WICKENBURG

Municipal Airport

Airport Master Plan

WICKENBURG MUNICIPAL AIRPORT
Wickenburg, Arizona

AIRPORT MASTER PLAN

Final Report

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Unanimously Approved By The
Wickenburg Town Council
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Wickenburg, Arizona

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WICKENBURG
MUNICIPAL AIRPORT

INTRODUCTION AND SUMMARY

Introduction and Summary

The Wickenburg Municipal Airport master plan is a cooperative effort between the Town of Wickenburg, the Federal Aviation Administration (FAA), and the Arizona Department of Transportation - Aeronautics Division (ADOT). This airport master plan is a comprehensive study providing an analysis of airport needs, defining the airport's role with the regional airport system, and evaluating alternatives with the purpose of providing direction for the future development of this facility.

This airport master plan is evidence that the Town of Wickenburg recognizes the importance of the Wickenburg Municipal Airport to both the community and the region, as well as the associated challenges inherent in accommodating future aviation needs. The cost of maintaining an airport is an investment which yields impressive benefits to a community. By maintaining a sound and flexible airport master plan, Wickenburg Municipal Airport will continue to be a major economic asset and a source of community pride.

MASTER PLAN OBJECTIVES

The primary objective of the airport master plan is to formulate and maintain a long-term development program which will yield a safe, efficient, economical, and environmentally acceptable air transportation facility. The accomplishment of this objective requires the evaluation of the existing airport and determination of what actions should be taken to maintain an adequate, safe, and reliable airport facility to meet the needs of the area. This master plan will provide an outline of the necessary development and give responsible officials advance notice of future airport

funding needs so that appropriate steps can be taken to ensure that adequate funds are budgeted and planned.

Specific objectives of the master plan are:

- To determine projected needs of airport users through the year 2025.
- To examine commercial air service potential.
- To identify infrastructure needs.
- To evaluate development which will enhance the airport's capacity to the maximum extent possible.
- To ensure that future development is environmentally compatible.
- To establish a schedule of development priorities and a program for the improvements proposed in the master plan.
- To prioritize the airport capital improvement program.
- To coordinate this master plan with local, regional, state, and federal agencies.
- To develop active and productive public involvement throughout the planning process.

To accomplish the objectives of this study, the master plan:

- Inventories and analyzes data pertinent to the airport, its environment, and the area it serves.
- Collects and analyzes general economic factors and evaluates the area's aviation activity.
- Forecasts aviation activity through the year 2025.
- Determines existing and future facility requirements for the airport.
- Examines the different alternatives for the required facilities.
- Proposes an airport layout plan which is compatible with both aviation demands and the local environment.
- Schedules priorities, phases proposed development, and estimates development costs.
- Identifies and evaluates capital improvement funding sources.

MASTER PLAN ELEMENTS AND PROCESS

The Wickenburg Municipal Airport master plan is being prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices. The master plan for Wickenburg Municipal Airport has six general elements which 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 Wickenburg Municipal Airport master plan process and elements.

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

Element Two examines the potential aviation demand for aviation activity at the airport. This analysis utilizes local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at Wickenburg Municipal Airport through the year 2025. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demands for Wickenburg Municipal Airport through the planning period. The results of this analysis are presented in Chapter Two, Aviation Demand Forecasts.

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

Element Four considers a variety of solutions to accommodate the projected facility needs. This element proposes various facility and site plan configurations which meet the projected facility needs. A thorough analysis is completed to analyze the strengths and weaknesses of each proposed development alternative, with the intention of determining a single direction for development. These results are presented in Chapter Four, Airport Development Alternatives.

Element Five comprises two independent, yet interrelated, work efforts: a capital implementation program and airport plans. This element comprises Chapters Five and Six of the master plan. Chapter Five provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport. Specifics on environmental concerns are also provided. Appendix C to the master plan includes the official Airport Layout Plan (ALP) and detailed technical drawings depicting related

airspace, land use, and property data. These drawings are used by the FAA in determining grant eligibility and funding. Chapter Six focuses on the capital needs program, which defines the schedules, costs, and funding sources for the recommended development projects.

COORDINATION

The Wickenburg Municipal Airport master plan is of interest to many within the local community. 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 Wickenburg Municipal Airport master plan is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the Wickenburg Municipal Airport master plan, the Town of Wickenburg has identified a cross-section of community members and interested persons to act in an advisory role in the development of the master plan. As members of the Planning Advisory Committee (PAC), the committee members will review phase reports and provide comment throughout the study to help ensure that a realistic, viable plan is developed.

To assist in the review process, draft phase reports are being prepared at three milestones in the planning process as shown previously on **Exhibit IA**. The draft phase report process allows for input and review during each step within the master plan process to ensure that all master plan issues are fully addressed as the recommended program is developed.

A public information workshop is also included as part of the plan coordination. The public information workshop allows the public to provide input and learn about general information concerning the master plan.

SUMMARY

The master plan for Wickenburg Municipal Airport provides for the orderly use of existing airport facilities to enhance the safety of aircraft operations, maintain existing airfield and general aviation facilities, and support future aviation demand (should new levels of demand be experienced). The master plan includes provisions to ensure the long-term viability and self-sufficiency of the airport by maximizing available areas at the airport for both aviation-related and commercial opportunities. Exhibit 5A, found after page 5-2, depicts elements of the master plan for Wickenburg Municipal Airport.

DEMAND-BASED PLAN

The proper planning of a facility of any type must consider the demand that may occur over a specified period. For Wickenburg Municipal Airport, this involved reviewing past trends, community socioeconomic forecasts, and the direction of the air transportation industry.

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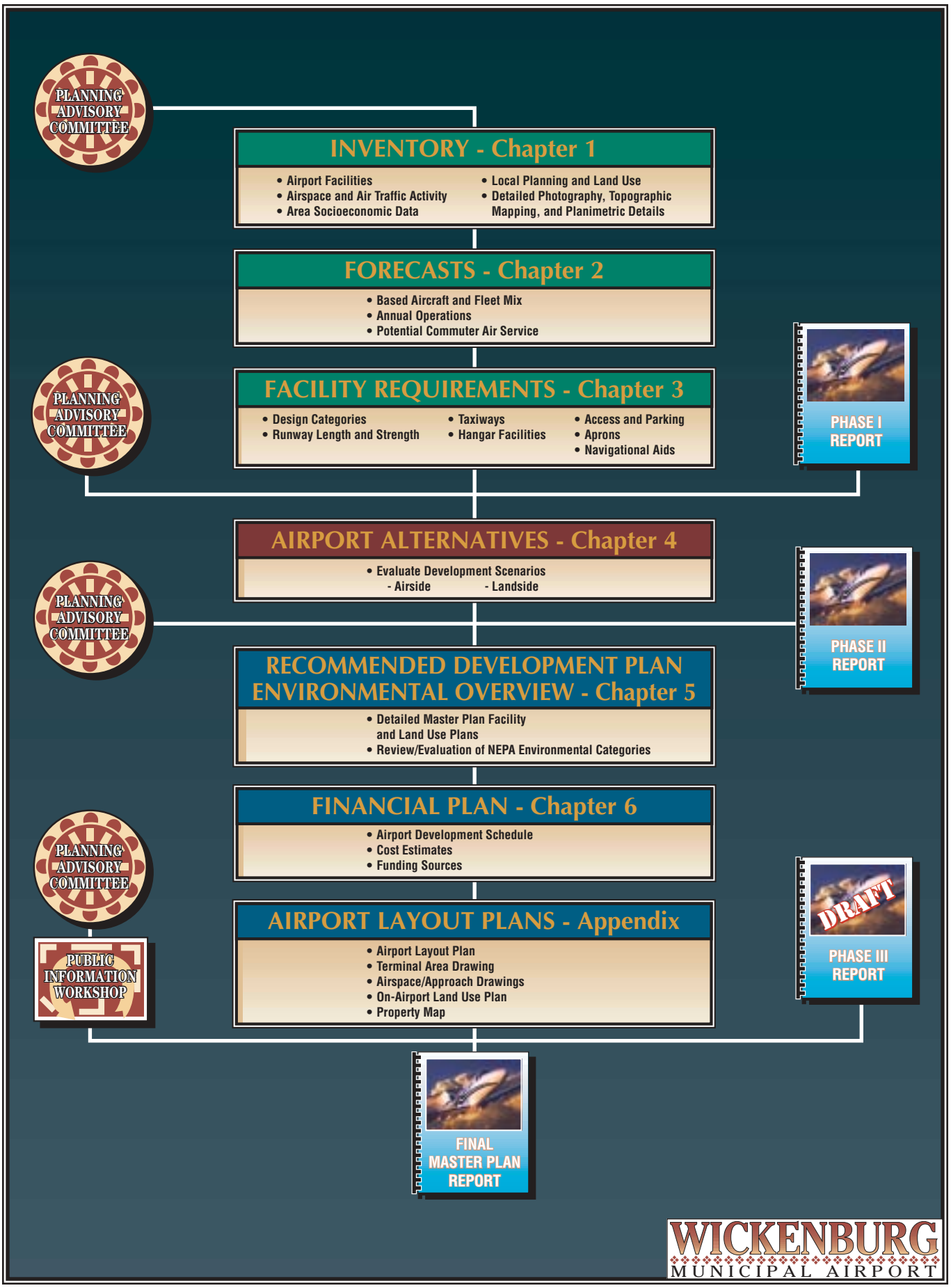

Exhibit IA
MASTER PLAN ELEMENTS AND WORK FLOW

The primary objective of a forecasting effort is to define the magnitude of change that can be expected over time. Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity when looking 20 years into the future. Thus, forecasts should serve only as guidelines, and planning must remain flexible to respond to needs as they occur.

Recognizing this, it was the intent of the Town of Wickenburg to develop a Master Plan for Wickenburg Municipal Airport that is demand-based rather than time-based. As a result, the reasonable levels of activity potential derived from this forecasting effort are related to planning horizon levels, rather than dates in time. These planning horizons were established as levels of activity that will call for consideration of the implementation of the next step in the master plan program. Should a level be reached sooner, the schedule to implement the improvements could be accelerated. This provides a level of flexibility in the master plan and can extend the time between master plan updates.

A demand-based master plan does not specifically require the implementation of any of the demand-based improvements. Instead, it is envisioned that the implementation of any master plan improvement would be examined against 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 the airport facilities consistent with potential aviation needs and the capital needs required to support that use. However, individual projects in the plan are not implemented until the need is demonstrated and the project is approved by the Town of Wickenburg.

In summary, the master plan does not specifically call for expansion of the airport. The intent of the master plan is to provide logical, realistic guidelines to accommodate aviation demand levels, should that demand ever occur. The master plan first focuses on providing improvements to enhance the safety of existing aircraft operations and maintenance of airfield and passenger terminal facilities. All remaining master plan provisions are demand-based.

Table A summarizes the planning horizon activity milestones for Wickenburg Municipal Airport. These milestones are established as levels of activity that will assist the Town in planning for the implementation of the demand-based provisions of the master plan program.

AIRFIELD PLAN

The airfield plan for Wickenburg Municipal Airport provides for the upgrade, in the short term, of the existing runway and taxiway system to Federal Aviation Administration (FAA) Airport Reference Code (ARC) B-II design standards. ARC B-II design standards relate to aircraft with approach speeds less than 121 knots and wingspans less than 79 feet. Aircraft within these approach speeds and wingspans are considered the critical design aircraft, since these types

TABLE A
Planning Horizon Activity Levels
Wickenburg Municipal Airport

	2000	Short Term	Intermediate Term	Long Term
Based Aircraft	42	60	70	85
Annual Operations	22,300	39,900	50,000	66,900

of aircraft have historically conducted more than 500 operations annually at the airport. Improvements to conform with ARC B-II standards include:

- Relocating Taxiway A 40 feet southeast to conform with runway/taxiway separation criterion.
- Widening all taxiways to 35 feet.
- Removing a hangar on the north side of the aircraft parking apron that is within the relocated Taxiway A object free area (OFA).
- Reconfiguring the apron tiedowns to meet the relocated Taxiway A OFA standards and Taxiway A to apron taxilane separation criterion.
- Removing buildings north of Runway 5-23 which obstruct the runway OFA.
- Relocating the Runway 5 end 651 feet northeast to provide for the development of the runway safety area (RSA) behind the Runway 5 end on existing airport property, and provide for obstruction clearance for landings to Runway 5. The existing pavement behind the Runway 5 end will be removed. 651 feet of pavement will be added to the Runway 23 end to ensure that the existing runway length is maintained.
- Relocating the segmented circle and lighted wind cone north of Runway 5-23 to clear the relocated Taxiway A OFA.

Other elements of the airfield plan include:

- Extending Runway 5-23 and a relocated Taxiway A to 6,100 feet. All of the extension will take place at the Runway 23 end.
- Installing an Automated Weather Observation System (AWOS) south of Runway 5-23.
- Developing a Global Positioning System (GPS) approach to Runway 23.
- Installing runway end identifier lighting (REILs) at each runway end. REILs assist pilots in locating the runway threshold at night and during poor visibility conditions.
- Installing a precision approach path indicator (PAPI) to Runway 5. A PAPI assist pilots in determining the correct descent path to the runway threshold.

Aircraft with approach speeds and wingspans greater than ARC B-II can and do operate at the airport; however,

their historical use of the airport is below 500 operations annually. Their use of the airport is not considered significant by FAA standards for airfield development in the short term. However, aircraft with higher approach speeds and longer wingspans are projected by this master plan to conduct more than 500 operations annually in the future; therefore, for the long term planning horizon these aircraft are considered the critical design aircraft.

The master plan considered the upgrades necessary to accommodate the design requirements of aircraft greater than ARC B-II and found that it was not feasible to upgrade the existing airport site to meet these requirements. The PAC and Town of Wickenburg found that the impacts on the existing airport facilities, adjoining industrial park, terrain features, and encroaching residential land uses prevented the expansion of the existing airport beyond ARC B-II design standards. This master plan concluded that the Town of Wickenburg pursue the permanent transfer of the Forepaugh Airport from the Bureau of Land Management (BLM) to the Town, and reserve this airport for the long term aviation needs of the community. The Town can pursue the permanent transfer of Forepaugh Airport through Section 516 of the Airport and Airway Improvement Act of September 3, 1982. This will require the completion of an environmental assessment and determination by the FAA and BLM.

A decision on whether an upgraded Forepaugh Airport site would replace the existing Wickenburg Municipal Airport would need to be made closer to the time this upgrade is implemented. A number of issues would need to be considered in making this decision. This includes (but is not limited to) the financial capability and desire of the Town of Wickenburg to fund the operation of two airports, the desire of state and federal agencies to maintain and fund two airports in the Town of Wickenburg, and the private investments in the existing Wickenburg Municipal Airport site and whether comparable facilities could be developed at the Forepaugh Airport site with similar cost structures.

LANDSIDE PLAN

The landside plan for the airport provides for the replacement of hangars that will be removed to meet ARC B-II runway OFA and the relocated Taxiway A OFA requirements. The landside plan also provides for the orderly expansion of hangar and apron facilities to accommodate future demands. The primary elements of the landside plan include:

- Developing four clear-span hangars northeast of the existing terminal building, to replace the hangars being removed to meet runway and taxiway OFA standards. The terminal building access road would be reconfigured as these hangars would extend over the existing road and parking area. Automobile parking would be developed adjacent to the hangars.

- Reserving the area along the west side of the existing public terminal building for the ultimate expansion of the building as needed to meet demand and operational needs.
- Expanding the apron west of the terminal building to allow for approximately seven tiedowns and replace existing tiedowns lost because of the shifting of Runway 5-23 to the northeast.
- Constructing an aircraft wash rack along the southern edge of the existing apron to provide an area for aircraft cleaning, and the proper collection of the aircraft cleaning solvents and contami-nants removed from the aircraft hull during cleaning.
- Developing six 10-unit T-hangars south of Runway 5-23 along the existing northeast apron.
- Developing conventional hangars south of the T-hangars.
- Constructing a helipad, helicopter parking pads, lease parcel, and automobile parking north of the T-hangar area. This helipad would provide a public helipad that could be properly marked and lighted for helicopter operations at the airport.
- Constructing a new apron area northeast of the helipad to provide for the safe and efficient operation of airplane design group (ADG) II aircraft at the airport and to provide areas for commercial FBO development.

The security of the airfield and landside facilities was also a primary consideration of the master plan. The master plan focused on limiting vehicle and pedestrian access to the apron and aircraft operational areas. Security elements of the master plan include:

- Replacing the existing barbed-wire fencing extending around the airport boundary, with six-foot tall chain link fencing.
- Replacing the existing manual vehicle access gate to the apron (located northeast of the terminal building) with an automated gate. The automated gate would ensure that only those approved to access the apron area would have access to the apron area. It also ensures that this gate is always closed.
- Developing a new access road along the southern airport boundary. This road would ultimately provide access to existing and future hangar facilities and eliminate the need for aircraft owners and visitors to cross the apron area to access hangars.
- Developing public parking areas outside the aircraft operational areas.

CAPITAL NEEDS

As shown in **Table B**, the master plan has identified approximately $14.6 million in capital needs over the planning period. Nearly 94 percent of the total costs are eligible for grants-in-aid administered by the Federal Aviation Administration (FAA) and Arizona Department of Transportation – Aeronautics Division (ADOT). A project specific listing is provided on Exhibit 6A found after page 6-4.

TABLE B
Development Funding Summary

Planning Horizons	Total Needs	Federally Eligible	State Eligible	Local Share
Short Term	$8,230,700	$6,696,145	$1,118,157	$416,397
Intermediate Term	3,358,972	2,721,576	466,778	170,618
Long Range	3,118,700	2,748,828	134,936	234,936
TOTAL	$14,708,372	$12,166,549	$1,719,871	$821,951

WICKENBURG
MUNICIPAL AIRPORT

Chapter One
INVENTORY

Inventory

The initial step in the preparation of the airport master plan update for Wickenburg Municipal Airport is the collection of information pertaining to the airport and the area it serves. The information collected in this chapter will be used in subsequent analyses in this study. The inventory of existing conditions at Wickenburg Municipal Airport provides an overview of the airport facilities, airspace, and air traffic control. Background information regarding the Town of Wickenburg and the regional area was collected. This includes information regarding the airport's role in regional, state, and national aviation systems, surface transportation, and the socioeconomic profile.

This information was obtained through on-site inspections of the airport, interviews with airport management, airport tenants, and various government agencies. Additional documents were provided by the Federal Aviation Administration (FAA), Arizona Department of Transportation-Aeronautics Division (ADOT), Maricopa Association of Governments (MAG), and Town of Wickenburg.

HISTORICAL PERSPECTIVE

Exhibit 1A provides a depiction of the current airport site and configuration. The original Wickenburg Airport served as a fuel stop for northern travelers that were headed south to the Phoenix area. The original Wickenburg Airport was located north of town and later abandoned.

In 1968, after a feasibility study was performed, a decision was made to accept donated land from the Wellik family to construct a new airport west

of town. At this site, the current Wickenburg Municipal Airport was constructed in 1968. Initial construction produced a 4,500-foot lighted runway oriented northeast to southwest and a small apron area.

Several improvements were made to the airport facilities soon after the runway was constructed. The first set of T-hangars were constructed in 1969. The current terminal building was constructed in 1970. During 1972-1973, a conventional hangar was constructed. In 1974-1975, the aircraft parking apron was expanded and a second set of T-hangars were constructed. The runway was extended to its current length of 5,050 feet, tiedowns were installed on the parking surface, and access to the parking apron was constructed in 1977-1978. The runway and taxiways were overlaid in 1982-1983. The partial parallel taxiway was extended to the Runway 23 end in 1989. In 1990, an overlay of the runway and taxiway/taxilanes in the hangar area was completed. The construction of additional apron area, auto parking area, and six additional T-hangars was also completed in 1990. In 1994, a new rotating beacon was installed and the runway, taxiway, and apron surfaces were rehabilitated. In 1996, an overlay of the runway was completed. In 1997, the runway was widened to 75 feet and the underground fuel storage tanks were removed. Utilizing a state loan, the Town of Wickenburg installed the existing above-ground fuel storage tanks (and removed the old underground tanks) in 2000. The airport was connected to the Town of Wickenburg sanitary sewer system in 2000-2001. The airport completed the rehabilitation of the runway in 2002. The Town received a grant in 1998 for the acquisition of 37 acres of land on the northeast end of the airport site. This land is to accommodate the Runway 23 runway protection zone and 1,000-foot runway extension proposed in the *1992 Airport Master Plan*. This property is being acquired from the Arizona State Land Trust.

AIRPORT ADMINISTRATION

Wickenburg Municipal Airport is owned by the Town of Wickenburg. The Town Manager serves as the Airport Director and is responsible for the administration of the airport. The Town of Wickenburg contracts with a private firm for the daily management and operation of the airport. This includes providing fuel sales and line services, providing airport advisory radio services, providing custodial maintenance of the public terminal building, and completing weekly safety inspections of the airport.

Wickenburg Municipal Airport has an airport advisory commission composed of seven members. One member is an elected member of the Town council, appointed by the mayor, and subject to approval of the council. The remaining six members are citizens appointed by the mayor and subject to the approval of the council. At least five of the citizens must be residents of the Town and all members must live within 10 miles of the Town limits. The council representative serves a two-year term, while the

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Exhibit 1A
EXISTING AIRSIDE FACILITIES

citizen members serve staggered three-year terms. The commission acts in an advisory role to the Town council, making recommendations on the use, operation, and development of the airport.

AIR TRAFFIC ACTIVITY

At airports that serve general aviation, the number of based aircraft and the total annual operations (takeoffs and landings) are the primary indicators of air traffic activity. These indicators will be used in subsequent analyses in this master plan to project future air traffic activity and determine future facility needs.

BASED AIRCRAFT

Table 1A summarizes historical based aircraft at Wickenburg Municipal Airport. Based aircraft totals from 1991 to 1998 were obtained from the Draft Aviation Demand Forecasts prepared in September 2001 for the *Maricopa Association of Governments Regional Aviation System Plan Update* (MAG RASP). Based aircraft totals for 1999 to 2001 were obtained from records maintained by Disciplinair and represent the peak month for based aircraft in those years. In 1999, monthly records indicate that based aircraft totals ranged from a low of 37 to a high of 43. For 2000, based aircraft totals ranged from a high of 43 to a low of 37. For 2001, based aircraft have ranged from a low of 37 to a high of 42. Since 1991, the airport has added 15 based aircraft. In 2001, the mix of aircraft based at Wickenburg Municipal Airport was comprised of 39 single-engine piston aircraft, one twin-engine piston aircraft, two helicopters, and a glider.

TABLE 1A
Historical Based Aircraft
Wickenburg Municipal Airport

Year	Based Aircraft
1991	27
1992	28
1993	31
1994	32
1995	24
1996	33
1997	32
1998	38
1999	43
2000	43
2001	42

Source: 1991-1998: MAG RASP, 1999-2001 Airport records.

AIRCRAFT OPERATIONS

Without an operating airport traffic control tower, annual aircraft operations at Wickenburg Municipal Airport have not been regularly counted. Instead, only estimates of historical and current activity are available. Historical operational estimates for 1991 to 1998 were recorded for Wickenburg Municipal Airport in the 2001 MAG RASP update. Operational totals for 1999 and 2000 were derived from observed activity recorded by the fuel provider. Since 1999, a record of aircraft operations

from 8:30 a.m. to 4:30 p.m. were recorded, and indicated 18,452 operations in 1999 and 19,406 operations in 2000.

In order to provide a reasonable estimate of annual aircraft operational levels at Wickenburg Municipal Airport, the total recorded annual operations have been increased by 15 percent. This is to account for aircraft operations conducted before or after staff was at the airport. The adjusted totals result in 21,200 operations in 1999 and 22,300 operations in 2000. For purposes of determining future facility needs and forecasting future activity at Wickenburg Municipal Airport, this master plan will consider the adjusted totals summarized in **Table 1B**. As shown in the table, aircraft operations have varied annually at the airport, ranging between 20,000 and 23,000 annually since 1996.

TABLE 1B
Historical Aircraft Operations
Wickenburg Municipal Airport

Year	Aircraft Operations
1996	20,900
1997	22,700
1998	19,900
1999	21,200
2000	22,300

Source: 1996-1998: MAG RASP;
1999-2000: Airport records.

AIRPORT FACILITIES

This section presents a description of the existing facilities at Wickenburg Municipal Airport and is divided into the following two categories:

- Airside Facilities
- Landside Facilities

AIRSIDE FACILITIES

Airside facilities, previously depicted on **Exhibit 1A**, are those facilities directly associated with the safe and efficient movement of aircraft on the airport. These facilities include runways, taxiways, airport lighting, and navigational aids. The types and levels of aviation activity capable of operating at an airport is dependent on the type of airside facilities. **Table 1C** summarizes airside facility data for Wickenburg Municipal Airport.

Runways

Wickenburg Municipal Airport is equipped with a single asphalt runway and a full length parallel taxiway. Runway 5-23 is 5,050 feet long, 75 feet wide, and is oriented in a northeast-southwest manner. The Runway 5 landing threshold is displaced 550 feet to provide approach clearance over U.S. Highway 60. This runway has a rated pavement strength of 23,000 pounds single wheel loading (SWL) and 30,000 pounds dual wheel loading. Single

wheel loading refers to the design of the aircraft landing gear which has a single wheel on each main landing gear strut. Dual wheel loading refers to aircraft with two wheels on each landing gear strut. The runway grade increases towards the southwest. The Runway 23 end elevation in 2,332 feet MSL, while the Runway 5 end elevation is 2,386 feet MSL. This equates to a 1.05 percent running grade.

TABLE 1C
Airside Facility Data
Wickenburg Municipal Airport

	Runway 5-23
Runway Length (feet)	5,050
Runway Width (feet)	75
Runway Surface Material	
Surface Condition	Asphalt
Runway Load Bearing Strength (lbs.)	Good
Single Wheel Loading (SWL)	23,000
Dual Wheel Loading (DWL)	30,000
Runway Markings	Basic
Taxiway Markings	Centerline, Hold Lines
Runway Lighting	Medium Intensity Runway Lights (MIRL)
Taxiway Lighting	Medium Intensity Taxiway Lights (MITL)
Visual Aids	Rotating Beacon Lighted Windcone Segmented Circle Precision Approach Path Indicator (PAPI) - 4L (23) Lighted Runway/Taxiway Directional Signs

Source: Airport Facility Directory; Southwest U.S., September 6, 2001.

Taxiways

The taxiway system at Wickenburg Municipal Airport includes a full length parallel taxiway and five connecting taxiways. Taxiway A is a full length parallel taxiway providing access to both ends of Runway 5-23. Taxiway A is located 200 feet from the Runway 5-23 centerline. Taxiway A is 40 feet wide from the approach end of Runway 5 to Taxiway D, where it narrows to 25 feet to the approach end of Runway 23. Taxiways B, C, D, E, and F provide access from Runway 5-23 to the parallel taxiway. Taxiways B, C, and D are 40 feet wide, while Taxiways E and F are 25 feet wide. Taxiway C extends to the Av-Art facilities located north of Runway 5-23. A portion of Taxiway C adjacent to the Av-Art facilities is unpaved. Two taxilanes connect the hangar and tiedown aprons to the parallel taxiway on the south side of the runway.

Airfield Lighting

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

Identification Lighting: The location of an airport at night is universally indicated by a rotating beacon, displaying alternating flashes of green and white lights 180 degrees apart. The rotating beacon at Wickenburg Municipal Airport is located on top of the terminal building.

Runway and Taxiway Lighting: Runway and taxiway lighting utilize light fixtures placed near the pavement edge to define the lateral limits of the runway or taxiway. These lighting systems are essential for safe operations at night and/or times of low visibility to ensure safe and efficient access to and from the runway and aircraft parking areas.

Runway 5-23 is equipped with medium intensity runway lighting (MIRL). Medium intensity taxiway lighting (MITL) has been installed on all the taxiways. The Runway 5-23 ends have been equipped with runway threshold lights, which indicate the location of the runway threshold at night. Runway threshold lighting utilizes specially designed lenses which are green on one side and red on the opposite. The green portion of the lens is directed to the approach end of the threshold.

Visual Approach Lighting: A precision approach path indicator (PAPI) is available at the approach end of Runway 23. The PAPI consists of a system of lights located near the runway threshold. When interpreted by the pilot, these lights give an indication of being above, below, or on the designed descent path to the runway.

Pilot-Controlled Lighting: All airfield lighting systems are controlled through a pilot-controlled lighting system (PCL). This allows the pilot to turn on, or increase the intensity of, various airfield systems from the aircraft with the use of the aircraft's transmitter.

Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces. The basic markings to Runway 5-23 identify the runway centerline and designation. Markings at the Runway 5 end identify the 550-foot displaced threshold and blast pad, which are not available for landing. Taxiway and apron centerline markings are provided to assist aircraft using these airport surfaces. Taxiway centerline markings assist pilots in maintaining proper clearance from pavement edges and objects near the taxiway/taxilane edges. Pavement markings also identify aircraft parking positions and aircraft holding positions.

Helipad

Wickenburg Municipal Airport is not currently equipped with a helipad. A designated helicopter landing area is located on the northwest corner of the secondary aircraft apron, which also serves as a compass rose. Pilots can use a compass rose to calibrate their aircraft compass. Lifenet operates from the apron area located near their facility, on the southwest portion of the apron.

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 navigation to and from the airport include: the very high frequency omnidirectional range (VOR) facility, global positioning system (GPS), and Loran-C.

The VOR, in general, 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 (VOR/DME) to provide distance as well as direction information to the pilot. Military tactical air navigation aids (TACANS) and civil VORs are combined to form a VORTAC. A VORTAC provides distance and course guidance information to civil and military pilots. The Buckeye VORTAC, located approximately 31 nautical miles (nm) south of the airport, can be utilized by pilots flying to or from the airport. **Exhibit 1B** depicts the location of the Buckeye VORTAC in relation to the airport.

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 varies from the VOR as pilots are not required to navigate using a specific facility (with the VOR, pilots must navigate to and from a specific VOR facility). With a properly equipped aircraft, pilots can navigate to any airport in the United States using Loran-C.

GPS is an additional navigational aid for pilots enroute to the airport. GPS was initially developed by the United States Department of Defense for military navigation around the world. Increasingly over the past few years, GPS has been utilized more in civilian aircraft. GPS uses satellites placed in orbit around the globe to transmit electronic signals which properly equipped aircraft use to determine altitude, speed, and navigational information. GPS is similar to Loran-C as pilots can directly navigate to any airport in the country and are not required to navigate using a specific navigational facility. The FAA is currently proceeding with a program to gradually replace all traditional enroute navigational aids with GPS over the next 20 years.

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 ceiling conditions. There are currently no instrument approach procedures published for Wickenburg Municipal Airport. Therefore, the airport is essentially closed to arrivals when visual flight can no longer be conducted.

Other Facilities

The airport has a lighted wind cone and segmented circle which are located south of the runway, near the midpoint of the runway. The wind cone provides pilots with information about wind speed and direction. The segmented circle provides traffic pattern information to pilots.

Local Operating Procedures

Wickenburg Municipal Airport is situated at 2,386 feet mean see level (MSL). The traffic pattern altitude for all aircraft at the airport is 1,000 feet above the airfield elevation (3,386 feet MSL). Runway 5 utilizes a left-hand traffic pattern. In this manner, aircraft approaching the Runway 5 end follow a series of left-hand turns. Runway 23 utilizes a right-hand traffic pattern. Aircraft approaching the Runway 23 end follow a series of right-hand turns. By designating the traffic pattern in this manner, all aircraft traffic is maintained west of the runway and away from the residential areas to the east.

Runway use is dictated by wind conditions. Ideally, it is desirable for aircraft to land directly into the wind. Generally, aircraft use is split evenly between each runway end.

Vicinity Airspace

To ensure a safe and efficient airspace environment for all aspects of aviation, the FAA has established an airspace structure that regulates and establishes procedures for aircraft using the National Airspace System. The U.S. airspace structure provides for categories of airspace and identifies them as Classes A, B, C, D, E, and G.

Class A airspace is high level controlled airspace and includes all airspace from 18,000 feet MSL to Flight Level 600 (approximately 60,000 feet MSL). Class B airspace is controlled airspace surrounding high activity commercial service airports (i.e. Phoenix Sky Harbor International Airport). Class C airspace is controlled airspace surrounding lower activity commercial service airports (i.e. Tucson International Airport) and some military airports. Class D airspace is controlled airspace surrounding low activity commercial service and general aviation airports with an air traffic control tower. All aircraft operating within Classes A, B, C, and D airspace must be in constant contact with the air traffic control facility responsible for the particular airspace. Class E airspace is controlled airspace that encompasses all instrument approach procedures and

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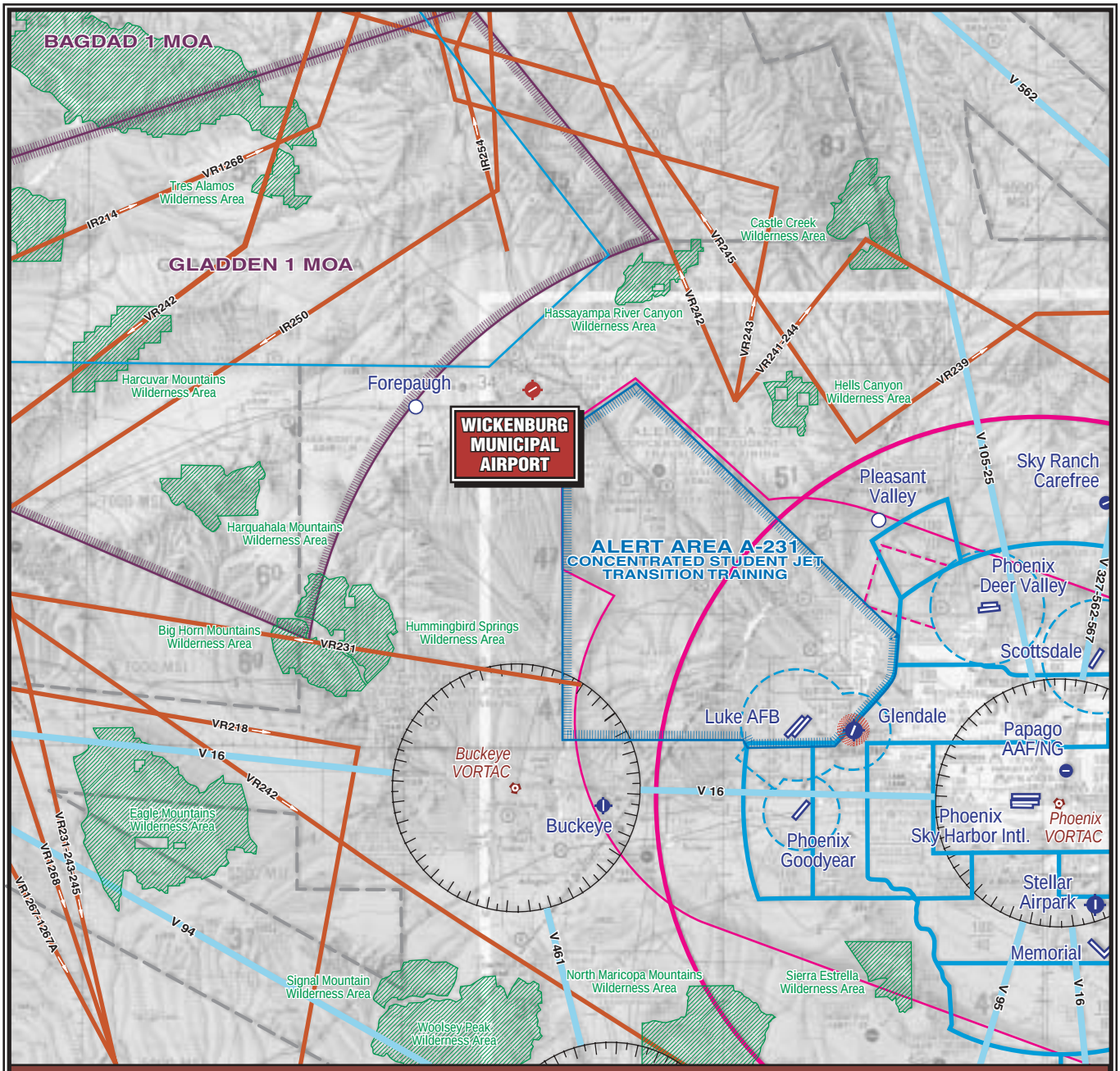

LEGEND

- 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'
- VOR
- VORTAC
- Non-Directional Radiobeacon (NDB)
- VOR-DME
- Compass Rose
- Class B Airspace
- Class C Airspace
- Class D Airspace
- Class E Airspace with Floor 700 ft. or greater above surface
- Class E Airspace with Floor 1200 ft. or greater above surface
- Class E Airspace
- Class E Airspace with Floor other than 700 ft. above surface
- MOA - Military Operations Area
- Restricted Areas
- Wilderness Areas
- Military Training Routes
- Victor Airways

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

WICKENBURG MUNICIPAL AIRPORT

Exhibit 1B
AREA AIRSPACE & REGIONAL AIRPORTS

low altitude federal airways. Only aircraft conducting instrument flights are required to be in contact with air traffic control when operating in Class E airspace. While aircraft conducting visual flight rules in Class E airspace are not required to be in radio communications with air traffic control facilities, visual flight can only be conducted if minimum visibility and cloud ceilings exist. Class G airspace is uncontrolled airspace that does not require contact with an air traffic control facility or minimum visibility and cloud ceilings.

Airspace in the vicinity of Wickenburg Municipal Airport is depicted on **Exhibit 1B**. The airspace surrounding Wickenburg Municipal Airport extending from 1,200 feet above ground level (AGL) to approximately 18,000 feet MSL is Class E airspace. This Class E airspace also encompasses the low altitude Victor Airways in the vicinity of the airport. Victor Airways are corridors of airspace eight miles wide that extend from 1,200 feet AGL to 18,000 feet MSL, and extend between VOR facilities. There are no Victor Airways directly to the Wickenburg Municipal Airport. **Exhibit 1B** depicts Victor Airways in the vicinity of the airport.

Located north of the airport are areas of special-use airspace designated as military operations areas (MOAs). MOAs define airspace where a high level of military activity is conducted and are intended to segregate civil and military aircraft. While civilian aircraft operations are not restricted in the MOA, civilian aircraft are cautioned to be alert for military aircraft when the MOA is active and at the specified altitude.

The Gladden 1 MOA is located to the northwest of Wickenburg Municipal Airport. The Gladden 1 MOA is under the control of the Albuquerque Air Route Traffic Control Center (ARTCC) and military operations are authorized from 7,000 feet MSL, or 5,000 feet AGL, whichever is higher, with no upper limit. The Gladden 1 MOA is in effect Mondays through Fridays from 6:00 a.m. to 7:00 p.m.

Alert Area A-231 is located approximately five miles southeast of Wickenburg Municipal Airport. Military operations within Alert Area A-231 are authorized from 500 feet AGL to 6,500 feet MSL continuously. Alert Area A-231 is used primarily by students and instructors from Luke Air Force Base conducting training missions in fighter-type aircraft. Pilots transitioning in the area, either as participants or nonparticipants in training activity, are responsible for collision avoidance.

While not considered part of the U.S. airspace structure, the boundaries of National Park Service Areas, U.S. Fish and Wildlife Service areas, and U.S. Forest Wilderness and Primitive areas are noted on aeronautical charts. While aircraft operations are not restricted over these areas, aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface. **Exhibit 1B** depicts the boundaries of these areas near the airport.

Air Traffic Control

Wickenburg Municipal Airport does not have an airport traffic control tower and is in uncontrolled airspace. Therefore, no formal terminal air services are available. Aircraft operating in the vicinity of the airport are not required to file any type of flight plan or contact any air traffic control facility unless they are entering airspace where contact is mandatory. Air traffic advisories and certain weather information can be obtained using the common traffic advisory frequency (CTAF) channel 122.8 Mhz, also known as UNICOM. Enroute air traffic control services are provided by the Albuquerque Air Route Traffic Control Center (ARTCC), which controls aircraft in a large multi-state area.

The Prescott Flight Service Station (FSS) provides additional traffic service to Wickenburg Municipal Airport. This FSS provides pilots with weather information, airport advisory service, flight planning processing, and communication with other air traffic control facilities.

Regional Airports

A review of public-use airports near Wickenburg Municipal Airport, and those important to the airspace and control environment of the area, has been made to identify and distinguish the type of air service provided in the area surrounding the airport. These airports were previously identified on **Exhibit 1B**. Information pertaining to each airport was obtained from FAA *Form 5010-1, Airport Master Record*. Based aircraft and operational data was obtained from the MAG RASP for Pleasant Valley Airport and Buckeye Municipal Airport.

Forepaugh Airport is located approximately 10 nautical miles west of Wickenburg Municipal Airport and is owned and operated by the Town of Wickenburg. A 4,467-foot long by 80-foot wide dirt runway is available for use. There are no services available at Forepaugh Airport and no based aircraft. There are approximately 500 annual operations.

Pleasant Valley Airport is located approximately 29 nautical miles southeast of Wickenburg Municipal Airport. Pleasant Valley Airport is owned and operated by the Pleasant Valley Airport Association. Four runways are available for use at the airport. Three of the runways are 4,200 feet long and 100 feet wide, while the fourth runway is 2,400 feet long and 100 feet wide. One runway is partially paved, while the remaining runways have dirt surfaces. Home to two soaring organizations, over half of the aircraft based at the airport are gliders and ultralights. Flight instruction, fuel, banner towing, and tiedown services are available at the airport. The airport had approximately 52,000 operations in 2000 and 45 based aircraft.

Buckeye Municipal Airport is located approximately 33 nautical miles south of Wickenburg Municipal Airport. A single asphalt runway, 4,300 feet long, is available for use. The runway is equipped with medium intensity runway lights (MIRLs) and precision approach path indicators (PAPIs).

Buckeye Municipal Airport accommodated approximately 90,000 operations in 2000 and had 55 based aircraft. Services available at the airport include fuel, flight instruction, aircraft rental, and aircraft maintenance.

Glendale Municipal Airport is located approximately 34.2 nautical miles southeast of Wickenburg Municipal Airport. Glendale Municipal Airport provides a single runway 5,350 feet long. The runway is equipped with MIRL and PAPIs. The airport is served by an airport traffic control tower (ATCT), has 269 based aircraft, and accommodates approximately 130,000 operations annually.

Luke Air Force Base is located approximately 31.2 nautical miles south-southeast of Wickenburg Municipal Airport. Luke Air Force Base is restricted to military use exclusively. The Luke Air Force Base mission is primarily advanced pilot training. The Base provides parallel runways, the longest at 10,012 feet. Luke Air Force Base is the primary user of the MOA and restricted areas near Wickenburg Municipal Airport.

LANDSIDE FACILITIES

Landside facilities are the ground-based facilities that support aircraft and pilot/passenger handling functions. Landside facilities typically include: terminal buildings, aircraft storage facilities, aircraft parking aprons, and support facilities such as fuel storage and aircraft rescue and firefighting equipment storage. Landside facilities are identified on **Exhibit 1C**.

Terminal Building

The public-use terminal building for Wickenburg Municipal Airport is located south of Runway 5-23, near the Runway 5 end. This building was constructed in 1970 and encompasses approximately 1,200 square feet. Flying M Air, LLC operates out of the terminal building. The airport universal radio communications equipment (UNICOM), the pilot-controlled lighting receiver, and PAPI-4L controls are located within the terminal.

Vehicle parking for the terminal building is located directly east of the terminal building and provides approximately 15 spaces. This parking lot constitutes the only designated parking areas at the airport and serves the general public, terminal area employees, and general aviation pilots.

Aircraft Parking Apron

The apron area at Wickenburg Municipal Airport includes space for aircraft tiedown, aircraft movement, and taxilane access to hangar facilities. The apron area at the airport encompasses approximately 40,900 square yards and is separated into two distinct areas. The main apron occupies approximately 30,200 square yards adjacent to Taxiway A. The main apron is equipped with security lighting and approximately 35 aircraft tiedown positions. The second aircraft parking apron is located east of the main apron area. This apron area encompasses approximately 10,700 square yards and has 28 aircraft tiedown positions. A

compass rose, which provides a location for aircraft owners to calibrate their aircraft compass, is marked on this apron area. As mentioned previously, the compass rose also serves as a helicopter landing area.

Aircraft Hangar Facilities

There are nine separate hangar facilities located at the airport totaling approximately 51,200 square feet. Hangar space is comprised of conventional, clear span hangars, nested T-hangars, and shade hangars. Conventional hangars provide a large enclosed space, typically accommodating more than one aircraft. Shade hangars do not provide a complete structural enclosure, only a roof structure. T-hangars provide for separate, single-aircraft storage areas within a larger contiguous facility.

Conventional hangar space at the airport totals approximately 12,400 square feet. This includes two enclosed hangar facilities and one shade hangar occupied by Av-Art, located north of Runway 5-23, and a single hangar is located south of Runway 5-23. The hangar is located 50 feet from the Taxiway A centerline.

The remaining five hangars at the airport are T-hangars encompassing approximately 38,800 square feet. A total of 30 separate aircraft storage areas are provided in these buildings. The southernmost hangar provides four aircraft storage areas, while the four remaining hangars provide six storage areas each. These hangars, along with the conventional hangar, are owned by Bonanza Leasing. The hangars occupied by Av-Art are owned by Moreton, Incorporated.

Fuel Facilities

Fuel storage and dispensing facilities at the airport are owned by the Town of Wickenburg. Fuel storage is provided in a single 22,000-gallon storage tank, of which 10,000 gallons is for 100LL storage and 12,000 gallons is for Jet-A fuel storage. Fuel is dispensed through a fuel island located on the aircraft apron, just north of the terminal building. The Town of Wickenburg has contracted with Flying M Air, LLC to provide fuel services at the airport.

General Aviation Services and Airport Tenants

A variety of services are available to general aviation aircraft owners and operators at Wickenburg Municipal Airport. This includes aircraft maintenance, aircraft modifications, aircraft painting, and flight instruction.

Av-Art of Arizona provides aircraft painting services. Flying M Air, LLC provides fuel services for the Town of Wickenburg. Wickenburg Aero Service provides aircraft maintenance services. Lifenet provides air ambulance services from the airport.

Utilities

Currently, electricity, water, and sanitary sewer services are available at Wickenburg Municipal Airport. Electric

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Exhibit 1C
EXISTING LANDSIDE FACILITIES

service is provided by Arizona Public Service (APS). Water and sanitary sewer services are provided by the Town of Wickenburg. A water storage tank, located on Vulture Mine Road, supplies water to the airport through a 16-inch pipeline adjacent to U.S. Highway 60. An eight-inch pipe serves the terminal area facilities. The airport was connected to the Town of Wickenburg sanitary sewer system in 2000-2001. The airport is served by an eight-inch main sewer line. Separate four-inch lines serve the public terminal building and Lifenet facilities. Communication services are provided by Qwest.

Aircraft Rescue and Firefighting (ARFF)

There is no designated airport rescue and firefighting (ARFF) facility at Wickenburg Municipal Airport. The Town of Wickenburg operates a volunteer fire department system. The Town's fire department facility is located about four miles east of the airport entrance, on U.S. Highway 60.

