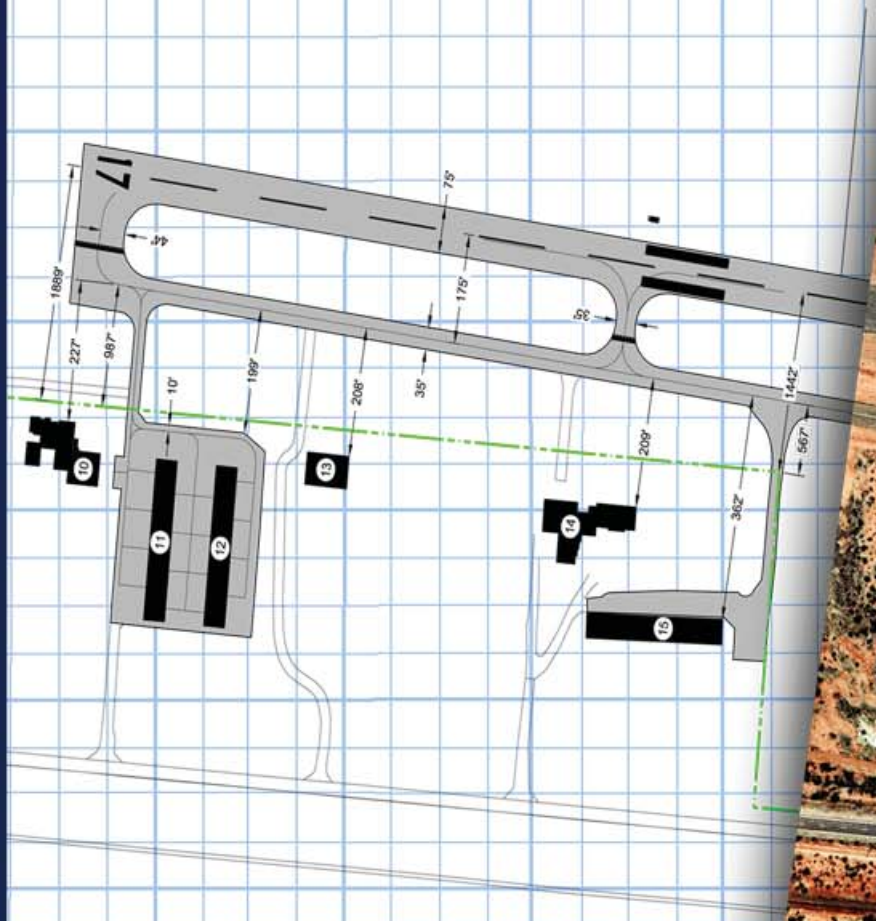
Bisbee Municipal Airport

Airport Master Plan

Final Report
March 11, 2011



ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

The preparation of this document may have been supported, in part, through the Airport Improvement Program financial assistance from the Federal Aviation Administration (3-04-004-009-2009) as provided under Title 49 U.S.C., Section 47104. The contents do not necessarily reflect the official views or policy of the FAA. Acceptance of this report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted therein nor does it indicate that the proposed development is environmentally acceptable or would have justification in accordance with the appropriate public laws.

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ARMSTRONG CONSULTANTS, INC.
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Bisbee Municipal Airport
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INTRODUCTION

The City of Bisbee, Arizona, as the Airport Sponsor, is continuing its effort to plan for future development of the Bisbee Municipal Airport. This future development is designed to enhance air and ground operations, improve safety, provide better airport services and stimulate the local economy through business growth potential. The preparation of this master plan is evidence that the City of Bisbee recognizes the significance of air transportation to the community as well as the requirement for a systematic approach to evaluating the airport's unique operating and improvement needs.

The master plan is intended to be a proactive document which identifies and plans for future facility needs well in advance of the actual need for the facilities. This is done to ensure that the City of Bisbee can coordinate project approvals, design, financing and construction to avoid experiencing unfavorable effects due to inadequate airport facilities. With a sound and realistic master plan Bisbee Municipal Airport can maintain its role as an important link to the national air transportation system for the community.

