Runway conditions such as orientation, length, pavement strength, and width at Coolidge Municipal Airport were analyzed. From this information, requirements for runway improvements were determined for the airport.

Runway Orientation

The airport is served by primary Runway 5-23, orientated in a northeast/southwest manner, while crosswind Runway 17-35 is orientated in a north/south manner. For the operational safety and efficiency of an airport, it is desirable for the primary runway to be orientated as close as possible to the direction of the prevailing wind. This reduces the impact of wind components perpendicular to the direction of travel of an aircraft that is landing or taking off (defined as a crosswind).

FAA Advisory Circular 150/5300-13, Change 14, *Airport Design*, recommends that a crosswind runway should be made available when the primary runway orientation provides for less than 95 percent wind coverage for specific crosswind conditions. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; 16 knots (18 mph) for ARC C-I through D-II; and 20 knots for ARC A-IV through D-VI.

Wind data necessary for this analysis specific to Coolidge Municipal Airport was not available. Therefore, data was obtained from an Arizona Meteorological Network (AZMET) site located approximately ten miles northwest of the airport, within the City of Coolidge. This data is graphically depicted on the wind rose on **Exhibit 3B**.

As depicted on the exhibit, primary Runway 5-23 provides 98.65 percent wind coverage for 10.5 knot crosswinds, 99.38 percent at 13 knots, 99.86 percent at 16 knots, and 99.97 percent at 20 knots. Crosswind Runway 17-35 provides 96.36 percent wind coverage at 10.5 knots, 97.96 percent at 13 knots, 99.42 percent at 16 knots, and 99.87 percent at 20 knots.

The combined runway system provides 99.50 percent wind coverage for 10.5-knot crosswinds, 99.88 percent wind coverage at 13 knots, 99.98 percent coverage at 16 knots, and 100.00 per-

cent coverage at 20 knots. As evidenced on the exhibit, the combination of Runways 5-23 and 17-35 provide greater than 95 percent wind coverage for the current and future critical design aircraft. Therefore, no additional runway orientations should be planned at the airport.

Runway Length

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

- Mean maximum temperature of the hottest month
- Airport elevation
- Runway gradient
- Critical aircraft type expected to use the airport
- Stage length of the longest nonstop destination (specific to larger aircraft)

The mean maximum daily temperature of the hottest month for Coolidge Municipal Airport is 105 degrees Fahrenheit (F). The airport elevation is 1,574 feet above mean sea level (MSL). The runway end elevation difference is 26 feet for Runway 5-23 and eight feet for Runway 17-35. Runway 5-23 has a longitudinal gradient of 0.5 percent, while Runway 17-35 has a 0.3 percent longitudinal gradient, both of which conform to FAA design standards. For aircraft in approach categories A and B, the runway longitudinal gradient cannot exceed two percent. For aircraft in approach categories C and D, the maximum allowable longitudinal runway gradient is 1.5 percent.

The first step in evaluating runway length requirements is to determine general runway length requirements for the majority of aircraft operating at the airport. The overwhelming majority of operations at Coolidge Municipal Airport consist of small aircraft weighing less than 12,500 pounds. According to runway length adjustment charts in AC 150/5325-4B, *Runway Length Requirements for Airport Design*, when adjusting for the elevation and temperature at Coolidge Municipal Airport, 100 percent of small aircraft can operate on a 4,500-foot long runway. At 5,562 feet, Runway 5-23 exceeds this length requirement. Crosswind Runway 17-35, at a length of 3,871 feet, falls short of meeting 100 percent of small aircraft; however, it can accommodate 95 percent of small airplanes. This includes all single engine and a large majority of smaller multi-engine aircraft in the national fleet. **Table 3C** outlines the runway length requirements for various classifications of aircraft that utilize Coolidge Municipal Airport.

Based upon the forecast of aircraft fleet mix through the long range planning period, Coolidge Municipal Airport should be designed to accommodate current aircraft using the airport, including the Lockheed C-130, as well as a large majority of business jets for the future. Primary Runway 5-23's length of 5,562 feet satisfies the needs of the C-130 aircraft and the majority of business jet aircraft currently using the airport.

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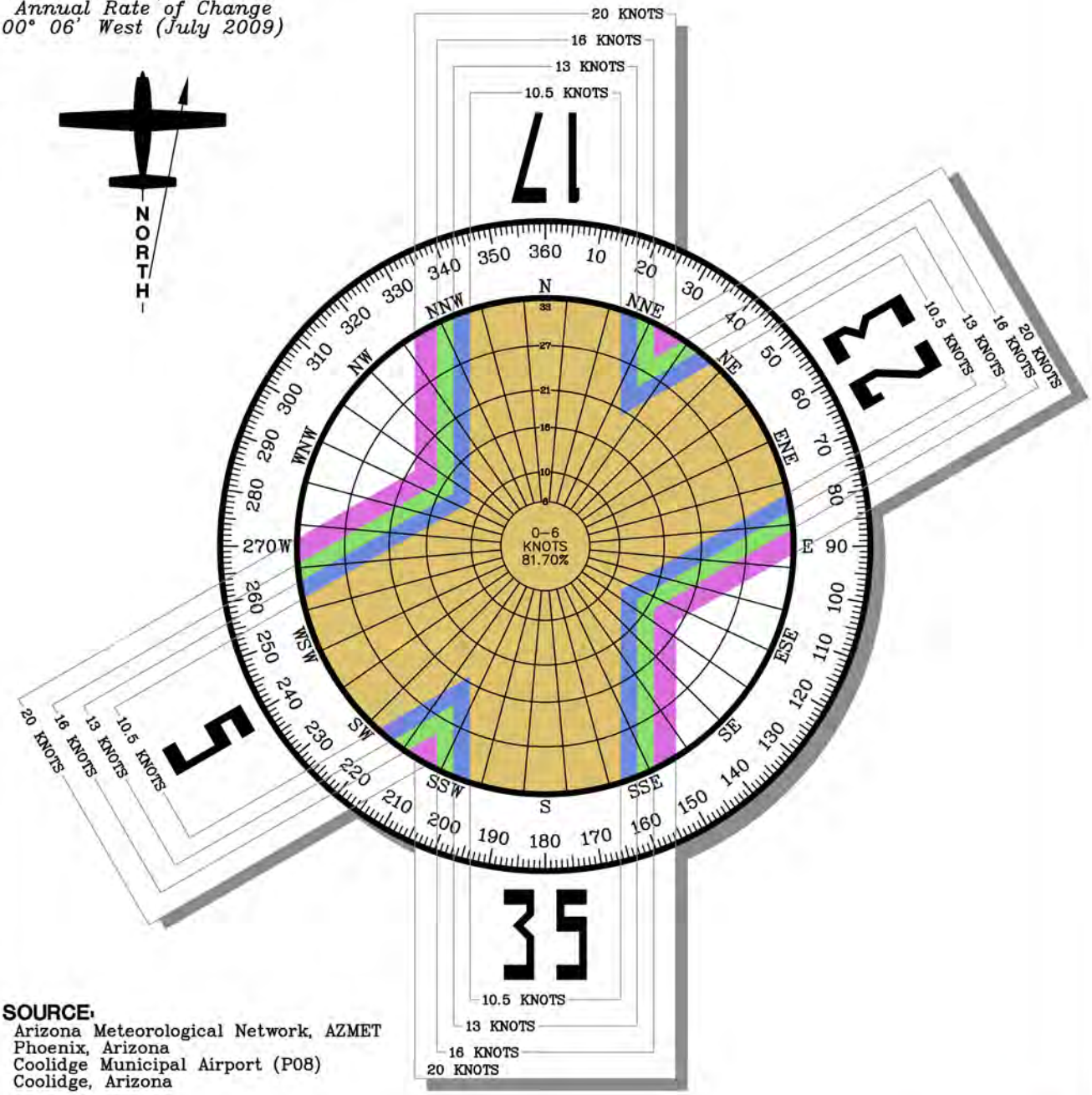
ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 5-23	*98.65%*	*99.38%*	*99.86%*	*99.97%*
Runway 17-35	*96.36%*	*97.96%*	*99.42%*	*99.87%*
Combined	*99.50%*	*99.88%*	*99.98%*	*100.00%*

Magnetic Variance
10° 53' East (July 2009)
Annual Rate of Change
00° 06' West (July 2009)



SOURCE:
Arizona Meteorological Network, AZMET
Phoenix, Arizona
Coolidge Municipal Airport (P08)
Coolidge, Arizona

OBSERVATIONS:
193,253 All Weather Observations
01/1987-06/2009

COOLIDGE MUNICIPAL AIRPORT

Exhibit 3B
WINDROSE

TABLE 3C Runway Length Requirements Coolidge Municipal Airport	
Airport and Runway Data	
Airport elevation	1,574
Mean daily maximum temperature of the hottest month	105 degrees F
Maximum difference in runway centerline elevation	26 feet
Runway Length Recommended for Airport Design	
Small airplanes with less than 10 passenger seats	
95 percent of these small airplanes	3,800 feet
100 percent of these small airplanes	4,500 feet
Small airplanes with 10 or more passenger seats	4,800 feet
Large airplanes of 60,000 pounds or less	
75 percent of business jets at 60 percent useful load	5,500 feet
75 percent of business jets at 90 percent useful load	8,100 feet
100 percent of business jets at 60 percent useful load	7,000 feet
100 percent of business jets at 90 percent useful load	10,700 feet
Airplanes of more than 60,000 pounds	7,000 feet

Source: Chapters Two and Three of AC 150/5325-4B, *Runway Length Requirements for Airport Design*

The majority of business jets fall within ADG I and II and range between approach categories B through D. According to the analysis presented in **Table 3C**, 75 percent of large airplanes weighing less than 60,000 pounds with 60 percent useful load require 5,500 feet of runway length. To accommodate 100 percent of business jets at 60 percent useful load, the runway should be at least 7,000 feet long. Aircraft types that make up this category include the Cessna 650 and 750, Challenger 600, and several models of Lear jets, which fall into approach categories C and D. In addition, aircraft weighing more than 60,000 pounds, including the Gulfstream family of aircraft, also would require approximately 7,000 feet of runway length.

As previously discussed, International Air Response operates Douglas DC-8 jets in addition to the Lockheed C-130 aircraft. Company personnel have indicated a desire to ultimately operate DC-8 aircraft at Coolidge Municipal Airport. In order to accommodate this aircraft, a runway length of approximately 7,500 feet is needed.

While a longer runway could be desirable for some aircraft operators, it is not needed for the majority of aircraft operations at Coolidge Municipal Airport at the current time. Future operations are projected to include a larger share of business jets in approach categories C and D. These aircraft are typically larger and heavier, requiring longer runways, especially during hot days when jet engines are less effi-

cient. Given these considerations in addition to proposed aircraft operations related to International Air Response, analysis in the following chapter will examine the potential for extending Runway 5-23. It should be clearly understood, however, that any runway extension will require specific aircraft operational justification prior to FAA funding assistance.

As previously discussed, crosswind Runway 17-35 is currently 3,871 feet long. This length could limit some aircraft in ARC B-I and B-II on hot days, however, would likely accommodate most of these aircraft operations on typical days. The crosswind runway functions to primarily serve the needs of small aircraft, for times when crosswinds prohibit the use of the primary runway, and when the primary runway is closed for maintenance or emergencies. In this capacity, the existing length of Runway 17-35 should be adequate for the planning period and no extension options will be pursued as a part of this study.

Runway Width

Primary Runway 5-23 is currently 150 feet wide. FAA design criteria stipulate a runway width of 150 feet to meet standards for ADG IV aircraft. As such, the current width of primary Runway 5-23 should be maintained in the future.

Crosswind Runway 17-35 is currently 75 feet wide. FAA design standards call for a runway width of at least 75 feet to serve aircraft up to ARC B-II, as long as the instrument approach minimums are not lower than three-quarters of a mile. This existing width of the crosswind runway should be maintained throughout the planning period.

Runway Strength

The officially published pavement strength rating for Runway 5-23 is 80,000 pounds single wheel loading (SWL), 115,000 pounds dual wheel loading (DWL), and 210,000 pounds dual tandem wheel loading (DTWL). As previously mentioned, SWL refers to the aircraft weight based upon the landing gear configuration with a single wheel on each landing strut. DWL includes the design of aircraft landing gear with additional wheels on each landing gear strut which distributes more of the aircraft weight on the runway and taxiway surfaces; thus, the surface itself can support a greater total aircraft weight.

The strength rating of a runway does not preclude aircraft weighing more than the published strength rating from using the runway. All federally obligated airports must remain open to the public, and it is typically up to the pilot of the aircraft to determine if a runway can support their aircraft safely. An airport sponsor cannot restrict an aircraft from using the runway simply because its weight exceeds the published strength rating. On the other hand, the airport sponsor has an obligation to properly maintain the runway and protect the useful life of the runway, typically for 20 years.

According to the FAA publication, *Airport/Facility Directory*, "Runway strength-rating is not intended as a maximum allowable weight or as an operating limitation. Many airport pavements are capable of supporting limited operations with gross weights in excess of the published figures." The directory goes on to say that those aircraft exceeding the pavement strength should contact the airport sponsor for permission to operate at the airport.

The strength rating of a runway can change over time. Regular usage by heavier aircraft can decrease the strength rating, while periodic runway resurfacing can increase the strength rating. The current strength rating of Runway 5-23 should be adequate to serve the existing and ultimate mix of aircraft through the planning period.

Crosswind Runway 17-35 functions to primarily serve small aircraft and larger aircraft on an infrequent basis. It is currently strength-rated at 17,000 pounds SWL. It is recommended that the pavement strength be increased to at least 30,000 pounds SWL in the future to better accommodate the full range of small aircraft.

SAFETY AREA DESIGN STANDARDS

The FAA has established several safety surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the runway safety area (RSA), object free area (OFA), obstacle free zone (OFZ), and runway protection zone (RPZ). The dimensions of these safety areas are dependent upon the critical aircraft and, thus, the ARC of the runway. The current critical aircraft is in ARC C-IV, as previously determined. Ultimate planning should continue to conform to ARC C-IV design standards.

Runway Safety Area

The RSA is defined in FAA Advisory Circular 150/5300-13, Change 14, *Airport Design*, as a "surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." The RSA is centered on the runway, dimensioned in accordance to the approach speed of the critical aircraft using the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and fire and rescue vehicles, and free of obstacles not fixed by navigational purpose.

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

to collect and maintain data on the RSA for each runway at the airport, and perform airport inspections. As previously mentioned, the current and ultimate critical aircraft for Runway 5-23 is ARC C-IV. For crosswind Runway 17-35, existing and ultimate design standards should conform to ARC B-II.

ARC C-IV standards for runways require RSAs to be 500 feet wide, extending 1,000 feet beyond the runway end. For ARC B-II runways with not lower than three-quarters of a mile visibility minimums, as is the case with Runway 17-35, the RSA is 150 feet wide, extending 300 feet beyond each runway end. As depicted on **Exhibit 3C**, no objects appear to obstruct the existing and ultimate RSA for both runways. Analysis in the next chapter will further examine the RSAs associated with each runway.

Object Free Area

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

FAA standards for ARC C-IV OFAs regarding runways call for the OFA to be 800 feet wide and extend 1,000 feet beyond each runway end, matching the length of the RSA, only wider. For Runway 17-35, the OFA is 500 feet wide extending 300 feet beyond the runway ends. This criterion meets ARC B-II design standards.

Exhibit 3C depicts the OFA requirements for each runway at Coolidge Municipal Airport. Runway 17-35 does not appear to have any obstructions within the existing and ultimate OFA. The majority of the OFA on Runway 5-23 conforms to ARC C-IV standards; however, it appears that the southwestern-most portion of the OFA is obstructed, as it extends beyond airport property into areas controlled by the Central Arizona Project Canal.

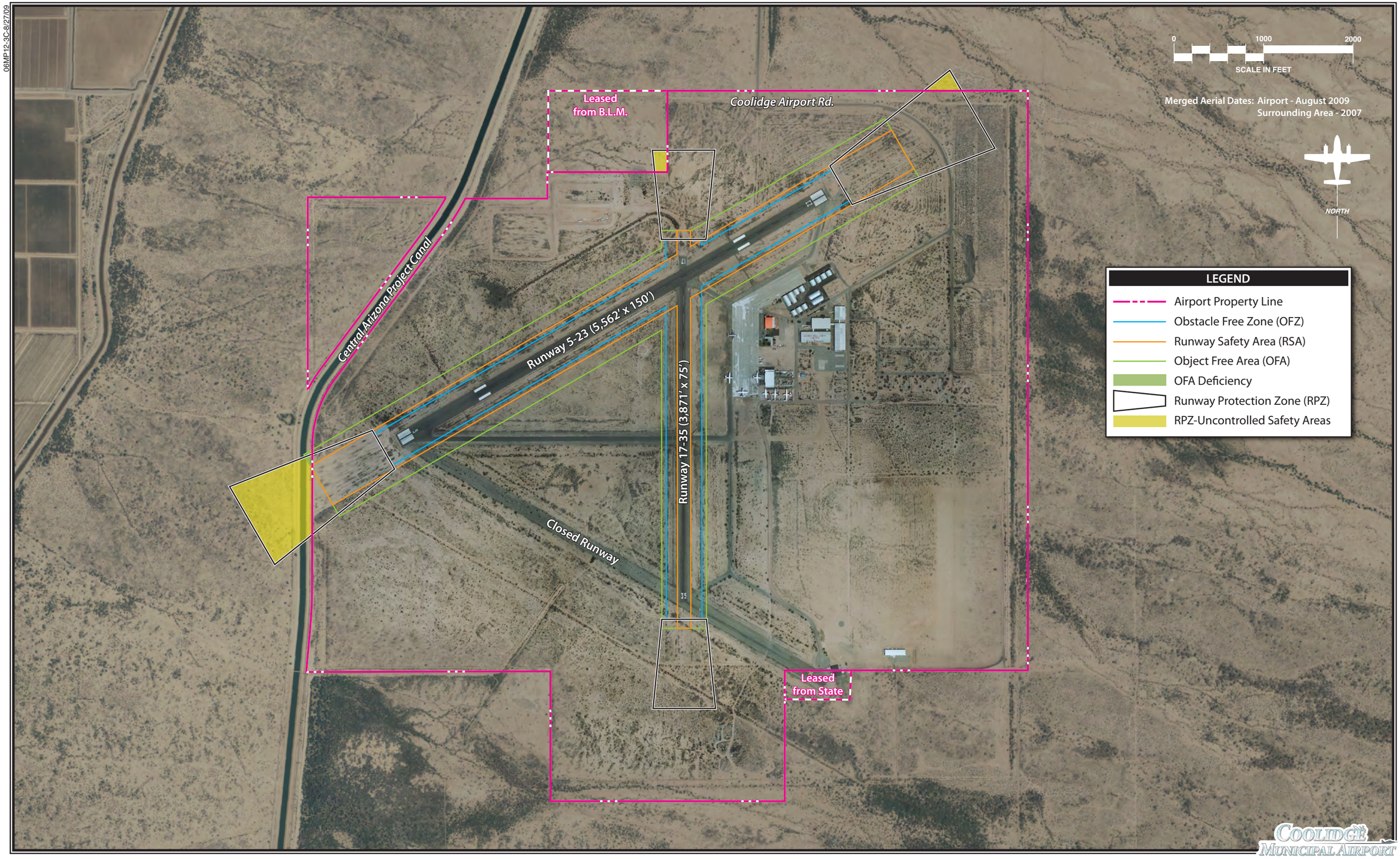
It should be noted that the aerial photography provides a good base for comparison; however, more detailed topographic information will be used in the following chapter to determine if the OFA is truly obstructed.

Obstacle Free Zone

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

The FAA's criterion for runways utilized by small airplanes (those weighing less than 12,500 pounds) with ap-

06MP12-3C-8/27/09



COOLIDGE MUNICIPAL AIRPORT

Exhibit 3C
EXISTING AND ULTIMATE SAFETY AREAS

proach speeds greater than 50 knots requires a clear OFZ to extend 200 feet beyond the runway ends, by 250 feet wide (125 feet on either side of the runway centerline). The OFZ width increases to 400 feet (200 feet on either side of the runway centerline) for runways serving aircraft over 12,500 pounds. Currently, both runways meet the 400-foot width to accommodate aircraft weighing more than 12,500 pounds.

Runway Protection Zone

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

The lowest existing visibility minimums for Coolidge Municipal Airport are one mile on Runway 5-23. The corresponding RPZ dimension calls for a 500-foot inner width, extending outward 1,700 feet to a 1,010-foot outer width on each runway end. For Runway 17-35, the existing and ultimate RPZs have an inner width of 500 feet, overall length of 1,000 feet, and an outer width of 700 feet. **Exhibit 3C** depicts the RPZs for both runways.

The majority of the existing RPZs for Runway 5-23 are fully contained on existing airport property. A portion of the northeast RPZ associated with Runway 23 extends beyond airport property over areas of vacant land, while a larger portion of the Runway 5 RPZ extends southwest outside airport property and over the Central Arizona Project Canal. If a lower than one mile visibility approach was implemented on either end of Runway 5-23 in the future, the corresponding RPZ would widen and encompass additional area outside existing airport property. The existing RPZs for both ends of Runway 17-35 are contained within current airport bounds, except for a small portion of the Runway 17 RPZ that extends over an area of vacant land that is currently leased by the airport.

Whenever possible, the airport should maintain positive control over the RPZ through fee simple acquisition; however, avigation easements (acquiring control of designated airspace rights within the RPZ) can be pursued if fee simple acquisition is not feasible. According to records, there are no avigation easements controlling areas of the existing RPZs that extend outside airport property. **Table 3D** presents existing and ultimate RPZ dimension data as well as other airfield requirements discussed in the previous sections.

TABLE 3D
Airfield Design Standards
Coolidge Municipal Airport

	Existing/Ultimate Runway 5-23	Existing/Ultimate Runway 17-35
Airport Reference Code (ARC)	C-IV	B-II
Approach Visibility Minimums	One mile	Visual / One mile
Runway Length (feet)	5,562	3,871
Runway Width (feet)	150	75
Runway Safety Area		
Width (feet)	500	150
Length Beyond Runway End (feet)	1,000	300
Object Free Area		
Width (feet)	800	500
Length Beyond Runway End (feet)	1,000	300
Obstacle Free Zone		
Width (feet)	400	400
Length Beyond Runway End (feet)	200	200
Runway Protection Zone	Both Ends	Both Ends
Inner Width (feet)	500	500
Outer Width (feet)	1,010	700
Length (feet)	1,700	1,000
Runway Centerline to:		
Holding Positions (feet)	250	125 / 200
Parallel Taxiway Centerline (feet)	400	240
Taxiways		
Width (feet)	40-50 / 75	40-50
Object Free Area Width (feet)	259	131
Centerline to Fixed or Moveable Object (feet)	129.5	65.5

Source: FAA AC 150/5300-13, Change 14, *Airport Design*

TAXIWAYS

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

As detailed in Chapter One, the taxiway system at Coolidge Municipal Airport consists of a partial-parallel taxiway and entrance/exit taxiways serving Runway 17-35, in addition to entrance/exit taxiways serving Runway 5-23. All existing taxiways range in width from 40 to 50 feet.

Consideration should be given to the addition of taxiways, as needed, to improve airfield circulation, efficiency, and safety. If Runway 5-23 were to be extended, additional taxiway pavement should be constructed and another exit taxiway added. In addition, further analysis will be given to extending the partial parallel taxiway

serving Runway 17-35 farther south in order to prevent aircraft from having to "back-taxi" on the crosswind runway in order to take-off on Runway 35.

Taxiway width is determined by the ADG of the most demanding aircraft to use the taxiway. As mentioned previously, the current critical aircraft for the airport falls within ADG IV. FAA criteria call for a width of 75 feet for taxiways serving aircraft within ADG IV. As previously discussed, all taxiways on the airfield currently range between 40 and 50 feet in width. Further study in the next chapter will analyze the possibilities of additional taxiways as well as those taxiways that would need to conform to ADG IV standards.

FAA AC 150/5300-13, Change 14, *Airport Design*, also discusses separation distances between aircraft and various areas on the airport. The separation distances are a function of the approaches approved for the airport and the runway's designated ARC. Under current and ultimate conditions for Runway 5-23 (ARC C-IV and approaches not lower than one mile), parallel taxiways would need to be at least 400 feet from the Runway 5-23 centerline. Aircraft parking areas are required to be at least 500 feet from the runway centerline. Taxiway 5 (as identified in Chapter One) is located 500 feet southeast of the runway centerline. The aircraft parking apron is located even farther southeast. These distances meet the appropriate FAA standards.

Crosswind Runway 17-35 is served by partial parallel Taxiway 1 (as identified in Chapter One). This taxiway is situated 525 feet east of the runway centerline and the aircraft parking apron is located farther east. As with Runway 5-23, these taxiway clearances meet the appropriate FAA standards for Runway 17-35.

AIRFIELD LIGHTING, MARKING, AND SIGNAGE

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

Airport Identification Lighting

The location of the airport at night is universally indicated by a rotating beacon. For civil airports, a rotating beacon projects two beams of light, one white and one green, 180 degrees apart. The existing beacon is sufficient and should be maintained through the planning period.

Runway and Taxiway Lighting

Runway identification lighting provides the pilot with a rapid and positive identification of the runway and its alignment. Primary Runway 5-23 is equipped with medium intensity runway lighting (MIRL). The MIRL system will be adequate to serve the runway and should be maintained through the planning period. Crosswind Runway 17-35 is currently not equipped with runway lighting. Plan-

ning will consider providing MIRL on this runway.

Medium intensity taxiway lighting (MITL) is provided on Taxiways 3 and 5 (as identified in Chapter One). During the course of the planning period, MITL should be applied to all taxiways. This system is vital for safe and efficient ground movements of aircraft during nighttime and/or poor weather conditions.

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Currently, Runway 5-23 is served by a two-box precision approach path indicator (PAPI-2). In the future, consideration should be given to upgrading the two-box systems on Runway 5-23 to four-box systems. The four-box systems are better to serve faster aircraft because they are more visible.

Runway 17-35 is currently not served by any type of visual approach lighting system. Future planning will call for implementing a PAPI-2 on each runway end.

Runway End Identification Lighting

Runway end identification lights (REILs) are flashing lights located at each runway end that facilitate identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify the runway ends and distinguish the runway end lighting from other lighting on the airport and in the approach areas. The FAA indicates that REILs should be considered for all lighted runway ends not planned for a more sophisticated approach lighting system. REILs should also be planned for each end of Runway 5-23 in the short term planning period. In the event that MIRL is installed on Runway 17-35, REILs should also be planned for this runway.

Pilot-Controlled Lighting

Coolidge Municipal Airport is equipped with pilot-controlled lighting (PCL). With PCL, a pilot can control the intensity of airfield lights from their aircraft through a series of clicks with their radio transmitter. PCL also provides for more efficient use of energy. This system should be maintained through the planning period.

Airfield Signage

Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. Signs located at intersections of taxiways provide crucial information to avoid conflicts between moving aircraft and potential runway incursions. Directional signage also instructs pilots as to the location of taxiways and apron areas. Currently, signage referring to runway and tax-

iway designations, holding positions, routing/directional, and runway exits is not available. Future planning should consider implementing these airfield signs to better accommodate aircraft movement on the airfield.

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

Taxiways 1 and 5 – Taxiway A
Taxiway 2 – Taxiway A1
Taxiway 3 – Taxiway A2
Connecting taxiway (Runway 23 end – Taxiway A3
Taxiway 4 – Taxiway A1

Distance Remaining Signs

Distance remaining signage should be planned for Runway 5-23. These lighted signs are placed in 1,000-foot increments along the runway to notify pilots of the length of runway remaining.

Pavement Markings

Runway markings are designed according to the type of instrument approach available on the runway. FAA AC 150/5340-1F, *Marking of Paved Areas on Airports*, provides guidance necessary to design airport markings. Runway 5-23 is served by non-precision markings. Runway 17-35 currently has basic runway markings. In the future, non-precision markings should be planned for this runway.

The current hold positions associated with primary Runway 5-23 are marked 250 feet from the runway centerline. The current hold position markings for Runway 5-23 meet the FAA standard for ARC C-IV aircraft and should be maintained throughout the planning period. The hold position markings for Runway 17-35 are set at 125 feet and fall short of the FAA standard for ARC B-II which calls for 200 feet. Future planning will consider relocating the hold position markings associated with the crosswind runway.

Helicopter Parking

The airport does not have a designated helicopter parking area. Helicopters utilize the same areas as fixed-wing aircraft. Helicopter and fixed-wing aircraft should be segregated to the extent possible. Facility planning should include establishing a designated transient helicopter hardstand parking area.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACH PROCEDURES

Airport and runway navigational aids are based on FAA recommendations, as defined in DOT/FAA Handbook 7031.2B, *Airway Planning Standard Number One*, and FAA AC 150/5300-2D, *Airport Design Standards, Site Requirements for Terminal Navigation Facilities*.

Navigational Aids

Navigational aids are electronic devices that transmit radio frequencies, which properly equipped aircraft and pilots translate into point-to-point guidance and position information. The very high frequency omnidirectional range (VOR), global positioning system (GPS), and LORAN-C are available for pilots to navigate to and from Coolidge Municipal Airport. These systems are sufficient for navigation to and from the airport; therefore, no other navigational aids are needed at the airport.

Instrument Approach Procedures

Instrument approach procedures are a series of predetermined maneuvers established by the FAA using electronic navigational aids that assist pilots in locating and landing at an airport during low visibility and cloud ceilings. At Coolidge Municipal Airport, there are two published straight-in non-precision approaches with one mile visibility minimums. Only on rare occasions does the visibility drop below three miles and/or cloud ceilings fall below 1,000 feet above ground level (AGL) resulting in the need for an instrument approach.

A GPS modernization effort is underway by the FAA and focuses on augmenting the GPS signal to satisfy requirements for accuracy, coverage, availability, and integrity. For civil aviation use, this includes the continued development of the Wide Area Augmentation System (WAAS), which was initially launched in 2003. The WAAS uses a system of reference stations to correct signals from the GPS satellites for improved navigation and approach capabilities. Where the non-WAAS GPS signal provides for enroute navigation and limited instrument approach (lateral navigation) capabilities, WAAS provides for approaches with both course and vertical navigation. This capability was historically only provided by an ILS, which requires extensive on-airport facilities. After 2015, the WAAS upgrades are expected to allow for the development of approaches to most airports with cloud ceilings as low as 200 feet above the ground and visibilities restricted to one-half mile.

Nearly all new instrument approach procedures in the United States are being developed with GPS. GPS approaches are currently categorized as to whether they provide only lateral (course) guidance or a combination of lateral and vertical (descent) guidance. An approach procedure with vertical guidance (APV) GPS approach provides both course and descent guidance. A lateral navigation (LNAV) approach only provides course

guidance. In the future, as WAAS is upgraded, precision approaches similar in capability to an instrument landing system (ILS) approach will become available. These approaches are currently categorized as the Global Navigation Satellite System Landing System (GLS). A GLS approach may be able to provide for approaches with one-half mile visibility and 200-foot cloud ceilings.

Both course guidance and descent information is desirable for an instrument approach to each end of primary Runway 5-23 at Coolidge Municipal Airport. The GPS APV approach does not require the installation of costly navigation equipment at the airport and will provide the airport with adequate instrument approach capabilities. In addition, an approach procedure providing for at least course guidance should be considered serving each end of crosswind Runway 17-35.

WEATHER REPORTING AIDS

Coolidge Municipal Airport has a wind cone and segmented circle as well as three supplemental wind cones. The wind cones provide information to pilots regarding wind conditions, such as direction and speed. The segmented circle consists of a system of visual indicators designed to provide traffic pattern information to pilots. A wind cone and segmented circle are required since the airport is not served by an airport traffic control tower (ATCT). These should be maintained throughout the planning period.

Two types of automated weather observing systems are currently deployed at airports across the country. Automated Surface Observation Systems (ASOS) and Automated Weather Observation Systems (AWOS) both measure and process surface weather observations 24 hours per day, with reporting varying from one minute to hourly. These systems provide near real-time measurements of atmospheric conditions.

ASOS systems are typically commissioned by the National Weather Service, while AWOS systems are often commissioned by the FAA. Future consideration should be given to the installation of an AWOS at Coolidge Municipal Airport in order to provide current weather conditions at the airport.

AIR TRAFFIC CONTROL

As previously mentioned, Coolidge Municipal Airport is not served by an ATCT. Forecast operational levels are not expected to approach the level necessary to justify federal funding for the construction and/or operation of an ATCT. Generally, airports must experience more than 100,000 operations to be considered for an ATCT facility. Most airports do not qualify for a federally funded ATCT until operations exceed 150,000. As such, the development of an ATCT will not be considered as a part of this study.

LANDSIDE FACILITIES

Landside facilities are those necessary for handling general aviation aircraft and passengers while on the ground. This section is devoted to identifying future landside facility needs during the planning period for the following types of facilities normally associated with general aviation service areas:

- Aircraft Storage Hangars
- Aircraft Parking Apron
- General Aviation Services
- Support Requirements

AIRCRAFT STORAGE HANGARS

The demand for hangar facilities typically depends on the number and type of aircraft expected to be based at the airport. Hangar facilities are generally classified as T-hangars and conventional hangars. T-hangars are typically nested single aircraft storage units which provide a more economical aircraft storage solution for aircraft owners. Conventional hangars can include standard individual box hangars or multi-aircraft hangars. These different types of hangars offer varying levels of privacy, security, and protection from the elements. While multi-aircraft storage hangars make up all aircraft storage units at Coolidge Municipal Airport presently, future hangar development may be a mixture of conventional hangars or T-hangars depending on demand.

Demand for hangars varies with the number of aircraft based at the airport. Another important factor is the type of based aircraft. Smaller single-engine aircraft usually prefer T-hangars, while larger, more expensive and sophisticated aircraft will prefer conventional hangars. The weather also plays a role in the demand for hangar facilities. The hot summers that are experienced in the Coolidge area create a high demand for enclosed or shaded parking spaces. Rental costs will also be a factor in the choice.

Coolidge Aviation owns 17 storage hangars that provide a total of 61,200 square feet of aircraft storage space and the company leases a single 12,000 square-foot conventional hangar. The hangars are currently fully occupied with anywhere from one to four aircraft being stored in a single unit. Taking into account each aircraft currently stored in the hangars results in 23 aircraft storage positions. A 2,000 square-foot portion of the 12,000 square-foot conventional hangar is used as office space resulting in 10,000 square feet of aircraft storage space. There are three aircraft stored in the conventional hangar currently. Coolidge Aviation has indicated that there is an aircraft hangar waiting list for storage space at the airport.

An analysis of future aircraft storage hangar requirements examined the number of storage units and the size of storage units typical for the future aircraft fleet mix of Coolidge Municipal Airport. The planning standards for future stored aircraft include 1,200 square feet per single engine aircraft, 2,500 square feet per multi-engine and

turbine aircraft, and 1,500 square feet per rotorcraft. The future aircraft storage hangar requirements analysis is summarized on **Table 3E**.

TABLE 3E
Hangar Storage Requirements
Coolidge Municipal Airport

	Available	Current Need	Short Term	Intermediate Term	Long Term
BASED AIRCRAFT					
Piston (Single & Multi-Engine	24		33	43	61
Turbine (Turboprop & Jet)	12		14	18	24
Rotor	1		2	3	4
Other	1		1	1	1
Total	38		50	65	90
AIRCRAFT TO BE HANGARED					
Piston		22	28	37	52
Turbine		8	9	13	19
Rotor		1	2	3	4
Other		1	1	1	1
Total		32	40	54	76
HANGAR POSITIONS					
Total Hangar Positions		32	40	54	76
HANGAR AREA REQUIREMENTS (s.f.)					
Total Hangar Area	71,200	40,400	60,300	82,600	117,100
Maintenance Area	18,000	5,425	8,750	11,375	15,750

The analysis shows that existing hangar storage space of 71,200 square feet exceeds the short term demand; however, this is the result of either underutilized storage space due to single aircraft stored in hangars that could potentially be used for the storage of multiple aircraft or hangar space being used for the storage of materials other than aircraft.

The airport has a single business that conducts aircraft maintenance for its own aircraft. International Air Response occupies an 18,000 square-foot hangar, which it uses for the regular maintenance of its Lockheed C-130 aircraft and other services. The airport does not currently have an operator that provides general aviation maintenance services. Requirements for maintenance area were estimated at 175 square feet per based aircraft resulting in a long term need for 15,750 square feet of general aviation maintenance service hangar area. Due to the available 18,000 square feet of maintenance area being dedicated to activities related to International Air Response, additional hangar area could be required to satisfy the needs of other general aviation aircraft maintenance.

AIRCRAFT PARKING APRON

A parking apron should be provided for at least the number of locally based aircraft that are not stored in hangars, as well as be capable of accommodating transient aircraft during the busy day of the peak month. The 50,000

square-yard apron at Coolidge Municipal Airport does not have marked aircraft tiedowns but has tiedown ropes for up to five aircraft.

TABLE 3F
General Aviation Apron Requirements
Coolidge Municipal Airport

	Available	Current Need	Short Term	Intermediate Term	Long Term
Based Aircraft in Tiedowns		5	6	7	11
Busy Day Itinerant Operations		32	38	45	63
Local Apron Positions	--	6	10	11	14
International Air Response Apron Positions	--	4	4	4	5
Transient Apron Positions	--	5	7	8	11
Total Apron Positions	5	10	21	23	30
Apron Area (s.y.)	50,000	12,400	13,300	14,500	17,400

FAA Advisory Circular 150/5300-13, *Airport Design*, suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day itinerant operations. At Coolidge Municipal Airport, the number of transient spaces required was determined to be approximately 17.5 percent of busy-day itinerant operations. International Air Response operates and bases four Lockheed C-130 aircraft that are presently stored on the apron. The company has indicated its plan to expand its based aircraft fleet in the future by another aircraft. The apron requirements analysis projects an estimated 1,350 square yards of apron space per International Air Response based aircraft through the planning period. A planning criterion of 360 square yards per small local aircraft parking space and 500 square yards per transient parking space was used to determine future apron requirements. The number of local and itinerant tiedowns and apron space for the planning period is presented in **Table 3F**.

While this analysis indicates that Coolidge Municipal Airport has adequate apron area, additional marked apron positions will be needed in the long term planning horizon.

GENERAL AVIATION SERVICES

General aviation service facilities are often the first impression of the community that air travelers or tourists will encounter. General aviation service facilities at an airport provide space for passenger waiting, a pilots' lounge and flight planning, concessions, management, storage, and various other needs. At Coolidge Municipal Airport, much of these services are accommodated by Coolidge Aviation in its 2,000 square-foot facility located adjacent to the World War II conventional hangar.

The methodology used in estimating terminal facility needs was based upon the number of airport users expected to utilize the terminal facilities

during the design hour, as well as FAA guidelines. Space requirements for terminal facilities were based on providing 90 square feet per design hour itinerant passenger. **Table 3G** outlines the space requirements for terminal services at Coolidge Municipal Airport through the long term planning horizon.

TABLE 3G
General Aviation Terminal Area Facilities
Coolidge Municipal Airport

	Available	Current Need	Short Term	Intermediate Term	Long Term
General Aviation Services Building Area (s.f.)	2,000	650	700	850	1,200
Design Hour Itinerant Passengers	--	6	7	9	13
Auto Parking Spaces	+10	19	23	29	42

Automobile parking at Coolidge Municipal Airport is made up of a large gravel parking lot adjacent to the Coolidge Aviation and Complete Parachute Solutions facilities. A paved parking lot containing ten marked automobile parking spaces is provided adjacent to the International Air Response facilities. Vehicle parking requirements were examined based on an evaluation of existing airport use, as well as industry standards. Vehicle parking spaces were calculated at 25 percent of based aircraft, plus the product of design hour itinerant passengers and the industry standard of 1.8. Automobile parking requirements are summarized in **Table 3G**.

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield or general aviation facilities have been identified for inclusion in this Master Plan. Facility requirements have been identified for these remaining facilities:

- Airport Access
- Interior Access
- Aviation Fuel Storage
- Aircraft Wash Facility
- Parachute Landing Area
- Perimeter Fencing
- Aircraft Rescue and Firefighting
- Airport Maintenance Building
- Utilities
- Revenue Support Facilities
- Security

Airport Access

In airport facility planning, both on- and off-airport vehicle access is important. For the convenience of the user (and to provide maximum capacity), access to the airport should include (to the extent practical) connections to the major arterial roadways near the airport.

Access to Coolidge Municipal Airport is available via Coolidge Airport Road, a two-lane roadway extending north from the airport. This roadway pro-

vides access from downtown Coolidge and the neighboring Town of Florence.

The capacity of a roadway is the maximum number of vehicles that can pass over a given section of roadway during a given time period. It is normally preferred that a roadway operate below capacity to provide reasonable flow and minimize delay to the vehicles using it.