Fencing

The airport perimeter is marked with a barbed-wire fencing. Four-strand barbed-wire generally extends along the eastern boundary, while five-strand barbed-wire extends along the western boundary. The vehicle access point to the apron area is equipped with a manual gate. The airport does not have a formal security plan.

COMMUNITY PROFILE

This section brings together individual studies and data to provide an understanding of the characteristics of the local area. Within this section is a historical summary of the local economy and demographics, a description of the ground access systems near Wickenburg Municipal Airport, competitive transportation modes, and local climate.

REGIONAL SETTING, ACCESS AND TRANSPORTATION

The Town of Wickenburg, Arizona is located approximately 60 miles northwest of the Phoenix metropolitan area, near the northern edge of Maricopa County. The Town lies in the foothills of the Bradshaw Mountains, along the banks of the Hassayampa River. This river flows 20 feet below the surface for most of its 100-mile course through the desert. Wickenburg is named after Henry Wickenburg, a German immigrant who, in 1863, joined a team of prospectors searching for gold in the hills surrounding Wickenburg. He discovered the Vulture Mine, which became the richest gold-producing mine in Arizona history. Ranching and tourism are the current economic mainstays of the area. The Town of Wickenburg was incorporated in 1909.

The Town of Wickenburg is located at the juncture of U.S. Highways 93 and 60, adjacent to the Burlington Northern/Santa Fe Railroad. U.S. Highway 89 is six miles north of town.

To the west, U.S. Highway 60 connects with Interstate Highway 10, providing access to the Los Angeles area. To the north, U.S. Highway 89 connects Wickenburg to Prescott and Williams, and Interstate Highway 40, a major east-west interstate route. U.S. Highway 93 also connects with Interstate Highway 40 to the northwest, joining Wickenburg with Kingman and Las Vegas, Nevada. **Exhibit 1D** depicts the airport in its local and regional setting.

The Wickenburg Municipal Airport is located at the western edge of the corporate Town limits, north of and adjacent to U.S. Highway 60. The airport sits at an elevation of 2,386 feet MSL. The airport is located next to the 15-acre Wickenburg Industrial Air Park, which was established in 1989. A number of light industrial users occupy the industrial park.

Burlington Northern/Santa Fe Railroad maintains an active freight line through Wickenburg. While there are no public transportation services in Wickenburg, private taxi services are available.

AREA LAND USE AND CONTROL

Existing Land Use

The majority of land adjacent to airport property to the west is currently undeveloped. The airport is bordered on the south by U.S. Highway 60. The 15-acre Wickenburg Industrial Air Park is located north of and adjacent to airport property and is occupied by a number of light industrial users. Sunset Park is located on the southeast side of the airport, north of U.S. 60, and consists of four baseball/softball fields, basketball/ tennis courts, and open picnic areas. The Town's closed landfill is located on the north side of the airport, east of the Wickenburg Industrial Air Park. The landfill was closed and capped in 1993 and is currently undeveloped. The Town of Wickenburg also owns a solid waste transfer station located adjacent to the landfill. All solid waste is transferred to the Northwest Regional Landfill by Maricopa County twice weekly.

Residential development is primarily located east of the airport, but not adjacent to airport property. The Saddle Ridge West subdivision is located east of Sunset Park and is platted for 66 single-family units. A mobile home park is located on the south side of U.S. Highway 60 approximately one and one-half miles east of the airport. There are three other single-family residential developments located approximately one mile northeast of the Runway 23 end, along Vulture Mine Road. These subdivisions are Rolling Hills, Desert Hills, and Sonoran. The Town of Wickenburg has been granted avigation easements for the Saddle Ridge West, Rolling Hills, Desert Hills, and Sonoran subdivisions.

Existing schools in the area include the Vulture Peak Middle School and Wickenburg High School, both located approximately three miles southeast of the airport. There is also one church located approximately two and one-half miles east of the airport. **Exhibit 1E** illustrates existing land uses in the vicinity of Wickenburg Municipal Airport.

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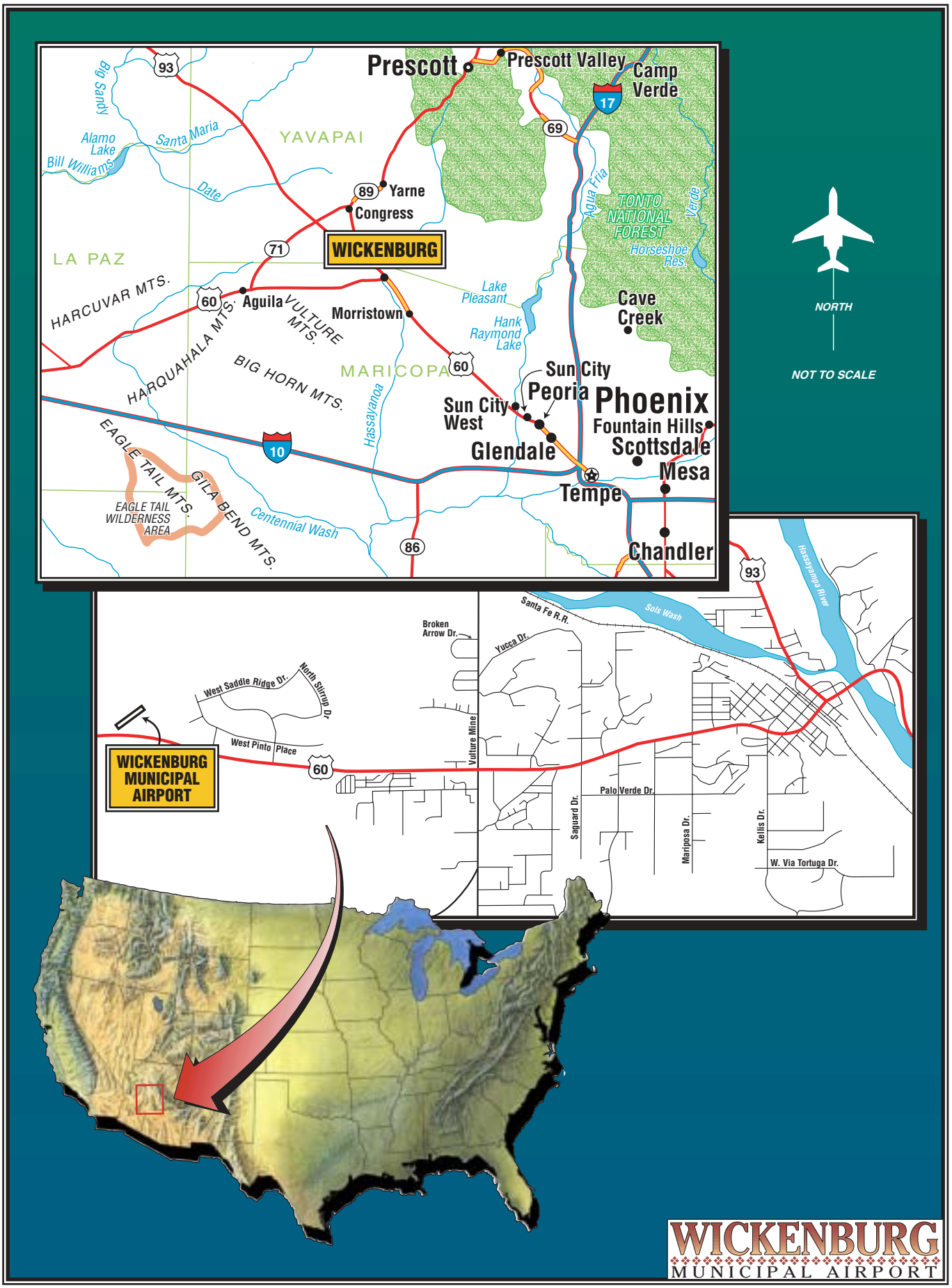

WICKENBURG MUNICIPAL AIRPORT

Exhibit 1D
VICINITY MAP

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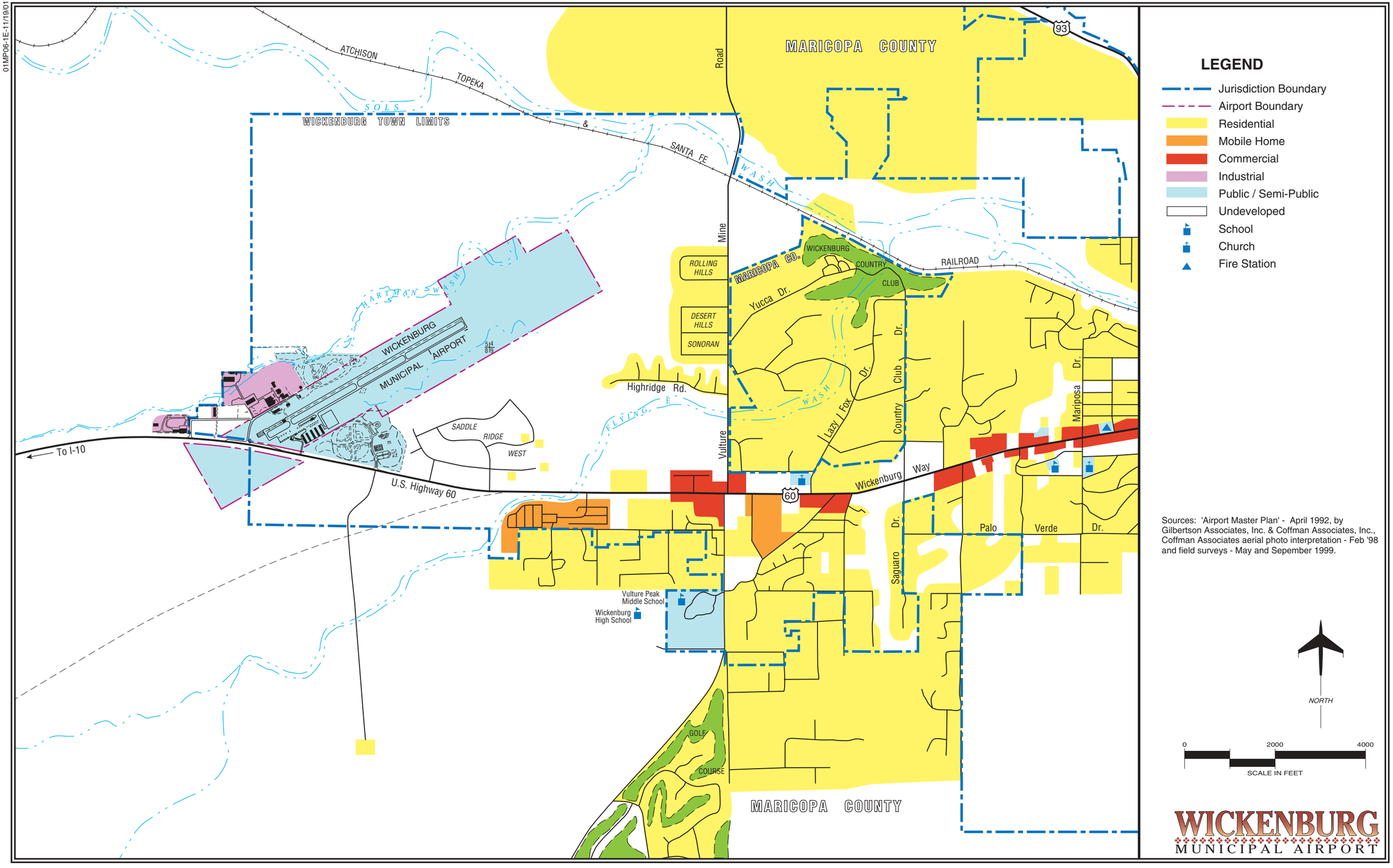

Exhibit 1E
EXISTING LAND USE

Land Use Plans

Planned land uses in the vicinity of the airport are illustrated on **Exhibit 1F**. According to the *Wickenburg General Plan*, the majority of the area around Wickenburg Municipal Airport is planned for light industrial uses. The area immediately adjacent to the airport is planned for general industrial uses. A portion of the Hartman Wash, north of the airport, and an area southeast of the airport are planned for parks and open space.

Maricopa County has designated the area west of the airport as a General Plan Development Area. This unincorporated area is considered to be annexed by a city or town in the future. This area has been designated for rural residential (RR) uses. Any subdivision or commercial and industrial developments that occur in the area designated as RR must be reviewed by both the Town of Wickenburg and Maricopa County to ensure compatibility in these areas.

Height and Hazard Zoning

Article 14-20, Section 14-20-11 of the Town of Wickenburg Land Use Code specifies building height limitations in the vicinity of the airport. Specifically, building heights are limited to 20 feet within 500 feet of the runway centerline, including the area along the extended runway centerline 1,000 feet from each runway end. Beyond a distance of 1,000 feet, building heights must remain below an upward sloping 40:1 approach surface. This approach surface rises one foot for each 40 feet the approach surface extends from the beginning of the surface, which originates 200 feet from the runway end.

Public Airport Disclosure Map

In accordance with Arizona Revised Statute 28-8486, the Town of Wickenburg has established a public airport disclosure map. This map is intended to assist property owners and prospective property owners with determining if their property is within a noise impact area or within an aircraft operational area (defined by the traffic pattern airspace). The public airport disclosure map for Wickenburg Municipal Airport is shown on **Exhibit 1G**.

THE AIRPORT'S SYSTEM ROLE

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

Regionally, Wickenburg Municipal Airport is included in the *Maricopa Association of Governments (MAG) Regional Aviation System Plan (RASP)*. The MAG RASP evaluates the region's capacity and ability to meet aviation demand, expanding the focus beyond the individual airports, as provided for in their respective master plans. Wickenburg Municipal Airport is one of 16 public-use airports included in the MAG RASP which MAG considers important to meeting the region's

demand for aviation services. The MAG RASP was being updated in 2001-2002.

At the state level, the airport is included in the *Arizona State Aviation System Plan (SASP)*. The purpose of the SASP is to ensure that the state has an adequate and efficient system of airports to serve its aviation needs well into the 21st century. The SASP defines the specific role of each airport in the state's aviation system and establishes funding needs. Through the state's *Continuous Aviation System Planning Process (CASPP)*, the SASP is updated every five years. The most recent update to the SASP is the draft *2000 Arizona State Aviation Needs Study (SANS)*. The purpose of the SANS is to provide policy guidelines that promote and maintain a safe aviation system in the state, assess the state's airports' capital improvement needs, and identify resources and strategies to implement the plan. Wickenburg Municipal Airport is one of 112 airports within the state's aviation system plan. The 2000 SANS included all public and private airports and heliports in Arizona which are open to the public, including American Indian and recreational airports.

At the national level, the airport is included in the *National Plan of Integrated Airport Systems (NPIAS)*. The NPIAS includes a total of 3,660 airports (both existing and proposed) which are important to national air transportation. Wickenburg Municipal Airport is one of 43 general aviation airports in Arizona included in the NPIAS. An airport must be included in the NPIAS to be eligible for federal funding.

PREVIOUS MASTER PLANS

Airport master plans were previously completed for Wickenburg Municipal Airport in 1985 and 1992. The 1985 master plan's principal recommendations included lengthening the partial parallel taxiway to a full length parallel taxiway (completed in 1989), installing runway edge lights and visual approach lighting, constructing a helipad, increasing runway width, constructing additional apron areas and hangars, land acquisition, and terminal renovations. The 1992 Wickenburg Airport Master Plan recommended the extension of the runway to 6,100 feet, widening the runway to 75 feet, the addition of new hangars east of the existing T-hangars, and apron area expansion.

CLIMATE

Weather conditions are important to the planning and development of an airport. Temperature is an important factor in determining runway length requirements, while wind direction and speed are used to determine optimum runway orientation. The need for navigational aids and lighting is determined by the percentage of time that visibility is impaired due to cloud coverage or other conditions.

The regional climate is characteristic of the high desert region of central Arizona. Wickenburg winters are warm and pleasant, and the summers are hot and dry. July is the hottest month with an average daily maximum temperature of 104.9° Fahrenheit (F), and January is the coldest month with

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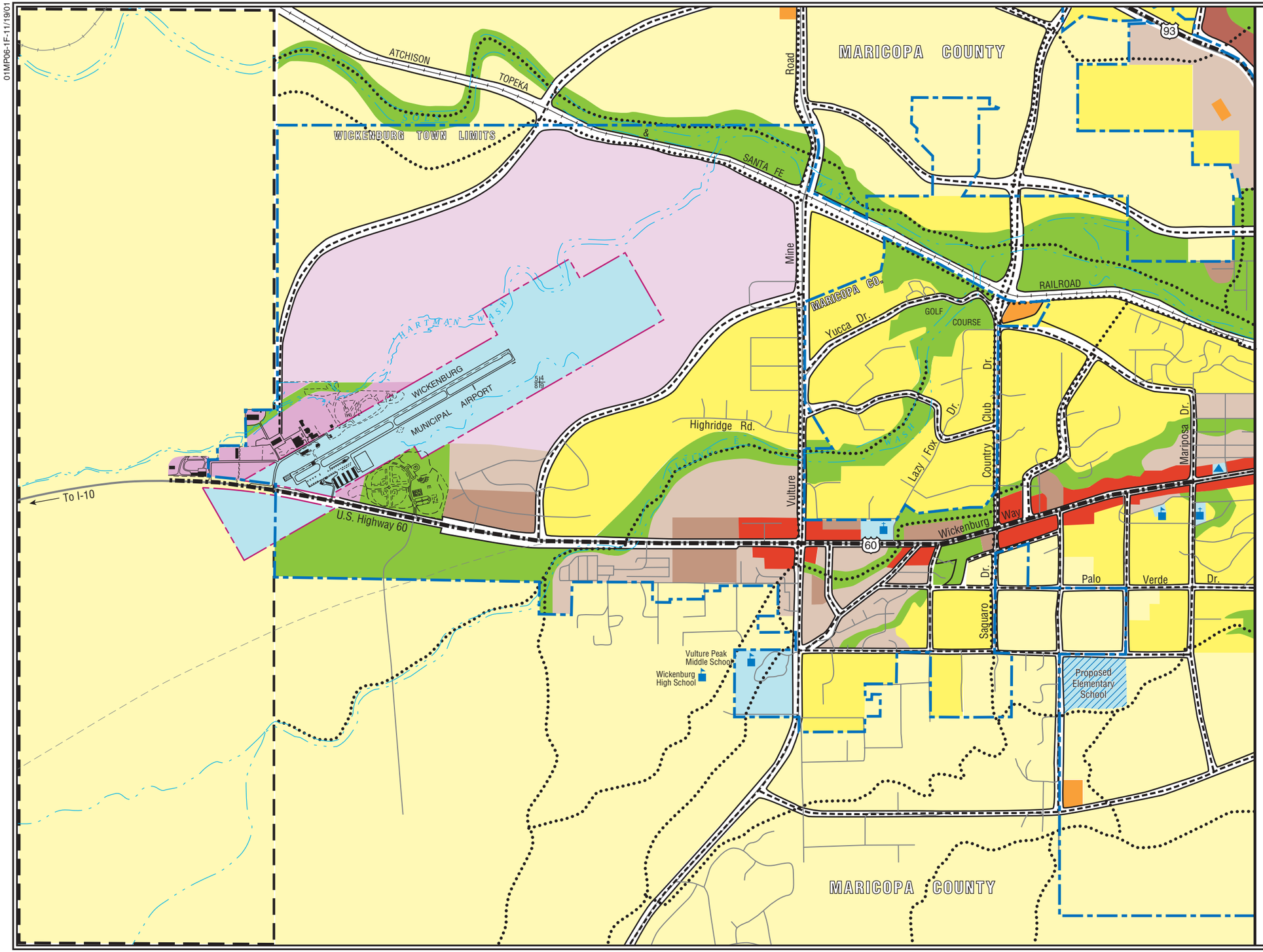

LEGEND

- Jurisdiction Boundary
- Airport Boundary
- Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Highway Oriented/Mixed Use
- Major Street Commercial
- Neighborhood Commercial
- Light Industrial
- General Industrial
- Public / Semi-Public
- Park/Open Space
- School
- Church
- Fire Station
- Principal Arterial
- Major Arterial
- Major Collector
- Equestrian / Pedestrian Trail System
- Maricopa County has designated this area a General Plan Development Area. This area is an unincorporated area that is likely to be annexed by a city or town in the future.

Source: 'Wickenburg General Plan' - 1987
by BRW, Inc. and Sunregion Associates of Phoenix

NORTH

0 2000 4000

SCALE IN FEET

WICKENBURG
MUNICIPAL AIRPORT

Exhibit 1F
GENERALIZED FUTURE LAND USE

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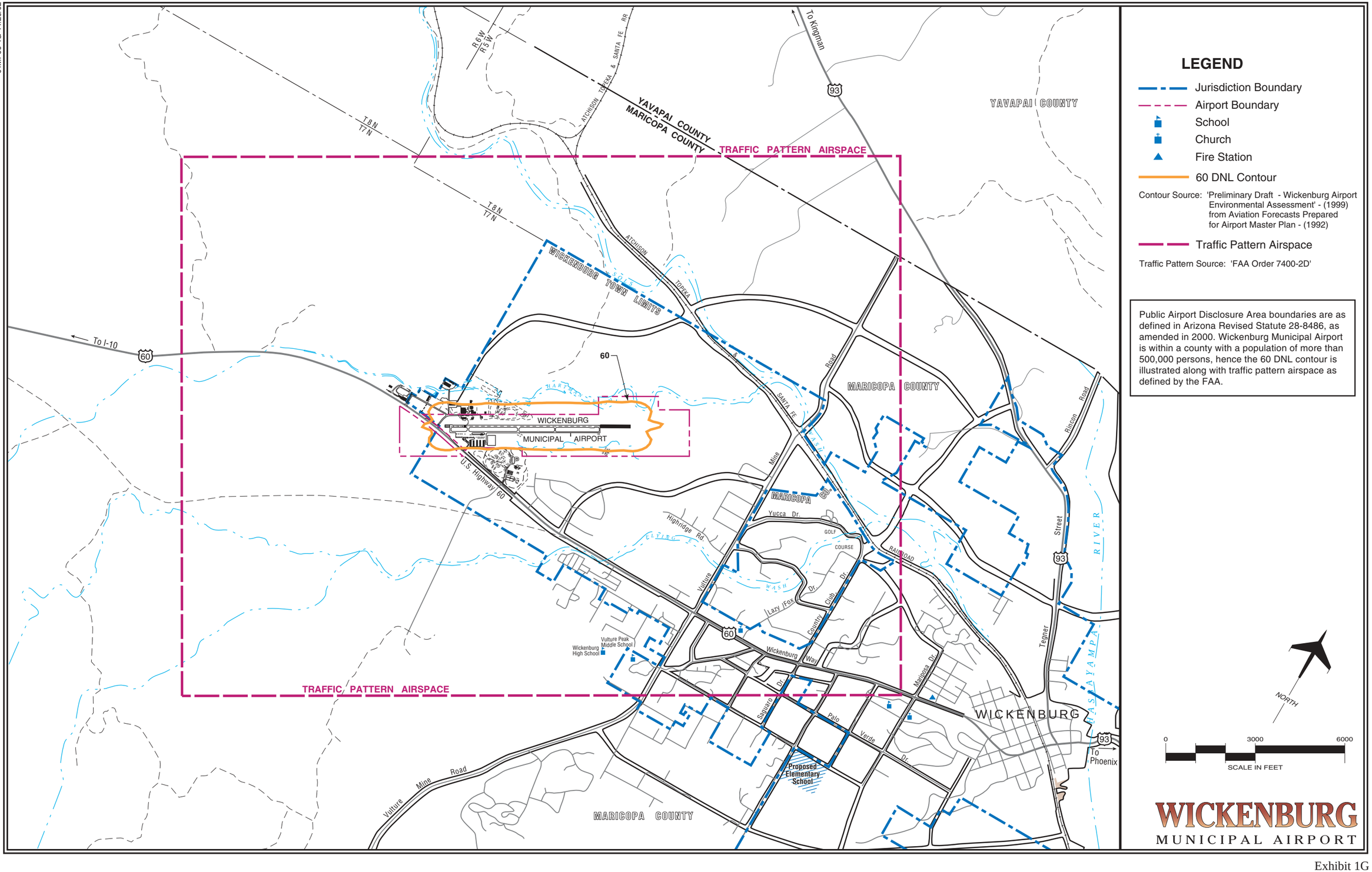

LEGEND

- Jurisdiction Boundary
- Airport Boundary
- School
- Church
- Fire Station
- 60 DNL Contour

Contour Source: 'Preliminary Draft - Wickenburg Airport Environmental Assessment' - (1999) from Aviation Forecasts Prepared for Airport Master Plan - (1992)

- Traffic Pattern Airspace

Traffic Pattern Source: 'FAA Order 7400-2D'

Public Airport Disclosure Area boundaries are as defined in Arizona Revised Statute 28-8486, as amended in 2000. Wickenburg Municipal Airport is within a county with a population of more than 500,000 persons, hence the 60 DNL contour is illustrated along with traffic pattern airspace as defined by the FAA.

WICKENBURG
MUNICIPAL AIRPORT

Exhibit 1G
EXISTING PUBLIC AIRPORT DISCLOSURE MAP

an average daily minimum temperature of 33.0° F. The average precipitation in Wickenburg is approximately 10.77 inches per year. Average temperature and precipitation totals by month are summarized in **Table 1D**.

SOCIOECONOMIC CHARACTERISTICS

A variety of historical and forecast socioeconomic data, related to the regional area, was collected for use in various elements of this master plan. This information assists in the determination of aviation service level requirements at the airport. Aviation activity is influenced by 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. Historical population, employment, and economic data was obtained for use in this study. This information was collected from the Maricopa Association of Governments (MAG) and the Arizona Department of Economic Security (ADES).

TABLE 1D
Weather Summary
Wickenburg, Arizona

Month	Daily Minimum (°F)	Daily Maximum (°F)	Average Total Precipitation (Inches)
January	33.0	63.3	1.00
February	33.0	67.2	0.88
March	37.1	71.5	1.09
April	43.3	80.8	0.50
May	49.9	90.1	0.15
June	57.9	99.0	0.17
July	69.7	104.9	1.21
August	68.3	100.6	2.24
September	59.3	96.4	1.04
October	47.5	86.0	0.58
November	36.5	73.0	0.75
December	30.8	65.3	1.16
Yearly Average	**46.9**	**83.1**	**10.77**

Source: Arizona Department of Commerce.

Population

Historical population estimates for the Town of Wickenburg, Maricopa County, and the State of Arizona are summarized in **Table 1E**. Historical population for Wickenburg includes only the incorporated area. Since 1980, the Town of Wickenburg has added approximately 1,500 new residents and has grown at an average annual rate of 1.7 percent. In 2000, the population of

the Town of Wickenburg was 5,082. More than half of the state's population resides in Maricopa County, which includes the cities of Phoenix, Mesa, Glendale, Scottsdale, Tempe, Chandler, Peoria, and Gilbert. Since 1980, Maricopa County has more than doubled its population, adding over 1.5 million new residents, bringing the total population in Maricopa County to 3,072,149 in 2000. Maricopa County's population accounts for nearly 60 percent of the State of Arizona's total population. Since 1980, the State of Arizona has added over 2.4 million new residents, for a total population of 5,130,632 in 2000. Maricopa County and the State of Arizona had similar growth rates, at 3.4 percent and 3.1 percent, respectively.

TABLE 1E
Historical Population

	1980	1990	2000	Average Annual Growth Rate
Town of Wickenburg	3,535	4,515	5,082	1.7%
Maricopa County	1,509,175	2,122,101	3,072,149	3.4%
State of Arizona	2,716,546	3,665,339	5,130,632	3.1%

EMPLOYMENT

Analysis of a community's employment base can be valuable in determining the overall well-being of that community. In most cases, the community's make-up and health is significantly determined by the availability of jobs, variety of employment opportunities, and types of wages provided by local employers. The top 10 employers in the Town of Wickenburg, including the number of employees at each respective business, are shown in **Table 1F**.

With 405 employees, Remuda Ranch is the number one employer in Wickenburg. Remuda Ranch, a medical treatment center, has increased its total employment by 62 percent over the past three years. Another treatment facility, The Meadows, employs 195 people and is the third largest employer in the Town. The Wickenburg Unified School District and the Rancho de los Caballeros, a guest ranch, have 200 and 155 employees, respectively.

TABLE 1F
Major Employers in 2001
Town of Wickenburg

Company Name	Description	Employees
Remuda Ranch	Treatment Facility	405
Wickenburg Unified School District	Education	200
The Meadows	Treatment Facility	195
Rancho de los Caballeros	Guest Ranch	155
Wickenburg Regional Medical	Medical	150
Safeway	Grocery Store	103
Rancho Grande/Homestead	Motel/Restaurant	93
Benner-Nawman	Manufacturing	74
Town of Wickenburg	Government	67
Bashas'	Grocery Store	60

Source: Town of Wickenburg.

Table 1G summarizes labor force data for the Town of Wickenburg. As shown in the table, the civilian labor force grew by 683 between 1990 and 1999. Unemployment is low, averaging 3.6 percent in 1999.

TABLE 1G
Labor Force Data
Town of Wickenburg

	1990	1998	1999
Civilian Labor Force	1,976	2,544	2,659
Unemployed	104	82	95
Unemployment Rate	5.3%	3.2%	3.6%

Table 1H summarizes local economic growth indicators compiled by the Arizona Department of Commerce for the Town of Wickenburg. As shown in the table, new construction has remained strong as new building permits have remained above 50 annually since 1990. Taxable sales and net assessed valuation have grown. The growth in taxable sales is characteristic of both growth in value and volume.

TABLE 1H
Growth Indicators
Town of Wickenburg

Growth Indicators	1990	1998	1999
New Building Permits	56	52	54
Taxable Sales	$64,755,820	$93,967,900	$100,713,000
Net Assessed Valuation	$18,654,547	$26,089,596	$27,132,286

SUMMARY

The information discussed in this inventory chapter provides a foundation upon which the remaining elements of the planning process will be constructed. This information will provide guidance, along with additional analysis and data collection, for the development of forecasts of aviation demand and facility requirements.

DOCUMENT SOURCES

Information for the inventory chapter was derived from a variety of sources. The following listing reflects a partial compilation of these sources. The listing does not include the data provided by Wickenburg Municipal Airport or drawings which were referenced for information. An on-site inventory and interviews with staff and tenants contributed to the development of the inventory effort.

Airport / Facility Directory, Southwest U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, September 6, 2001 Edition.

Maricopa Association of Governments Regional Aviation System Plan (MAG RASP), September 2001 Update.

National Plan of Integrated Airport System (NPIAS), U.S. Department of Transportation, Federal Aviation Administration, 1998-2002.

Phoenix Sectional Aeronautical Chart, U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, 65th Edition, May 17, 2001.

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

Arizona Department of Economic Security:
http://www.de.state.az.us/

FAA 5010 Data, Area Airports
http://www.airnav.com

Maricopa Association of Governments
http://www.mag.maricopa.gov/

Wickenburg Chamber of Commerce
http://www.wickenburgchamber.com/

WICKENBURG
MUNICIPAL AIRPORT

Chapter Two
AVIATION DEMAND FORECASTS

Aviation Demand Forecasts

Facility planning must begin with a definition of the demand that may reasonably be expected to occur at the facility over a specific period of time. For Wickenburg Municipal Airport, this involves forecasts of aviation activity through the year 2025. In this master plan, forecasts of based aircraft, based aircraft fleet mix, and annual aircraft operations will serve as the basis for facility planning.

It is virtually impossible to predict with any certainty year-to-year fluctuations of activity when looking 20 years into the future. Because aviation activity can be affected by many influences at the local, regional, and national levels, it is important to remember that forecasts are to serve only as guidelines and planning must remain flexible enough to respond to unforseen facility needs.

The following forecast analysis examines recent developments, historical information, and current aviation trends to provide an updated set of aviation demand projections for Wickenburg Municipal Airport. The intent is to permit the Town of Wickenburg to make planning adjustments necessary to ensure that the facility meets projected demands in an efficient and cost-effective manner.

The forecasts for Wickenburg Municipal Airport were prepared subsequent to the events of September 11, 2001, when four commercial airliners were hijacked. Immediately following the events of September 11th, the national airspace system was closed and all commercial and general aviation flights were grounded. Following the resumption of flights, commercial airline traffic was down, which led to schedule reductions

and layoffs by many of the airlines. The federal government provided billions of dollars in financial assistance to the commercial airlines, along with loan guarantees. No similar assistance was provided for the general aviation industry.

While the commercial airline industry experienced sharp decreases in passenger traffic, charter operators and fractional ownership companies were experiencing a significant increase. Media reports indicated that some charter companies experienced a 50 percent increase in business, and fractional ownership companies gained new ownership in fractional aircraft.

There is no comparative period in recent history to draw conclusions or trends to gauge the full effects of these events. In 1991, the commercial airlines experienced a decline in passengers and profits due to the Persian Gulf War and simultaneous economic recession. However, general aviation was already in an extended period of decline due to product liability concerns and was not specifically affected by the war or economic recession. The industry did not begin to recover until 1994 with the passage of the General Aviation Revitalization Act. Commercial airline traffic experienced a decline only in 1991, growing each subsequent year through 2000.

The total impacts the events of September 11, 2001 will have on commercial and general aviation can only be determined over time. Commercial airline recovery will be a factor of air traveler confidence in new security measures and the recovery of the U.S. economy, which was slowing in 2001. General aviation recovery will be dependent upon economic recovery, fuel prices, and the type and extent of any new regulatory controls over flight training and operations.

The long term aviation trends used in these forecasts for Wickenburg Municipal Airport are expected to remain relevant and applicable to intermediate and long term growth. While there may be a short-lived decline in commercial airline activity, a decline over many years is not expected.

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, instead of points in time. This allows the airport to address capital improvement needs according to actual demand occurring at the airport. Therefore, should based aircraft growth 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.

GENERAL AVIATION TRENDS

Each year the Federal Aviation Administration (FAA) publishes its national aviation forecast. Included in this publication are forecasts for air carriers, regional air carriers, general

aviation, and military activity. The forecasts are prepared to meet budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, the aviation industry, and the general public. The current edition when this chapter was written was FAA *Aviation Forecasts - Fiscal Years 2001-2012*. These 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. Long term FAA forecasts through the year 2025 are provided in the FAA *Long Range Aerospace Forecasts* document.

By most statistical measures, general aviation recorded its sixth consecutive year of growth in 2000. Following more than a decade of decline, the general aviation industry was revitalized with the passage of the General Aviation Revitalization Act in 1994 (federal legislation which limits the liability on general aviation aircraft to 18 years from the date of manufacture). The positive effects the Act has had on the general aviation industry since its passage are reflected in general aviation activity statistics. General aviation manufacturers' shipments were up for a seventh consecutive year in 2000, growing from 928 in 1994 to 2,816 in 2000. Piston-engine aircraft production more than tripled between 1994 and 2000, growing from 499 to 1,913. The production of turbine-powered aircraft was in its eighth consecutive year of growth in 2000, up from 348 in 1992 to 903 in 2000.

Based on the results of the *1999 General Aviation and Air Taxi Activity and Avionics Survey*, the size of the active aircraft fleet and hours flown increased in 1999 for the fifth consecutive year. While activity at FAA air traffic facilities declined 0.5 percent in 2000, most likely due to higher fuel prices, instrument operations were up for the fourth consecutive year, signifying the continued growth in the use of sophisticated general aviation activity for business purposes. The number of student pilots grew for the third consecutive year.

Manufacturer and industry programs and initiatives also continue to revitalize the general aviation industry. Notable initiatives include the "No Plane, No Gain" campaign sponsored by the General Aviation Manufacturers Association (GAMA) and the National Business Aviation Association (NBAA), "Project Pilot" sponsored by the Aircraft Owners and Pilots Association (AOPA), the "Learn to Fly" campaign sponsored by the National Air Transportation Association (NATA), and "Be a Pilot" sponsored by numerous aviation companies and organizations. The "No Plane, No Gain" campaign is a program promoting the cost-effectiveness of using general aviation aircraft for business and corporate uses. "Project Pilot," "Learn to Fly," and "Be a Pilot" are all programs promoting the training of new pilots.

The general aviation industry is also launching new programs to make aircraft ownership easier and more affordable. The New Piper Aircraft Company has created Piper Financial

Services (PFS) to offer competitive interest rates and/or leasing of Piper aircraft. The Experimental Aircraft Association (EAA) offers financing for kit-built airplanes through a private lending institution.

A particularly important component of the general aviation industry is business and corporate use of general aviation aircraft, particularly turbine-powered aircraft. Business and corporate uses represent 23 percent of all general aviation activity. For 1999, those categories grew 6.9 percent over 1998. Growth in these categories is driven by the continued expansion of fractional ownership programs and corporate flight departments. Fractional ownership programs allow businesses or individuals to purchase a fractional interest in an aircraft, then pay for only the time they use the aircraft. These programs offer greater flexibility to users who otherwise would not generate sufficient activity to support aircraft ownership. In 2000, there were nearly 2,000 entities involved in fractional ownership of over 530 aircraft. In 1993, only two dozen aircraft were involved in fractional ownership. The NBAA estimates the corporate aircraft fleet has grown at 5.4 percent annually and the number of flight departments has grown at 4.5 percent annually since 1993. This signifies that existing corporate flight departments are expanding and new ones are being added. The success of fractional ownership programs is believed to have driven the expansion of corporate flight departments as businesses which have become reliant on the access and time savings of corporate flying find it more cost-effective to establish a flight department rather than purchase a larger share in a fractional ownership program.

Exhibit 2A depicts the FAA forecast for active general aviation aircraft in the United States through 2025. The FAA forecasts general aviation aircraft to increase at an average annual rate of 0.9 percent through 2025, with turbine-powered aircraft projected to grow at 3.0 percent annually to 2013 and 2.2 percent annually from 2013 to 2025. General aviation hours flown are forecast to increase at 1.2 percent annually through 2025.

AIRPORT SERVICE AREA

The airport service area is an area where there is a potential market for airport services. Access to general aviation airports, commercial air service, and transportation networks are important determinates in the size of the airport service area. The proximity of other airports and the facilities and services they provide to general aviation are important considerations as well. It should be noted that aviation demand does not necessarily conform to political or geographical boundaries.

Local airport service areas are generally closely defined as the result of nearby airports providing similar aircraft tiedown, fuel, and hangar services. However, this is not the case for Wickenburg Municipal Airport. Wickenburg Municipal Airport enjoys a large service area and is generally unencumbered by competing airports. As detailed in Chapter One, there are

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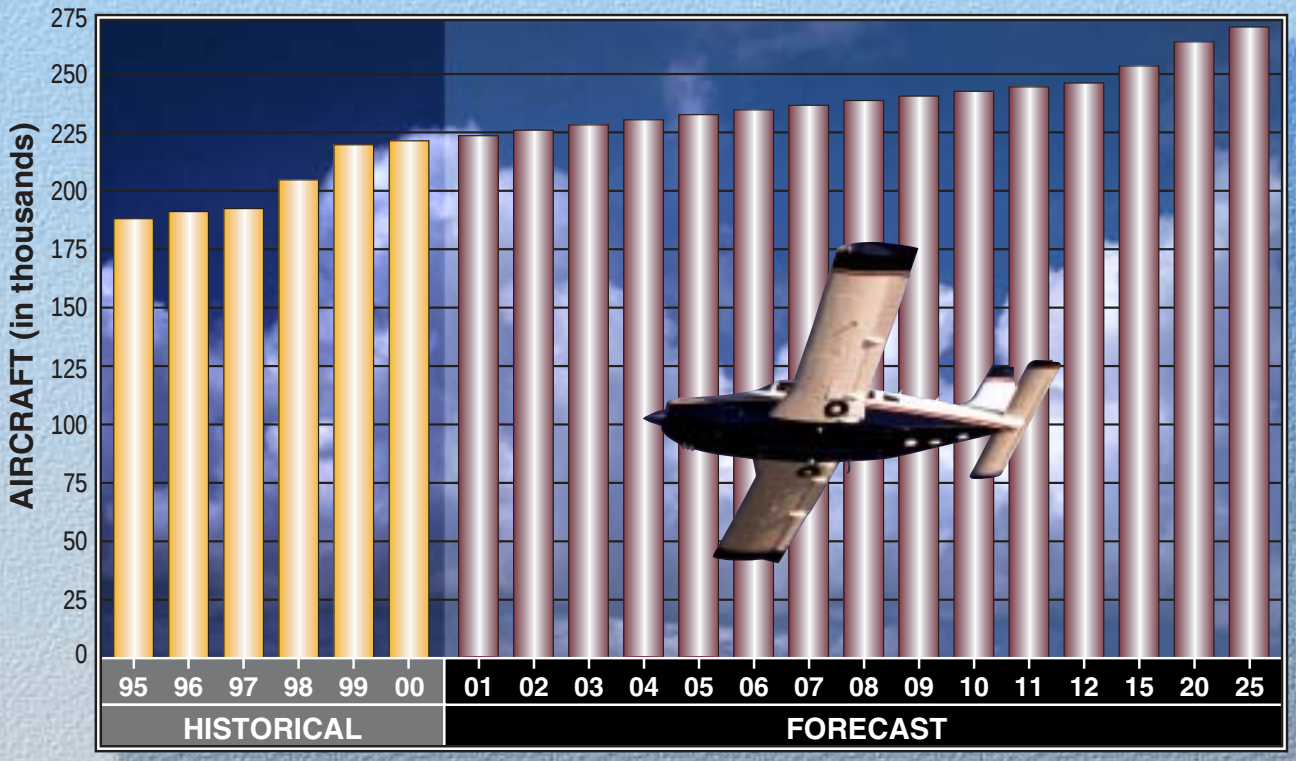
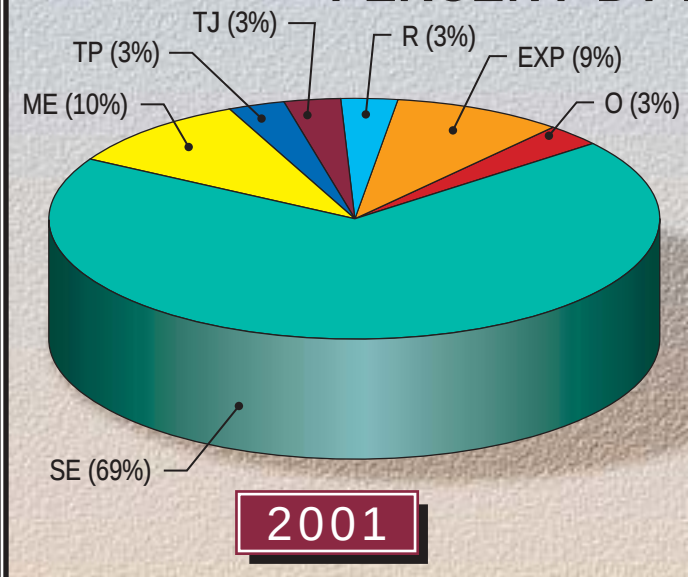
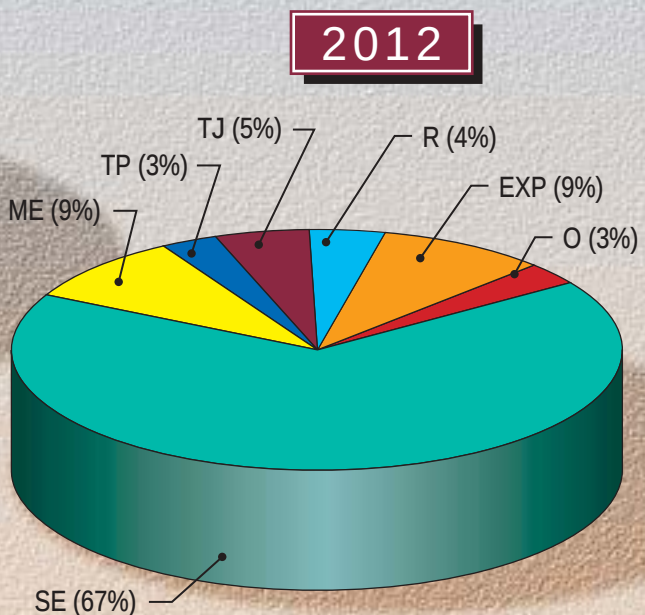
ACTIVE GENERAL AVIATION AIRCRAFT



Sources: FAA Aerospace Forecasts, FY 2001-2012
FAA Long-Range Aerospace Forecasts

PERCENT BY AIRCRAFT TYPE





SE	Single-Engine Piston	R	Rotorcraft
ME	Multi-Engine Piston	EXP	Experimental
TP	Turboprop	O	Other
TJ	Turbojet		

WICKENBURG MUNICIPAL AIRPORT

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

only three public-use airports within approximately 30 nautical miles (nm) of Wickenburg Municipal Airport. Of the three airports (Forepaugh Airport, Pleasant Valley Airport, and Buckeye Airport), only Buckeye Municipal Airport provides a paved runway. At 4,300 feet, the runway at Buckeye Municipal Airport is less capable of serving business jets than Wickenburg Municipal Airport. Forepaugh Airport provides no services. Services at Pleasant Valley Airport are limited and focused on soaring activities. Outside these airports, the closest public-use airports are Glendale Municipal Airport, Phoenix Goodyear Airport, and Phoenix Deer Valley Airport, located nearly 40 nautical miles southwest in the Phoenix metropolitan area.

A review of based aircraft records indicates that a majority of the based aircraft are owned by residents of Wickenburg. One based aircraft owner was from Salome (52 miles west) and one was from Congress (16 miles north).

Considering these factors, a generalized service area for Wickenburg Municipal Airport has been determined. The service area is known to extend west to Salome and north to Congress. The extent of the service area to the southwest is limited by public-use airports in the Phoenix metropolitan area, but for practical purposes, it most likely extends to Wittman along U.S. Highway 60. In general terms, the service area for Wickenburg Municipal Airport extends to those communities along U.S. Highways 60, 93, 89, and 71. This includes Wickenburg, Morristown, and Wittman to the southeast, Aguilla, Wenden, Salome, and Vicksburg to the southwest, and Congress, Peeples Valley, and Kirkland Junction to the north.

As in any business, the more attractive the facility in services and capabilities, the more competitive it will be in the market place. If the airport's attractiveness increases in relation to nearby airports, so will the size of the service area. For Wickenburg Municipal Airport, this can include the availability and cost of hangar facilities. Affordable hangar facilities could draw aircraft from the west Phoenix metropolitan area, where the demand for hangar facilities is greater than the number of hangars available.

POPULATION PROJECTIONS

Population growth provides an indication of the potential for sustaining growth in aviation activity over the planning period. **Table 2A** summarizes historical and forecast population numbers for the Wickenburg Municipal Planning Area (MPA), Maricopa County, and the State of Arizona.

Projections for local population growth are only provided for the Wickenburg MPA. The Wickenburg MPA includes areas outside the existing Town limits which are expected to become part of the incorporated limits. The Maricopa Association of Governments (MAG) estimates the Wickenburg MPA population at 8,470 for year 2000. The Town of Wickenburg's population in 2000 was estimated at 5,082, or 60 percent of the total MPA population. MAG has not determined historical

Wickenburg MPA populations. As shown in the table, population for the MPA is projected to reach 12,238 by 2025, which represents an annual growth rate of 1.8 percent. The population for Maricopa County is expected to grow 2.3 percent annually and reach 4,948,423 by the year 2025. This is similar to the projected growth rate for the entire State of Arizona, which is projected to grow 2.1 percent, resulting in a total population of 7,993,039 by the year 2025.