PURPOSE

The purpose of the airport master plan is to provide a framework to guide future airport development that will cost-effectively satisfy aviation demand, while considering potential environmental and socioeconomic impacts. The airport master plan considers the possible environmental and socioeconomic costs associated with alternative development concepts, as well as, the possible means of avoiding, minimizing, or mitigating impacts to sensitive resources at the appropriate level of detail for facilities planning.

The airport master plan document describes and depicts the overall concept for the long-term development of an airport. It presents the concepts graphically in the airport layout plan (ALP) drawing set and reports the data and logic upon on which the concept is based in the airport master plan (AMP) report.

OBJECTIVES

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

Objectives of the airport master plan include:

- Document the issues that the proposed development will address.
- Justify the proposed development through the technical, economic and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the development of the airport and anticipated land uses in the vicinity of the airport.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.

- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state and Federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing planning process that will monitor key conditions and permit changes in plan recommendations as required.

MASTER PLAN PROCESS

Airport planning takes place at a national, state, regional and local level. These plans are formulated on the basis of overall transportation demands and are coordinated with other transportation planning and comprehensive land use planning. The National Plan of Integrated Airport Systems (NPIAS) is a ten-year plan continually updated and published by the Federal Aviation Administration (FAA). The NPIAS lists developments at public use airports that are considered to be of national interest and thus eligible for financial assistance for airport planning and development under the Airport and Airway Improvement Act of 1982. Statewide Integrated Airport Systems Planning identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals. This planning is performed by state transportation or aviation planning agencies. Regional Integrated Airport Systems Planning identifies airport needs for a large regional or metropolitan area. Needs are stated in general terms and incorporated into statewide systems plans. Airport Master Plans are prepared by the operators of individual airports and are usually completed with the assistance of consultants. The City of Bisbee is completing this master plan with the assistance of Armstrong Consultants, Inc. The airport master planning process involves collecting data, forecasting demand, determining facility requirements, studying various alternatives and developing plans and schedules. The flow chart in Figure I-1 depicts the steps in the master planning process. This process will take into consideration the needs and concerns of the airport sponsor, airport tenants and users, as well as the general public.