As with the airfield, the means of describing the operational efficiency of a given roadway segment is defined in terms of six descriptive service levels. These various levels of service (LOS) range from A to F and are defined as follows:

- **LOS A** – Free flowing traffic with minimal delays.
- **LOS B** - A stable flow of traffic, with occasional delays due to the noticeable presence of others in the traffic stream.
- **LOS C** – Still stable flow, but operations become more significantly affected by the traffic stream. Periodic delays are experienced.
- **LOS D** – Flow becomes more high density, and speed and freedom to maneuver become severely restricted. Regular delays are experienced.
- **LOS E** – Maximum capacity operating conditions. Delays are extended and speeds are reduced to a low, relatively uniform level.
- **LOS F** – Forced flow with excessive delays. A condition where more traffic is approaching a point than can traverse the point.

Level of Service "D" is generally considered as the threshold of acceptable traffic conditions during peak periods in an urban area, and is commonly used by Pinal County in transportation planning.

According to information included in the *Coolidge-Florence Regional Transportation Plan*, Coolidge Airport Road will not exceed LOS A through 2025. The long-range recommended development plan for Coolidge Airport Road includes extending it to the south and widening it from two to six lanes to accommodate anticipated traffic increases.

Interior Access

Occasionally, private vehicles use the apron and taxilanes for movement as there is no dedicated interior access road. The segregation of vehicle and aircraft operational areas is supported by FAA guidance established in June 2002. FAA AC 50/5210-20, *Ground Vehicle Operations on Airports*, states, "The control of vehicular activity on the airside of an airport is of the highest importance." The AC further states, "An airport operator should limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport."

Service roads are typically used to segregate vehicles from the aircraft operational areas. The alternatives analysis will examine options for interior access roads to serve hangar facil-

ities as well as a service road extending around the runway and airport perimeter for airport maintenance vehicles.

Aviation Fuel Storage

The City of Coolidge leases two fuel storage facilities to Coolidge Aviation. These storage facilities consist of a 10,000-gallon 100LL Avgas storage tank and a 10,000-gallon Jet A fuel storage tank.

Fuel storage requirements are typically based upon keeping a two-week supply of fuel during an average month; however, more frequent deliveries can reduce the fuel storage capacity requirement. Based on historical fuel sales from Coolidge Municipal Airport and similar general aviation airports, an average of 2.6 gallons per piston operation was used to project Avgas fuel storage requirements.

Turbine aircraft operations at Coolidge Municipal Airport have been comprised of turboprop fixed wing aircraft, such as the Lockheed C-130 and jet aircraft that utilize the airport. As the Phoenix metropolitan area continues to develop towards the City of Coolidge and surrounding areas, and with the shift in the active general aviation aircraft fleet mix towards a greater increase of turbine aircraft, additional activity from turbine aircraft can be expected.

Projections of future Jet A fuel storage requirements were based upon a ratio of 160 gallons per turbine operation. Turbine operations were estimated at 5.4 percent of annual operations currently, increasing to approximately 5.8 percent of the annual operations in the long term planning horizon.

100LL Avgas and Jet A fuel storage requirements are summarized in **Table 3H**. Available fuel storage meets the current demand at Coolidge Municipal Airport, but will need to be expanded over the planning horizon.

TABLE 3H
Fuel Storage Requirements
Coolidge Municipal Airport

	Available	Current Need	Short Term	Intermediate Term	Long Term
Two-Week Fuel Storage Requirements					
100LL Avgas (gal)	10,000	2,900	3,400	4,000	5,200
Jet A (gal)	10,000	10,000	12,200	14,800	19,600

Aircraft Wash Facility

Presently, there is not a designated aircraft wash facility on the airport. Consideration should be given to establishing an aircraft wash facility at the airport to collect aircraft cleaning fluids used during the cleaning process.

Parachute Landing Area

An active parachute landing area is currently located on the airport and used in relation to operations conducted by Complete Parachute Solutions and International Air Response. The airport recently improved areas adjacent to the existing landing area that included burying electric power lines. In an effort to better segregate parachuting activities from aircraft operating on the runway and taxiway system, future analysis will consider relocating the parachute landing area farther south and east. This area would be closer to facilities operated by Complete Parachute Solutions.

Perimeter Fencing

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

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

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

- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV). It should be noted that these security systems and equipment are not eligible for FAA funding.

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

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

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

- Creates a psychological deterrent.

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

- Demonstrates a corporate concern for facility security.

- Provides a cost-effective method of protecting facilities.

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

Portions of the airport perimeter are equipped with barbed-wire fencing. Six-foot perimeter security fencing with three-strand barbed-wire should be considered around the airport's perimeter in the future. Access gates throughout the perimeter and in the apron area should be provided to allow access to emergency service and maintenance personnel. Consideration should be given to installing perimeter fencing around the airport in order to

provide better security and to help prevent runway incursions. Furthermore, airport perimeter fencing is eligible for FAA funding.

Aircraft Rescue And Firefighting

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

Airport Maintenance Building

Presently, there is not a dedicated airport maintenance facility at the airport. Consideration should be given to developing a maintenance facility for the storage of maintenance equipment and to provide work areas for maintenance personnel.

Utilities

Electrical, water, sanitary sewer, telephone, and internet services are available at the airport. Information collected during the inventory revealed deficiencies in water supply and pressure at the airport. Further analysis will be considered to provide improved utility services to the airport. Utility extensions to new hangar areas will be needed through the planning period.

Revenue Support Facilities

Revenue support facilities refer to areas of non-aviation uses on airport property. Non-aviation uses assist in expanding and diversifying the income stream at Coolidge Municipal Airport. Existing non-aviation land uses at the airport include approximately 8.8 acres of land immediately east of the FBO facilities that are utilized for industrial and manufacturing purposes.

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

Security

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

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

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

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

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

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

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

Table 3J also ranks Coolidge Municipal Airport according to this scale. As shown in the table, the Coolidge Municipal Airport ranking on this scale is 15. Points are assessed for the airport having more than 26 based aircraft, having based aircraft over 12,500 pounds, having a runway greater than 5,001 feet in length, having a paved runway surface, and for conducting maintenance and repair on large aircraft.

As shown in **Table 3K**, a rating of 15 points places Coolidge Municipal Airport in the second tier ranking of security measures by the TSA. This rating clearly illustrates that emerging security needs are recommended at Coolidge Municipal Airport as the activity at the airport grows. The Coolidge

Municipal Airport ranking could easily extend into the third tier with the addition of aircraft flight training, rental, charter, or aerial application services. Several of these activities could be expected to occur during the planning period of this study.

TABLE 3J
Airport Characteristics Measurement Tool

Security Characteristics	Assessment Scale: Public Use Airport	Assessment Scale: Coolidge Airport
Location		
Within 20 nm of mass population areas[1]	5	0
Within 30 nm of a sensitive site[2]	4	0
Falls within outer perimeter of Class B airspace	3	0
Falls within boundaries of restricted airspace	3	0
Based Aircraft		
Greater than 101 based aircraft	3	0
26-100 based aircraft	2	2
11-25 based aircraft	1	0
10 or fewer based aircraft	0	0
Based aircraft over 12,500 pounds	3	3
Runways		
Runway length greater than 5,001 feet	5	5
Runway length less than 5,000 feet, greater than 2,001 feet	4	0
Runway length 2,000 feet or less	2	0
Asphalt or concrete runway	1	1
Operations		
Over 50,000 annual operations	4	0
Part 135 operations	3	0
Part 137 operations	3	0
Part 125 operations	3	0
Flight training	3	0
Flight training in aircraft over 12,500 pounds	4	0
Rental aircraft	4	0
Maintenance, repair, and overhaul facilities conducting long-term storage of aircraft over 12,500 pounds	4	4
Totals		**15**

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

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

A review of each recommended security procedure is below.

Access Controls: To delineate and adequately protect security areas from unauthorized access, it is important to consider boundary measures such as

fencing, walls, or other physical barriers, electronic boundaries (e.g., sensor lines, alarms), and/or natural barriers. Physical barriers can be used to deter and delay the access of unauthorized persons onto sensitive areas of airports. Such structures are usually permanent and are designed to be a visual and psychological deterrent as well as a physical barrier.

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

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

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

Source: *Security Guidelines for General Aviation Airports*

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

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

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

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

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

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

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

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

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

Aircraft Security: The main goal of this security enhancement is to prevent the intentional misuse of general aviation aircraft for terrorist purposes. Proper securing of aircraft is the most basic method of enhancing general

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

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

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

- Hold periodic meetings with the airport community.

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

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

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

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

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

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

SUMMARY

The intent of this chapter has been to outline the facilities required to meet potential aviation demands projected for Coolidge Municipal Airport through the planning horizon. A summary of the airside and landside requirements is presented on **Exhibits 3D** and **3E**.

Following the facility requirements determination, the next step is to determine a direction of development which best meets these projected needs through a series of airport development alternatives. The remainder of the Master Plan will be devoted to outlining this direction, its schedule, and its cost.

06MP12-3D-8/28/09

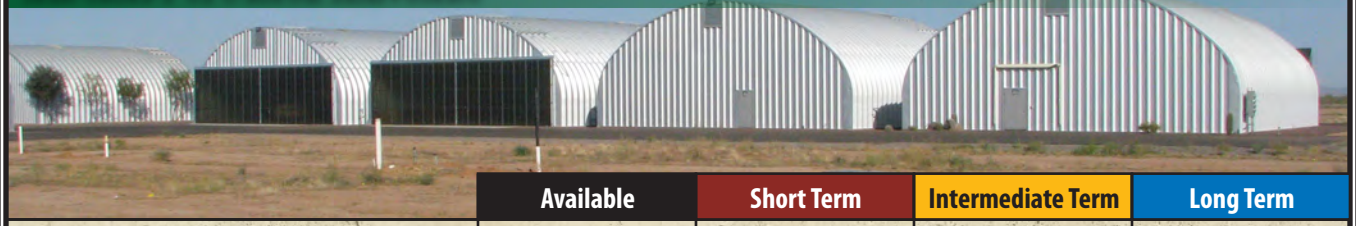
	AVAILABLE	SHORT TERM NEED	LONG TERM NEED
RUNWAYS 	**Primary Runway 5-23** ARC C-IV 5,562' x 150', Asphalt 80,000 lbs. SWL 115,000 lbs. DWL 210,000 lbs. DTWL One-mile Visibility Approach (both ends) **Crosswind Runway 17-35** ARC B-II 3,871' x 75', Asphalt 17,000 lbs. SWL Visual Approach	**Primary Runway 5-23** Improve GPS Approaches Improve OFA **Crosswind Runway 17-35** 30,000 lbs. SWL One-Mile Visibility Approach (both ends)	**Primary Runway 5-23** Consider Runway Extension to at Least 7,000' **Crosswind Runway 17-35** Same
TAXIWAYS 	**Primary Runway 5-23** Three Exit Taxiways 500' Separation 40'-50' Wide **Crosswind Runway 17-35** Partial Parallel Taxiway Two Exit Taxiways 525' Separation 40'-50' Wide	**Primary Runway 5-23** Four Exit Taxiways 75' Wide Designate Taxiway Identifiers **Crosswind Runway 17-35** Full-length Parallel Taxiway Three Exit Taxiways	**Primary Runway 5-23** Consider West Side Parallel Taxiway **Crosswind Runway 17-35** Same
NAVIGATIONAL AIDS 	**Primary Runway 5-23** VOR/DME (5) GPS (23) LORAN-C **Crosswind Runway 17-35** LORAN-C	**Primary Runway 5-23** GPS APV Approach with One-Mile Visibility (both ends) **Crosswind Runway 17-35** GPS LNAV Approach with One Mile Visibility (both ends)	**Primary Runway 5-23** Same **Crosswind Runway 17-35** Same
LIGHTING, MARKING, AND WEATHER 	Rotating Beacon Four Wind Cones Segmented Circle Limited MITL PCL **Primary Runway 5-23** Non-precision Markings MIRL, PAPI-2 (both ends) Hold Positions - 250' **Crosswind Runway 17-35** Basic Markings Hold Positions - 125'	Install AWOS Add MITL on all Taxiways **Primary Runway 5-23** Add REILs (both ends) **Crosswind Runway 17-35** Non-precision Markings Add MIRL Hold Positions - 200'	Add Distance Remaining Signs **Primary Runway 5-23** Upgrade to PAPI-4 (both ends) **Crosswind Runway 17-35** Add PAPI-2 (both ends) Add REIL (both ends)

APV: approach procedure with vertical guidance
ARC: airport reference code
AWOS: automated weather observation station
DWL: aircraft with dual-wheel type landing gear
DTWL: aircraft with dual-tandem type landing gear
GPS: global positioning system
LNAV: lateral navigation
MIRL: medium intensity runway lighting
MITL: medium intensity taxiway lighting
OFA: object free area
PAPI: precision approach path indicator
PCL: pilot-controlled lighting
REIL: runway end identifier lighting
SWL: aircraft with single-wheel tandem type landing gear
VOR/DME: very high frequency omni-directional range with distance measuring equipment

COOLIDGE MUNICIPAL AIRPORT

Exhibit 3D
AIRSIDE FACILITY REQUIREMENTS

AIRCRAFT STORAGE HANGARS

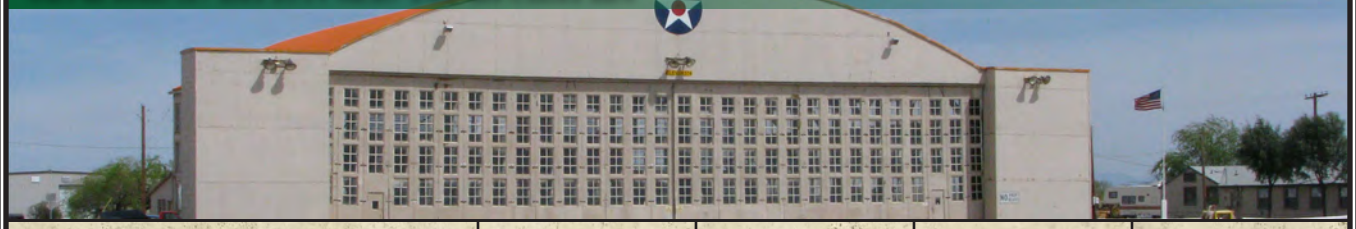


	Available	Short Term	Intermediate Term	Long Term
Total Hangar Positions	32	40	54	76
Total Hangar Storage Area (s.f.)	71,200	60,300	82,600	117,100
Maintenance Area (s.f.)	18,000	8,750	11,375	15,750

AIRCRAFT PARKING APRON

Transient Ramp Positions		7	8	11
Local Ramp Positions		14	15	19
Total Ramp Positions	***5***	***21***	***23***	***30***
Apron Area (s.y.)	50,000	13,300	14,500	17,400

GENERAL AVIATION SERVICE FACILITIES



General Aviation Services Area (s.f.)	2,000	700	850	1,200
Automobile Parking Spaces	NA	23	29	42

FUEL STORAGE (two-week requirements)

100LL Avgas (gal.)	10,000	3,400	4,000	5,200
Jet A (gal.)	10,000	12,200	14,800	19,600

OTHER FACILITIES

	None	Wash Rack, Helicopter Hardstand	Wash Rack, Helicopter Hardstand	Wash Rack, Helicopter Hardstand

COOLIDGE MUNICIPAL AIRPORT

Exhibit 3E
LANDSIDE FACILITY REQUIREMENTS

Chapter Four

AIRPORT ALTERNATIVES

Coolidge Municipal Airport

Coolidge, Arizona

CHAPTER 4

Airport Alternatives

AIRPORT MASTER PLAN

Prior to defining the recommended development program for Coolidge Municipal Airport, it is important to first consider development potential as well as constraints to future development at the airport. The previous chapters have focused on the airport's available facilities, existing and potential future demand levels, and the types of facilities that are needed to meet the demand. Specific attention was also given to defining Federal Aviation Administration (FAA) design standards that are applicable to the airport.

In some cases, development needs are straightforward, while for other items, alternative methods for meeting projected aviation demand should be considered. In this chapter, airport development alternatives are considered for the airport, where applicable. For each alternative, different physical layouts are presented for the purpose of evaluation. The ultimate goal is to develop the underlying rationale which supports the recommended Master Plan Concept. Through this process, an evaluation of the most realistic and best uses of airport property is made while considering local development goals, physical and environmental constraints, and appropriate airport design standards.

Any development proposed by a Master Plan evolves from an analysis of projected needs. Though the needs were determined by the best methodology available, it cannot be assumed that future events will not change these needs. The master planning process attempts to develop a viable concept for meeting the needs caused by projected demands for the next 20 years. However, no plan of action

should be developed which may be inconsistent with the future goals and objectives of the City of Coolidge, who has a vested interest in the development and operation of the airport.

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

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

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

NO-BUILD/DO NOTHING ALTERNATIVE

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

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

The potential for increased aviation activity at Coolidge Municipal Airport can be related to the growing population of the City of Coolidge and surrounding area and growth within the general aviation industry as a whole. The diversified economic base in the

area that includes manufacturing, trade, and service industries also offers a potential for increased private and business general aviation activity. While overall, general aviation growth will be steady but slow nationally, the demand for higher performance aircraft is experiencing the strongest growth rate. With heightened interest in commercial aviation security, corporate general aviation could expect demand for private aircraft to grow even more.

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

The unavoidable consequence of the "no-build/do nothing" alternative would involve the airport's inability to attract potential airport users and expand economic development in the City of Coolidge and the surrounding region. Corporate aviation plays a major role in the transportation of business leaders and key employees. If the airport does not have the capability to meet the needs of potential users, the City's capability to attract the major sector businesses that rely on air transportation could be diminished. In addition, the airport not only serves the aviation needs of the area, but provides opportunities for non-aviation related commercial/industrial development. Due to the large amount of land available at the airport, certain areas are designated for development other than aviation, thus, further providing diversity for economic activities in the City of Coolidge and surrounding region.

Following the "no-build/do nothing" alternative would also not support the private businesses that have made investments at Coolidge Municipal Airport. As these businesses grow, the airport will need to be able to accommodate the infrastructure needs associated with their growth. Each of the businesses on the airport provides jobs for local residents, creates positive economic benefits for the community, and pays taxes for local government operations.

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

To propose no further development at Coolidge Municipal Airport could adversely affect the long term viability of the airport, resulting in negative economic effects on the City of Coolidge and surrounding communities. The "no-build/do nothing" alternative is also inconsistent with the long term goals of the FAA and Arizona Department of Transportation (ADOT) –

Aeronautics Group, which are to enhance local and interstate commerce. Therefore, this alternative is not considered to be prudent or feasible and will no longer be considered in this study.

REVIEW OF PREVIOUS MASTER PLAN

The previous Master Plan for Coolidge Municipal Airport was completed in June 1997. The study examined means by which the airport could continue to operate as a safe, efficient facility that served future aviation demands. The 1997 Master Plan was also demand-based and was designed to allow the airport to respond to aviation demand as it evolved over time.

The previous Master Plan recommended airfield improvements to include upgrading navigational aids and constructing additional taxiways. In fact, a full-length parallel taxiway was identified on the west side of the airport should aviation demand warrant such. In addition, the plan identified the need for additional hangar development. Since the time of these recommendations, the City of Coolidge has installed two-box precision approach path indicators (PAPI-2s) on each end of Runway 5-23. Several aircraft storage hangars have also been constructed to accommodate based aircraft demand. The airport layout plan (ALP) drawing shown on **Exhibit 4A** depicts the airside and landside improvements recommended in the 1997 Master Plan.

AIRPORT DEVELOPMENT OBJECTIVES

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

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

- Develop facilities to safely and efficiently serve general aviation users and encourage increased use of the airport.

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

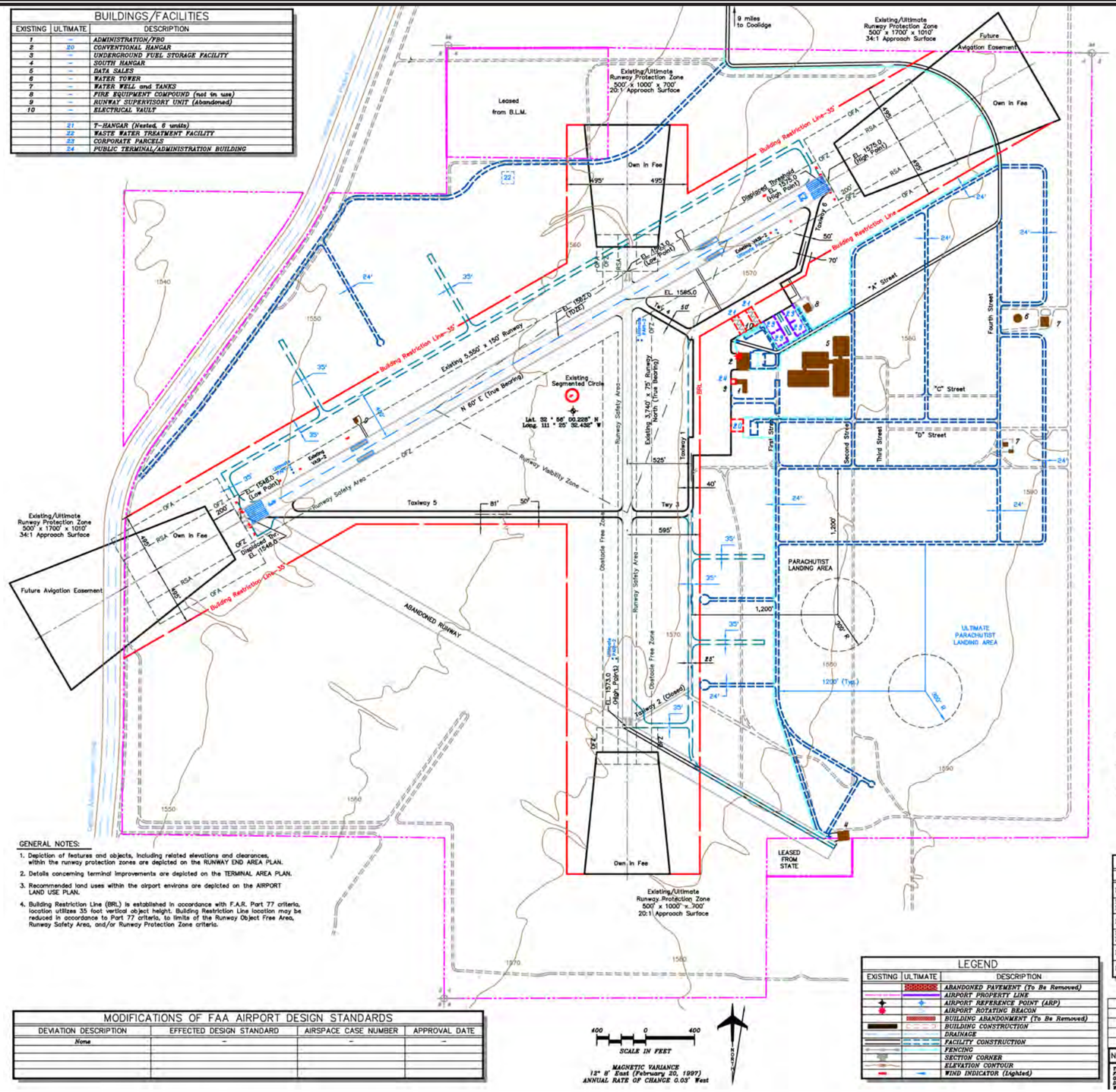
- Identify any future land acquisition needs.

- Identify opportunities for approved non-aeronautical use of certain areas on the airport to further diversify the airport's revenue-generating potential.

06MP12-4A-11/17/09

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION
1	–	ADMINISTRATION/FBO
2	20	CONVENTIONAL HANGAR
3	–	UNDERGROUND FUEL STORAGE FACILITY
4	–	SOUTH HANGAR
5	–	DATA SALES
6	–	WATER TOWER
7	–	WATER WELL and TANKS
8	–	FIRE EQUIPMENT COMPOUND (not in use)
9	–	RUNWAY SUPERVISORY UNIT (abandoned)
10	–	ELECTRICAL VAULT
	21	T-HANGAR (Nested, 6 units)
	22	WASTE WATER TREATMENT FACILITY
	23	CORPORATE PARCELS
	24	PUBLIC TERMINAL/ADMINISTRATION BUILDING



GENERAL NOTES:

1. Depiction of features and objects, including related elevations and clearances, within the runway protection zones are depicted on the RUNWAY END AREA PLAN.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA PLAN.
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE PLAN.
4. Building Restriction Line (BRL) is established in accordance with F.A.R. Part 77 criteria, location utilizes 35 foot vertical object height. Building Restriction Line location may be reduced in accordance to Part 77 criteria, to limits of the Runway Object Free Area, Runway Safety Area, and/or Runway Protection Zone criteria.

MODIFICATIONS OF FAA AIRPORT DESIGN STANDARDS

DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	AIRSPACE CASE NUMBER	APPROVAL DATE
None	-	-	-

400 0 400
SCALE IN FEET

MAGNETIC VARIANCE
12° 0' East (February 20, 1997)
ANNUAL RATE OF CHANGE 0.03' West

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		ABANDONED PAVEMENT (To Be Removed)
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING ABANDONMENT (To Be Removed)
		BUILDING CONSTRUCTION
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		SECTION CORNER
		ELEVATION CONTOUR
		WIND INDICATOR (Lighted)

FOR APPROVAL BY:

John Baudek, City Manager — DATE

AIRPORT DATA

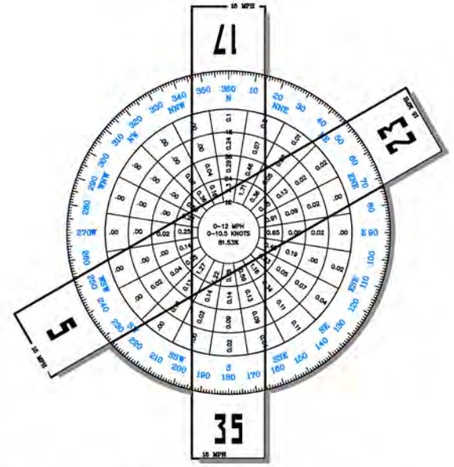
CITY: Coolidge, Arizona — COUNTY: Pinal, Arizona
RANGE: 05 SE — TOWNSHIP:– — CIVIL TOWNSHIP: –

COOLIDGE MUNICIPAL AIRPORT		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		General Aviation	SAME
AIRPORT REFERENCE CODE		C-II	SAME
DESIGN AIRCRAFT		Canadair CL-600	SAME
AIRPORT ELEVATION		1575.0 MSL	SAME
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		107° F	SAME
AIRPORT REFERENCE POINT (NAD 83)	Latitude	32° 56' 00.228" N	SAME
ARP COORDINATES (5010)	Longitude	111° 25' 32.436" W	SAME
AIRPORT and TERMINAL NAVIGATIONAL AIDS		GPS VOR/DME Rotating Beacon	GPS Rotating Beacon

RUNWAY DATA

	RUNWAY 5–23		RUNWAY 17–35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
MAX ELEVATION ABOVE MSL	1575.0	1575.0	1573.0	1573.0
AIRCRAFT APPROACH CATEGORY–DESIGN GROUP	C–II	C–II	B–II	B–II
WIND COVERAGE (12 MPH)	90.8%	90.8%	92.9%	92.9%
RUNWAY BEARING	N 80.0 ° E	N 80.0 ° E	North	North
RUNWAY DIMENSIONS	5,550' x 150'	5,550' x 150'	3,740' x 75'	3,740' x 75'
RUNWAY END–FAR PART 77 CATEGORY	Nonprecision/Nonprecision	Nonprecision/Nonprecision	Visual, Visual	Visual, Visual
RUNWAY APPROACH SURFACES	34:1, 34:1	34:1, 34:1	20:1, 20:1	20:1, 20:1
RUNWAY THRESHOLD DISPLACEMENT	50'/55'	50'/35'	None	None
RUNWAY STOPWAY	None	None	None	None
RUNWAY SAFETY AREA	1,000' x 400'	1,000' x 400'	300' x 150'	300' x 150'
RUNWAY OBSTACLE FREE ZONE	200' x 400'	200' x 400'	200' x 400'	200' x 400'
RUNWAY OBJECT FREE AREA (ROFA)	1,000' x 800'	1,000' x 800'	300' x 500'	300' x 500'
RUNWAY SURFACE MATERIAL	Asphalt	Asphalt	Asphalt	Asphalt
RUNWAY SURFACE TREATMENT	None	None	None	None
RUNWAY STRENGTH (in thousand lbs.) [1]	80(S)/115(D)/210(DT)	80(S)/115(D)/210(DT)	17(S)	17(S)
RUNWAY EFFECTIVE GRADIENT	0.4685%	0.4685%	0.2139%	0.2139%
RUNWAY TOUCHDOWN ZONE ELEVATION	1582 MSL, 1575 MSL	1582 MSL, 1575 MSL	1570 MSL, 1573 MSL	1570 MSL, 1573 MSL
RUNWAY MARKING	TDZ, Edge, Centerline	TDZ, Edge, Centerline	Basic Visual	Basic Visual
RUNWAY LIGHTING	MIRL	MIRL	None	MIRL
RUNWAY APPROACH LIGHTING	None	None	None	None
TAXIWAY LIGHTING [2]	MITL	MITL	None	MITL
TAXIWAY SURFACE MATERIAL	Asphalt	Asphalt	Asphalt	Asphalt
TAXIWAY MARKING	Centerline	Centerline	Centerline	Centerline
ELECTRONIC NAVIGATIONAL AIDS	GPS VOR/DME	GPS	None	None
VISUAL NAVIGATIONAL AIDS	VASI–2L (Inoperative)	PAPI–2 REIL	None	PAPI–2

[1] Pavement strengths are expressed in Single(S), Dual(D), Dual Tandem(DT), and/or Double Dual Tandem(DDT) wheel loading capacities.
[2] Taxiway 4 and Taxiway 6



SOURCE:
COOLIDGE MUNICIPAL AIRPORT
Coolidge, Arizona

PERIOD:
Feb. 2, 1984 – Nov. 19, 1984

COMPILED BY:
Henningson, Durham, Richardson, Inc
Architects – Engineers

RUNWAY END COORDINATES (NAD 83)

Coolidge Municipal Airport		EXISTING	ULTIMATE
Runway 5	Latitude	32° 56' 01.128" N	32° 56' 01.128" N
	Longitude	111° 26' 07.234" W	111° 26' 07.234" W
Runway 5 Displaced Threshold	Latitude	32° 56' 01.375" N	32° 56' 01.375" N
	Longitude	111° 26' 06.726" W	111° 26' 06.726" W
Runway 23	Latitude	32° 56' 28.537" N	32° 56' 28.537" N
	Longitude	111° 25' 10.807" W	111° 25' 10.807" W
Runway 23 Displaced Threshold	Latitude	32° 56' 28.407" N	32° 56' 28.407" N
	Longitude	111° 25' 11.192" W	111° 25' 11.192" W
Runway 17	Latitude	32° 56' 21.528" N	32° 56' 21.528" N
	Longitude	111° 25' 30.133" W	111° 25' 30.133" W
Runway 35	Latitude	32° 55' 44.624" N	32° 55' 44.624" N
	Longitude	111° 25' 30.133" W	111° 25' 30.133" W

WIND COVERAGE

	12 MPH 10.5 Knots	15 MPH 13 Knots
Runway 5–23	90.8%	92.0%
Runway 17–35	92.9%	95.2%
Runways Combined	96.1%	97.8%

No.	REVISIONS	DATE	BY	APP'D

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

Coolidge Municipal Airport

AIRPORT LAYOUT PLAN

Coolidge, Arizona

PLANNED BY: Christopher M. Huguenin
DETAILED BY: Larry B. Johnson
APPROVED BY: James M. Harris
July 17, 1997 | SHEET 1 OF 6

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4A
1997 ALP DRAWING

- Allow adequate separation of future airport development from the existing parachute operations being conducted in the southeast area of the airport.

- Ensure that any recommended future development is environmentally compatible.

AIRPORT ALTERNATIVE CONSIDERATIONS

Exhibit 4B presents both airside and landside planning issues that will be specifically addressed. These issues are the result of the findings of the aviation demand forecasts and airport facility requirements evaluations, and they include input from the FAA, ADOT-Aeronautics Group, PAC, and City staff.

The remainder of this chapter will describe various development alternatives for airside and landside facilities. Within each of these areas, specific facilities are required or desired. Although each area is treated separately, planning must integrate the individual requirements so that they can complement one another.

ANALYSIS OF AIRSIDE CONSIDERATIONS

The purpose of this section is to identify and evaluate the various viable airside considerations at Coolidge Municipal Airport to meet the requirements set forth in Chapter Three. Airfield facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of airport alternatives.

In particular, the runway system requires the greatest commitment of land area to meet the physical layout of the system as well as the required FAA safety standards. Moreover, the design of the airfield system defines minimum building set-back distances from the runway and object clearance standards. These criteria should be defined first to ensure that the fundamental needs of the airport are met. Therefore, airside alternatives will be considered prior to detailing landside alternatives.

AIRPORT REFERENCE CODE DESIGN STANDARDS

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

The critical aircraft operational threshold is used when evaluating the need to develop and/or upgrade airport facilities. This is done to ensure that an airport is cost-effectively constructed to meet the needs of those aircraft that are using, or have the potential to use, the airport on a regular basis. It should be noted that it is not uncommon for aircraft to operate at airports that are not designated to meet that aircraft's ARC. This is due to these aircraft not meeting the 500 annual itinerant operations threshold.

At Coolidge Municipal Airport, based aircraft fall within a diverse range of approach categories (A, B, and C) and Airplane Design Groups (ADGs I, II, and IV). Refer to Chapter Three for a full discussion of the ARC. The mix of transient aircraft that utilizes the airport also varies just as based aircraft. Aircraft that fall within approach category C and ADG IV are the most demanding aircraft to operate at the airport (due to their higher approach speeds and longer wingspans) and do so with a frequency of at least 500 operations annually. The Lockheed C-130 turboprop aircraft (ARC C-IV) represents the airport's current critical design aircraft.

As indicated previously, the potential exists in the future for increased use of the airport by business turboprop and jet aircraft. In the event this does occur, the majority of these aircraft would likely fall within approach categories B and C and ADGs I and II. It is expected that the Lockheed C-130 will continue to operate at the airport on a regular basis as it is currently doing. As a result, Coolidge Municipal Airport should ultimately be planned to continue to meet ARC C-IV design standards. Alternative analysis will evaluate facility development that will meet ARC C-IV aircraft design standards on primary Runway 5-23. As previously discussed, Runway 17-35 serves to accommodate smaller aircraft, especially when crosswinds prohibit the use of Runway 5-23. As such, Runway 17-35 should be designed to conform to full ARC B-II design standards. **Table 4A** compares the existing and ultimate design requirements for Runways 5-23 and 17-35.

Object Free Area

The design of airfield facilities includes both the pavement areas to accommodate landing and ground operations of aircraft as well as imaginary safety areas to protect aircraft operational areas and keep them free of obstructions that could affect the safe operation of aircraft at the airport. The imaginary safety areas include the object free area (OFA) as previously discussed in Chapter Three.

The FAA defines the runway OFA as an area centered on the runway extending laterally and beyond each runway end, in accordance to the critical aircraft design category utilizing the runway. The OFA must provide clearance of all ground-based objects protruding above the RSA edge elevation, unless the object is fixed by function serving air or ground navigation. For ARC C-IV design standards that apply to Runway 5-23, the OFA is 800 feet wide, extending 1,000 feet beyond each runway end.

AIRSIDE CONSIDERATIONS

Runway 5-23

- Evaluate the runway for existing/ultimate Airport Reference Code (ARC) C-IV design standards
- Consider the potential for a runway extension providing for up to 8,100´ of operational length
- Analyze a straight-in instrument approach procedure to each runway end providing vertical guidance with approach minimums not lower than ¾-mile
- Improve visual approach aids to include the installation of runway end identification lights (REILs) and upgrade to a four-box precision approach path indicator (PAPI-4) system on each runway end

Runway 17-35

- Install medium intensity runway lighting (MIRL)
- Analyze a straight-in instrument approach procedure to each runway end with approach minimums not lower than one mile
- Increase the pavement strength to 30,000 pounds single wheel loading (SWL)
- Improve visual approach aids to include the installation of REILs and PAPI-2s on each runway end

Taxiways / Weather and Marking Aids

- Extend taxiway south to provide full length parallel taxiway serving Runway 17-35
- Construct hold aprons serving all runway ends
- Install medium intensity taxiway lighting (MITL) on all active taxiways
- Evaluate a west side parallel taxiway on Runway 5-23
- Implement an airfield signage system
- Evaluate the existing and ultimate taxiway system in conforming to appropriate airplane design group (ADG) standards
- Install Automated Weather Observation System (AWOS)
- Identify locations for marked helicopter parking

LANDSIDE CONSIDERATIONS

- Identify locations for potential hangar development to meet projected demand
- Analyze current and future terminal area needs and locations
- Identify potential revenue support parcels to include both airfield access and non-airfield access areas
- Analyze property on the northwest side of the airport for future development
- Expand fuel farm capacity to meet future demand
- Analyze support facilities to help further development of airport property

COOLIDGE MUNICIPAL AIRPORT

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

	Existing/Ultimate Runway 5-23	Existing/Ultimate Runway 17-35
Airport Reference Code (ARC)	C-IV	B-II
Approach Visibility Minimums	One mile / Not lower than ¾-mile	Visual / One mile
Runways		
Length	5,562 / Up to 8,100	3,871
Width	150	75
Runway Safety Area (RSA)		
Width	500	150
Length Beyond Runway End	1,000	300
Object Free Area (OFA)		
Width	800	500
Length Beyond Runway End	1,000	300
Obstacle Free Zone (OFZ)		
Width	400	400
Length Beyond Runway End	200	200
Runway Centerline to:		
Parallel Taxiway Centerline	400	240
Edge of Aircraft Parking Apron	500	250
Runway Protection Zone (RPZ)	Both Ends	Both Ends
Inner Width	500 / 1,000	500
Outer Width	1,010 / 1,510	700
Length	1,700 / 1,700	1,000
Taxiways		
Width	40-50 / 75	40-50 / 35
Safety Area Width	171	79
Object Free Area Width	259	131
Taxiway Centerline to:		
Parallel Taxiway/Taxilane	215	105
Fixed or Moveable Object	129.5	65.5
Taxilanes		
Object Free Area Width	225	115
Taxilane Centerline to:		
Parallel Taxilane Centerline	198	97
Fixed or Moveable Object	129.5	57.5

Source: FAA Advisory Circular (AC) 150/5300-13, Change 14, *Airport Design*; 14 CFR Part 77, *Objects Affecting Navigable Airspace*

The southwestern-most portion of the OFA on Runway 5-23 is obstructed by a levee and fence that rise above the RSA edge elevation that is associated with the Central Arizona Project Canal which runs adjacent to the west side of the airport. In addition, the OFA extends beyond airport property by approximately 100 feet into the canal. **Exhibit 4C** depicts the OFA deficiency as previously discussed. The alternatives to follow will address bringing the OFA obstruction into FAA compliance.

Runway Protection Zone

The runway protection zone (RPZ) is a trapezoidal surface which begins 200 feet from the runway threshold. The RPZ is a designated area beyond the runway end that the FAA encourages airports to own, or in some fashion maintain positive control over the types of land uses within it. The goal of the RPZ standard is to increase safety for both pilots and people on the ground. The RPZ can have objects located within its boundaries, provided the objects are not obstructions to FAA's Federal Aviation Regulation (F.A.R.) Part 77, *Objects Affecting Navigable Airspace* or FAA Order 8260.3B, *Terminal Instrument Procedures* (TERPS). It should be noted, however, that the FAA places high priority on maintaining the RPZ free of items that attract groupings of people or permanent residences.

The FAA does not necessarily require the fee simple property acquisition of the RPZ area, but highly recommends that the airport have positive control over development within the RPZ. It is preferred that the airport owns the property; however, avigation easements (ownership of airspace within the RPZ) can be pursued if fee simple purchase is not possible. It should be noted, however, that avigation easements can often cost as much as 80 percent of the full property value and may not adequately prohibit incompatible land uses from locating in the RPZ. An avigation easement would include the space below the approach surface and within the RPZ.

Portions of the existing RPZs off each end of Runway 5-23 extend beyond airport property as shown on **Exhibit 4C**. If the airport were to pursue a runway extension or obtain improved instrument approach procedures to this runway, the RPZs would encompass even greater area currently not controlled by the airport. The alternatives section will further discuss options related to the RPZs associated with Runway 5-23. It should be noted that a small portion of the existing Runway 17 RPZ currently extends beyond airport property into land the airport currently leases from the Bureau of Land Management. Through this lease, the airport is able to maintain positive control over land uses within this area.

RUNWAY LENGTH

Analysis in the previous chapter recommended a minimum of 5,500 feet for Runway 5-23 to satisfy the existing planning category of aircraft. This runway length is consistent with the FAA runway length requirements contained in FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*.