TABLE 2A
Forecast Population

Year	Wickenburg MPA	Maricopa County	State of Arizona
2000	8,470	3,072,149	5,130,632
2005	8,942	3,329,561	5,553,849
2010	9,491	3,709,566	6,145,108
2015	10,004	4,101,784	6,744,754
2025	12,238	4,948,423	7,993,039
Average Annual Growth Rate (2000-2025)	1.8%	2.3%	2.1%

Sources: Arizona Department of Economic Security, Maricopa Association of Governments.

COMPARATIVE FORECASTS

Forecasts of future aviation activity at Wickenburg Municipal Airport have been prepared independently by the FAA, Arizona Department of Transportation - Aeronautics Division (ADOT), and MAG. The forecasts prepared by ADOT are included in the draft 2000 State Aviation Needs Study (SANS). The SANS projected only aircraft operations, which are summarized in **Table 2B**. With 22,300 estimated operations in 2000 at Wickenburg Municipal Airport, it is evident that the SANS has understated operational levels for the airport.

The MAG forecasts were prepared for the ongoing update to the *Regional Aviation System Plan* (*MAG RASP*). The MAG RASP forecasts were included in the draft Aviation Demand Forecasts, Working Paper No. 2, prepared in September 2001. The MAG RASP projections for Wickenburg Municipal Airport are included in **Table 2C**. Forecasts for the entire MAG region (which includes all public-use airports in Maricopa County) are also summarized. As shown in the table, growth in based aircraft for Wickenburg Municipal Airport is expected to outpace growth in the region.

TABLE 2B
2000 ADOT State Aviation Needs Study (SANS)
Projected Operations for Wickenburg Municipal Airport

	2005	2010	2015	2020
Annual Operations	9,226	10,044	10,934	11,903

Source: 2000 SANS.

TABLE 2C
Maricopa Association of Governments (MAG)
MAG RASP Forecasts for Wickenburg Municipal Airport and the MAG Region

	2005	2010	2015	2020	2025	Avg. Annual Growth Rate (2000-2025)
Wickenburg Municipal Airport						
Based Aircraft	41	45	50	55	60	2.7%
Annual Operations	25,950	29,000	32,040	35,090	38,140	2.7%
MAG Region						
Based Aircraft	4,615	5,283	5,950	6,618	7,288	2.3%
Annual Operations	2,194,210	2,582,170	2,970,130	3,358,090	3,746,060	2.8%

Source: MAG RASP.

For Wickenburg Municipal Airport, the FAA provides forecasts within their *Terminal Area Forecast (TAF)* document for based aircraft and annual operations. These are updated annually by the FAA based upon current trends and typically updated when new planning forecasts are prepared for master plan studies.

The current FAA TAF forecasts for Wickenburg Municipal Airport are summarized in **Table 2D**. While these projections are developed for each year through 2015, only the five-year incremental projection is included in the table. The TAF was prepared with a base year of 1999. The TAF projects static operational and based aircraft levels for the airport through 2015. Based aircraft and operational levels are underestimated in these forecasts. In 2000, there were 43 based aircraft and approximately 22,300 operations at Wickenburg Municipal Airport.

FORECASTING APPROACH

The development of aviation forecasts proceeds through both analytical and judgmental processes. A series of mathematical relationships is tested to establish statistical logic and rationale for projected growth. However, the judgement of the forecast analyst, based upon professional experience, know-

ledge of the aviation industry, and assessment of the local situation, is important in the final determination of the preferred forecast.

TABLE 2D
FAA Terminal Area Forecast

	2000	2005	2010	2015
Based Aircraft	30	30	30	30
Annual Operations	18,000	18,000	18,000	18,000

Source: 2000-2015 FAA Terminal Area Forecasts.

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

Trend line/time-series projections are probably the simplest and most familiar of the forecasting techniques. By fitting growth curves to historical 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 statistical relationships 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" value (coefficient determination) is greater than 0.95, it indicates good predictive reliability. A value less than 0.95 may be used, but with the understanding that the predictive reliability is lower.

Market share analysis involves a historical review of the 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 10-year preview, 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.

AVIATION ACTIVITY FORECASTS

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

- Based Aircraft
- Based Aircraft Fleet Mix
- Annual Operations
- Peak Activity

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

BASED AIRCRAFT FORECASTS

The number of based aircraft is the most basic indicator of general aviation demand at an airport. By first developing a forecast of based aircraft, the growth of the other factors can be projected. **Table 2E** summarizes based aircraft at Wickenburg Municipal Airport for the past 10 years. As shown in the table, based aircraft totals have varied annually. Based aircraft increased each year from 1991 to 1994. After falling in 1995 and 1997, based aircraft increased again to a 10-year high of 43 in 1999. In the past 10 years, 16 new based aircraft have been added at the airport. This equates to an average growth rate of 5.3 percent.

The first step in developing forecasts of based aircraft involved the use of time-series and regression analyses. The time-series analysis used historical based aircraft totals since 1991. Due to the downturn in based aircraft in 1995 and 1997, the time-series analysis yielded a correlation coefficient of only 0.69. Using historical population totals for the Town of Wickenburg since 1991, a regression analysis was performed. Similar to the time-series analysis, the regression analysis yielded a correlation coefficient of 0.43. Neither of these forecasts were carried forward in the study as they are not considered reliable enough for forecasting purposes due to their low correlation coefficients. Therefore, forecasts of based aircraft at Wickenburg Municipal Airport have been prepared by examining the airport's share of U.S. active aircraft, the airport's share of based aircraft within the MAG airport system, and as a ratio of the population within the Wickenburg MPA.

Table 2E compares historical based aircraft at Wickenburg Municipal Airport and historical U.S. active aircraft. As shown in the table, the percentage of U.S. active general aviation aircraft based at Wickenburg Municipal Airport has increased from

0.014 percent in 1991 to 0.019 percent in 2000.

To gain an understanding of future based aircraft at Wickenburg Municipal Airport considering growth projected nationally, two market share forecasts (a constant share of U.S. active aircraft forecast and an increasing share U.S. active aircraft forecast) have been prepared. The constant share forecast assumes that based aircraft will continue to grow at the same rate as U.S. active aircraft and applies the 2000 Wickenburg Municipal Airport market share of 0.019 percent to projected U.S. active aircraft prepared by the FAA. As shown in the table, this forecast yields 52 based aircraft in 2025.

TABLE 2E
Share of U.S. Active Aircraft

Year	U.S. Active Aircraft	Wickenburg Municipal Airport Based Aircraft	Percentage of U.S. Active Aircraft Based at Wickenburg
HISTORICAL			
1991	198,000	27	0.014%
1992	198,700	28	0.014%
1993	177,119	31	0.018%
1994	172,936	32	0.019%
1995	188,089	24	0.013%
1996	191,129	33	0.017%
1997	192,414	32	0.017%
1998	204,710	38	0.019%
1999	219,464	43	0.020%
2000	221,213	43	0.019%
FORECASTS			
Constant Share			
2005	232,500	44	0.019%
2010	242,300	46	0.019%
2015	252,000	48	0.019%
2025	272,800	52	0.019%
Increasing Share			
2005	232,500	51	0.022%
2010	242,300	60	0.025%
2015	252,000	71	0.028%
2025	272,800	85	0.031%

Source for historical data: Airport records, MAG.

An increasing share forecast of U.S. active aircraft was also considered. This is consistent with the historical trend at Wickenburg Municipal Airport which has increased it's market share 0.006 percent since 1991. Applying an increasing share to forecast U.S. active

aircraft yields 85 based aircraft at Wickenburg Municipal Airport in 2025.

A second forecasting technique examined Wickenburg Municipal Airport's share of based aircraft in the MAG region. The MAG region consists of 16 public-use airports within Maricopa County. As shown in **Table 2F**, based aircraft in the MAG region have grown from approximately 2,852 aircraft in 1991 to 4,133 in 2000. This is an annual average growth rate of 4.2 percent. The percent of aircraft in the MAG region based at Wickenburg Municipal Airport has varied annually since 1991, increasing from 0.95 percent in 1991 to 1.11 percent in 1994. After decreasing to 0.75 percent in 1995, this share increased to 1.14 percent in 1999.

TABLE 2F
Share of MAG Region Based Aircraft

Year	Based Aircraft in MAG Region	Wickenburg Municipal Airport Based Aircraft	Percentage of MAG Region Aircraft Based at Wickenburg
HISTORICAL			
1991	2,852	27	0.95%
1992	2,837	28	0.99%
1993	2,825	31	1.10%
1994	2,891	32	1.11%
1995	3,185	24	0.75%
1996	3,350	33	0.99%
1997	3,489	32	0.92%
1998	3,632	38	1.05%
1999	3,770	43	1.14%
2000	4,133	43	1.04%
FORECASTS			
Constant Share			
2005	4,615	46	1.00%
2010	5,283	53	1.00%
2015	5,950	60	1.00%
2025	7,288	73	1.00%
Increasing Share			
2005	4,615	46	1.00%
2010	5,283	55	1.05%
2015	5,950	65	1.10%
2025	7,288	84	1.15%

Source for historical data: Airport records, MAG

Two market share forecasts have been prepared for Wickenburg Municipal Airport using projections of based aircraft in the MAG region prepared for the MAG RASP. The first forecast considers that the Wickenburg

Municipal Airport share of based aircraft in the MAG region would remain constant, or near the 2000 level of 1.0 percent. Applying this share to forecast based aircraft in the MAG region, yields 73 based aircraft at Wickenburg Municipal Airport in 2025. Following the historical trend of an increasing share of MAG region based aircraft at Wickenburg Municipal Airport, an increasing share forecast was developed. An increasing market share yields 84 based aircraft in 2025. By comparison, the MAG RASP projected the share of aircraft based at Wickenburg Municipal Airport to fall to 0.98 by 2025.

A final forecast examined historical based aircraft totals to residents in the Wickenburg MPA. This forecasting technique examined historical based aircraft as a ratio of 1,000 residents. As previously mentioned, the population for the Wickenburg MPA includes areas outside the current incorporated areas. For the year 2000, the Wickenburg MPA had an estimated population of 8,470, or 5.1 based aircraft per 1,000 residents. As shown in **Table 2G**, assuming a constant ratio of 5.1 aircraft per 1,000 residents yields 62 aircraft in 2025. This results in based aircraft growing at the same rate as the local population. Assuming the ratio of based aircraft to 1,000 residents increases gradually throughout the planning period yields 70 based aircraft at Wickenburg Municipal Airport in 2025.

TABLE 2G
Aircraft Per 1,000 Residents

Year	Based Aircraft	Wickenburg MPA Population	Aircraft Per 1,000 Residents
2000	43	8,470	5.1
Constant Ratio of Based Aircraft Per 1,000 Residents			
2005	46	8,942	5.1
2010	48	9,491	5.1
2015	51	10,044	5.1
2025	62	12,238	5.1
Increasing Ratio of Based Aircraft Per 1,000 Residents			
2005	47	8,942	5.3
2010	52	9,491	5.5
2015	57	10,044	5.7
2025	72	12,238	5.9

Source for historical and forecast MPA Population: Maricopa Association of Governments

Other resources used for comparative purposes include the *1992 Wickenburg Municipal Airport Master Plan,* the *2000 FAA TAF,* and the *2001 MAG RASP* update. These forecasts are summarized in **Table 2H**.

Based Aircraft Forecast Summary

A summary of all forecasts for based aircraft at Wickenburg Municipal Airport and the selected planning forecast is presented in **Table 2H** and **Exhibit 2B**. As shown on the exhibit, the combination of forecasts represent a "forecast envelope." The forecast envelope represents the area in which future based aircraft at Wickenburg Municipal Airport should be found. The constant share of U.S. active aircraft forecast represents the lower end of the planning envelope. The increasing share of U.S. active aircraft forecast represents the upper end of the forecast envelope. The FAA TAF forecast lies below the forecast envelope, while the MAG RASP lies midway in the forecast envelope.

TABLE 2H
Based Aircraft Forecast Summary

		FORECASTS			
	2000	**2005**	**2010**	**2015**	**2025**
Share of U.S. Active Aircraft					
Constant Share		44	46	48	52
Increasing Share		51	60	71	85
Share of MAG Region Based Aircraft					
Constant Share		46	53	60	73
Increasing Share		46	55	65	84
Aircraft Per 1,000 Residents					
Constant Ratio		46	48	51	62
Increasing Ratio		47	52	57	72
Other Resources					
1992 Airport Master Plan		42	46	50	N/A
2000 FAA TAF		30	30	30	N/A
2001 MAG RASP		41	45	50	60
Selected Planning Forecast	**43**	**50**	**60**	**70**	**85**

In examining the forecasts, it is evident that a few of the forecasts yielded similar results. The increasing share of U.S. active aircraft forecast and the increasing share of based aircraft in the MAG region forecast yielded similar growth trends. The constant share of based aircraft in the MAG region forecast and the increasing ratio of aircraft per 1,000 residents forecast projected similar growth trends as well.

In evaluating the forecasts, the constant share of U.S. active aircraft forecast appears to be too conservative considering historical growth trends at the airport. This forecast only adds nine aircraft through the planning period. Sixteen aircraft have been added in the past 10 years. Similarly, the constant ratio of aircraft per 1,000 residents forecast appears too conservative. This forecast adds only 19 aircraft over the next 25 years.

While the constant share of based aircraft in the MAG region forecast and increasing ratio of aircraft per 1,000 residents forecast projected nearly 30 new based aircraft at the airport by 2025, these forecasts may underestimate growth potential for Wickenburg Municipal Airport. As most based aircraft at the airport are from owners who reside in the Town of Wickenburg, it can be expected that as the local population increases so will the number of based aircraft at the airport. The large service area the airport enjoys also increases the potential for new based aircraft at the airport. This includes drawing aircraft from Yavapi and La Paz counties.

Aviation growth within the Phoenix metropolitan area must also be considered in facility planning. The MAG RASP projects nearly 2,700 new based aircraft for the MAG region by the year 2025. Aircraft operations are expected to grow by 70 percent. While Wickenburg Municipal Airport is some 60 miles from the Phoenix metropolitan area, the airport could be considered a viable alternative for aircraft owners in the Phoenix metropolitan area wanting to operate in a less restrictive airspace and air traffic control environment, with lower levels of aircraft activity. Wickenburg must also consider the potential for general aviation businesses wanting to relocate or establish services at Wickenburg Municipal Airport for the same reasons. This could include aircraft maintenance and repair facilities or smaller flight training operations, which all have based aircraft associated with them.

For these reasons, this master plan will utilize the growth trends established by the increasing share of U.S. active aircraft forecast and increasing share of based aircraft in the MAG region forecast for facility planning. These forecasts project over 40 new based aircraft at the airport by 2025. While at the top of the planning envelope, these forecasts appear to be the most reasonable for the master plan due, in part, to the growth envisioned for the MAG region by the MAG RASP. Additionally, the airport has outpaced the forecasts of the *1992 Airport Master Plan*, which projected 42 based aircraft in 2005. The airport had 43 based in 1999. The MAG RASP forecast for the airport projects the airport's share of based aircraft decreasing through the planning period. This is contrary to the historical trend of the airport increasing it's share of based aircraft within the MAG region. The FAA TAF clearly underestimates the number of based aircraft at the airport and does not allow for future growth.

In all likelihood, actual activity will not follow any one of the forecasts exactly. It is more likely that based aircraft at Wickenburg Municipal Airport will fluctuate within the range of projections presented on **Exhibit 2B**. This selected planning forecast projects 42 new based aircraft at the airport by 2025. This equates to an average annual growth rate of 2.8 percent.

BASED AIRCRAFT FLEET MIX PROJECTION

Knowing the aircraft fleet mix expected to utilize the airport is necessary to

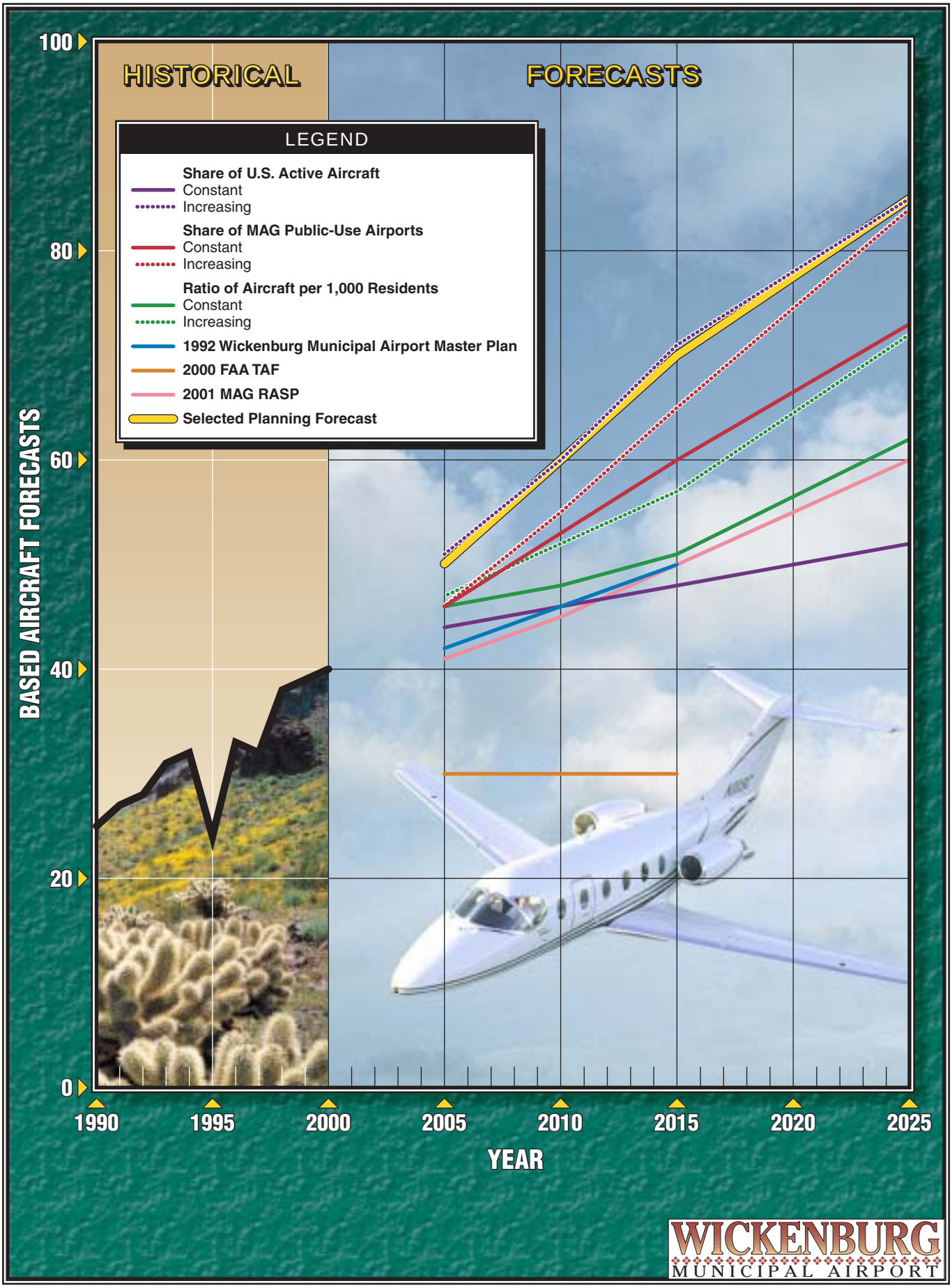


Exhibit 2B
BASED AIRCRAFT FORECASTS

properly plan facilities that will best serve the level of activity and the type of activities occurring at the airport. The existing based aircraft fleet mix is comprised mainly of single-engine piston aircraft, but also includes a multi-engine piston aircraft, two helicopters, and a glider.

Projections for the based aircraft fleet mix considers national trends, as well as trends at airports in the MAG region. As previously mentioned, the FAA anticipates strong growth in active turbine-powered aircraft. This trend illustrates the movement in the general aviation community towards more sophisticated, higher-performing, and more demanding aircraft for business purposes. The FAA projects growth in turbine-powered aircraft to outpace growth in all other components of the active aircraft fleet. As mentioned previously, turbine-powered aircraft are expected to grow at an average annual rate of 3.0 percent through 2012 and 2.2 percent from 2013 to 2025. The MAG RASP projects turbine-powered based aircraft in the MAG region to grow at 3.8 percent annually through 2025.

The projected trend of based aircraft at Wickenburg Municipal Airport includes a growing number of single-engine piston aircraft and multi-engine piston aircraft at the airport. Turbine-powered aircraft are expected to base at the airport through the planning period. Single-engine piston aircraft and helicopters at the airport are expected to decline as a percentage of total based aircraft. The based aircraft fleet mix projection for Wickenburg Municipal Airport is summarized in **Table 2J** and **Exhibit 2C**.

TABLE 2J
Based Aircraft Fleet Mix Forecast

Year	Total	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Other
HISTORICAL							
2000	43	39	1	0	0	2	1
FORECAST							
2005	50	44	2	1	0	2	1
2010	60	50	4	2	1	2	1
2015	70	56	6	3	2	2	1
2025	85	64	9	4	3	3	2

Source for historical data: Airport records.

ANNUAL OPERATIONS

There are two types of operations at an airport: local and itinerant. A local operation is a takeoff 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. Itinerant operations are those performed by aircraft with a specific origin or destination away from the

airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use since business aircraft are used primarily to carry people from one location to another.

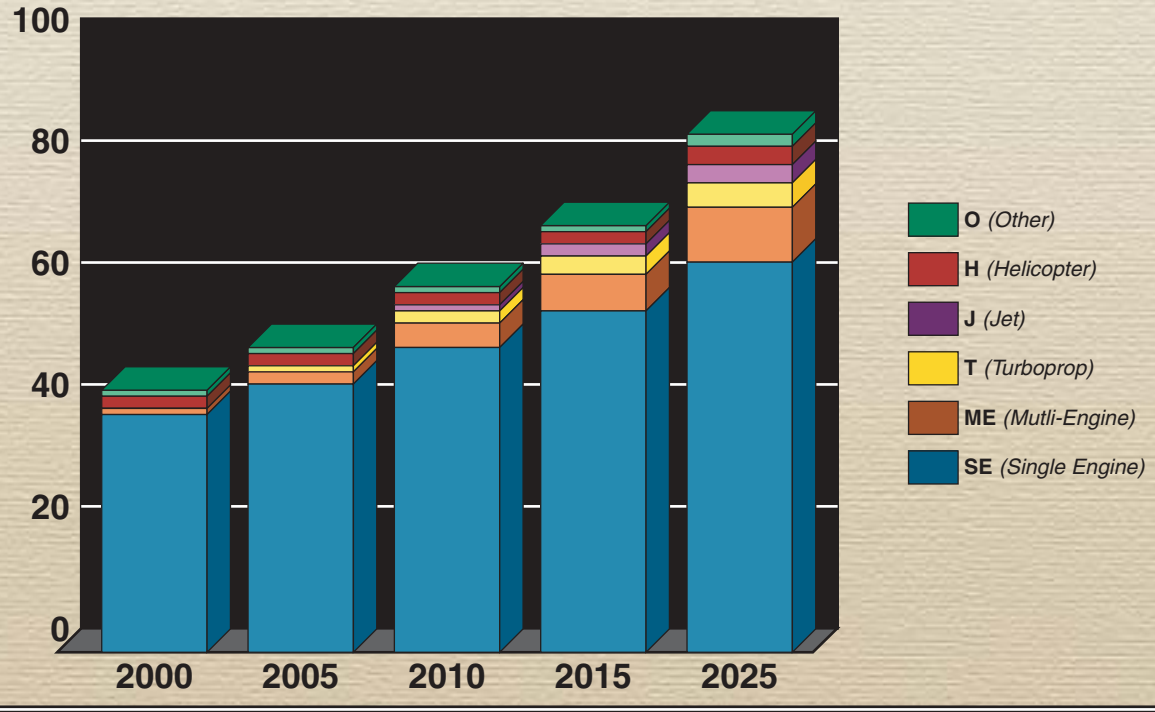
Due to an absence of an airport traffic control tower (ATCT), actual operational counts are not available for Wickenburg Municipal Airport. Instead, only general estimates of historical aircraft operations are available. These estimates were obtained from the MAG RASP study for 1996 through 1998 and operational counts completed at the airport during normal business hours for 1999 and 2000. As mentioned previously in Chapter One, the operational counts completed at the airport were increased by 15 percent to account for operations that took place after business hours, or may not have been recorded. As shown in **Table 2K**, annual operations have varied since 1996 and have ranged between 20,000 and 23,000. Operations per based aircraft has varied annually as well, ranging from a high of 709 to a low of 544.

TABLE 2K
Annual Operations Forecast

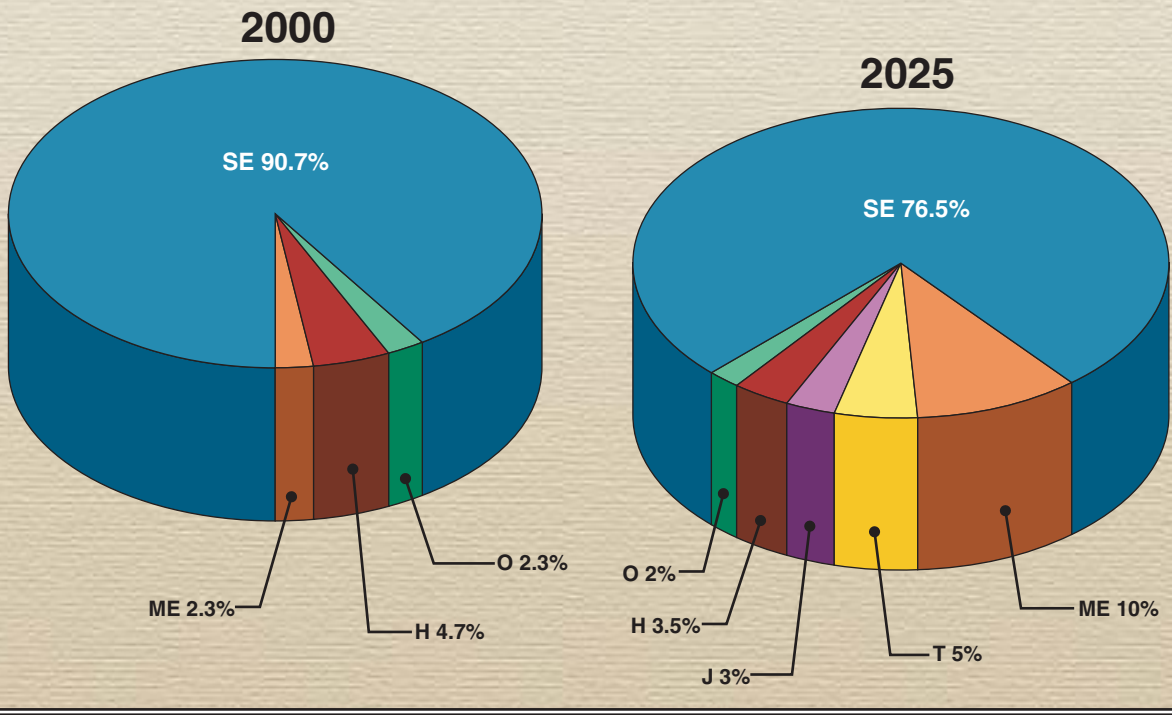
Year	Based Aircraft	Total Annual Operations (est.)	Operations Per Based Aircraft
HISTORICAL			
1996	33	20,886	633
1997	32	22,688	709
1998	38	19,854	522
1999	39	21,220	544
2000	40	22,300	558
FORECASTS			
Constant Number of Operations per Based Aircraft			
2005	50	28,000	560
2010	60	33,600	560
2015	70	39,200	560
2025	85	47,600	560
Increasing Number of Operations per Based Aircraft			
2005	50	32,000	640
2010	60	44,100	735
2015	70	54,600	780
2025	85	71,800	845

On average, there are 451 operations per based aircraft for the public-use airports in the MAG region. The operations per based aircraft varies at each airport. For example, there are 2,500 operations per based aircraft at Williams Gateway Airport where there are a high number of local operations, but only 63 based aircraft. There are 304 operations per based aircraft at

BASED AIRCRAFT



PERCENT BY AIRCRAFT TYPE



WICKENBURG MUNICIPAL AIRPORT

Exhibit 2C
BASED AIRCRAFT & FLEET MIX FORECAST

Phoenix Sky Harbor International Airport where there are 237 based aircraft and 72,000 overall general aviation operations, of which 80 percent are itinerant. The MAG RASP projects the operations per based aircraft in the MAG region to increase to 514 by 2025. This is consistent with the findings for a growing number of local operations within the region.

At Wickenburg Municipal Airport, transient operations have represented a higher percentage of total annual operations than local operations. According to the operational counts completed at the airport, transient operations represented approximately 88 percent of total operations in 1999 and 90 percent in 2000. Local operations represented the remaining 12 and 10 percent of total operations, respectively.

Projections of annual operations have been developed by examining the number of operations per based aircraft. Two forecasts of operations per based aircraft have been developed. First, a constant, or static, level of 560 operations per based aircraft was applied to forecast based aircraft. This yields 47,600 total operations at Wickenburg Municipal Airport by 2025. This projection results in annual operations growing at the same rate as based aircraft.

Next, an increasing number of operations per based aircraft was developed. The MAG RASP projects the number of operations within the MAG region to increase 2.8 percent annually through 2025. Applying this growth rate to the 2000 level of 558 operations per based aircraft yields 845 operations per based aircraft in 2025, or 71,800 operations.

Previous forecasts have been examined for comparative purposes and are summarized in **Table 2L** and on **Exhibit 2D.** The 1992 *Airport Master Plan* projected annual operations reaching 34,800 by 2015. The 2000 FAA TAF projects annual operations to remain static at an understated level of 18,000 through 2015. The 2001 MAG RASP projects annual operations reaching only 38,140 by 2025.

The FAA projects an increase in aircraft utilization and the number of general aviation hours flown nationally. The MAG RASP projects significant increases in annual operations in the MAG region; however, most of their growth is reserved for the airports within the Phoenix metropolitan area. These trends, along with projected growth in based aircraft, support future growth in annual operations at Wickenburg Municipal Airport.

Contrary to the MAG RASP which projected local operations remaining at 10 percent for Wickenburg Municipal Airport through the planning period, local operations can be expected to increase in number and as a percentage of total operations. Similar to based aircraft growth, should activity increase as projected for the MAG region, pilots may want to search for alternative locations for training where there is less restrictive airspace and air traffic control. This can be expected to gradually increase the number of operations per based aircraft through

the planning period at Wickenburg Municipal Airport. This also accounts for the potential for a flight training operation to base at the airport.

TABLE 2L
Annual Operations Forecast Summary

	2000	2005	2010	2015	2025
Operations Per Based Aircraft					
Constant		28,000	33,600	39,200	47,600
Increasing		32,000	44,100	54,600	71,800
1992 Airport Master Plan		27,800	31,300	34,800	N/A
2000 SANS		9,226	10,004	10,934	N/A
2000 FAA TAF		18,000	18,000	18,000	N/A
2001 MAG RASP		25,950	29,000	32,040	38,140
Selected Planning Forecast	**22,300**	**30,000**	**39,900**	**50,000**	**66,900**

Considering these factors, the selected planning forecast for the airport projects the number of operations per based aircraft to gradually increase through the planning period, reaching 790 by 2025. Annual operations are therefore projected to grow to 66,900 by 2025, or 4.5 percent annually. Local operations are projected to grow to 40 percent of total operations by 2025. The local and itinerant operational splits are summarized at the end of the chapter.

According to the operational counts completed by the airport, single-engine piston aircraft represented 84 percent of operations in 2000. Multi-engine piston aircraft represented five percent while helicopters represented seven percent, turboprop aircraft represented one percent, business jets represented two percent, and ultralights and gliders represented the remaining one percent. **Table 2M** presents forecasts of operations for each of these aircraft classifications through the planning period, assuming these ratios remain the same.

TABLE 2M
Operations by Aircraft Classification

	% of Total Operations	2000	2005	2010	2015	2025
Total Operations		**22,300**	**30,000**	**39,900**	**50,000**	**66,900**
Single-Engine	84%	18,700	25,200	33,500	42,000	56,200
Multi-Engine	5%	1,100	1,500	2,000	2,500	3,300
Turboprop	1%	200	300	400	500	700
Jet	2%	500	600	800	1,000	1,300
Helicopter	7%	1,600	2,100	2,800	3,500	4,700
Other	1%	100	300	400	500	700

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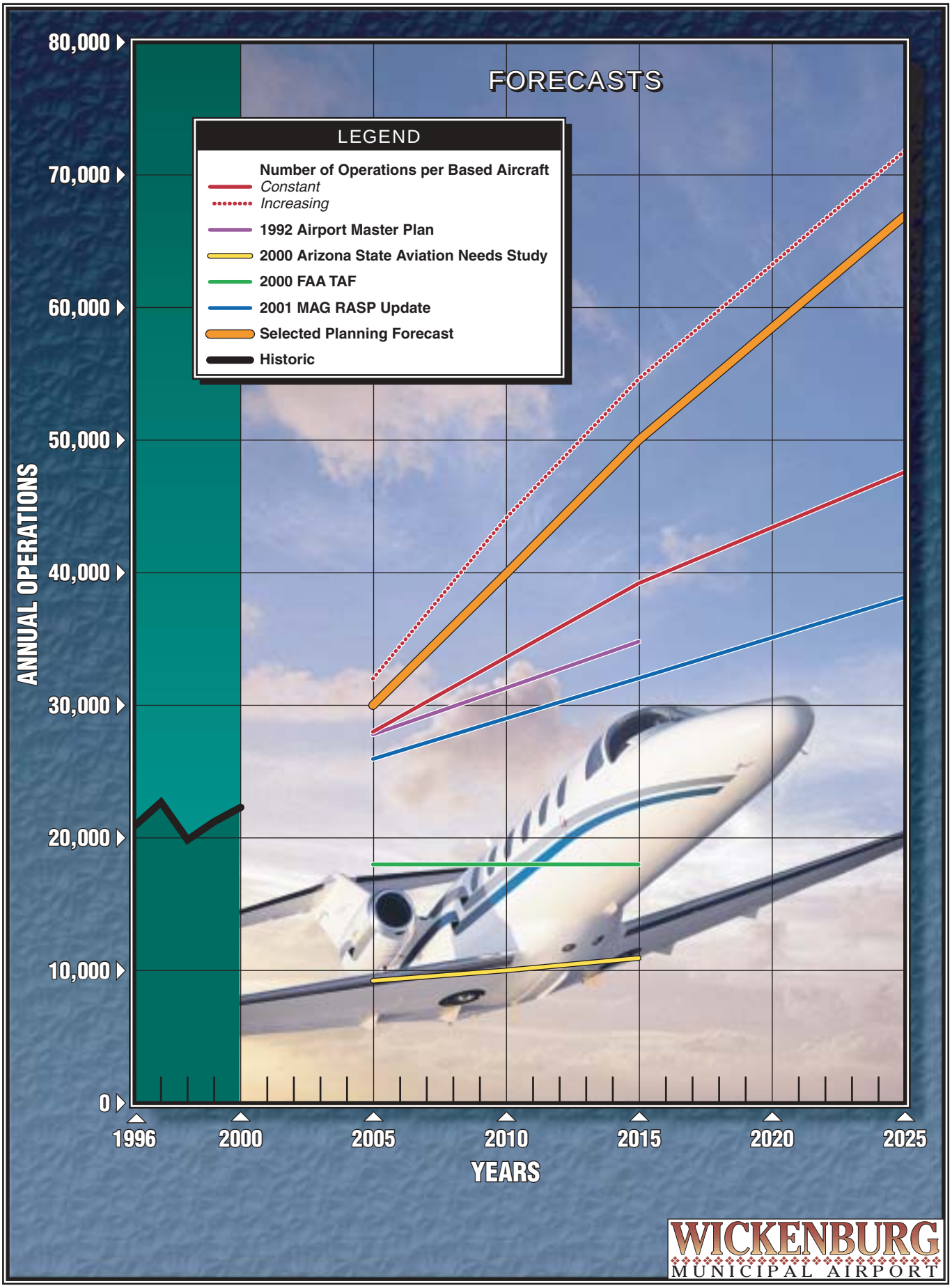


Exhibit 2D
ANNUAL OPERATIONS FORECASTS

PEAKING CHARACTERISTICS

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

- **Peak Month -** The calendar month when peak activity occurs.
- **Design Day** - The average day in the peak month. This indicator is easily derived by dividing the peak month activity 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 airport traffic control tower, adequate operational information is not available to directly determine peak operational activity at the airport. Therefore, peak period forecasts have been determined according to trends experienced at similar airports and by examining the operational counts completed at the airport in 1999 and 2000.

Typically, the peak month for activity at general aviation airports approximates 10 to 15 percent of the airport's annual operations. According to the operational counts maintained at the airport, the peak month for 2000 was January, which had approximately 12 percent of total recorded operations for 2000. Peak month activity has been projected by applying this percentage to forecast annual operations, as the peak month activity at Wickenburg Municipal Airport correlates with typical peak month activity at similar airports.

The design day is derived by dividing the peak month operations by 30. The forecast of busy day operations was calculated as 1.25 times design day activity. Design hour operations were estimated at 15 percent of design day operations. **Table 2N** summarizes peak operations forecasts for the airport.

Estimates of the number of passengers have also been prepared. This equates to the number of pilots and aircraft passengers which board and/or deplane an aircraft using the airport, and is essential in determining terminal building size. The number of passengers has been determined by applying a ratio of passengers to itinerant operations. This is estimated at 1.8 for 2000, growing to 2.2 by 2025, consistent with the expectations for a larger number of business jets (which have greater seating capacity) to use the airport. Peak period determinations were made using the peak period operational figures listed above.

COMMERCIAL AIR SERVICE POTENTIAL

Wickenburg Municipal Airport has never been served by scheduled airline service. Commercial air travel for residents of Wickenburg has been provided by Phoenix Sky Harbor International Airport, located approximately 60 miles southeast of the Town of Wickenburg.

TABLE 2N
Forecasts of Peak Activity

		FORECASTS			
Operations	**2000**	**2005**	**2010**	**2015**	**2025**
Annual	22,300	30,000	39,900	50,000	66,900
Peak Month	2,700	3,600	4,800	6,000	8,000
Design Day	90	150	200	250	333
Busy Day	112	120	160	200	267
Design Hour	13	18	24	30	40
Passengers	**2000**	**2005**	**2010**	**2015**	**2025**
Annual	36,200	48,500	63,800	73,500	88,200
Peak Month	4,300	5,800	7,700	8,800	10,600
Design Day	145	194	255	294	353
Design Hour	22	29	38	44	53

An airline's decision to enter a market is purely a business decision based, in part, on the potential passenger market. Without a history of air service at Wickenburg Municipal Airport, it is difficult to estimate the local air passenger market. However, by examining similar airports and neighboring communities with existing scheduled airline service, it may provide an indication of the potential number of air passengers.

Communities near Wickenburg which currently have scheduled air service include Flagstaff, Kingman, and Prescott. **Table 2P** compares local population in each community to the number of annual enplanements at each airport from 1995 through 1999 and determines a ratio of enplanements to 1,000 residents. An enplanement is defined as "a person boarding a scheduled airline flight," and is commonly used to define the size of an air service market and for use in facility planning.

TABLE 2P
Enplanements per 1,000 Residents

City	Year	Enplanements	Population	Enplanements per 1,000 Residents
Flagstaff	1997	45,483	57,093	797
	1998	38,487	58,300	660
	1999	33,385	59,505	561
Kingman	1997	1,882	18,061	104
	1998	2,680	18,724	143
	1999	2,492	19,372	129
Prescott	1997	9,405	32,037	294
	1998	7,844	32,086	244
	1999	5,725	33,581	170

Sources: FAA Terminal Area Forecasts, Arizona Department of Economic Security.

As shown in the table, the number of enplanements per 1,000 residents in Flagstaff decreased from 797 in 1997 to 561 in 1999 as enplanements decreased annually at the airport. Prescott also experienced a decrease in the number of enplanements per 1,000 residents, falling from 294 in 1997 to 170 in 1999. This was also the result of an annual decline in enplanements for the airport. The number of enplanements per 1,000 at Kingman grew from 104 in 1997 to 129 in 1999, as enplanements grew.

Both Prescott and Kingman are included in the Federal Essential Air Service (EAS) program. Under this program, a subsidy is paid to the airline serving Prescott and Kingman to guarantee regular service and reduce ticket prices. Considering the proximity of Prescott to Phoenix (less than 90 minutes north), the EAS subsidy likely increases the number of annual airline enplanements by ensuring regular air service. The number of enplanements per 1,000 residents in Prescott is lower in comparison to Flagstaff since a large number of airline passengers in Prescott drive to Phoenix instead of using the airport in Prescott. For Kingman, the number of enplanements per 1,000 residents is even lower than Prescott due to the low levels of enplanements. Residents of Kingman have several choices for airline service including Flagstaff, Phoenix, Laughlin-Bullhead, and Las Vegas.

The ratio of enplanements per 1,000 residents in Wickenburg is likely to be even lower than the ratio experienced at Prescott and Kingman due to Wickenburg's proximity to Phoenix Sky Harbor International Airport. However, by applying the ratios at Prescott and Flagstaff to projected residents in the Wickenburg MPA, a potential range of airline enplanements can be estimated. Applying the 1999 ratio of 170 enplanements to 1,000 residents experienced in Prescott to the Wickenburg MPA population of 8,470 in 2000 results in a potential air passenger market in Wickenburg of approximately 1,400 enplanements. Applying this same factor to the forecast MPA population of 12,238 results in approximately 2,100 passengers in 2025. Applying the higher ratio experienced at Flagstaff results in 4,700 enplanements in 2000 and 6,800 enplanements in 2025.

The proximity of Wickenburg Municipal Airport to Phoenix Sky Harbor International Airport is the primary factor limiting the potential for scheduled air service. Phoenix Sky Harbor International Airport offers jet service, a variety of flight times, schedules, and fares that could never be provided at Wickenburg Municipal Airport. This disparity in service levels is considered significant enough that most air travelers in the area would choose to drive to Phoenix Sky Harbor International Airport rather than fly directly from Wickenburg Municipal Airport.

Considering the potential air passenger market for Wickenburg Municipal Airport ranges between 1,400 and 4,700 enplanements annually, it is not expected that Wickenburg could profitably support scheduled airline service without operating subsidies. Inclusion in the EAS program could prove difficult. Since 1990, the EAS

program has dropped markets and no new markets have been added. For example, Blythe Airport was dropped from the EAS program in 1990. Without a federal subsidy, the local community would need to offer the operating subsidy to initiate and continue service.

Besides operating subsidies, a number of capital improvements would be needed at the airport. This would include establishing a secure terminal building, commercial aircraft apron, and auto parking. The Town would need to operate the airport in conformance with Federal Aviation Regulation (F.A.R.) Part 139, *Certification of Land Airports Serving Certain Air Carriers*, F.A.R. Part 107, *Airport Security*, and F.A.R. Parts 108 and 109, *Indirect Air Carrier Security*. This would require additional staff and operational expenses. The costs for these capital and operating requirements would be expected to exceed operational revenues gained from a limited air service schedule.

ANNUAL INSTRUMENT APPROACHES

An instrument approach is defined by the FAA as "an approach to an airport with the intent to land by an aircraft in accordance with an Instrument Flight Rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude." Currently, Wickenburg Municipal Airport does not have a published instrument approach. Therefore, the airport is essentially closed to arrivals when flight conditions are below the minimum prescribed for visual flight. Since visual flight conditions occur approximately 99 percent of the time in the region, it is expected that should an instrument approach procedure be established for the airport, it would be required only a limited amount of time.

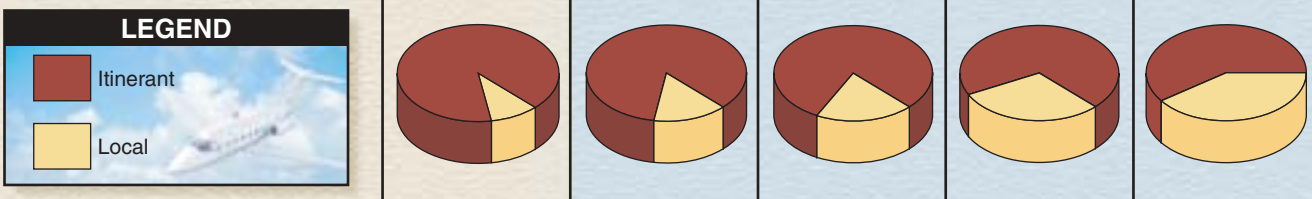
For Wickenburg Municipal Airport, it is expected than annual instrument approaches would represent one percent of total itinerant operations. Applying the percentage to forecast itinerant operations yields 255 instrument approaches in 2005, 320 in 2010, 350 in 2015, and 410 in 2025.

SUMMARY

This chapter has provided forecasts for each sector of aviation demand anticipated over the planning period. **Exhibit 2E** presents a summary of the aviation forecasts developed for Wickenburg Municipal Airport. Wickenburg Municipal Airport has experienced an increase in total based aircraft, annual operations, and turbine-powered aircraft use of the airport. These trends are expected to continue through the planning period, consistent with regional and national projections. The next step in this study is to assess the capacity of existing facilities to accommodate forecast demand and determine what type of facilities will be needed to meet these demands.

FORECAST SUMMARY

CATEGORY	Historical 2000	Forecasts 2005	2010	2015	2025
BASED AIRCRAFT					
Single-Engine	39	44	50	56	64
Multi-Engine	1	2	4	6	9
Turboprop	0	1	2	3	4
Turbojet	0	0	1	2	3
Helicopter	2	2	2	2	3
Other	1	1	1	1	2
Total Based Aircraft	***43***	***50***	***60***	***70***	***85***
OPERATIONS					
Local	2,200	4,500	8,000	15,000	26,800
Itinerant	20,100	25,500	31,900	35,000	40,100
Total Operations	***22,300***	***30,000***	***39,900***	***50,000***	***66,900***
ANNUAL PASSENGERS	**36,200**	**48,400**	**63,800**	**73,500**	**88,200**
ANNUAL INSTRUMENT APPROACHES	**0**	**250**	**320**	**350**	**410**



WICKENBURG MUNICIPAL AIRPORT

Exhibit 2E
FORECAST SUMMARY

WICKENBURG
MUNICIPAL AIRPORT

Chapter Three
FACILITY REQUIREMENTS

Facility Requirements

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

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

The cost-effective, efficient, and orderly development of an airport should rely more upon actual demand levels

experienced at an airport rather than 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 Wickenburg Municipal Airport that take into consideration the reasonable range of aviation demand projections.

It is important to consider that the actual activity at the airport may be higher or lower than projected. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts, or changes in aviation demand. It is important for the plan to accommodate

these changes so that airport officials can respond to unexpected changes in a timely fashion. As a result, these milestones provide flexibility, while potentially extending this plan's useful life if aviation trends slow over the period.