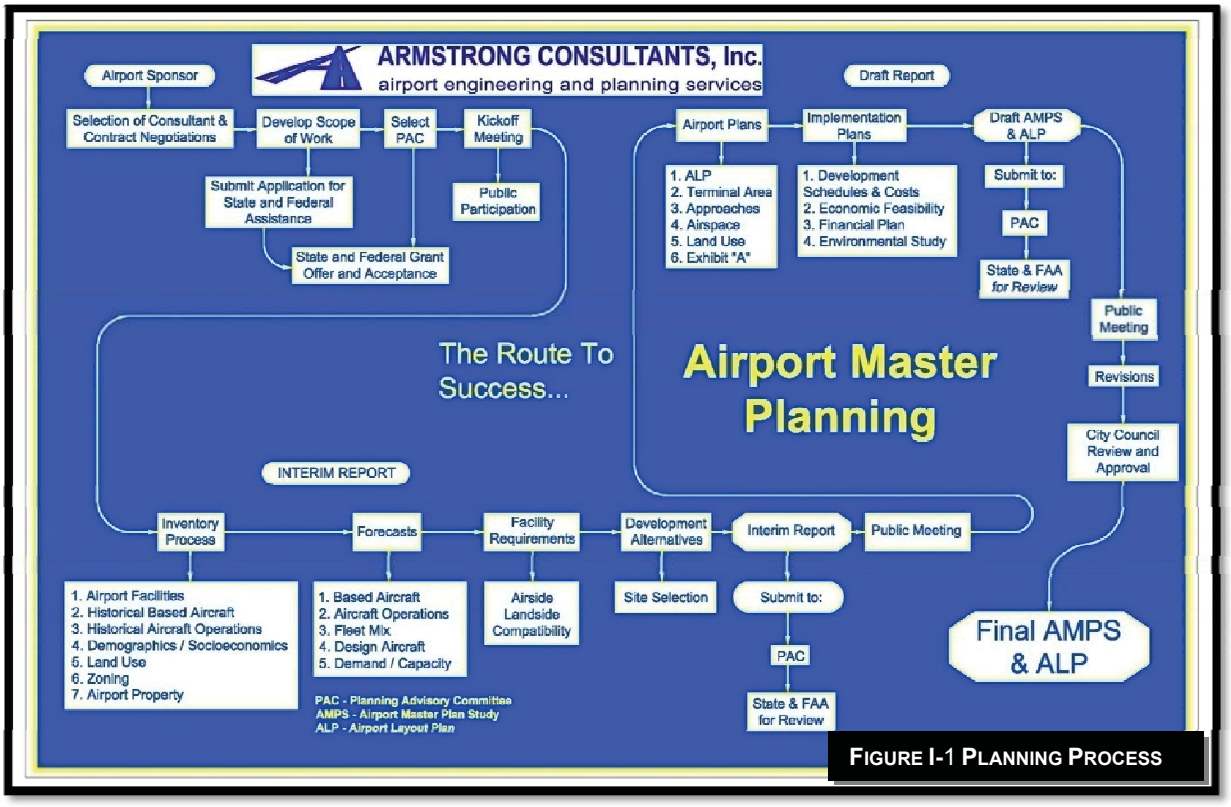


FIGURE I-1 PLANNING PROCESS

PLANNING ADVISORY COMMITTEE

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

Members of the PAC:

- Tom Klimek, City of Bisbee
- Jim Gutowski, City of Bisbee
- George Buley, FAA
- Ken Potts, Arizona Department of Transportation, Aeronautics Group
- Gordon Lewis, Bisbee Airport Advisory Commission
- Bill Seibold, Bisbee Airport Advisory Commission
- Kim Christian, Bisbee Airport Advisory Commission
- Marilyn Seibold, Bisbee Airport Advisory Commission

Chapter One
Inventory

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

1.1 INTRODUCTION

The preparation and collection of meaningful data on the airport usage and the condition of its components are basic to sound master planning. The development of this master plan requires the collection and evaluation of baseline information relating to the airport's property, facilities, services and local vicinity. The information presented in this chapter will serve as the basis in determining any necessary airport improvements or expansions that are indicated by aviation activity forecasts and the demand/capacity analysis. The information was obtained during visits and interviews with airport management, City staff, airport tenants and users. Airport and other public documents were also examined.

1.2 AIRPORT LOCATION

The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East in unincorporated Cochise County approximately five miles southeast of downtown Bisbee, Arizona (see Figure 1-2). The airport location is Latitude 31˚ 22' 07.69" North and Longitude 109˚ 53' 00.49" West and the airport elevation is 4,807.6 ft.

Bisbee Municipal Airport provides service to the southeast Arizona general aviation community, which includes business travel, charter, sport aviation and training, as well as private use of the light aircraft. Figure 1-1 shows an aircraft that typically operates at Bisbee Municipal Airport.

1.3 AIRPORT OWNERSHIP AND MANAGEMENT

The Bisbee Municipal Airport is owned and operated by the City of Bisbee. The Public Works Department oversees the operation, plans for future developments and manages grant applications through the Arizona Department of Transportation (ADOT) and the Federal Aviation Administration (FAA). The Bisbee Airport Advisory Commission (BAAC) meets on a regular basis and submits ideas and requests to the City concerning the operation and planning of the airport.