The 5,562 feet of available length on Runway 5-23 can allow for unrestricted operations for many business jet aircraft when weather conditions such as mild temperatures and a non-contaminated (free of water) runway prevail. Operations become more restricted when daily temperatures climb into the 100s, which occurs on a

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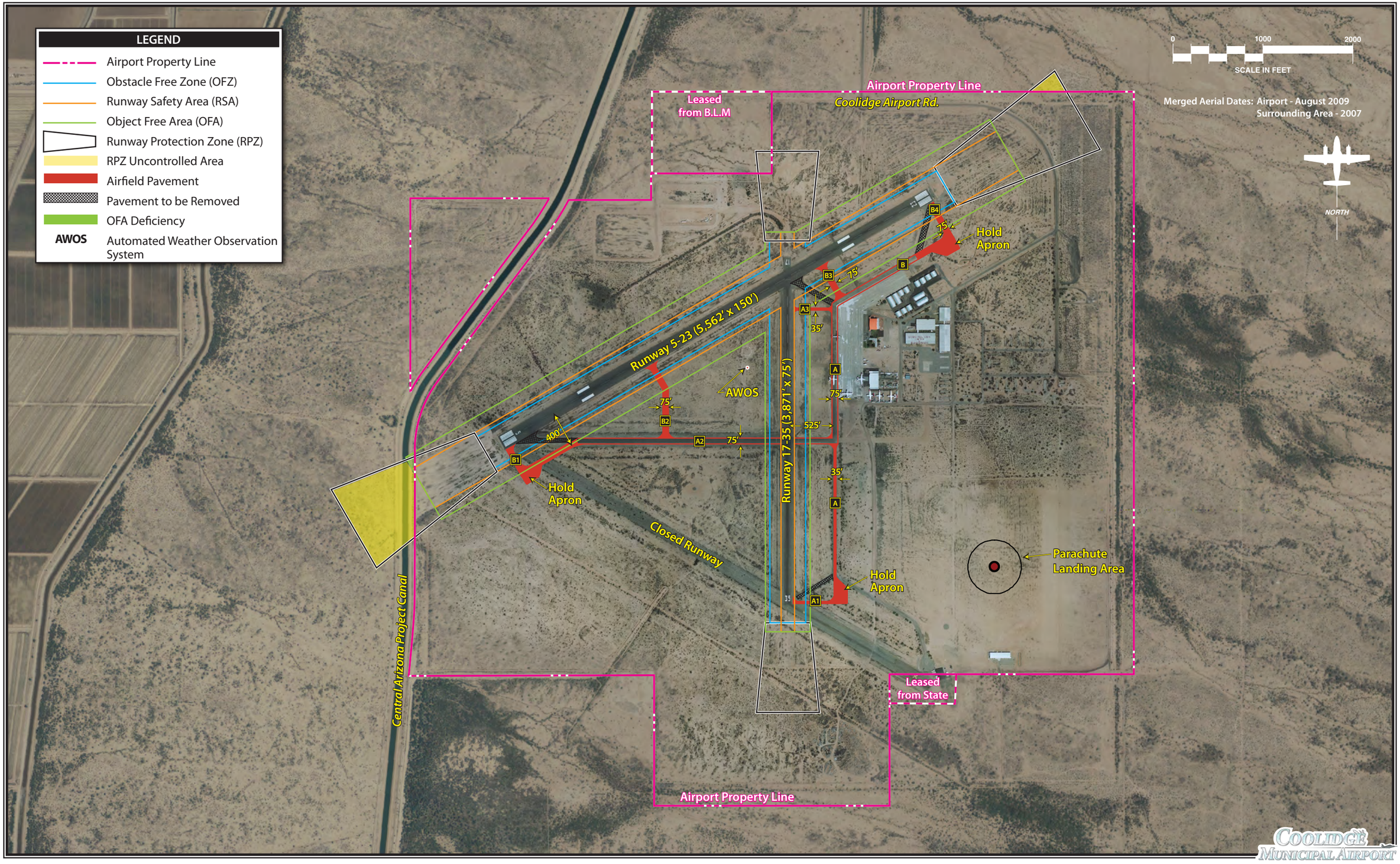

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4C
AIRSIDE CONSIDERATIONS

frequent basis at Coolidge Municipal Airport. At these higher temperatures, aircraft operators must reduce useful loads to be able to depart on Runway 5-23. As a result, fuel or passenger loading must decrease to ensure that the aircraft can depart on the available runway length. This can increase operator costs as they must stop enroute to their final destination to take on additional fuel needed.

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

Several aircraft which currently utilize the airport on an infrequent basis require runway lengths longer than 5,500 feet. If business jets, such as the Cessna Citation 550 and 650, Beechjet 400, Lear 35, and Challenger 600, begin to operate at the airport on a much more regular basis, necessary justification may be made to extending the length of Runway 5-23. Some of these aircraft call for as much as 7,000 feet of available length to operate. Also, if the stage lengths of aircraft operating out of Coolidge Municipal Airport increase, additional runway length may be needed to allow increased useful loads. Under these circumstances, up to 8,100 feet of runway length may be needed to satisfy the demands of these longer stage lengths. In addition to these business jet aircraft, specialty operators located at the airport to include International Air Response and Complete Parachute Solutions have indicated a desire to ultimately operate larger air cargo and military jump aircraft at the airport that would need at least 7,000 feet of runway length to safely accommodate their operations.

The alternatives to follow analyze two separate runway extensions. One calls for an ultimate length of 7,000 feet on Runway 5-23 while the other depicts an ultimate runway length of 8,100 feet. Due to the location of the Central Arizona Project Canal to the southwest of the airport and the likelihood that it would not be realigned, extending Runway 5-23 to the southwest is considered impracticable. There is, however, land available for development to the northeast of Runway 5-23. Therefore, the runway extension alternatives will be considered to the northeast.

It should be noted that a runway extension was also considered on Runway 17-35 during this analysis. The reasoning behind extending this runway would be to maintain Coolidge Airport Road in its existing location so as not to have to realign the roadway around a potential northeasterly extension to Runway 5-23. While realigning the roadway would be a costly endeavor, it was determined that extending Runway 17-35 to make it the airport's primary runway would be more costly and could potentially alter airfield safety.

Currently, Runway 17-35 is 3,871 feet long and 75 feet wide. Extending this runway to at least 7,000 feet and making it the airport's primary runway would require a total reconstruction

that would necessitate a substantial increase to its pavement strength, in addition to widening the runway to 150 feet in order to accommodate ADG IV aircraft. Furthermore, additional property would need to be acquired north and/or south of the airport to secure the runway extension and its associated safety areas. In addition to these physical attributes, winds at Coolidge Municipal Airport favor the use of existing primary Runway 5-23. Providing a runway length on Runway 17-35 that would exceed the existing length of Runway 5-23 could negatively impact airfield safety as aircraft would likely utilize the longer runway even though wind conditions tend to favor the use of Runway 5-23.

As a result, no alternatives depicting an extension on Runway 17-35 are presented. The width and pavement strength on Runway 5-23 accommodates the existing and ultimate critical design aircraft while also providing for more desirable wind coverage. As such, a proposed future extension to Runway 5-23 could be better justified for Coolidge Municipal Airport.

Justification for a runway extension will likely be required outside this Master Plan at the time of implementation. This justification would require letters of support from users detailing 500 annual operations by the critical aircraft requiring the additional runway length.

INSTRUMENT APPROACH CONSIDERATIONS

This section will present information regarding the potential for improved instrument approach procedures. Where possible, approach minimums should be as low as possible considering safety and financial constraints. The best approach minimums possible will prevent aircraft from having to divert to another airport, which can cause financial hardship for the aircraft operator, on-airport businesses, and the City.

A key priority which needs to be considered is protecting the airport from the potential for flight obstructions. The FAA has established criteria aimed at protecting the airport from these flight obstructions. First, FAA criterion stipulates that obstructions not be placed too near the runway ends or parallel to the runway. The obstruction clearance requirements are based on the ARC and/or the weight of the critical aircraft, as well as the type of approaches established or planned for the airport. For visual approaches and/or approaches not lower than one-mile visibility for ARC B-II aircraft, minimum obstruction clearance is required. For ARC C-IV aircraft with approach minimums lower than one-mile visibility, however, the obstruction criterion is more protective.

The two primary resources for determining airspace obstructions are Part 77, *Objects Affecting Navigable Airspace* and *Terminal Instrument Procedures* (TERPS). Part 77 is more of a filter which identifies potential obstructions, whereas TERPS is the critical tool in determining actual flight obstructions. In fact, TERPS analysis is used to evaluate and develop instrument approach procedures including visibility minimums and cloud heights associated with approved approaches.

Analysis in the previous chapter indicated that the plan should consider improved instrument approach capabilities for Runways 5-23 and 17-35. The first step in identifying potential airspace obstructions is the evaluation of the appropriate threshold siting surfaces (TSS). TSS is an imaginary surface which represents the most critical approach area nearest the runway end. The TSS is defined by the visibility minimums of the approach and aircraft type utilizing the approach. At Coolidge Municipal Airport, the lowest visibility minimum for aircraft in categories A and B is currently one mile. There are currently no approved instrument approach procedures for aircraft in approach categories C and D.

Coolidge Municipal Airport should consider approval and implementation of approaches providing not lower than ¾-mile visibility minimums for Runway 5-23 for all categories of aircraft. Approaches providing lower than one-mile minimums will allow operations at the airport, when in the past, aircraft may have had to divert to another airport for landing, or delay departure from their origination point awaiting weather improvements. Further, the forecast increase in the operation of business jets at the airport and the continued presence of specialty operators at the airport provides a need for improved instrument approach procedures.

As previously discussed in Chapter Three, significant advancements continue to be made in global positioning system (GPS) navigation that can provide a more cost-effective and attractive means of obtaining instrument approaches. This includes the continued development of the Wide Area Augmentation System (WAAS). WAAS provides for approaches with both course and vertical navigation. This capability was historically only provided by an instrument landing system (ILS), which requires extensive on-airport facilities. The GPS-WAAS could allow for approach minimums to be lower than one-mile visibility. For purposes of this study, alternatives will consider GPS approach procedures with vertical guidance (APV) providing for not lower than ¾-mile visibility minimums on Runway 5-23. In addition, an approach procedure providing for not lower than one-mile visibility minimums with at least course guidance should be considered serving each end of Runway 17-35.

To achieve an approach providing less than one mile visibility minimums, the corresponding runway end will require the installation of an approach lighting system. Examples of approach lighting systems for approaches with not lower than ¾-mile visibility minimums would include a medium intensity approach lighting system

(MALS), omnidirectional approach lighting system (ODALS), or a lead-in light system (LDIN).

TAXIWAYS

Taxiways are the primary transport surfaces linked with the runway and its operation. Such surfaces include parallel taxiways, entrance/exit taxiways, and connecting taxiways.

Taxilanes are those surfaces that would typically realize a lower level of aircraft activity because the taxilanes provide direct ingress/egress to a specific location or airport facility. An example of a taxilane would be the surface which links to an aircraft storage hangar complex, as not all aircraft will use the surface, only those traversing to and from the storage hangars.

FAA AC 150/5300-13, Change 14, *Airport Design*, provides standards for taxiway width and associated safety areas surrounding the taxiway system. As discussed in the previous chapter, these standards are based on the critical aircraft design group which will frequent that particular taxiway. Currently, all existing taxiways at the airport range in width from 40-50 feet. **Exhibit 4C** calls for the widening of certain taxiways to 75 feet in order to accommodate aircraft in ADG IV, namely the Lockheed C-130.

The current location and number of taxiways at Coolidge Municipal Airport is adequate to provide access to existing landside facilities and the runway system. However, in order to provide increased efficiency and safety at the airport, additional taxiways should be planned. A full-length parallel taxiway serving Runway 17-35 is proposed on **Exhibit 4C**. Currently, aircraft landing on Runway 17 or departing on Runway 35 must "back-taxi" on the runway in order to arrive at their intended destination on the airfield. Extending this taxiway to the south to provide a full-length parallel taxiway is highly recommended to improve operational safety and efficiency. In addition, if Runway 17-35 were to accommodate a not lower than one-mile visibility minimum approach, as previously discussed, a full-length parallel taxiway is highly recommended. This taxiway extension should be constructed to 35 feet in width and located 525 feet from the Runway 17-35 centerline, which exceeds the separation requirements for ARC B-II design standards.

In addition, the entrance/exit taxiways at the northeast and southwest ends of Runway 5-23 and at the south end of Runway 17-35 are also depicted as being aligned perpendicular to the runway centerline to allow pilots with improved line-of-sight to the approach ends of each runway. Furthermore, an additional exit taxiway located approximately 1,900 feet north of the Runway 5 threshold is being proposed to improve airfield efficiency.

Exhibit 4C also depicts removing the existing taxiway that leads to/from the intersection of both runways and replacing it with two additional taxiways. In doing so, each of the proposed taxiways would provide en-

trance/exit access to a particular runway, providing for better separation of aircraft that could potentially be using both runways simultaneously.

As called for in the previous Master Plan, a parallel taxiway to the west of Runway 5-23 is being proposed to support landside development in the northwest quadrant of the airport. While facility requirements called for in Chapter Three can be accommodated on the east side of the airport, the development of a west side parallel taxiway should be analyzed to provide the City of Coolidge with a concept for ultimate build-out of the airport as future demand dictates. Alternatives to follow provide two concepts as they relate to the development of a west side parallel taxiway. During the course of the planning period, medium intensity taxiway lighting (MITL) should be applied to all active taxiways at the airport.

RUNWAY LIGHTING AND APPROACH AIDS

Previous analysis determined that crosswind Runway 17-35 should consider providing medium intensity runway lighting (MIRL). MIRL would provide pilots with positive identification of the runway and its alignment during nighttime and/or poor visibility conditions.

Airside considerations also call for upgrading the PAPI-2s serving each end of Runway 5-23 with PAPI-4s. As previously stated in Chapter Three, the four-box systems are better to serve faster aircraft because they are more visible. PAPI-2s should also be considered on each end of Runway 17-35. This will enhance safety by providing pilots with visual guidance information during landings to the runway.

Runway end identification lights (REILs) should be planned for each end of Runway 5-23 in the short term planning period. The FAA indicates that REILs should be considered for all lighted runway ends not planned for a more sophisticated approach lighting system. In the event that a MALS or other type of approach lighting system was to be implemented on this runway, there would be no need for REILs. In addition, REILs are recommended on Runway 17-35 in the event that MIRL is implemented.

RUNWAY PAVEMENT STRENGTH

The pavement strength for Runway 17-35 is rated at 17,000 pounds single wheel loading (SWL). While aircraft weighing more than the certified strength can operate on the runway on a limited basis, the life span of the airport pavements can be shortened due to the utilization of these heavier loads over time.

With the number of aircraft operations forecast to increase over the next several years, an increased pavement strength rating of up to 30,000 pounds SWL on Runway 17-35 should be planned. This will meet the ultimate critical design aircraft for the runway on a regular basis.

HOLD APRONS

Hold aprons provide a location for aircraft to prepare for departure and/or bypass other aircraft. They allow aircraft to pull aside, thus, allowing following aircraft ready to depart to pass. Currently, there are no hold aprons on the airfield. Alternatives consider providing hold aprons for all runway ends at the airport as depicted on **Exhibit 4C**.

AIRFIELD SIGNAGE UPGRADE

Consideration should be given to designating all taxiways in conformance with FAA AC 150/5340-18D, *Standards for Airport Sign Systems*. **Exhibit 4C** depicts potential taxiway designations following the recommendations of the AC. The runway extension alternatives and west side parallel taxiway alternatives to follow also provide for airfield signage recommendations in the event of further development on the airfield.

AUTOMATED WEATHER OBSERVATION SYSTEM SITING

Presently, the airport is without any form of automated or actual weather observation which provides important weather details to pilots such as visibility, cloud ceilings, and altimeter settings. Wind speed and direction can be estimated by pilots using the wind cones located at various locations on the airfield.

The unavailability of current weather observation and reporting primarily affects itinerant aircraft operations to the airport as pilots cannot readily determine weather conditions at the airport from a distant location. In the case at Coolidge Municipal Airport, local operations conducted by Complete Parachute Solutions, related to its military parachute training operations, would also benefit from having current weather reporting capability at the airport. The nearest weather reporting station is located at Casa Grande Municipal Airport, approximately 17 nautical miles to the west.

Aircraft operating under F.A.R. Part 135, *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft*, conducting aircraft charter activities, are especially affected as these aircraft cannot operate at the airport unless current weather reporting is available. Section 135.213, *Weather Reports and Forecasts*, states that weather observations made and furnished to pilots to conduct Instrument Flight Rule (IFR) operations at an airport must be taken at the airport where those IFR operations are conducted. Fractional aircraft operators are also limited when there is no weather reporting. Section 91.1039, *IFR Takeoff, Approach and Landing Minimums*, states that no pilot may begin an instrument approach procedure to an airport unless that airport or the alternate airport has a weather reporting facility.

FAA Order 6560.20B, *Siting Criteria for Automated Weather Observing Systems (AWOS)* provides AWOS siting requirements. While each AWOS sensor has specific siting requirements,

all AWOS sensors should be located together and outside the runway and taxiway OFAs. Generally, AWOS sensors are best placed between 1,000 and 3,000 feet from the primary runway threshold and between 500 and 1,000 feet from the runway centerline. However, this criterion can be relaxed to meet site requirements or reduce impacts to landside development. **Exhibit 4C** calls for the AWOS to be located adjacent to the existing segmented circle and wind cone located in the midfield area of the airport. This location is approximately 2,800 feet from each end of Runway 5-23 and 600 feet from the runway centerline.

AIRSIDE ALTERNATIVES

The following section describes alternatives as they relate to airside considerations previously discussed. Within these alternatives are four scenarios regarding an extension to Runway 5-23 while improving the OFA deficiency at the southwest end of the airport. Also considered are improved instrument approach procedures, approach lighting aids, and land acquisition adjacent to the northeast and southwest sides of the airport. Finally, two alternatives are presented for a west side parallel taxiway serving Runway 5-23.

RUNWAY EXTENSION ALTERNATIVES A1 AND A2

Runway Extension Alternatives A1 and A2, depicted on **Exhibit 4D**, consider an extension on Runway 5-23 to the northeast that provides 7,000 feet of runway length. This length would accommodate the majority of aircraft operating at Coolidge Municipal Airport. It does, however, fall short of the projected 8,100 feet needed to accommodate large aircraft with long stage lengths and increased fuel and passenger loads operating during the hot summer months when temperatures are well above 100 degrees.

In both alternatives, the proposed runway safety area (RSA), OFA, and RPZ would all extend beyond the current property boundary, necessitating the need for land acquisition to the northeast. These areas containing the RSA and OFA would need to be cleared and graded of any obstructions that could negatively affect the operation of aircraft and/or emergency response vehicles. At a minimum, the airport would need to acquire the RSA and OFA areas outside the property line, but it is further recommended that the airport purchase property that falls within the RPZ to provide a larger safety and land use compatibility buffer. At the very least, the airport should have positive control over what is developed in the future within this area through the use of an avigation easement. It should be noted that all land adjacent to the northeast side of the airport is currently owned by the State of Arizona.

The proposed runway extensions traverse Coolidge Airport Road which currently provides access to and from the airport. Any runway extension to the northeast would warrant relocating portions of the roadway. In order to provide the highest level of safety, the alternatives depict the relocated

roadway outside all safety areas including the RPZ.

Likewise, proposing improved instrument approach procedures to each end of Runway 5-23, will further expand the RPZs as a result of the lowered visibility minimums. As indicated on **Exhibit 4D**, the RPZs for Runway 5-23 consider providing for not lower than ¾-mile visibility minimums. In order to achieve an approach providing less than one-mile visibility minimums, the corresponding runway ends generally require the installation of an approach lighting system. A MALS is depicted on the alternatives and further engineering analysis, separate from this Master Plan, would determine the exact location of the approach lighting system. Given the terrain issues to the southwest to include the canal, implementing an approach lighting system of any kind would be challenging. Generally, the MALS lights begin approximately 200 feet from the runway threshold and are spaced to a maximum distance of 1,400 feet, as indicated on the exhibit. The FAA requires that the airport own property within 100 feet on either side of the MALS extending 200 feet from the end. With this being said, approximately 4.5 acres of land are shown as property acquisition to protect the proposed MALS extending southwest of the airport. It should be noted that in the event that either or both runway ends were served with a GPS localizer performance with vertical guidance (LPV) approach, the MALS is recommended but may not be required.

The OFA deficiency at the southwest end of Runway 5-23, discussed earlier in this chapter, is fully mitigated in Alternatives A1 and A2. Alternative A1 considers abandoning the last 100 feet of pavement at the southwest end of Runway 5-23. All safety areas, including the OFA, are shifted 100 feet to the northeast, which removes the OFA from traversing the levee system and fence associated with the Central Arizona Project Canal. In doing so, the airport is able to gain positive control over the OFA which is desirable. In addition, a 1,538-foot runway extension is proposed to the northeast providing an ultimate usable runway length of 7,000 feet.

In Alternative A1, the total area of land outside existing airport property but within the safety areas is approximately 64 acres. The RSA and OFA combined include 6.7 acres. The proposed RPZ northeast of Runway 5-23 contains another 36 acres of land that would need to be positively controlled by the airport. To the southwest, the proposed RPZ encompasses 21 acres.

While Alternative A1 depicts a usable 7,000 feet of total runway length, Alternative A2 proposes to solve the OFA obstruction on the southwest end of the runway by limiting the amount of usable length on Runway 23 through the use of declared distances. The result is a 1,438-foot proposed runway extension to the northeast. Declared distances are the effective runway distances that the airport operator declares available for take-off run, take-off distance, accelerate-stop distance, and landing distance requirements. These are defined by the FAA as follows:

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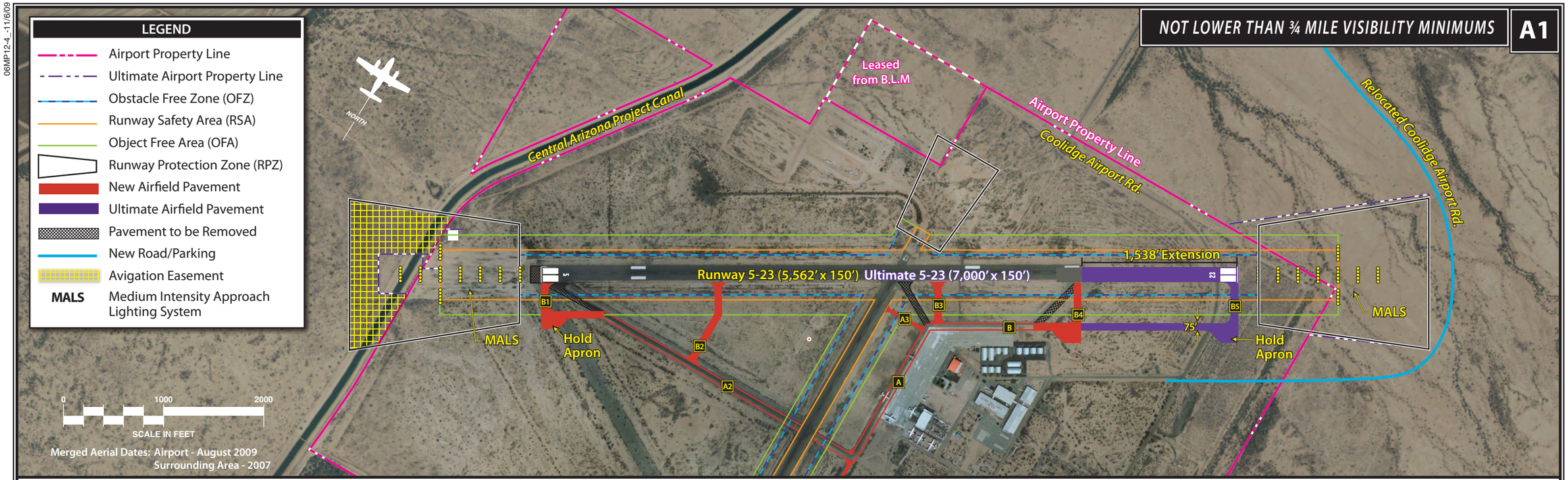
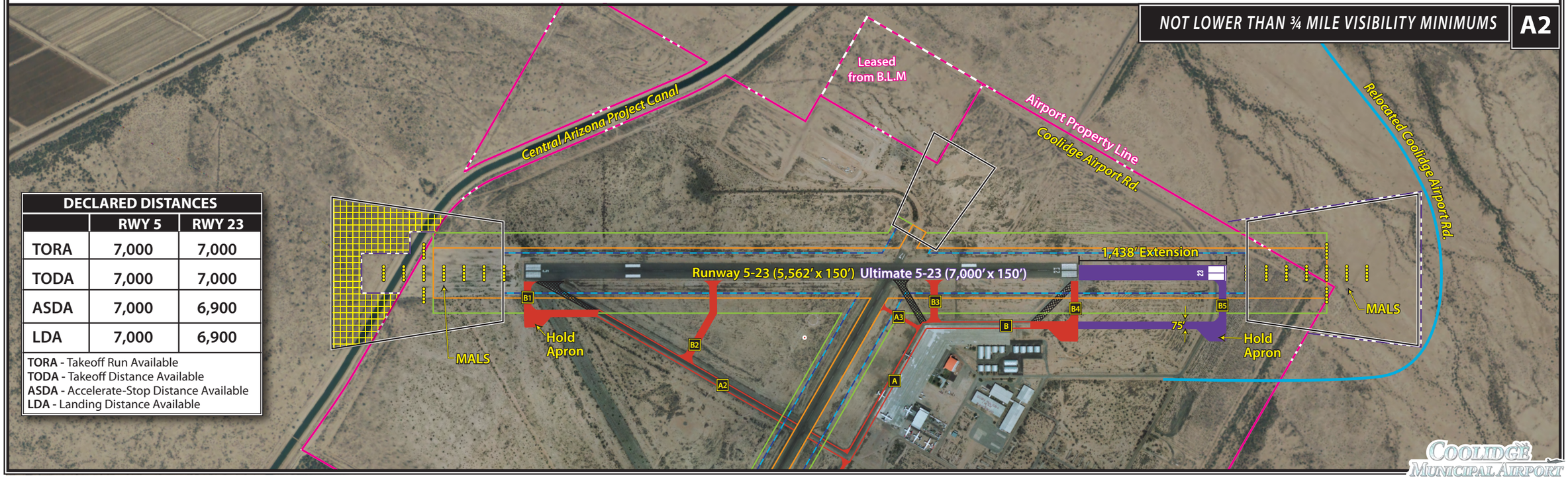
NOT LOWER THAN ¾ MILE VISIBILITY MINIMUMS — A1



NOT LOWER THAN ¾ MILE VISIBILITY MINIMUMS — A2



DECLARED DISTANCES	RWY 5	RWY 23
TORA	7,000	7,000
TODA	7,000	7,000
ASDA	7,000	6,900
LDA	7,000	6,900

TORA - Takeoff Run Available
TODA - Takeoff Distance Available
ASDA - Accelerate-Stop Distance Available
LDA - Landing Distance Available

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4D
RUNWAY EXTENSION
ALTERNATIVE A1 AND A2

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

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

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

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

The ASDA and LDA are the overriding considerations in determining the runway length available for use by aircraft, because safety areas must be considered. The ASDA and LDA can be figured as the useable portions of the runway minus the area required to maintain adequate RSA and OFA beyond the end of the runway.

The FAA standard calls for only 600 feet for RSA (and corresponding OFA) prior to landing. As a result, there is no need to displace the southwest end threshold for landing operations to Runway 5. In Alternative A2, the operational length available for TORA, TODA, ASDA, and LDA calculations utilizing Runway 5 would be 7,000 feet. The ASDA and LDA for Runway 23 take into account the need for full 1,000-foot safety areas beyond the runway end. Because there is approximately 100 feet of OFA obstructed on the southwest end, the ASDA and LDA for Runway 23 operations (take-offs and landings) would be 6,900 feet.

Implementing declared distances would require no changes to the airfield. The runway would not have to be re-marked, and none of the existing lights would have to be moved.

In Alternative A2, the total area of land outside existing airport property but within the safety areas is approximately 65 acres, similar to Alternative A1. The RSA and OFA combined include five acres. The proposed RPZ northeast of Runway 5-23 contains 35.6 acres of land that would need to be positively controlled by the airport. To the southwest, the proposed RPZ encompasses 24 acres.

It should be noted that another option not depicted on these alternatives to address the OFA deficiency currently located off the southwest end of Runway 5-23 is for Coolidge Municipal Airport to submit a request for modification to airport design standards per FAA AC 150/5300, *Airport Design*. Given the small amount of area that the OFA encompasses off airport property and the existing land use associated with the Central Arizona Project Canal, the FAA may determine that a modification to standard is sufficient. If this were the case, the southwest end of Runway 5-23 as it

currently exists would be adequate and declared distances would not apply.

RUNWAY EXTENSION ALTERNATIVES B1 AND B2

A second option for accommodating airfield needs is to provide for a runway extension allowing for up to 8,100 feet, as depicted in Alternatives B1 and B2 on **Exhibit 4E**. This runway length would further accommodate large aircraft needing increased fuel and passenger loads traveling longer stage lengths.

As with the previous alternatives, the OFA deficiency in the southwest area of the airport is addressed. Alternative B1 proposes to abandon 100 feet of pavement at the southwest end of Runway 5-23, allowing the safety areas to be shifted to the northeast, which further allows positive control over the OFA as it is entirely contained on airport property. A 2,638-foot runway extension is depicted to the northeast, bringing the total usable runway length to 8,100 feet. Similar to the previous alternatives, Coolidge Airport Road would need to be relocated in order to allow for the runway extension and secure the safety areas which would expand further north.

The amount of land outside existing airport property but within the safety areas is approximately 95 acres. The RSA and OFA combined include 27 acres. The proposed RPZ northeast of Runway 5-23 contains another 46 acres of land that would need to be positively controlled by the airport. To the southwest, the proposed RPZ encompasses 21.5 acres, similar to Alternative A1. In addition, approximately 4.5 acres of land adjacent to the canal are shown as future airport property in order to protect the MALS.

Alternative B2 applies declared distances in order to satisfy the OFA obstruction southwest of Runway 5-23. Similar to Alternative A2, the amount of usable length on Runway 23 is limited by approximately 100 feet in order to allow the OFA to shift to the northeast which, in turn, alleviates the levee and fence obstructions that currently penetrate the OFA. In order to allow for 8,100 feet of runway length, this alternative proposes a 2,538-foot extension to the northeast. Through the use of declared distances, aircraft operating on Runway 5 would be allowed the full runway length for take-off and landing. On the contrary, aircraft utilizing Runway 23 would be provided 8,000 feet of ASDA and LDA. As previously discussed, the airport could pursue a modification to standard on the OFA deficiency that currently exists in the southwest area of the airport that would allow the runway to remain as it currently exists without having to implement declared distances or abandon runway pavement.

The total area of land outside existing airport property but within the safety areas is approximately 94 acres in Alternative B2. The RSA and OFA combined include 25 acres and the proposed RPZ northeast of Runway 5-23 contains 45 acres of land that would need to be positively controlled by the

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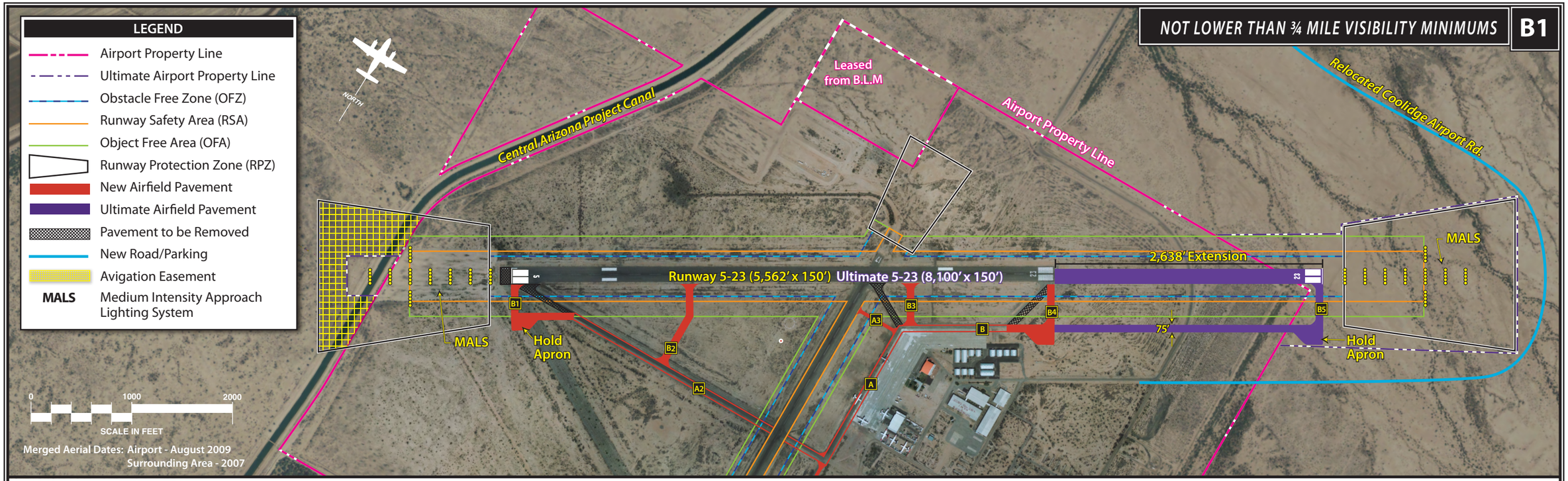
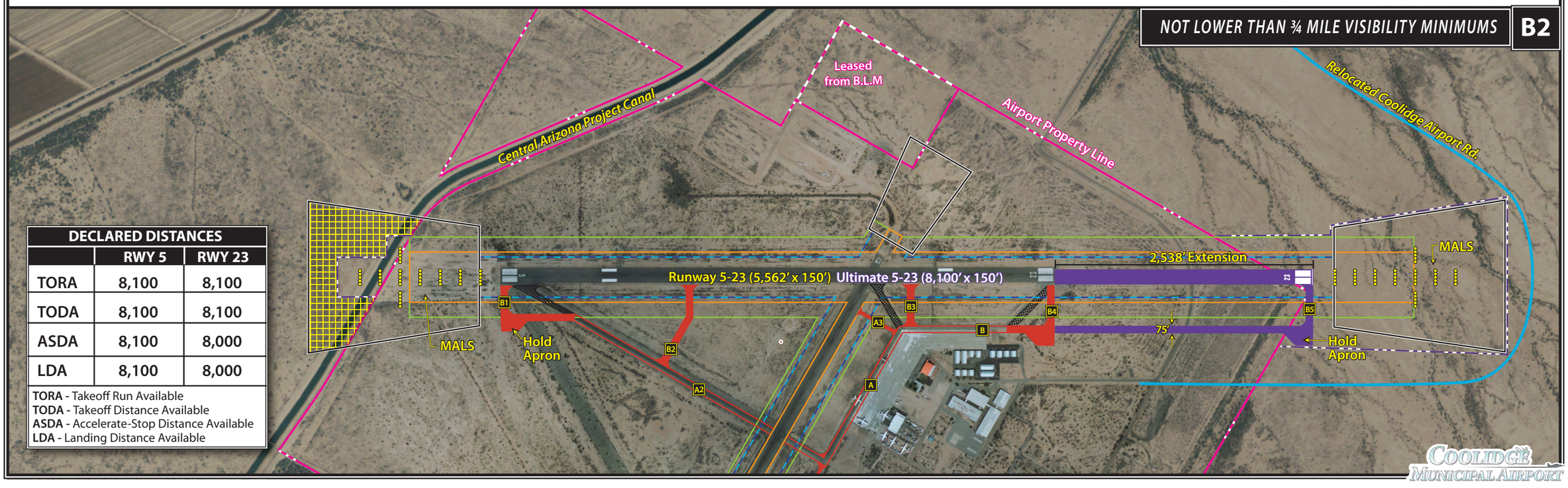
NOT LOWER THAN ¾ MILE VISIBILITY MINIMUMS — B1



NOT LOWER THAN ¾ MILE VISIBILITY MINIMUMS — B2



DECLARED DISTANCES	RWY 5	RWY 23
TORA	8,100	8,100
TODA	8,100	8,100
ASDA	8,100	8,000
LDA	8,100	8,000

TORA - Takeoff Run Available
TODA - Takeoff Distance Available
ASDA - Accelerate-Stop Distance Available
LDA - Landing Distance Available

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4E
RUNWAY EXTENSION
ALTERNATIVE B1 AND B2

airport. To the southwest, the proposed RPZ encompasses approximately 24 acres.

As in the previous alternatives, improved instrument approaches for Runways 5 and 23 are also considered here allowing for straight-in APV approaches with not lower than ¾-mile visibility minimums. As such, the implementation of an approach lighting system in the form of a MALS is depicted in each alternative.

WEST SIDE PARALLEL TAXIWAY ALTERNATIVES A AND B

As previously discussed, the 1997 Master Plan proposed a west side parallel taxiway that could accommodate future aviation demand at Coolidge Municipal Airport. While forecast aviation demand through the long term planning period of this Master Plan can be accommodated on property to the east of Runways 5-23 and 17-35 that is already provided with taxiway access and utility infrastructure, the ultimate goal of providing alternatives as they relate to a west side parallel taxiway is to provide the City with a potential concept allowing for ultimate build-out of the airport. As is the case with most development on airport property, demand will dictate the timing and degree to which property on the west side of Runway 5-23 will be needed. For purposes of this analysis, a 1,438-foot runway extension is depicted on **Exhibit 4F** in order to portray a taxiway running the full-length of Runway 5-23.

In order to prevent the taxiway from penetrating the RSA and obstacle free zone (OFZ) associated with crosswind Runway 17-35, Alternative A presents a full-length taxiway on the northwest side of Runway 5-23 that curves around these safety areas so as not to affect aircraft utilizing the crosswind runway. The majority of this taxiway is located 400 feet from the runway centerline, satisfying runway-to-parallel taxiway separation standards for an instrument approach providing not lower than ¾-mile visibility minimums. A portion of the taxiway does extend to approximately 600 feet from the runway centerline in order to avoid penetrating the safety areas previously discussed.

Alternative B on **Exhibit 4F** portrays a traditional parallel taxiway traversing the full-length of Runway 5-23 at a separation of 400 feet from runway centerline to taxiway centerline. In order for this to occur, it is being proposed that crosswind Runway 17-35 and its associated safety areas be shifted 400 feet south. In doing so, the proposed parallel taxiway would not penetrate the RSA and OFA that extends north of the crosswind runway. Furthermore, this alignment would better accommodate the proposed taxiway (Taxiway A3) east of the crosswind runway leading to the terminal area. Adequate airport property to the south of Runway 17-35 could accommodate this shift while allowing the airport to maintain positive control of the safety areas associated with the runway. While this alternative would be more costly due to the shifting of

Runway 17-35, it would allow for an increased area of potential development on the northwest side of the airport while also providing a more efficient airfield design. In addition, the RPZ that extends north of Runway 17-35 would shift south and be contained entirely on airport property.

In an effort to improve airfield efficiency, both alternatives depict hold aprons at each end of Runway 5-23 and a total of four entrance/exit taxiways are proposed at various locations connecting the runway and taxiway. A taxiway width of 35 feet is proposed on Alternatives A and B that would satisfy aircraft operations in ADG II.

ANALYSIS OF LANDSIDE CONSIDERATIONS

The purpose of this section is to identify and evaluate viable landside alternatives at Coolidge Municipal Airport to meet program requirements set forth in the previous chapter. While the airfield is comprised of facilities where aircraft movement occurs (runways, taxiways, etc.), other "landside" functions occur outside this area. The primary aviation functions to be accomplished landside at Coolidge Municipal Airport include aircraft storage hangars, aircraft parking aprons, a general aviation terminal area, and automobile parking and access. The interrelationship of these functions is important to defining a long-range landside layout for general aviation uses at the airport. Due to the amount of land available at the airport, careful consideration will also be given to parcels of land that could be considered for non-aviation related uses that can provide additional revenue support to the airport and support economic development for the region.

The orderly development of the airport terminal area, those areas along the flight line parallel to the runway, can be the most critical, and often times the most difficult to control on the airport. A development approach of taking the path of least resistance can have a significant effect on the long-term viability of an airport. Allowing development without regard to a functional plan could result in a haphazard array of buildings and small apron areas, which will eventually preclude the most efficient use of valuable space along the flight line.

Activity in the aviation development areas should be divided into high, medium, and low intensity levels at the airport. The high-activity area should be planned and developed to provide aviation services on the airport. An example of the high-activity areas is the airport terminal area and adjoining aircraft parking apron, which provides tiedown locations and circulation for aircraft. In addition, large conventional hangars used for fixed base operators (FBOs), specialty aviation operators, or storing a large number of aircraft would be considered a high-activity use area. The best location for high-activity areas is along the flight line near midfield, for ease of access to all areas on the airfield. All major utility infrastructures would need to be provided to these areas.

06MP12-4F-11/19/09

A

B

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

0 1,200 2,400
SCALE IN FEET

North

LEGEND
- Airport Property Line
- Ultimate Airport Property Line
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Runway Protection Zone (RPZ)
- New Airfield Pavement
- Ultimate Airfield Pavement
- Pavement to be Removed
- New Road/Parking
- Avigation Easement

Central Arizona Project Canal
Leased from B.L.M
Airport Property Line
Coolidge Airport Rd.
Hold Apron
400'
35'
Runway 5-23 (5,562' x 150')
Ultimate 5-23 (7,000' x 150')
1,438' Extension
75'
Runway 17-35 (3,871' x 75')
Shift Runway 400'
Leased from State

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4F
WEST SIDE PARALLEL
TAXIWAY ALTERNATIVES

The medium-activity use category defines the next level of airport use and primarily includes smaller corporate aircraft that may desire their own executive hangar storage on the airport. The best location for medium-activity use is off the immediate flight line, but still readily accessible to aircraft including corporate jets. Due to an airport's layout and other existing conditions, if this area is to be located along the flight line, it is best to keep it out of the midfield area of the airport, so as not to cause congestion with transient aircraft utilizing the airport. Parking and utilities such as water and sewer should also be provided in this area.