The most important reason for utilizing milestones is they allow the airport to develop facilities according to need generated by actual demand levels. The demand-based schedule provides flexibility in development, as development schedules can be slowed or expedited according to actual demand at any given time over the planning period. The resultant plan provides airport officials with a financially responsible and need-based program. **Table 3A** presents the planning horizon milestones for each activity demand category.

TABLE 3A
Planning Horizon Activity Levels
Wickenburg Municipal Airport

	2000	Short Term	Intermediate Term	Long Term
Based Aircraft	42	60	70	85
Annual Operations	22,300	39,900	50,000	66,900

AIRFIELD REQUIREMENTS

Airfield requirements include the need for those facilities related to the arrival and departure of aircraft. These facilities comprise the following items:

- Runways
- Taxiways
- Navigational Aids
- Airfield Marking and Lighting

AIRFIELD CAPACITY

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

Pursuant to Federal Aviation Administration (FAA) guidelines detailed in the FAA Advisory Circular 150/5060-5, *Airport Capacity and Delay*, the annual service volume of a single runway normally exceeds 200,000 annual operations. Since the forecasts for the airport indicate that the activity throughout the planning period may only reach 67,000 annual operations, the capacity of the existing airfield

system will not be reached and the airfield can meet operational demands.

RUNWAY ORIENTATION

Wickenburg Municipal Airport is currently served by Runway 5-23, which is oriented in a northeast-southwest direction. For the operational safety of an airport, the primary runway should be oriented as close as possible to the direction of the prevailing wind. This reduces the percentage of time that crosswind conditions could make the primary runway inoperable and unsafe for aircraft landing and taking off.

FAA design standards specify that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots for small aircraft weighing less than 12,500 pounds and from 13 to 20 knots for aircraft weighing more than 12,500 pounds.

Wind data specific to Wickenburg Municipal Airport is not available. Therefore, the runway orientation analysis was conducted using observed wind data from Luke Air Force Base (AFB). According to the wind summary on the approved Airport Layout Plan (ALP) for Wickenburg Municipal Airport, Runway 5-23 provides greater than 95 percent wind coverage for all crosswind components. Therefore, an additional runway orientation is not needed at the airport.

It should be noted that it is preferable that a wind analysis be completed with wind data specific to the airport. However, as mentioned before, wind data specific to Wickenburg Municipal Airport is not available. While Luke AFB is an appropriate alternative, it is over 30 nautical miles (nm) from Wickenburg Municipal Airport. Consideration should be given to establishing automated weather observation at the airport to record wind direction and speed data specific to Wickenburg Municipal Airport. Once this system compiles 10 years of wind data, a new wind analysis should be completed to verify the wind analysis completed using wind data from Luke AFB.

PHYSICAL PLANNING CRITERIA

The selection of appropriate 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. Planning for future aircraft use is of particular importance since design standards are used to plan separation distances between facilities. These standards must be determined now since the relocation of these facilities would likely be extremely expensive at a later date.

The most important characteristics in airfield planning are the approach speed and wingspan of the critical design aircraft anticipated to use the airport now and in the future. The critical design aircraft is defined as the

most demanding category of aircraft which conducts 500 or more operations per year at 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 code, referred to as the 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 (ADG) and relates to aircraft wingspan (physical characteristic). Generally, aircraft approach speed applies to runways and runway-related facilities, while airplane wingspan primarily relates to separation criteria involving taxiways, taxilanes, and landside facilities.

According to FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, Change 6, 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 the aircraft's wingspan. The six ADG's used in airport planning 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.

Exhibit 3A presents a summary of representative aircraft by ARC. As indicated on the exhibit, the airport does not currently, nor is it expected to, serve aircraft in ARCs C-III, D-III, C-IV, D-IV, or D-V. These are large transport aircraft commonly used by commercial air carriers. These aircraft are primarily accommodated at Phoenix Sky Harbor International Airport. As mentioned previously in Chapter Two, Wickenburg Municipal Airport presently serves general aviation activity. This role is expected to remain the same through the planning period.

FAA advises designing airfield facilities to meet the requirements of the airport's most demanding aircraft, or critical aircraft. As discussed above, this is the aircraft, or group of aircraft (defined by ARC), with at least 500 operations at the airport. In order to determine future facility needs, an ARC should first be determined, then appropriate airport design criteria can

01MP06-3A-11/13/01

A-I

Beech Baron 55
Beech Bonanza
Cessna 150
Cessna 172
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, II
over 12,500 lbs.

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

A-III, B-III

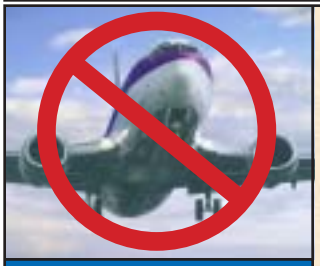
DHC Dash 7
DHC Dash 8
DC-3
Convair 580
Fairchild F-27
ATR 72
ATP

C-I, D-I

Lear 25, 35, **55**
Israeli Westwind
HS 125

C-II, D-II

Gulfstream II, **III**, IV
Canadair 600
Canadair Regional Jet
Lockheed JetStar
Super King Air 350



C-III, D-III

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
DC-8-70
DC-10
MD-11
L1011

D-V

B-747 Series
B-777

Note: Aircraft pictured is identified in bold type.

WICKENBURG
MUNICIPAL AIRPORT

Exhibit 3A
AIRPORT REFERENCE CODES

be applied. This begins with a review of aircraft currently using the airport and those expected to use the airport through the planning period.

Wickenburg Municipal Airport is currently utilized by all types of general aviation aircraft ranging from small single-engine and multi-engine piston aircraft to turboprop and business jet aircraft. Based aircraft at Wickenburg Municipal Airport fall within ARCs A-I and B-I and include a variety of single-engine and multi-engine piston aircraft.

The type of transient aircraft using the airport is more diverse than the type of aircraft based at the airport and includes single-engine and multi-engine piston aircraft, as well as turboprop aircraft and various business jets within ARCs B-I, B-II, C-I, and C-II. According to activity observations completed at the airport, turboprop aircraft conducted 152 operations at the airport in 2000, while business jet aircraft conducted 484 operations. The most common business jets included Cessna Citation aircraft (ARCs B-I and B-II), Learjet aircraft (ARC C-I), and Canadair Challenger aircraft (ARC C-II).

Critical Design Aircraft Conclusion

In some cases, more than one aircraft comprise the airport's critical aircraft. This is the case at Wickenburg Municipal Airport. While business jet aircraft are the most demanding aircraft to operate at the airport due to their wingspans, takeoff weights, and approach speeds, business jets did conduct more than 500 operations at the airport in 2000 and therefore cannot be considered the critical design aircraft alone. Combining the operations of business jets, turboprop aircraft and multi-engine piston aircraft, the airport is expected to presently fall within ARC B-II.

As discussed in Chapter Two, the potential exists in the future for increased use of the airport by business jet aircraft. This follows with the national trend of increased business and corporate use of turbojet aircraft, strong sales and deliveries of business jet aircraft, and expanded fractional ownership programs. The expanding local economy and population also supports the potential for increased use by business jet aircraft. As detailed in Chapter Two, business jet operations at Wickenburg Municipal Airport are projected to grow from 484 in 2000 to 1,300 by 2025.

The most likely business jets to operate at Wickenburg Municipal Airport in the future will be business jets weighing up to 30,000 pounds. This commonly includes the Cessna Citation, Dassault Falcon, and Lear Jet series of aircraft. These aircraft fall within ARCs B-I to C-II. Business jets within approach categories B and C represent 90 percent of the operational business jets. Therefore, by applying ARC C-II design and safety standards to the airport, it is expected that the airport would adequately serve over 90 percent of the operational business jets. To safely accommodate business jet aircraft at Wickenburg Municipal Airport in the future, the airport would need to conform to ARC C-II design standards.

The design of taxiway and apron areas should consider the wingspan requirements of the most demanding aircraft to operate within that specific functional area on the airport. The airfield taxiways, aircraft maintenance and repair hangar areas, and transient apron areas should consider ADG II design requirements to accommodate the wingspan requirements of the largest general aviation aircraft to operate at the airport. T-hangar and small conventional hangar areas should consider ADG I requirements as these commonly serve smaller single and multi-engine piston aircraft.

AIRFIELD DESIGN STANDARDS

The FAA has established several imaginary surfaces to protect aircraft operational areas and keep them free from obstructions that could affect the safe operation of aircraft. These include the object free area (OFA), obstacle free zone (OFZ), runway safety area (RSA), and runway protection zones (RPZ).

The OFA is defined as a "two dimensional ground area surrounding runways, taxiways, and taxilanes which are clear of objects except for objects whose location is fixed by function." The RSA is defined as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or an excursion from the runway." The obstacle free zone is defined as "the airspace below 150 feet above the established airport elevation along the runway and extended runway centerline that is required to be clear of all objects (except for frangible items required for navigation of aircraft) in order to provide clearance protection for aircraft landing and taking off from the runway, and for missed approaches". The RPZ is defined as "an area off the runway end to enhance the protection of people and property on the ground". The RPZ is trapezoidal in shape and centered about the extended runway centerline. The dimensions of an RPZ are a function of the runway ARC and approach visibility minimums.

Table 3B summarizes the design requirements of these safety areas by airport reference code for Wickenburg Municipal Airport. The FAA expects these areas to be under the control of the airport and free from obstructions.

A review of current airport drawings indicates that the airport does not fully comply with ARC B-II design requirements. Presently, Taxiway A is located 200 feet from the Runway 5-23 centerline. As shown in the table, ARC B-II design requirements specify a runway/taxiway separation distance of 240 feet. More importantly, Taxiway A is located within the OFZ. OFZ standards preclude taxiing and parked aircraft. According to Appendix 16 of FAA AC 15-/5300-13, *Airport Design*, the OFZ must be clear to qualify for an instrument approach procedure. All conventional hangars at the airport and the segmented circle are located within the runway OFA. This includes the hangars occupied by Av-Art, located north of Runway 5-23 and the conventional hangar located south of Taxiway A. This hangar is located only 50 feet from the Taxiway A centerline and obstructs the taxiway object free

area as well. Some taxiways are 25 feet wide. As shown in the table, design standards specify the taxiways be 35 feet wide.

TABLE 3B
Runway Design Standards

	Existing	Ultimate
Airport Reference Code	B-II	C-II
Approach Visibility Minimums	Visual	One Mile
Runway		
Width	75	100
Runway Safety Area (RSA)		
Width (centered on runway centerline)	150	400
Length Beyond Runway End	300	1,000
Object Free Area (OFA)		
Width (centered on runway centerline)	500	800
Length Beyond Runway End	300	1,000
Obstacle Free Zone (OFZ)		
Width (centered on runway centerline)	400	400
Length Beyond Runway End	200	200
Runway Protection Zones (RPZ)		
Inner Width	500	500
Outer Width	700	1,010
Length	1,000	1,700
Runway Centerline to:		
Edge of Aircraft Parking	250	400
Taxiways		
Width	35	35
Taxiway Object Free Area Width	131	131

Note: All dimensions in feet
Source: FAA Airport Design Software Version 4.2D

In its present configuration, the airport would not meet ARC C-II design standards. In addition to the deficiencies described above, a majority of the existing tiedown apron would be located within the runway OFA. Additional runway width would also be needed. Conformance with the larger RSA and OFA areas would also need to be considered. A full evaluation of the RSA and OFA is dependent upon runway length. The alternatives analysis will examine options for conforming with these FAA design standards and eliminating these obstructions.

RUNWAY LENGTH

The determinations of runway length requirements for the airport are based on four primary factors. These include the critical aircraft type expected to use the airport, mean maximum daily temperature of the hottest month, runway gradient, and airport elevation. Aircraft performance declines as each of these factors increase.

For Wickenburg Municipal Airport, the airport elevation is 2,386 feet above mean sea level (MSL) and the mean maximum daily temperature of the hottest month (July) is 104.9 degrees Fahrenheit (F). The effective runway gradient for Runway 5-23 is 1.05 percent. Runway gradient is the difference in elevation at each end of the runway divided by the length of the runway. Summertime temperatures are the primary factors in determining runway length requirements for the airport.

Using the data specific to Wickenburg Municipal Airport, runway length requirements for the various classifications of aircraft that may operate at the airport were examined using the FAA Airport Design computer program Version 4.2D. This program groups general aviation aircraft into several categories, reflecting the percentage of the fleet within each category and useful load of the aircraft. **Table 3C** summarizes FAA recommended runway lengths for Wickenburg Municipal Airport.

TABLE 3C
FAA Recommended Runway Length Requirements

AIRPORT AND RUNWAY DATA	
Airport Elevation	2,386 feet
Mean daily maximum temperature of the hottest month	104.9 F
Maximum difference in runway centerline elevation	44 feet
RUNWAY LENGTHS RECOMMENDED FOR AIRPORT DESIGN	
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	3,500 feet
95 percent of these small airplanes	4,300 feet
100 percent of these small airplanes	4,900 feet
Small airplanes with 10 or more passenger seats	5,000 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	6,100 feet

Source: FAA Airport Design Computer Program Version 4.2D.
Small airplanes - aircraft less than 12,500 pounds.

At its present length of 5,050 feet, Runway 5-23 can accommodate the full range of small general aviation aircraft (refer to small airplanes with 10 or more passenger seats) but falls short of fully accommodating common business jet aircraft (refer to large airplane runway length requirements). In general, the existing runway length is sufficient for departures when temperatures are mild and destinations are to regional markets. To fully accommodate the type of business aircraft likely to operate at the airport safely during summer months and without limiting fuel and passenger loading, the FAA recommends a runway length of 6,100 feet.

For comparison, actual runway length requirements for common business jets expected to operate at the airport at the mean daily maximum temperature listed above have been analyzed and are included in **Table 3D**. As shown in the table, runway length requirements vary from a less demanding 4,600 feet for the Cessna Citation V to 8,600 feet for the Dassault Falcon 50. Only two aircraft, the Cessna Citation Jet and Cessna Citation V, can presently operate at the airport without incurring weight restrictions such as fuel loading or passengers.

TABLE 3D
Business Jet Runway Length Requirements

Aircraft Make and Model	Airport Reference Code	Certified Maximum Takeoff Weight (pounds)	Takeoff Distance (feet)
Cessna CitationJet[1]	**B-I**	**10,000**	**4,700**
Cessna Citation I[2]	B-I	11,850	5,500
Dassault Falcon 10	B-I	16,100	6,400
Cessna Citation II	B-II	14,100	7,500
Cessna Citation V	**B-II**	**15,900**	**4,600**
Dassault Falcon 20[3]	B-II	28,660	5,500
Dassault Falcon 50	B-II	38,800	*8,600*
Learjet 31	C-I	17,000	6,400
Learjet 45	C-I	20,500	7,500
Beechjet 400A	C-I	18,740	6,500
Learjet 35/36 [2,5]	C-I	18,300	*7,900*
Learjet 55[2,6]	C-I	21,500	*8,300*
Cessna Citation III/VI[4]	C-II	22,000	5,400
Challenger 600/604	C-II	40,125	6,500
Learjet 60	D-I	23,500	7,500
Gulfstream IV	D-II	75,000	6,300

[1] Takeoff distance determined at 92° Fahrenheit
[2] Takeoff distance determined at 100°Fahrenheit
[3] Limited to 25,500 pounds takeoff weight
[4] Limited to 18,000 pounds takeoff weight
[5] Limited to 17,000 pounds takeoff weight
[6] Limited to 20,000 pounds takeoff weight
Note: Aircraft in bold can operate at the existing runway length
Source: Aircraft Manufacturer Performance Guides

While three aircraft, the Dassault Falcon 50, Learjet 35/36 and Learjet 55, have runway length requirements at or above 8,000 feet, these aircraft are no longer in production and will be phased-out of the operating fleet mix during the planning period of this master plan. Therefore, it is not necessary to plan for the extended takeoff requirements of these aircraft. The newer production aircraft, such as the Learjet 31 (which replaced the Learjet 35/36) and Learjet 60 (which replaced the Learjet 55) are more efficient and generally have less runway length requirements. Examining the actual runway length requirements listed above, an ultimate runway length of 7,500 feet should be

examined at Wickenburg Municipal Airport. This length will accommodate typical business jets in production and a majority of the common business jets within the operational fleet mix.

RUNWAY WIDTH

Runway width is primarily determined by the planning ARC for the particular runway. The ultimate planning ARC for Runway 5-23 is C-II. ARC C-II design standards specify a runway width of 100 feet. Currently, Runway 5-23 is 75 feet wide. Since business aircraft use of the airport is currently limited, the existing runway width is sufficient. Over the long term, it will be necessary to widen Runway 5-23 to 100 feet to safely serve increased business aircraft use of the airport and meet FAA design standards.

RUNWAY PAVEMENT STRENGTH

The most important feature of airfield pavement is its ability to withstand repeated use by aircraft of significant weight. Presently, Runway 5-23 has a pavement strength of 23,000 pounds single wheel loading (SWL) and 30,000 pounds dual wheel loading (DWL). This strength rating is sufficient only for small general aviation aircraft. While the runway can accommodate limited operations by heavier aircraft, a pavement load bearing strength of 30,000 pounds SWL is needed to accommodate the mix of aircraft expected to use the airport through the planning period.

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.

Taxiway width is determined by the ADG of the most demanding aircraft to use the taxiway. As mentioned previously, the most demanding aircraft to use Runway 5-23 fall within ADG II. According to FAA design standards, the minimum taxiway width for ADG II is 35 feet. Presently, a portion of Taxiway A and Taxiways B, C, and D are 40 feet wide, exceeding FAA design standards. A portion of Taxiway A and Taxiways E and F are 25 feet wide. These taxiways should be widened to conform with ADG II design standards.

Design standards for the separation distances between runways and parallel taxiways are based primarily on the ARC for that particular runway and the type of instrument approach capability. For Runway 5-23, which is not served by an instrument approach, ARC B-II design standards specify a runway/ taxiway separation distance of 240 feet. ARC C-II design standards specify a runway/taxiway separation distance of 300 feet for runways served by visual approaches or instrument approaches with visibility minimums of one mile. Presently, Taxiway A is located 200 feet

from the Runway 5-23 centerline. As mentioned previously, the location of the parallel taxiway precludes the development of an instrument approach procedure to the airport since the taxiway is within the runway OFZ. The alternatives analysis will examine the options available for meeting the runway/taxiway design requirement and ensure that an instrument approach procedure could be established for the airport.

Holding aprons provide an area at the runway end for aircraft to prepare for departure and/or bypass other aircraft which are ready for departure. Holding aprons should be planned for both runway ends.

INSTRUMENT APPROACH PROCEDURES

Instrument approach procedures are a series of maneuvers designed by the FAA which utilize navigational aids and assist pilots in locating and landing at an airport and are especially helpful during poor weather conditions. Presently, Wickenburg Municipal Airport is not served by an instrument approach. Therefore, the airport is effectively closed during poor weather conditions when visual flight can no longer be conducted.

The increased use of general aviation aircraft for business and corporate uses has advanced the need for approaches at non-commercial airports. With the need for the airport to support and enhance business and industrial growth in the Town of Wickenburg, it is important that the airport is accessible during all weather conditions and that the amount of time the airport is inaccessible due to inclement weather is reduced.

Aircraft operating under Federal Aviation Regulations (F.A.R.) Part 135, conducting aircraft charter activities, are primarily affected as these aircraft cannot land at an airport during low visibility and cloud ceiling conditions without an approved instrument approach procedure. Therefore, facility planning should include establishing an instrument approach at the airport so the airport is accessible during poor weather conditions.

Rapidly rising terrain features to the southwest could potentially prevent, or significantly limit, the capabilities of an instrument approach to Runway 5. There are no such features to the northeast. Therefore, facility planning should include establishing an instrument approach procedure to Runway 23.

The advent of Global Positioning System (GPS) technology will ultimately provide the airport with the capability of establishing instrument approaches. As mentioned previously in Chapter One, the FAA is proceeding with a program to transition from existing ground-based navigational aids to a satellite-based navigation system utilizing GPS technology. GPS is currently certified for enroute guidance and for use with instrument approach procedures. The initial GPS approaches being developed by the FAA provide only course guidance information. An enhancement to the GPS system, the wide area augmentation system

(WAAS), is expected to allow for GPS approaches that provide descent information as well as course guidance information. This capability is currently only available using an Instrument Landing System (ILS). In contrast to existing navigational aids, GPS does not require the installation of costly navigational aids at the airport.

Appendix 16 of FAA AC 150/5300-13, *Airport Design*, Change 6, details the requirements for new instrument approach procedures. This appendix details three types of instrument approach procedures: precision instrument approaches, approach procedures with vertical guidance (APV), and nonprecision approaches. While both the precision instrument and APV provide descent and course guidance information, the precision approach provides the best approach minimums (visibility less than 3/4 mile and 200-foot cloud ceilings). The APV can provide similar visibility minimums, but cloud ceiling minimums only to 250 feet. The APV is applicable to any approach using GPS. Nonprecision approaches can provide for approaches with visibility minimums less than 3/4 of a mile and 300-foot cloud ceilings. Since both course guidance and descent information is desirable for an instrument approach to Wickenburg Municipal Airport, and GPS does not require the installation of costly navigation equipment at the airport, an APV approach should be planned for Wickenburg Municipal Airport.

A review of Appendix 16 indicates that the existing airport site can support an APV with visibility minimums of one mile and cloud ceilings as low as 300 feet (provided Taxiway A is relocated). Lower visibility and cloud ceiling minimums would require an approach lighting system. According to regional weather observations, visual weather conditions occur nearly 99 percent of the time. Therefore, it would appear that only limited instrument approach capability is needed at the airport as weather conditions seldom fall below visual conditions. Based upon the prevailing weather conditions and the costs associated with installing and maintaining approach lighting systems, it would appear unnecessary to plan for GPS approach minimums lower than one mile visibility.

HELIPAD

The airport does not have a designated helipad. Helicopters conducted 1,600 operations at the airport in 2000. Helicopters utilized the same apron areas as fixed wing aircraft, typically operating from the compass rose area. Helicopter and fixed-wing aircraft should be segregated to the extent possible.

Facility planning should include establishing a designated helipad at the airport. This should be supplemented with two parking positions and be lighted to allow for operations during low visibility conditions.

LIGHTING AND MARKING

Currently, there are a number of lighting and pavement marking aids serving pilots using Wickenburg

Municipal Airport. These lighting systems and marking aids assist pilots in locating the airport at night or poor weather conditions and assist in the ground movement of aircraft.

Identification Lighting

Wickenburg Municipal Airport is equipped with a rotating beacon to assist pilots in locating the airport at night. The existing rotating beacon, located next to the terminal building, is adequate and should be maintained in the future.

Runway and Taxiway Lighting

Runway 5-23 is equipped with medium intensity runway lights (MIRL). The runway is also equipped with threshold lights, which indicate the location of the runway threshold at night. These systems are sufficient for any future GPS approaches and should be maintained through the planning period.

Effective ground movement of aircraft at night is enhanced by the availability of taxiway lighting. Presently, medium intensity taxiway lighting (MITL) is in place along all taxiways. This lighting is sufficient and should be maintained through the planning period.

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in visual conditions. To provide pilots with visual descent information during landings to the runway, visual glideslope indicators are commonly provided at airports. A precision approach path indicator (PAPI-4L) is installed at the Runway 23 end for this purpose. The PAPI-4L is appropriate for the mix of aircraft operating at the airport and should be maintained through the planning period. A similar system should be planned for the Runway 5 end.

Runway End Identification Lighting

Runway end identification lighting provides the pilot with rapid and positive identification of the runway end. The most basic system involves runway end identifier lights (REILs). As 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, REILs should be planned for each runway end.

Airfield Signs

Lighted directional and hold signs are installed at the airport. This signage identifies runways, taxiways, and apron areas. These aid pilots in determining their position on the airport and provide directions to their desired location on the airport. These lighting aids are sufficient and should be maintained through the planning period.

Distance Remaining Signs

Distance remaining signs are commonly installed at airports when there are a significant number of business aircraft operations. Distance remaining signs are located at 1,000-foot intervals from each runway threshold and indicate to pilots the length of runway remaining. Lighted distance remaining signs should be planned for Wickenburg Municipal Airport.

Pilot-Controlled Lighting

Wickenburg Municipal Airport is equipped with pilot-controlled lighting (PCL). PCL allows pilots to control the intensity of runway and taxiway lighting using the radio transmitter in the aircraft. PCL also provides for more efficient use of runway and taxiway lighting energy use. A PCL system turns the runway and taxiway lights off or to a lower intensity when not in use. Similar to changing the intensity of the lights, pilots can turn up the lights using the radio transmitter in the aircraft. This system should be maintained through the planning period. All airfield lighting components should be connected to this system.

Pavement Markings

Pavement 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 the guidance necessary to design an airport's markings. Runway 5-23 is equipped with basic runway markings. Nonprecision markings will be required for a GPS approach.

Taxiway and apron areas also require marking to assure that aircraft remain on the pavement. Yellow centerline stripes are currently painted on all taxiway and apron surfaces at the airport to provide this guidance to pilots. Besides routine maintenance, these markings will be sufficient through the planning period.

WEATHER REPORTING

Presently, Wickenburg Municipal Airport is without any form of automated or actual weather observations to provide pilots with information such as visibility, cloud ceilings, and altimeter settings. Wind speed and direction can be estimated by pilots using the lighted wind cone.

Itinerant aircraft operations to the airport are primarily affected by the absence of weather reporting. Without weather reporting, pilots cannot readily determine weather conditions at Wickenburg Municipal Airport from a distant airport. The nearest weather reporting stations are located at Luke AFB and Phoenix Deer Valley Airport. Aircraft operating under F.A.R. Part 135, conducting aircraft charter and commercial activities, are especially affected as these aircraft cannot operate at the airport unless current weather reporting is available.

To provide weather reporting, an automated weather observation system (AWOS) or automated surface observation system (ASOS) is commonly

installed at an airport. Both systems provide similar capabilities which include reporting current weather conditions such as: altimeter setting, wind direction and speed, temperature, dewpoint, density altitude, visibility, cloud ceilings data, and precipitation identification and intensity. Facility planning for Wickenburg Municipal Airport should include the installation of an automated weather reporting system. This would provide pilots flying into or out of the airport more accurate information about weather conditions in the area.

OTHER FACILITIES

The airport has a lighted wind cone which provides pilots with information about wind conditions. A segmented circle provides traffic pattern information to pilots. These facilities are required when the airport is not served by a 24-hour airport traffic control tower (ATCT). These facilities are sufficient and should be maintained in the future. However, as mentioned previously, the segmented circle is within the runway OFA and should be relocated.

AIR TRAFFIC CONTROL

Wickenburg Municipal Airport does not have an operational ATCT; therefore, no formal terminal air traffic control services are available at the airport. The establishment of a fully-funded ATCT, staffed and maintained by FAA personnel, follows guidance provided in FAA Handbook 7031.2C, *Airway Planning Standard Number One - Terminal Air Navigation Facilities and Air Traffic Control Services*. To be identified as a possible candidate for an ATCT, the sum of the following formula must be greater than or equal to one. The formula is as follows:

AC +	AT +	GAI +	GAL +	MI +	ML =	X
38,000	90,000	160,000	280,000	48,000	90,000	

Where:

AC = Air Carrier Operations
AT = Air Taxi Operations
GAI = General Aviation Itinerant Operations
GAL = General Aviation Local Operations
MI = Military Itinerant Operations
ML = Military Local Operations

Using current activity levels and those forecast activity levels prepared in Chapter Two, it is expected that the airport would not qualify as a possible candidate for a fully-funded FAA ATCT due to levels of air traffic at the airport. At current activity levels, the sum of the formula above is 0.13. At long term planning horizon levels, the sum is 0.34.

A remote communications outlet (RCO) is commonly established at an airport that has an instrument approach procedure. The RCO provides pilots with a direct connection to the Air Route Traffic Control Center (ARTCC) for the opening and closing of instrument flight plans. An RCO should be planned for the airport once an instrument approach procedure is developed.

AIRFIELD CONCLUSIONS

A summary of the airfield facility requirements is presented on **Exhibit 3B**. The critical design aircraft currently falls within ARC B-II. Presently, the airport does not fully meet all ARC B-II design standards. Taxiway A is located only 200 feet from the runway centerline. In this location, Taxiway A obstructs the OFZ and prevents the establishment of a GPS approach to the airport. Design standards require this taxiway be 240 feet from the runway centerline. The existing Av-Art hangars north of Runway 5-23 obstruct the runway OFA. The existing conventional hangar south of Taxiway A obstructs both the runway OFA and Taxiway A OFA. The segmented circle is also located within the runway OFA. Additional taxiway width is needed for Taxiways A, E, and F.

In the future, the critical design aircraft is expected to fall within ARC C-II. This places new airfield design requirements on the airport, including a runway/taxiway separation of 300 feet and a larger RSA and OFA. The existing aircraft parking areas would be within the runway OFA.

An ultimate runway length of 7,500 feet should be examined. This would better serve business jet operators at the airport which are weight-limited, especially during warm summer months. An interim runway length of 6,100 feet should be considered.

In order to prepare for future critical design aircraft, the Runway 5-23 pavement strength should be increased to 30,000 pounds single wheel loading (SWL). A helipad should ultimately be constructed to enhance aircraft safety and operations on the ground by segregating helicopter and fixed-wing aircraft.

To provide for aircraft arrivals during low visibility and cloud ceiling conditions, an instrument approach procedure should be established to Runway 23. A PAPI-4 is recommended for the Runway 5 end. REILs are recommended for each runway end. Lighted distance remaining signs and nonprecision runway markings are also needed at the airport.

The addition of an automated weather reporting system would enable local and transient pilots to determine weather conditions at the airport. This increased knowledge would allow the pilot to make better decisions about flying into or out of the airport. The following chapter will examine the options available for meeting all these design requirements.

EXISTING	SHORT TERM NEED (0-10 Years)	LONG TERM NEED (10-25 Years)
RUNWAYS AND TAXIWAYS		
Runway 5-23 ARC B-II 5,050' x 75' 23,000# SWL • 30,000# DWL Blast Pad - Runway 5 **TAXIWAYS** Full-Length Parallel Taxiway A 25' to 40' wide • 200' from runway centerline 5 Entrance/Exit Taxiways Taxiways B, C, D - 40' wide Taxiways E, F - 25' wide	Runway 5-23 ARC C-II 6,100' x 75' 30,000# SWL • 60,000# DWL Blast Pad Each End **TAXIWAYS** Full-Length Parallel Taxiway 35' wide • 300' from runway centerline 5 Entrance/Exit Taxiways - 35' wide Holding Aprons Each End	Runway 5-23 ARC C-II 7,500' x 100' 30,000# SWL • 60,000# DWL Blast Pad Each End **TAXIWAYS** Full-Length Parallel Taxiway 35' wide • 300' from runway centerline 5 Entrance/Exit Taxiways - 35' wide Holding Aprons Each End
WEATHER AND COMMUNICATION FACILITIES/INSTRUMENT APPROACH PROCEDURES		
None	Automated Surface Observation System **GPS Approach to Runway 23** Straight in Approach with Vertical Guidance One-Mile Visibility, 300' Cloud Ceilings Remote Communications Outlet (RCO)	Automated Surface Observation System **GPS Approach to Runway 23** Straight in Approach with Vertical Guidance One-Mile Visibility, 300' Cloud Ceilings Remote Communications Outlet (RCO)
AIRFIELD LIGHTING AND MARKINGS		
Rotating Beacon Medium Intensity Runway Lighting (MIRL) Medium Intensity Taxiway Lighting (MITL) PAPI-4L (Runway 23) Basic Runway Markings Pilot Controlled Lighting (PCL) Lighted Runway/Taxiway Directional Signs Segmented Circle/Lighted Windcone	Rotating Beacon Medium Intensity Runway Lighting (MIRL) Medium Intensity Taxiway Lighting (MITL) PAPI-4L (Runways 5 & 23) REILs (Runways 5 & 23) Nonprecision Runway Markings Lighted Distance Remaining Signs Pilot Controlled Lighting (PCL) Lighted Runway/Taxiway Directional Signs Segmented Circle/Lighted Windcone	Rotating Beacon Medium Intensity Runway Lighting (MIRL) Medium Intensity Taxiway Lighting (MITL) PAPI-4L (Runways 5 & 23) REILs (Runways 5 & 23) Nonprecision Runway Markings Lighted Distance Remaining Signs Pilot Controlled Lighting (PCL) Lighted Runway/Taxiway Directional Signs Segmented Circle/Lighted Windcone
HELIPAD		
None	2 Parking Positions Lighted	2 Parking Positions Lighted

KEY

ARC - Airport Reference Code
PAPI - Precision Approach Path Indicator
REIL - Runway End Identifier Lights

WICKENBURG MUNICIPAL AIRPORT

Exhibit 3B
AIRFIELD REQUIREMENTS

LANDSIDE REQUIREMENTS

Landside facilities are those necessary for handling of aircraft and passengers while on the ground. These facilities provide the essential interface between the air and ground transportation modes. The capacities of the various components of each area were examined in relation to projected demand to identify future landside facility needs.

HANGAR REQUIREMENTS

Utilization of hangar space varies as a function of local climate, security, and owner preferences. The trend in general aviation aircraft, whether single or multi-engine, is towards more sophisticated aircraft (and consequently more expensive aircraft). Therefore, many aircraft owners prefer enclosed hangar space to outside tiedowns. Presently, all the hangars at the airport are occupied. The Town of Wickenburg has issued a request for proposals for the development of additional aircraft storage hangars at the airport. These are planned to be developed along the apron east of the primary apron area.

The demand for aircraft storage hangars is dependent upon the number and type of aircraft expected to be based at the airport in the future. For planning purposes, it is necessary to estimate hangar requirements based upon forecast operational activity. However, hangar development should be based upon actual demand trends and financial investment conditions. While a majority of aircraft owners prefer enclosed aircraft storage, a number of based aircraft will still tiedown outside (due to the lack of hangar availability, hangar rental rates, and/or operational needs). Therefore, enclosed hangar facilities should not be planned for each based aircraft. At Wickenburg Municipal Airport, 70 percent of the based aircraft are currently stored in enclosed hangar facilities. In the future, it is estimated that 85 percent of based aircraft will be located within enclosed hangar facilities.

Future hangar requirements for the airport are summarized on **Exhibit 3C**. A planning standard of 1,200 square feet per based aircraft stored in T-hangars has been used to determine future T-hangar requirements. A planning standard of 2,500 square feet for large aircraft stored in conventional hangars has been used to determine future conventional hangar requirements. Conventional hangar area was increased by 15 percent to account for future aircraft maintenance needs. Aircraft storage and maintenance needs are currently being met through the use of three conventional hangars and one shade hangar. Chapter Four, Airport Development Alternatives, will examine the options available for hangar development at the airport and determine the best location for each type of hangar facility.

AIRCRAFT PARKING APRON REQUIREMENTS

Aircraft parking apron requirements are primarily determined by examining both locally-based and transient aircraft positions required in the future.

Transient aircraft parking apron positions are estimated as a percentage of forecast busy day operations.

For Wickenburg Municipal Airport, the future number of transient aircraft parking positions was determined as 17.5 percent of forecast busy day operations. Total apron requirements were determined by applying a planning criterion of 800 square yards of apron for each transient aircraft parking position and 650 square yards for each locally-based aircraft parking position. Transient business jet apron requirements were determined by applying a planning criterion of 1,600 square yards for each transient business jet parking position.

Presently, approximately 63 aircraft tiedown positions are available for both transient and locally-based aircraft on the existing 40,900 square-yard parking apron. As shown on **Exhibit 3C**, the number of aircraft tiedown positions appears to be adequate through the planning period. However, facility planning must consider the loss of the apron east of the primary apron area when examining long term apron needs. As mentioned previously, additional T-hangar development is being considered for this apron area. Additionally, the existing primary apron area is located within the ultimate ARC C-II runway OFA and will need to be replaced outside this area.

TERMINAL BUILDING REQUIREMENTS

General aviation terminal facilities provide an area for transient passengers to meet waiting passengers, pilots' lounge and flight planning, concessions, management, storage, restrooms, and general aviation businesses providing services such as refueling and line services. The existing general aviation terminal building at Wickenburg Municipal Airport encompasses approximately 1,200 square feet and provides areas for these activities.

The size of the terminal building is dependent upon many factors, most importantly the type of activities to be accommodated in the terminal building. Future terminal requirements have been determined for the airport based upon the forecast number of passengers presented in Chapter Two and are shown on **Exhibit 3C**.

SUPPORT REQUIREMENTS

Various facilities that do not logically fall within classifications of airfield, terminal building, or general aviation areas have been identified. These other areas provide certain functions related to the overall operation and safety of the airport and include: airport access, vehicle parking, fuel storage, and aircraft rescue and firefighting.

Airport Access

The airport is primarily accessed via U.S. Highway 60. On the airport, a two-lane access road leads to the terminal building and apron area providing access for based aircraft owners. A paved road provides access to the Av-Art facilities and adjacent Wickenburg

AIRCRAFT STORAGE HANGARS

	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
Aircraft to be Hangared	30	44	58	73
T-Hangars	30	36	47	57
Conventional Hangars	1-2	8	11	19
Hangar Area Requirements				
T-Hangar Area (s.f.)	38,800	41,800	52,600	62,300
Conventional Hangar Storage Area (s.f.)	12,400	16,100	22,300	41,000
Total Hangar Area (s.f.)	51,200	57,900	74,900	103,300

AIRCRAFT PARKING APRON

	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
Single, Multi-engine Transient				
Aircraft Positions	---	22	25	28
Apron Area (s.y.)	---	17,600	20,000	22,400
Transient Business Jet Positions	---	2	3	5
Apron Area (s.y.)	---	3,200	4,800	8,000
Locally-Based Aircraft Positions	---	16	12	12
Apron Area (s.y.)	---	10,400	7,800	7,800
Total Positions	63	40	40	45
Total Apron Area (s.y.)	40,900 [1]	31,200	32,600	38,200

	AVAILABLE	SHORT TERM NEED	INTERMEDIATE NEED	LONG TERM NEED
General Aviation Terminal Facilities (s.f.)	1,200	3,200	3,800	4,800
General Aviation Automobile Parking	15	72	85	106
Fuel Storage (gallons)				
100LL AVGAS	10,000	4,100	8,500	15,900
JET-A	10,000	6,900	11,500	19,100
Other Facilities		Aircraft Wash Rack		Covered Aircraft Owner's Maint. Facility/Wash Rack

[1] Includes hangar access taxilanes

WICKENBURG MUNICIPAL AIRPORT

Exhibit 3C
LANDSIDE FACILITY REQUIREMENTS

Industrial Airpark. These roadways provide sufficient capacity for the level of activity at the airport and will not require any upgrades to serve the airport.

Vehicle Parking

The only designated vehicle parking for the airport is located directly east of the terminal building and provides approximately 15 vehicle parking spaces. This parking area serves the general public, terminal area employees, and general aviation pilots. Vehicle parking requirements have been determined for the airport and are shown on **Exhibit 3C**. As shown on the exhibit, additional vehicle parking areas are needed through the planning period. This would include additional parking areas adjacent to the public terminal building for transient users and visitors, as well as parking for based aircraft owners adjacent to the main tiedown and hangar areas.

Fuel Storage

Fuel storage and dispensing facilities at the airport are owned by the Town of Wickenburg. Fuel storage is provided in a single 20,000-gallon storage tank located south of the terminal building. Separate 10,000-gallon chambers within the tank provide for 100LL and Jet-A fuel storage. Fuel is dispensed through a fuel island located on the aircraft apron, just north of the terminal building.

According to fuel records, approximately 35,000 gallons of 100LL Avgas were sold in 2000. This equates to approximately 2,900 gallons in an average month, or two gallons per general aviation operation requiring 100LL Avgas. Approximately 59,000 gallons of Jet-A fuel were sold in 2000. This equates to approximately 4,900 gallons in an average month, or 100 gallons per operation requiring Jet-A fuel. These ratios were utilized as the baseline to project future Avgas and Jet-A needs.

Exhibit 3C presents future Avgas and Jet-A storage requirements for the airport based upon these fuel use projections. Fuel storage requirements are typically based upon maintaining a two-week supply of fuel during an average month, however, more frequent deliveries can reduce the fuel storage capacity requirement. Based upon the use assumptions presented above, it is anticipated that additional fuel storage will be needed through the planning period.

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.

Other airports, such as Glendale Municipal Airport, have combined an aircraft owner maintenance facility with the wash facility. This typically has involved covering the wash rack area. These areas typically provide for the collection of used aircraft oil and other hazardous materials and provide

a covered area for aircraft washing and light maintenance. The development of a similar facility at the airport could reduce environmental exposure and provide an additional revenue source which could be used to amortize development costs.

Perimeter Fencing and Access Gates

The airport is presently equipped with a combination of four-strand and five-strand barbed-wire fencing. The vehicle access point to the apron area is equipped with a manual gate. This type of fencing provides limited ability to prevent inadvertent access to the aircraft operational areas by wildlife and vehicles.

Future facility planning should consider replacing the current barbed-wire fencing with chain-link fencing. This would limit the potential for inadvertent access to the airport by wildlife and vehicles and provide greater security. Securing the fencing to the ground can prevent wildlife from burrowing under the fencing. An automated access gate, operated through a keypad or card system, should be planned for each vehicle entrance to the aircraft operational areas. This would allow the airport to control the vehicles which access the aircraft operational areas and prevent vehicles from inadvertently accessing these areas.

Utilities

Electrical, water, and sanitary sewer services are available at the airport. Electrical service is provided by Arizona Public Service. Water and sewer services are provided by the Town of Wickenburg. The airport was recently connected to the Town's sewer system. No information collected during the inventory effort revealed any deficiencies in providing these services at the airport. Therefore, it is assumed that all future utility needs will be sufficiently met. New aviation facilities (hangars, terminal buildings) will likely require new utility extensions to primary service lines and should be included in future design estimates.

Aircraft Rescue and Firefighting

The airport is not required to maintain aircraft rescue and firefighting services at the airport since it is not served by scheduled airline service or charter operators using aircraft with more than 30 passengers seats. A Town of Wickenburg fire station is located four miles east of the airport along U.S. Highway 60.

LANDSIDE CONCLUSIONS

Landside facility requirements are summarized on **Exhibit 3C**. To accommodate forecast general aviation demand, enclosed T-hangar and conventional hangar space will be required through the planning period. Additional vehicle parking areas near the terminal and hangar areas will be needed through the planning period. Future planning should include an aircraft wash rack and tenant maintenance shelter. An alternate location for the primary aircraft parking apron should be considered, as it is located within the future ARC C-II runway OFA.

WICKENBURG
MUNICIPAL AIRPORT

Chapter Four
AIRPORT DEVELOPMENT ALTERNATIVES

Airport Development Alternatives

Prior to defining the development program for Wickenburg Municipal Airport, it is important to consider development potential and constraints at the airport. The purpose of this chapter is to consider the actual physical facilities that are needed to accommodate projected demand and meet the program requirements as defined in Chapter Three, Airport Facility Requirements.

In this chapter, a series of airport development scenarios are considered for the airport. In each of these scenarios, different physical facility layouts are presented for the purposes of evaluation. The ultimate goal is to develop the underlying rationale that supports the final master plan recommendations. Through this process, an evaluation of the highest and best uses of airport property is made while considering local goals, physical constraints, and appropriate federal airport design standards, where appropriate.

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 through the planning period.

The number of potential alternatives that can be considered can be endless. Therefore, some judgment must be applied to identify the alternatives that have the greatest potential for implementation. The alternatives presented in this chapter have been identified as such.

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 the Town of Wickenburg, the alternatives (or combination thereof) will be refined and modified as necessary to develop the recommended development program. Therefore, the alternatives presented in this chapter can be considered a beginning point in the development of the recommended master plan development program and input will be necessary to define the resultant development program.

While the focus of the analysis summarized in this chapter is identifying future development options for Wickenburg Municipal Airport, it is also important to consider the impacts of alternatives to developing Wickenburg Municipal Airport to meet future demands. These include: 1) no future development at the airport ("no action" alternative); and 2) transferring aviation demand to another airport.

The "no action" alternative essentially considers keeping the airport in its present condition and not providing for any type of improvement to the existing facilities to accommodate future demand. The primary results of this alternative would be the inability of the airport to satisfy the projected aviation demands of the airport service area as well as experience additional economic growth through the development of viable parcels of land.

The airport's aviation forecasts and the analysis of facility requirements indicated a potential need for a lengthened runway, increased safety areas, and greater runway/taxiway separation distance. Additionally, the facility requirements analysis indicated a need for the establishment of an instrument approach procedure, additional airfield lighting, and expanded hangar facilities.

Without these improvements to the airport facilities, regular and potential users of the airport will be constrained from taking maximum advantage of the airport's air transportation capabilities. The Town of Wickenburg would also not be able to accrue additional economic growth through the introduction of new and/or expanded businesses at the airport.

The unavoidable consequences of the "no action" alternative would involve the airport's inability to attract potential airport users. Corporate aviation plays a major role in the transportation of business leaders. Thus, an airport's facilities are often the first impression many corporate officials will have of the community. If the airport does not have the capability to meet hangar, apron, or airfield needs of potential users, the airport's capabilities to accommodate businesses that rely on air transportation will be diminished. As detailed in Chapter Two, Aviation Demand Forecasts, corporate aviation is becoming an increasing larger portion of total general aviation activity regionally, nationally, and at Wickenburg Municipal Airport.

An overall impact of the alternative will be the inability to attract new users,

especially those businesses and industries seeking location with adequate and convenient aviation facilities. Without regular maintenance and additional improvements, potential users and business for the local area could be lost. To propose no further development at the airport would be inconsistent with local community goals to expand the economic development of the Town of Wickenburg.

Transferring aviation services to another airport essentially considers limiting development at Wickenburg Municipal Airport and relying on other airports to serve aviation demand for the local area. As detailed in Chapter One, there are only three public use airports within 30 nautical miles of Wickenburg Municipal Airport. Only Pleasant Valley Airport and Buckeye Airport provide paved runways, with Forepaugh Airport providing only a dirt strip. Forepaugh Airport does not provide any services, while services at Pleasant Valley Airport are currently limited to soaring activities. With a runway length of 4,300 feet, Buckeye Airport cannot serve the mix of business jets currently using Wickenburg Municipal Airport. Considering the current capability of these airports, none of these airports is presently configured to serve the existing mix of aircraft using Wickenburg Municipal Airport without significant investments.

Buckeye Airport is also located a considerable distance from the Town of Wickenburg and would not be in a good position to serve local demand. While Pleasant Valley Airport and Buckeye Airport could theoretically accommodate a portion of the demand from Wickenburg Municipal Airport, each of these airports has a role to fill in the regional and national aviation system. Accommodating demand from Wickenburg Municipal Airport could potentially reduce the long-term ability of these airports to meet their future demand levels.

As new industries in the community begin to emerge and existing businesses expand, there will be a need for a highly functional airport. General aviation plays an important role in the way companies conduct their businesses. Wickenburg Municipal Airport is expected to contribute to economic development of the area by serving the general aviation needs of the Town of Wickenburg and surrounding areas. This role is not easily replaced by another airport.