FIGURE 1-1 – AIRCRAFT AT BISBEE

Source: Armstrong Consultants, Inc., 2009

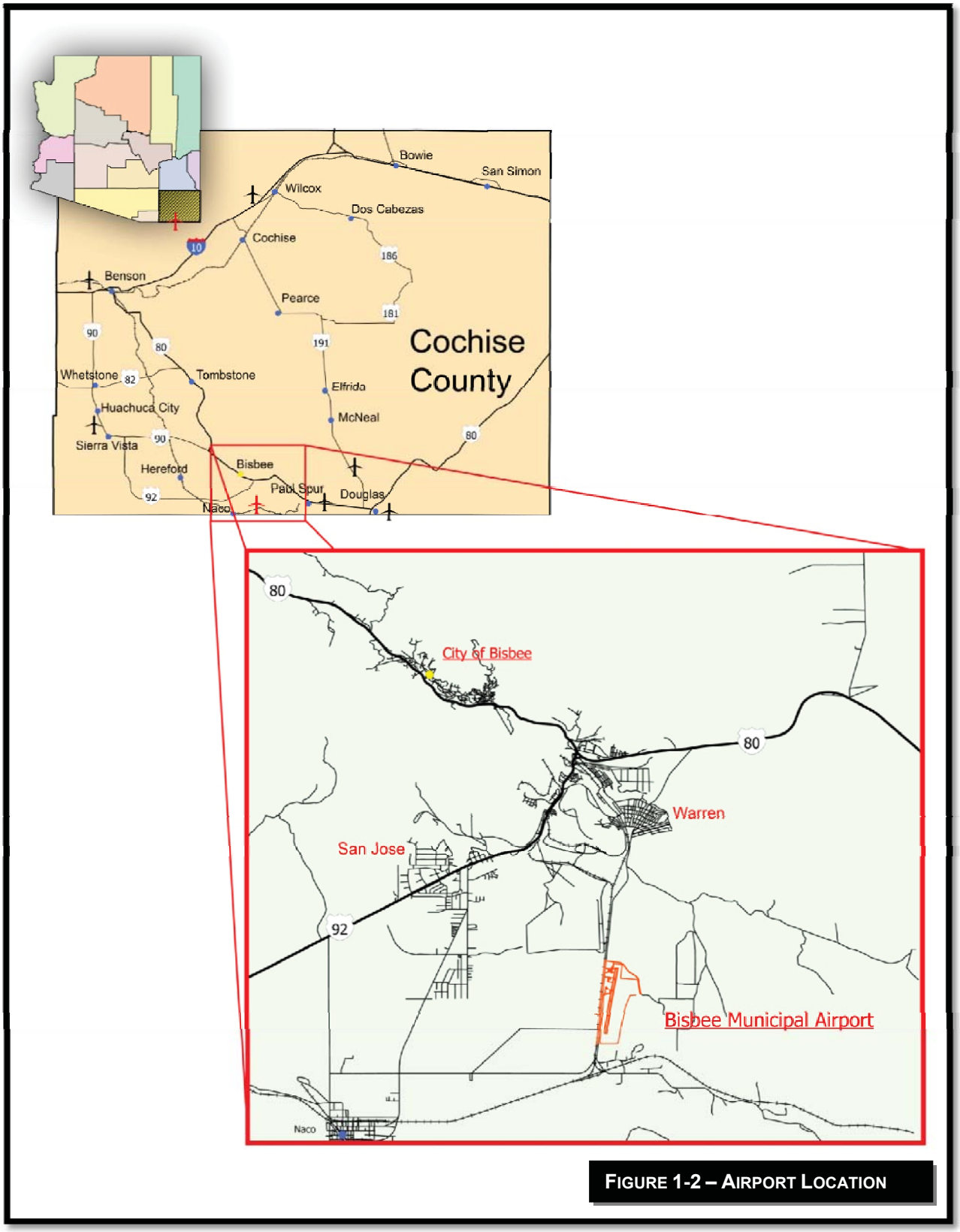


FIGURE 1-2 – AIRPORT LOCATION

Source: Developed based on Nation Atlas and TIGER Line Files data

1.4 AIRPORT GRANT HISTORY

A federal and state grant history for the capital improvements at Bisbee Municipal Airport is provided in Table 1-1.