The low-activity use category defines the area for storage of smaller single and multi-engine aircraft. Low-activity users are personal or small business aircraft owners who prefer individual space in hangars. Low-activity areas should be located in less conspicuous areas. This use category will require electricity, but generally does not require water or sewer utilities.

Ideally, terminal area facilities at airports should follow a linear configuration parallel to the primary runway system. The linear configuration allows for maximizing available space while providing ease of access to terminal facilities from the airfield. Landside alternatives will address development in specific areas on the airport. Separation of activity levels and efficiency of layout will be discussed as well.

In addition to the functional compatibility of the aviation development areas, the proposed development concept should provide a first-class appearance for Coolidge Municipal Airport. As previously mentioned, the airport serves as a very important link to the entire region whether it is for business or pleasure. Consideration to aesthetics should be given high priority in all public areas, as the airport can serve as the first impression a visitor may have of the community.

Coolidge Municipal Airport is located on approximately 1,268 acres. In order to allow for maximum development of the airport while keeping with FAA mandated safety design standards, it is very important to devise a plan that allows for the orderly development of airport facilities. Typically, airports will reserve property adjacent to the runway system for aviation-related activity exclusively. This will allow for the location of taxiways, aprons, and hangars.

In those circumstances where ultimate demand levels fall short of ultimate build-out need, some airports will encourage non-aviation commercial or industrial development. The potential for non-aviation development on airport property can provide an additional revenue source in the form of long-term land leases for the airport. As evidenced in Chapter Two, aviation-related growth is forecast to increase throughout the planning period of this Master Plan. A substantial portion of airport property will be dedicated for airfield operations and aviation use; however, planning will consider designating certain portions of airport property for non-aviation development.

The alternatives to be presented are not the only options for development. In some cases, a portion of one alternative could be intermixed with another. Also, some development concepts could be replaced with others. The final recommended plan only serves as a guide for the City. Many times, airport operators change their plan to meet the needs of specific users. The goal in analyzing landside development alternatives is to focus future development so that airport property can be maximized.

Landside alternative considerations were summarized previously on **Exhibit 4B**. The following briefly describes proposed landside facility improvements.

AIRPORT TERMINAL BUILDING

Analysis in the previous chapter indicated that existing general aviation terminal services are accommodated in a 2,000 square-foot building occupied by Coolidge Aviation. The current building caters to general aviation needs by providing FBO offices and other pilot amenities.

A terminal facility is often the first impression air travelers have of the community. A functional and attractive terminal facility is needed to secure and build air travelers' favorable opinion of a community, particularly business leaders who may be investing in the community.

Terminal Building Location

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

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

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

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

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

A review of each of these factors is listed below.

Runway configuration: The existing terminal area is situated southeast of the intersection of Runways 5-23 and 17-35 near midfield. A taxiway serves the apron adjacent to the terminal area.

Access to transportation network: The existing terminal facility is located on Coolidge Airport Road. Coolidge Airport Road is the only roadway providing access to the airport.

Expansion potential: Space is available adjacent to the terminal facility for building expansion. Adjacent to the north side of the facility is the airport's fuel farm and the World War II conventional hangar. To the south is a parcel of land that is being leased to a private entity for future development. Additional automobile parking could be obtained farther east of the existing parking lot associated with the terminal facility.

FAA Geometric Design Standards: The existing terminal is located approximately 1,000 feet east of the Runway 17-35 centerline. This is well outside any area obstruction clearance area and does not impact any design standards.

As shown, the existing terminal building site meets the general recommendations of the FAA utilizing this criterion. Therefore, retention of the terminal in its existing location will be considered in one of the landside alternatives to follow. However, for planning purposes, a new terminal location will also be explored.

AIRCRAFT HANGAR DEVELOPMENT

Landside alternatives to follow will consider the construction of additional aircraft hangars at Coolidge Municipal Airport. Hangar development takes on a variety of sizes corresponding with several different uses.

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

The mix of aircraft using Coolidge Municipal Airport is expected to change to include more business class aircraft which have larger wingspans. These larger aircraft require greater separation distances between facilities, larger apron areas for parking and circulation, and larger hangar facilities.

Aircraft hangars used for the storage of smaller aircraft primarily involve T-hangars or small box hangars. Since storage hangars often have lower levels of activity, these types of facilities can be located away from the primary apron areas, in more remote locations of the airport. Limited utility services

are needed for these areas. Currently, aircraft storage hangars make up over half of the combined hangar space made available at Coolidge Municipal Airport.

Other types of hangar development can include executive hangars for accommodating several aircraft simultaneously. Typically, these types of hangars are used by corporations with company-owned aircraft or by an individual or group of individuals with multiple aircraft. These hangar areas typically require all utilities and segregated roadway access.

REVENUE SUPPORT LAND USES

Due to the large amount of land on airport property exceeding the space needed for forecast aviation demand, consideration is given for the City of Coolidge to utilize portions of the airport for non-aeronautical purposes such as commercial, industrial, or manufacturing development. Currently, areas on airport property are used for these types of operations. It should be noted that the City does not have the approval to use airport property at this time for non-aeronautical purposes on specific parcels to be further discussed. This requires specific approval from the FAA. The Master Plan does not gain approval for non-aeronautical uses, even if these uses are ultimately shown in the Master Plan. A separate request justifying the use of airport property for non-aeronautical uses will be required once the Master Plan is complete. The Master Plan can be a source for developing that justification.

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

These obligations will require that the City formally request from the FAA a release from the terms, conditions, reservations, and restrictions contained in any conveyance deeds and assurances in previous grant agreements. A release is required even if the airport desires to continue to own the land and only lease the land for development. The obligations relate to the use of the land just as much as they do to the ownership of the land.

U.S. Code 47153 authorizes the FAA to release airport land when it is convincingly clear that:

a. Airport property no longer serves the purpose for which it was conveyed. In other words, the airport does not need the land now or in the future because it has no aviation-related or aeronautical use, nor does it serve as approach protection, a compatible land use, or a noise buffer zone.

b. The release will not prevent the airport from carrying out the purpose for which the land was conveyed. In other words, the

airport will not experience any negative impacts from relinquishing the land.

c. The release is actually necessary to advance the civil aviation interests of the counters. In other words, there is a measurable and tangible benefit for the airport or the airport system.

Ultimately, the ability of the City to use airport property for non-aeronautical revenue production will rest upon a determination by the FAA that portions of airport property are no longer needed for airport-related or aeronautical uses. To prove that land is not needed for aeronautical purposes, an assessment and determination of the area that will be required for aeronautical purposes will be needed. The Master Plan provides this analysis.

A formal request to the FAA for a release from federal obligations will have several distinct elements. The major elements of the request will include:

1. A description of the obligating conveyance instrument or grant.

2. A complete property description including a legal description of the land to be released.

3. A description of the property condition.

4. A description of federal obligations.

5. The kind of release requested. (lease or sale)

6. Purpose of the release.

7. Justification for the release.

8. Disposition and market value of the released land.

9. Reinvestment agreement. A commitment by the City to reinvest any lease revenues exclusively for the improvement, operation, and maintenance of the airport.

10. Draft instrument of release.

An environmental determination will also be required. While FAA Order 1050.1E, *Environmental Policies and Procedures*, states that a release of an airport sponsor from federal obligations is normally categorically excluded and would not normally require an Environmental Assessment, the issuance of a categorical exclusion is not automatic and the FAA must determine that no extraordinary circumstances exist at the airport. Extraordinary circumstances would include a significant environmental impact to any of the environmental resources governed by federal law. An Environmental Assessment may be required if there are extraordinary circumstances.

PARACHUTE LANDING OPERATIONS

As previously discussed, an active parachute landing area is currently located on the airport and used regularly in relation to operations conducted by Complete Parachute Solutions and

International Air Response. The landing area was recently re-surveyed and the new location is identified on **Exhibit 4G**. According to the United States Parachute Assocation's basic safety requirements, an active civilian parachute landing area (drop zone) shall be unobstructed from any hazards within a radial distance of 100 meters or 330 feet. Hazards can be defined as telephones or power lines, towers, buildings, open bodies of water, highways, automobiles, and clusters of trees.

Due to the nature of operations conducted by Complete Parachute Solutions as they relate to specialized military training, it has been further recommended that the parachute landing area be free of hazards within a radial distance of at least 1,000 feet. As a result, the landside alternatives to follow show no future development within these general locations from the center of the drop zone.

GENERALIZED LAND USE

There are three large areas which are given specific attention for planned development at Coolidge Municipal Airport as depicted on **Exhibit 4G**. The first is the area on the east side of Runways 5-23 and 17-35. Currently, this is where all landside development is located on the airport, and there is still ample property for future development. Several separate parcels of land are available that could accommodate both aviation and non-aviation related development. Due to the existing infrastructure (roadways, utilities, etc.) that is in place to support future development, the east side of the airport could accommodate most, if not all, future growth needs through the long term planning period of this Master Plan. For these reasons, detailed planning has been done for this area and will be discussed in the next section.

A second area that could potentially support aviation development is on the northwest side of the airport adjacent to Runway 5-23. Approximately 162 acres of land are highlighted in the form of aviation-related and industrial/commercial development areas. It should be noted that approximately 25 acres of land are dedicated for a waste water treatment facility as proposed by the City of Coolidge.

As previously mentioned, the projections for future aviation demand can be accommodated on the east side of the airport. Therefore, development of the west side may not be needed, at least for aviation-related development, until the airport surpasses the long term planning horizon activity levels. As a result, no traditional hangar or apron development will be shown in this area, but approximately 100 acres of land is designated for future aviation-related activities along portions of the west side of Runway 5-23. It should be noted that in the event Runway 5-23 is extended, additional space could be made available for aviation-related development in this area. Access to the northwest side of the airport could be provided by extending a roadway south from Coolidge Airport Road as it enters airport property.

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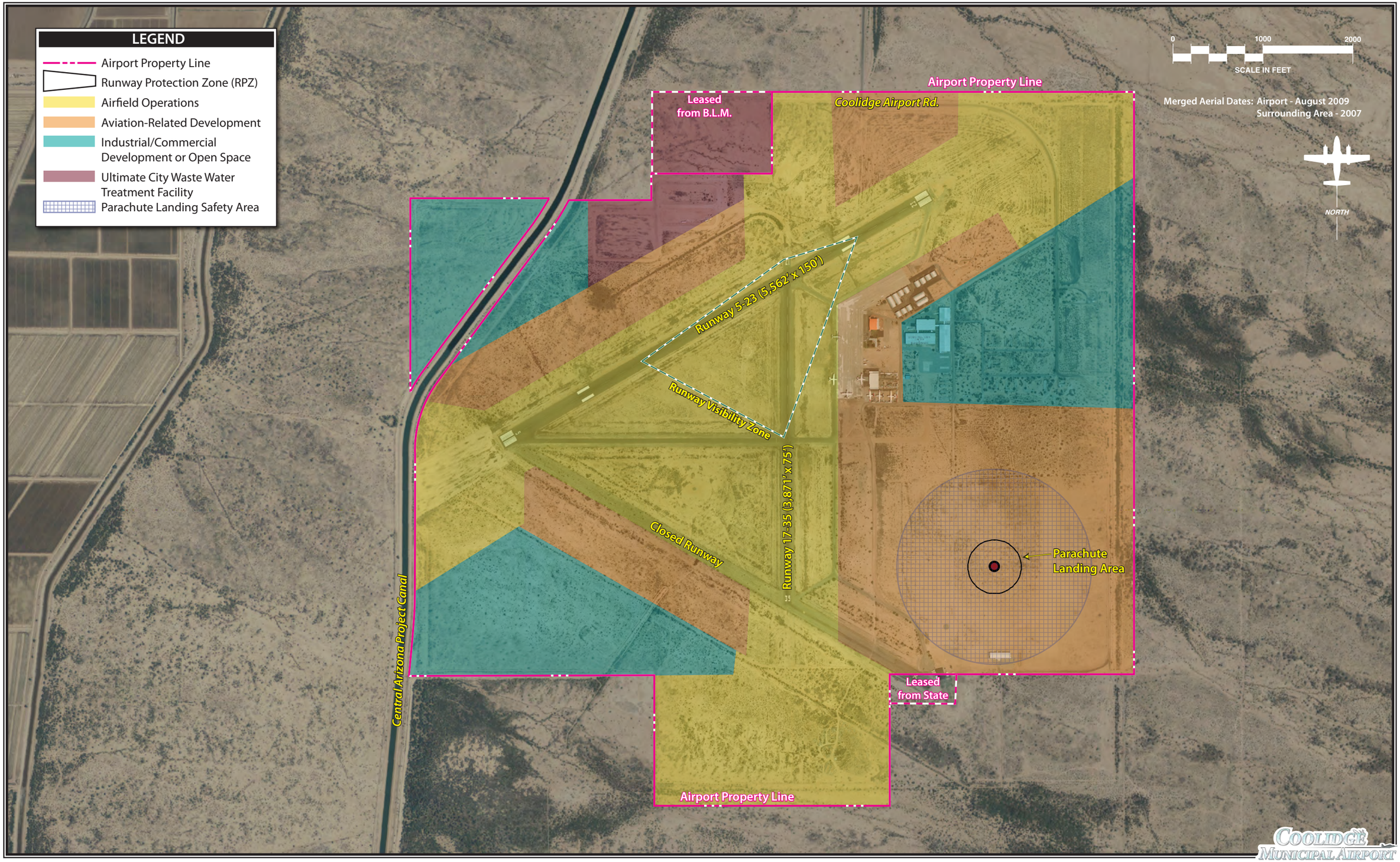

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4G
GENERALIZED ON-AIRPORT
FUTURE LAND USE PLAN

The designated aviation-related development is also planned so it does not penetrate the runway visibility zone (RVZ). The RVZ outlines the area needed to be clear of obstructions so that aircraft on both runways can see other aircraft before it is too late to avert an accident.

In addition to the proposed aviation-related development depicted on the west side of the airport, approximately 25 acres of land would be available for potential industrial/commercial development. This type of development cannot proceed until a roadway network is provided, utility infrastructure is improved and expanded, and land would need to be cleared and graded. Extensive environmental analyses may also need to be conducted in these areas prior to any development taking place. A third area on existing airport property was also analyzed for potential development; in particular, south of the closed runway. Lack of roadway and utility access to this area makes it an unattractive location for development until all other areas on the airport have been fully developed.

LANDSIDE ALTERNATIVES

A series of landside alternatives have been examined for the east side of the airport. As previously discussed, this area can accommodate the forecast aviation demand through the planning period of this Master Plan and is the most readily available for development given existing roadway access and utility infrastructure. These alternatives consider general aviation facility development providing for separation of activity levels. The goal of this analysis is to indicate development potentials which would provide Coolidge Municipal Airport with a specific goal for future development. The resultant plan will aid the City in strategic marketing of available airport properties.

It should be noted that the landside alternatives to follow depict a 1,438-foot northeasterly extension to Runway 5-23. As a result, additional aviation-related development would be made available adjacent to the runway extension should it occur.

LANDSIDE ALTERNATIVE A

Landside Alternative A is depicted on **Exhibit 4H**. This alternative proposes that future aviation development would continue to take place adjacent to the east side of Runways 5-23 and 17-35. Northeast of the current terminal area adjacent to the existing Runway 23 threshold, approximately eight acres of airport property are currently being leased to a private entity for future aviation-related development. The potential exists for the development of aircraft storage hangars to occupy this area as based aircraft demand dictates. Further to the northeast, approximately five acres of land is identified for future aviation development dependent on a runway extension. Facilities to support specialty aviation operators and/or FBOs could occupy this high-activity area with immediate access to the runway and taxiway system.

Moving farther south into the existing terminal area, this alternative proposes a dedicated airport terminal building in the current location of the 2,000 square-foot facility that accommodates general aviation terminal needs. To the east of this building is additional automobile parking. Immediately to the south of this proposed development is a two-acre parcel that is leased to a private entity that will be constructing a large hangar/office facility to support its specialty aviation operations in the near future. On the north side of the terminal area, a dedicated airport maintenance building is proposed that would provide storage space for airport equipment. In addition, two helicopter hardstands are depicted on the parking apron west of the terminal building. With providing for these markings, helicopters are better segregated from fixed-wing aircraft which is desirable.

Adjacent to the south side of the existing aircraft parking apron at Coolidge Municipal Airport is proposed a large conventional hangar and associated parking apron that could support a major aircraft specialty and/or FBO operation similar to what currently exists on property immediately north being occupied by International Air Response. A taxiway extending east would provide access to several parcels of land that could further support aviation development ranging in size from approximately 1.5 to 2.5 acres. It should be noted that this proposed taxiway is located on land that has tentatively been prepared and graded for future taxiway development.

Proposed development to the south of these parcels would be dependent upon the construction of a full-length parallel taxiway serving Runway 17-35. Assuming this would occur, additional development in the form of separate executive-style hangars are presented on **Exhibit 4H**. As mentioned earlier, these hangars are often utilized by corporate flight departments that possess their own aircraft, or an individual or group of individuals, that have separate aircraft. These facilities would be provided aircraft access via a taxiway connecting to the proposed parallel taxiway. Immediately south of these hangars are three storage hangars that could provide aircraft storage space similar to a T-hangar or box hangar. In this same general area, an aircraft wash rack is proposed.

This alternative also depicts additional aviation access parcels toward the south end of the airfield. These parcels, ranging in size from ½- to ¾-acre, could further enhance revenue support for the airport while accommodating aviation demand. Taxiways providing access to these parcels could also ultimately lead to future development on the southeast side of the airport associated with Complete Parachute Solutions.

Finally, a large area of land east of the existing terminal area is paid particular attention to in each of the three landside alternatives. As previously discussed in Chapter One, the City of Coolidge leases approximately nine acres of land east of the terminal area to a private entity who conducts non-aviation related activities. As depicted on **Exhibit 4H**, approximately 95 acres of land are divided up into

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Relocated Coolidge Airport Rd.

Airport Property Line

Parachute Landing Area

1,438' Extension

Coolidge Airport Rd.

23

17

35

Runway 5-23 (5,562' x 150')

Ultimate 5-23 (7,000' x 150')

Runway 17-35 (3,871' x 75')

Airport Maintenance Building

Terminal Building

Helicopter Hardstands

Aircraft Wash Rack

To Private Development

Leased from State

LEGEND

- Airport Property Line
- Ultimate Airport Property Line
- Runway Protection Zone (RPZ)
- New Airfield Pavement
- Ultimate Airfield Pavement
- Pavement to be Removed
- New Road/Parking
- New Building
- Privately Leased Aviation Development Parcel
- Aviation Access Revenue Support Parcels
- Industrial/Commercial Parcels
- Future Aviation Development Dependent Upon Runway Extension

NORTH

0 500 1000

SCALE IN FEET

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4H
LANDSIDE ALTERNATIVE A

five separate parcels in this alternative to further support industrial and/or commercial development. Improved roadway networks and certain utilities would need to be extended into areas east and south of the existing terminal area in order to support the proposed development called out.

LANDSIDE ALTERNATIVE B

Exhibit 4J depicts Landside Alternative B. This alternative proposes the relocation of the existing terminal area to the south. In doing so, an airport terminal building and additional aircraft parking apron are proposed adjacent to the existing taxiway extending east from Runway 17-35. Two large aviation access support parcels are depicted on each side of the terminal building that could support high-activity aviation operations. In addition, two helicopter hardstands are shown immediately west of the proposed terminal building. Automobile access to this area would be provided by extending the existing roadway serving the terminal area farther south.

Similar to the previous landside alternative, property to the south of the airfield is dedicated for aviation development in the form of executive hangars and other aircraft storage hangars. As such, any aviation development in this area would be dependent upon the construction of a full-length parallel taxiway serving Runway 17-35.

In this alternative, the airport maintenance building and aircraft wash rack are proposed farther south of the relocated terminal area. A taxiway extending southeast of the proposed parallel taxiway would provide airfield access to several aviation support parcels while also leading to the Complete Parachute Solutions' leasehold.

Moving to the north side of the airport, **Exhibit 4J** depicts the leased property adjacent to the east side of Runway 5-23 and potential developable property dependent upon a future runway extension. Consideration is also given to developing approximately 95 acres of existing airport property in the form of non-aviation development. In this alternative, nine smaller parcels are identified for potential industrial/commercial development to further enhance airport revenues while providing a diversified economic base for the City of Coolidge and surrounding area.

LANDSIDE ALTERNATIVE C

Major development associated with Landside Alternative C, as depicted on **Exhibit 4K**, deals with aviation demand justifying the construction of a runway extension and parallel taxiway serving Runway 5-23. In this alternative, a dedicated airport terminal building and associated aircraft parking apron are proposed in the northwest area of the airport, in addition to approximately 20 acres of property that could accommodate aviation development in the form of several activity levels such as FBO operations and aircraft storage space. Automobile access to the proposed terminal area could be provided by extending a

roadway south from Coolidge Airport Road as it enters onto airport property.

This concept allows separation between typical general aviation activities that could take place on the west side of the airport from specialty operations such as those currently being conducted by International Air Response and Complete Parachute Solutions on the east side of the airport. As previously discussed, major aviation demand to support a runway extension and landside development would need to occur at the airport in order for this concept to become reality. This would most likely happen beyond the planning period of this Master Plan; however, it does provide a forward-thinking concept moving toward future build-out of available airport property.

In Alternative C, property east of the existing runway system is provided with a mix of aviation and non-aviation development. Several airfield access support parcels are identified adjacent to Runway 17-35 in addition to specific aircraft storage hangar layouts. Finally, a large area east of the existing terminal area is separated into seven parcels that could support industrial and/or commercial development as shown on the previous alternatives.

The proposed development areas discussed in each of the three landside alternatives will need to be analyzed and studied in more detail before ever coming to fruition. As with any development, these areas will have to take into account specific site preparation methods regarding grading, drainage, and utility expansion.

SUMMARY

The process utilized in assessing the airside and landside development alternatives involved a detailed analysis of short and long term requirements, as well as future growth potential. Current and future airport design standards were considered at every stage in the analysis. Safety, both in the air and on the ground, was given a high priority in the analysis of alternatives.

After review and input from the PAC and City officials, a recommended development concept will be put forth by the consultant. The resultant plan will represent an airside facility that fulfills safety design standards and a landside complex that can be developed as demand dictates. The development plan for Coolidge Municipal Airport must represent a means by which the airport can evolve in a balanced manner, both on the airside and landside, to accommodate the forecast demand. In addition, the plan must provide flexibility to meet activity growth beyond the long range planning horizon.

The following chapters will be dedicated to refining the basic concept into a final plan with recommendations to ensure proper implementation and timing for a demand-based program.

06MP12-4J-11/6/09

Relocated Coolidge Airport Rd.

Airport Property Line

Parachute Landing Area

To Private Development

Airport Maintenance Building

Leased from State

Terminal Building

Helicopter Hardstands

Aircraft Wash Rack

1,438' Extension

Coolidge Airport Rd.

Runway 5-23 (5,562' x 150')

Ultimate 5-23 (7,000' x 150')

Runway 17-35 (3,871' x 75')

23

5

17

35

Leased

LEGEND

- Airport Property Line
- Ultimate Airport Property Line
- Runway Protection Zone (RPZ)
- New Airfield Pavement
- Ultimate Airfield Pavement
- Pavement to be Removed
- New Road/Parking
- New Building
- Privately Leased Aviation Development Parcel
- Aviation Access Revenue Support Parcels
- Industrial/Commercial Parcels
- Future Aviation Development Dependent Upon Runway Extension

NORTH

0 500 1000

SCALE IN FEET

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4J
LANDSIDE ALTERNATIVE B

06MP12-4K-11/6/09

Airport Property Line

Relocated Coolidge Airport Rd.

Parachute Landing Area

Leased from State

To Private Development

23

1,438' Extension

Aircraft Wash Rack

Terminal Building

Existing Coolidge Airport Rd.

Airport Maintenance Building

Helicopter Hardstands

Runway 5-23 (5,562' x 150')

Ultimate 5-23 (7,000' x 150')

West Side Taxiway Alternative A

West Side Taxiway Alternative B

Runway 17-35 (3,871' x 75')

17

35

Leased from B.L.M.

0 500 1000

SCALE IN FEET

NORTH

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

LEGEND

- Airport Property Line
- Ultimate Airport Property Line
- Runway Protection Zone (RPZ)
- New Airfield Pavement
- Ultimate Airfield Pavement
- Pavement to be Removed
- New Road/Parking
- New Building
- Privately Leased Aviation Development Parcel
- Aviation Access Revenue Support Parcels
- Industrial/Commercial Parcels
- Future Aviation Development Dependent Upon Runway Extension

COOLIDGE MUNICIPAL AIRPORT

Exhibit 4K
LANDSIDE ALTERNATIVE C

RECOMMENDED MASTER PLAN CONCEPT

CHAPTER 5

RECOMMENDED MASTER PLAN CONCEPT

AIRPORT MASTER PLAN

The planning process for Coolidge Municipal Airport has included several analytical efforts in the previous chapters intended to project potential aviation demand, establish airside and landside facility needs, and evaluate options for improving the airport to meet those facility needs. The planning process, thus far, has included the presentation of two draft phase reports to the Planning Advisory Committee (PAC).

The PAC is comprised of several constituencies with an investment or interest in Coolidge Municipal Airport. This diverse group has provided extremely valuable input during this study. A plan for the use of the airport has evolved considering input from the PAC, City of Coolidge, Federal Aviation Administration (FAA), and Arizona Department of Transportation (ADOT) - Aeronautics Group. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use and development of Coolidge Municipal Airport.

MASTER PLAN CONCEPT

The Master Plan Concept represents the development direction for Coolidge Municipal Airport through the 20-year planning period and beyond. This concept is the consolidation and refinement of the airside and landside planning alternatives presented in Chapter Four into a single recommended concept. It is important to note that the finalized concept provides for anticipated facility needs over the next 20 years, as well as establishing a vision and direction for meeting facility needs beyond the planning period of this Master Plan.

AIRSIDE DEVELOPMENT PLAN

Airside components include the runways, parallel and connecting taxiways, lighting and marking aids, and imaginary surfaces which help provide a safe operating environment for aircraft. The major airside issues addressed in the Master Plan Concept include the following list. The sections to follow detail the airside development recommendations as depicted on **Exhibit 5A**.

- Adhere to appropriate safety design standards on runways and taxiways.
- Improve instrument approach procedures on all runway ends.
- Acquire land for approach protection and potential runway extension.
- Extend Runway 5-23 2,638 feet to the northeast should additional length ever be warranted by aircraft operators in the future.
- Upgrade runway and taxiway lighting, visual approach aids, and airfield signage.
- Construct additional taxiways and realign existing taxiways associated with Runways 5-23 and 17-35.
- Extend Runway 17-35 400 feet to the north in order to accommodate a full-length parallel taxiway on the west side of Runway 5-23 while providing appropriate safety measures.
- Strengthen Runway 17-35 to 30,000 pounds single wheel loading (SWL).
- Construct hold aprons at each runway end.
- Install an Automated Weather Observation System (AWOS).

Airfield Design Standards

As a result of accepting federal grant funding, Coolidge Municipal Airport is a federally obligated airport and must comply with FAA design and safety standards. The FAA has established these design criteria to define the physical dimensions of runways and taxiways and the imaginary surfaces surrounding them that ensure the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapters Three and Four, FAA design criterion, categorized by Airport Reference Code (ARC), is a function of the critical design aircraft's approach speed, wingspan, and/or tail height, and in some cases, the runway approach visibility minimums. The critical design aircraft is defined as the most demanding aircraft or "family" of aircraft which will conduct 500 or more itinerant operations per year at the airport.

As detailed in Chapter Three, Coolidge Municipal Airport is used by a wide range of aircraft. These aircraft include, at a minimum, single and multi-engine piston aircraft within ARCs

06MP12-5A-03/22/10

0 1000 2000
SCALE IN FEET

Merged Aerial Dates: Airport - August 2009
Surrounding Area - 2007

NORTH

Central Arizona Project Canal

Leased from B.L.M.

Existing Coolidge Airport Rd.

To Existing Coolidge Airport Road

Relocated Coolidge Airport Rd.

General Aviation Terminal Area

Helicopter Hardstands

Hold Apron

2,638' Extension

MALS

400' Extension

Ultimate Runway 5-23 (8,100' x 150')

Runway 5-23 (5,562' x 150')

Ult. Rwy17-35 (4,271' x 75')

Runway 17-35 (3,871' x 75')

AWOS

Joint-Use Fire / Rescue Facility

Water Well Site

Aircraft Wash Rack

Airport Maintenance Building

Parachute Landing Area

To Private Development

100' of Pavement Removal

Closed Runway

Leased from State

35'

75'

525'

400'

LEGEND

- Airport Property Line
- Ultimate Airport Property Line
- Runway Visibility Zone (Existing)
- Runway Visibility Zone (Ultimate)
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Runway Protection Zone (RPZ)
- Future Aviation Related Development
- Ultimate City Waste Water Treatment Facility
- Future Avigation Easement
- Potential Land Sale / Exchange
- Airfield Pavement
- Ultimate Road / Parking
- Pavement to be Removed
- New Building
- Privately Leased Aviation Development Parcel
- Aviation Access Revenue Support Parcels
- Non-Airfield Access Revenue Support Parcels
- Future Aviation Development Dependent Upon Runway Extension
- **AWOS** Automated Weather Observation System
- **MALS** Medium Intensity Approach Lighting System

COOLIDGE MUNICIPAL AIRPORT

Exhibit 5A
MASTER PLAN CONCEPT

A-I and B-I; turboprop aircraft within ARCs A-II, B-I, B-II, and C-IV; and business jet aircraft within ARCs B-I, B-II, and C-I. The Lockheed C-130 turboprop aircraft, which is categorized within ARC C-IV, is the most demanding aircraft to utilize the airport in terms of approach speed and wingspan. Previous analysis has indicated that the C-130 exceeds the 500 annual operations threshold as determined by FAA to define the critical aircraft. As a result, it has been determined that the current airfield configuration should meet ARC C-IV design standards.

The Master Plan anticipates that Coolidge Municipal Airport will continue to accommodate significant volumes of C-130 aircraft operations through the long term planning period in addition to larger and more sophisticated business jet and turboprop aircraft. Analysis in the previous chapters indicated that each runway at Coolidge Municipal Airport is expected to serve different types of aircraft; therefore, an ARC has been assigned separately for each runway at the airport and used in the development and ultimate Master Plan Concept. As the primary runway at the airport, Runway 5-23 will serve the needs of all aircraft expected to utilize the airport. For this reason, the runway is planned for the most demanding ARC C-IV standards. It was determined that crosswind Runway 17-35 needs only to conform to ARC B-II design standards.

Adhering to ARC C-IV design standards on Runway 5-23 will allow the airport to accommodate a large range of turboprop and jet aircraft on the market today while ensuring the safety of these operations. Moreover, meeting these design requirements will allow the airport to be well positioned to remain competitive for aviation-related development and those businesses which have aviation needs.

- **Adhere to appropriate safety design standards on runways and taxiways**

The Master Plan Concept considers the object free area (OFA) deficiency adjacent to the southwest end of Runway 5-23. As previously discussed, the FAA defines the runway OFA as an area centered on the runway extending laterally and beyond each runway end, in accordance with the critical aircraft design category utilizing the runway. The OFA must provide clearance of all ground-based objects protruding above the runway safety area (RSA) edge elevation, unless the object is fixed by function serving air or ground navigation. For Runway 5-23, ARC C-IV design standards apply which constitute an OFA that is 800 feet wide, extending 1,000 feet beyond each runway end.

The southwestern-most portion of the existing OFA on Runway 5-23 is obstructed by a levee and fence that are associated with the Central Arizona Project Canal. These facilities rise above the RSA edge elevation and, therefore, constitute a penetration to the OFA. The development plan considers abandoning the last 100 feet of pavement at the southwest end of Runway 5-23. As a result, all safety areas, including the OFA, are shifted

100 feet to the northeast, which clears the OFA from the levee system and fence associated with the Central Arizona Project Canal. In doing so, the airport is also able to gain positive control over the entire OFA. A northeasterly extension on Runway 5-23 is detailed in the analysis to follow, which would more than make up for the 100 feet of pavement removal called for to mitigate the OFA deficiency at the southwest end. The timing of pavement removal on the southwest end of Runway 5-23 could correspond with a runway extension to the northeast so as to not decrease usable runway length for future operations.

Design standards associated with airfield taxiways are related to the critical aircraft's airplane design group (ADG). A taxiway width of 75 feet is called for in order to conform to ADG IV standards. Currently, all existing taxiways at the airport range in width from 40-50 feet. The Master Plan Concept calls for widening certain taxiways to 75 feet to accommodate the C-130 aircraft which is the airport's existing and ultimate critical aircraft. Only certain taxiways on the east side of Runway 5-23 are proposed to be widened to 75 feet, as the Master Plan assumes future C-130 operations will focus in and around existing landside facilities on the east side of the airport. As proposed on the development concept, existing and ultimate taxiways labeled as A2, B, B1, B2, B3, B4, 5, and the northern portion of Taxiway A should be widened to 75 feet.

- **Improve instrument approach procedures on all runway ends**

There are currently two published instrument approach procedures serving Coolidge Municipal Airport. Both procedures are non-precision in nature providing course guidance information to pilots, with one serving Runway 5 and the other serving Runway 23. Where possible, approach minimums should be as low as practical considering safety and financial constraints. Lower approach minimums and/or straight-in instrument approach procedures could prevent aircraft from having to divert to another airport when visibility and cloud ceilings are lower than currently provided, which can cause financial hardship for the operator, on-airport business, and the City.

As a result, the Master Plan Concept calls for additional straight-in instrument approaches to Runway 5-23 at the airport that would allow for visibility minimums as low as ¾-mile and cloud ceilings as low as 200 feet above ground level (AGL). The installation of a medium intensity approach lighting system (MALS) is required to achieve these visibility minimums and cloud ceiling requirements. Further engineering analysis would be needed to determine the location of a MALS on either runway end.

Straight-in instrument approaches serving each end of Runway 17-35 are also called for on the development plan. In the event that Runway 5-23 were to be closed for emergency and/or maintenance reasons, Runway 17-35

would be the only available means for aircraft to access the airport. Thus, it is important that this runway be accessible at all times. The plan proposes each end of Runway 17-35 support a non-precision instrument approach with visibility minimums not lower than one mile.

A large majority of new instrument approach procedures are being developed with global positioning system (GPS). With the development of the Wide Area Augmentation System (WAAS), as discussed previously in Chapters Three and Four, a GPS WAAS approach provides for both course and vertical navigation, similar to a traditional instrument landing system (ILS) precision approach. As WAAS continues to be upgraded and the Local Area Augmentation System (LAAS) is implemented, precision approaches similar to an ILS should become available for Coolidge Municipal Airport via GPS. The LAAS enhancement serves to further improve the GPS data, making it more precise and in line with current ILS standards.

Planning considers all future straight-in instrument approaches at the airport to utilize GPS capabilities. Future analysis completed by the FAA separate from this study will determine the types of instrument approach procedures and corresponding minimums that could serve the airport. As called out in previous chapters, in the event that either or both ends of Runway 5-23 were served with a GPS localizer performance with vertical guidance (LPV) approach, the MALS is recommended but may not be required.

- **Acquire land for approach protection and potential runway extension**

With the onset of improved instrument approach procedures to Runway 5-23, the proposed runway protection zones (RPZs) will further expand to include areas outside existing airport property. Furthermore, the potential for extending Runway 5-23 to the northeast, as depicted on the development plan, would require additional property to be controlled by the airport. The Master Plan Concept depicts two types of land acquisition. The first type called for would secure the land necessary to accommodate a 2,638-foot runway extension and associated RPZ to the northeast in addition to providing for the MALS. As a result, approximately 78.5 acres of land should be acquired through fee simple property acquisition on the northeast side of the airport. In addition, approximately 3.8 acres of land should be acquired southwest of the airport to secure land necessary to install the MALS serving Runway 5.

The second type of land acquisition calls for an avigation easement over the remaining 21 acres of land located within the RPZ southwest of the airport. An avigation easement on this property could be designed to control both land use development and the airspace above, which should be adequate as long as the land use remains vacant or compatible with airport operations.

It should be noted that approximately 32 acres of airport property are currently located on the west side of the

Central Arizona Project Canal. It would be difficult to utilize this property for aviation-related development due to the canal serving as a physical barrier that would not allow aircraft access to existing airfield facilities. Consideration could be given to potentially selling this parcel or exchanging portions of this property with adjacent land that would be needed for acquisition of RPZs and/or a runway extension. Land currently depicted on the development plan for ultimate property acquisition and/or avigation easement falls under the jurisdiction of the State of Arizona and Central Arizona Project. Further analysis outside this Master Plan would be needed to consider the likelihood of a land sale or exchange.

- **Extend Runway 5-23 2,638 feet to the northeast should additional length ever be warranted by aircraft operators in the future**

The Master Plan Concept includes extending Runway 5-23 2,638 feet to the northeast, allowing for 8,100 feet of usable runway pavement. It should be noted that the ultimate runway length considers 100 feet of pavement being removed from the southwest end of Runway 5-23 in order to mitigate the OFA deficiency as previously discussed.

This extension would require the relocation of Coolidge Airport Road, which currently provides access to and from landside development at the airport. In order to provide the highest level of safety, the development plan considers relocating the roadway outside all safety areas associated with the runway extension, including the RPZ. As depicted, the relocation of Coolidge Airport Road would extend beyond existing airport property over areas of land currently owned and controlled by the Arizona State Land Department. The relocated roadway could tie into existing Coolidge Airport Road farther north of the airport.

The runway extension is planned to allow for increased useful load (fuel, passengers, and baggage) and longer stage lengths for jet aircraft that may operate at the airport in the future. While allowing for adequate operations for most of the current aircraft fleet utilizing the airport, including the C-130, the present length of Runway 5-23 can limit the useful load of some larger aircraft when daily temperatures climb well above 100 degrees, which occurs frequently during the summer months at Coolidge Municipal Airport. Consequently, some aircraft must reduce passenger and/or fuel loads to operate from Runway 5-23, especially during the warmest summer months.

In the event that typical business jet aircraft, such as the Cessna Citation 550 and 650, Challenger 600, Beechjet 400, Lear 35, or Gulfstream family, all which require lengths longer than 5,562 feet, begin to operate at the airport on a much more frequent basis, necessary justification may be made to extending the runway length to as much as 7,000 feet.

Data on the most demanding jet aircraft currently utilizing the airport al-

so revealed that a large majority of existing flights from the airport are regional in nature with shorter stage lengths. This eliminates the need to stop enroute for additional fuel. If the stage lengths of these demanding aircraft were to increase, justification could be made for additional runway length as shown on the development plan to allow for increased useful loads in terms of fuel.

Specialty operators currently located at the airport to include International Air Response and Complete Parachute Solutions have indicated a desire to ultimately operate larger air cargo and military jump aircraft. Personnel from these companies have indicated that at least 7,000 feet of runway length would be needed to safely accommodate these prospective aircraft.

It should be noted that the runway extension included in this Master Plan is for planning purposes only and this document does not justify a runway extension utilizing federal grant funding. Justification for funding the runway extension will be required outside the Master Plan process and closer to the time for implementation should justification exist. Including this extension in the Master Plan allows the City to take appropriate measures to ensure that there are no hazards or obstacle penetrations to the airspace surrounding the airport that could in the future prevent the extension, while allowing for compatible land uses to be planned in the extended runway approach/departure areas. As previously discussed in Chapter One, the *2007 City of Coolidge General Plan* shows significant development in areas adjacent to existing airport property. Being able to protect specific areas for airport development is vital to the continued and future success of the Coolidge Municipal Airport, City of Coolidge, and surrounding areas.

Justification for a runway extension will require that the airport detail 500 annual operations by aircraft users that require a longer runway length than what currently exists. This documentation is usually in the form of a letter of support from the users detailing the following:

1) Aircraft type;
2) Number of annual operations; and
3) Runway length required to operate to their intended destination with full passenger loading assuming the mean maximum temperature of the hottest month and existing runway gradient.

- **Upgrade runway and taxiway lighting, visual approach aids, and airfield signage**

Currently, Runway 17-35 is not provided with medium intensity runway lighting (MIRL), which limits its use to daytime operations only. MIRL would provide pilots with positive identification of the runway and its alignment during nighttime and/or poor visibility conditions. As a result, MIRL should be applied to Runway 17-35 during the short term planning period of this study.

Medium intensity taxiway lighting (MITL) is also limited to two existing

taxiways serving the east side of the airfield. In an effort to increase safety and provide enhanced guidance for aircraft taxiing during nighttime conditions, MITL should be applied to all active taxiways, both existing and ultimate, at Coolidge Municipal Airport.