The Town of Wickenburg leases the Forepaugh Airport site from the United States Bureau of Land Management (BLM). While this airport is presently not developed to accommodate the demand experienced at Wickenburg Municipal Airport, the Forepaugh Airport may have the ability to serve the long-term aviation demand of the Town of Wickenburg. The alternatives to follow will consider accommodating the long-term aviation needs of the Town of Wickenburg at Forepaugh Airport.

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. As owner and operator, the Town of Wickenburg provides the overall guidance for the operation and development of Wickenburg Municipal Airport. It is of primary concern that the airport is marketed, developed, and operated for the betterment of the community and its users. With this in mind, the following development objectives have been defined for this planning effort:

1. Develop a safe, attractive, and efficient aviation facility in accordance with applicable federal, state, and local regulations.

2. Identify facilities to efficiently serve general aviation users.

3. Identify the necessary improvements that will provide sufficient airside and landside capacity to accommodate the long term planning horizon level of demand of the area.

4. Target local economic development through the development of available property.

5. Maintain and operate the airport in compliance with applicable environmental regulations, standards and guidelines.

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

EVALUATION CATEGORIES AND CRITERIA

The evaluation of development alternatives includes both quantitative and subjective criteria. Quantitative criteria include (but are not limited to) the type and size of facility development, costs and regulatory requirements. Subjective criteria could include preferences for facility layout and efficiency. The weight given to each criterion can be as subjective as the criteria itself. Therefore, the best manner in which to evaluate each alternative is to define evaluation categories and criteria that aid the evaluator in understating the advantages and/or disadvantages of the proposed alternative.

Table 4A lists four evaluation categories and evaluation criterion that can be used to evaluate each of the proposed alternatives. This list is not necessarily all inclusive and other criteria can be used as appropriate. Additionally, these categories are not intended to develop a ranking for the proposed alternatives. The intent of these criteria is to allow the evaluator to develop a full understanding of the alternative by applying similar criteria to each alternative. This provides the evaluator with a sound basis for the acceptance or rejection of a particular alternative. Following a description of each alternative in this chapter, an evaluation of each alternative following this criterion will be made to assist in the evaluation of the preferred development direction for the airport.

TABLE 4A
Evaluation Categories and Criteria

Category	Description/Evaluation Criteria
1. Ability to Meet Program Requirements	1. Does the proposed alternative fully meet the requirements identified by the Facility Needs Evaluation? If not, what are the constraints?
2. Development Strategy	2. What are the impacts on existing facilities? Are existing facilities displaced by the proposal? Can the proposed alternative be developed in phases? Are the expansion capabilities beyond the proposed alternative?
3. Financial Considerations	3. Does the proposed alternative provide a revenue enhancement for the airport? What are the funding opportunities for this alternative? Does the proposed alternative increase the operational costs to the airport? Are the development costs of the proposed alternative more or less than other proposed alternatives?
4. Regulatory Requirements	4. Is the proposed alternative required to meet a federal, state, or local regulatory requirement? Are there regulatory or environmental requirements that could constrain the proposed alternative?

AIRFIELD ALTERNATIVES

Airfield facilities are, by nature, the focal point of the airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and often imparts the greatest influence of the identification and development of other airport facilities. Furthermore, aircraft operations dictate that the Federal Aviation Administration (FAA) design criteria that must be considered when looking at airfield improvements. These criteria, depending upon the areas around the airport, can often have a significant impact on the viability of various alternatives designed to meet airfield needs.

AIRFIELD DEVELOPMENT CONSIDERATIONS

Exhibit 4A summarizes the primary planning issues related to the airfield. These issues are the result of analyses conducted previously in Chapter Two, Aviation Demand Forecasts, and Chapter Three, Facility Requirements. These issues have been incorporated into a series of airfield development alternatives. The following describes in detail the specific requirements

considered in the development of the airfield alternatives to follow.

Airport Reference Code (ARC) Designation

The design of airfield facilities is based, in part, on the physical and operational characteristics of aircraft using the airport. The FAA utilizes the Airport Reference Code (ARC) system to relate airport design requirements to the physical (wingspan) and operational (approach speed) characteristics of the largest and fastest aircraft conducting 500 or more 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 operations at the airport.

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

At Wickenburg Municipal Airport, based aircraft fall within ARCs A-I and B-I. However, the mix of transient aircraft is more diverse and includes aircraft in ARCs B-I, B-II, C-I, and C-II. Aircraft in ARCs C-I and C-II are the most demanding aircraft to operate at the airport (due to their higher approach speeds); however, these aircraft conduct less than 500 annual operations at the airport. Therefore, at this time, the most demanding approach category for the airport is Approach Category B. The wingspans of the most demanding aircraft fall within Airplane Design Group (ADG) II.

As discussed in Chapter Three, the current critical aircraft at Wickenburg Municipal Airport fall within ARC B-II design standards. The potential exists in the future for increased use of the airport by business turboprop and turbojet aircraft. This follows with the national trend of increased business and corporate use of turboprop and turbojet aircraft, strong sales and deliveries of turboprop and turbojet aircraft, and expanded fractional ownership programs for these aircraft.

Common business and turboprop aircraft have higher approach speeds than the current critical aircraft operating at the airport; however, most of these aircraft have similar wingspans to the existing critical aircraft operating at the airport. The higher approach speeds of these aircraft are expected to have the potential of changing the critical aircraft designation for the airport. Ultimately, the airport is expected to accommodate aircraft within ARC C-II.

For planning purposes, it is necessary to examine the options available for meeting ARC C-II design requirements. **Table 4B** compares existing (ARC B-II) and future (ARC C-II) design requirements. As shown in the table, applying ARC C-II design requirements considerably increases both the

AIRFIELD CONSIDERATIONS

- Provide an interim runway length of 6,100 feet
- Provide an ultimate runway length of 7,500 feet
- Provide for an instrument approach procedure to Runway 23
- Conform to Federal design requirements
  - Relocate existing hangars from the existing and ultimate Runway 5-23 Object Free Area (OFA)
  - Relocate segmented circle and lighted wind cone from the existing and ultimate Runway 5-23 OFA
  - Relocate primary apron tiedowns outside the ultimate Runway 5-23 OFA
  - Establish ultimate Runway Safety Areas at each runway end
  - Increase the Runway 5-23/Taxiway A separation distance
  - Increase Taxiway A, E and F width
- Provide location for the development of an automated weather reporting system
- Provide for holding aprons at each runway end

LANDSIDE CONSIDERATIONS

- Provide areas for new hangar development to meet long term needs
- Provide areas for commercial general aviation development
- Provide for the relocation of hangars which are within the ultimate Runway 5-23 OFA
- Provide for ultimate aircraft parking apron needs and relocation of tiedowns which are within the ultimate Runway 5-23 OFA
- Provide for the expansion or redevelopment of the general aviation terminal building to meet long term needs
- Provide location for the development of an aircraft wash rack and tenant maintenance shelter
- Provide for expansion of fuel storage
- Provide for efficient vehicular access to future development areas
- Provide for a helipad and two helicopter parking positions
- Identify land acquisition needs

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Exhibit 4A
DEVELOPMENT CONSIDERATIONS

pavement and safety area requirements. For example, the minimum runway width increases from 75 feet to 100 feet and the distance that safety areas extend beyond the runway end increases from 300 feet to 1,000 feet.

TABLE 4B
Runway Design Standards

Airport Reference Code Approach Visibility Minimums	B-I One Mile	B-II One Mile	C-II One Mile
Width	60	75	100
Runway Safety Area (RSA)			
Width (centered on runway centerline)	120	150	400
Length Beyond Runway End	240	300	1,000
Object Free Area (OFA)			
Width	400	500	800
Length Beyond Runway End	240	300	1,000
Obstacle Free Zone (OFZ)			
Width (centered on runway centerline)	400	400	400
Length Beyond Runway End	200	200	200
Runway Centerline to:			
Parallel Taxiway Centerline	225	240	300
Runway Protection Zones (RPZ)			
Inner Width	500	500	500
Outer Width	700	700	1,010
Length	1,000	1,000	1,700

Source: FAA Airport Design Software Version 4.2D

The airside alternative analysis to follow, examines the options available to meeting ARC C-II design requirements as well as existing ARC B-II design requirements.

Increase The Runway 5-23 To Taxiway A Separation Distance to Qualify For An Instrument Approach Procedure And Meet Design Standards

Presently, Taxiway A is located 200 feet from Runway 5-23. At this distance from the runway, Taxiway A is located within the Runway 5-23 obstacle free zone (OFZ). The OFZ is defined as a volume of airspace 400 feet wide, centered on the runway centerline, extending 200 feet beyond each runway end. FAA standards preclude facility development or taxiways within the OFZ. The non-standard separation distance between Runway 5-23 and Taxiway A has led to the aircraft holding positions along Runway 5-23 being located only 125 feet from the runway centerline. FAA standards dictate that aircraft hold positions be located 200 feet from the runway centerline. These deficiencies prevent Wickenburg Municipal Airport from being considered for the development of an instrument approach procedure.

An instrument approach procedure is an important component of the overall

safety and reliability of Wickenburg Municipal Airport. Presently, Wickenburg Municipal Airport does not have an established approach procedure. Without an approach procedure, the airport is effectively closed to arrivals during weather conditions when visual flight can no longer be conducted. With the need for the airport to support local economic growth, it is important that the airport is accessible during all weather conditions and that the amount of time the airport is inaccessible due to weather conditions is reduced. An instrument approach procedure is a tool that increases the accessibility of the airport by providing procedures for pilots to locate the airport during poor weather conditions.

The previous master plan for Wickenburg Municipal Airport noted the deficiency in the runway/taxiway separation distance. The previous master plan recommended that the FAA issue a modification to design standard due to the development costs and impacts on existing landside facilities caused by relocating the taxiway. While the FAA approved the last Airport Layout Plan (ALP) that included a modification to design standard, the FAA requested in November 2001 that additional consideration be given to fully meeting all ARC B-II design standards, including runway/taxiway separation.

Two options can be considered to increase the Runway 5-23 to Taxiway A separation distance: 1) relocate Taxiway A to the south; or 2) relocate Runway 5-23 to the north. Both alternatives will be considered in more detail later within this chapter.

Aircraft Safety Areas

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: runway safety area (RSA), object free area (OFA) and runway protection zone (RPZ).

The FAA defines the OFA as "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 RSA is defined as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway." The RPZ is a trapezoidal area centered on the extended runway centerline to protect people and property on the ground. The RPZ is a two-dimensional area and has no associated approach surface. Presently, existing fencing and a dirt service road obstruct an ARC B-II OFA and RSA behind the Runway 5 end. The OFA further extends across the airport property line, into the U.S. Highway 60 right-of-way. The alternatives to follow will examine the options available to meet these design standards.

Obstacle clearance at each runway end and laterally along each side of the runway is governed by Federal Aviation Regulations (FAR) Part 77. FAR Part 77 establishes approach surfaces for

each runway end based upon the category of aircraft using the runway and the approach visibility minimums. The approach surface begins 200 feet from each runway end. Based on the existing visual approaches to each runway end, the existing approach slope for each runway is 20:1. Should an instrument approach procedure be established for the Runway 23 end, the approach slope for Runway 5-23 would increase to 34:1. Existing terrain features west of Runway 5 obstruct the existing 20:1 approach surface. The Runway 5 landing threshold has been displaced 535 feet to provide a clear approach surface. These terrain features would likely limit approach capability to this runway end; therefore, consideration is only being given to establishing an instrument approach procedure to Runway 23.

Obstacle clearance laterally on each side of the runway follows a 7:1 transitional surface that begins 250 feet on either side of the runway centerline at the same elevation as that portion of the runway centerline. To comply with these standards, building heights must be below the transitional surface. At the west end of the runway, landside facilities are below the runway elevation. Therefore, landside can be placed closer to the runway than is possible at the midpoint and east ends of the runway, where the runway and undeveloped land are closer in elevation.

Table 4B summarized the dimensions of the safety areas for both existing and ultimate conditions. FAA standards require these areas to be under the control of the airport to ensure that these areas are kept clear of objects that could be hazardous to aircraft operations. As will be discussed in greater detail later within this chapter, in certain circumstances portions of these safety areas may extend beyond the existing airport property line. In these situations, the airport would be required to purchase the property to protect these safety areas.

Runway Length

The runway length analysis in Chapter Three indicated a need for a longer runway for both the existing and projected mix of aircraft using Wickenburg Municipal Airport. Presently, Runway 5-23 is 5,050 feet long. The analysis in Chapter Three indicates that a runway length of 6,100 feet is needed to serve the existing mix of aircraft using the airport. A runway length of 7,500 feet is needed to fully serve projected critical design aircraft with ARC C-II.

Three alternatives can be considered to provide additional runway length: 1) place the entire extension on the southeast (Runway 5) end; 2) place the entire extension on the northeast (Runway 23) end; and 3) divide the extension between each runway end. The distance the runway can be extended at either end is dependent upon the ability to meet safety area requirements at that end of the runway. In other words, the distance the runway can be extended is dependant upon the extent that a full RSA and OFA can be provided beyond the extension. As shown in **Table 4A**, for ARC C-II this requires consideration for an additional 1,000 feet beyond the end of the extension.

An extension to the Runway 5 end is limited by the location of U.S. Highway 60. As mentioned previously, OFA and RSA standards are not fully met beyond this runway end now. Therefore, it is not possible to extend the runway to the southeast without relocating U.S. Highway 60. This master plan will not consider an extension to the Runway 5 end due to the costs associated with relocating U.S. Highway 60 and the availability of property to the northeast to accommodate the extension. Therefore, the only extension option to be considered in this master plan is an extension to the northeast end.

AIRFIELD
ALTERNATIVE A

Airfield Alternative A is presented on **Exhibit 4B**. This alternative depicts the requirements to comply with ARC B-I design standards at Wickenburg Municipal Airport. As discussed previously, ARC B-I is representative of the based aircraft fleet mix. In contrast, the transient fleet mix is comprised of a mix of larger aircraft within ARCs B-II, C-I, and C-II.

This alternative has been developed as a baseline condition to compare and contrast the ARC B-II and ARC C-II design requirements to be studied later within this section. Wickenburg Municipal Airport was originally constructed to "basic utility" standards (a designation no longer used for airport design and construction). ARC B-I closely approximates the "basic utility" standards. This alternative illustrates the improvements needed to maintain the airport to the current standards most applicable to those used in the original construction and design of the airport.

As shown by dashed lines on **Exhibit 4B**, the OFA and OFZ extend beyond the existing airport property line in the area behind the Runway 5 end. Existing fencing and a dirt service road further obstruct the OFA and OFZ.

To meet OFA and OFZ standards, Alternative A proposes to relocate the Runway 5 end 162 feet northeast. This would locate the OFA and OFZ inside the fencing and service road and entirely on airport property. To ensure that the runway length is preserved, Alternative A proposes to add 162 feet of length to the Runway 23 end to replace the length removed at the Runway 5 end to meet OFA and OFZ standards.

The existing displaced landing threshold at the Runway 5 end is retained to ensure proper clearance over the rising terrain to the southwest for landing aircraft. This requires two runway protection zones (RPZ) at the Runway 5 end. The approach RPZ would be located 200 feet behind the Runway 5 landing threshold, while the departure RPZ would be located 200 feet beyond the Runway 5 end. As shown on the exhibit, both of these RPZs would be located on airport property or over the U.S. Highway 60 right-of-way and would not be obstructed.

ARC B-I standards specify a runway/taxiway separation distance of 225 feet. Presently, Taxiway A is located 200 feet from Runway 5-23. Alterative A proposes to relocate Taxiway A 25 feet south to meet the

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LEGEND

- Airport Property Line
- Ultimate Pavment
- Pavement to be Removed
- Object Free Area (OFA)
- OFA without Relocated Threshold
- Object Free Zone (OFZ)
- OFZ without Relocated Threshold
- Runway Safety Area (RSA)
- RSA without Relocated Threshold
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

SUMMARY

1. Relocate Runway 5 Threshold 162' Northeast
2. Extend Runway 23 End 162'
3. Relocate Taxiway A 25' South
4. Relocate Segmented Circle
5. Relocate Hangar
6. Remove Fuel Island
7. Relocate Tiedowns

ABANDONED LANDFILL

EXISTING/ULTIMATE 5,050' X 75'

RELOCATED TAXIWAY A

TAXIWAY A

HOLDING APRON

162'

44.5'

30'

225'

200'

400'

240'

240'

EXISTING FENCE

DIRT SERVICE ROAD

APPROACH RPZ

DEPARTURE RPZ

U.S. HIGHWAY 60

NORTH

0 600 1,200

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4B
AIRFIELD ALTERNATIVE A
MAINTAIN ARC B-I DESIGN STANDARDS

ARC B-I runway/taxiway separation distance of 225 feet. As shown on the exhibit, relocating Taxiway A requires removing a hangar located along the northern portion of the apron, the existing fuel island, segmented circle, and lighted wind cone since each of these facilities would be located within the Taxiway A OFA, which extends 44.5 feet from the taxiway centerline.

Airfield Alternative A proposes a reconfiguration of the exit taxiways. Taxiways B, C, D, and F would be closed. Taxiways B and F would be replaced at the new runway ends. Taxiway D would be replaced by a new taxiway constructed at the new midpoint of the runway. Taxiway C would be replaced by a new exit taxiway located midway between the relocated Taxiways B and E.

An important consideration with this alternative is that it does not meet the facility needs identified in Chapter Three. The facility requirements analysis indicated that the current critical design aircraft at the airport fall within ARC B-II and require additional runway length. Additional runway length is not needed for aircraft within ARC B-I. To extend Runway 5-23, consideration must be given to upgrading the ARC for the airport.

AIRFIELD ALTERNATIVE B

Airfield Alternative B examines the requirements to upgrade the existing airport to ARC B-II standards. Alternatives B1, B2, and B3 have been developed to identify various options to comply with existing design deficiencies. These deficiencies include:

1. Four hangar buildings and the segmented circle are located within the runway and taxiway OFA;

2. The RSA does not meet minimum grade requirements, laterally, or at each end of the runway;

3. The RSA behind the Runway 5 end is obstructed by existing fencing and a dirt service road;

4. The OFA behind the Runway 5 end extends outside the existing airport property line and is obstructed by fencing, a dirt road, and U.S. Highway 60;

5. The OFZ behind the Runway 5 end extends outside the existing airport property line and is obstructed by fencing, a dirt road, and U.S. Highway 60;

6. Taxiway A is located within the OFZ (OFZ standards preclude taxiways within the OFZ);

7. Taxiway A is located 200 feet from the runway centerline (design standards specify a runway/ taxiway separation distance of 240 feet);

8. Portions of Taxiway A and Taxiways E and F are 25 feet wide (design standards specify a minimum width of 35 feet); and

9. Existing tiedown areas are located within the Taxiway OFA.

Each of the alternatives to follow will have similar recommendations for complying with some of these design deficiencies. Each of the buildings obstructing the runway OFA and Taxiway A OFA are shown for removal/relocation. The landside alternatives incorporate proposals to allow for the relocation of these facilities. A project will be included in the final capital improvement program to meet lateral grade requirements.

Taxiway A is shown for reconstruction 40 feet south of its present position to meet runway/taxiway separation standards and remove the taxiway from the OFZ. Relocating Taxiway A 40 feet south of its present position can impact the existing landside facilities. Should Taxiway A extend to the Runway 5 end, the existing fuel island and some aircraft tiedown locations would be located within the Taxiway A OFA and would need to removed/relocated. Alterative B1 considers the relocation of the fuel island, while Alternatives B2 and B3 consider options to retain the fuel island in its existing location.

Consideration has not been given to constructing a new parallel taxiway on the north side of the runway to comply with runway/taxiway separation distances. An abandoned landfill extends along a portion of the northern airport boundary and in the area where the taxiway would need to be constructed. This may likely require environmental mitigation that would likely increase the project costs. Furthermore, a taxiway along the north side of the runway would not be as functionally efficient. Presently, landside facilities are located along the south side of the runway. A taxiway along the north side of the runway would require that all aircraft cross the runway to transition between the airfield and landside facilities.

The reconstruction of Runway 5-23 40 feet north to meet the runway/taxiway separation distances has not been considered. Relocating the runway would essentially require reconstructing the runway. This is considered too costly. Runway 5-23 already meets pavement width standards. Portions of Taxiway A do not meet pavement width standards and would need to be rebuilt if retained as the parallel taxiway to Runway 5-23. Moving the runway would require not only reconstructing the runway but reconstructing a portion of Taxiway A, as well.

Taxiways A, E, and F are assumed to be widened when Taxiway A is relocated. The landside alternatives consider new locations to accommodate the tiedowns which may be lost if Taxiway A is extended to the Runway 5 end.

Alternatives B1, B2, and B3 incorporate a 1,050-foot extension to the Runway 23 end. The 1,050-foot extension meets short term runway length needs as identified in Chapter Three and is consistent with facility planning since the last master plan. As discussed previously, an extension to the Runway 23 end is the most viable runway extension alternative. Any extension to the Runway 5 end would require relocating U.S. Highway 60, which is considered too costly and unnecessary for this project since there are no constraints to extending the runway to the northeast (Runway 23 end).

Airfield Alternative B1

Airfield Alternative B1 is shown on **Exhibit 4C**. Similar to Airfield Alternative A, Airfield Alternative B1 proposes to relocate the Runway 5 end to the northeast to comply with ARC B-II RSA, OFA, and OFZ standards. As shown on the exhibit, the Runway 5 end must be relocated 279 feet to allow for the RSA, OFA, and OFZ to be located entirely on airport property and not be obstructed by the fencing and dirt service road. For comparison, if the fencing were relocated to the existing airport property line and the dirt service closed, the Runway 5 end would need to be relocated only 212 feet.

Airfield Alternative B1 incorporates a 1,329-foot extension to the Runway 23 end. This extension provides for the replacement of the 279 feet of runway length lost as a result of relocating the Runway 5 end to meet RSA, OFA, and OFZ standards and an additional 1,050 feet to meet the short-term runway length requirement of 6,100 feet. This alternative retains the existing displaced threshold at the Runway 5 end.

Taxiway A is relocated 40 feet south to meet runway/taxiway separation requirements and clear the OFZ. Holding aprons are added at each runway end. Holding aprons provide an area for aircraft to prepare for departure off the taxiway. This allows for aircraft ready for departure to by-pass those aircraft preparing for departure.

In this alternative, Taxiway A is extended to the relocated Runway 5 end. When extended to the relocated Runway 5 end, the existing fuel island and aircraft tiedown locations are within the taxiway OFA. The holding apron at the Runway 5 end would eliminate all tiedown locations west of the fuel island. The fuel island is relocated to the southern edge of the apron as proposed in the last master plan. The landside alternatives to follow will identify new locations to replace the lost tiedown locations.

Airfield Alternative B1 proposes a reconfiguration of the exit taxiways. Existing Taxiways B, C, D, and F would be closed. Taxiways B and F would be replaced at the new runway ends. Taxiway D would be replaced by a new taxiway constructed at the new midpoint of the runway. New exit taxiways would be located midway between the new midfield taxiway and runway ends. Exit taxiway location data outlined in Appendix 9 of FAA Advisory Circular (AC) 5300-13, Change 7, *Airport Design*, suggests that 100 percent of small aircraft would be able to exit the runway at the new midfield location. The new exits located between the relocated runway ends and new midfield taxiway would allow for 100 percent of larger turboprop and multi-engine piston aircraft to exit at these points.

Airfield Alternative B1 also considers a reconfiguration of the existing apron tiedown locations and taxilanes considering the relocated Taxiway A. As shown in the inset on **Exhibit 4C**, all existing tiedown locations would need to be relocated. A row of 10 tiedowns could be constructed at the north end of the apron, along the Taxiway A OFA. An apron taxilane serving aircraft through ADG I would

be created south of these tiedowns (along an area currently used for aircraft tiedown) to provide access to the relocated fuel island.

The facility requirements analysis determined that an automated weather observation system (AWOS) is needed at Wickenburg Municipal Airport to provide important weather details to pilots, especially transient and charter aircraft operators (charter companies cannot operate to the airport without current weather data). An AWOS includes various sensors for recording cloud height, visibility, wind, temperature, dew point, and precipitation.

FAA Order 6560.20A, Siting Criteria For Automated Weather Observing Systems (AWOS) was reviewed for general 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.

Since an instrument approach procedure is planned for Runway 23, the AWOS is best placed near the Runway 23 end. While the AWOS could be located on either the north or south side of the runway, the AWOS is best placed south of the runway. There is not sufficient airport property available north of Runway 5-23 to develop the AWOS on existing property and meet the minimum siting criteria described above. Therefore, any potential AWOS is best placed south of Runway 23 on available airport property. The boundaries of this siting area south of Runway 5-23 are shown with a blue dashed line on **Exhibit 4C**. Generally, an area within a 500-foot radius of the AWOS is protected from development that could interfere with the sensing equipment. This protection area is shown on the exhibit and used to determine the potential location for the AWOS. As shown, the most optimal location for the AWOS is on the northern edge of the AWOS siting area, approximately in the center of the siting area.

Airfield Alternative B2

Airfield Alternative B2 is shown on **Exhibit 4D**. This alternative, in most cases, presents similar options as Airfield Alternative B1; however, this alternative considers retaining the fuel island in its existing location.

To retain the fuel island in its existing location, Taxiway A cannot extend past the fuel island as the fuel island would be located within the taxiway OFA. Airfield Alternative B2 proposes to eliminate the Runway 5 displaced landing threshold and relocate the Runway 5 end 651 feet northeast. In this manner, Taxiway A would not extend past the fuel island and the fuel island could be retained in its existing location.

This alternative proposes a 1,701-foot extension to the Runway 23 end to replace the pavement lost to the relocation of the Runway 5 end and extend the runway to 6,100 feet to meet short-term runway length needs. Taxiway A is relocated 40 feet south

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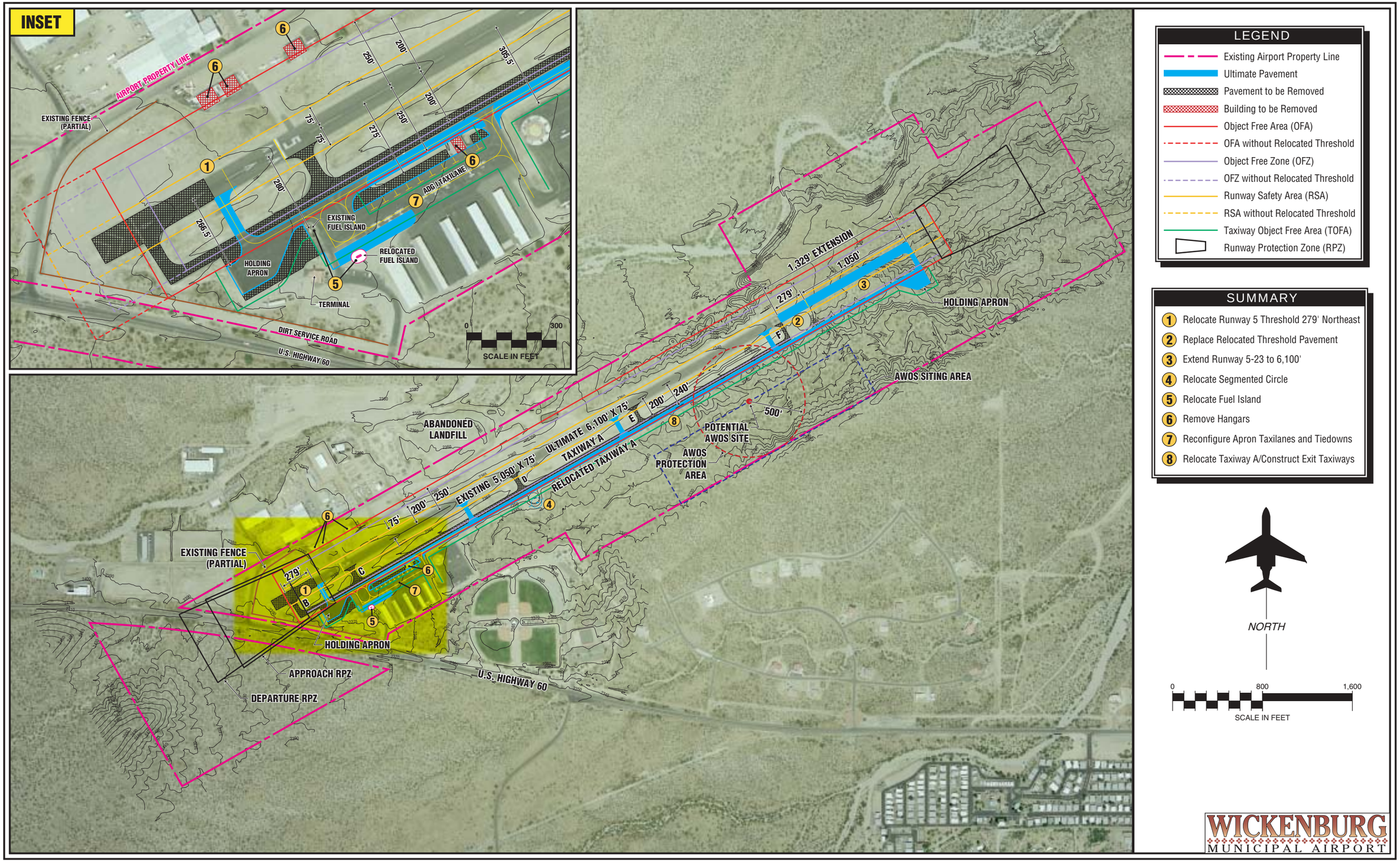

LEGEND

- Existing Airport Property Line
- Ultimate Pavement
- Pavement to be Removed
- Building to be Removed
- Object Free Area (OFA)
- OFA without Relocated Threshold
- Object Free Zone (OFZ)
- OFZ without Relocated Threshold
- Runway Safety Area (RSA)
- RSA without Relocated Threshold
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

SUMMARY

1. Relocate Runway 5 Threshold 279' Northeast
2. Replace Relocated Threshold Pavement
3. Extend Runway 5-23 to 6,100'
4. Relocate Segmented Circle
5. Relocate Fuel Island
6. Remove Hangars
7. Reconfigure Apron Taxilanes and Tiedowns
8. Relocate Taxiway A/Construct Exit Taxiways

NORTH

0 800 1,600

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4C
AIRFIELD ALTERNATIVE B1
UPGRADE TO ARC B-II

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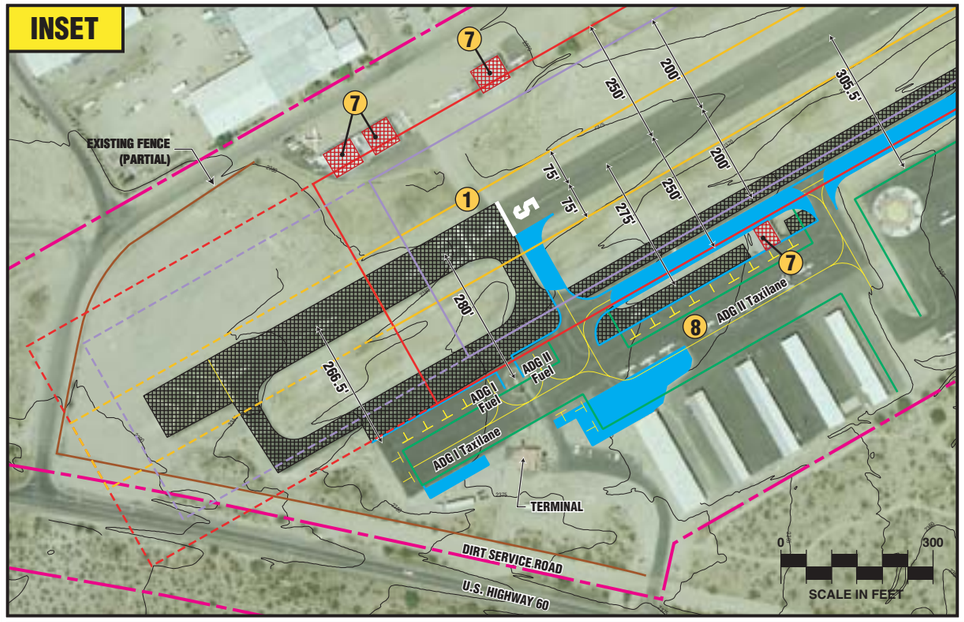

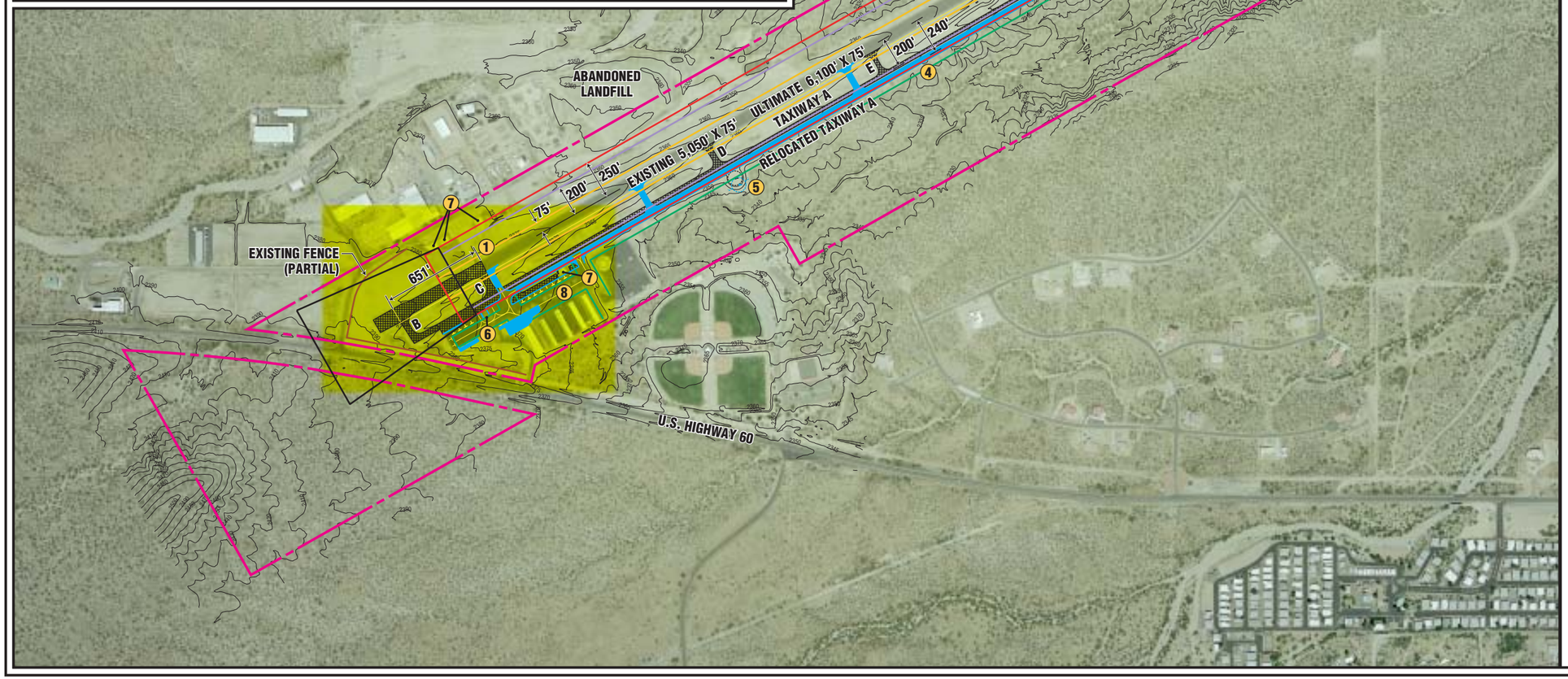

LEGEND

- Existing Airport Property Line
- Ultimate Pavement
- Pavement to be Removed
- Building to be Removed
- Object Free Area (OFA)
- OFA without Relocated Threshold
- Object Free Zone (OFZ)
- OFZ without Relocated Threshold
- Runway Safety Area (RSA)
- RSA without Relocated Threshold
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

SUMMARY

1. Relocate Runway 5 Threshold 651' Northeast
2. Replace Relocated Threshold Pavement
3. Extend Runway 5-23 to 6,100'
4. Relocate Taxiway A/Construct Exit Taxiways
5. Relocate Segmented Circle
6. Maintain Location of Fuel Island
7. Remove Hangars
8. Reconfigure Apron Taxilanes and Tiedowns

NORTH

0 800 1,600

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4D
AIRFIELD ALTERNATIVE B2
UPGRADE TO ARC B-II

and the runway exits relocated at optimal distances from the runway end.

While relocating the Runway 5 end, as shown on the exhibit, would allow the fuel island to remain in its existing location, full circulation around the fuel island by aircraft would be limited. As shown on the inset on **Exhibit 4D**, the location of the Runway 5-23 OFA and OFZ would prevent aircraft from parking or taxiing along the north side of the fuel island. Therefore, aircraft could only park along the northeast and southwest sides of the fuel island. The Runway 5 threshold would need to be relocated an additional 151 feet northeast (for a total of 802 feet) to allow for circulation around the entire fuel island.

In contrast to Airfield Alternative B1, this alternative provides for an ADG II taxilane along the northeastern portion of the apron. An ADG I taxilane is shown for the portion of the apron extending past the terminal building. The distance between the fuel island and terminal building does not allow for an ADG II taxilane in this area. Therefore, an area for ADG II aircraft refueling is reserved along the northeastern portion of the fuel island. An ADG I fuel position is located along the southwestern side of the fuel island.

The apron tiedowns are reconfigured to allow for the new taxilanes and avoid the relocated Taxiway A OFA and other safety areas. As shown, approximately 22 tiedown spaces could be redeveloped on the existing apron area, including three spaces that could be developed by extending the apron to the south, southwest of the terminal building. An additional three spaces could be developed northeast of the terminal building, near the existing vehicle entrance point as shown on the exhibit.

Airfield Alternative B3

Airfield Alternative B3 is shown on **Exhibit 4E**. This alternative seeks to meet short-term runway length needs and compliance with ARC B-II standards with minimal impacts on the existing landside facilities.

In this alterative, Taxiway A is relocated 40 feet south; however, Taxiway A only extends between the northeastern portion of the apron and the Runway 23 end. To gain access to the Runway 5 end, this alternative proposes to construct a partial parallel taxiway north of Runway 5-23. By not extending to the Runway 5 end, the existing tiedown locations and fuel island are not impacted by the relocated taxiway. In contrast to Airfield Alternatives B1 and B2, only the segmented circle would need to be relocated as a result of relocating Taxiway A. Similar to the previous airfield alternatives, the runway exit taxiways are relocated at optimal distances from the new runway ends.

This alternative extends Runway 5-23 1,050 feet northeast to meet the short-term runway length requirements of 6,100 feet.

In contrast to Airfield Alternatives B1 and B2, which relocated the Runway 5 end to meet OFA, OFZ, and RSA design standards, Airfield Alternative B3 proposes to leave the Runway 5 end in its existing location and implement a concept known as “declared distances”

to comply with OFA, RSA, and OFA design standards. Declared distances ensure that the full safety areas are provided during critical aircraft operational activities by notifying pilots of the length of runway available for landing or departure. Specifically, declared distances incorporate the following concepts:

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 clearway 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; and

Landing Distance Available (LDA) - The runway length declared available and suitable for landing.

Exhibit 4E summarizes declared distances for Wickenburg Municipal Airport, considering the displaced landing threshold discussed above. As shown on the exhibit, the TORA and TODA are equal to the actual pavement available since a clearway has not been designated for the airport. When determining the ASDA, FAA guidelines require that the full RSA and OFA safety areas be provided at the far end of the runway an aircraft is departing. For example, the ASDA for Runway 23 is reduced by 279 feet, the distance necessary to locate the OFA, OFZ and RSA behind the Runway 5 end inside the airport property line. The full OFA, OFZ, and RSA safety areas are provided behind the Runway 23 end. Therefore, departure operations to the north along Runway 5 are not limited and the ASDA is equal to the actual pavement length available of 6,100 feet.

The LDA must provide the full RSA at the approach end of the runway, as well as at the rollout end of the runway. Since the full OFA, OFZ and RSA can be provided behind the Runway 23 end (the rollout end for landing operations to Runway 5), the Runway 3 LDA is only reduced by 535 feet, the length of the existing displaced landing threshold to Runway 5. For Runway 23, the LDA is reduced by 279 feet, the amount necessary to relocate the OFA, OFZ, and RSA behind the Runway 5 end inside the airport property line.

The use of declared distances requires specific approval from the FAA Western-Pacific region. While FAA AC 150/5300-13, *Airport Design*, specifies the use of declared distances for complying with OFA, OFZ, and RSA design standard deficiencies, the FAA has limited the implementation of declared distances at general aviation airports. In most cases, the FAA has approved declared distances only at those airports that are constrained in meeting these standards at each runway end. As discussed earlier, the full ARC B-II OFA, OFZ, and RSA standards can be met in the area behind the Runway 23 end. Additionally, the runway can be shifted to the northeast as shown in Airfield Alternatives B1 and B2 to allow for compliance with the OFA, OFZ, and RSA standards behind the Runway 5 end.

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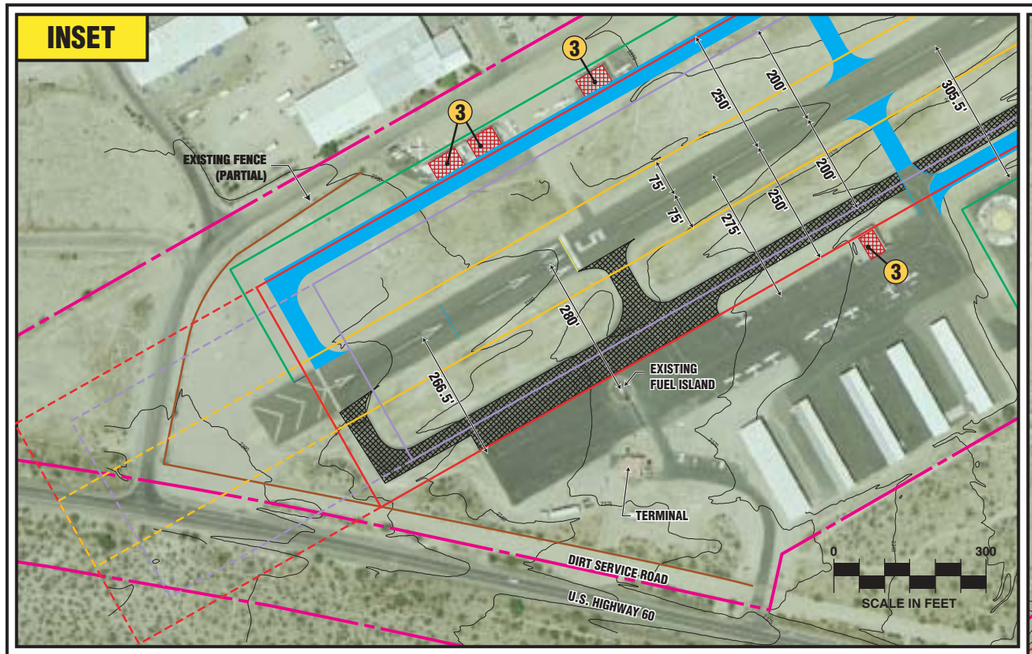

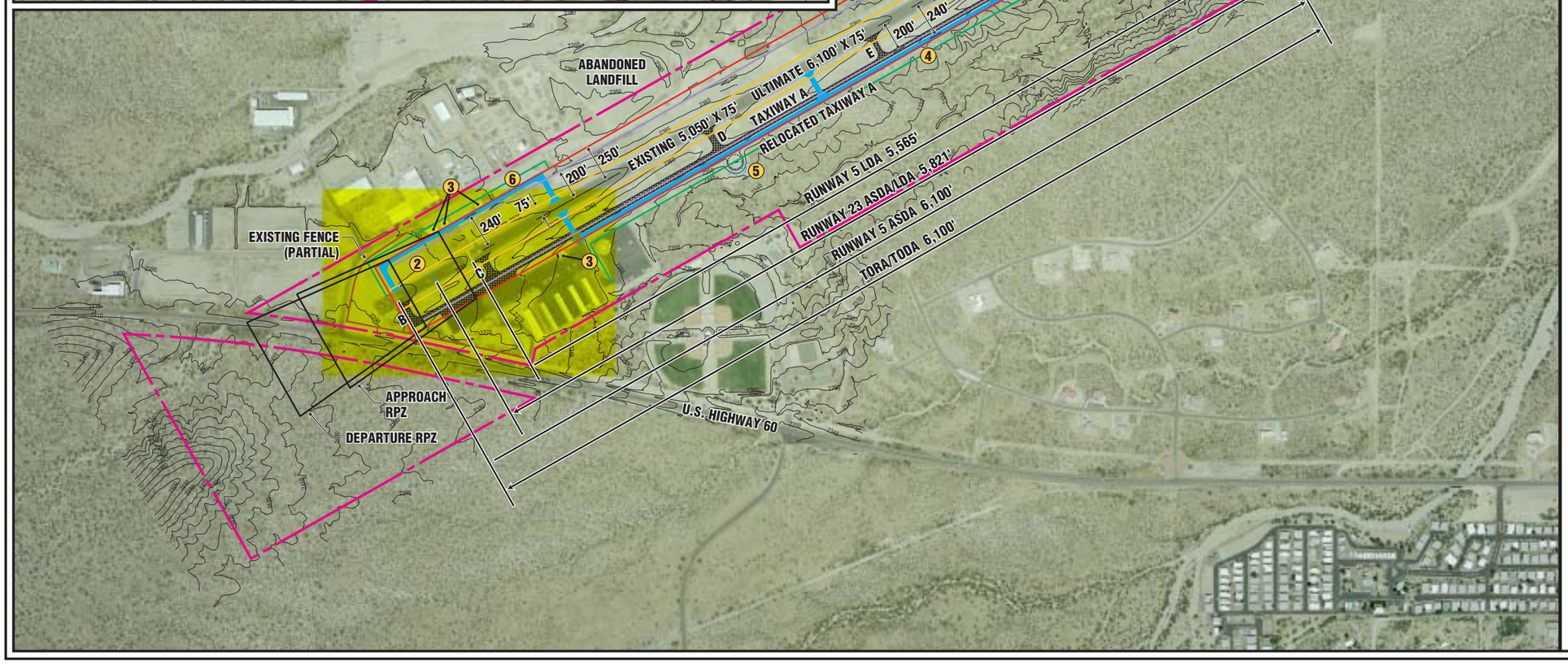

LEGEND

- Existing Airport Property Line
- Ultimate Pavement
- Pavement to be Removed
- Building to be Removed
- Object Free Area (OFA)
- OFA without Relocated Threshold
- Object Free Zone (OFZ)
- OFZ without Relocated Threshold
- Runway Safety Area (RSA)
- RSA without Relocated Threshold
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

SUMMARY

1. Extend Runway 5-23 1,050' Northeast
2. Implement Declared Distances
3. Remove Buildings
4. Relocate Taxiway A/Construct Exit Taxiways
5. Relocate Segmented Circle
6. Construct Partial Parallel Taxiway

DECLARED DISTANCES

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

NORTH

0 800 1,600
SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4E
AIRFIELD ALTERNATIVE B3
UPGRADE TO ARC B-II

AIRFIELD ALTERNATIVE C

Airfield Alternative C examines the requirements to upgrade the existing airport to ARC C-II standards. The facility requirements analysis indicated that with the growth in business jet activity at the airport and across the general aviation industry the airport might need to conform to ARC C-II in the future. The growth in business jet activity was also projected to require a 7,500-foot runway length.