TABLE 1-1 GRANT HISTORY

FAA Grant No.	Year	Description of Work	Federal Amount
001-1982	1982	Rehabilitate Taxiway	$7,200
		Expand Apron	$34,446
		Extend Runway	$238,348
		Total:	**$279,994**
002-1989	1989	Construct Taxiway	$395,837
		Extend Taxiway	$18,691
		Total:	**$414,528**
003-1994	1994	Improve Airport Drainage	$116,529
		Install Runway Lighting	$62,299
		Total:	**$178,828**
004-1995	1995	Rehabilitate Runway	$152,464
		Install Airfield Guidance Signs	$18,000
		Expand Apron	$43,910
		Rehabilitate Taxiway	$94,000
		Total:	**$308,374**
006-2004	2004	Rehabilitate Runway Lighting	$104,185
		Rehabilitate Taxiway Lighting	$104,185
		Total:	**$208,370**
007-2005	2005	Widen Runway	**$190,000**
008-2007	2007	Widen Runway	**$1,523,448**
009-2009	2009	Update Airport Master Plan Study	**$182,120**
		TOTAL FAA AMOUNTS	**$3,285,662**

State Grant No	Year		State Amount
9032	1999	Master Plan Update	$49,500
5S19	2005	Design only: Fire suppression system	175,500
5F67	2005	Design runway and taxiway lighting system and install electrical vault	$5,355
6S20	2006	Fire Suppression System, Phase 2	$67,500
7F77	2007	Design and Widen Runway 17/35, Phase 1	$5,000
7S25	2007	Fire Suppression System, Phase 3	$0[(1)]
8S26	2008	Fire safety System Phase 4, 500,000 gal	$0[(1)]
		TOTAL STATE AMOUNTS	**$302,855**

Source: FAA, ADOT 2009
(1) Still open

1.5 AIRPORT HISTORY

Bisbee Municipal Airport began its life in the late 1920's, when barnstorming pilots began to use a field just south of the Town of Warren. At that time, there were no defined runways and pilots were able to land and takeoff using the cleared 187-acre square of land. Since then, Bisbee Municipal Airport has provided general aviation service to the area.

As private aircraft became more common during the 1930's and 1940's, activity at the airfield increased. During that time, there were two privately owned aircraft based at Bisbee airfield. The aircraft were owned by two local doctors, Dr. Piepergerdes and Dr. Tuell, who in about 1932 constructed two aircraft hangars which only one of them exists today.

During World War II, Cochise County played an important role as a key training location for the U.S. Army Forces. The Douglas Army Airfield, today Bisbee-Douglas International Airport was constructed near the City of Douglas, which is about 24 miles east of Bisbee. During the war years, activity at Bisbee Municipal Airport increased, with extensive use by general aviation, the Civil Air Patrol and some military use.

Sometime prior to the 1950's, three graded dirt runways were constructed. These included Runway 2/20 (4,000 x 200 feet), Runway 15/33 (3,900 x 200 feet) and Runway 8/26 (2,200 x 200 feet).

Early in 1950, a barracks-type structure was constructed at the Bisbee Municipal Airport to serve as the area headquarters for the Civil Air Patrol. This building was located on the site presently occupied by the airport terminal building.

The present terminal building was constructed by the City during the early 1970's. In the early 1970's, efforts were undertaken to acquire the necessary land interest to qualify for federal funding by the FAA and state funding by the ADOT, in order to upgrade the airport facilities. Fee title was granted to the City of Bisbee by the Phelps Dodge Corporation in 1974.

An Airport Layout Plan and Property Map was prepared in 1976 as a requirement of the FAA and ADOT grant application process. On April 10, 1978 the Mayor signed a formal application requesting a $305,000 grant from the FAA and a $14,972 grant from ADOT for the construction of a new 5,900' x 60' paved Runway 17-35, aircraft parking apron, connector taxiway and perimeter fencing. Construction of the new improvements was completed in the fall of 1978. Because of funding limitations, the initial pavement sections were limited to a Bituminous Surface Treatment ("chip seal") over a primed 4" Aggregate Base Course and 5" of Select material. This work was completed under the FAA Airport Development Aid Program (ADAP) as a demonstration block grant under ADOT Project Number 01250.

A segmented Circle and Lighted Wind Cone were installed during February of 1980 using an FAA and State grant.

The airport installed Medium Intensity Runway Lights (MIRL) and a new Rotating Beacon in late 1980. Runway 17-35, the connector taxiway and parking apron were overlain with 2" of Asphaltic Concrete in October of 1983. Two 5-aircraft T-Shades were constructed by the City in the early 1980's.