The Master Plan Concept includes the installation of runway end identification lights (REILs) on each end of Runways 5-23 and 17-35. This will provide pilots with the improved ability to distinguish the runway ends during nighttime conditions. REILs should be considered for all lighted runway ends not planned for a more sophisticated approach lighting system. As a result, REILs are recommended on Runway 17-35 in the event that MIRL is implemented. As the primary runway, Runway 5-23 should contain at least REILs in the short term. In the event that a MALS was to be implemented on this runway as shown on the development plan, the REILs serving each runway end could be removed.

Runway 5-23 is currently served with two-box precision approach path indicators (PAPI-2s) that provide pilots with visual guidance information during landings to each runway end. PAPI-2s should be installed on each end of Runway 17-35 to further enhance airfield operational efficiency and safety. The airfield plan considers upgrading to a four-box PAPI (PAPI-4) on each end of Runway 5-23 in order to better serve larger and quicker aircraft that currently use and are projected to frequent the airport more regularly.

The development plan also considers designating all taxiways in conformance with FAA Advisory Circular (AC) 150/5340-18D, *Standards for Airport Sign Systems*. This AC specifies that the entrance/exit taxiways that connect the runways and parallel taxiways should be assigned alphanumerically. Potential taxiway designations following the recommendations of the AC are depicted on the development plan. In addition to designating the taxiways, signage referring to holding positions, routes/directions, and runway exits should be implemented.

- **Construct additional taxiways and realign existing taxiways associated with Runways 5-23 and 17-35**

Currently, there are three entrance/exit taxiways on the east side of Runway 5-23. This includes one entrance/exit taxiway at each runway end and one taxiway leading to/from the intersection of both runways. The Master Plan Concept includes removing the taxiway leading to/from the intersection of Runways 5-23 and 17-35 in order to provide better separation of aircraft that could potentially be using both runways simultaneously. As a result, the construction of a new taxiway is proposed approximately 400 feet northeast providing access to the existing aircraft parking apron. An additional exit taxiway is proposed farther southwest approximately 1,800 feet from the Runway 5 threshold. A parallel taxiway, called out

as Taxiway B on the development plan, would also be extended to accommodate the proposed runway extension to the northeast.

The extension of Taxiway A approximately 1,800 feet to the south is also called for in the development plan that provides a full length parallel taxiway serving Runway 17-35. Extending this taxiway to the south will improve airfield efficiency and safety and will also provide access to potential landside development on the east side of the airport. It should be noted that a taxiway is proposed approximately 300 feet south of the intersection of both runways connecting Runway 17-35 to the existing aircraft parking apron that replaces the existing taxiway farther north. The development plan also realigns the existing and ultimate entrance/exit taxiways serving all runway ends at the airport perpendicular to the runway centerline in order to allow pilots with improved line-of-sight capability to the approach ends of each runway.

The Master Plan Concept also depicts the construction of a parallel taxiway on the west side of Runway 5-23 in order to satisfy potential landside development in the northwest area of the airport. This taxiway could provide access to aircraft storage hangars and aviation-related businesses. The parallel taxiway is planned for 400 feet of separation from the Runway 5-23 centerline in order to adhere to ARC C-IV design standards. Although the runway is designed to ADG IV standards, this parallel taxiway would be designed to meet ADG II aircraft since the movement of ADG IV aircraft, in particular the C-130, is expected to be limited to existing areas on the east side of the airport.

- **Extend Runway 17-35 400 feet to the north in order to accommodate a full-length parallel taxiway on the west side of Runway 5-23 while providing appropriate safety measures**

It was determined that the current Runway 17 threshold is located within the existing and ultimate obstacle free zone (OFZ) associated with Runway 5-23. It is recommended that the Runway 17 threshold be relocated outside the OFZ to provide a greater level of safety associated with the runway system at Coolidge Municipal Airport. As illustrated on **Exhibit 5A**, a 400-foot northerly extension is called for on Runway 17-35. As previously discussed in Chapter Three, although the current length of 3,871 feet on this runway could limit some aircraft in ARC B-I and B-II on hot days, its length is adequate in the capacity as serving as the airport's crosswind runway. The primary purpose of extending the runway is to enhance safety associated with the intersecting runway system, while also accommodating a full-length parallel taxiway on the west side of Runway 5-23.

- **Strengthen Runway 17-35 to 30,000 pounds SWL**

The current strength rating on Runway 17-35 is 17,000 pounds SWL. This strength rating should be adequate to meet the mix of aircraft cur-

rently utilizing the airport; however, the recommended development plan includes reconstructing Runway 17-35 to obtain an ultimate SWL of 30,000 pounds. This will meet the ARC B-II critical design aircraft for the runway on a regular basis as the number of aircraft operations is forecast to increase over the next several years.

- **Construct hold aprons at each runway end**

The current airfield alignment does not include hold aprons. Hold aprons are recommended to be constructed serving each end of Runway 5-23 and Runway 17-35 in order to provide an area for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. Hold aprons also provide a designated area for transient and local aircraft to perform engine run-ups for maintenance purposes.

- **Install an AWOS**

An AWOS is planned to be implemented approximately 150 feet south of the existing segmented circle and wind cone located in the midfield area of the airport. This location meets the recommended separation criteria from the primary runway as set forth in FAA Order 6560.2B, *Siting Criteria for Automated Weather Observing Systems*. Electric utility service can be extended to this location from the Runway 5-23 lighting system, located approximately 500 feet to the northwest. The AWOS will provide important weather information to pilots such as wind conditions, visibility, cloud ceilings, and altimeter settings.

LANDSIDE DEVELOPMENT PLAN

Landside components include aircraft storage hangars, aircraft parking aprons, hangar and apron access taxiways and taxilanes, fuel storage facilities, terminal areas, and vehicle parking lots which help provide the interface between air and ground transportation modes. The primary goal of landside facility planning is to provide adequate aircraft storage space to meet the forecast need, while also maximizing operational efficiencies and land uses. Achieving this goal yields a development scheme which segregates aircraft users (large vs. small aircraft).

The landside plan for Coolidge Municipal Airport has been devised to efficiently accommodate potential aviation demand and provide revenue enhancement possibilities by designating the use of certain portions of airport property for aviation and non-aviation development. Future construction of landside facilities is anticipated to be done through a combination of private and public investments.

The development of landside facilities will be demand-based. In this manner, the facilities will only be constructed if required by verifiable demand. For example, aircraft storage hangars will be constructed only if new based aircraft owners desire enclosed aircraft storage. The landside

plan is based on projected needs that can change over time. The landside plan is developed with flexibility in mind to ensure the orderly development of the airport should this demand materialize.

It should be noted that standards have been developed for pilot visibility between intersecting runways, such as the case at Coolidge Municipal Airport. For intersecting runways, a clear line-of-sight between the ends of intersecting runways is recommended. The runway visibility zone (RVZ) outlines the area needed to be clear of obstructions so that proper visibility can be maintained. With the proposed northeasterly extension on Runway 5-23, the RVZ would further shift to the northeast and encompass more area, especially east of the runway intersection. Fortunately, existing infrastructure will remain just outside the shifted RVZ. As a result, the ultimate RVZ will not impose any significant restrictions to future airport development.

The following list includes the major considerations for landside improvements at Coolidge Municipal Airport throughout the planning period. **Exhibit 5A** depicts the recommended landside development plan for the airport.

- Construct additional aircraft storage hangars.
- Provide additional apron space for aircraft parking and support future aviation-related development.
- Extend aircraft access to the east side of the airport providing for additional aviation development.
- Construct aviation support facilities to include a fire/rescue facility, airport maintenance building, and an aircraft wash rack.
- Designate non-aviation development parcels on airport property to further enhance potential revenues.
- Maintain the existing parachute landing area free of hazards within a radial distance of 1,000 feet.
- Identify existing airport property on the west side of Runway 5-23 for future aviation-related development.

Hangars and Aviation Development Parcels

The Master Plan Concept shows the location for potential hangar development at the airport. **Table 5A** presents the existing and ultimate aircraft hangar storage area as determined previously in Chapter Three.

As can be seen from the table, the Master Plan Concept provides approximately 183,900 square feet of hangar space. The need over the next 20 years is estimated at 45,900 square feet should demand for based aircraft and annual aircraft operations grow according to the forecasts presented in

Chapter Two. Therefore, the hangar layout presented represents a vision for the airport that extends beyond the scope of this Master Plan. The reason for this is to provide airport decision-makers with dedicated areas on the airport that should be reserved for certain hangar types.

TABLE 5A
Hangar Space Planned
Coolidge Municipal Airport

	Current Supply Estimate	20-Year Supply Forecast	Total 20-Year Need	Provided in Master Plan
Based Aircraft	38	90	52	
Hangar Area Requirements (square feet)				
Hangar Area	71,200	117,100	45,900	
Maintenance Area Reserve	18,000	15,800	0	
Total Hangar Storage Area	89,200	132,900	45,900	183,900

Source: Coffman Associates analysis

The hangar layout meets the separation of activity levels philosophy previously discussed in Chapter Four. In order for the hangar development to occur as illustrated on the Master Plan Concept, Taxiway A must be extended farther south to provide aircraft access to these development areas. As proposed, 21 separate executive-style hangars intended for private aircraft owners and/or aviation businesses and six storage hangars that could provide aircraft storage space similar to a T-hangar or box hangar are located immediately east of the Taxiway A extension. The hangars would share a large apron area while being separated by aviation support facilities to be discussed later.

Also included on the development plan are several parcels dedicated for aviation-related development on the east side of the airport. Northeast of the current terminal area adjacent to the existing Runway 23 threshold are approximately eight acres of airport property currently being leased to a private entity to construct future aviation-related development. The potential exists for this area to accommodate aircraft storage hangars as demand dictates. Contrary to the previously discussed hangar storage facilities proposed farther south, this area is adjacent to existing taxiway access and provided utility infrastructure for immediate development. Farther northeast, approximately ten acres of land are identified for future aviation development dependent on a runway extension. Specialty aviation businesses and/or fixed base operators (FBOs) could occupy this high-activity area that would be provided immediate access to the runway and taxiway system.

The existing terminal area contains a two-acre parcel that has recently been

leased to a private entity which plans to construct a large hangar facility to support its specialty aviation operation in the near future. The Master Plan Concept also proposes the expansion of the terminal apron farther south to encompass an additional 17,100 square yards of apron space. Two undeveloped parcels that provide aircraft access to the apron expansion are depicted, each totaling approximately 1.7 acres. Parcels such as these are popular because business entities can lease airport property and then construct a custom hangar facility to meet the needs of their operation. Placed in a desirable midfield location on the airport with immediate taxiway access leading to either runway, these parcels could support high-activity aviation operations similar to an FBO or specialty business such as those currently at the airport.

The development plan also focuses on vacant property farther east of the existing terminal area and flight line. Before any aviation development can take place in this area, aircraft access will need to be provided. A taxiway extending approximately 2,700 feet to the east would provide access to several parcels ranging in size from approximately one acre to 3.7 acres. Three additional taxiways extending north from the east/west taxiway could further enhance potential aviation development. It should be noted that the design and separation standards for this proposed taxiway development supports ADG II design. Moving to the south side of the airfield adjacent to proposed Taxiway A, six ½-acre parcels are proposed that could be leased to private aircraft owners or business operators to construct aviation-related facilities.

Table 5B provides a breakdown of the potential aviation development parcels on the east side of Coolidge Municipal Airport as depicted on the Master Plan Concept. As proposed, there are 28 individual parcels that total approximately 44.5 acres of space. Significant improvements will be needed for the utilization of this area to include site preparations, roadway access, and utility extensions. Careful consideration should be given regarding the implementation of staging projects in these areas. While the recommended development plan shows total build-out, actual demand will dictate the timeline for future development.

TABLE 5B
East Side Proposed Parcel Development
Coolidge Municipal Airport

Parcel Size	Number of Parcels	Total Acreage
Less than One Acre	6	3
Between One and Two Acres	17	24.2
Between Two and Three Acres	1	2.5
Greater Than Three Acres	4	14.8
Total Proposed Parcel Development	**28**	**44.5**

Source: Coffman Associates analysis

Aviation Support Facilities

Currently, the airport does not have a facility that would allow for the proper disposal of aircraft cleaning fluids nor does it have a dedicated building to store and maintain airport equipment. As a result, the development plan calls for the construction of an aircraft wash rack and dedicated airport maintenance building on the south side of the airport adjacent to the proposed hangar storage facilities discussed previously. Vehicle access to this area would be via a roadway extending south from the existing terminal area.

A joint-use fire/rescue facility that would serve both the airport and surrounding areas is also shown adjacent to Coolidge Airport Road. Although not required at a general aviation airport such as Coolidge Municipal Airport, the facility would bring an added safety enhancement to aircraft operations and businesses. The facility would have to be funded locally since it is not an FAA requirement to have such a facility on the airport.

Non-Aviation Development Parcels

The Master Plan Concept also reserves land on the east side of the airport for non-aviation parcels that could support commercial and/or industrial development. Five separate parcels are depicted on the development plan, ranging in size from two acres to nine acres. This type of land use would be compatible with aviation activities conducted at the airport and be similar to those activities that currently exist on the nine-acre parcel being leased directly east of the existing terminal area. Improved automobile access and utility infrastructure would be needed in order to accommodate these non-aviation land uses which could further enhance airport revenue support.

Parachute Landing Area

As detailed in Chapter Four, an active parachute landing area associated with Complete Parachute Solutions is located on the southeast side of the airport. Due to the nature of the parachute operations as they relate to specialized military training, the Master Plan Concept maintains a 1,000-foot radial distance free of development from the center of the landing area. As a result, no future development is proposed in the southeast area of the airport.

West Landside Plan

A large area of vacant airport property extends west of Runway 5-23. As previously discussed, the development plan depicts a parallel taxiway on the west side of Runway 5-23 that would accommodate future development in this area. While forecast aviation demand is expected to be met on the east side of the airport through the planning period of this study, the Master Plan Concept designates over 100 acres of property for future aviation development. In particular, approximately 23 acres of existing airport property on the north side of the airport could be dedicated for a general

aviation terminal area to include a terminal building and aircraft parking apron. This concept allows the potential for separation between typical general aviation activities that could take place on the west side of the airport from specialty operations such as those currently being conducted on the east side of the airport. Extensive utility infrastructure and roadway access would be needed to prepare the west side of the airport for any type of development. It should be noted that the development plan sets aside approximately 25 acres on the northwest side of the airport to accommodate a future waste water treatment facility as proposed by the City of Coolidge.

SUMMARY

The recommended Master Plan Concept is designed to assist in making decisions on the future growth and development of Coolidge Municipal Airport. Flexibility will be very important to future development at the airport, as activity may not occur as predicted. The recommended plan provides the airport stakeholders with a general guide that, if followed, can maintain the airport's long term viability and allow the airport to continue to provide air transportation service to the region.

CAPITAL IMPROVEMENT PROGRAM

CHAPTER 6

CAPITAL IMPROVEMENT PROGRAM

AIRPORT MASTER PLAN

The previous analyses outline airport development needs on both the airside and landside to meet projected aviation demand for at least the next 20 years based on forecast activity, facility needs, and operational efficiency. In this chapter, basic economic, financial, and management rationale is applied to each development item so that the feasibility of each item contained in the plan can be assessed.

The capital improvement program (CIP) has been organized into three parts. First, the airport's capital program needs are categorically recognized. Second, the CIP projects and their allocated cost estimates are itemized into planning horizons that extend through the planning period of the Master Plan. Finally, funding sources on the federal, state, and local levels are identified and discussed. The vision of the Master Plan is based on the airport achieving specific demand-based triggers such as growth in based aircraft and an increase in aviation business development.

DEMAND-BASED PLAN

The Coolidge Municipal Airport Master Plan Update has been developed according to a demand-based schedule. Demand-based planning establishes planning guidelines for the airport based upon airport activity levels instead of guidelines based upon subjective factors such as points in time. By doing so, the levels of activity derived from the demand forecasts can be related to the actual capital investments

needed to safely and efficiently accommodate the level of demand being experienced at the airport. More specifically, the intention of the Master Plan is that the facility improvements needed to serve new levels of demand should only be implemented when the levels of demand experienced at the airport justify their implementation.

For example, the aviation demand forecasts indicate based aircraft at Coolidge Municipal Airport can be expected to grow through the long term. The potential for increased aviation activity can be related to the expectation for a growing population within the City of Coolidge and surrounding area as well as projected facility development at the airport. Future based aircraft levels, however, will be dependent upon the actual growth in the airport service area's economy and population, as well as trends in the aviation industry. Factors affecting future based aircraft levels include, but are not limited to, aircraft storage hangar costs and the impact of oil prices on recreational aviation. Individually or collectively, these factors can slow or accelerate based aircraft levels differently. Since changes in these factors can affect the accuracy of time-based forecasts over time, it can be difficult to predict the exact time a given improvement may become justified for the out-years of the planning period.

For these reasons, the Master Plan for Coolidge Municipal Airport has been developed as a demand-based plan. The Master Plan projects an increase in based aircraft at the airport for the short term planning horizon. As such, the development plan and corresponding CIP should consider those needs necessary to accommodate these aircraft. When based aircraft levels in the short term planning horizon are realized, the Master Plan suggests planning begin to consider the intermediate term horizon levels. While the aviation demand forecasts suggest these levels could be reached in another five years, a varying economy and other factors could speed up or slow down when this horizon is reached.

Should the intermediate term horizon levels take longer to achieve than projected in the aviation demand forecasts, any related improvements to accommodate the next horizon would be delayed. Should this level be reached sooner, the schedule to implement the improvements could be accelerated. This provides a level of flexibility in the Master Plan.

A demand-based Master Plan does not specifically require the implementation of any of the demand-based improvements. Instead, it is envisioned that implementation of any Master Plan improvement would be examined against the demand levels prior to implementation. In many ways, this Master Plan is similar to a community's general plan. The Master Plan establishes a plan for the use of airport facilities consistent with the potential aviation needs and capital needs required to support that specific use. However, individual projects in the plan are not implemented until the need is demonstrated and the

project is approved for funding. **Table 6A** summarizes the key demand milestones for each of the three planning horizons.

TABLE 6A
Planning Horizon Summary
Coolidge Municipal Airport

	Current	Short Term	Intermediate Term	Long Term
ANNUAL OPERATIONS				
Total Itinerant	6,300	7,600	9,000	12,600
Total Local	14,500	16,800	19,900	25,300
Total Operations	**20,800**	**24,400**	**28,900**	**37,900**
BASED AIRCRAFT				
Single Engine Piston	22	30	40	57
Multi-Engine Piston	2	3	3	4
Turboprop	8	9	11	14
Jet	4	5	7	10
Rotorcraft	1	2	3	4
Other	1	1	1	1
Total Based Aircraft	**38**	**50**	**65**	**90**
TOTAL ANNUAL INSTRUMENT APPROACHES	**63**	**75**	**90**	**125**

AIRPORT DEVELOPMENT NEEDS

In an effort to identify capital needs at the airport, this section provides analysis regarding the associated development needs of those projects included in the CIP. While some projects will be demand-based, others will be dictated by design standards, safety, or rehabilitation needs. In putting together a listing of projects, an attempt has been made to include anticipated rehabilitation needs through the planning period and capital replacement needs. Each development need is categorized according to this schedule. The applicable category (or categories) included is presented in **Table 6B**.

The proposed projects can be categorized as follows:

1) **Safety/Security (SS)** – these are capital needs considered necessary for operational safety and protection of aircraft and/or people and property on the ground near the airport.

2) **Environmental (EN)** – these are capital needs which are identified to enable the airport to operate in an environmentally acceptable manner or meet needs identified in

the Environmental Overview outlined in Chapter Five.

3) **Maintenance (MN)** – these are capital needs required to maintain the existing infrastructure at the airport.

4) **Efficiency (EF)** – these are capital needs intended to optimize aircraft ground operations or passengers' use of the terminal building.

5) **Demand (DM)** – these are capital needs required to accommodate levels of aviation demand. The implementation of these projects should only occur when demand for these needs is verified.

6) **Opportunities (OP)** – these are capital needs intended to take advantage of opportunities afforded by the airport setting. Typically, this will involve improvements to property intended for lease to aviation-related commercial and industrial development.

The projects in the short term period mainly focus on airfield improvements that improve airfield safety/security and efficiency while also addressing pavement maintenance issues. Items include the reconstruction and rehabilitation of a large majority of existing airfield pavements as deemed necessary. In addition, several safety-related projects associated with the construction of taxiways and installation of weather, lighting, and approach aids are called for. These safety-related projects will also provide for more efficient use of the airfield. The short term program also includes improving airfield efficiency by constructing hold aprons at certain runway ends.

Intermediate term improvements focus on projects related to demand that are associated with the development of additional taxiways, taxilanes, and apron space serving hangar development and aviation-related businesses. In addition, access roads and utility infrastructure are proposed to allow for continued development of the airfield, further enhancing airport revenues. The first phase of extending Runway 5-23 is called for during this time in addition to bringing the airport into conformance with safety design standards. Safety/security projects continue to be implemented which include the installation of runway end identification lights (REILs) on Runway 17-35 as well as construction of security fencing. Finally, continued maintenance of airfield pavement is also included in the intermediate term.

Long term improvements continue to address demand-based projects such as the construction of additional taxiways and taxilanes leading to hangar development. Continued roadway and utility extensions on the east side of the airport are called and will be tied to actual demand. The Phase II runway extension on Runway 5-23 is also proposed during this timeframe. Toward the end of the long term, focus is given on developing portions of the west side of the airport, in particular, for general aviation operations.

TABLE 6B
Development Needs by Category
Coolidge Municipal Airport

	PROJECT DESCRIPTION	CATEGORY
Short Term Program (1-5 Years)		
1	Design Only: Automated Weather Observation System (AWOS)	SS/EF
2	Develop a Pavement Maintenance Management Program	MN
3	Design Only: 1,800' Southerly Extension to Taxiway A on East Side of Runway 17-35	SS/EF
4	Construct AWOS	SS/EF
5	Construct 1,800' Extension to Taxiway A and Install Medium Intensity Taxiway Lighting (MITL); Construct Hold Apron	SS/EF
6	Design Only: Airfield Improvements including Reconstruction/Rehabilitation of Runway 17-35 and Associated Taxiways, Medium Intensity Runway Lighting (MIRL), and Precision Approach Path Indicator Lights (PAPIs)	SS/MN
7	Reconstruct/Rehabilitate Runway 17-35 and Associated Taxiways; Widen Certain Taxiways to 75'	SS/MN
8	Design Only: Airfield Improvements including Reconstruction/Rehabilitation of Runway 5-23 and Associated Taxiways and Runway End Identification Lights (REILs)	SS/MN
9	Reconstruct/Rehabilitate Runway 5-23 and Associated Taxiways; Widen Certain Taxiways to 75'; Realign Entrance/Exit Taxiway Serving Runway 23 Threshold; Construct Hold Apron	SS/MN
10	Install MIRL and PAPI-2s on Runway 17-35	SS
11	Install REILs on Runway 5-23	SS
12	Install Security Fencing (Phase I)	SS
Intermediate Term Program (6-10 Years)		
1	Improve Roadway Access and Utility Infrastructure to Support Existing/Future Aviation Development on South Side of the Airport	DM/OP
2	Construct Taxiways Leading to Existing/Future Aviation Development	DM
3	Reconstruct/Rehabilitate Portions of Existing Aircraft Parking Apron	MN
4	Construct Joint-Use Fire/Rescue Facility	SS
5	Construct Additional Apron Space to Support Aircraft Parking and Aviation Development	DM
6	Construct Taxilanes Leading to Hangar Development	DM
7	Conduct Environmental Assessment for Runway 5-23 Extension	EN
8	Acquire Property on Northeast Side of Airport for Ultimate Runway Extension and Procurement of Safety Areas (78.5 Acres)	SS
9	Relocate Coolidge Airport Road on Northeast Side of Airport	SS
10	Extend Runway 5-23 and Associated Taxiway 1,538' Northeast (Phase I)	DM
11	Improve Object Free Area (OFA) Deficiency on Southwest Side of Runway 5-23; Realign Entrance/Exit Taxiway Serving Runway 5 Threshold; Construct Hold Apron	SS/EF
12	Acquire Avigation Easement for Approach Protection (21 Acres)	SS
13	Remove Intersection Taxiway; Construct Three Additional Taxiways Serving Runways 5-23 and 17-35	SS/EF
14	Conduct Environmental Assessment for Runway 17-35 Extension	EN
15	Extend Runway 17-35 400' North and Construct Associated Taxiway	SS

TABLE 6B *(Continued)*
Development Needs by Category
Coolidge Municipal Airport

	PROJECT DESCRIPTION *(Continued)*	CATEGORY
Intermediate Term Program (6-10 Years) *(Continued)*		
16	Install REILs on Runway 17-35	SS
17	Install Security Fencing (Phase II)	SS
18	General Pavement Maintenance	MN
Long Term Program (11-20 Years)		
1	Improve Roadway Access and Utility Infrastructure to Support Aviation and Non-Aviation Development on East Side of Airport	DM/OP
2	Construct Taxiway Extending to East Side of Airport to Support Aviation Development Parcels	DM
3	Construct Taxilanes Leading to Hangar Development and Aviation Support Facilities	DM
4	Construct Airport Maintenance Facility and Aircraft Wash Rack	EF/DM
5	Construct Additional Apron Space to Support Aircraft Parking and Aviation Development	DM
6	Extend Runway 5-23 and Associated Taxiway 1,100' Northeast (Phase II)	DM
7	Acquire Property on Southwest Side of Airport for Improved Instrument Approach Procedures (3.8 Acres)	SS
8	Install Medium Intensity Approach Lighting System (MALS) on Each End of Runway 5-23	SS/DM
9	Conduct Environmental Assessment for West Side Development (Taxiway and Terminal Area)	EN
10	Construct Parallel Taxiway on West Side of Runway 5-23	DM
11	Construct Roadway Access and Utility Infrastructure to Support Aviation Development on West Side of Airport	DM/OP
12	Construct General Aviation Terminal Facilities on Northwest Side of Airport	DM
13	General Pavement Maintenance	MN

Categories:
SS - Safety/Security
EN - Environmental
MN - Maintenance
EF - Efficiency
DM - Demand
OP - Opportunity

CAPITAL IMPROVEMENT SCHEDULE AND COST SUMMARIES

Once the specific needs for the airport have been established, the next step is to determine a realistic capital improvement schedule and associated costs for implementing the plan. This section will identify these projects and the overall costs of each item in the development plan. The program outlined on the following pages has been evaluated from a variety of perspectives and represents the culmination of a comparative analysis of basic budget factors, demand, and priority assignments.

The recommended improvements are grouped by the planning horizons: short term, intermediate term, and

long term. Each year, Coolidge Municipal Airport will need to re-examine the priorities for funding, adding or removing projects on the capital programming lists.

Exhibit 6A summarizes the CIP for Coolidge Municipal Airport through the planning period of this Master Plan. An estimate has been included with each project of federal and state funding eligibility, although this amount is not guaranteed. **Exhibit 6B** graphically depicts development staging. As a Master Plan is a conceptual document, implementation of these capital projects should only be undertaken after further refinement of their design and costs through architectural and engineering analyses.

The cost estimates presented in this chapter have been increased to allow for contingencies that may arise on the project. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for planning purposes. Cost estimates for each of the development projects listed in the CIP are listed in current (2010) dollars. Adjustments will need to be applied over time as construction costs or capital equipment costs change.

A primary assumption in the CIP is that all future hangar construction will be completed privately as has occurred at the airport in recent history. The capital plan does provide for the airport to construct apron, taxiway, and taxilane improvements leading to proposed hangar development which is eligible for Federal Aviation Administration (FAA) and Arizona Department of Transportation (ADOT)-Aeronautics Group grant funding. This reduces the overall development costs for the private hangar construction.

SHORT TERM IMPROVEMENTS

The short term planning horizon considers 12 projects for the five-year planning period as presented on **Exhibit 6A** and illustrated on **Exhibit 6B**. The short term planning period is the only planning horizon separated into single years. This is to allow the CIP to be coordinated with the five-year planning cycle of the FAA and ADOT-Aeronautics Group programs. In later planning periods, actual demand levels will dictate implementation.

The first year of the CIP considers projects that may be accomplished in the 2011 federal funding cycle (October 2010 to September 2011). It should be noted that the short term CIP as called for in this report mirrors the five-year CIP that was submitted to FAA and ADOT-Aeronautics Group in November 2009. Projects called out during this timeframe are very specific in terms of actual design and construction. As proposed, most projects are initially put through a design phase and then followed up with actual construction the following year. This is evident with two of the first three projects listed in the short term. The design for constructing an auto-

mated weather observation system (AWOS) and an extension to Taxiway A are called for. In addition, a Pavement Maintenance Management Program (PMMP) is to be developed which would provide thorough analyses on existing airport pavement conditions in order to plan for future pavement maintenance.

The next two projects involve actual construction of the AWOS and taxiway extension. The AWOS will provide accurate weather reporting for the airport and is planned immediately south of the existing segmented circle and wind cone in the midfield area of the airport. Extending Taxiway A approximately 1,800 feet to the south will provide a full-length parallel taxiway serving Runway 17-35 and allow for aircraft access to potential development areas along the east side of the runway.

It should be noted that portions of existing runway and taxiway pavement at the airport have failed and considerable foreign object debris (FOD) is present on active surfaces. Projects are planned in the short term CIP to address these issues and include major reconstruction and/or rehabilitation of existing runway and taxiway pavements. In addition, certain taxiways should be widened to 75 feet in order to accommodate airplane design group (ADG) IV aircraft, in particular, the C-130. Hold aprons serving Runways 23 and 35 should be considered during this time to allow a designated area for aircraft to prepare for departure. These would also provide more efficient taxiing operations as aircraft can bypass those waiting for departure without delay. Additional hold aprons serving Runways 5 and 17 are programmed later in the CIP in an effort to accommodate related projects.

Further airfield enhancements planned for the short term are the installation of airfield signage and assignment of taxiway designations at the airport to increase airfield operational safety and awareness. Medium intensity taxiway lighting (MITL) is also programmed into the short term CIP for all active taxiways currently located at Coolidge Municipal Airport.

As previously discussed, Runway 17-35 is currently not provided with medium intensity runway lighting (MIRL) and is therefore limited to daytime use only. The short term plan proposes improving the operational efficiency of this runway by providing MIRL and two-box precision approach path indicators (PAPI-2s). In an effort to better serve larger and faster aircraft that currently use and are projected to frequent the airport more regularly, a four-box precision approach path indicator (PAPI-4) is considered for Runway 5-23. In addition, REILs are called for on each end of Runway 5-23 to provide improved identification of the runway thresholds during nighttime and/or poor weather conditions. Finally, the installation of security fencing is planned for specific areas on the airport to provide overall security and further separate airside and landside operations.

06MP12-6A-1/26/11

	PROJECT DESCRIPTION	TOTAL PROJECT COST	FAA ELIGIBLE	ADOT ELIGIBLE*	LOCAL SHARE
	SHORT TERM PROGRAM (1-5 years)				
	2011				
1	Design Only: Automated Weather Observation System (AWOS)	$30,000	$28,500	$750	$750
2	Develop a Pavement Maintenance Management Program	50,000	47,500	1,250	1,250
3	Design Only: 1,800' Southerly Extension to Taxiway A on East Side of Runway 17-35	136,000	129,200	3,400	3,400
	2011 SUBTOTAL	***$216,000***	***$205,200***	***$5,400***	***$5,400***
	2012				
4	Construct AWOS	$173,000	$164,350	$4,325	$4,325
5	Construct 1,800' Extension to Taxiway A and Install Medium Intensity Taxiway Lighting (MITL); Construct Hold Apron	969,000	920,550	24,225	24,225
6	Design Only: Airfield Improvements including Reconstruction / Rehabilitation of Runway 17-35 and Associated Taxiways, Medium Intensity Runway Lighting (MIRL), and Precision Approach Path Indicator Lights (PAPIs)	347,000	329,650	8,675	8,675
	2012 SUBTOTAL	***$1,489,000***	***$1,414,550***	***$37,225***	***$37,225***
	2013				
7	Reconstruct/Rehabilitate Runway 17-35 and Associated Taxiways; Widen Certain Taxiways to 75'	$2,380,000	$2,261,000	$59,500	$59,500
8	Design Only: Airfield Improvements including Reconstruction / Rehabilitation of Runway 5-23 and Associated Taxiways and Runway End Identification Lights (REILs)	825,000	783,750	20,625	20,625
	2013 SUBTOTAL	***$3,205,000***	***$3,044,750***	***$80,125***	***$80,125***
	2014				
9	Reconstruct/Rehabilitate Runway 5-23 and Associated Taxiways; Widen Certain Taxiways to 75'; Realign Entrance/Exit Taxiway Serving Runway 23 Threshold; Construct Hold Apron	$6,211,000	$5,900,450	$155,275	$155,275
	2014 SUBTOTAL	***$6,211,000***	***$5,900,450***	***$155,275***	***$155,275***
	2015				
10	Install MIRL and PAPI-2s on Runway 17-35	$281,000	$266,950	$7,025	$7,025
11	Install REILs on Runway 5-23	110,400	104,880	2,760	2,760
12	Install Security Fencing (Phase I)	150,000	142,500	3,750	3,750
	2015 SUBTOTAL	***$541,400***	***$514,330***	***$13,535***	***$13,535***
	TOTAL SHORT TERM PROGRAM	**$11,662,400**	**$11,079,280**	**$291,560**	**$291,560**
	INTERMEDIATE TERM PROGRAM (6-10 YEARS)				
1	Improve Roadway Access and Utility Infrastructure to Support Existing / Future Aviation Development on South Side of the Airport	$926,300	$185,250	$4,900	$736,150
2	Construct Taxiways Leading to Existing/Future Aviation Development	916,500	870,675	22,913	22,913
3	Reconstruct/Rehabilitate Portions of Existing Aircraft Parking Apron	195,000	185,250	4,875	4,875
4	Construct Joint-Use Fire / Rescue Facility	329,200	--	--	329,200
5	Construct Additional Apron Space to Support Aircraft Parking and Aviation Development	1,001,700	951,615	25,043	25,043
6	Construct Taxilanes Leading to Hangar Development	282,100	267,995	7,053	7,053
7	Conduct Environmental Assessment for Runway 5-23 Extension	250,000	237,500	6,250	6,250
8	Acquire Property on Northeast Side of Airport for Ultimate Runway Extension and Procurement of Safety Areas (78.5 Acres)	903,000	857,850	22,575	22,575
9	Relocate Coolidge Airport Road on Northeast Side of Airport	2,250,000	2,137,500	56,250	56,250
10	Extend Runway 5-23 and Associated Taxiway 1,538' Northeast (Phase I)	4,507,500	4,282,125	112,688	112,688
11	Improve Object Free Area (OFA) Deficiency on Southwest Side of Runway 5-23; Realign Entrance/Exit Taxiway Serving Runway 5 Threshold; Construct Hold Apron	944,200	896,990	23,605	23,605
12	Acquire Avigation Easement for Approach Protection (21 Acres)	193,200	183,540	4,830	4,830
13	Remove Intersection Taxiway; Construct Three Additional Taxiways Serving Runways 5-23 and 17-35	1,137,200	1,080,340	28,430	28,430
14	Conduct Environmental Assessment for Runway 17-35 Extension	100,000	95,000	2,500	2,500
15	Extend Runway 17-35 400' North and Construct Associated Taxiway	678,000	644,100	16,950	16,950
16	Install REILs on Runway 17-35	124,800	118,560	3,120	3,120
17	Install Security Fencing (Phase II)	150,000	142,500	3,750	3,750
18	General Pavement Maintenance	500,000	475,000	12,500	12,500
	TOTAL INTERMEDIATE TERM PROGRAM	**$15,388,700**	**$13,611,790**	**$358,230**	**$1,418,680**
	LONG TERM PROGRAM (11-20 YEARS)				
1	Improve Roadway Access and Utility Infrastructure to Support Aviation and Non-Aviation Development on East Side of Aiport	$1,657,500	$463,125	$12,188	$1,182,188
2	Construct Taxiway Extending to East Side of Airport to Support Aviation Development Parcels	788,500	749,075	19,713	19,713
3	Construct Taxilanes Leading to Hangar Development and Aviation Support Facilities	1,479,400	1,405,430	36,985	36,985
4	Construct Airport Maintenance Facility and Aircraft Wash Rack	400,000	237,500	141,250	21,250
5	Construct Additional Apron Space to Support Aircraft Parking and Aviation Development	488,800	464,360	12,220	12,220
6	Extend Runway 5-23 and Associated Taxiway 1,100' Northeast (Phase II)	3,281,200	3,117,140	82,030	82,030
7	Acquire Property on Southwest Side of Airport for Improved Instrument Approach Procedures (3.8 Acres)	43,700	41,515	1,093	1,093
8	Install Medium Intensity Approach Lighting System (MALS) on Each End of Runway 5-23	1,000,000	950,000	25,000	25,000
9	Conduct Environmental Assessment for West Side Development (Taxiway and Terminal Area)	150,000	142,500	3,750	3,750
10	Construct Parallel Taxiway on West Side of Runway 5-23	3,857,100	3,664,245	96,428	96,428
11	Construct Roadway Access and Utility Infrastructure to Support Aviation Development on West Side of Airport	325,000	30,875	813	293,313
12	Construct General Aviation Terminal Facilities on Northwest Side of Airport	2,278,800	1,452,360	38,220	788,220
13	General Pavement Maintenance	1,000,000	950,000	25,000	25,000
	TOTAL LONG TERM PROGRAM	**$16,750,000**	**$13,668,125**	**$494,689**	**$2,587,189**
	TOTAL PROGRAM COSTS	***$43,801,100***	***$38,359,195***	***$1,144,479***	***$4,296,679***

*The funding of projects will be subject to the Arizona Revised Statutes, Arizona Transportation Board Policies, and administrative policies as well as funds available.