As evident in **Table 4B**, design standards increase significantly from ARC B-II to ARC C-II. For example, the ARC B-II OFA and RSA extend 300 feet beyond the runway end; for ARC C-II, the OFA and RSA extend 1,000 feet beyond the runway end. There are similar increases for all design standards when a transition from ARC B-II to ARC C-II is considered.

Two alternatives have been developed for complying with ARC C-II design requirements. Similar to ARC B-II design requirements, the ARC C-II RSA and OFA extend beyond airport property behind the Runway 5 end and are obstructed by existing fencing, a dirt service road, and U.S. Highway 60. Both ARC C-II alternatives relocate the Runway 5 threshold to the northeast to locate the ARC C-II OFA and RSA on existing airport property. While this provides for compliance with the design standards, shifting the runway to the northeast moves the runway closer to existing residential developments located northeast of the airport; many of which may not be subject to overflights presently.

Airfield Alternative C1

Airfield Alternative C1 is shown at the top of **Exhibit 4F**. In this alterative, the Runway 5 threshold is relocated 1,160 feet northeast to provide for the RSA and OFA behind the Runway 5 end. Runway 5-23 is extended 3,610 feet to the northeast, for an ultimate length of 7,500 feet. The runway is widened to 100 feet. To meet runway/taxiway separation distance requirements, Taxiway A is relocated 100 feet south.

Extending the runway places a portion of the extension and Runway 23 RPZ outside the existing airport property line. The acquisition of approximately 102 acres of land is required to protect these areas and the FAR Part 77 transitional surface along the north side of the runway.

This alternative has several impacts on the existing terminal area. As shown on the exhibit, all the existing main apron tiedowns would be within the OFA and need to be removed. The fuel island, terminal building, and hangar located on the main apron area would also be located within the OFA and need to be removed. Three hangar buildings north of Runway 5-23 would also need to be removed.

Airfield Alternative C2

Airfield Alternative C2 is shown on the lower half of **Exhibit 4F**. This alternative shifts Runway 5-23 approximately 3,200 feet northeast to eliminate any impacts on the existing terminal area facilities, which were

evident in Airfield Alternative C1. To meet runway/taxiway separation criteria, Runway 5-23 is shifted 100 feet north. Taxiway A is retained to provide access to the existing terminal facilities.

Shifting Runway 5-23 3,200 feet northeast limits the ability to extend the runway to 7,500 feet. As shown on the exhibit, the location of the Burlington and Santa Fe railroad limits the ability to reconstruct Runway 5-23 to only 7,000 feet, 500 feet short of the projected length requirement.

AIRFIELD ALTERNATIVE D

Airfield Alternative D is shown on **Exhibit 4G**. This alternative considers developing Forepaugh Airport to ARC C-II design standards instead of the existing Wickenburg Municipal Airport.

As mentioned previously, the Town of Wickenburg leases the existing Forepaugh Airport from the United State Bureau of Land Management (BLM). The existing Forepaugh site includes a dirt runway 4,671 feet long by 80 feet wide. There are no services. The Forepaugh Airport lease encompasses 640 acres of land north of U.S. Highway 60, approximately 15 miles west of Town. The Forepaugh Airport lease with the BLM will expire in 2003.

Exhibit 4G depicts a potential configuration for a redeveloped airport on the existing Forepaugh Airport site. This alternative would develop a new runway in the same orientation as the existing runway; however, the new runway would be located southeast of the existing runway to maximize the use of the existing 640-acre parcel of land. An apron area would be developed south of the new runway with direct access from U.S. Highway 60.

At 7,500 feet, portions of the new runway would extend beyond the existing lease boundary. As shown on the exhibit, the acquisition of an additional 240 acres of land would be needed to protect the safety areas and provide for the construction of the runway and taxiways.

The Town of Wickenburg could pursue the permanent transfer of this property from the BLM. The transfer of BLM land for airport purposes is provided in *Section 516 of the Airport and Airway Improvement Act of September 3, 1982.* This legislation provides for the transfer of property to the public airport sponsor with no acquisition cost to the sponsor. The airport sponsor is only responsible for the administrative costs to facilitate the conveyance of the property. *United States Code, Tile 43, Chapter II, Part 2640, FAA Airport Grants*, specifies the procedures for obtaining the conveyance of BLM land.

An important consideration with pursuing this alternative is whether Forepaugh Airport would be a replacement for Wickenburg Municipal Airport. Forepaugh Airport is presently not part of the National Plan of Integrated Airport Systems (NPIAS). Prior to federal funding, this airport would need to be included in this program. Additionally, funding for each airport would need to be decided on the local, state, and federal levels. At the state and federal levels, the controlling agencies would need to decide if their

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AIRFIELD ALTERNATIVE C1

SUMMARY

1. Relocate Runway 5 Threshold 1,160' Northeast
2. Extend Runway 5-23 to 7,500' East
3. Relocate Taxiway A 100' South
4. Relocate Segmented Circle
5. Remove Buildings
6. Remove Fuel Island
7. Remove Terminal
8. Remove Tiedowns
9. Close Road to Industrial Park

LEGEND

- Existing Airport Property Line
- Ultimate Airport Property Line
- Residential
- Commercial
- Industrial
- Ultimate Runway/Taxiway
- Runway Protection Zone (RPZ)
- Object Free Area (OFA)
- OFA without Relocated Threshold
- Runway Safety Area (RSA)
- RSA without Relocated Threshold
- Pavement to be Removed
- Building to be Removed

HARTMAN WASH

102 Acres

3,610' Extension

Relocated Taxiway A

Ultimate Runway 7,500' x 100'

300'

Existing Runway 5,050' x 75'

Taxiway A

5/14 8/9

SADDLE RIDGE

U.S. High

ROLLING HILLS

DESERT HILLS

SONORAN

SANTA FE

Mine

130 Acres

Ultimate Runway 7,000' x 100'

300'

HARTMAN WASH

Existing Runway 5,050' x 75'

Taxiway A

5/14 8/9

SADDLE RIDGE WEST

U.S. Highway 60

Highridge Rd.

FLYING E

Vulture

SUMMARY

1. Reconstruct Runway 100' North, Shift 3,200' Northeast
2. Abandon Existing Runway

NORTH

0 1200 2400

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

AIRFIELD ALTERNATIVE C2

Exhibit 4F
AIRFIELD ALTERNATIVE C
UPGRADE TO ARC C-II

01MP06-4G-4/22/02

0 3000 6000

SCALE IN FEET

NORTH

NORTHEAST VIEW

SOUTH VIEW

180 Acres

Ultimate 7,500' x 100' Paved Runway

Existing 4,671 x 80' Dirt Runway

400'

Apron

Hangar Lease Parcels

Entrance from U.S. Highway 60

60 Acres

NORTH VIEW

LEGEND

- Existing Lease Boundary
- Ultimate Property Line
- Parking/Access
- Proposed Pavement
- Hangar Lease Parcels
- Object Free Area (OFA)
- Runway Protection Zone (RPZ)

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4G
AIRFIELD ALTERNATIVE D
UPGRADE FOREPAUGH SITE

respective system plans could support two airports in the Town of Wickenburg. Additionally, the Town of Wickenburg would need to decide if it could fund the operation of two airports.

An additional consideration with developing the Forepaugh Airport is the location of the Forepaugh Airport next to the Gladden 1 MOA. An upgrade of the Forepaugh Airport site would need to be coordinated with Luke Air Force Base and the other military users of the MOA to ensure that there is not a significant negative impact to the military's use of the MOA. Any potential instrument approach procedures would need careful consideration.

AIRFIELD ALTERNATIVES COST COMPARISON

Table 4C summarizes development costs for each of the airfield alternatives. These costs include the required pavement development costs and related facility impacts. Land acquisition costs are considered as well.

TABLE 4C
Airfield Alternatives Cost Comparison

Project	ALT. A	ALT. B1	ALT. B2	ALT. B3	ALT. C1	ALT. C2	ALT. D
Land Acquisition	$0	$90,000	$170,000	$50,000	$1,020,000	$1,300,000	$2,400,000
Airfield Pavement	$1,340,000	$2,470,000	$2,600,000	$2,160,000	$7,600,000	$8,530,000	$15,960,000
Roads and Parking	$0	$0	$0	$0	$0	$0	$430,000
Facilities	$310,000	$340,000	$90,000	$90,000	$375,000	$0	$370,000
Const. Admin., Design, & Contingencies	$660,000	$1,160,000	$1,140,000	$1,440,000	$3,600,000	$3,930,000	$7,430,000
Total Development	$2,310,000	$4,060,000	$4,000,000	$3,740,000	$12,595,000	$13,760,000	$26,590,000

The primary costs of implementing Airfield Alternative A include the cost to relocate the Runway 5 threshold, hangar building, fuel island, segmented circle, and Taxiway A.

Airfield Alternatives B1 and B2 development costs are very similar. While Airfield Alternative B3 land acquisition costs are higher than Airfield Alternative B1, Airfield Alternative B2 does not require the relocation of the fuel island. Airfield Alternative B3 is the least expensive mostly due to the shorter runway extension and smaller land acquisition when compared with Airfield Alternatives B1 and B2, and the fact that no existing landside facilities are impacted.

The development costs in Airfield Alternatives C1 and C2 are influenced by the land acquisition costs and runway and taxiway development costs. The terrain to the northeast of the airport varies greatly and will influence final development costs. Even though Airfield Alternative C2 does not impact any existing facilities, this alternative has much greater pavement development costs than Airfield Alternative C1.

Airfield Alternative D costs are the result of the lack of any existing infrastructure at the Forepaugh Airport site. Essentially, this alternative requires the full development of all utility services, runways, taxiways, roads, parking and apron facilities. This alternative has assumed the

private development of hangar facilities and transfer of the existing lease property at no cost to the Town of Wickenburg.

EVALUATION SUMMARY

The following analysis compares each airfield alternative using the evaluation criterion described at the beginning of this chapter.

Airfield Alternative A

1. **Ability to Meet Program Requirements** - This alternative ***does not*** meet the projected short or long runway length needs or design standard requirements. This alternative is designed to ARC B-I standards. The most demanding aircraft to operate at the airport presently fall within ARC B-II. In the future, the most demanding aircraft are expected to fall within ARC C-II.
2. **Development Strategy** - Portions of the airport or runway would be closed for short periods of time during construction. The fuel island, a hangar building, a portion of the main apron tiedowns, and segmented circle would need to be relocated. The runway could be further extended to the northeast if a higher ARC standard is pursued.
3. **Financial Considerations** - This improvement is eligible for federal and state grant assistance and is estimated to cost $2.3 million to implement.
4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

Airfield Alternative B

1. **Ability to Meet Program Requirements** - This alternative meets short-term design standard requirements and runway length needs; however, it ***does not*** meet projected long-term runway and design standard requirements.
2. **Development Strategy** - Portions of the airport or runway would be closed for short periods of time during construction. Four hangar buildings, a portion of the main apron tiedowns, and segmented circle would need to be relocated for Alternatives B1, B2, and B3. The fuel island would need to be relocated for Alternative B1. Alternatives B1 and B2 require a reconfiguration of the main apron area. Alternative B2 provides ADG II taxilanes, whereas Alternative B1 only provides for ADG I taxilanes. While Alternative B3 does not impact existing landside facilities, aircraft accessing the Runway 5 end for departure, or exiting at the Runway 5 end, would be required to cross the taxiway to gain access to the apron areas. Many pilots may wish to back-taxi to gain access to or from the Runway 5 end. This decreases airfield safety as aircraft use the runway for

taxiing and increases airfield delay, as landing aircraft may need to hold or extend their pattern for aircraft on the runway. The implementation of Alternative B3 will require the approval for the use of declared distances from the FAA.

3. **Financial Considerations** - These improvements are eligible for federal and state grant assistance. Alternative B1 has the highest development costs due to the need to remove the fuel island. While Alternative B2 does not affect the fuel island, the development costs are similar to Alternative B1 as the land acquisition is greater and the runway extension is longer. Alternative B3 has the lowest development costs, as the existing landside facilities are not impacted.
4. **Regulatory Requirements** - This improvement is required by federal design standards and regulations. This alternative would be subject to federal environmental review prior to implementation.

Airfield Alternative C

1. **Ability to Meet Program Requirements** - Alternative C1 meets both short and term design standard requirements and runway length needs. While Alternative C2 meets long-term design standard requirements, this alternative provides only 7,000 feet of runway length, 500 feet short of projected long-term needs.
2. **Development Strategy** - Portions of the airport or runway would be closed for short periods of time during construction. Alternatives C1 and C2 require land acquisition prior to development. Alternative C1 impacts existing landside facilities. The fuel island, terminal building, four hangar facilities, and main apron tiedowns would need to be removed and relocated. Nearly half of the northeast apron would be unusable. Each alternative shifts the runway to the northeast, closer to existing residential development, which at this time may not be subject to regular overflights.
3. **Financial Considerations** - These improvements are eligible for federal and state grant assistance. Alternative C2 has the higher development costs due to the need to reconstruct the entire runway length. Alternative C1 development costs are increased by the landside facility impacts.
4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

Airfield Alternative D

1. **Ability to Meet Program Requirements** - This alternative meets long-term design standard requirements and runway length needs.
2. **Development Strategy** - This alternative requires the acquisition of approximately 240

acres of land and transfer of the existing Forepaugh Airport site from the BLM. Without any existing infrastructure, this alternative requires the development of a paved runway, taxiway and apron area. All utilities, roadways, hangar facilities and parking areas would need to be developed. This facility development could proceed while the existing Wickenburg Municipal Airport remained open. While Forepaugh Airport could be considered as a replacement for Wickenburg Municipal Airport, consideration may be given to maintaining both airports. This would involve both individual and collective decisions at the local, state, and federal levels. Both the state and federal agencies would need to decide if they would want to maintain two separate airports for the Town of Wickenburg. Additionally, the Town of Wickenburg would need to decide if it could fiscally maintain two separate airports. While development costs are greater at this site, the area surrounding the existing Forepaugh Airport site is undeveloped. This would provide a compatible land use situation for the airport, which is a concern for the implementation of one of the Airfield Alternative C options.

3. **Financial Considerations** - This alternative requires significant private development for hangar facilities. Federal and state funding would require Forepaugh Airport to be included in their respective system plans.
4. **Regulatory Requirements** - This alternative would be subject to federal environmental review prior to implementation.

LANDSIDE ALTERNATIVES

The primary planning considerations for this analysis is the development of additional general aviation storage hangars to accommodate forecast demand, the development of a helipad and helicopter parking positions, expansion of fuel storage, and the development of a designated aircraft wash facility.

The facility requirements analysis indicated the need for additional aircraft storage facilities. This could include the development of T-hangar units and clearspan hangars. Consideration will be given to providing areas for corporate/executive hangar development as well.

The facility requirements analysis indicated a need for additional fuel storage through the planning period. A helipad is needed to provide a marked and segregated landing and takeoff area for helicopters. This is anticipated to include specific parking areas for helicopter aircraft.

Consideration is given to developing an aircraft wash/maintenance facility to provide a suitable area for the washing of aircraft. This provides for the proper disposal of aircraft cleaning fluids. There is no such facility currently available at the airport.

Consideration must also be given to providing areas for the relocation of facilities impacted by the implementation of either Airfield Alternatives A, B1, B2, or C1. Implementation of these alternatives may require the relocation of the fuel island, four hangar buildings, existing main apron tiedowns, and segmented circle.

To a certain extent, landside uses should be grouped with similar uses or uses that are compatible. Other functions should be separated, or at least have well defined boundaries for reasons of safety, security, and efficient operation. Finally, each landside use must be planned in conjunction with the airfield, as well as ground access that is suitable to the function.

Runway frontage should be reserved for those uses with a high level of airfield interface, or need for exposure. Other uses with lower levels of aircraft movements, or little need for runway exposure, can be placed in more isolated locations. The interrelationship of the landside functions discussed above is important to defining a long-term landside layout for the airport. These requirements have been combined in a series of landside development alternatives.

The landside alternatives are limited to the area south of Runway 5-23. Development north of Runway 5-23 has not been considered. The area north of Runway 5-23 is constrained by the location of Hartman Wash and an abandoned landfill and is without utilities, roadway access, and airfield taxiway access. Development north of Runway 5-23 would also require land acquisition, as there is not sufficient land area between the runway and existing property line for facility development.

Two landside alternatives have been developed. Landside Alternative A examines landside development potential assuming the implementation of Airfield Alterative B1. Landside Alternative B assumes the implementation of Airfield Alternative B2. Each of these alternatives remains valid should either Airfield Alternative B3 or Airfield Alternative C2 be implemented. Airfield Alterative C2 allows the taxiway to remain in its existing location, while Airfield Alternative B3 relocates Taxiway A the same distance south of Runway 5-23 as Airfield Alternatives B1 and B2. The landside alternatives would require modifications if Airfield Alternative C2 were implemented. Airfield Alternative C2 would move Taxiway A 60 feet closer to the proposed facilities. In most cases, this would require some proposed facilities to be removed from the plan as shown.

LANDSIDE ALTERNATIVE A

Landside Alternative A is shown on **Exhibit 4H**. This alternative proposes the development of an aircraft wash rack adjacent to a relocated fuel island. Fuel storage is expanded in its existing location. The existing apron area north of the main apron is utilized for new hangar development. The layout depicted on the exhibit provides for approximately 30 new hangars. This includes approximately 10 40-foot by 40-foot conventional hangars and 20 T-hangars. A new taxiway on the

northeast portion of the apron would provide additional access for the northeastern-most T-hangar.

A new apron area is shown northeast of this hangar development area. This apron would allow for the relocation of the four hangar buildings displaced by the implementation of Airfield Alternative B1 and provide for the new development of commercial general aviation hangars. The available area between the relocated Taxiway A and the existing property line only allows for the apron area to be developed to ADG I standards. A helipad and two helicopter parking positions are integrated on the northeast portion of the new apron.

An additional T-hangar development is proposed northeast of this apron area. This development as shown would accommodate an additional 30 T-hangars. These hangars were located in close proximity to the relocated Taxiway A so as not to be impacted by the rapidly declining terrain to the northeast.

A new paved public road is proposed to provide access for these new hangar and apron areas. This road would extend parallel with the southern airport property line. The segmented circle is relocated to the northern airport boundary to allow for the hangar and apron development.

LANDSIDE
ALTERNATIVE B

Landside Alternative B is shown on **Exhibit 4J**. This alternative proposes the expansion of the existing hangar area along the main apron. For this alternative, the existing access road and auto parking serving the terminal building are closed and a new conventional hangar constructed in its place. A new parking area located south of the terminal building and access road developed along the existing dirt service road would serve the terminal building. A wash rack is proposed for development along the southwestern portion of the main apron area. The main apron area taxilanes and tiedowns are reconfigured to provide access for ADG II aircraft.

Similar to Landside Alternative A, this alternative proposes the development of hangars on the existing northeastern apron area. This alternative proposes the development of two 8-unit nested T-hangars and five executive hangars on this apron area. These hangars would be served by the existing taxilane access.

In contrast with Landside Alternative A, this alternative proposes hanger development northeast of this existing apron area instead of the development of a new apron and commercial general aviation hangar area. As shown on the exhibit, both executive hangars and T-hangars could be developed in this area. The executive hangar development area provides for eight 60-foot by 60-foot hangars. Convenient automobile parking and access roads serve these hangars. The proposed T-hangar development allows for two 8-unit nested T-hangars. These hangar developments could be easily swapped in location. Depending upon demand, the executive and T-hangars could be developed as shown, or both development areas could be used for T-

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LEGEND

- Existing Airport Property Line
- Parking/Access
- Proposed Pavement
- Pavement to be Removed
- Proposed Building
- Building to be Removed
- Object Free Area (OFA)
- Object Free Zone (OFZ)
- Runway Safety Area (RSA)
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

RELOCATED SEGMENTED CIRCLE

6-UNIT T-HANGARS

AUTO PARKING

HELICOPTER PARKING POSITIONS

HELIPAD

10-UNIT T-HANGARS

ADG I TAXILANE

ADG I TAXILANE

ADG I TAXILANE

CONVENTIONAL HANGAR PARCELS

AUTO PARKING

ADG I TAXILANE

RELOCATED FUEL ISLAND

WASH RACK

ACCESS ROAD

EXECUTIVE HANGARS

EXPANDED AUTO PARKING

EXPANDED FUEL STORAGE

NORTH

0 300 600

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4H
LANDSIDE ALERNATIVE A

01MP06-4J-4/22/02

LEGEND

- Existing Airport Property Line
- Parking/Access
- Proposed Pavement
- Pavement to be Removed
- Proposed Building
- Building to be Removed
- Object Free Area (OFA)
- Object Free Zone (OFZ)
- Runway Safety Area (RSA)
- Taxiway Object Free Area (TOFA)
- Runway Protection Zone (RPZ)

HELIPAD

ADG II TAXILANE

ADG II TAXILANE

COMMERCIAL HANGAR LEASE PARCELS

AUTO PARKING

RELOCATED SEGMENTED CIRCLE

8-UNIT T-HANGARS

COMMERCIAL HANGAR LEASE PARCELS

AUTO PARKING

HELICOPTER PARKING POSITIONS

8-UNIT T-HANGARS

ADG II TAXILANE

FUEL ISLAND

EXECUTIVE HANGARS

ACCESS ROAD

WASH RACK

EXPANDED FUEL STORAGE

EXPANDED AUTO PARKING

NORTH

0 300 600

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 4J
LANDSIDE ALERNATIVE B

hangars or executive hangar development. The executive hangar area could provide for the relocation of the four hangar buildings displaced by this alternative.

The development of the helipad and helicopter parking area is shown northeast of the proposed hangar areas. In contrast with Landside Alternative A, this helipad is segregated from the fixed-wing operational areas. Additionally, this alternative provides a hangar lease parcel for the development of service and/or hangar facilities for regular users of the helipad.

Finally, this alternative provides for the development of a new apron area to serve aircraft with wingspans in ADG II. An area for commercial hangar development is reserved along the south portion of the new apron area. Similar to Landside Alternative A, a new service road extends along the southern airport boundary to provide public access to the hangars and apron facilities.

Evaluation Summary

The following summarizes the evaluation criterion described at the beginning of this chapter for the alternatives discussed above.

Landside Alternative A

1. **Ability to Meet Program Requirements** - This alternative provides for a mixture of hangar types, including T-hangar, large conventional hangars, and executive hangars. This alternative provides for the expansion of the fuel farm and development of an aircraft wash rack and helipad.
2. **Development Strategy** – The wash rack is proposed for development in an area along the main apron and could be developed in the short-term. It is conveniently located near the terminal building. This alternative maximizes development potential south of Runway 5-23 by redeveloping the existing northeastern apron area for hangar development in the short-term. This reduces development costs associated with constructing taxilane access. While the new apron would provide lease parcels for the development of commercial general aviation hangars, the new apron area is limited to ADG I taxilanes. With a mix of ADG II aircraft using the airport, an ADG I apron area may be limited in its ability to efficiently and safely serve a number of larger aircraft.
3. **Financial Considerations** - The terrain features south of Runway 5-23 decline rapidly to the northeast. Significant grading and fill may be required to construct the new apron and hangars as shown. The extension of all primary utilities is required for these developments. Each of these factors needs to be carefully considered prior to implementation to ensure cost recovery through rates and charges. These developments would provide considerable revenue enhance-

ment for the airport, as the airport would draw land lease revenues from most hangar development.

4. **Regulatory Requirements** – The proposed apron area and T-hangar areas may be subject to further environmental review prior to development.

Landside Alternative B

1. **Ability to Meet Program Requirements** - This alternative provides for a mixture of hangar types, including T-hangar, large conventional hangars, and executive hangars. This alternative accommodates an expanded fuel farm, new aircraft wash rack, and helipad.
2. **Development Strategy** – The development of the new conventional hangar area along the main apron would require removing the existing auto parking area and access road serving the terminal building. The executive hangar and/or T-hangar development in the area northeast of the existing apron areas provides maximum flexibility and has excellent phasing opportunities for each hangar site. Each hangar could be developed individually as required to meet demand. The helipad is segregated from the fixed-wing operational areas and provides a lease parcel for the development of hangar facilities to serve helicopter aircraft. The new apron area is designed to accommodate aircraft within ADG II.
3. **Financial Considerations** - The terrain features south of Runway 5-23 decline rapidly to the northeast. Significant grading and fill may be required to construct the new apron and hangars as shown. The extension of all primary utilities is required for these developments. The proposed hangars would provide considerable revenue enhance-ment for the airport, as the airport would draw land lease revenues from most hangar development.
4. **Regulatory Requirements** - The proposed apron area and T-hangar areas may be subject to further environmental review prior to development.

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 airport design standards were considered at each stage of development.

Upon review of this report by the Town of Wickenburg and the Planning Advisory Committee, a final Master Plan concept can be formed. The resultant plan will represent an airside facility that fulfills safety and design standards and a landside complex that can be developed as demand dictates.

The proposed development plan for the airport must represent a means by which the airport can grow in a balanced manner, both on the airside as well as the landside, to accommodate forecast demand. In addition, it must provide (as all good development plans should) for flexibility in the plan to meet activity growth beyond the 20-year planning period.

The remaining 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.

WICKENBURG
MUNICIPAL AIRPORT

Chapter Five
AIRPORT PLANS

Airport Plans

The planning process for the Wickenburg Municipal Airport master plan has included several analytic 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 airside and landside facility needs. The planning process, thus far, has included the presentation of two draft phase reports (representing the first four chapters of the master plan) to the planning advisory committee (PAC) and Town of Wickenburg. A plan for the use of Wickenburg Municipal Airport has evolved considering their input. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use of Wickenburg Municipal Airport.

AIRFIELD PLAN

The airfield plan for Wickenburg Municipal Airport focuses on meeting current Federal Aviation Administration (FAA) design and safety standards, establishing an instrument approach procedure, installing an automated weather observation system (AWOS), extending Runway 5-23 to the northeast, and the development of new taxiways over time to improve airfield capacity, safety, and efficiency. **Exhibit 5A** graphically depicts the proposed airfield improvements. The following text summarizes the elements of the airfield plan.

AIRFIELD DESIGN STANDARDS

As a federally-obligated airport (the result of accepting federal grant

funding), Wickenburg Municipal Airport must comply with Federal Aviation Administration (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 protect the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapter Three, FAA design criteria is a function of the critical design aircraft's (the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations [take-offs and landings] per year at the airport) wingspan and approach speed, and in some cases, the runway approach visibility minimums. The FAA has established the Airport Reference Code (ARC) to relate these factors to airfield design standards.

Wickenburg Municipal Airport is currently used by a wide range of general aviation aircraft and helicopters. General aviation aircraft include single and multi-engine aircraft within ARCs A-I and B-I, turboprop aircraft within ARCs B-I and B-II, and business jet aircraft within ARCs C-I, C-II, D-I, and D-II.

Based on operational counts conducted at the airport, aircraft within ARCs C-I, C-II, D-I, and D-II do not currently conduct 500 annual operations at the airport. Therefore, following FAA guidance, these aircraft are not considered the current critical design aircraft. Rather, aircraft within ARC B-II are considered the current critical design aircraft. Based upon the historical trend at the airport, which has shown an annual increase in business aircraft operations (particularly business jet operations), aircraft within ARC C-II are projected to comprise the critical design aircraft in the future. Therefore, short and intermediate term planning and development should ensure that the airport meets ARC B-II design standards. Long term airport planning for the Town of Wickenburg should include developing an airport to meet ARC C-II design standards and the needs of the full range of business jets destined for the Town of Wickenburg and regional area.

Considering the need to provide an airport capable of meeting ARC C-II planning standards and the operational needs of business jets in the future for the Town of Wickenburg, the Airport Development Alternatives (Chapter Four) examined two alternatives to upgrade the existing Wickenburg Municipal Airport to ARC C-II standards and a third alternative to improve the existing Forepaugh Airport site to ARC C-II standards. The improvements required to meet ARC C-II standards at the existing airport site would require shifting Runway 5-23 to the northeast to meet safety standards, extending the runway to at least 7,000 feet, and increasing the runway/taxiway separation distance to at least 300 feet. ARC C-II standards would cause the elimination of most of the existing apron area, impact roadway access to the adjoining industrial park to the north, and limit building development south of Runway 5-23 in an effort to

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SUMMARY

1. Relocate Taxiway A 40' Southeast/Realign Entrance Taxiways/Remove Hangar/Reconfigure Apron Tiedowns and Taxilanes
2. Relocate Runway 5 End 651' Northeast
3. Extend Runway 5-23 and Taxiway A 1,700' Northeast/Construct Holding Apron
4. Install Runway End Identifier Lights (REILs)
5. Relocate Runway 23 Precision Approach Path Indicator (PAPI)/Install PAPI Runway 5
6. Relocate Segmented Circle and Windcone
7. Remove Buildings in OFA
8. Install Automated Weather Observation System (AWOS)
9. Establish Global Positioning System (GPS) Approach to Runway 23
10. Install Nonprecision Markings

HARTMAN WASH

EXISTING 5,050' X 75'

ULTIMATE 6,100' X 75'

TAXIWAY A

1,701'

651'

250'

200'

240'

A

B

C

D

E

F

U.S. HIGHWAY 60

LEGEND

- Existing Airport Property Line
- Ultimate Airfield Pavement
- Ultimate Buildings
- Auto Access and Parking
- Pavement to be Removed
- Building to be Removed
- Object Free Area (OFA)
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)

NORTH

0 800 1,600

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 5A
AIRFIELD PLAN

comply with object clearing standards. Depending upon the alternative, the acquisition of an additional 100 to 130 acres of land would be required. Shifting Runway 5-23 to the northeast would move the runway and operational patterns closer to existing residential development northeast of the airport. Shifting Runway 5-23 to the northeast is complicated by terrain features which would require significant amounts of fill.

The Town of Wickenburg leases the current Forepaugh Airport site from the U.S. Bureau of Land Management (BLM). The existing Forepaugh Airport site includes a dirt runway 4,671 feet long by 80 feet wide. The existing Forepaugh Airport lease encompasses 640 acres located north of U.S. Highway 60 approximately 15 miles west of the Town. The area surrounding the existing Forepaugh Airport site is undeveloped. An alternative to develop a 7,500-foot long runway was considered in Chapter Four. The acquisition of approximately 240 acres of land would be required to provide a runway capable of serving the needs of business jets and meeting ARC C-II standards at the Forepaugh Airport.

In evaluating the development alternatives, the Town of Wickenburg and PAC decided that the existing Wickenburg Municipal Airport site should not be upgraded to ARC C-II standards due to the existing constraints to meeting ARC C-II standards and extending the runway to meet the needs of business jets. In particular, this included the impacts on the existing terminal area and adjoining industrial park, terrain features, and encroaching residential land uses. Instead, the Town and PAC wanted to pursue the development of the Forepaugh Airport site to serve the full range of business jets and meet ARC C-II standards in the future. The Forepaugh Airport site, while located further west of the Town, provides more capability to be developed to meet these standards and is not restricted by existing land uses. Therefore, this master plan provides for the upgrade of the existing Wickenburg Municipal Airport site to ARC B-II standards and calls for the permanent transfer of the existing Forepaugh Airport to the Town of Wickenburg to eventually be developed to meet the needs of the full range of business jet aircraft sometime in the future.

The existing lease for the Forepaugh Airport site expires in 2003. The Town can pursue the permanent transfer of Forepaugh Airport through Section 516 of the *Airport and Airway Improvement Act of September 3, 1982*. This will require the completion of an environmental assessment and determination by the FAA and BLM.

A decision on whether an upgraded Forepaugh Airport site would replace the existing Wickenburg Municipal Airport would need to be made closer to the time this upgrade is implemented. A number of issues would need to be considered in making this decision. This includes (but is not limited to) the financial capability and desire of the Town of Wickenburg to fund the operation of two airports, the desire of state and federal agencies to maintain

and fund two airports in the Town of Wickenburg, and the private investments in the existing Wickenburg Municipal Airport site and whether comparable facilities could be developed at the Forepaugh Airport site with similar cost structures. A full evaluation of these conditions cannot be made at this time.

Table 5A summarizes ARC B-II airfield safety and facility dimensions for the existing Wickenburg Municipal Airport. These standards were considered in the planned improvements of the existing airport site to be discussed in greater detail later within this chapter.

AIRFIELD DEVELOPMENT

The airfield plan for Wickenburg Municipal Airport closely follows Alternative B2 presented previously in Chapter Four. This plan provides for the airport to fully comply with ARC B-II design standards and be extended to provide an ultimate length of 6,100 feet. In this alternative, Runway 5-23 and Taxiway A are extended 1,701 feet north. This includes 651 feet to replace pavement being abandoned behind a relocated Runway 5 end and 1,050 feet to extend the runway from 5,050 feet to 6,100 feet. Taxiway A is being relocated 40 feet southeast to meet runway/taxiway separation distance and widened to 35 feet.

A review of ARC B-II runway safety area (RSA) and object free area (OFA) standards indicates that these standards are not fully met at the airport. The RSA and OFA behind the Runway 5 end are obstructed by existing fencing and a dirt service road. Furthermore, the OFA extends beyond the existing property line and is obstructed by U.S. Highway 60. The RSA lateral grade requirements are not fully met along the entire length of Runway 5-23. Finally, three hangar buildings north of Runway 5-23 obstruct the runway OFA.

Compliance with RSA standards is a current focus of FAA policy. Guidance for compliance with RSA standards is provided in FAA Order 5200.8, *Runway Safety Area Program*. The objective of the runway safety area program is that all RSAs at federally-obligated airports conform to the standards contained in AC 150/5300-13, *Airport Design*, to the extent practicable. FAA Order 5300.1F, *Modification of Agency Airport Design, Construction, and Equipment Standards* indicates that modifications of standards are ***not*** issued for nonstandard runway safety areas.

To conform with FAA guidance and the intent of FAA Order 5200.8, a plan to meet the full RSA and OFA standards at each runway end has been developed. This includes grading and filling the RSA along the entire length of Runway 5-23 to ARC B-II standards, removing the hangar buildings north of Runway 5, and relocating the Runway 5 end to the northeast to move the RSA and OFA onto existing airport property to ensure they are no longer obstructed by the fencing, road, and U.S. Highway 60.

TABLE 5A **Planned Airfield Safety and Facility Dimensions (in feet)**	
Airport Reference Code (ARC)	B-II
Approach Visibility Minimums	
Runway 5	Visual
Runway 23	One-Mile
Runway	
Width	75
Length	6,100
Runway Safety Area (RSA)	
Width	150
Length Beyond Runway End	300
Object Free Area (OFA)	
Width	500
Length Beyond Runway End	300
Obstacle Free Zone (OFZ)	
Width	400
Length Beyond Runway End	200
Runway Centerline To:	
Hold Line	200
Parallel Taxiway Centerline	240
Edge of Aircraft Parking	250
Runway Protection Zone (RPZ)	
Inner Width	500
Outer Width	700
Length	1,000
Obstacle Clearance	
Runway 5	20:1
Runway 23	34:1
Taxiways	
Width	35
Safety Area Width	79
Object Free Area Width	131
Taxiway Centerline To:	
Parallel Taxiway/Taxilane	105
Taxilanes	
Taxilane Centerline To:	
Parallel Taxilane Centerline	97
Fixed or Moveable Object	57.5
Taxilane Object Free Area	115
Source: FAA Advisory Circular 150/5300-13, *Airport Design,* Change 7, FAR Part 77, *Objects Affecting Navigable Airspace*, FAA Advisory Circular 150/5340-1F, *Marking Of Paved Areas On Airports*	

As mentioned, the Runway 5 end is planned to be relocated 651 feet northeast to meet RSA and OFA standards. Relocating the Runway 5 end also eliminates the existing 535-foot displaced threshold to Runway 5, which was put in place to ensure proper clearance over the terrain to the southwest that obstructs the Runway 5 approach surface. Additionally, relocating the Runway 5 end 651 feet north ensures the existing fuel island

can remain in its location. If the Runway 5 end is not relocated this distance, the relocated parallel taxiway would have caused the removal and relocation of the fuel island. Furthermore, this relocation ensures proper clearance between aircraft located on the north side of the fuel island and aircraft taxiing to the Runway 5 end from the existing apron area.

Taxiway A is planned to be relocated 40 feet southeast to meet the ARC B-II runway/taxiway separation standard of 240 feet. In its present position, Taxiway A prohibits the establishment of an instrument approach procedure as Taxiway A obstructs the obstacle free zone (OFZ). Relocating the taxiway will allow the airport to qualify for an instrument approach procedure and meet standards for aircraft holdlines which must be marked 200 feet from the runway centerline.

Relocating Taxiway A 40 feet southeast impacts the configuration of the existing apron area and causes the removal of an existing conventional hangar located on the northwest portion of the main apron area and the segmented circle and lighted windcone. The hangar, segmented circle, and lighted windcone would be located within the relocated taxiway OFA and must be removed to ensure safe passage of aircraft along the taxiway. The segmented circle and lighted windcone are planned to be relocated to the northern airport boundary, outside the limits of the runway OFA. The hangar is planned to removed. This facility could ultimately be replaced with a similar facility located east of the terminal building as shown on **Exhibit 5A**.

The apron tiedowns and taxilanes must be reconfigured to ensure proper clearance from the relocated taxiway centerline and taxiway OFA. The existing tiedowns on the northwest edge of the main apron are planned to be removed as shown on the exhibit and replaced with new tiedowns outside the limits of the taxiway OFA. This would shift the existing apron taxilane to the southeast, in the area currently occupied by two rows of aircraft tiedowns and a row of apron lighting standards. The lighting standards are planned to be removed to allow for the relocated taxilane. Some of the apron tiedowns are planned to be replaced on the northern edge of the existing T-hangars.

Taxiways D and E are planned to be relocated when Taxiway A is relocated to the southeast. The new locations of these taxiways better aligns these taxiways with the new runway ends caused by extending the runway to the northeast and shifting the Runway 5 end northeast.

Concurrent with the runway extension, the existing Runway 23 precision approach path indicator (PAPI) would be relocated to the new Runway 23 end. A PAPI is planned for the Runway 5 end. PAPIs assist the pilot in determining the correct descent path to the runway end.

Runway end identifier lights (REILs) are planned for each runway end. REILs aid in the identification of the runway end at night and during low visibility conditions.

Nonprecision runway markings are also planned. These are required should a new global positioning system (GPS) instrument approach procedure be established to Runway 23 as planned.

An automated weather observation system (AWOS) is planned to be installed south of Runway 5-23. The AWOS would provide automated weather observations and reporting.

Exhibit 5A depicts the land currently being acquired from the Arizona State Land Trust. This property will provide for the runway extension and relocated RPZ. This land area encompasses approximately 37 acres.

LANDSIDE PLAN

The landside plan for Wickenburg Municipal Airport has been devised to safely, securely, and efficiently accommodate potential aviation demand. The landside plan provides for development of new commercial general aviation facilities, aircraft storage facilities, an aircraft wash rack, expanded public terminal building, expanded fuel farm, helipad, and segregated vehicle access routes. Landside improvements are shown in detail on **Exhibit 5B**.

With the exception of the public terminal building and aircraft wash rack, most structural improvements are anticipated to be developed privately, as has been done historically at Wickenburg Municipal Airport. The capital improvements program identifies the infrastructure improvements needed at the airport to support development and the federal and state funding assistance available to the Town of Wickenburg to make those improvements.

The implementation of the *Aviation and Transportation Security Act* of 2001 will need to be closely monitored throughout the implementation of this master plan. This law established the Transportation Security Administration (TSA) to administer transportation security nationally. While the focus of the TSA in 2002 was commercial airline checked baggage and carry-on baggage screening, a component of the TSA security plan will be general aviation airports.

As of December 2002, there was no formal rulemaking for general aviation airport security. However, industry groups had made a series of recommendations to the TSA for general aviation threat assessment and security standards for general aviation airports. This master plan has anticipated that greater security scrutiny will be placed on general aviation airports in the future, especially those general aviation airports serving aircraft greater than 12,500 pounds. The TSA has already implemented security provisions for air charter operations with aircraft over 12,500 pounds. For Wickenburg Municipal Airport, the master plan

security enhancements focus on limiting vehicle and pedestrian access to the apron areas and aircraft operational areas.

The segregation of vehicle and aircraft operational areas is further supported by new FAA guidance established in June 2002. FAA AC 150/5210-20, *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." The recommended landside plan for Wickenburg Municipal Airport has been developed to reduce the need for vehicles to cross an apron or taxiway area. Special attention has been given to ensure public access routes to the public terminal building and commercial general aviation facilities. Commercial general aviation facilities or fixed base operator (FBO) facilities are focal points for users who are not familiar with aircraft operations (i.e. delivery vehicles, charter passengers, etc.).

To provide a more secure environment at the airport, the existing barbed-wire fencing extending around the airport boundary is planned to be replaced with six-foot tall chain link fencing. Vehicle parking areas and roadways would be located outside the perimeter fencing. The existing manual vehicle access gate to the apron, located northeast of the terminal building, is planned to be replaced with an automated gate. The automated gate would ensure that only those approved to access the apron area would have access to the apron area. It also ensures that this gate is always closed. Finally, the landside plan includes a new access road along the southern airport boundary. This road would ultimately provide access to existing and future hangar facilities and eliminate the need for aircraft owners and visitors to cross the apron area to access hangars. Public parking areas are planned outside the operational areas.

The landside plan provides for the development of four clear-span hangars northeast of the existing terminal building, and could ultimately replace the hangars being removed to meet runway and taxiway OFA standards. As shown, these hangars would be developed parallel with the existing hangar facilities. The terminal building access road would be reconfigured as these hangars would extend over the existing road and parking area. Automobile parking would be available immediately adjacent to the hangars.

The area along the west side of the existing public terminal building is reserved for the ultimate expansion of the building as needed to meet demand and operational needs. The apron west of the terminal building is planned to be expanded to allow for the development of approximately seven tiedowns and replace existing tiedowns lost because of the shifting of Runway 5-23 to the northeast. Existing tiedowns on the northern portion of the apron must be removed as these tiedowns are located

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SUMMARY

EXISTING FACILITIES	ULTIMATE FACILITIES
1 Terminal	1 Terminal Expansion
2 Fuel Island	2 Clearspan Hangars
3 Above Ground Fuel Storage	3 Wash Rack
4 Office Building (Lifenet)	4 10-Unit Nested T-Hangars
5 Aircraft Storage Hangars	5 Helipad
6 Conventional Hangars	6 General Aviation Apron
7 Conventional Hangar	7 Relocated Segmented Circle/Windcone
	8 Commercial General Aviation Hangar Lease Parcel

NOTE: Ultimate fence line extends along property line except when shown.

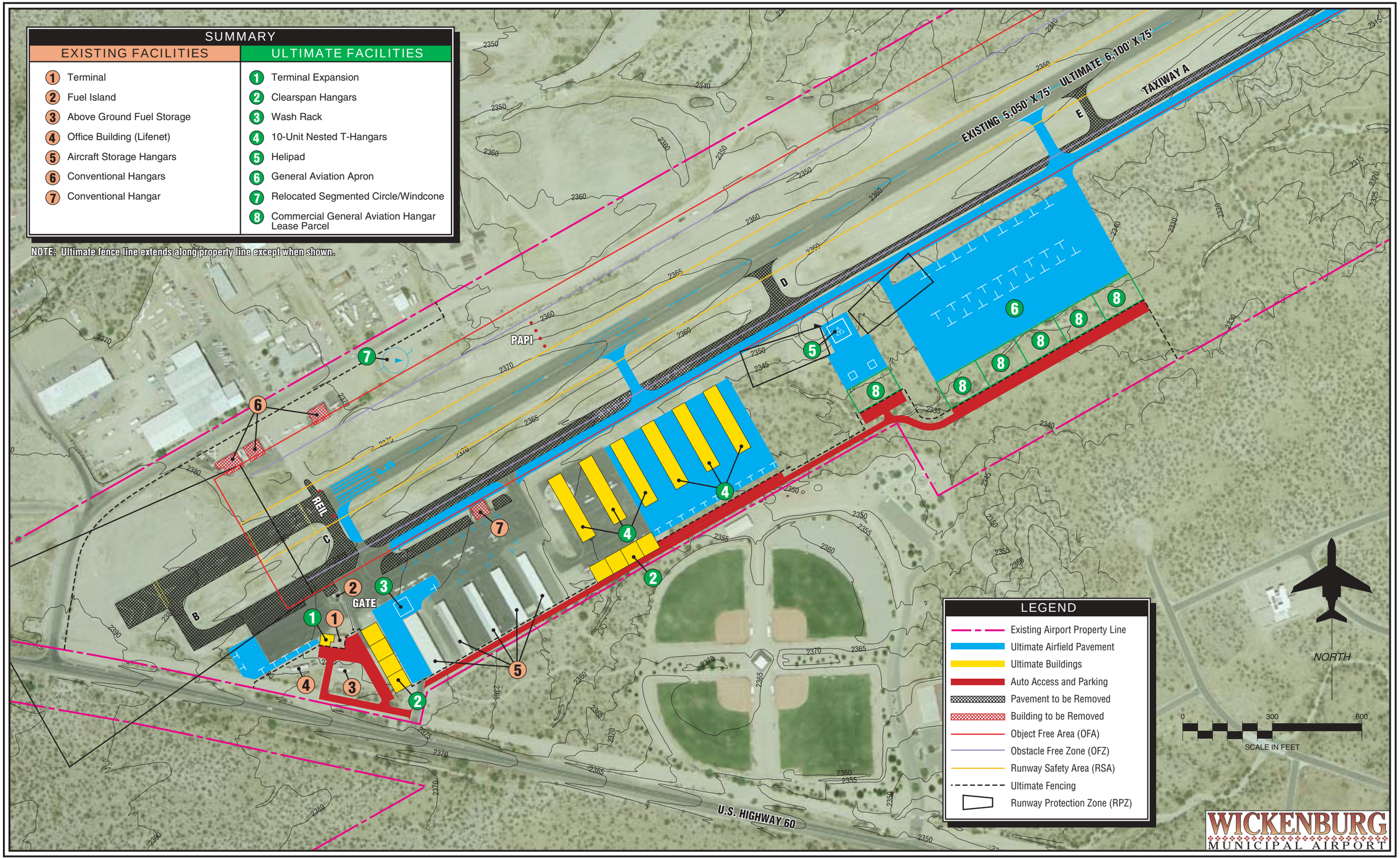

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Exhibit 5B
LANDSIDE PLAN

within the runway protection zone (RPZ).

An aircraft wash rack is planned along the southern edge of the existing apron, near Wickenburg Aero Services. The aircraft wash rack would provide an area for aircraft cleaning and the proper collection of the aircraft cleaning solvents and contaminants removed from the aircraft hull during cleaning.

The development of six 10-unit T-hangars is planned south of Runway 5-23 along the existing northeast apron. Current plans include developing two 10-unit T-hangars along the northeast apron. The layout for this hangar area continues this initial configuration and provides for the ultimate development of 60 T-hangar units. The southern edge of northeast apron and expanded T-hangar areas are reserved for aircraft tiedowns. However, based upon future needs and demands, this southern edge of the apron could also be developed with conventional hangars facing north. This area is served by the single taxiway located at the west end of the existing northeast apron.