In 1987 a comprehensive Airport Master Plan for the Bisbee Airport was conducted. In the fall of 1987 plans and specifications for pavement preservation of Runway 17-35, the taxiways, and

aircraft parking apron were prepared. Construction was completed in November of 1988. A full parallel taxiway adjacent to Runway 17-35 was constructed in 1989.

A Precision Approach Path Indicator (PAPI) system was installed on Runway17/35 by the City of Bisbee in 1992. Plans and specifications for replacement of the Medium Intensity Runway Lights (MIRL) and perimeter fence were prepared in 1993/94. Work was completed in early 1995. The original direct-burial cabled MIRL system that was constructed in 1980 was replaced with a new system. All underground cables were placed in PVC ducts, and the existing perimeter and terminal area fencing was replaced.

Plans were prepared in June of 1996 for the construction of an expanded aircraft parking apron, rubberized chip seal of Runway 17-35, taxiways and existing apron, installation of runway guidance signage, and removal of the fuel system and underground storage tanks. The City of Bisbee installed a new above-ground fuel system in May of 1997. Between 2004 and 2008 the runway was widened to 75 feet and the runway lighting system was rehabilitated.

1.6 AIRPORT CLASSIFICATION

Arizona has a variety of aviation facilities, from small rural unpaved airstrips serving isolated portions of the state to busy rooftop heliports and large long haul commercial service airports. Because of this diversity of facilities with broad ranges of operating parameters and design standards, a means of facility classification is necessary.

The FAA and the Arizona Department of Transportation use four basic aviation facility classifications. The first is the National Plan of Integrated Airport System (NPIAS). The second is the Airport Reference Code (ARC) which is a coding system used by the FAA to relate airport design criteria to the operational and physical characteristics of the airplanes operating at the airport. Third is a hierarchical classification used by the Arizona Division of Aeronautics that divides the state's airports into a Primary System, a Secondary System and other airports. The fourth was developed by the ADOT, based on former FAA airport classification categories, to assist in setting minimum development standard and planning guidelines for airport facility development in the state.

1.6.1 SERVICE LEVEL (NPIAS)

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

- **Commercial Service Airports** are public airports that enplane 2,500 or more passengers annually and receive aircraft offering scheduled passenger service. Commercial service airports are either:
    - Primary: an airport that enplanes more than 10,000 passengers annually; or
    - Nonprimary: an airport that enplanes between 2,500 and 10,000 passengers annually.
- **General Aviation Airports,** while not specifically defined, are considered to be airports not classified as commercial service. General aviation airports include:
    - Reliever airports designated by the FAA as having the function of relieving congestion at a commercial service airport and providing more general aviation

access to the overall community. Privately owned airports may be identified as reliever airports.
  - Privately owned public-use airports that enplane 2,500 or more passengers annually and receive scheduled passenger service are also classified as general aviation because they do not meet the criteria for commercial service.
  - Other General Aviation are airports that are largely intended to serve the needs of general aviation users (users who conduct non-military operations not involving the carriage of passengers or cargo for hire or compensation.)

Bisbee Municipal Airport is listed in the NPIAS as a general aviation airport. The airport meets all of the NPIAS criteria for a general aviation airport.

1.6.2 AIRPORT REFERENCE CODE (ARC)

The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport. The ARC has two components relating to the airport design aircraft. The first component, depicted by a letter, is the aircraft approach category and relates to the aircraft approach speed (operational characteristic). The second component depicted by a Roman numeral, is the airplane design group and relates to the airplane wingspan and tail height (physical characteristics).

In general, runway standards are related to aircraft approach speed, airplane wingspan, and designated or planned approach visibility minimums. Taxiway and taxilane standards are related to airplane design group. An upgrade in the first component of the ARC may result in a slight increase in certain design standards, while an upgrade in the second component of the ARC generally will result in a major increase in airport design standards.

The current FAA approved Airport Layout Plan (ALP) indicates an ARC B-II with a non-standard condition due to the runway centerline to taxiway centerline of 175’ which is lower than the minimum of 240’ required by the standards. The airport is currently serving predominately single-engine and multi-engine piston aircraft.