COOLIDGE MUNICIPAL AIRPORT

Exhibit 6A
CAPITAL IMPROVEMENT PROGRAM

06MP12-6B-01/26/11

SHORT TERM PROGRAM (1-5 years)

2011

1. Design Only: Automated Weather Observation System (AWOS) ***(NP)***
2. Develop a Pavement Maintenance Management Program ***(NP)***
3. Design Only: 1,800' Southerly Extension to Taxiway A on East Side of Runway 17-35 ***(NP)***

2012

4. Construct AWOS
5. Construct 1,800' Extension to Taxiway A and Install Medium Intensity Taxiway Lighting (MITL) Construct Hold Apron
6. Design Only: Airfield Improvements including Reconstruction / Rehabilitation of Runway 17-35 and Associated Taxiways, Medium Intensity Runway Lighting (MIRL), and Precision Approach Path Indicator Lights (PAPIs) ***(NP)***

2013

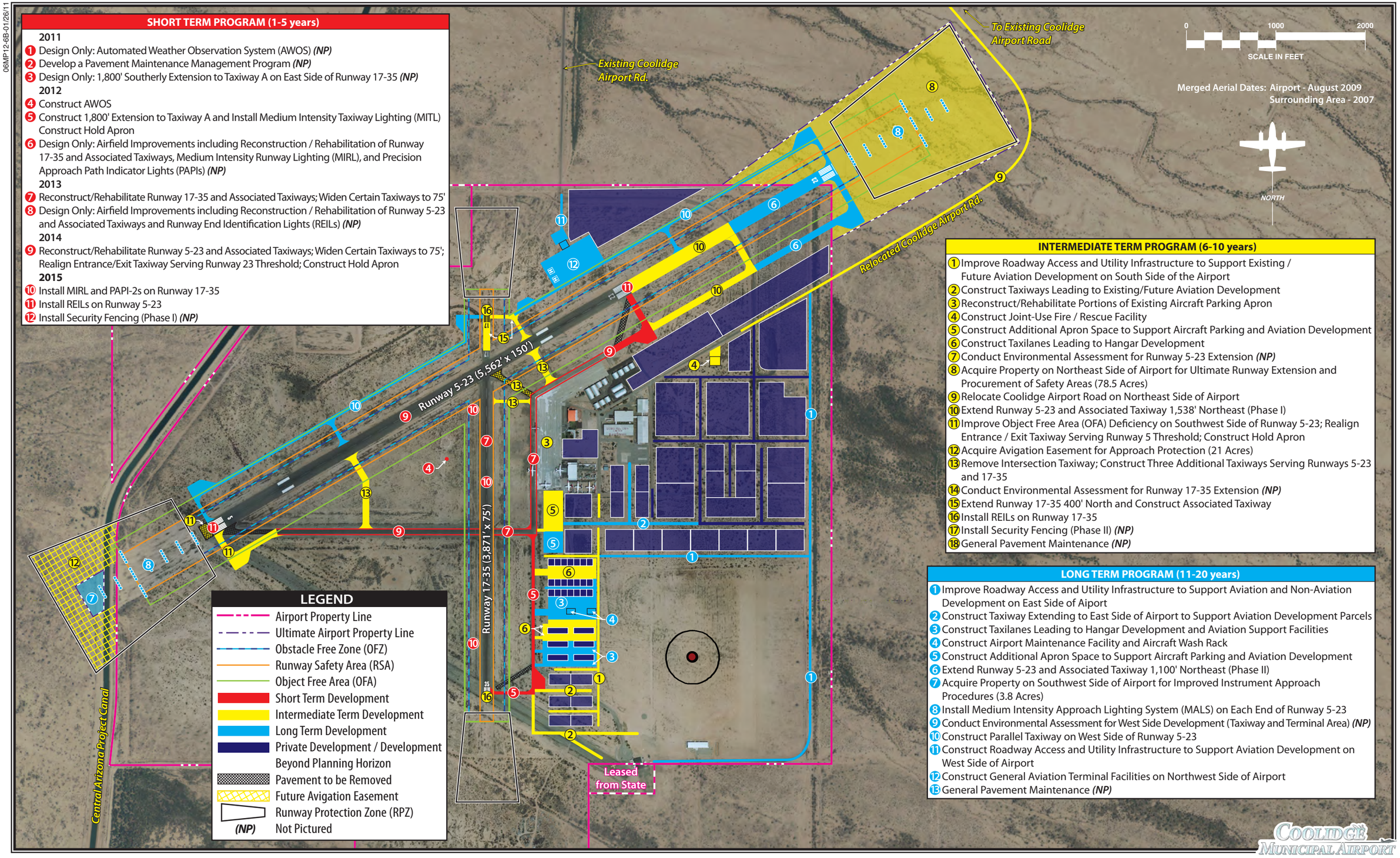
7. Reconstruct/Rehabilitate Runway 17-35 and Associated Taxiways; Widen Certain Taxiways to 75'
8. Design Only: Airfield Improvements including Reconstruction / Rehabilitation of Runway 5-23 and Associated Taxiways and Runway End Identification Lights (REILs) ***(NP)***

2014

9. Reconstruct/Rehabilitate Runway 5-23 and Associated Taxiways; Widen Certain Taxiways to 75'; Realign Entrance/Exit Taxiway Serving Runway 23 Threshold; Construct Hold Apron

2015

10. Install MIRL and PAPI-2s on Runway 17-35
11. Install REILs on Runway 5-23
12. Install Security Fencing (Phase I) ***(NP)***



LEGEND

- Airport Property Line
- Ultimate Airport Property Line
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Short Term Development
- Intermediate Term Development
- Long Term Development
- Private Development / Development Beyond Planning Horizon
- Pavement to be Removed
- Future Avigation Easement
- Runway Protection Zone (RPZ)
- ***(NP)*** Not Pictured

INTERMEDIATE TERM PROGRAM (6-10 years)

1. Improve Roadway Access and Utility Infrastructure to Support Existing / Future Aviation Development on South Side of the Airport
2. Construct Taxiways Leading to Existing/Future Aviation Development
3. Reconstruct/Rehabilitate Portions of Existing Aircraft Parking Apron
4. Construct Joint-Use Fire / Rescue Facility
5. Construct Additional Apron Space to Support Aircraft Parking and Aviation Development
6. Construct Taxilanes Leading to Hangar Development
7. Conduct Environmental Assessment for Runway 5-23 Extension ***(NP)***
8. Acquire Property on Northeast Side of Airport for Ultimate Runway Extension and Procurement of Safety Areas (78.5 Acres)
9. Relocate Coolidge Airport Road on Northeast Side of Airport
10. Extend Runway 5-23 and Associated Taxiway 1,538' Northeast (Phase I)
11. Improve Object Free Area (OFA) Deficiency on Southwest Side of Runway 5-23; Realign Entrance / Exit Taxiway Serving Runway 5 Threshold; Construct Hold Apron
12. Acquire Avigation Easement for Approach Protection (21 Acres)
13. Remove Intersection Taxiway; Construct Three Additional Taxiways Serving Runways 5-23 and 17-35
14. Conduct Environmental Assessment for Runway 17-35 Extension ***(NP)***
15. Extend Runway 17-35 400' North and Construct Associated Taxiway
16. Install REILs on Runway 17-35
17. Install Security Fencing (Phase II) ***(NP)***
18. General Pavement Maintenance ***(NP)***

LONG TERM PROGRAM (11-20 years)

1. Improve Roadway Access and Utility Infrastructure to Support Aviation and Non-Aviation Development on East Side of Aiport
2. Construct Taxiway Extending to East Side of Airport to Support Aviation Development Parcels
3. Construct Taxilanes Leading to Hangar Development and Aviation Support Facilities
4. Construct Airport Maintenance Facility and Aircraft Wash Rack
5. Construct Additional Apron Space to Support Aircraft Parking and Aviation Development
6. Extend Runway 5-23 and Associated Taxiway 1,100' Northeast (Phase II)
7. Acquire Property on Southwest Side of Airport for Improved Instrument Approach Procedures (3.8 Acres)
8. Install Medium Intensity Approach Lighting System (MALS) on Each End of Runway 5-23
9. Conduct Environmental Assessment for West Side Development (Taxiway and Terminal Area) ***(NP)***
10. Construct Parallel Taxiway on West Side of Runway 5-23
11. Construct Roadway Access and Utility Infrastructure to Support Aviation Development on West Side of Airport
12. Construct General Aviation Terminal Facilities on Northwest Side of Airport
13. General Pavement Maintenance ***(NP)***

COOLIDGE MUNICIPAL AIRPORT

Exhibit 6B
DEVELOPMENT STAGING

The total investment necessary for the short term CIP is approximately $11.66 million. Of this total, $11.08 million is eligible for FAA grant funding and approximately $291,560 is eligible for state funding. The remaining $291,560 would need to be provided locally.

INTERMEDIATE TERM IMPROVEMENTS

The intermediate term CIP considers 18 projects for the five-year timeframe. Due to the fluid nature of aviation growth and the uncertainty of infrastructure and development needs more than five years into the future, the projects in the intermediate term were combined into a single project listing and not prioritized by year. However, the project listing is intended to depict a prioritization of projects as now anticipated to meet future demand.

The first two projects call for improvements on the east side of Runway 17-35 that include extending roadway access and utilities farther south as well as constructing taxiways east from parallel Taxiway A which will accommodate aviation development parcels warranted by demand. These activities could provide additional revenue for the airport and enhance activities currently being conducted by existing aviation specialty operators.

During this time, plans call for the reconstruction and/or rehabilitation of the existing aircraft parking apron adjacent to the terminal area. This pavement experiences high-activity utilization in addition to heavy aircraft loads. The Pavement Maintenance Management Program, as discussed in the previous section, will identify areas that have deteriorated over time and should be improved.

A safety-related project in the intermediate term deals with the construction of a joint-use fire station that would serve both the airport and surrounding areas. Although not required at Coolidge Municipal Airport, the fire station would bring an added safety benefit to airport operations.

The construction of additional apron space is planned during this time immediately south of the existing aircraft parking apron. Opportunities for additional aircraft parking and aviation-related development in the form of large hangars that could support fixed base operators (FBOs), corporate flight departments, and other high-activity specialty aviation operators would be allowed immediately to the east of the proposed apron. Taxilanes are also programmed farther south that would provide aircraft access to hangars serving lower-activity operations as demand dictates.

Next, projects are identified that prepare for a potential runway extension on Runway 5-23. Several projects must be implemented leading up to the actual extension. Prior to any significant construction on the airport, an environmental assessment (EA) is required. If there are no significant environmental impacts identified, then

the process can proceed to design and engineering phase of the runway extension.

The runway extension will require supplementary projects. As proposed during this time, the runway would be extended 1,538 feet northeast (Phase I). The northeasterly extension would remain entirely on airport property; however, additional property would need to be acquired to secure safety areas within the runway protection zone (RPZ), runway safety area (RSA), and object free area (OFA). It should be noted that a second runway extension (Phase II) is called out later in the CIP that would further extend the runway and associated safety areas to the northeast. As a result, the plan considers the fee simple acquisition of approximately 78.5 acres of land northeast of the airport to meet FAA safety standards. In addition, Coolidge Airport Road should be realigned so as to accommodate an ultimate length of 8,100 feet on Runway 5-23.

Once the initial runway extension is complete, the OFA deficiency on the southwest side of the airport is addressed. As proposed, 100 feet of pavement at the southwest end of Runway 5-23 is to be removed which shifts the OFA entirely onto airport property and clears it of the levee system and fence associated with the Central Arizona Project Canal. At this time, the entrance/exit taxiway serving Runway 5 is to be realigned and a hold apron constructed to improve airfield awareness and efficiency. The RPZ extends farther southwest across the Central Arizona Project Canal. It is recommended that this area be controlled through an avigation easement.

Other projects in the intermediate term involve enhancing safety and efficiency as related to the intersection of Runways 5-23 and 17-35. The existing taxiway extending east from the runways' intersection is to be removed and replaced with two additional exits connecting each runway to the main aircraft apron. Furthermore, a 400-foot northerly extension is proposed on Runway 17-35 in an effort to remove the Runway 17 threshold from penetrating safety areas, in particular the obstacle free zone (OFZ), associated with Runway 5-23. As with any major construction, an EA is programmed prior to potential construction of the runway and associated taxiway extensions.

At the end of the intermediate term program, the airport should install REILs on Runway 17-35 and construct additional security fencing. Finally, ongoing replacement and maintenance of airfield pavements is considered throughout the plan. These projects could entail crack sealing, rejuvenating seal coats, slab replacements, and overlays.

Intermediate term projects have been estimated to cost approximately $15.39 million. Of this total, $13.61 million is eligible for FAA grant funding, $358,230 is eligible for state funds, and the local share is projected to be approximately $1.42 million. Utility infrastructure improvements and the construction of a joint-use fire

station are two items that are not eligible for federal or state funds; therefore, the costs associated with these projects would need to be entirely funded by local sources.

LONG TERM IMPROVEMENTS

The long term planning horizon considers 13 projects for the ten-year period focused on continued landside development and improvements to the airfield. The improvements are listed on **Exhibit 6A** and depicted on **Exhibit 6B**.

The first six projects in the long term will be driven by demand. In an effort to make available additional airport property for aviation and non-aviation development, roadway improvement and utility extensions are proposed on the east side of the facility. In addition, taxiways and taxilanes are proposed extending east from Runway 17-35 that would provide aircraft access to potential hangar storage and aviation development parcels. During this time, the construction of a maintenance facility and aircraft wash rack are called for on the south side of the airport adjacent to proposed private hangar development.

As called out previously, the Phase II extension of Runway 5-23 is scheduled in the long term and will provide an ultimate runway length of 8,100 feet. Upon completion of the runway extension, an approach lighting system in the form of a medium intensity approach lighting system (MALS) is proposed on each end of Runway 5-23 to help achieve a straight-in instrument approach with not lower than ¾-mile visibility minimums. Approximately 3.8 acres of land on the west side of the Central Arizona Project Canal would need to be acquired through fee simple property acquisition in order to accommodate the MALS serving Runway 5.

At the end of the long term CIP, projects related to the development of the west side of the airport are proposed. An EA would need to be conducted to determine the environmental impacts, if any, prior to design and construction of development. The plan includes a full-length parallel taxiway on the west side of Runway 5-23, in addition to a dedicated general aviation terminal area on the northwest side of the airport. Access to this area could be provided by extending a roadway south from existing Coolidge Airport Road. Finally, the long term CIP addresses continued pavement maintenance on runways, taxiways, taxilanes, and aircraft parking aprons. The conditions of these pavements will determine the scope of improvements needed.

Total long term projects have been estimated to cost approximately $16.75 million in year 2010 dollars, with approximately $13.67 million eligible for FAA funding. An additional $494,689 is eligible for state funds and the remaining $2.59 million is the local share. Extensive utility improvements on the east and west sides of the airport and the proposed general aviation terminal facility on the northwest side of the airport contri-

bute to the local-only funded projects in the long term horizon. The total CIP program costs are estimated at $43.80 million through the 20-year planning period of this Master Plan.

CAPITAL IMPROVEMENTS SUMMARY

The CIP covers potential development at Coolidge Municipal Airport over the next 20 years. Many of the planned facilities at the airport are not included in the CIP, as they are either projected to be necessary beyond the scope of this plan or assumed to be private development, as is the case with future hangar construction. Several airport improvements presented in the CIP are demand-based. These facilities should be constructed to serve an existing demand at the airport at that time. This plan does not support building facilities in order to attract activity. Because the plan is demand-based rather than time-based, it provides the City of Coolidge with the flexibility to develop facilities as needed. Should demand increase at a greater rate than is forecast, implementation of these improvements can be advanced. Should demand slow, the life of the Master Plan is effectively increased.

CAPITAL IMPROVEMENTS FUNDING

Financing capital improvements at the airport will not rely solely on the financial resources of the airport. Capital improvement funding is available through various grant-in-aid programs on both the federal and state levels. The following discussion outlines key sources of funding potentially available for capital improvements at Coolidge Municipal Airport.

FEDERAL GRANTS

Through federal legislation over the years, various grant-in-aid programs have been established to develop and maintain a system of public airports across the United States. The purpose of this system and its federally based funding is to maintain national defense and to promote interstate commerce. The most recent comprehensive legislation affecting federal funding was enacted in late 2003 and was titled, *Century of Aviation Reauthorization Act,* or *Vision 100*.

The four-year bill covered FAA fiscal years 2004, 2005, 2006, and 2007. (This bill presented similar funding levels to the previous bill - *Air 21*.) Airport Improvement Program (AIP) funding was authorized at $3.4 billion in 2004, $3.5 billion in 2005, $3.6 billion in 2006, and $3.7 billion in 2007. This bill provided the FAA the opportunity to plan for longer term projects versus one-year re-authorizations.

Vision 100 expired at the end of fiscal year 2007. Since this time (April 2010), the United States Congress had not passed a reauthorization or long term AIP program. The federal government has been operating on a series of continuing resolutions which allows the continued collection of avia-

tion taxes at 2007 levels. Both the Senate and House of Representatives have considered legislation reauthorizing the AIP program and reestablishing the Aviation Trust Fund; however, Senate and House versions vary and neither bill has been passed. While different in make-up, both bills retained the fundamentals of the current program for eligibility and matching levels. Therefore, the CIP assumes a similar funding system will be in place through the planning period of this study. Under *Vision 100* and the current continuation bill, Coolidge Municipal Airport is eligible for 95 percent funding assistance from AIP grants.

The source for airport improvement funds from the federal government is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Aviation Trust Fund also finances the operation of the FAA. It is funded by user fees, including taxes on airline tickets, aviation fuel, and various aircraft parts.

Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to commercial service airports based upon enplanement (passenger boarding) levels. Airports with qualifying levels of air cargo shipments can receive additional entitlements. After all specific entitlements are distributed, the remaining AIP funds are disbursed by the FAA based upon the priority of the project through discretionary apportionments. A national priority system is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding.

Under the AIP program, examples of eligible development projects include the airfield, public aprons, and access roads. Additional buildings and structures may be eligible if the function of the structure is to serve airport operations in a non-revenue generating capacity, such as maintenance facilities. Some passenger terminal building improvements (such as bag claim and public waiting lobbies) are also eligible for FAA funding. Improvements such as fueling facilities, utilities (with the exception of water supply for fire prevention), hangar buildings, airline ticketing, and airline operations areas are not typically eligible for AIP funds.

Non-Primary Entitlement Funds

Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to primary commercial service airports based upon enplanement levels. For those airports that do not meet the criteria for a primary commercial service airport, such as the case with Coolidge Municipal Airport, eligible airports could receive up to $150,000 of funding each year in Non-Primary Entitlement (NPE) funds. Eligible airports include those that are included in the National Plan of Integrated Airport Systems (NPIAS). Coolidge

Municipal Airport is currently eligible for full NPE funding.

Discretionary Funds

In a number of cases, airports face major projects that will require funds in excess of the airport's annual non-primary entitlements. Thus, additional funds from discretionary apportionments under AIP become desirable. The primary feature about discretionary funds is that they are distributed on a priority basis. These priorities are established by the FAA, utilizing a priority code system. Under this system, projects are ranked by their purpose. Projects ensuring airport safety and security are ranked as the most important priorities, followed by maintaining current infrastructure development, mitigating noise and other environmental impacts, meeting standards, and increasing system capacity.

It is important to note that competition for discretionary funding is not limited to airports in the State of Arizona or those within the FAA Western Pacific Region. The funds are not distributed to all airports in the country and, as such, are more difficult to obtain. High priority projects will often fare favorably, while lower priority projects usually will not receive discretionary grants.

FAA Facilities and Equipment Program

The Airway Facilities Division of the FAA administers the national Facilities and Equipment (F&E) Program. This annual program provides funding for the installation and maintenance of various navigational aids and equipment for the national airspace system and airports. Under the F&E program, funding is provided for FAA airport traffic control towers, enroute navigational aids, on-airport navigational aids, and approach lighting systems. As activity levels and other developments warrant, the airport may be considered by the FAA Airways Facilities Division for the installation and maintenance of navigational aids through the F&E program. A project which could be funded through the F&E Program that is included in the CIP for Coolidge Municipal Airport is the installation of a MALS on each end of Runway 5-23.

STATE FUNDING PROGRAM

In support of the state aviation system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The State Transportation Board establishes the policies for distribution of these state funds.

Under the State of Arizona's grant program, an airport can receive funding for one-half (currently 2.5 percent) of the local share of projects receiving federal AIP funding. The state also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding.

It should be noted that due to recent budget shortfalls, limitations have been placed on state funding programs. This has directly impacted the state's Aviation Fund, as the amount of money dedicated to airport improvements has been significantly reduced. It is projected that the Aviation Fund will return to normal levels within the next few years as the state's budget improves.

State Airport Loan Program

The ADOT – Aeronautic Group Airport Loan Program was established to enhance the utilization of state funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition, planning studies, and the preparation of plans and specifications for airport construction projects; as well as revenue-generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program are considered if the project would enhance the airport's ability to be financially self-sufficient.

There are three ways in which the loan funds can be used: Grant Advance, Matching Funds, or Revenue-Generating Projects. The Grant Advance loan 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 be included in the ADOT Five-Year Airport Development Program. The Matching Funds are provided to meet the local matching fund requirement for securing federal airport improvement grants or other federal or state grants. The Revenue-Generating funds are provided for airport-related construction projects that are not eligible for funding under another program. As previously discussed, current limitations on the state funding program could affect this program.

Pavement Maintenance Program

The airport system in Arizona is a multi-million dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited and the State Transportation Board recognizes that need to protect and extend the maximum useful life of the airport system's pavement. The Arizona Pavement Preservation Program (APPP) has been established to assist in the preservation of the Arizona airports' system infrastructure.

Public Law 103-305 requires that airports requesting federal AIP funding for pavement rehabilitation or recon-

struction have an effective pavement maintenance program system. To this end, ADOT-Aeronautics Group maintains an Airport Pavement Management System (APMS). This system requires monthly airport inspections which are conducted by airport management and supplied to ADOT.

The Arizona Airport Pavement Management System uses the Army Corps of Engineers "Micropaver" program as a basis for generating a Five-Year APPP. The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement conditions in accordance with the most recent FAA Advisory Circular 150/5380-7, *Pavement Management System*, and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. Individual airport reports from the update are shared with all participating system airports. ADOT-Aeronautics Group ensures that the APMS database is kept current, in compliance with FAA requirements.

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

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. Coolidge Municipal Airport is operated by the City of Coolidge and could receive some assistance from the City. The goal for the operation of the airport is to generate ample revenues to cover all operating and maintenance costs as well as the local matching share of capital expenditures. As with many airports, this is not possible and other financial methods will be needed.

According to **Exhibit 6A**, local funding will be needed in each planning horizon. This includes $291,560 in the short term, $1.42 million in the intermediate term, and $2.59 million in the long term.

There are several alternatives for local financing options for future development at the airport, including airport revenues, direct funding from the City, issuing bonds, and leasehold financing. These strategies could be used to fund the local matching share, or com-

plete the project if grant funding cannot be arranged.

Local funding options may also include the solicitation of private developers to construct and manage hangar facilities at the airport. This practice is currently in place at Coolidge Municipal Airport. The capital improvement program has assumed that landside facility development would be undertaken in this manner. Outsourcing hangar development can benefit the airport sponsor by generating land lease revenue and relieving the sponsor of operations and maintenance costs.

FUNDING AIRPORT OPERATIONS

The airport is operated by the City of Coolidge through the collection of various rates and charges from general aviation revenue sources. These revenues are generated specifically by airport operations. There are, however, restrictions on the use of revenues collected by the airport. All receipts, excluding bond proceeds or related grants and interest, are irrevocably pledged to the punctual payment of operating and maintenance expenses, payment of debt service for as long as bonds remain outstanding, or to additions or improvements to airport facilities.

Operating revenues at Coolidge Municipal Airport include, at a minimum, fuel flowage fees and ground leases. Revenues are anticipated to continue to grow consistent with aviation activity and an overall positive economic outlook. As more aircraft base at the airport, additional revenues from land leases and fuel flowage fees should increase proportionately. Revenues will also be bolstered by increases in transient aircraft activity that additionally increases fuel sales.

To ensure that the airport maximizes revenue potential in the future, the City of Coolidge should also periodically review aviation services rates and charges (i.e., fuel flowage fees, ground lease rates, tiedown rental, etc.) at other airports to ensure that rates and charges at the airport are competitive and similar to aviation services at other airports and further generate the opportunity for the City to establish other means of revenue collection or establish future rates and charges. Additionally, all new leases at the airport should have inflation clauses allowing for periodic rate increases in line with inflationary factors.

While it is desirable for the airport to directly pay for itself, the indirect and intangible benefits of the airport to the community's economy and growth must be considered in implementing future capital improvements.

Airport Rates and Charges

The FAA places several stipulations on rates and charges establishment and collection; however, two primary considerations need to be addressed. First, the rates and charges must be fair, equally applied, and resemble fair market value. Second, the rates and

charges collected must be returned to and used only by and/or for the airport. In other words, the revenues generated by airport operations cannot be diverted to the general use of the City of Coolidge. The FAA requires funds to be used at airports as these funds are many times needed to either support the day-to-day operational costs or offset capital improvement costs.

Given its location to other airports, the rates and charges structure at Coolidge Municipal Airport needs to be somewhat competitive with other airports in the region. If the costs are too high, some users may choose other airports. On the other hand, if rates and charges are set too low, some facilities will not be capable of being amortized, thus requiring a subsidy from the City. The following provides several activities that could enhance revenue production for an airport, some of which are currently being practiced at Coolidge Municipal Airport.

Aircraft Parking

Aircraft parking fees, also referred to as tiedown fees, are typically assessed to those aircraft utilizing a portion of an aircraft parking area that is owned by the airport. These fees are most generally assessed on a daily or monthly basis, depending upon the specific activity of a particular aircraft.

Aircraft parking fees can be established in several different ways. Typically, airports assess aircraft parking fees in accordance with an established schedule in which an aircraft within a designated weight and/or size pays a similar fee (i.e., small aircraft, single engine aircraft). Aircraft parking fees may also be charged according to a "cents per 1,000 pounds" basis in which larger aircraft with increased weights would obviously pay more for utilizing the aircraft parking apron. There are also instances in which aircraft parking fees are not assessed on an airport.

An airport sponsor may also include in a lease agreement with an aviation-related commercial operator at the airport to collect aircraft parking fees on portions of an aircraft parking apron in which the airport does not own or is leasing to a commercial operator, such as an FBO. As a result, the airport could directly collect parking fees from an aircraft utilizing this space or allow the commercial operator to collect the parking fee, in which the agreement may allow the commercial operator to retain a portion of the parking fee as an administrative or service fee.

As previously discussed, aircraft parking fees can be assessed on a daily or monthly basis. Daily aircraft parking fees are typically assessed to transient aircraft utilizing the airport on a short-term basis, while monthly fees are charged to aircraft that utilize a particular parking area for the permanent storage of their aircraft. Monthly aircraft parking fees are often assessed at airports that contain a waiting list for aircraft hangar storage

space. It is also common practice at many airports to waive a daily aircraft parking fee in the event the aircraft purchases fuel prior to departing the airport.

Previous rates and charges analysis conducted by the consultant outside this study have indicated that daily aircraft parking fees can vary from $3.00 to $10.00 depending on the type of aircraft, and monthly aircraft parking fees can range between $25.00 and $100.00 per month depending on the type and size of the aircraft.

Aircraft Storage Hangars

There are several types of aircraft storage hangars that can accommodate aircraft on an airport. In order to establish hangar fees, an airport typically factors in such qualities as hangar size, location, and utilities. Aircraft hangar fees are most often charged on a monthly basis.

Common aircraft storage hangars are typically categorized as shade hangars, T-hangars, and conventional hangars. Shade hangars consist of tiedown spaces with a protective roof covering. T-hangars provide for separate, single-aircraft storage areas. Conventional hangars provide a larger enclosed space that can accommodate larger multi-engine piston or turbine aircraft and/or multiple aircraft storage. Conventional hangars can also be utilized by aviation-related commercial operators for their business activities on an airport.

Location can also play a role in determining hangar rates. Aircraft storage hangars with direct access to improved taxiways/taxilanes and adjacent to aviation services being offered at an airport can oftentimes be more expensive to rent. In addition, the type of utility infrastructure being offered to the hangar can also help determine storage fees. Smaller aircraft storage hangars, such as a T-hangar or small box hangar, can either be granted access through a manual sliding door or electric door. It is common for hangars that provide electric doors to have higher rental fees as the cost associated with constructing these hangars would exceed the cost associated with simpler structures.

At some airports, hangar facilities are constructed by the airport sponsor, while at other airports, hangars are built by private entities. In some cases, airports have both public and private hangar facilities available. Hangars can be expensive to construct and offer minimal return on investment in the short term. In order to amortize the cost of constructing hangars, lease rates should be developed at a minimum to recover development and finance costs.

T-hangars often range from $100 to $350 per month depending on several factors previously listed. Larger conventional-style hangars can be leased per aircraft space or for the entire hangar. Monthly rates similar to those for individual T-hangar units often apply to leased aircraft space in a conventional hangar.

Ground Rental

Ground rentals can be applied to aviation and non-aviation development on an airport. Also known as a land lease, a ground lease can be structured to meet the particular needs of an airport operator in terms of location, terrain features, amount of land needed, and type of facility infrastructure included.

One of the single most valuable assets available to an airport is the leasable land with access to the runway/taxiway system. For aviation-related businesses, it is critical that they be located on an airport. Airport property is available for long term lease but, in most cases, it cannot be sold. At the expiration of the lease, and any extensions, the improvements on the leased land revert back to the airport sponsor. In order for this arrangement to make financial sense, most ground leases are at least 20 years in length and include extension opportunities. Those who lease land on an airport are typically interested in constructing a hangar for their own private use, for sub-lease, or for operation of an airport business. Therefore, the long term lease arrangement is important in order to obtain capital funding for the construction of a hangar or other type of facility. It should also be noted that ground leases should include the opportunity to periodically review the lease and adjust the rate according to the consumer price index (CPI). Typical lease agreements range from 20 to 30 years with options for extensions.

Ground leases are typically established on a yearly fee schedule based upon the amount of square feet leased. The amount charged can vary greatly depending on the level of improvements to the land. For example, undeveloped land with readily accessible utilities and taxiway access can generate more revenue than unimproved property. Previous surveys at other airports across the country conducted by the consultant have determined ground lease rates to range from $0.08 per square foot per year to approximately $1.00 per square foot per year. In some instances, lease rates were well over $1.00 per square foot per year.

Some airports will have other leasable space available. For example, airports with a terminal building may have office or counter space available for aviation and non-aviation related businesses. Some example businesses could include commercial airlines, aircraft sales, flight instruction, aircraft insurance, and a restaurant.

As previously mentioned, under certain circumstances, an airport sponsor may utilize portions of the airport for non-aeronautical purposes such as commercial and/or industrial development if certain areas are not needed to satisfy aviation demand or are not accessible to aviation activity. Prior to an airport pursuing a ground lease with a commercial operator for non-aeronautical purposes, the sponsor must formally request from the FAA a release from certain land parcels that may not be needed for aviation-related uses.

Fuel Sales and Flowage

Fuel sales are typically managed at an airport in one of two ways: the airport sponsor acts as the fuel distributor or fueling operations are sub-contracted to an FBO. If the airport sponsor acts as the fuel distributor, then the airport would receive revenues equal to the difference between wholesale and retail prices. Of course, there are added expenses such as employing people to fuel the aircraft.

When these services are undertaken by an FBO, the airport sponsor typically receives a fuel flowage fee per gallon of fuel. By way of agreement with the airport sponsor, FBOs would be required to pay a fuel flowage fee for each gallon of fuel sold or received into inventory. In the case of self-fueling entities, a fuel flowage fee could apply for each gallon of fuel dispensed. Fuel flowage fees are typically paid on a "cents per gallon" basis. In some instances, fuel flowage fees will be established based upon the type of aviation activity. For example, commercial airline service operators may be assessed a higher fuel flowage fee than general aviation aircraft or no fuel flowage fee at all if being assessed a landing fee (to be discussed in the next section). Fuel flowage fees can also be distinguished by type of fuel (100LL or Jet A).

The owner of the fuel farm can also be the airport sponsor or an FBO operator. If the airport sponsor owns the fuel farm and the FBO operator undertakes the fueling activities, then a separate fuel storage fee can be charged or a higher fuel flowage fee may be assessed. Fuel flowage fees at other airports similar to Coolidge Municipal Airport oftentimes range from $0.03 per gallon to $0.20 per gallon.

Landing Fees

Landing fees typically only apply to larger aircraft, such as those over 60,000 pounds, for example, and only those involved in commercial airline or air taxi operations. Landing fees are not common on general aviation airports and are generally discouraged due to collection difficulty. Moreover, landing fees are somewhat discouraging to aircraft operators which will many times elect to utilize a nearby airport that does not collect a landing fee.

When landing fees are assessed, they are most commonly based upon aircraft weight and a "cents per 1,000 pounds" approach. In addition, some airport sponsors may use a flat fee approach wherein aircraft within a specified weight range are charged the same fee.

Landing fees may be collected directly by the airport sponsor or an airport may have an agreement with a commercial operator to collect landing fees. Similar to what was discussed with aircraft parking fees, under this scenario, the agreement may allow the commercial operator, such as an FBO, to retain a portion of the landing fee as an administrative or service fee.

PLAN IMPLEMENTATION

The best means to begin implementation of the recommendations in this Master Plan is to first recognize that planning is a continuous process that does not end with completion and approval of this document. Rather, the ability to continuously monitor the existing and forecast status of airport activity must be provided and maintained. The issues upon which this report is based will remain valid for a number of years. The primary goal is for the airport to best serve the air transportation needs of the region, while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. For example, projections have been made as to when air cargo facilities may be needed at the airport. In reality, however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate the development. Although every effort has been made to conservatively estimate when facility development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a study of this nature is in keeping the issues and objectives in the minds of the managers and policymakers so that they are better able to recognize changes and their effects. In addition to adjustments in aviation demand, decisions made as to when to undertake the improvements recommended in this Master Plan will impact the period that the plan remains valid. The format used in this plan is intended to reduce the need for formal and costly updates by simply adjusting the timing. Updating can be done by airport management, thereby improving the plan's effectiveness.

GLOSSARY OF TERMS

Glossary of Terms

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): See declared distances.

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed greater than 166 knots.

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway

Improvement Act of 1982 that provides funding for airport planning and development.

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): Equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dew point, etc.)

AUTOMATIC DIRECTION FINDER (ADF): An aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

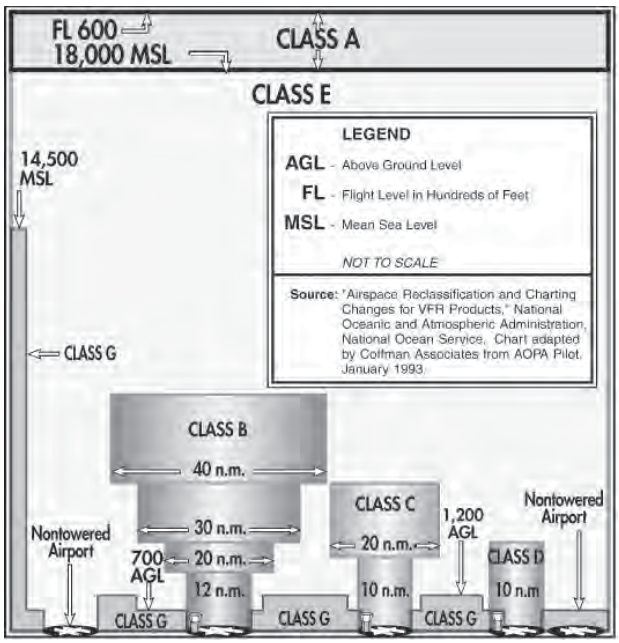
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

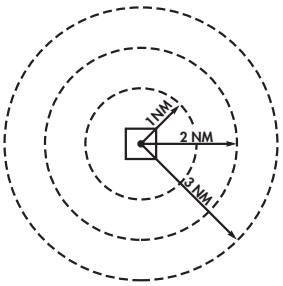
COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**:
  

  Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure . Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA)**: The runway length declared available and suitable for the ground run of an airplane taking off.
- **TAKEOFF DISTANCE AVAILABLE (TODA)**: The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)**: The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA)**: The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

ENPLANED PASSENGERS: The total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and nonscheduled services.

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable

environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A designation for altitude within controlled airspace.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and

from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

HELIPAD: A designated area for the takeoff, landing, and parking of helicopters.

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction- limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument

approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest clas- sification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

MICROWAVE LANDING SYSTEM (MLS): An instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

NON-PRECISION APPROACH PROCEDURE: A standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the
timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety

area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to

any point five feet above an intersecting runway centerline.

RUNWAY VISUAL RANGE (RVR): An instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRPLANE: An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.

- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- **WARNING AREA**: Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees

of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

TETRAHEDRON: A device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

THRESHOLD: The beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

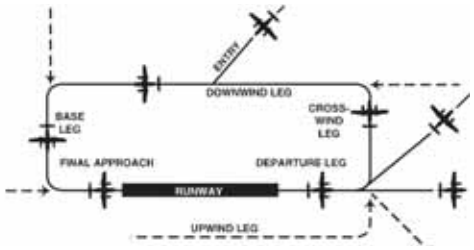
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



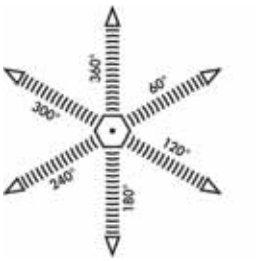
U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."



V

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100L)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: midium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

VORTAC: VOR and TACAN collocated

Appendix B

ENVIRONMENTAL EVALUATION

Appendix B
ENVIRONMENTAL EVALUATION

Analysis of the potential environmental impacts of proposed airport development projects is an important component of the Airport Master Plan process. The primary purpose of this section is to evaluate the proposed development program for the Coolidge Municipal Airport to determine whether proposed development actions could individually or collectively affect the quality of the environment.

Construction of the improvements depicted on the Airport Layout Plan will require compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended, to receive federal financial assistance. For projects not "categorically excluded" under FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). In instances where significant environmental impacts are expected, an Environmental Impact Statement (EIS) may be required. While this portion of the master plan is not designed to satisfy the NEPA requirements for a categorical exclusion, EA, or EIS, it is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA process. This evaluation considers all environmental categories required for the NEPA process as outlined in FAA Order 1050.1E and Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementation Instructions for Airport Actions.*

During the inventory process for this Master Plan, the existing environmental condition was researched and documented within Chapter One. This evaluation will

determine if any previously identified resources could be impacted by the proposed airport development projects discussed in Chapter Five and depicted on Exhibit 5A.

AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short term and long term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants, which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). Potentially significant air quality impacts, associated with an FAA project or action, would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed. Various levels of air quality impact review apply within both NEPA and permit requirements. According to the most recent update contained on the EPA's Greenbook website, Coolidge Municipal Airport is located in a portion of Pinal County that is currently designated as an attainment area for all criteria pollutants. An attainment area is defined as a geographical area where the levels of all criteria pollutants meet the NAAQS.

Construction projects planned at the airport could have temporary air quality impacts during construction. Emissions from the operation of construction vehicles and fugitive dust from pavement removal are common air pollutants during construction. However, with the use of best management practices (BMPs) during construction, these air quality impacts can be significantly lessened. Additionally, a dust control permit from the Pinal County Air Quality Control District may be required for earthmoving activities related to construction projects at the airport.

COASTAL RESOURCES

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

The airport is not located within a Coastal Management Zone or Coastal Barrier Area.

COMPATIBLE LAND USE

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Typically, significant impacts will occur over noise-sensitive areas within the 65 DNL noise contour.

Noise contours were not prepared as part of this Master Plan. Due to the absence of noise-sensitive land uses within the vicinity of the airport, it is not anticipated that the planned development at the airport will result in land use compatibility conflicts.

Compatible land use also addresses nearby features that could pose a threat to safe aircraft operations by attracting wildlife (e.g., landfills and ponds). The closest landfill to the airport is located approximately five miles north of the airport. Additionally, the Central Arizona Project Canal is located immediately west of the airport.

As part of the Master Plan process, an airport disclosure map is being created which depicts the airport influence area. This area, which encompasses land surrounding the airport, is determined by airport traffic patterns. This disclosure map will be filed with the State of Arizona Department of Real Estate. Any person purchasing property that is located within the boundaries of the airport influence area will be made aware of the property's proximity to the airport.

CONSTRUCTION IMPACTS

Construction impacts typically relate to the effects on specific impact categories, such as air quality or noise, during construction. The use of BMPs during construction is typically a requirement of construction-related permits such as an Arizona Pollutant Discharge Elimination System (AZPDES) permit. Use of these measures typically alleviates potential resource impacts.

Short term construction-related noise impacts could occur with implementation of the proposed project as the area immediately northeast of the airport contains residential land uses. However, these impacts typically do not arise unless construction is being undertaken during early morning, evening, or nighttime hours.

Construction-related air quality impacts can be expected. Air emissions related to construction activities will be short term in nature and will be included in the air emissions inventory, as required for NEPA documentation efforts. As previously discussed, a dust control permit from the Pinal County Air Quality Control District may also be required for earthmoving activities related to construction projects at the airport.

DEPARTMENT OF TRANSPORTATION ACT SECTION 4(F)

A significant impact would occur when a proposed action involves more than a minimal physical use of a Section 4(f) property, (publicly owned land from a public

park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from a historic site of national, state, or local significance) or is deemed a "constructive use" substantially impairing the Section 4(f) property where mitigation measures do not reduce or eliminate the impacts. Substantial impairment would occur when impacts to Section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost. There are no properties that are considered Section 4(f) lands within the vicinity of the airport.

FARMLAND

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

Based on a review of information available from the Natural Resource Conservation Service Soil Survey, lands within the existing and proposed airport property boundary are not classified as prime farmland or soils of statewide importance.

FISH, WILDLIFE, AND PLANTS

Through consultation with the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), the FAA determines that a significant impact to fish, wildlife or plants will result when the proposed action would likely jeopardize the continued existence of a species in question, or would result in the destruction or adverse modification of federally designated critical habitat in the area. Lesser impacts, as outlined by agencies and organizations having jurisdiction, can also result in a significant impact.

Table B1 identifies the state and federally listed threatened, endangered, and candidate species with the potential to occur in Pinal County.

TABLE B1
Federally Listed Threatened, Endangered, and Candidate Species with Habitat in Pinal County

COMMON NAME	SCIENTIFIC NAME	HABITAT	STATUS
Arizona Hedgehog Cactus	Echinocereus triglochidiatus var. arizonicus	Ecotone between interior chaparral and madrean evergreen woodland.	Endangered
Desert Pupfish	Cyprinodon macularius	Shallow springs, small streams, and marshes. Tolerates saline and warm water.	Endangered
Gila Chub	Gila intermedia	Pools, springs, cienegas, and streams.	Endangered
Lesser Long-nosed Bat	Leptonycteris curasoae yerbabuenae	Desert scrub habitat with agave and columnar cacti present as food plants.	Endangered
Loach Minnow	Tiaroga cobitis	Small to large perennial streams with swift shallow water over cobble and gravel.	Threatened
Mexican Spotted Owl	Strix occidentalis lucida	Nests in canyons and dense forests with multilayered foliage structure.	Threatened
Nichol Turk's Head Cactus	Echinocactus horizonthalonius var. nicholii	Sonoran desert scrub.	Endangered
Razorback Sucker	Xyrauchen texanus	Riverine and lacustrine areas, generally not in fast moving water and may use backwaters.	Endangered
Southwestern Willow Flycatcher	Empidonax traillii extimus	Cottonwood/willow and tamarisk vegetation communities along rivers and streams.	Endangered
Spikedance	Meda fulgida	Moderate to large perennial streams with gravel substrates and moderate to swift velocities over sand and gravel substitutes.	Threatened
Yuma Clapper Rail	Rallus longirostris yumanensis	Fresh water and brackish marshes.	Endangered
Acuna Cactus	Echinomastus erectocentrus var. acunensis	Well drained knolls and gravel ridges in Sonoran desertscrub.	Candidate
Northern Mexican Garter snake	Thamnophis eques megalops	Found in source-area wetlands, large river riparian woodlands and forests, and streamside gallery forests.	Candidate
Yellow-billed Cuckoo	Coccyzus americanus	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries).	Candidate

Source: U.S. Fish and Wildlife Service, Pinal County Species List, March 2010

As indicated in the table, several of the listed species, such as the desert pupfish, loach minnow, razorback sucker, Gila chub, spikedace, and Yuma clapper rail re-

quire aquatic habitat which is not present at the airport. Additionally, habitat for species such as the Mexican spotted owl, which requires canyons and forests and the Southwestern willow flycatcher which requires riparian areas, is not present at the airport. Additionally, as discussed in Chapter One, a search of the Arizona Department of Fish and Game *Online Environmental Review Tool* indicates that no federal special status species have been located within two miles of the airport. Field investigation to determine the presence of protected species may be required prior to undertaking proposed projects at the airport that include areas with minimal disturbance, such as the proposed property acquisition.