A helipad, helicopter parking pads, lease parcel, and automobile parking and access are planned north of the T-hangar area. This helipad would provide a public helipad that could be properly marked and lighted for helicopter operations at the airport.

To provide for the safe and efficient operation of airplane design group (ADG) II aircraft at the airport and provide areas for commercial FBO development, a new apron area is planned northeast of the helipad. This apron area would be served by a public access road and automobile parking.

NOISE EXPOSURE ANALYSIS

Aircraft sound emissions are often the most noticeable environmental effect an airport will produce on the surrounding community. If the sound is sufficiently loud or frequent in occurrence, it may interfere with various activities or otherwise be considered objectionable.

To determine the noise related impacts the proposed development could have on the environment surrounding Wickenburg Municipal Airport, noise exposure patterns were analyzed for both existing airport activity conditions and projected long term activity conditions.

The basic methodology employed to define aircraft noise levels involves the use of a mathematical model for aircraft noise predication. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility, meaning that noise levels below 65 DNL are considered compatible with underlying land uses. Most federally-

funded airport noise studies use DNL as the primary metric for evaluating noise.

DNL is defined as the average A-weighted sound level as measured in decibels (dB) during a 24-hour period. A 10 dB penalty applies to noise events occurring at night (10:00 p.m. to 7:00 a.m.). DNL is a summation metric which allows objective analysis and can describe noise exposure comprehensively over a large area. The 65 DNL contour has been established as the threshold of incompatibility, meaning that noise levels below 65 DNL are considered compatible with underlying land uses.

Since noise decreases at a constant rate in all directions from a source, points of equal DNL noise levels are routinely indicated by means of a contour line. The various contour lines are then superimposed on a map of the airport and its environs. It is important to recognize that a line drawn on a map does not imply that a particular noise condition exists on one side of the line and not on the other. DNL calculations do not precisely define noise impacts. Nevertheless, DNL contours can be used to: (1) highlight existing or potential incompatibilities between an airport and any surrounding development; (2) assess relative exposure levels; (3) assist in the preparation of airport environs land use plans; and (4) provide guidance in the development of land use control devices, such as zoning ordinances, subdivision regulations, and building codes.

The noise contours for Wickenburg Municipal Airport have been developed from the Integrated Noise Model (INM), Version 6.0. The INM was developed by the Transportation Systems Center of the U.S. Department of Transportation at Cambridge, Massachusetts, and has been specified by the FAA as one of two models acceptable for federally-funded noise analysis.

The INM is a computer model which accounts for each aircraft along flight tracks during an average 24-hour period. These flight tracks are coupled with separate tables contained in the data base of the INM which relate to noise, distances, and engine thrust for each make and model of aircraft type selected.

Computer input files for the noise analysis assumed implementation of the proposed airfield plan. The input files contain operational data, runway utilization, aircraft flight tracks, and fleet mix as projected in the plan. The operational data and aircraft fleet mix are summarized in **Table 5B**.

The aircraft noise contours generated using the aforementioned data for Wickenburg Municipal Airport are depicted on **Exhibit 5C, Existing Noise Exposure** and **Exhibit 5D, Long Term Noise Exposure**. As shown on both exhibits, the 65 DNL noise contour is expected to remain almost entirely within the existing airport property line when considering both existing and forecast activity at the airport. A small portion of the long term 65 DNL contour extends beyond the northern airport boundary. This includes a portion of the industrial park, which is considered a compatible

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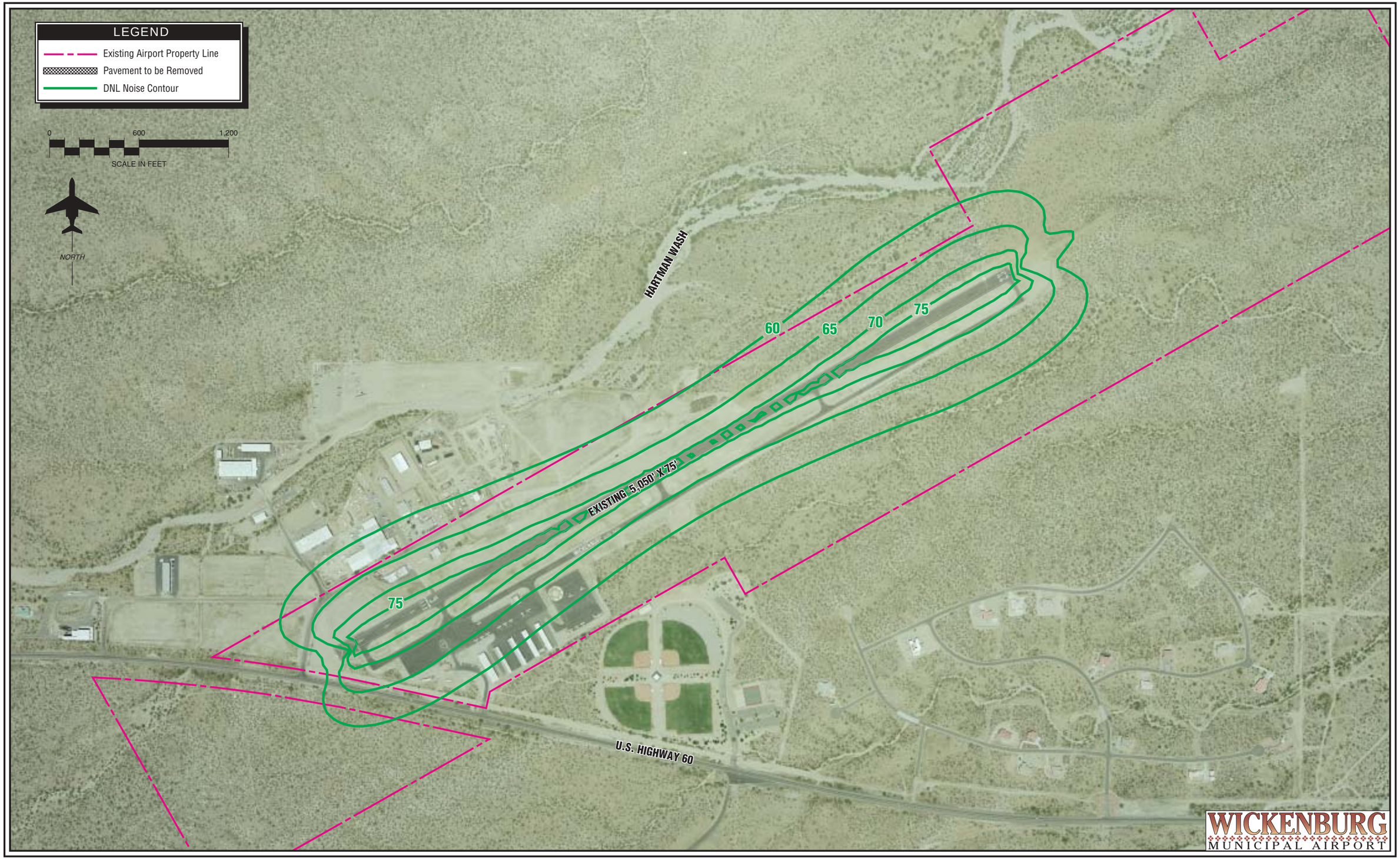

Exhibit 5C
EXISTING AIRCRAFT NOISE EXPOSURE

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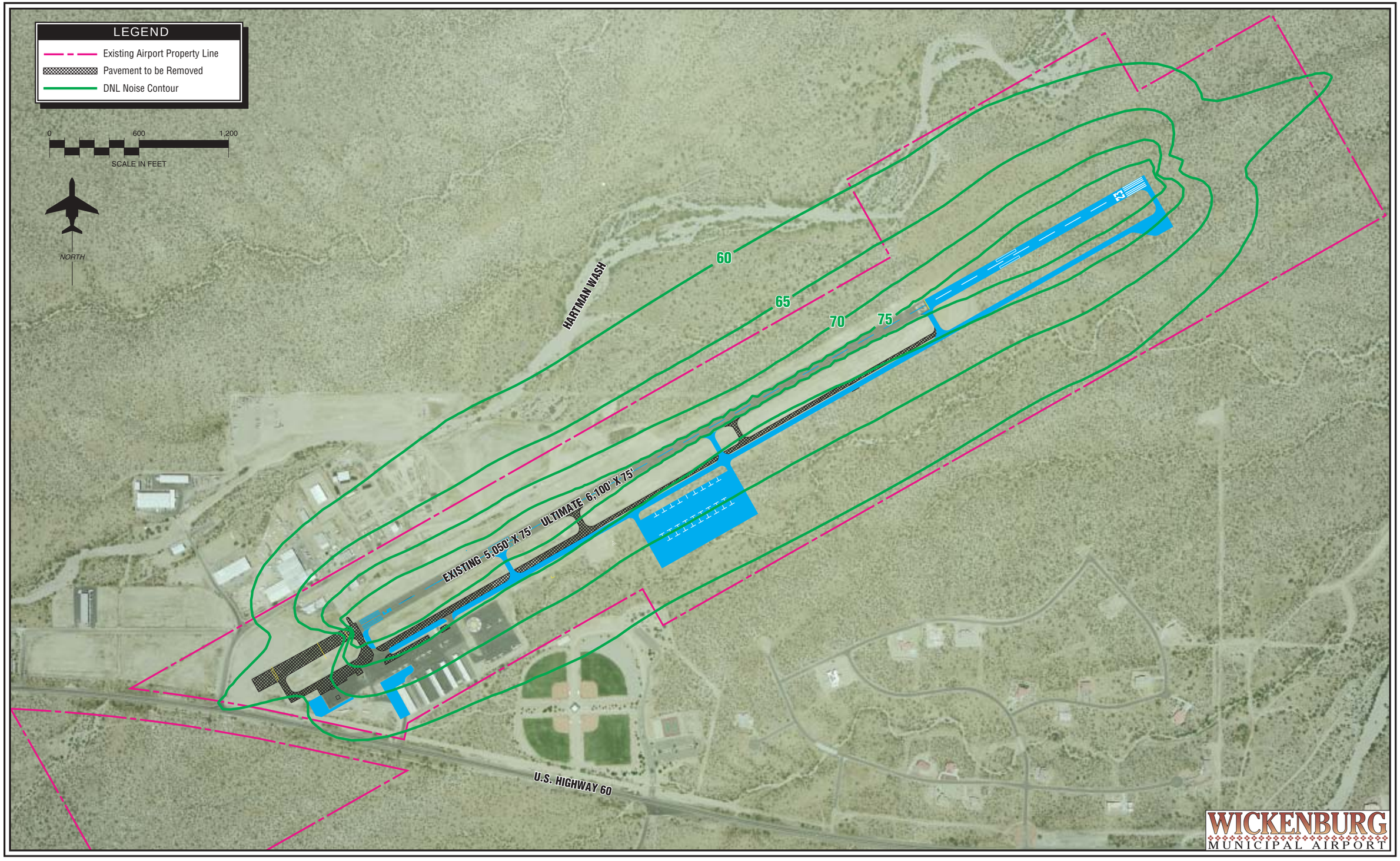

Exhibit 5D
LONG TERM AIRCRAFT NOISE EXPOSURE

use. The remaining area is undeveloped and includes an abandoned landfill and Hartman Wash. These areas have little potential for being developed with incompatible land uses.

TABLE 5B
Aircraft Forecast Summary

	Annual Operations	
Type of Operation	**Existing (2000)**	**Long Term (2025)**
Single-Engine Piston	18,910	56,730
Multi-Engine Piston	1,120	3,350
Turboprop	210	660
Business Jet	500	1,480
Helicopter	1,560	4,680
Total Operations	22,300	66,900

ENVIRONMENTAL EVALUATION

The protection and preservation of the local environment are essential concerns in the master planning process. Now that a program for the use and development of Wickenburg Municipal Airport has been proposed, it is necessary to review environmental issues to ensure that the program can be implemented in compliance with applicable environmental regulations, standards, and guidelines.

All the improvements planned for Wickenburg Municipal Airport, as depicted on the Airport Layout Plan (ALP), will require compliance with the *National Environmental Policy Act (NEPA) of 1969,* as amended. While many of the improvements will be categorically excluded and will not require NEPA documentation, the proposed runway extension will require the preparation of a NEPA document. As detailed in FAA Order 5050.4A, *Airport Environmental Handbook*, compliance with NEPA is generally satisfied with the preparation of an Environmental Assessment (EA). An EA is currently funded by the FAA for the runway extension, improvements to the RSA, and relocation of Taxiway A. In cases where a categorical exclusion is issued, environmental issues such as wetlands, threatened or endangered species, and cultural resources are further evaluated during the federal, state, and/or local permitting processes.

This section of the master plan is not intended to satisfy NEPA's requirements for an EA; rather, it is intended only to supply a preliminary review of environmental issues that would need to be analyzed in more detail within NEPA or permitting processes. Consequently, this analysis ***does not*** address mitigation or the resolution of environmental issues. The following pages consider the environmental resources as outlined in FAA Order 5050.4A. **Table 5C**

summarizes the results of this evaluation. A review of a recent preliminary draft environmental assessment contributed to this analysis.

TABLE 5C
Environmental Evaluation

Noise. The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the Federal Aviation Administration (FAA), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility.	• The extension of Runway 23 end 1,701 feet and the relocation of Runway 5 end 651 feet northeast will not result in any impacts to noise-sensitive development. There are currently no residents or noise-sensitive facilities located within the 65 DNL contour.
Compatible Land Use. Federal Aviation Regulation (F.A.R.) Part 150 recommends guidelines for planning land use compatibility within various levels of aircraft noise exposure. In addition, Advisory Circular 150/5200-33 identifies land uses that are incompatible with safe airport operations because of their propensity for attracting birds or other wildlife, which in turn results in an increased risk of aircraft strikes and damage. Finally, F.A.R. Part 77 regulates the height of structures within the vicinity of the airport.	• Implementation of the runway extension will not result in additional noise impacts on noise-sensitive development. There are no noise-sensitive land uses or residential uses in the existing or ultimate 65 DNL contour. • The proposed airport improvements will not provide wildlife attractants, nor will any development impede the airport's Part 77 surface.
Social Impacts. These impacts are often associated with the relocation of residents or businesses or other community disruptions.	• The extension of Runway 5-23 to the northeast end will result in the RPZ, OFA, and RSA to extend beyond the current property line. This will require the acquisition of approximately 17 acres. This land is currently being acquired from the Arizona State Land Trust. • The proposed development and associated land acquisition are not anticipated to divide or disrupt an established community, interfere with orderly planned development, or create a short-term, appreciable change in employment.

TABLE 5C (Continued) **Environmental Evaluation**	
Induced Socioeconomic 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 the 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 tourism, 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 would be primarily positive in nature.
Air Quality. The US 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 (O3), Carbon Monoxide (CO), Sulfur Dioxide (SO2), Nitrogen Oxide (NO), Particulate matter (PM10), and Lead (Pb). Various levels of review apply within both NEPA and permitting requirements. Currently, only airports in nonattainment and maintenance areas must meet the requirements of the General Conformity Rule provided in the Federal Clean Air Act; airports in attainment areas are assumed to conform.	• Wickenburg Municipal Airport has been classified as being in an attainment area for all six criteria pollutants under NAAQS; therefore, the General Conformity Rule does not apply. • Since the airport is not expected to enplane 1.3 million passengers and is projected to have less than 180,000 annual general aviation operations, no air quality analysis will be needed as part of any formal NEPA document submission.

TABLE 5C (Continued) **Environmental Evaluation**	
Water Quality. Water quality concerns associated with airport expansion most often relate to domestic sewage disposal, increased surface runoff and soil erosion, and the storage and handling of fuel, petroleum, solvents, etc.	• The airport will need to continue to comply with their current NPDES operations permit requirements. • With regard to construction activities, the airport and all applicable contractors will need to comply with the requirements and procedures of the construction-related NPDES General Permit, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan*, prior to the initiation of product construction activities.
Section 4(f) Lands. These include 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.	• No impacts anticipated. The master plan projects do not require the use of any designated Section 4(f) lands.
Historical and Cultural Resources	• No impacts anticipated. There are no known archaeological or historical properties within or around the airport site.
Threatened or Endangered Species and Biological Resources	• Correspondence collected for the draft environmental assessment indicated that the airport site lacks the critical habitat needed to sustain threatened and endangered species. There are no unique or significant biological features within or around the airport site.
Waters of the U.S. Including Wetlands	• A small natural wash area is located within the proposed improvement area south of Runway 5-23. Current permits need to be revised before construction can take place. It is likely that correspondence with the Army Corps of Engineers, along with a new Section 404 Permit will be required before development south of Runway 5-23 can proceed.

TABLE 5C (Continued) Environmental Evaluation	
Floodplains	• No impacts. The proposed improvements are not contained within a designated floodplain.
Wild and Scenic Rivers	• No impacts. The airport is not near any designated wild and scenic rivers.
Farmland	• No impacts. The proposed development will not affect prime or unique farmland.
Energy Supply and Natural Resources	• According to FAA Order 5050.4A, "for most airport improvements, changes in energy or other natural resource consumption will not result in significant impacts" unless demand exceeds supplies, or there are changes in aircraft or ground vehicle uses which would greatly increase fuel consumption, or the proposal requires substantial use of natural resources in short supply. None of this is expected to be applicable to the proposed improvements identified at Wickenburg Municipal Airport. Therefore, the proposed development is expected to result in a less-than-significant impact to energy supply and natural resources.
Light Emissions	• Lighting improvements are part of the proposed alternative. Impacts related to lighting will be less-than-significant as there are no light-sensitive land uses in close proximity to the proposed lighting improvements.
Solid Waste	• As a result in operations at the airport, solid waste will slightly increase. These impacts are expected to be less-than-significant as sufficient solid waste disposal facilities and capacity are available.

SUMMARY

The master plan for Wickenburg Municipal Airport has been developed in cooperation with the planning advisory committee, interested citizens, and Town of Wickenburg. It is designed to assist the Town in making decisions relative to the future use of Wickenburg Municipal Airport as it is maintained to meet the air transportation needs for the Town.

Flexibility will be a key to the plan since activity may not occur exactly as forecast. The master plan provides the Town of Wickenburg with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain it's viability and continue to provide air transportation services to the region.

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Chapter Six
CAPITAL IMPROVEMENT PROGRAM

Capital Improvement Program

The analyses conducted in the previous chapters evaluated airport development needs based upon safety, security, potential aviation activity, and operational efficiency. However, one of the more important elements of the master planning process is the application of basic economic, financial, and management rationale to each development item so that the feasibility of implementation can be assured. The purpose of this chapter is to identify capital needs at Wickenburg Municipal Airport and identify when these should be implemented according to need, function, and demand.

The presentation of the financial plan and its feasibility has been organized into two sections. First, the airport's capital needs are presented in narrative and graphic form. Secondly, funding sources on the federal and local levels are identified and discussed.

DEMAND-BASED PLAN

The master plan for Wickenburg Municipal Airport has been developed according to a demand-based schedule. Demand-based planning refers to the intention to develop planning guidelines for the airport based upon airport activity levels, instead of guidelines based on points in time. By doing so, the levels of activity derived from the demand forecasts can be related to the actual capital investments needed to safely and efficiently accommodate the level of demand being experienced at the airport. More specifically, the intention of this master plan is that the facility improvements needed to serve

new levels of demand should only be implemented when the levels of demand experienced at the airport justify their implementation.

For example, the aviation demand forecasts projected that based aircraft could be expected to grow through the year 2025. This forecast was supported by the local community's growing economy, population, households, and historical trends showing growth in based aircraft levels.

The forecasts noted, however, that future based aircraft levels will be dependent upon a number of economic factors. These factors could slow or accelerate based aircraft levels differently than projected in the aviation demand forecasts. Since changes in these factors cannot be realistically predicted for the entire forecast period, it is difficult to predict, with the level of accuracy needed to justify a capital investment, exactly when an improvement will be needed to satisfy demand level.

For these reasons, the Wickenburg Municipal Airport master plan has been developed as a demand-based plan. The master plan projects various activity levels for short, intermediate, and long term planning horizons. When activity levels begin to reach or exceed the level of one of the planning horizons, the master plan suggests planning begin to consider the next planning horizon level of demand. This provides a level of flexibility in the master plan as the development program can be accelerated or slowed to meet demand. This can extend the time between master plan updates.

A demand-based master plan does not specifically require implementation of any of the demand-based improvements. Instead, it is envisioned that implementation of any master plan improvement would be examined against 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 potential aviation needs and capital needs required to support that use. However, individual projects in the plan are not implemented until the need is demonstrated and the project is approved by the Town of Wickenburg.

CAPITAL NEEDS AND COST SUMMARIES

Once the specific needs for the airport have been established, the next step is to determine a realistic schedule and costs for implementing each project. The capital needs presented in this chapter outline the costs and timing for implementation. 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 into three planning horizons: short, intermediate, and long term.

Each year, the Town of Wickenburg will need to re-examine the priorities for funding in the short-term period, adding or removing projects on the capital programming lists. **Table 6A** summarizes the key activity milestones for each planning horizon.

TABLE 6A
Planning Horizon Activity Levels
Wickenburg Municipal Airport

	2000	Short Term	Intermediate Term	Long Term
Based Aircraft	42	60	70	85
Annual Operations	22,300	39,900	50,000	66,900

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. However, it is difficult to project with certainty the scope of such projects when looking 10 or more years into the future.

Exhibit 6A summarizes capital needs for Wickenburg Municipal Airport through the planning period of this master plan. An estimate has been included with each project of federal funding eligibility, although this amount is not guaranteed.

Individual project cost estimates account for engineering and other contingencies that may be experienced during implementation of the project and are in current (2002) dollars. Due to the conceptual nature of a master plan, implementation of capital improvement projects should occur only after further refinement of their design and costs through engineering and/or architectural analyses. Capital costs in this chapter should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficient for performing the feasibility analyses in this chapter.

SHORT TERM CAPITAL NEEDS

The short term planning horizon is the only planning horizon correlated to time. This is because development within this initial period is concentrated on the most immediate needs of the airfield and landside areas. Therefore, the program is presented year-by-year to assist in capital planning not only locally, but at the state and federal levels. Short term capital needs presented on **Exhibit 6A** are estimated at $8.2 million, which includes already established funding for FY 2002 and FY 2003.

A focus of the short term planning horizon is bringing the airport in conformance with ARC B-II design standards and extending Runway 5-23 to 6,100 feet. Approximately $6.2 million of the $8.2 million programmed in the short term planning horizon is designated for these improvements. Existing FY 2002 and FY 2003 federal funding is being directed towards the design of the runway extension and taxiway relocation. This project will include a survey of runway end coordinates in accordance with FAA Standard 405. The relocation of Taxiway A is programmed for FY 2004, while the runway extension is planned for two phases in FY 2005 and FY 2006.

The relocation of Taxiway A will include not only the removal of the existing Taxiway A surface, but also a conventional hangar located on the northern side of the main apron area. The segmented circle and lighted wind cone would be relocated to the north of Runway 5-23, outside the limits of the object free area (OFA). The existing main apron tiedowns and taxilanes would be reconfigured to locate these tiedowns outside the limits of the relocated Taxiway A OFA. This requires the relocation of the existing main apron lighting, which will be located along the approximate centerline of the new main apron taxilane. Taxiways D and E will be relocated to better align these taxiways with the new runway ends after the runway extension is completed and the Runway 5 end is relocated to the northeast. The existing runway safety area (RSA) will be graded to FAA standards. Concurrent with the runway extension is the relocation of the Runway 23 precision approach path indicator (PAPI), installation of a comparable PAPI at the Runway 5 end, and installation of runway end identification lighting (REILs) at each runway end. The removal of three hangars north of Runway 5-23 is programmed to meet object clearing standards.

The short term planning horizon also includes the installation of the automated weather observation system (AWOS). The AWOS will provide automated weather observation and reporting at the airport. A security measure is the installation of chain link fencing around the existing and ultimate property line and installation of an automated access gate at the main apron entrance near the terminal building. This is intended to deter unauthorized pedestrian and vehicle access to the aircraft operational areas.

Two environmental assessments are programmed for the short term planning horizon. This includes the already funded update to the environmental assessment for the runway extension and Taxiway A relocation. A second environmental assessment is planned to allow for the permanent transfer of the Forepaugh Airport to the Town of Wickenburg. As detailed previously in Chapter Five, the PAC and Town wanted to secure the Forepaugh Airport to ultimately serve the long term aviation needs of the Town and regional area. The Forepaugh Airport is envisioned to ultimately be developed to meet the needs of business jets and federal design standards applicable to business jets.

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	DESCRIPTION	TOTAL COST	FEDERALLY ELIGIBLE	STATE ELIGIBLE	SPONSOR SHARE
	SHORT TERM PLANNING HORIZON				
	FY 2002				
1.	Preliminary Runway Extension / Taxiway Relocation Design	$ 106,900	$ 97,343	$ 4,778	$ 4,778
2.	Conduct Environmental Assessment	57,800	52,633	2,584	2,584
	Subtotal FY 2002	$ 164,700	$ 149,976	$ 7,362	$ 7,362
	FY 2003				
3.	Waterline Extension	$ 312,500	$ -	$ 281,250	$ 31,250
4.	Taxiway Relocation / Runway Extension Design	164,700	150,000	7,350	7,350
	Subtotal FY 2003	$ 477,200	$ 150,000	$ 288,600	$ 38,600
	FY 2004				
5.	Install Perimeter Fencing & Controlled Access Gate	$ 439,700	$ -	$ 395,730	$ 43,970
6.	Conduct Environmental Assessment for BLM Transfer of Forepaugh Airport Site	125,000	-	112,500	12,500
7.	Relocated Taxiway A 40' Southeast / Grade & Fill RSA / Remove Hangar / Relocate Apron Lighting / Relocate Tiedowns / Relocate Segmented Circle & Lighted Wind Cone	2,400,000	2,185,440	107,280	107,280
8.	Install Automated Weather Observation System (AWOS)	164,700	150,000	7,350	7,350
	Subtotal FY 2004	$ 3,129,400	$ 2,335,400	$ 622,860	$ 171,100
	FY 2005				
9.	Extend Runway 5-23 1,701' Northeast / Relocate Runway 5 End 651' Northeast -Phase I	$ 2,400,000	$ 2,185,440	$ 107,280	$ 107,280
	Subtotal FY 2005	$ 2,400,000	$ 2,185,440	$ 107,280	$ 107,280
	FY 2006				
10.	Extend Runway 5-23 1,701' Northeast / Relocate Runway 5 End 651' Northeast -Phase II	$ 1,200,000	$ 1,092,720	$ 53,640	$ 53,640
11.	Install REILs Runway 5 and Runway 23	50,000	45,530	2,235	2,235
12.	Install PAPI Runway 5	50,000	45,530	2,235	2,235
	Subtotal FY 2006	$ 1,300,000	$ 1,183,780	$ 58,110	$ 58,110
	FY 2007				
13.	Construct East Access Road - Phase I	$ 165,000	$ 150,249	$ 7,376	$ 7,376
14.	Southeast Utility Extensions - Phase I	60,500	55,091	2,704	2,704
15.	Construct Southeast Automobile Parking - Phase I	40,000	36,424	1,788	1,788
	Subtotal FY 2007	$ 265,500	$ 241,764	$ 11,868	$ 11,868
	FY 2008				
16	Construct Terminal Building Access Road and Parking	$ 140,400	$ 127,848	$ 6,276	$ 6,276
17.	Expand Main Apron	297,500	270,904	13,298	13,298
18.	Remove Hangars In Object Free Area	56,000	50,994	2,503	2,503
	Subtotal FY 2008	$ 493,900	$ 449,745	$ 22,077	$ 22,077
	SUBTOTAL SHORT TERM PLANNING HORIZON	**$ 8,230,7 00**	**$ 6,696,145**	**$ 1,118,157**	**$ 416,397**
	INTERMEDIATE TERM PLANNING HORIZON				
1.	Construct Wash Rack	$ 50,000	$ -	$ 45,000	$ 5,000
2.	Construct T-Hangar Taxilanes - Phase I	370,300	337,195	16,552	16,552
3.	Construct Northeast Apron - Phase I	1,487,600	1,354,609	66,496	66,496
4.	Construct Northeast Apron Access and Parking - Phase I	186,300	169,645	8,328	8,328
5.	Extend Utilities to Northeast Apron - Phase I	145,672	132,649	6,512	6,512
6.	Construct Helipad	251,100	228,652	11,224	11,224
7.	Construct Helipad Parking and Access	37,300	33,965	1,667	1,667
8.	Extend Utilities to Helipad	10,500	9,561	469	469
9.	Expand/Rehabilitate Public Terminal Building	320,200	-	288,180	32,020
10.	Pavement Preservation	500,000	455,300	22,350	22,350
	SUBTOTAL INTERMEDIATE TERM PLANNING HORIZON	**$ 3,358,972**	**$ 2,721,576**	**$ 466,778**	**$ 170,618**
	LONG TERM PLANNING HORIZON				
1.	Construct T-Hangar Taxilanes - Phase II	$ 370,300	$ 337,195	$ 16,552	$ 16,552
2.	Construct Automobile Parking - Phase II	40,000	36,424	1,788	1,788
3.	Construct Northeast Apron - Phase II	1,487,600	1,354,609	66,496	66,496
4.	Construct Northeast Apron Access and Parking - Phase II	79,200	72,120	3,540	3,540
5.	Extend Utilities to Northeast Apron - Phase II	41,600	37,881	1,860	1,860
6.	Expand Jet -A and 100LL Fuel Storage	100,000	-	-	100,000
7.	Pavement Preservation	1,000,000	910,600	44,700	44,700
	SUBTOTAL LONG TERM PLANNING HORIZON	**$ 3,118,700**	**$ 2,748,828**	**$ 134,936**	**$ 234,936**
	TOTAL ALL DEVELOPMENT	**$ 14,708,372**	**$ 12,166,549**	**$ 1,719,871**	**$ 821,951**

Exhibit 6A
CAPITAL IMPROVEMENT PROGRAM

Landside development included in the short term planning horizon is directed towards constructing the first phase of the south access road and extension of a water line along the southern airport boundary in 2003. The south access road will continue main utility extensions to future hangar areas south of Taxiway A.

A final series of projects are intended to provide for the development of four conventional hangars northeast of the terminal. This hangar area is expected to provide replacement hangars for the hangars which need to be removed to meet the Runway 5-23 OFA standards, and the hangar which needs to be removed to allow for the relocation of Taxiway A. The reconfiguration of the main airport entrance road and terminal building parking lot is needed to provide for the development of these hangars, which are expected to be developed privately.

INTERMEDIATE TERM AND LONG TERM CAPITAL NEEDS

The remaining portions of the capital improvements program include provisions for continued infrastructure improvements to support landside development needs. For the intermediate term planning horizon, this includes the development of the wash rack, first phase construction of T-hangar taxilanes and new northeast apron, construction of the helipad, second phase development of the southern access road, and expansion of the public terminal building.

The long term planning horizon includes the final development of the south access road and automobile parking, T-hangar taxilanes, and northeast apron. Provisions for the expansion of the fuel farm are also included.

A total of $100,000 annually is included in both the intermediate term planning horizon and long term planning horizon for pavement preservation activities. Pavement preservation activities typically include applying a slurry seal to rejuvenate and protect the pavement surface, crack sealing, and/or small pavement repairs. **Exhibit 6B** graphically depicts development staging.

CAPITAL IMPROVEMENTS FUNDING

Financing capital improvements at the airport will not rely exclusively upon the financial resources of the Town of Wickenburg. Capital improvements funding is available through various grants-in-aid programs at both the federal and state levels. The following discussion outlines the key sources for capital improvements funding.

FEDERAL GRANTS

Through federal legislation over the years, various grants-in-aid programs have been established to develop and maintain a system of public airports throughout the United States. The purpose of this system and its federally-

based funding is to maintain national defense and promote interstate commerce. The most recent legislation was enacted in early 2000 and is entitled the *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century* or AIR-21.

The four-year bill covers FAA fiscal years 2000, 2001, 2002, and 2003. This was breakthrough legislation because it authorized funding levels significantly higher than ever before. Airport Improvement Program (AIP) funding was authorized at $2.475 billion in 2000, $3.2 billion in 2001, $3.3 billion in 2002, and $3.4 billion in 2003. Since a Fiscal Year (FY) 2003 budget had not been approved by the United States Congress as of December 2002, a FY 2003 AIP program has not been established, although it is expected that Congress will appropriate the $3.4 billion authorized by AIR-21. An AIP bill after 2003 is still uncertain. The U.S. Congress will need to consider re-authorization of the program in calender year 2003.

The source for AIR-21 funds 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 Trust Fund also finances the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts.

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. If Congress appropriates the full amounts authorized by AIR-21, eligible general aviation airports receive up to $150,000 of funding each year. The remaining AIP funds are distributed by the FAA based upon the priority of the project for which they have requested federal assistance through discretionary apportionments. A National Priority Ranking System is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding.

Each airport project for Wickenburg Municipal Airport must follow this procedure and compete with other airport projects in the state for AIP state apportionment dollars and across the country for other Federal AIP funds. An important point to consider is that, unlike entitlement dollars for commercial service airports, funding for Wickenburg Municipal Airport is not guaranteed.

Reliever airport development that meets FAA's eligibility requirements can receive 91.06 percent federal funding from AIR-21. Property acquisition, airfield improvements, aprons, perimeter service roads, and access road improvements are examples of eligible items. General aviation terminal buildings, cargo buildings, and fueling facilities are not generally eligible.

As evident from the airport development schedule and cost summaries, the Town of Wickenburg will rely primarily on federal discretionary funding (since Wickenburg Municipal Airport is not a

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SHORT TERM PLANNING HORIZON

1. Waterline Extension
2. Install Perimeter Fencing & Controlled Access Gate
3. Relocate Taxiway A 40' Southeast/Grade & Fill RSA/Remove Hangar/Relocate Apron Lighting/Relocate Tiedowns/Relocate Segmented Circle & Lighted Windcone
4. Install Automated Weather Observation System (AWOS)
5. Extend Runway 5-23 1,701' Northeast/Relocate Runway 5 End 651' Northeast - Phase I
6. Extend Runway 5-23 1,701' Northeast/Relocate Runway 5 End 651' Northeast - Phase II
7. Install REILs Runway 5 and Runway 23
8. Install PAPI Runway 5, Relocate Runway 23 PAPI
9. Construct East Access Road - Phase I
10. Southeast Utility Extensions - Phase I
11. Construct Southeast Automobile Parking - Phase I
12. Construct Terminal Building Access Road and Parking
13. Expand Main Apron
14. Remove Hangars in Object Free Area

INTERMEDIATE TERM PLANNING HORIZON

1. Construct Wash Rack
2. Construct T-hangar Taxilanes - Phase I
3. Construct Northeast Apron - Phase I
4. Construct Northeast Apron Access and Parking - Phase I
5. Extend Utilities to Northeast Apron - Phase I
6. Construct Helipad
7. Construct Helipad Parking and Access
8. Extend Utilities to Helipad
9. Expand/Rehabilitate Public Terminal Building

LONG TERM PLANNING HORIZON

1. Construct T-hangar Taxilanes - Phase II
2. Construct Automobile Parking - Phase II
3. Construct Northeast Apron - Phase II
4. Construct Northeast Apron Access and Parking - Phase II
5. Extend Utilities to Northeast Apron - Phase II

HARTMAN WASH

1,701'

EXISTING 5,050' X 75'

ULTIMATE 6,100' X 75'

TAXIWAY A

240'

250'

200'

651'

U.S. HIGHWAY 60

LEGEND

- Existing Airport Property Line
- Short Term Development
- Intermediate Term Development
- Long Term Development
- Pavement to be Removed
- Building to be Removed
- Object Free Area (OFA)
- Obstacle Free Zone (OFZ)
- Runway Safety Area (RSA)
- Runway Protection Zone (RPZ)

NORTH

0 600 1,200

SCALE IN FEET

WICKENBURG MUNICIPAL AIRPORT

Exhibit 6B
DEVELOPMENT STAGING

commercial service airport) to implement many of the development needs. An important point to consider is that federal discretionary funding is not guaranteed each year for the airport.

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, and on-airport navigational aids such as approach lighting systems. As activity levels and other development 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. This could include the installation of the REILs and PAPI.

STATE AID TO AIRPORTS

In support of the state airport system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees, (as well as interest on these funds) are deposited in the Arizona Aviation Fund. The transportation board establishes the policies for distribution of these state funds.

Under the State of Arizona grant program, an airport can receive funding for one-half (4.47 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.

State Airport Loan Program

The Arizona Department of Transportation-Aeronautics Division (ADOT) 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 5-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.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through local resources. This essentially equates to 4.47 percent of the project costs if all eligible FAA and state funds are available.

There are several alternatives for local finance options for future development at the airport, including airport revenues, direct funding from the Town, issuing bonds, and leasehold financing. This strategy could be used to fund the local matching share, or complete the project if grant funding cannot be arranged.

The capital improvements program has assumed that all landside facility development would be completed privately and that the Town of Wickenburg would complete the necessary infrastructure improvements to support the development.

There are several municipal bonding options available to the Town of Wickenburg including: general obligation bonds, limited obligation bonds, and revenue bonds. General obligation bonds are a common form of municipal bond which is issued by voter approval and is secured by the full faith and credit of the Town. Town tax revenues are pledged to retire the debt. As instruments of credit, and because the community secures the bonds, general obligation bonds reduce the available debt level of the community. Due to the community pledge to secure and pay general obligation bonds, they are the most secure type of municipal bond and are generally issued at lower interest rates and carry lower costs of issuance. The primary disadvantage of general obligation bonds is that they require voter approval and are subject to statutory debt limits. This requires that they be used for projects that have broad support among the voters, and that they be reserved for projects that have highest public priorities.

In contrast to general obligation bonds, limited obligation bonds (sometimes referred to as a Self-Liquidating Bonds) are secured by revenues from a local source. While neither general fund revenues nor the taxing power of the local community is pledged to pay the debt service, these sources may be required to retire the debt if pledged revenues are insufficient to make interest and principal payments on the bonds. These bonds still carry the full faith and credit pledge of the local community and, therefore, are considered, for the purpose of financial analysis, as part of the debt burden of the local community. The overall debt burden of the local community is a factor in determining interest rates on municipal bonds.

There are several types of revenue bonds, but in general they are a form of municipal bond which is payable solely from the revenue derived from the operation of a facility that was constructed or acquired with the proceeds of the bonds. For example, a Lease Revenue Bond is secured with the income from a lease assigned to the repayment of the bonds. Revenue bonds have become a common form of financing airport improvements. Revenue bonds present the opportunity to provide those improvements without direct burden to the taxpayer. Revenue bonds normally carry a higher interest rate because they lack the guarantees of general and limited obligation bonds.

Leasehold financing refers to a developer or tenant financing improvements under a long term ground lease. The obvious advantage of such an arrangement is that it relieves the community of all responsibility for raising the capital funds for improvements. However, the private development of facilities on a ground lease, particularly on property owned by a municipal agency, produces a unique set of problems. In particular, it is more difficult to obtain private financing as only the improvements and the right to continue the lease can be claimed in the event of a default. Ground leases normally provide for the reversion of improvements to the lessor at the end of the lease term, which reduces their potential value to a lender taking possession. Also, companies that want to own their property as a matter of financial policy may not locate where land is only available for lease. The Town of Wickenburg has used long term lease arrangements successfully to finance capital improvements at the airport in the past. All hangar facilities were developed with private funds under a long term ground lease with the Town. Future landside facilities are expected to be developed in a similar manner.

PLAN IMPLEMENTATION

The successful implementation of the Wickenburg Municipal Airport master plan will require sound judgment on the part of the Town of Wickenburg with regard to the implementation of projects to meeting future activity demands, while maintaining the existing infrastructure and improving this infrastructure to support new development. While the projects included in the capital improvements program have been broken into short, intermediate, and long term planning periods, the Town will need to consider the scheduling of projects in a flexible manner and add new projects from time-to-time to satisfy safety or design standards, or newly created demands.

In summary, the planning process requires that the Town of Wickenburg continually monitor the need for new or rehabilitated facilities, since applications (for eligible projects) must be submitted to FAA and the state each year. The Town of Wickenburg should continually monitor, with the FAA and state, the projects which are required for safety and security.

WICKENBURG
MUNICIPAL AIRPORT

Appendix A
GLOSSARY OF TERMS

Appendix A
GLOSSARY OF TERMS

ACCELERATE-STOP DISTANCE AVAILABLE (ASDA): see declared distances.

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) transport 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.

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 ELEVATION: The highest point on an airport's usable runway expressed in feet above mean sea level (MSL).

AIRPORT LAYOUT DRAWING (ALD): The drawing of the airport showing the layout of existing and proposed airport facilities.

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.

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.

AIR TAXI: An air carrier certificated in accordance with 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.

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 (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 enroute phase of flight.

ALERT AREA: see special-use airspace.

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.

AUTOMATIC DIRECTION FINDER (ADF): an aircraft radio navigation system which senses and indicates the direction to a non-directional radio beacon (NDB) ground transmitter.

AUTOMATED WEATHER OBSERVATION STATION (AWOS): equipment used to automatically record weather conditions (i.e. cloud height, visibility, wind speed and direction, temperature, dewpoint, etc...)

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.

AZIMUTH: Horizontal direction expressed as the angular distance between true north and the direction of a fixed point (as the observer's heading).

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."

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.

BUILDING RESTRICTION LINE (BRL): A line which identifies suitable building area locations on the airport.

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.

CROSSWIND: wind flow that is not parallel to the runway of the flight path of an aircraft.

COMPASS LOCATOR (LOM): a low power, low/medium frequency radiobeacon installed in conjunction with the instrument landing system at one or two of the marker sites.

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.

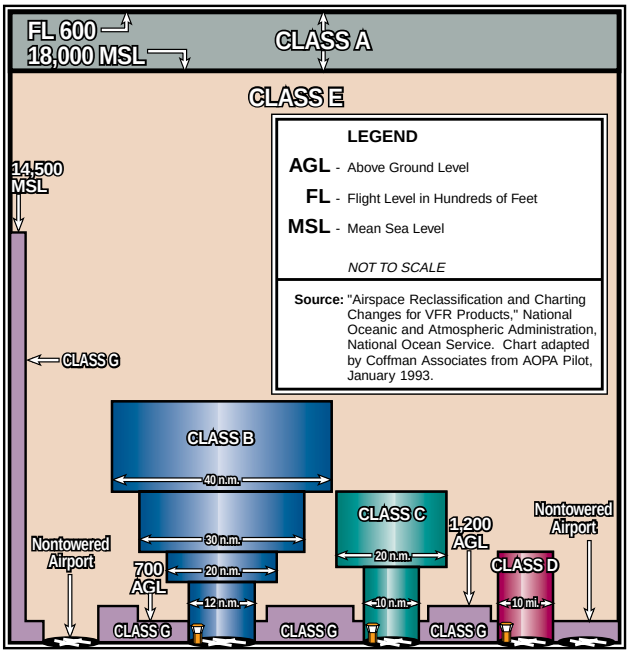
- *CLASS C:* generally, the airspace from the surface to 4,000 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually 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 airport that have an operational control tower. Class D air space is individually tailored and configured to encompass published instrument approach procedures. 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 LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

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;

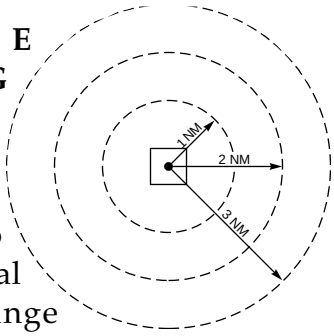
- *TAKEOFF DISTANCE AVAILABLE (TODA):* The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA;

- *ACCELERATE-STOP DISTANCE AVAILABLE (ASDA):* The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff; and

- *LANDING DISTANCE AVAILABLE (LDA):* The runway length declared available and suitable for landing.

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 A-weighted 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."

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.

ENPLANED PASSENGERS: the total number of revenue passengers boarding aircraft, including originating, stop-over, and transfer passengers, in scheduled and non-scheduled services.

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."

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.

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.

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.

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: See "GPS."

GPS - GLOBAL POSITIONING SYSTEM: A system of 24 satellites

used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

HELIPAD: a designated area for the takeoff, landing, and parking of helicopters.

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.

INSTRUMENT APPROACH: 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): Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

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.

LANDING DISTANCE AVAILABLE (LDA): see declared distances.

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.

LORAN: long range navigation, 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 enroute navigation.

MICROWAVE LANDING SYSTEM (MLS): an instrument approach and landing system that provides precision guidance in azimuth, elevation, and distance measurement.

MILITARY OPERATIONS AREA (MOA): see special-use airspace.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not effected, 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.

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..)

NOISE CONTOUR: A continuous line on a map of the airport vicinity connecting all points of the same noise exposure level.

NONDIRECTIONAL 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.

NONPRECISION APPROACH PROCEDURE: a standard instrument approach procedure in which no electronic glide slope is provided, such as VOR, TACAN, NDB, or LOC.

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.

OPERATION: a take-off or a landing.

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.

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 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.

PROHIBITED AREA: see special-use airspace.

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 enroute 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 enroute 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 BLAST PAD: a surface adjacent to the ends of runways provided to reduce the erosive effect of jet blast and propeller wash.

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 VISUAL RANGE (RVR): an instrumentally derived value, in feet, representing the horizontal distance a pilot can see down the runway from the runway end.

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.

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.

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 TERMINAL ARRIVAL (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.

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.

TACTICAL AIR NAVIGATION (TACAN): An ultra-high 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.

TETRAHEDRON: a device used as a landing direction indicator. The small end of the tetrahedron points in the direction of landing.

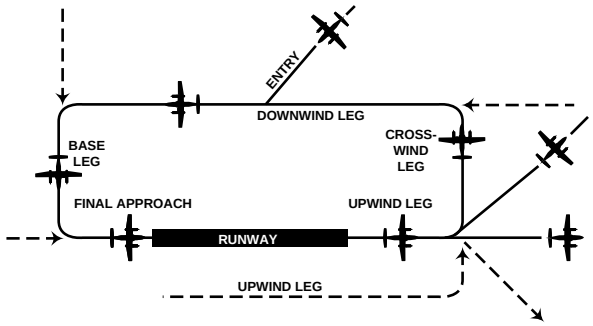
THRESHOLD: the beginning of that portion of the runway available for landing. In some instances the landing threshold may be displaced.

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 take-off.

TOUCHDOWN ZONE LIGHTING (TDZ): 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.

UNICOM: A nongovernment communication facility which may provide

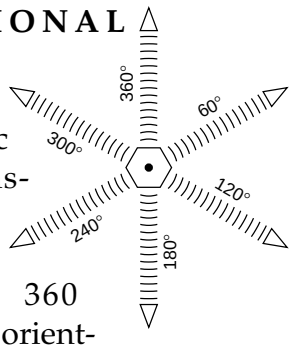


airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

UPWIND LEG: A flight path parallel to the landing runway in the direction of landing. See "traffic pattern."

VECTOR: A heading issued to an aircraft to provide navigational guidance by radar.

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE STATION (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 OMNIDIRECTIONAL RANGE STATION/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.

VOR: See "Very High Frequency Omnidirectional Range Station."