1.6.3 AIRPORT ROLE

The Arizona State Aviation System is divided into two sub-categories: (1) Primary System Airports and (2) Secondary System Airports. Airports are classified into these two categories by size and usage.

A Primary System Airport must be open to the public and meet at least one of the following criteria:

- Have 10 or more based aircraft and/or 2,000 or more annual operations; or
- Have scheduled air carrier service; or
- Receive commuter service regularly; or
- Projected to meet any of the above criteria within 10 years.

A Secondary airport is one that satisfies both of the following criteria:
- Recognized by the FAA as an airport per form 5010; and
- Open to the public.

Primary and Secondary System Airports are further classified into the following categories:

- **Commercial Service Airport**: a publicly owned airport which enplanes 2,500 or more passengers annually and receives scheduled passenger air service.
- **Reliever Airport**: an airport that serves as a "relief of General Aviation traffic congestion for a Commercial Service airport, providing more general aviation access to the overall community. The Reliever Airport should have a current or forecast activity level of 50 based aircraft and a minimum of 25,000 annual itinerant operations (or 35,000 local operations).
- **General Aviation Airports:** the remaining airports that do not fall into either the Commercial Service or Reliever status are referred to as General Aviation airports. This category includes privately owned and/or private use airports/heliports. For system planning purposes, the General Aviation Airports may be divided into the following types:
    - **Community Airport:** an airport within the State of Arizona serving an incorporated community with a population more than 1,000 people.
    - **Rural Airport:** an airport within the State of Arizona serving an incorporated community with less than 1,000 population.
    - **Emergency Airport**: an airport/facility or area within the State of Arizona that currently has, or can demonstrate, a need for an emergency or "air evacuation" airport. These airports may serve general aviation, recreation, and/or emergency services.
- **New Urban Airport:** the construction of a new airport within 24 statute miles of the Urbanized Area Boundary of Phoenix, Tucson, Yuma, and Flagstaff requires the approval of the State Transportation Board.

Bisbee Municipal Airport is classified a Primary System General Aviation, Public Community Airport based on the criteria described in the 2008 Arizona State Aviation System Plan.

1.7 AIRPORT SERVICE AREA

An airport service area is defined by the communities and surrounding areas served by the airport facility. For example, factors such as the airport's surrounding topographical features (mountains, rivers, etc.), proximity to its users, quality of ground access, required driving time to the airport and the proximity of the facility to other airports that offer the same or similar services can all affect the size of a particular airport's service area. To define the service area for the Bisbee Municipal Airport, the airports in the area and their specific services and facilities were reviewed. Figure 1-3 shows the airport service area. Relevant characteristics of other airports in the vicinity of Bisbee Airport are shown on Table 1-2.

The nearest public airport with a paved surface and other similar characteristics is Cochise College Airport which is located approximately 10 nautical miles east of Bisbee Municipal Airport. Runway 5/23 at Cochise College Airport is 5,303 feet long and 72 feet wide. Douglas-Bisbee International Airport is located approximately 16 nautical miles northeast of the Bisbee Airport. The Primary Service Area includes the area within half the distance of the nearest airport from Bisbee Municipal Airport.