FLOODPLAINS

As defined in FAA Order 1050.1E, floodplains consist of "lowland and relatively flat areas adjoining inland and coastal water including flood prone areas of offshore islands, including at a minimum, that area subject to one percent or greater chance of flooding in any given year." Federal agencies are directed to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. Floodplains have natural and beneficial values, such as providing ground water recharge, water quality maintenance, fish, wildlife, plants, open space, natural beauty, outdoor recreation, agriculture, and forestry. FAA Order 1050.1E (12) (c) indicates that "if the proposed action and reasonable alternatives are not within the limits of a base floodplain (100-year flood area)," that it may be assumed that there are no floodplain impacts. The limits of base floodplains are determined by Flood Insurance Rate Maps (FIRM) prepared by the Federal Emergency Management Agency (FEMA).

A review of FEMA Floodplain Insurance Rate Map Panel 04021C1250E indicates that no 100-year floodplains are present within the vicinity of the airport.

HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these materials. In addition, disrupting sites containing hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

The EPA's *Enviromapper for Envirofacts*[1] was consulted regarding the presence of impaired waters or regulated hazardous sites. No impaired waters are located on or

[1] http://www.epa.gov/enviro/emef/, Accessed March 2010.

in the vicinity of the airport. According to the site, there are no SUPERFUND hazardous waste sites located within the vicinity of the airport.

An environmental due diligence audit (EDDA) may be required for the area identified for acquisition to determine the presence of any recognized environmental conditions (RECs). An REC is defined by the American Society for Testing and Materials as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances, or petroleum products into the ground, groundwater, or surface water of a property.

A construction-related AZPDES permit may be required prior to on-airport construction projects. The permit requires a Notice of Intent for all construction activities disturbing one or more acre of land. In conjunction with the AZPDES, a Storm Water Pollution Prevention Plan (SWPPP) may be required to outline the best management practices to be used to minimize impacts to storm water conveyance systems.

As a result of increased operations at the airport, solid waste may slightly increase; however, these increases are not anticipated to be significant. According to Arizona Department of Environmental Quality records, the nearest landfill facility is the Ironwood Landfill located approximately five miles north of the airport. [2]

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Impacts may occur when the proposed project causes an adverse effect on a property which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

Prior to implementation of the planned improvements, coordination with the State Historic Preservation Office will be needed to determine if field surveys are warranted. Projects such as the relocation of the airport access road, Runway 5-23 extension and associated runway safety area grading, and construction of the parallel taxiway extension will disturb land which has not been disturbed previously. Projects including the connecting taxiways and landside development will occur in areas that have been previously disturbed.

[2] Arizona Department of Environmental Quality, http://www.azdeq.gov/environ/waste/solid/download/active.pdf, accessed March 2010

LIGHT EMISSIONS AND VISUAL IMPACTS

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light, such as a runway end identification light (REIL), would produce glare on any adjoining site, particularly residential uses.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

Airside development will include a 2,638-foot extension to Runway 5-23 and associated parallel taxiway, construction of additional connecting taxiways. and the construction of medium intensity approach lighting systems (MALS) at both ends of Runway 5-23. The runway extension will result in the extension of runway and taxiway lighting and the construction of connecting taxiways will result in additional airfield lighting. The MALS will also increase the light emissions at the airport.

Landside development at the airport includes new hangar space, aviation use revenue support parcels, aviation use support parcels, and the relocation of the airport access road. Additional security lighting for these facilities will increase light emissions at the airport.

As previously discussed, development surrounding the airport is limited and there are no light-sensitive land uses within the immediate vicinity. If the potential for lighting or visual impacts is determined to be associated with the planned development, consultation with local residents and the owners of light-sensitive sites may be needed to determine possible alternatives to minimize these effects without risking aviation safety or efficiency. Additional coordination with state, regional, or local art or architecture councils, tribes, or other organizations having an interest in airport-associated visual effects may be necessary.

NATURAL RESOURCES AND ENERGY SUPPLY

In instances of proposed actions, such as the expansion of utilities, power companies or other suppliers of energy will need to be contacted to determine if the proposed project demands can be met by existing or planned facilities.

Increased use of energy and natural resources are anticipated as the operations at the airport grow. None of the planned development projects are anticipated to result in significant increases in energy consumption.

SECONDARY (INDUCED) IMPACTS

These impacts address those secondary impacts to surrounding communities resulting from the proposed development, including shifts in patterns of population growth, public service demands, and changes in business and economic activity to the extent influenced by airport development.

Significant shifts in patterns of population movement or growth or public service demands are not anticipated as a result of the proposed development. It could be expected, however, that the proposed development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services, would be expected to attract additional users. It is also expected to encourage industry and trade, and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development are anticipated to be primarily positive in nature.

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

Impacts occur when disproportionately high and adverse human health or environmental effects occur to minority and low-income populations; disproportionate health and safety risks occur to children; and extensive relocation of residents, businesses, and disruptive traffic patterns are experienced.

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project.

The acquisition of real property or displacing people or businesses is required to conform to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URARPAPA). These regulations mandate that certain relocation assistance services be made available to owners/tenants of the properties.

The proposed airport development concept includes the extension of Runway 5-23. Associated with the runway extension is the acquisition of approximately 78.5 acres northeast of the airport to ensure airport control over land uses within the runway protection zone (RPZ) and to prevent incompatible land uses within this area. Additionally, southwest of the airport, a four-acre parcel is proposed to be acquired to accommodate the MALS and a 20-acre easement is proposed to ensure airport control over the RPZ. Acquisition of these parcels will not require the relocation of residents or businesses. Additionally, the construction of the Runway 5-23 extension may result in alterations to local traffic patterns as it will require the relocation of the airport access road.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations, as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Based on a review of U.S. Census Bureau information, blocks within the airport environs do not contain high percentages of minority populations or high percentages of residents below the poverty level.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they may be exposed.

During construction of the projects outlined within the master plan, appropriate measures should be taken to prevent access by unauthorized persons to construction project areas. Additionally, best management practices should be implemented to decrease environmental health risks to children.

WATER QUALITY

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc.

The Central Arizona Project Canal is located immediately west of the airport. The proposed development projects identified in the Master Plan will not impact this watercourse. The Environmental Protection Agency's *Enviromapper* website indicates that there are no impaired streams within the vicinity of the airport, thereby being in violation of established water quality standards.

During construction of any of the planned improvements at the airport, it is suggested that mitigation measures from FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control*, be incorporated into project design specifications to further mitigate potential water quality impacts. These standards include temporary measures to control water pollution, soil erosion, and siltation through the use of berms, fiber mats, gravels, mulches, slope drains, and other erosion control methods.

WETLANDS AND WATERS OF THE U.S.

The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredge and/or fill material into waters of the United States, including adjacent wetlands, under Section 404 of the *Clean Water Act*.

Wetlands are defined by Executive Order 11990, *Protection of Wetlands*, as "those areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." Categories of wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, natural ponds, estuarine area, tidal overflows, and shallow lakes and ponds with emergent vegetation. Wetlands exhibit three characteristics: hydrology, hydrophytes (plants able to tolerate various degrees of flooding or frequent saturation), and poorly drained soils.

Based on the National Resource Conservation Service's Web Soil Survey, one soil type, identified as the Mohall-Contine complex, is present at the airport. The Mohall-Contine complex is not a hydric soil. A review of aerial photography indicates the presence of ephemeral washes located within the proposed acquisition area northeast of the airport. Field surveys and coordination with the U.S. Army Corps of Engineers may be necessary prior to acquiring this parcel to determine the presence of waters of the U.S.

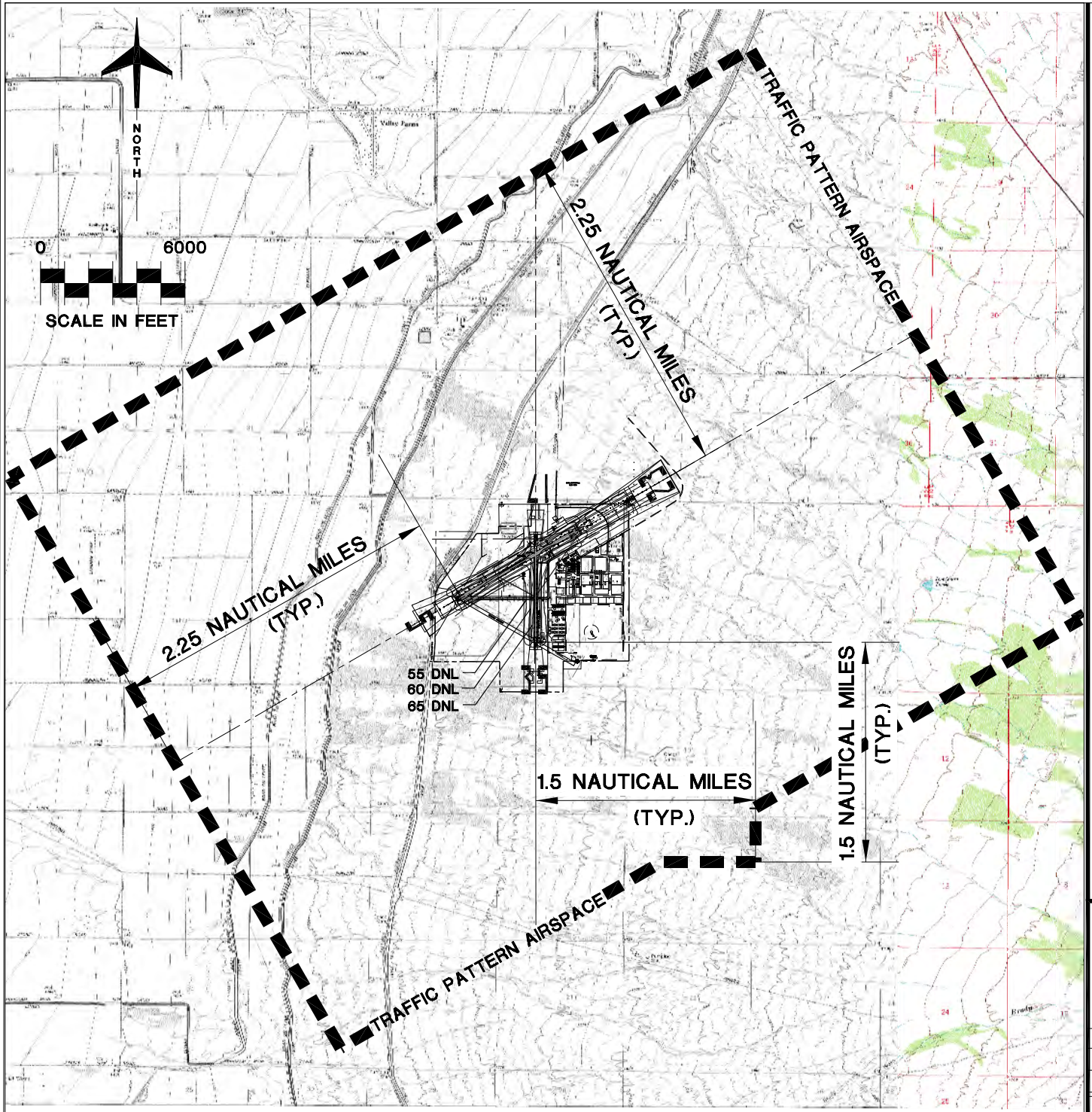
WILD AND SCENIC RIVERS

Wild and scenic rivers (WSR) are designated by the *Wild and Scenic River Act*. A National Rivers Inventory (NRI) is maintained to identify those river segments which are protected under this Act. No wild and scenic rivers are located in the vicinity of the airport.

PUBLIC AIRPORT DISCLOSURE MAP

Arizona Revised Statutes (ARS) 28-8486, *Public Airport Disclosure*, provides for an airport owner to publish a map depicting the "territory in the vicinity of the airport." The territory in the vicinity of the airport is defined as the traffic pattern airspace and the property that experiences 60 day-night noise level (DNL) or higher in counties with a population of more than 500,000, and 65 DNL or higher in counties with less than 500,000 residents. ARS 28-8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The Disclosure Map is recorded with the County Recorder.

Exhibit B1 depicts the Disclosure Map for Coolidge Municipal Airport. Traffic pattern airspace is a function of the approach category for each runway.



NOTES:

1. This map has been prepared in accordance with the Arizona Revised Statutes, Section 28-8486, relating to Public Airport Disclosure.
2. Traffic Pattern Airspace Boundaries have been established in accordance with the guidelines provided in the FAA Order JO 7400.2G.
3. The Airport Noise Contours have been developed with the Integrated Noise Model (Version 5.0) and are based on Total Annual Operations (Take-offs and Landings) of 12,300.
4. 1 Nautical mile = 6,080 feet or 1.1516 statute miles.
5. Base map derived from electronic USGS mapping quadrangles, Cactus Forest and Valley Farms.

LEGEND:

- TRAFFIC PATTERN AIRSPACE
- 65 — NOISE CONTOURS DAY NIGHT LEVEL (DNL)
- EXISTING AIRPORT PROPERTY LINE
- EXTENDED RUNWAY CENTERLINE

COOLIDGE MUNICIPAL AIRPORT

PUBLIC AIRPORT DISCLOSURE MAP

DRAFT

COOLIDGE, ARIZONA

PLANNED BY:	Matt Quick
DETAILED BY:	Maggie Beaver
APPROVED BY:	James M. Harris, P.E.
January 31, 2011	*SHEET* 1 *OF* 1

Coffman Associates
Airport Consultants
www.coffmanassociates.com

EXHIBIT B1

AIRPORT LAYOUT PLAN DRAWINGS

Appendix C
AIRPORT LAYOUT PLAN DRAWINGS

Per Federal Aviation Administration (FAA) requirements, an official Airport Layout Plan (ALP) has been developed for Coolidge Municipal Airport. The ALP is used in part by the FAA to determine funding eligibility for future development projects.

These drawings were created on a computer-aided drafting system (CAD) and serve as the official depiction of the current and planned condition of the airport. These drawings will be delivered to the FAA for their review and inspection. The FAA will critique the drawings from a technical perspective to be sure all applicable federal regulations are met.

The following is a description of the ALP drawings included with this Master Plan.

Airport Layout Plan (Sheet 1 of 11) – An official ALP drawing has been developed for Coolidge Municipal Airport, a draft of which is included in this appendix. The ALP drawing graphically presents the existing and ultimate layout plan of the airport. The ALP drawing will include such elements as the physical airport features, location of airfield facilities (i.e., runways, taxiways, navigational aids), and existing general aviation development. Also presented on the ALP are the runway safety areas, airport property boundary, and revenue support areas. The ALP is used by the FAA to determine funding eligibility for future capital projects.

Terminal Area Drawing (Sheet 2 of 11) – The Terminal Area Drawing provides greater detail concerning landside improvements at a larger scale than on the ALP drawing.

Airport Airspace Drawing (Sheet 3 of 11) – The Airport Airspace Drawing is a graphic depiction of the Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, regulatory criterion. The Airport Airspace Drawing is intended to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. These plans should be coordinated with local land use planners.

Inner Portion of the Runway Approach Surface Drawings (Sheets 4 and 5 of 11) – The Inner Portion of the Approach Surface Drawings contain the plan and profile view of the inner portion of the approach surface to the runway and a tabular listing of all surface violations. The drawings also contain other approach surfaces, such as the threshold siting surface. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions. A drawing of each runway end is provided.

Runway Profile and Outer Approach Surface Drawings (Sheets 6 and 7 of 11) – The Profile and Outer Approach Surface Drawings provide both plan and profile views of 14 CFR Part 77 approach surfaces for each runway end. A composite profile of the extended ground line is depicted. Obstructions and clearances over roads are shown as appropriate.

Departure Surface Drawings (Sheets 8 and 9 of 11) – The Departure Surface Drawings provide information as it relates to the 40:1 departure surface on each runway end. They have been prepared in accordance with Appendix 2 of FAA Advisory Circular (AC) 150/5070-6B, Change 1.

On-Airport Land Use Plan (Sheet 10 of 11) – The On-Airport Land Use Plan is a geographic depiction of the land use recommendations. The objective of this drawing is to coordinate uses of the airport property in a manner compatible with the functional design of the airport facility. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

"Exhibit A" Property Map (Sheet 11 of 11) – The "Exhibit A" Property Map provides information on the acquisition and identification of all land tracts under the control of the airport. Both existing and future property holdings are identified on the Property Map.

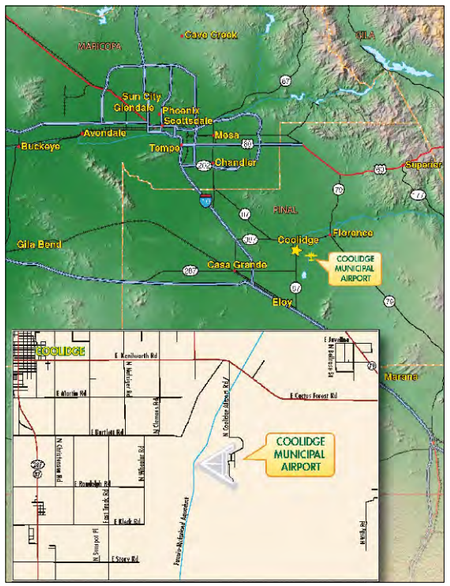
DRAFT ALP DISCLAIMER

The ALP drawing set has been developed in accordance with accepted FAA and Arizona Department of Transportation (ADOT) – Aeronautics Group standards. The ALP set has not been approved by the FAA and is subject to FAA airspace review. Land use and other changes may result.

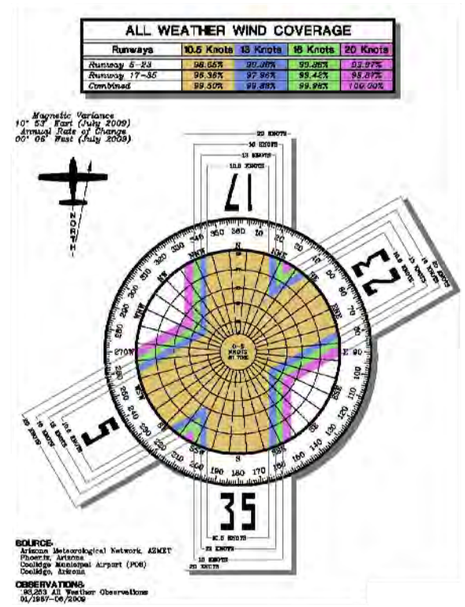
AIRPORT MASTER PLAN

COOLIDGE MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN SET



INDEX OF DRAWINGS



PREPARED FOR
CITY OF COOLIDGE, ARIZONA

DRAFT

Coffman Associates
Airport Consultants

RUNWAY DATA

	RUNWAY 5-23		RUNWAY 17-35	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
RUNWAY CATEGORY/AIRCRAFT DESIGN GROUP	C-IV	C-IV	B-II	B-II
CRITICAL DESIGN AIRCRAFT	C-130	SAME	KING AIR 200	SAME
UNDERCARRIAGE WIDTH (FEET)	14.3'	SAME	17.2'	SAME
WINGSPAN OF DESIGN AIRCRAFT	132.6'	SAME	50.25'	SAME
APPROACH SPEED OF DESIGN AIRCRAFT (KNOTS)	138	SAME	100	SAME
MAXIMUM TAKE OFF WEIGHT (lb.)	155,000	SAME	10,100	SAME
RUNWAY BEARING (TRUE)	60.06°	SAME	180.00°	SAME
RUNWAY DIMENSIONS	5562.72'X150'	8100.00'X150'	3871.7'X75'	4271.7'X75'
ELEVATION OF RWY TOUCH DOWN ZONE (MSL)	1548.0'/1574.0'	1549.0'/1580.0'	1573.0'/1573.0'	1564.8'/1573.0'
ELEVATION OF RUNWAY HIGH POINT (above MSL)	1574.0'	1580'	1573.0'	SAME
ELEVATION OF RUNWAY LOW POINT (above MSL)	1548.0'	1549'	1563.0'	SAME
WIND COVERAGE IN MPH/KNOTS	12.1/10.5-99.20% / 15/13-99.88% / 18/16-99.98% / 23/20-100.00%			
APPROACH VISIBILITY MINIMUMS	ONE MILE/ONE MILE	3/4 MILE	VISUAL/VISUAL	ONE MILE/ONE MILE
14 CFR PART 77 CATEGORY	NON PREC/NON. PREC	SAME/SAME	UTILITY/UTILITY	NON PREC/NON. PREC
RUNWAY APPROACH SURFACES	20:1/20:1	34:1/34:1	20:1/20:1	SAME
RUNWAY THRESHOLD DISPLACEMENT	NONE	NONE	NONE	NONE
RUNWAY SAFETY AREA WIDTH (RSA)	500'	SAME	150'	SAME
RSA DISTANCE BEYOND EACH RUNWAY END	1,000'/1,000'	SAME	300'	SAME
RUNWAY OBJECT FREE AREA WIDTH (OFA)	800'/800'	SAME	500'	SAME
OFA DISTANCE BEYOND EACH RUNWAY END	1,000'/1,000'	SAME	300'	SAME
RUNWAY OBSTACLE FREE ZONE WIDTH (OFZ)	400'	SAME	400'	SAME
OFZ DISTANCE BEYOND EACH RUNWAY END	200'	SAME	200'	SAME
LINE OF SITE REQUIREMENT MET	YES	SAME	YES	SAME
DECLARED DISTANCES	N/A	N/A	N/A	N/A
RUNWAY PAVEMENT MATERIAL	ASPHALT	SAME	ASPHALT	SAME
RUNWAY PAVEMENT SURFACE TREATMENT	NONE	SAME	NONE	SAME
PAVEMENT STRENGTH (in thousand lb.)[1]	80(S)/115(D)/210(DT)	SAME	17(S)	30(S)
RUNWAY EFFECTIVE GRADIENT (in %)	0.5%	SAME	0.3%	SAME
MAXIMUM GRADIENT (in %)	1.5%	SAME	2%	SAME
RUNWAY LIGHTING	MIRL	SAME	NONE	MIRL
RUNWAY MARKINGS	NON PREC	SAME	BASIC	NON PREC
RUNWAY APPROACH LIGHTING	NONE	MALS/MALS	NONE	SAME
PARALLEL RUNWAY SEPARATION	N/A	N/A	N/A	N/A
RUNWAY CENTERLINE TO AIRCRAFT PARKING	500'	SAME	250'	SAME
RUNWAY/TAXIWAY SEPARATION	400'	SAME	240'	SAME
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME	ASPHALT	SAME
TAXIWAY LIGHTING	MITL (LIMITED)	MITL (ALL ACTIVE)	NONE	MITL
TAXIWAY MARKING	CENTERLINE	SAME	CENTERLINE	SAME
TAXIWAY OBJECT FREE AREA	259'	SAME	131'	SAME
TAXIWAY SAFETY AREA WIDTH	171'	SAME	79'	SAME
TAXIWAY CL TO FIXED OR MOVEABLE OBJECT	129.5'	SAME	65.5'	SAME
DISTANCE FROM RWY. CL TO HOLD BARS	250'	SAME	126'	200'
WINGTIP CLEARANCE	44'	SAME	26'	SAME
VISUAL AIDS	PAPI-2 -- --	PAPI-4 MALS --	-- -- --	PAPI-2 REILs --
NAVIGATIONAL AIDS	VOR/DME GPS --	SAME SAME --	-- -- --	GPS -- --

[1] Pavement strengths are expressed in Single(S), Dual(D), Dual Tandem(DT).

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS

DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	STANDARD	EXISTING	PROPOSED DISPOSITION
OBSTRUCTION IN "OFA"	OFA	1,000' BEYOND RUNWAY END	900' BEYOND RUNWAY END	SHIFT RUNWAY 5-23 100' TO THE NORTHEAST

AIRPORT DATA

COOLIDGE MUNICIPAL AIRPORT (P08)

CITY: COLLIDGE, ARIZONA — COUNTY: PINAL

RANGE: 09 E — TOWNSHIP: 6S — CIVIL TOWNSHIP: NA

		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		GENERAL AVIATION	SAME
AIRPORT REFERENCE CODE		C-IV	SAME
AIRPORT ELEVATION		1575.0' MSL	SAME
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		105° F (July)	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	Latitude	32°56' 06.2300" N	32°56' 13.200" N
	Longitude	111°25' 32.4300" W	111°25' 18.810" W
AIRPORT and TERMINAL NAVIGATIONAL AIDS		GPS	SAME
		VOR/DME	SAME
		PAPI-2	PAPI-4
		ROTATING BEACON	SAME
		SEGMENTED CIRCLE/WIND CONE	SAME
		--	REILs

RUNWAY END COORDINATES (NAD 83)

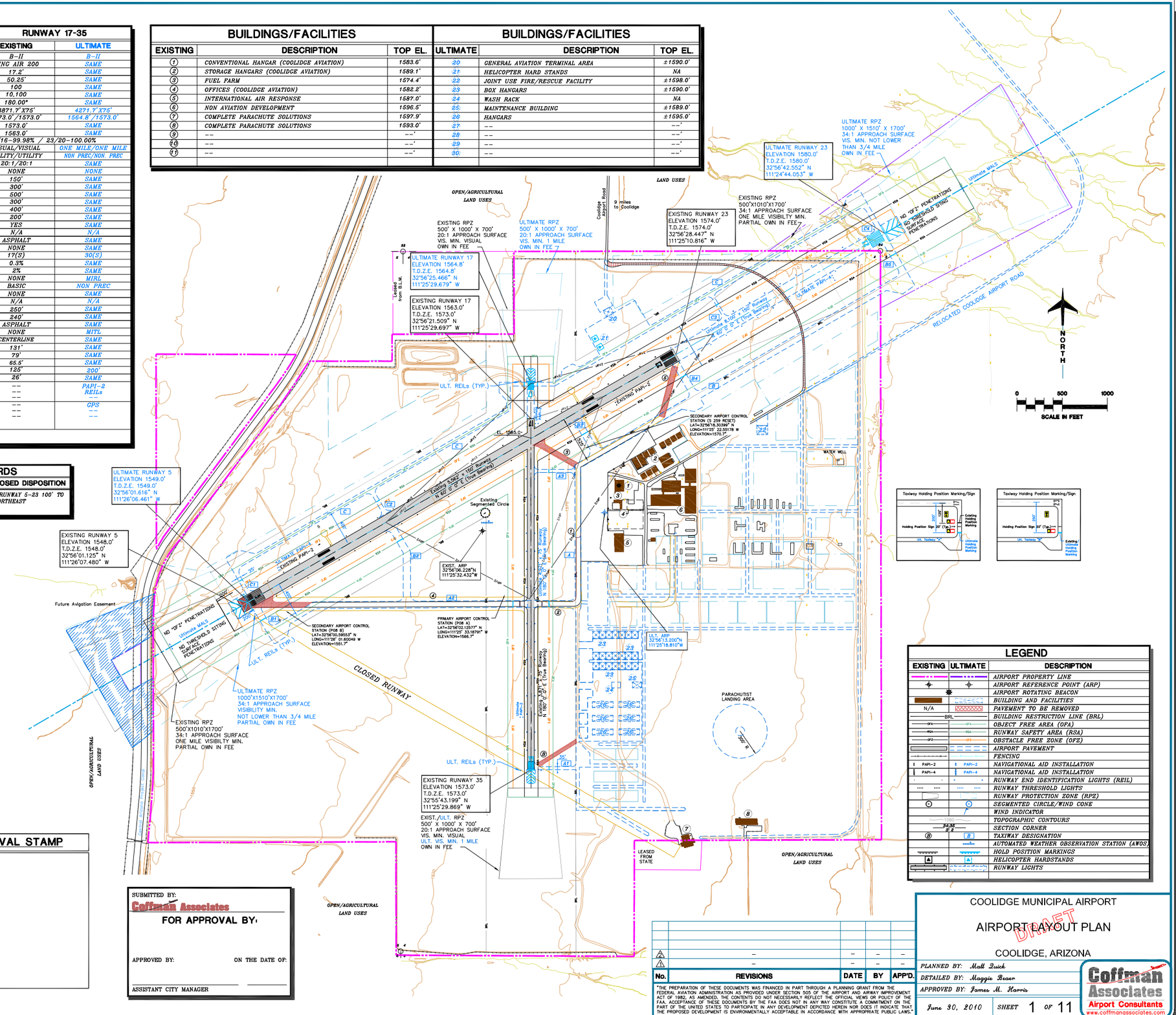
RUNWAY		EXISTING	ULTIMATE
Runway 5	Latitude	32°56' 01.125" N	32°56' 01.616" N
	Longitude	111°26' 07.48" W	111°26' 06.461" W
Runway 23	Latitude	32°56' 28.447" N	32°56' 42.552" N
	Longitude	111°25' 10.816" W	111°24' 44.053" W
Runway 17	Latitude	32°56' 21.509" N	32°56' 25.466" N
	Longitude	111°25' 29.697" W	111°25' 29.679" W
Runway 35	Latitude	32°55' 43.199" N	SAME
	Longitude	111°25' 29.869" W	SAME

BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	TOP EL.
1	CONVENTIONAL HANGAR (COOLIDGE AVIATION)	1583.6'
2	STORAGE HANGARS (COOLIDGE AVIATION)	1589.1'
3	FUEL FARM	1574.4'
4	OFFICES (COOLIDGE AVIATION)	1582.2'
5	INTERNATIONAL AIR RESPONSE	1587.0'
6	NON AVIATION DEVELOPMENT	1596.5'
7	COMPLETE PARACHUTE SOLUTIONS	1597.9'
8	COMPLETE PARACHUTE SOLUTIONS	1593.0'
9	--	--'
10	--	--'
11	--	--'

BUILDINGS/FACILITIES

ULTIMATE	DESCRIPTION	TOP EL.
20	GENERAL AVIATION TERMINAL AREA	±1590.0'
21	HELICOPTER HARD STANDS	NA
22	JOINT USE FIRE/RESCUE FACILITY	±1598.0'
23	BOX HANGARS	±1590.0'
24	WASH RACK	NA
25	MAINTENANCE BUILDING	±1589.0'
26	HANGARS	±1595.0'
27	--	--'
28	--	--'
29	--	--'
30	--	--'



LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
OFA	OFA	OBJECT FREE AREA (OFA)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		AIRPORT PAVEMENT
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/WIND CONE
		WIND INDICATOR
		TOPOGRAPHIC CONTOURS
34/34	34/34	SECTION CORNER
B	B	TAXIWAY DESIGNATION
		AUTOMATED WEATHER OBSERVATION STATION (AWOS)
		HOLD POSITION MARKINGS
A	A	HELICOPTER HARDSTANDS
		RUNWAY LIGHTS

GENERAL NOTES:

1. Depiction of features and objects, including related elevations within the runway protection zones are depicted on the INNER APPROACH SURFACE DRAWING.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA PLANS.
3. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE PLAN.
4. Detail concerning airport property are depicted on the AIRPORT PROPERTY MAP.
5. Building Restriction Line (BRL) is established in accordance with F.A.R. Part 77 criteria Building Restriction Line location may be reduced in accordance to Part 77 to limits of the Runway Object Free Area, Runway Safety Area, and/or Runway Protection Zone criteria.
6. Ultimate fence line extends around Existing/Ultimate Property Line except where shown.
7. Base Map and Contours derived from August, 2009 aerial photography and planametric mapping, surveyed by Urban Engineering Inc..
8. Source for existing runway end/displaced threshold coordinates, elevations: Planametric Mapping surveyed by Urban Engineering Inc.
9. All elevations are in NAVD 88 and all horizontal coordinates are in NAD 83.
10. The airport has not been surveyed in accordance with FAA Standard 405.
11. No threshold siting surface object penetrations.
12. All survey monuments enclosed in concrete casings.

FAA APPROVAL STAMP

SUBMITTED BY:
Coffman Associates
FOR APPROVAL BY:

APPROVED BY: ON THE DATE OF:

ASSISTANT CITY MANAGER

No.	REVISIONS	DATE	BY	APP'D.
1	-	-	-	-
2	-	-	-	-

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982, AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

COOLIDGE MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Brase
APPROVED BY: James M. Harris

June 30, 2010 — SHEET 1 OF 11

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BUILDINGS/FACILITIES

EXISTING	DESCRIPTION	TOP EL.
1	CONVENTIONAL HANGAR (COOLIDGE AVIATION)	1583.6'
2	STORAGE HANGARS (COOLIDGE AVIATION)	1589.1'
3	FUEL FARM	1574.4'
4	OFFICES (COOLIDGE AVIATION)	1582.2'
5	INTERNATIONAL AIR RESPONSE	1587.0'
6	NON AVIATION DEVELOPMENT	1596.5'
7	COMPLETE PARACHUTE SOLUTIONS	1597.9'
8	COMPLETE PARACHUTE SOLUTIONS	1593.0'
9	--	--'
10	--	--'
11	--	--'

BUILDINGS/FACILITIES

ULTIMATE	DESCRIPTION	TOP EL.
20	GENERAL AVIATION TERMINAL AREA	±1590.0'
21	HELICOPTER HARD STANDS	NA
22	JOINT USE FIRE/RESCUE FACILITY	±1598.0'
23	BOX HANGARS	±1590.0'
24	WASH RACK	NA
25	MAINTENANCE BUILDING	±1589.0'
26	HANGARS	±1595.0'
27	--	--'
28	--	--'
29	--	--'
30	--	--'

Existing 5,562' x 150' Runway
N 60° 0' 0" E (True Bearing)

Ultimate 8,100' x 150' Runway
N 60° 0' 0" E (True Bearing)

EXISTING PAPI-2

Ultimate PAPI-4

Ultimate PAPI-2

Existing 3,871' x 75' Runway
N 150° 0' 0" E (True Bearing)

CLOSED RUNWAY

Existing Segmented Circle

EXIST. ARP
32°56'06.228"N
111°25'32.432"W

ULT. ARP
32°56'13.200"N
111°25'18.810"W

PARACHUTIST LANDING AREA

5,000' HR

LEASED

NORTH

0 300 600
SCALE IN FEET

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
OFA	OFA	OBJECT FREE AREA (OFA)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		AIRPORT PAVEMENT
		FENCING
PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/WIND CONE
		WIND INDICATOR
1080		TOPOGRAPHIC CONTOURS
34-35 / 16-2		SECTION CORNER
B		TAXIWAY DESIGNATION
	AWOS	AUTOMATED WEATHER OBSERVATION STATION (AWOS)
		HOLD POSITION MARKINGS
		HELICOPTER HARDSTANDS
		RUNWAY LIGHTS

No.	REVISIONS	DATE	BY	APP'D.
2	-	-	-	-
1	-	-	-	-

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COOLIDGE MUNICIPAL AIRPORT

TERMINAL AREA PLAN

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Braun
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 2 OF 11

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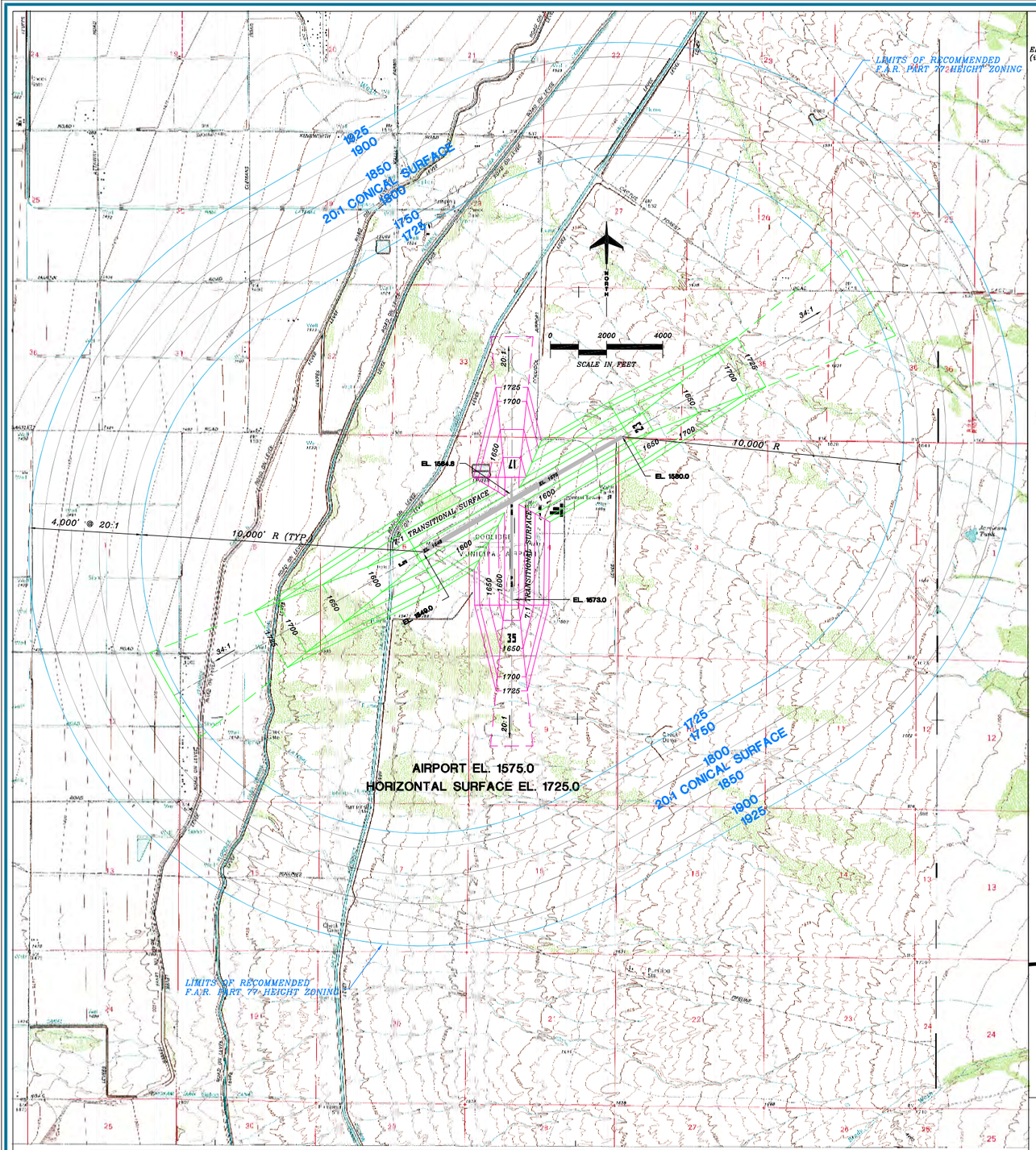


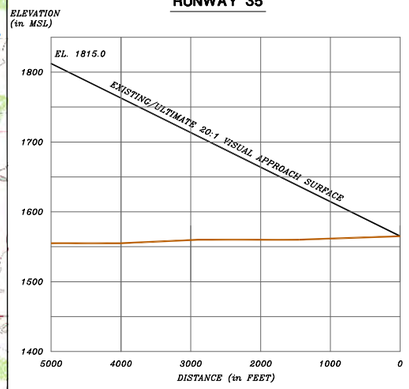
OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–

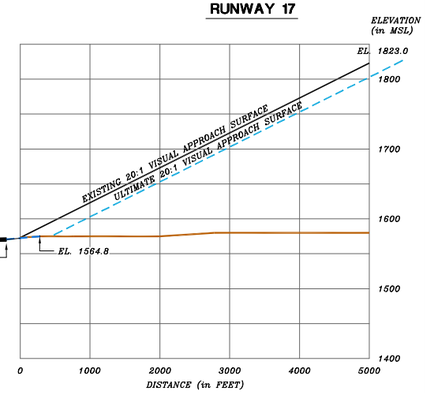
OBSTRUCTION LEGEND

- OBSTRUCTION
- GROUP or MULTIPLE OBSTRUCTIONS

RUNWAY 35

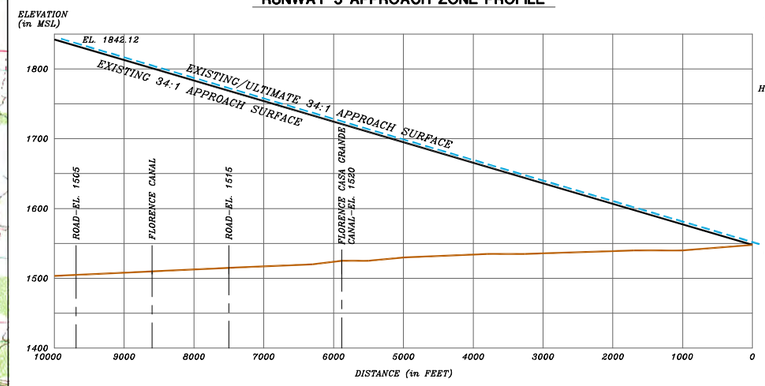


RUNWAY 17

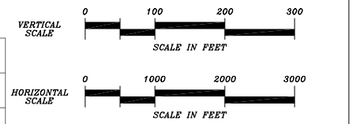


RUNWAY 17-35 APPROACH ZONES PROFILES

RUNWAY 5 APPROACH ZONE PROFILE

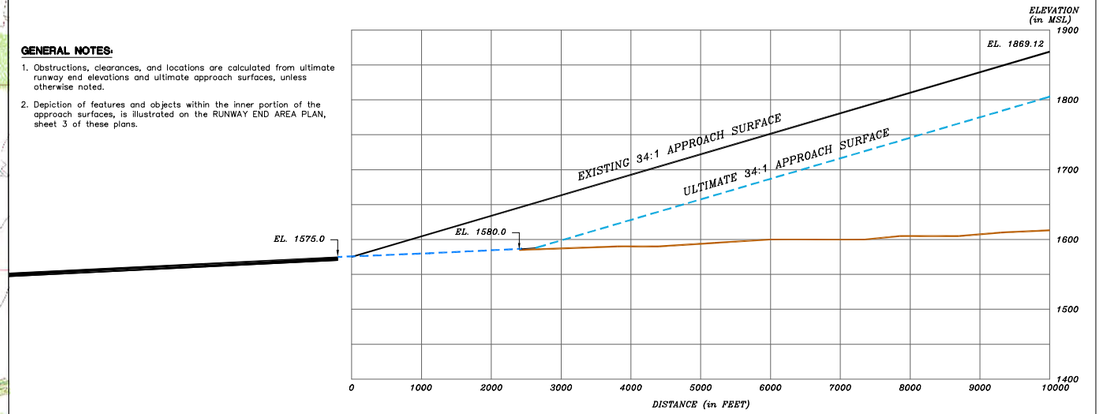


APPROACH ZONE PROFILES



GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the RUNWAY END AREA PLAN, sheet 3 of these plans.