VORTAC: See "Very High Frequency Omnidirectional Range Station/Tactical Air Navigation."

WARNING AREA: see special-use airspace.

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 light ing system with sequenced flashers (CAT II configuration)

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 (100LL)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulations

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity for air

craft with dual-wheel type landing gear

DTWL: runway weight bearing capacity for 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 middle marker

LOC: ILS localizer

LOM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: medium intensity approach lighting system

MALSR: medium intensity approach lighting system with runway alignment 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)

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rulemaking

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

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

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 sequenced flashers

SSALR: 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 type landing gear

STWL: 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

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

WICKENBURG
MUNICIPAL AIRPORT

Appendix B
REGISTERED AIRCRAFT

BASED AIRCRAFT LISTING

WICKENBURG MUNICIPAL AIRPORT
September, 2001

N-Number	Type	Make/Model
43556	SE	Piper PA-28-151
4329L	SE	Cessna 172
242X	SE	Cessna 150
73784	SE	Cessna 172
7810T	SE	Cessna 172
400BB	Glider	DG-400
16115	SE	Cessna 150
6262K	SE	Cessna P210
15655	SE	Piper PA-28-35
125RS	SE	American Champion 8KCAB
4152N	SE	Piper PA-18-150
6570E	SE	Cessna 175
6860L	ME	Beech 58
4RB	SE	Beech F33A
7981U	SE	Cessna 172
9048S	SE	Beech V35
6050M	SE	Beech A36
4394	SE	Cessna 180
210LW	SE	Cessna T210M
182P	SE	Ryan Navion
115P	SE	Howard DGA-15P
727MR	SE	Bellanca 8KCAB
1656V	SE	Cessna 120

WICKENBURG
MUNICIPAL AIRPORT

Appendix C
AIRPORT LAYOUT PLAN DRAWINGS

Appendix C
AIRPORT LAYOUT PLAN DRAWINGS

Per Federal Aviation Administration (FAA) and Arizona Department of Transportation, Division of Aeronautics (ADOT) requirements, an official Airport Layout Plan (ALP) has been developed for Wickenburg Municipal Airport. The ALP graphically presents the existing and ultimate airport layout. The ALP is used, in part by the FAA and state, to determine funding eligibility for future development projects.

The ALP was prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys.

A number of related drawings, which depict the ultimate airspace and landside development, are included with the ALP. The following provides a brief discussion of the additional drawings included with the ALP:

Terminal Area Drawing - The terminal area drawing provides greater detail concerning landside improvements south of Runway 5-23.

Airport Airspace Drawing - The Airport Airspace Drawing is a graphic depiction of Federal Aviation Regulations (F.A.R.) 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. This plan should be coordinated with local land use planners.

Approach Zone Profiles and Runway Profiles Drawing s - These drawings provide both plan and profile views of the F.A.R. Part 77 approach surface for each runway end. A composite profile of the extended ground line is depicted. Obstructions and clearances over roads and railroads are shown as appropriate.

Inner Portion of the Approach Surface Drawings - The Inner Portion of the Approach Surface Drawings are scaled drawings of the runway protection zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions (as appropriate).

On-Airport Land Use Drawing - The On-Airport Land Use Drawing is a graphic depiction of the land use recommendations. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

Airport Property Map - The 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.

AIRPORT MASTER PLAN

WICKENBURG, ARIZONA

WICKENBURG

MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN SET

INDEX OF DRAWINGS

PREPARED FOR
TOWN OF WICKENBURG

Coffman Associates
Airport Consultants

RUNWAY DATA

	RUNWAY 5-23	
	EXISTING	ULTIMATE
AIRPORT REFERENCE CODE	B-II	B-II
RUNWAY AZIMUTH	60.4111	SAME
RUNWAY BEARING	S60°55'12" W	SAME
RUNWAY DIMENSIONS	5050' X 75'	6100' X 75'
MAXIMUM RUNWAY ELEVATION (above MSL)	2386.28'	2378.50'
WIND COVERAGE (in %)	12-96.3%/15-98.4%	12-96.3%/15-98.4%
RUNWAY INSTRUMENTATION	VISUAL/VISUAL	VISUAL/NONPRECISION
RUNWAY APPROACH VISABILITY MINIMUMS	VISUAL/VISUAL	VISUAL/1 MILE
RUNWAY APPROACH SURFACES	20:1/20:1	20:1/34:1
RUNWAY THRESHOLD DISPLACEMENT	550'/NONE	NONE
(RSA) LENGTH BEYOND RUNWAY END	220'	300'
RUNWAY SAFETY AREA	5570' X 150'	6700' X 150'
RUNWAY OBSTACLE FREE ZONE	5380' X 400'	6500' X 400'
RUNWAY OBJECT FREE AREA	5390' X 450'	6700' X 500'
RUNWAY PAVEMENT MATERIAL	ASPHALT	PCC
PAVEMENT SURFACE TREATMENT	NONE	GROOVED
PAVEMENT STRENGTH (in thousand lbs.)[1]	23(S)/30(D)	30(S)/60(D)
RUNWAY EFFECTIVE GRADIENT (in %)	1.06	1.0
RUNWAY MARKING	VISUAL/VISUAL	VISUAL/NONPRECISION
RUNWAY LIGHTING	MIRL	SAME
RUNWAY APPROACH LIGHTING	NONE	SAME
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME
TAXIWAY WIDTH	25'-40'	35'
TAXIWAY LIGHTING	MITL	SAME
TAXIWAY MARKING	CENTERLINE/HOLDLINES	SAME
NAVIGATIONAL AIDS	NONE	GPS
VISUAL AIDS	PAPI-4 (RWY. 23) NONE	PAPI-4 (23)(G) REILs

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

THRESHOLD SITING SURFACE OBJECT PENATRATION

OBJECT	PENATRATION	DISPOSITION
TERRAIN IN RUNWAY 5 APPROACH	6.00'	RELOCATE RUNWAY 5 LANDING TRESHOLD

OBJECT FREE ZONE (OFZ) OBJECT PENATRATION

OBJECT	PENATRATION	DISPOSITION
TAXIWAY, FENCING and DIRTROAD BEHIND RUNWAY 5 END	6.00'	RELOCATE RUNWAY 5 END

AIRPORT DATA

WICKENBURG MUNICIPAL AIRPORT (E25)

CITY: WICKENBURG, ARIZONA — COUNTY: MARICOPA

RANGE: 6 WEST — TOWNSHIP: 7 NORTH — CIVIL TOWNSHIP: GILA & SALT RIVER BASE & MERIDIAN

		EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL		GENERAL AVIATION	SAME
DESIGN AIRCRAFT		CESSNA CITATION	CESSNA CITATION
AIRPORT REFERENCE CODE		B-II	B-II
AIRPORT ELEVATION		2386.28'	2378.50'
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		104.9°F (JULY)	SAME
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD-83) ⚠	Latitude	33°56'08.106" N	30°56'13.760" N
	Longitude	112°47'54.646" W	112°47'42.443" W
AIRPORT and TERMINAL NAVIGATIONAL AIDS		ROTATING BEACON	ROTATING BEACON
			—
			—
GPS AT AIRPORT		NO	YES

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING CONSTRUCTION
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
5280	5280	TOPOGRAPHIC CONTOURS
WIND	WIND	WIND INDICATOR (Lighted)
		BUILDING TO BE REMOVED
		PAVEMENT TO BE REMOVED

RUNWAY END COORDINATES (NAD 83)

RUNWAY		EXISTING	ULTIMATE
Runway 5	Latitude	33°57'56.23518" N	33°57'59.41388" N
	Longitude	112°48'20.74824" W	112°48'14.02617" W
Runway 23	Latitude	33°58'20.89028" N	33°58'28.19364" N
	Longitude	112°47'28.60026" W	112°47'11.03300" W

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	ELEVATION
1	---	TERMINAL BUILDING	2,381'
2	---	FUEL ISLAND	---
3	---	ABOVE GROUND FUEL STORAGE	---
4	---	OFFICE BUILDING	2,382'
5	---	T-HANGARS	2,376' -2,380'
6	---	COMMERCIAL HANGARS	2,388' -2,390'
---	7	CLEARSPAN HANGARS	---
---	8	WASH RACK	---
---	9	10-UNIT NESTED T-HANGARS	---
10	10	HELIPAD	---
---	11	GENERAL AVIATION APRON	---
---	12	COMMERCIAL HANGAR LEASE PARCELS	---
---	---	---	---

LOCATION MAP

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS

DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	STANDARD	EXISTING	PROPOSED DISPOSITION
RUNWAY-TAXIWAY SEPARATION	SAME	240'	200'	TAXIWAY TO BE RELOCATED
TAXIWAY WIDTH	B-II TAXIWAY WIDTH	35'	25'(1)	TAXIWAY TO BE WIDENED
BUILDINGS AND FENCE IN OFA	B-II OFA	500'	460'	REMOVE
RSA GRADE	SAME	---	---	REGRADE RSA
FENCE OBSTRUCTS RWY 5 RSA	RSA	300'	220'	RELOCATE RUNWAY 5 END

(1) Note: The 25 foot width applies only to Taxiway F and part of Taxiway A.

WIND COVERAGE

	10.5 KNOTS	13 KNOTS
	12 MPH	15 MPH
Runway 5-23	99.31%	99.74%

SOURCE:
USAFETAC
Air Weather Service (MAC)
Asheville, N.C. 28801-2723
Luke AirForce Base
Wickenburg, Arizona

OBSERVATIONS:
87,641 Observations
Jan 1986 - Dec 1995

APPROVED BY: _____ ON THE DATE OF: _____

GERALD STRICKLIN
AIRPORT MANAGER

FAA APPROVAL STAMP

NORTH
MAG. 12°28' E

MAGNETIC VARIANCE 12°28' E
RATE OF CHANGE -3.06' WEST (NOVEMBER 2003)

0 300 600 900
SCALE IN FEET

GENERAL NOTES:

1. Depiction of features and objects, including related elevations within the runway protection zones are depicted on the INNER PORTION OF THE APPROACH SURFACE DRAWING.
2. Details concerning terminal improvements are depicted on the TERMINAL AREA DRAWING.
3. Recommended land uses on the airport are depicted on the ON-AIRPORT LAND USE DRAWING.
4. Detail concerning airport property is depicted on the AIRPORT PROPERTY MAP.
5. The Building Restriction Lines (BRL) are set for the ultimate runway condition. The BRL's encompass the runway protection zones, the runway object free area, the runway visibility zone, Navaid critical areas and areas required for terminal instrument procedures. The established BRL is an estimate of the minimum distance to the runway for an object 20 feet in height. Prior to constructing any building or object on the airport, a F.A.R. Part 77 obstruction analysis should be conducted.
6. Ultimate fence line extends around Existing/Ultimate Property Line except where shown.
7. Base map, ground contours, and building elevations derived from aerial photo and aerial survey taken 5/30/2001.
8. Source for runway elevations, Aerial Survey, Airport Facility Directory **and calculations using** Geodetic Calculator Program in NAD88.
9. Source for runway end coordinates and runway bearing Gilbertson Associates Inc. survey taken 05/07/2002.

No.	REVISIONS	DATE	BY	APP'D.
1	Revised NAD 27 to NAD 83; Magnetic Variation	6/10/03	C.A.M.	R.B.
2	Revised Land Acquisition for Runway 23 Rpz	01/27/00	C.A.M.	R.B.
3	Revised for Master Plan Update	01/27/00	M.J.R.	C.H.

WICKENBURG MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN

WICKENBURG, ARIZONA

PLANNED BY: Chris Kuguru
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris, P.E.
November 14, 2003 SHEET 1 OF 7

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Airport Consultants
www.coffmanassociates.com

Coffman Associates E25dwg 11/14/2003

BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	ELEVATION
1	--	TERMINAL BUILDING	2,381'
2	--	FUEL ISLAND	--
3	--	ABOVE GROUND FUEL STORAGE	--
4	--	OFFICE BUILDING	2,387'
5	--	T-HANGARS	2,376'-2,380'
6	--	COMMERCIAL HANGARS	2,388'-2,390'
--	7	CLEARSPAN HANGARS	--
--	8	WASH RACK	--
--	9	10-UNIT NESTED T-HANGARS	--
10	10	HELIPAD	--
--	11	GENERAL AVIATION APRON	--
--	12	COMMERCIAL HANGAR LEASE PARCELS	--
--	--	--	

EXISTING ARP
EL. 2362.28'
33°58'08.106"N
112°47'54.646"W

EXIST. OFA 5,380' X 450'(TYP.)
EXIST. OFZ 5,390' X 400' (TYP.)
EXIST. RSA 5,570' X 150'
ULTIMATE RUNWAY 6,100' X 75'
EXISTING RUNWAY 5,050' X 75'
S 60°55'12" W (TRUE)
EXIST. RSA 5,570' X 150'

RELOCATED SEGMENTED CIRCLE
PAPI-4
EXISTING SEGMENTED CIRCLE
RELOCATED RUNWAY 23 PAPI-4
REIL
REIL
RECREATIONAL
60

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING CONSTRUCTION
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
PAPI-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
1080	1080	TOPOGRAPHIC CONTOURS
		WIND INDICATOR (Lighted)
		BUILDING TO BE REMOVED
		PAVEMENT TO BE REMOVED

NORTH
MAG

MAGNETIC VARIANCE 12°28' E
RATE OF CHANGE -3.06' WEST (NOVEMBER 2003)

0 100 200 300
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.
1	Revised NAD 27 to NAD 83; Magnetic Variation	6/10/93	C.A.M.	R.B.
2	Revised Land Acquisition for Runway 23 Rpz	01/27/00	C.A.M.	R.B.
3	Revised for Master Plan Update	01/27/00	M.J.R.	C.H.

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WICKENBURG MUNICIPAL AIRPORT

TERMINAL AREA PLAN

WICKENBURG, ARIZONA

PLANNED BY: Chris Huguenin
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris, P.E.

November 14, 2003 | SHEET 2 OF 7

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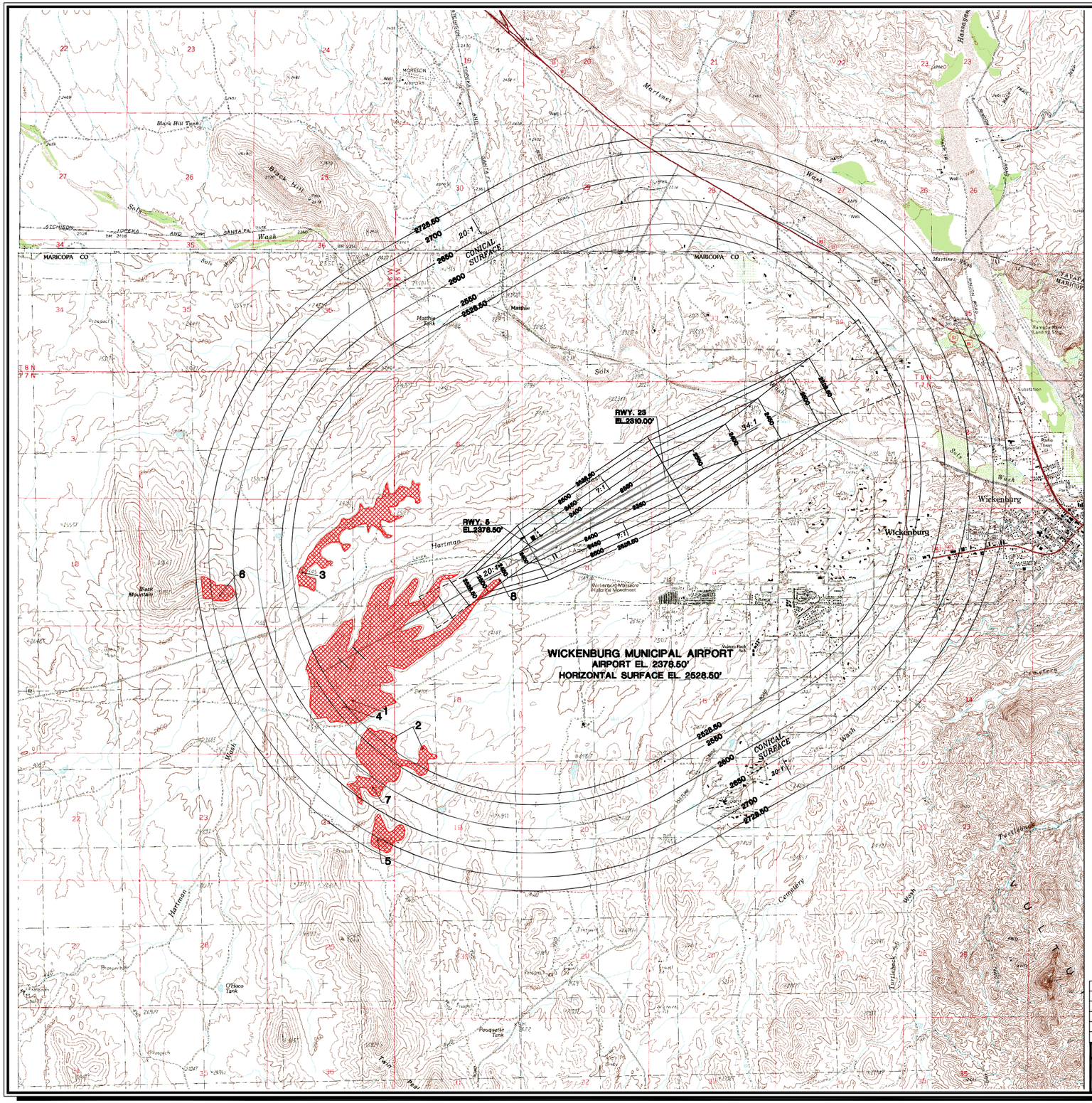
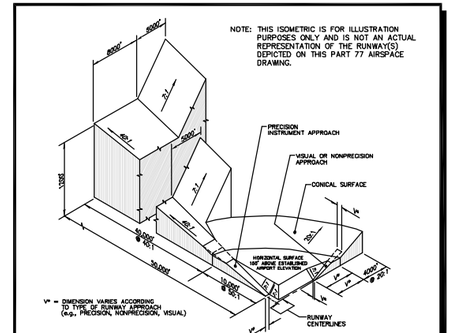


OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
1. TERRAIN	UP TO 2680'	HORIZONTAL SURFACE	2528.50'	152'	NO CHANGE
2. TERRAIN	UP TO 2660'	HORIZONTAL SURFACE	2528.50'	132'	NO CHANGE
3. TERRAIN	UP TO 2560'	HORIZONTAL SURFACE	2528.50'	32'	NO CHANGE
4. TERRAIN	UP TO 2701'	CONICAL SURFACE	2550'	151'	NO CHANGE
5. TERRAIN	UP TO 2715'	CONICAL SURFACE	2600'	115'	NO CHANGE
6. TERRAIN	UP TO 2780'	CONICAL SURFACE	2692'	88'	NO CHANGE
7. TERRAIN	UP TO 2865'	CONICAL SURFACE	2717'	148'	NO CHANGE
8. TERRAIN	UP TO 2580'	APPROACH SURFACE	2565'	15'	NO CHANGE



ISOMETRIC VIEW OF SECTION THRU CENTERLINE OF RUNWAYS
N.T.S.

OBSTRUCTION LEGEND

- 1 OBSTRUCTION
- TOPOGRAPHIC OBSTRUCTION

MAG NORTH

MAGNETIC VARIANCE 9°25' E
RATE OF CHANGE -3.06' WEST (JULY 2008)

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 outer portion of the approach surfaces, is illustrated on the RUNWAY APPROACH SURFACE PROFILES, sheet 5 of 7.
3. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE RUNWAY 5–23 APPROACH SURFACE DRAWING, sheet 4 of 7.
4. Article 14–20, Section 14–20–11 of the Town of Wickenburg Land Use Code provides for building height limitations.

0 2000 4000
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.
1	--	--	--	--

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WICKENBURG MUNICIPAL AIRPORT

AIRPORT AIRSPACE DRAWING

WICKENBURG, ARIZONA

PLANNED BY: Chris Huguenin
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris, P.E.

November 14, 2003 SHEET 3 OF 7

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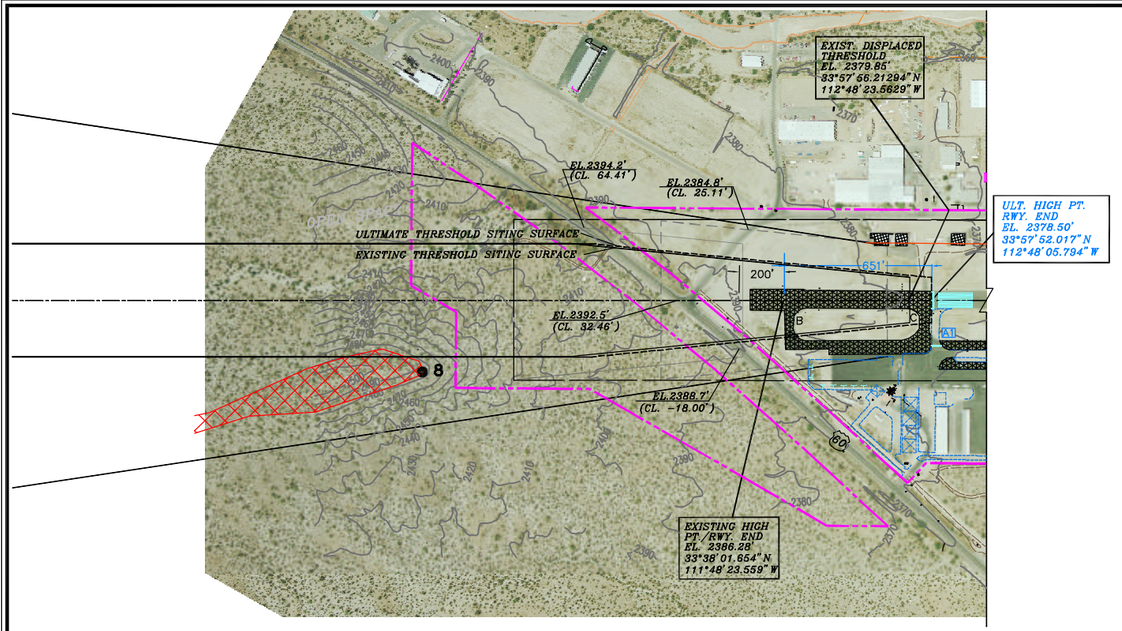
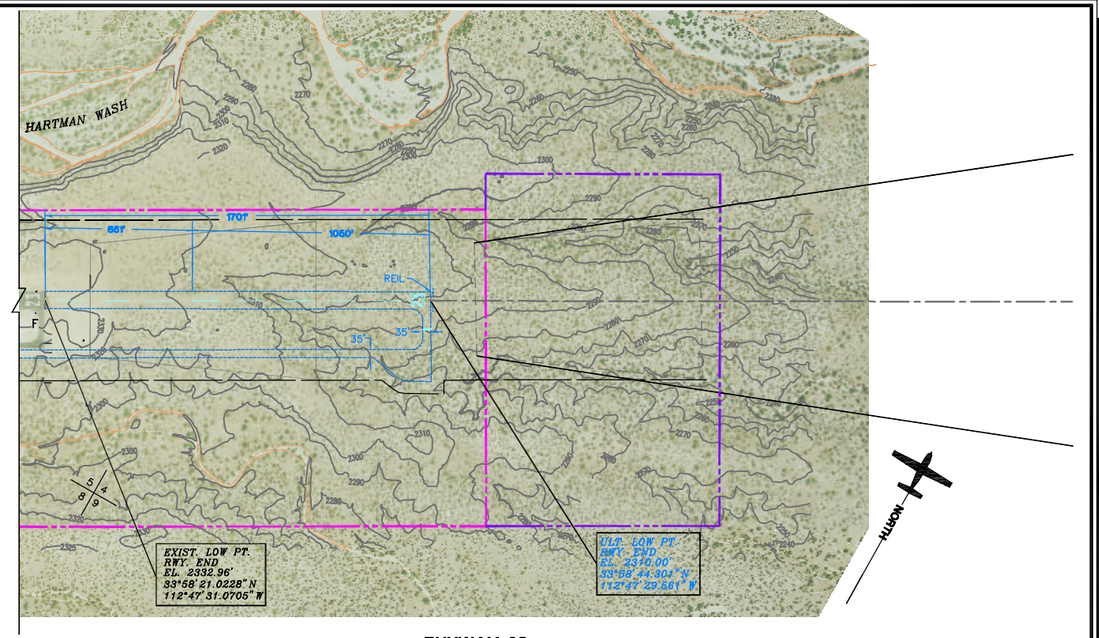
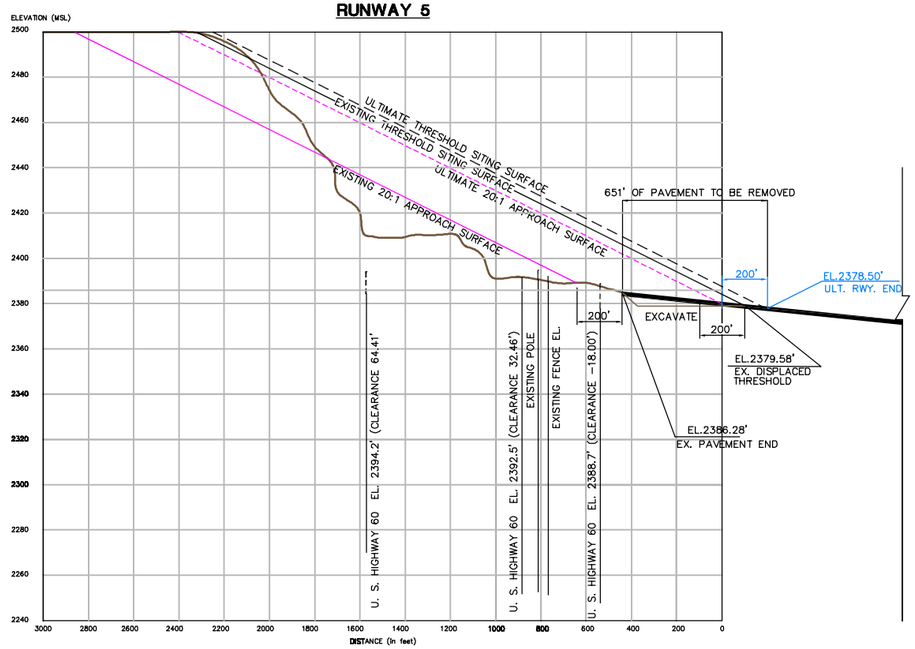
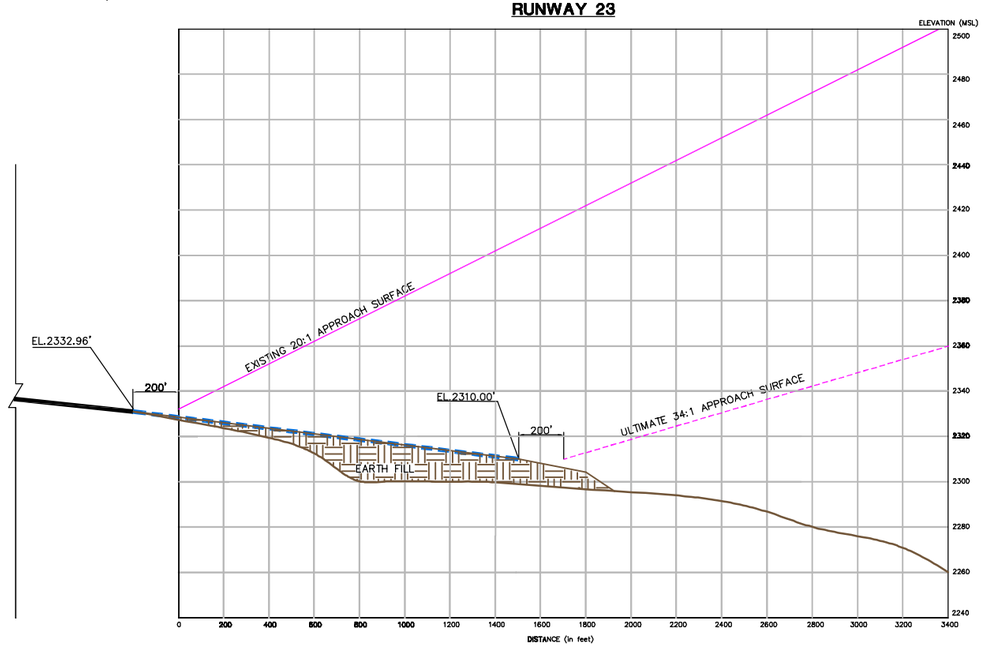




RUNWAY 5



RUNWAY 23



OBSTRUCTION TABLE					
Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
8. TERRAIN	UP TO 2580'	APPROACH SURFACE	2565'	15'	NO CHANGE

HORIZONTAL SCALE
0 200 400 800
SCALE IN FEET

VERTICAL SCALE
0 20 40 80
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.
1	--	--	--	--

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Wickenburg Municipal Airport

INNER PORTION OF THE RUNWAY 5-23 APPROACH SURFACE DRAWING

Wickenburg, Arizona

PLANNED BY: Chris Huguenin
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris P.E.

November 14, 2003 SHEET 4 OF 7

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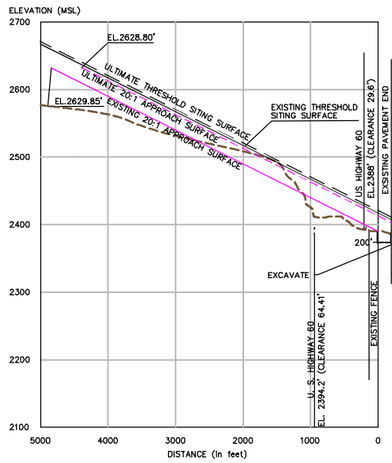
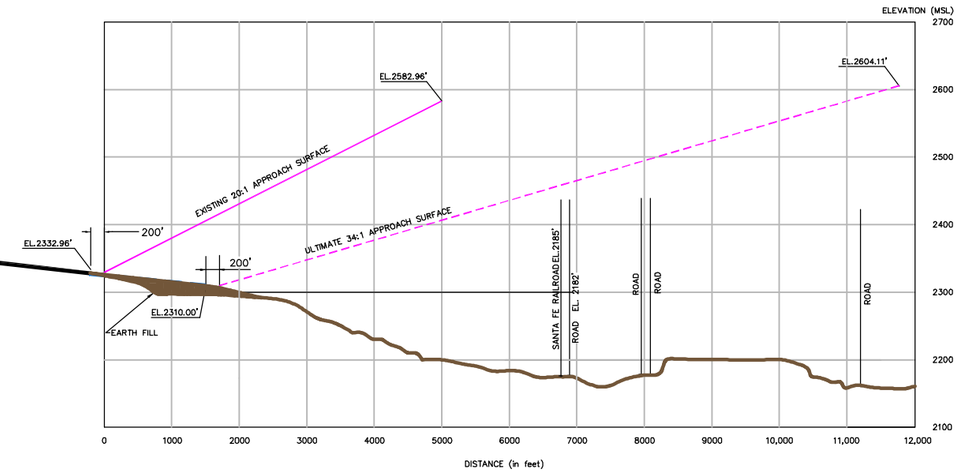
RUNWAY 5



RUNWAY 23



OBSTRUCTION TABLE

Object Description	Object Elevation	Obstructed Part 77 Surface	Surface Elevation	Object Penetration	Proposed Object Disposition
S. TERRAIN	UP TO 2580'	APPROACH SURFACE	2595'	15'	NO CHANGE

RUNWAY 5-23 APPROACH SURFACE

HORIZONTAL SCALE 0 1000 2000 3000
SCALE IN FEET

VERTICAL SCALE 0 100 200 300
SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.
1	--	--	--	--

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Wickenburg Municipal Airport

RUNWAY APPROACH SURFACE DRAWING

Wickenburg, Arizona

PLANNED BY: Chris Huguenin
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris P.E.

November 14, 2003 | SHEET 5 OF 7

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ON-AIRPORT LAND USE LEGEND

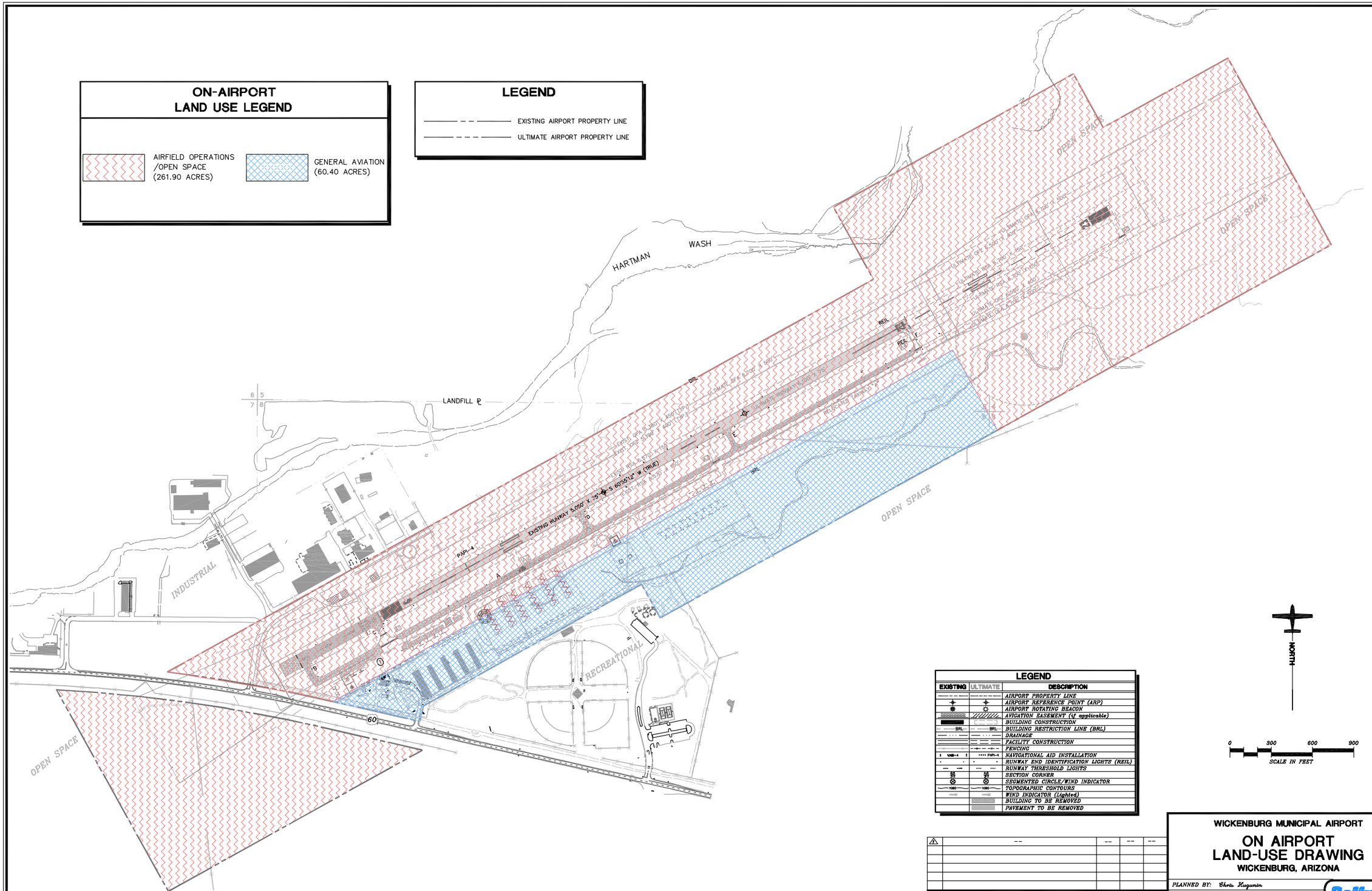
AIRFIELD OPERATIONS /OPEN SPACE (261.90 ACRES)

GENERAL AVIATION (60.40 ACRES)

LEGEND

EXISTING AIRPORT PROPERTY LINE

ULTIMATE AIRPORT PROPERTY LINE



LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		AVIGATION ESEMENT (if applicable)
		BUILDING CONSTRUCTION
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VAS-4	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
1080	1080	TOPOGRAPHIC CONTOURS
		WIND INDICATOR (Lighted)
		BUILDING TO BE REMOVED
		PAVEMENT TO BE REMOVED

NORTH

0 300 600 900

SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D.
	--	--	--	--

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WICKENBURG MUNICIPAL AIRPORT

ON AIRPORT LAND-USE DRAWING

WICKENBURG, ARIZONA

PLANNED BY: Chris Huguenin

DETAILED BY: Maggie Rogers

APPROVED BY: James M. Harris, P.E.

November 14, 2003

SHEET 6 OF 7

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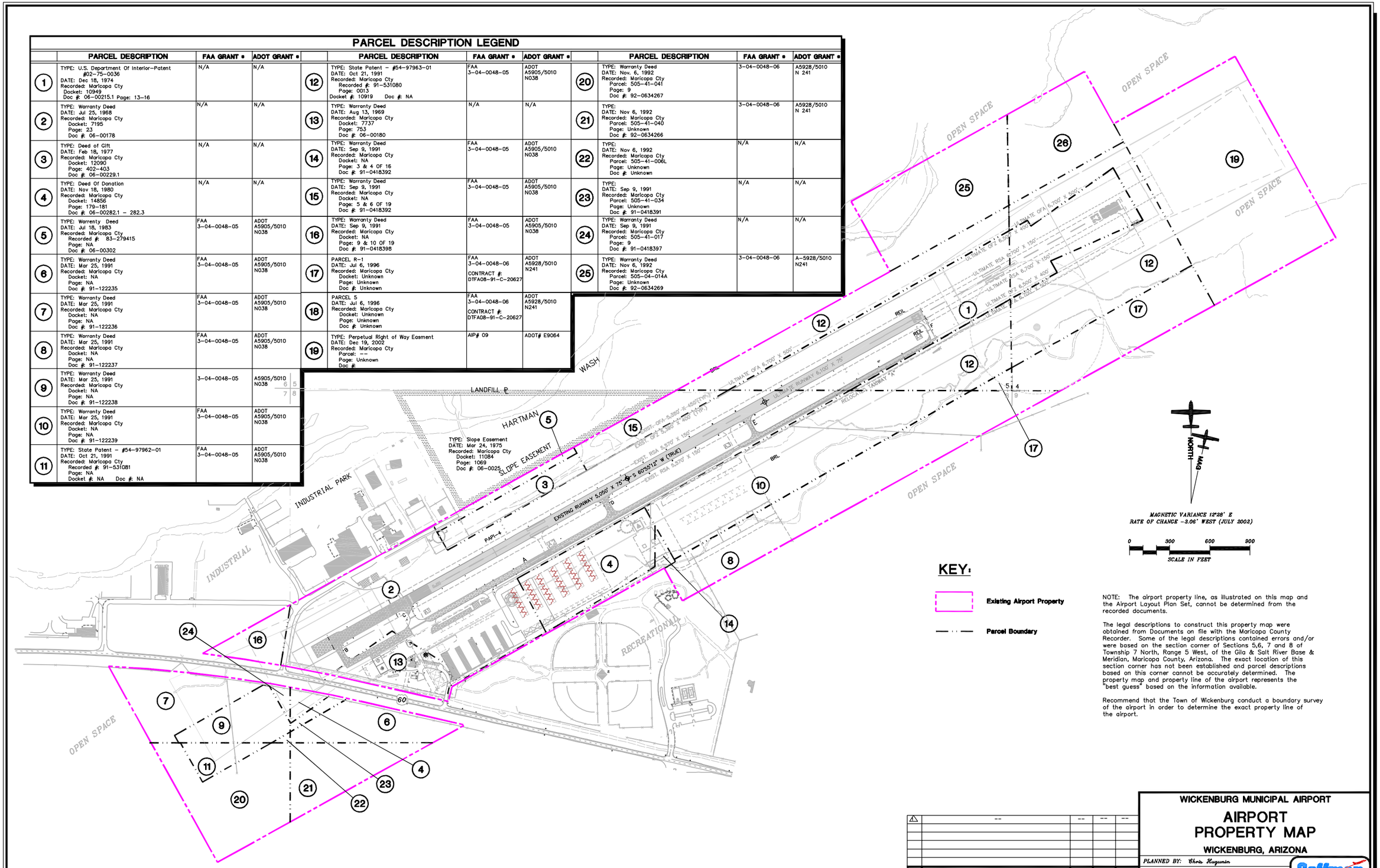
PARCEL DESCRIPTION LEGEND

	PARCEL DESCRIPTION	FAA GRANT #	ADOT GRANT #
1	TYPE: U.S. Department Of Interior–Patent #02–75–0036 DATE: Dec 18, 1974 Recorded: Maricopa Cty Docket: 10949 Doc #: 06–00215.1 Page: 13–16	N/A	N/A
2	TYPE: Warranty Deed DATE: Jul 25, 1968 Recorded: Maricopa Cty Docket: 7195 Page: 23 Doc #: 06–00178	N/A	N/A
3	TYPE: Deed of Gift DATE: Feb 18, 1977 Recorded: Maricopa Cty Docket: 12090 Page: 402–403 Doc #: 06–00229.1	N/A	N/A
4	TYPE: Deed Of Donation DATE: Nov 18, 1980 Recorded: Maricopa Cty Docket: 14856 Page: 179–181 Doc #: 06–00282.1 – 282.3	N/A	N/A
5	TYPE: Warrenty Deed DATE: Jul 18, 1983 Recorded: Maricopa Cty Recorded #: 83–279415 Page: NA Doc #: 06–00302	FAA 3–04–0048–05	ADOT A5905/5010 N038
6	TYPE: Warranty Deed DATE: Mar 25, 1991 Recorded: Maricopa Cty Docket: NA Page: NA Doc #: 91–122235	FAA 3–04–0048–05	ADOT A5905/5010 N038
7	TYPE: Warranty Deed DATE: Mar 25, 1991 Recorded: Maricopa Cty Docket: NA Page: NA Doc #: 91–122236	FAA 3–04–0048–05	ADOT A5905/5010 N038
8	TYPE: Warranty Deed DATE: Mar 25, 1991 Recorded: Maricopa Cty Docket: NA Page: NA Doc #: 91–122237	FAA 3–04–0048–05	ADOT A5905/5010 N038
9	TYPE: Warranty Deed DATE: Mar 25, 1991 Recorded: Maricopa Cty Docket: NA Page: NA Doc #: 91–122238	3–04–0048–05	A5905/5010 N038
10	TYPE: Warranty Deed DATE: Mar 25, 1991 Recorded: Maricopa Cty Docket: NA Page: NA Doc #: 91–122239	FAA 3–04–0048–05	ADOT A5905/5010 N038
11	TYPE: State Patent – #54–97962–01 DATE: Oct 21, 1991 Recorded: Maricopa Cty Recorded #: 91–531081 Page: NA Docket #: NA Doc #: NA	FAA 3–04–0048–05	ADOT A5905/5010 N038
12	TYPE: State Patent – #54–97963–01 DATE: Oct 21, 1991 Recorded: Maricopa Cty Recorded #: 91–531080 Page: 0013 Docket #: 10919 Doc #: NA	FAA 3–04–0048–05	ADOT A5905/5010 N038
13	TYPE: Warranty Deed DATE: Aug 13, 1969 Recorded: Maricopa Cty Docket: 7737 Page: 753 Doc #: 06–00180	N/A	N/A
14	TYPE: Warranty Deed DATE: Sep 9, 1991 Recorded: Maricopa Cty Docket: NA Page: 3 & 4 OF 16 Doc #: 91–0418392	FAA 3–04–0048–05	ADOT A5905/5010 N038
15	TYPE: Warranty Deed DATE: Sep 9, 1991 Recorded: Maricopa Cty Docket: NA Page: 5 & 6 OF 19 Doc #: 91–0418392	FAA 3–04–0048–05	ADOT A5905/5010 N038
16	TYPE: Warranty Deed DATE: Sep 9, 1991 Recorded: Maricopa Cty Docket: NA Page: 9 & 10 OF 19 Doc #: 91–0418398	FAA 3–04–0048–05	ADOT A5905/5010 N038
17	PARCEL R–1 DATE: Jul 6, 1996 Recorded: Maricopa Cty Docket: Unknown Page: Unknown Doc #: Unknown	FAA 3–04–0048–06 CONTRACT #: DTFA08–91–C–20627	ADOT A5928/5010 N241
18	PARCEL 5 DATE: Jul 6, 1996 Recorded: Maricopa Cty Docket: Unknown Page: Unknown Doc #: Unknown	FAA 3–04–0048–06 CONTRACT #: DTFA08–91–C–20627	ADOT A5928/5010 N241
19	TYPE: Perpetual Right of Way Easment DATE: Dec 19, 2002 Recorded: Maricopa Cty Parcel: --- Page: Unknown Doc #:	AIP# 09	ADOT# E9084
20	TYPE: Warranty Deed DATE: Nov. 6, 1992 Recorded: Maricopa Cty Parcel: 505–41–041 Page: 9 Doc #: 92–0634267	3–04–0048–06	A5928/5010 N 241
21	TYPE: DATE: Nov 6, 1992 Recorded: Maricopa Cty Parcel: 505–41–040 Page: Unknown Doc #: 92–0634266	3–04–0048–06	A5928/5010 N 241
22	TYPE: DATE: Nov 6, 1992 Recorded: Maricopa Cty Parcel: 505–41–006L Page: Unknown Doc #: Unknown	N/A	N/A
23	TYPE: DATE: Sep 9, 1991 Recorded: Maricopa Cty Parcel: 505–41–034 Page: Unknown Doc #: 91–0418391	N/A	N/A
24	TYPE: Warranty Deed DATE: Sep 9, 1991 Recorded: Maricopa Cty Parcel: 505–41–017 Page: 9 Doc #: 91–0418397	N/A	N/A
25	TYPE: Warranty Deed DATE: Nov 6, 1992 Recorded: Maricopa Cty Parcel: 505–04–014A Page: Unknown Doc #: 92–0634269	3–04–0048–06	A–5928/5010 N241
26			



MAGNETIC VARIANCE 12°28' E
RATE OF CHANGE –3.06' WEST (JULY 2002)

0 300 600 900

SCALE IN FEET

KEY:

Existing Airport Property

Parcel Boundary

NOTE: The airport property line, as illustrated on this map and the Airport Layout Plan Set, cannot be determined from the recorded documents.

The legal descriptions to construct this property map were obtained from Documents on file with the Maricopa County Recorder. Some of the legal descriptions contained errors and/or were based on the section corner of Sections 5,6, 7 and 8 of Township 7 North, Range 5 West, of the Gila & Salt River Base & Meridian, Maricopa County, Arizona. The exact location of this section corner has not been established and parcel descriptions based on this corner cannot be accurately determined. The property map and property line of the airport represents the "best guess" based on the information available.

Recommend that the Town of Wickenburg conduct a boundary survey of the airport in order to determine the exact property line of the airport.

No.	REVISIONS	DATE	BY	APP'D.
1	--	--	--	--

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WICKENBURG MUNICIPAL AIRPORT

AIRPORT PROPERTY MAP

WICKENBURG, ARIZONA

PLANNED BY: Chris Huguenin
DETAILED BY: Maggie Rogers
APPROVED BY: James M. Harris P.E.
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