RUNWAY 23 APPROACH ZONE PROFILE

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

AIRPORT AIRSPACE DRAWING

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Zuick
DETAILED BY: Maggie Brauer
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 3 OF 11

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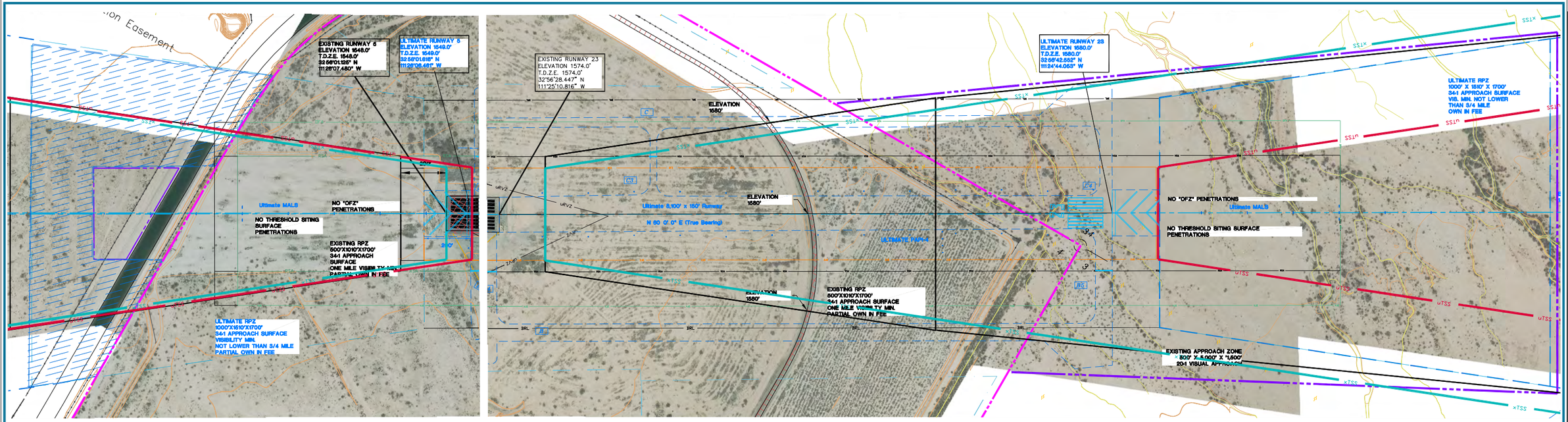
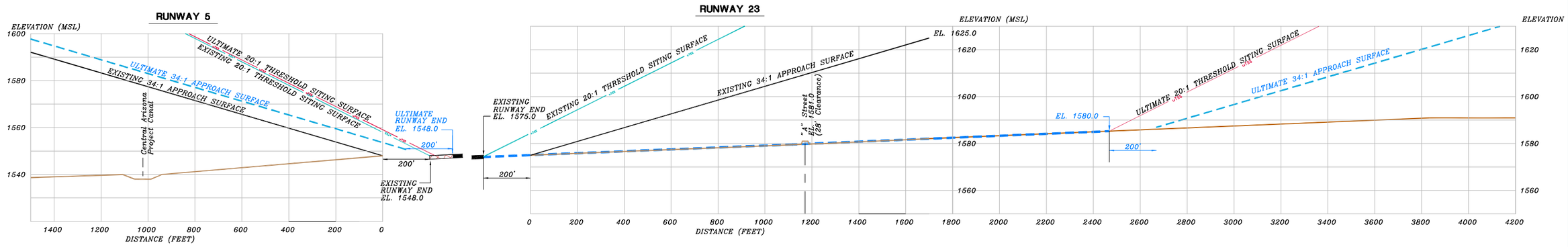


RUNWAY 5-23 INNER APPROACH SURFACE PLANS and PROFILES



OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from existing runway end elevations and existing approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the PART 77 AIRSPACE DRAWING
3. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the OUTER APPROACH SURFACE DRAWINGS

NORTH

HORIZONTAL SCALE IN FEET
0 200 400

VERTICAL SCALE IN FEET
0 20 40

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

INNER PORTION OF THE RUNWAY 5-23 APPROACH SURFACE DRAWING

COOLIDGE, ARIZONA

PLANNED BY: Matt Zuick
DETAILED BY: Maggie Braar
APPROVED BY: James M. Harris

June 30, 2010 SHEET 4 OF 11

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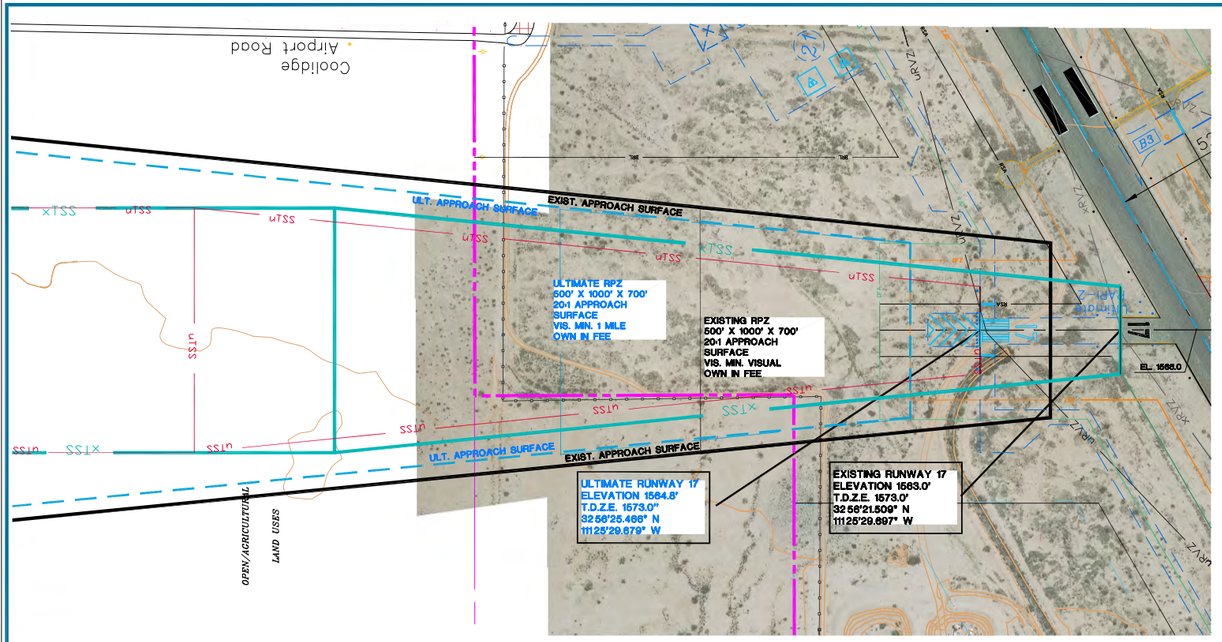
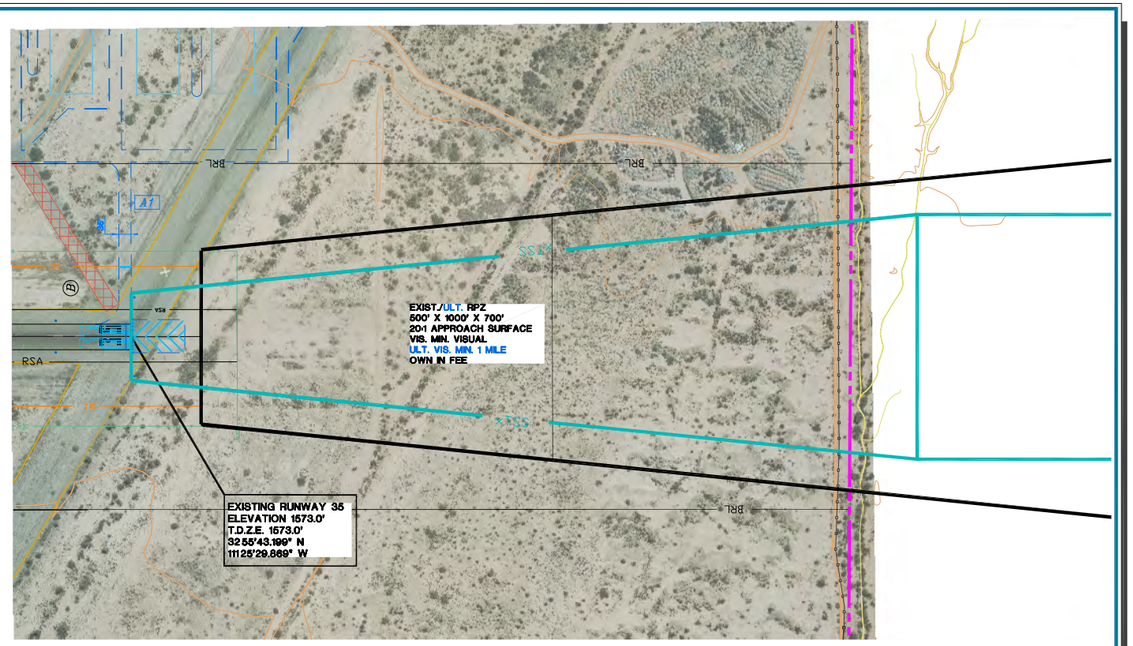
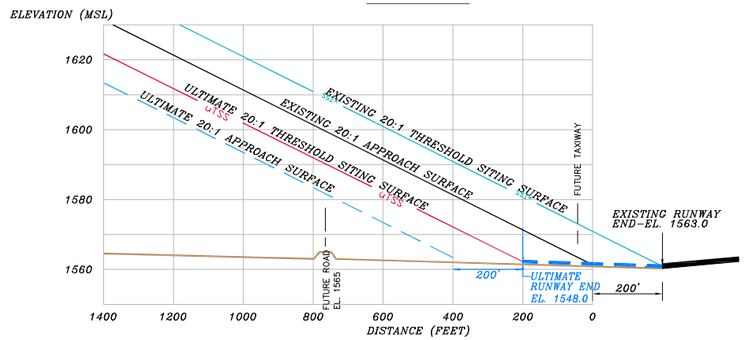


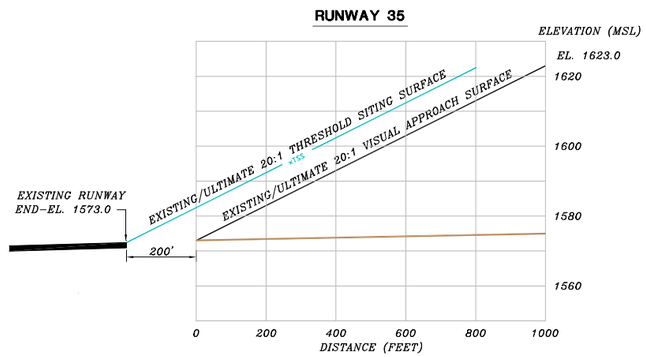


RUNWAY 17-35 INNER APPROACH SURFACE PLANS and PROFILES

RUNWAY 17



RUNWAY 35



OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
–	–	–	–	–	–

GENERAL NOTES:

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2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the PART 77 AIRSPACE DRAWING
3. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the OUTER APPROACH SURFACE DRAWINGS

NORTH

HORIZONTAL SCALE IN FEET
0 200 400

VERTICAL SCALE IN FEET
0 20 40

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

INNER PORTION OF THE RUNWAY 17-35 APPROACH SURFACE DRAWING

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 5 OF 11

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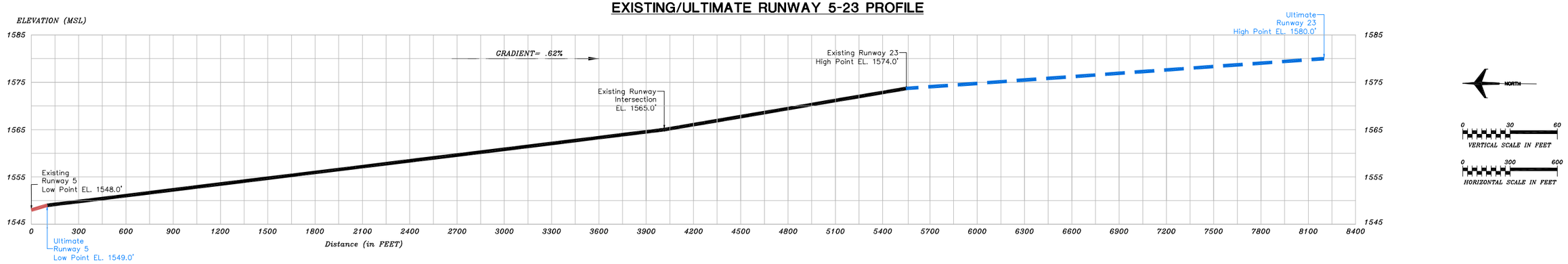
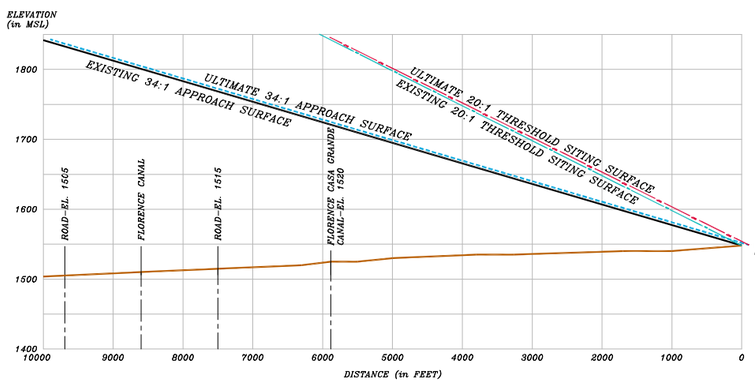
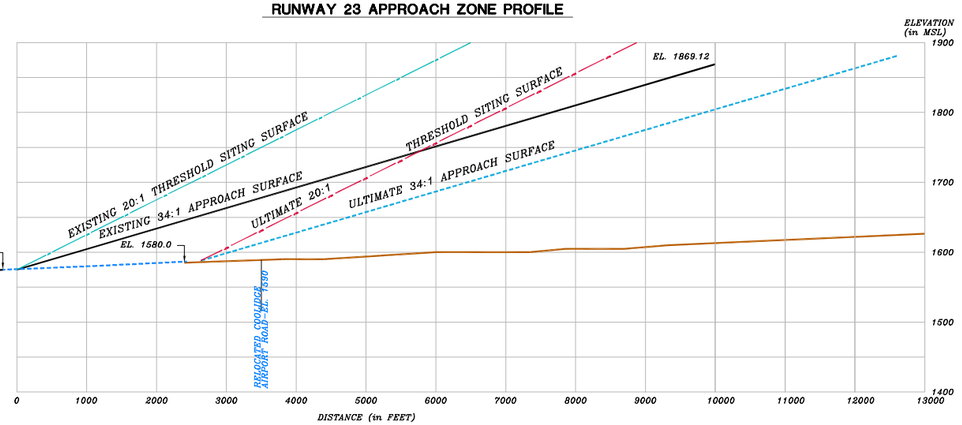
EXISTING/ULTIMATE RUNWAY 5-23 PROFILE



RUNWAY 5 APPROACH ZONE PROFILE



RUNWAY 23 APPROACH ZONE PROFILE



APPROACH ZONE PROFILES

VERTICAL SCALE: 0 100 200 300 — SCALE IN FEET

HORIZONTAL SCALE: 0 1000 2000 3000 — SCALE IN FEET

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the RUNWAY END AREA PLAN, sheet 3 of these plans.

NORTH

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
–	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from existing runway end elevations and existing approach surfaces, unless otherwise noted.
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No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

RUNWAY 5-23 PROFILE AND OUTER APPROACH SURFACE DRAWING

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Braun
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 6 OF 11

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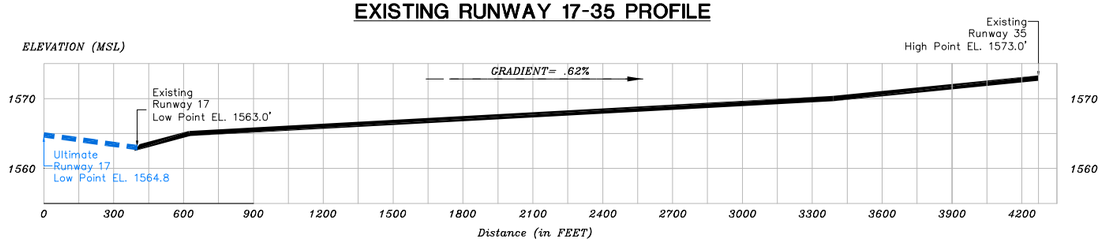
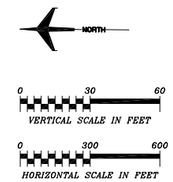
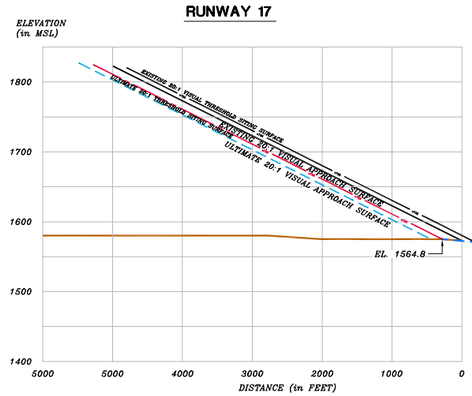
EXISTING RUNWAY 17-35 PROFILE

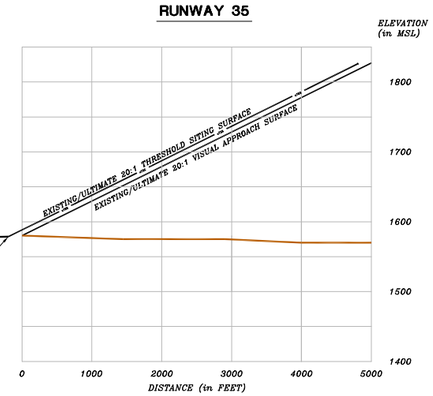




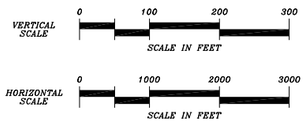
RUNWAY 17



RUNWAY 35



APPROACH ZONE PROFILES



RUNWAY 17-35 OUTER APPROACH SURFACE PLANS and PROFILES

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
–	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from existing runway and elevations and existing approach surfaces, unless otherwise noted.
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3. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the OUTER APPROACH SURFACE DRAWINGS

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

RUNWAY 17-35 PROFILE AND OUTER APPROACH SURFACE DRAWING

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Mall Quick
DETAILED BY: Maggie Brace
APPROVED BY: James M. Harris

June 30, 2010 SHEET 7 OF 11

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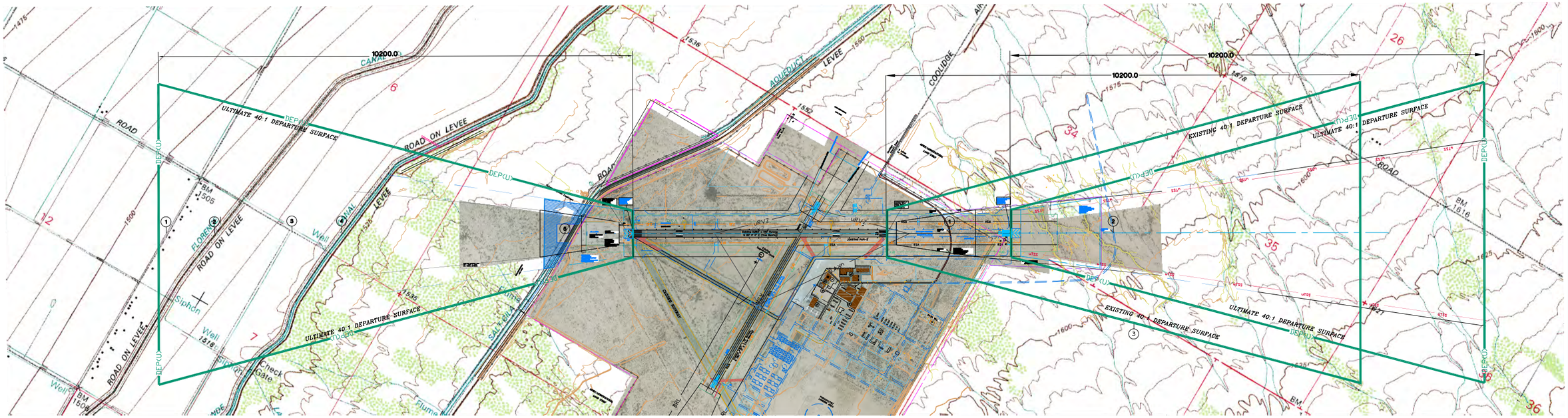
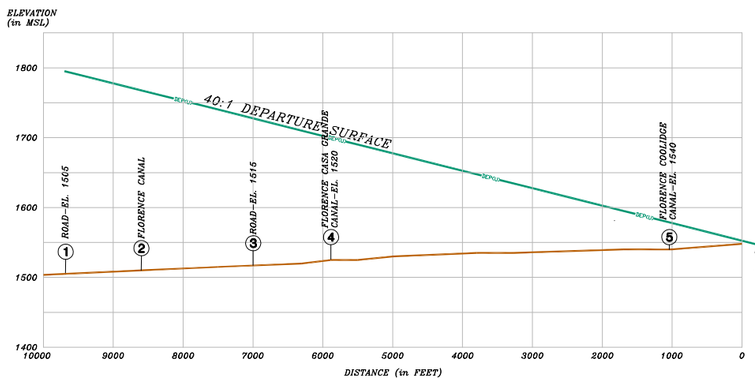
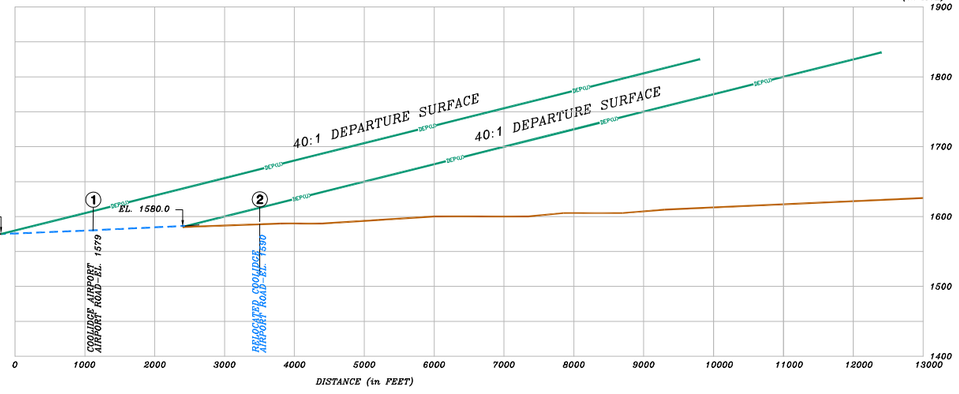


RUNWAY 5 APPROACH ZONE PROFILE



RUNWAY 23 APPROACH ZONE PROFILE



APPROACH ZONE PROFILES

VERTICAL SCALE: 0 100 200 300 — SCALE IN FEET

HORIZONTAL SCALE: 0 1000 2000 3000 — SCALE IN FEET

NORTH

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
–	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from existing runway and elevations and existing approach surfaces, unless otherwise noted.
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3. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the OUTER APPROACH SURFACE DRAWINGS

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

RUNWAY 5-23 DEPARTURE SURFACE DRAWING

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Brase
APPROVED BY: James M. Harris
June 30, 2010

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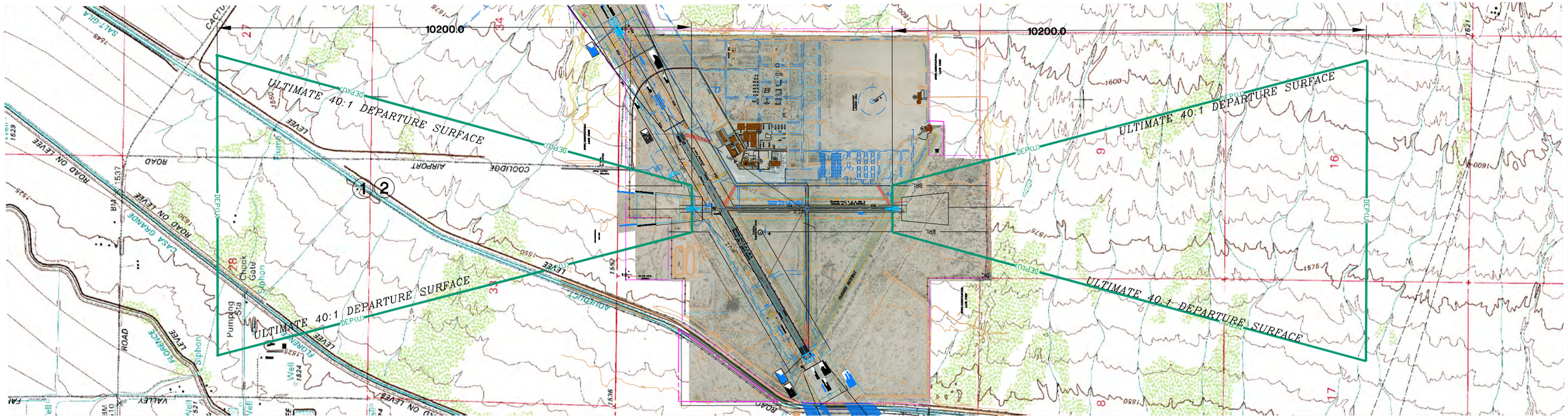

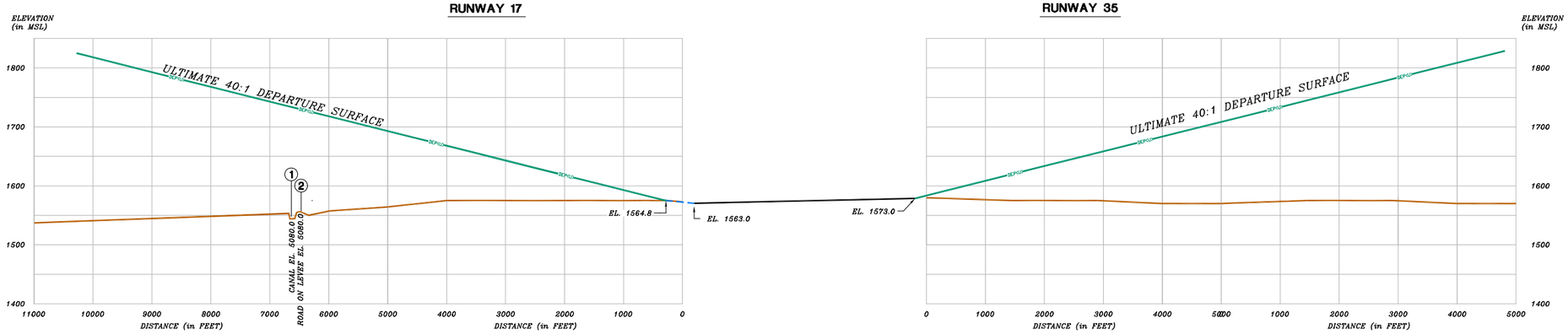

DEPARTURE SUFACES PROFILES

VERTICAL SCALE: 0 — 100 — 200 — 300 SCALE IN FEET

HORIZONTAL SCALE: 0 — 1000 — 2000 — 3000 SCALE IN FEET

NORTH

OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
NONE FOUND	–	–	–	–	–
–	–	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from existing runway and elevations and existing approach surfaces, unless otherwise noted.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the PART 77 AIRSPACE DRAWING
3. Depiction of features and objects within the outer portion of the approach surfaces, are illustrated on the OUTER APPROACH SURFACE DRAWINGS

No.	REVISIONS	DATE	BY	APP'D.
2	–	–	–	–
1	–	–	–	–

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COOLIDGE MUNICIPAL AIRPORT

RUNWAY 17-35 DEPARTURE SURFACE DRAWING

SUPERSEDE

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Brear
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 9 OF 11

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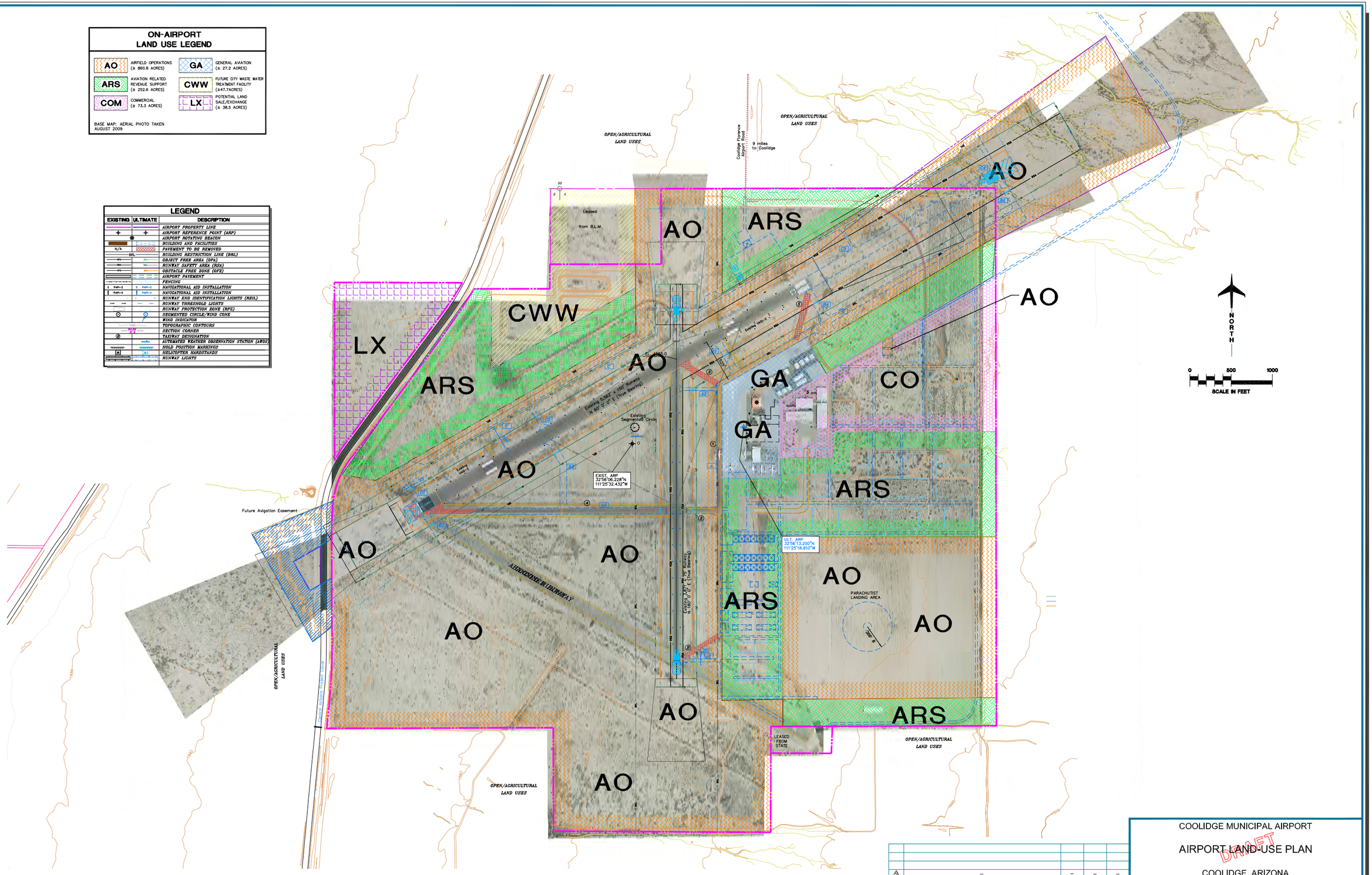
ON-AIRPORT LAND USE LEGEND

AO	AIRFIELD OPERATIONS (± 860.8 ACRES)	GA	GENERAL AVIATION (± 27.2 ACRES)
ARS	AVIATION RELATED REVENUE SUPPORT (± 252.6 ACRES)	CWW	FUTURE CITY WASTE WATER TREATMENT FACILITY (±47.7ACRES)
COM	COMMERCIAL (± 73.3 ACRES)	LX	POTENTIAL LAND SALE/EXCHANGE (± 38.5 ACRES)

BASE MAP: AERIAL PHOTO TAKEN AUGUST 2009

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING AND FACILITIES
N/A		PAVEMENT TO BE REMOVED
BRL		BUILDING RESTRICTION LINE (BRL)
OFA	OFA	OBJECT FREE AREA (OFA)
RSA	RSA	RUNWAY SAFETY AREA (RSA)
OFZ	OFZ	OBSTACLE FREE ZONE (OFZ)
		AIRPORT PAVEMENT
		FENCING
1 PAPI-2	1 PAPI-2	NAVIGATIONAL AID INSTALLATION
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/WIND CONE
		WIND INDICATOR
1625		TOPOGRAPHIC CONTOURS
		SECTION CORNER
		TAXIWAY DESIGNATION
		AUTOMATED WEATHER OBSERVATION STATION (AWOS)
		HOLD POSITION MARKINGS
		HELICOPTER HARDSTANDS
		RUNWAY LIGHTS



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COOLIDGE MUNICIPAL AIRPORT

AIRPORT LAND-USE PLAN

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 10 OF 11

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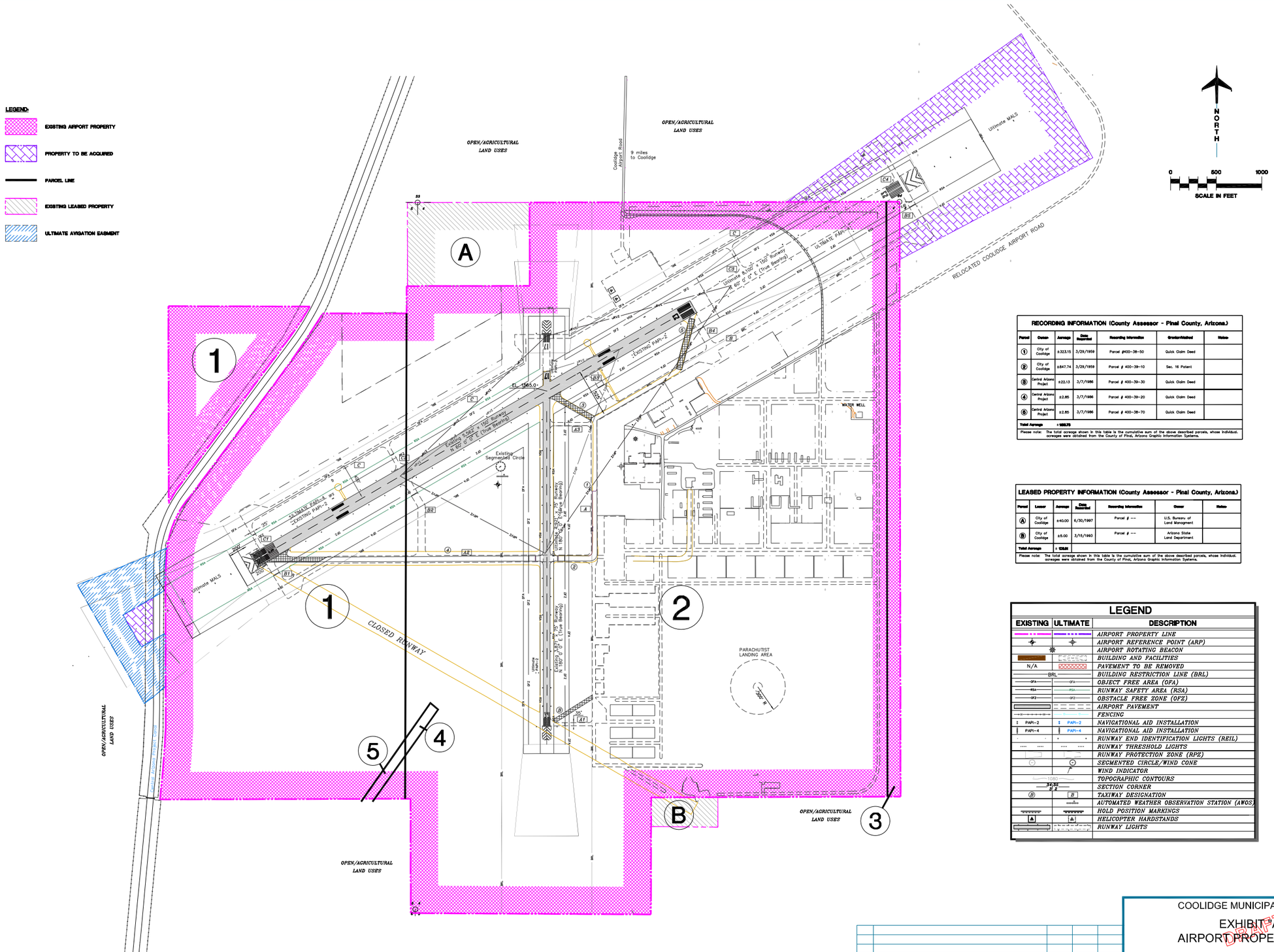

RECORDING INFORMATION (County Assessor - Pinal County, Arizona.)

Parcel	Owner	Acreage	Date Recorded	Recording Information	Grantor/Method	Notes
1	City of Coolidge	±323.15	3/29/1959	Parcel #400-38-50	Quick Claim Deed	
2	City of Coolidge	±847.74	3/29/1959	Parcel # 400-39-10	Sec. 16 Patent	
3	Central Arizona Project	±22.13	3/7/1986	Parcel # 400-39-30	Quick Claim Deed	
4	Central Arizona Project	±2.85	3/7/1986	Parcel # 400-39-20	Quick Claim Deed	
5	Central Arizona Project	±2.85	3/7/1986	Parcel # 400-38-70	Quick Claim Deed	
Total Acreage		± 1195.75				

Please note: The total acreage shown in this table is the cumulative sum of the above described parcels, whose individual acreages were obtained from the County of Pinal, Arizona Graphic Information Systems.

LEASED PROPERTY INFORMATION (County Assessor - Pinal County, Arizona.)

Parcel	Lessor	Acreage	Date Recorded	Recording Information	Owner	Notes
A	City of Coolidge	±40.00	6/30/1997	Parcel # ---	U.S. Bureau of Land Management	
B	City of Coolidge	±5.00	3/15/1993	Parcel # ---	Arizona State Land Department	
Total Acreage		± 1026.81				

Please note: The total acreage shown in this table is the cumulative sum of the above described parcels, whose individual acreages were obtained from the County of Pinal, Arizona Graphic Information Systems.

LEGEND

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		AIRPORT ROTATING BEACON
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PAPI-2	PAPI-2	NAVIGATIONAL AID INSTALLATION
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		HELICOPTER HARDSTANDS
		RUNWAY LIGHTS

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COOLIDGE MUNICIPAL AIRPORT

EXHIBIT "A"
AIRPORT PROPERTY MAP

DRAFT

COOLIDGE, ARIZONA

PLANNED BY: Matt Quick
DETAILED BY: Maggie Braun
APPROVED BY: James M. Harris

June 30, 2010 | SHEET 11 OF 11

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