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

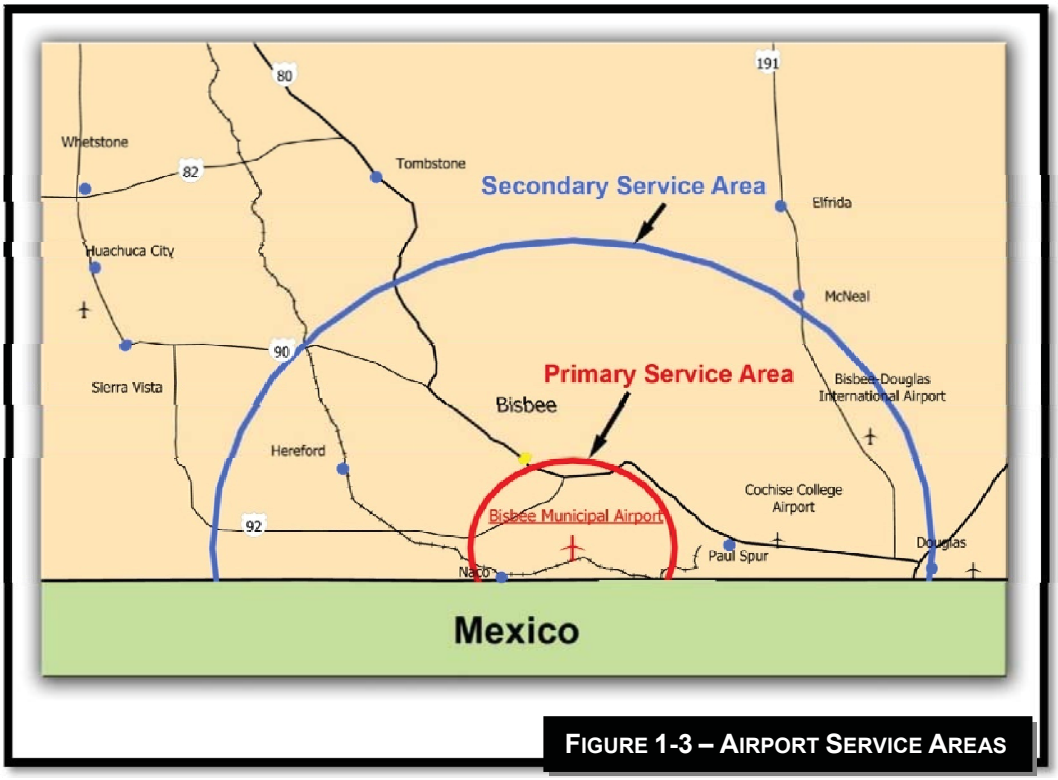


FIGURE 1-3 – AIRPORT SERVICE AREAS

Source: Developed based on National Atlas and TIGER Line Files data

TABLE 1-2 BISBEE MUNICIPAL AIRPORT AND SURROUNDING AIRPORTS

	Identifier	Distance (Nautical Miles)	Distance (Highway Miles)	NPIAS Status	Runway Length(s) Width(s)	Pavement Type	Instrument Approaches	Fuel
Bisbee Municipal Airport	P04	--	--	GA	5,900x75 ft 2,700x120 ft	Asphalt Dirt	None	100LL
Cochise College Airport	P03	10 E	15	GA	5,303x72 ft	Asphalt	None	100LL
Bisbee Douglas International Airport	KDUG	16 NE	25	GA	7,311x100 ft 5,000x75 ft	Asphalt Asphalt	VOR VOR/DME GPS	100LL Jet-A
Tombstone Municipal Airport	P29	19.8 N	26	GA	4,430x60 ft	Asphalt	None	None
Douglas Municipal Airport	KDGL	20E	28	GA	5,760x75 ft 4,095x100 ft	Asphalt Dirt	None	100LL Jet-A
Sierra Vista Municipal Airport-Libby Army Airfield	KFHU	27 NW	36	GA	12,001x150 ft 5,366x100 ft 4,285x75 ft	Concrete Asphalt Asphalt	ILS/LOC RNAV TACAN NDB	100LL Jet-A
Benson Municipal Airport	E95	45 NW	60	GA	4,000x75 ft	Asphalt	None	100LL Jet-A
Nogales International Airport	KOLS	50 W	86	GA	7,199x100 ft	Asphalt	VOR/DME VOR or GPS-A NBD or GPS-C	100LL Jet-A
Cochise County Airport	P33	53 N	90	GA	6,095x75 ft	Asphalt	GPS GPS-A	100LL Jet-A

Source: AirNav.com

1.8 SOCIOECONOMIC DATA

1.8.1 LOCAL PROFILE

The City of Bisbee is located in Cochise County, which is one of the 15 counties in Arizona. It is part of the Sierra Vista-Douglas, Arizona Micropolitan Statistical Area which in 2007 had a population of 127,931 which ranked 7th in the state. An aerial photo the City of Bisbee is shown in Figure 1-4

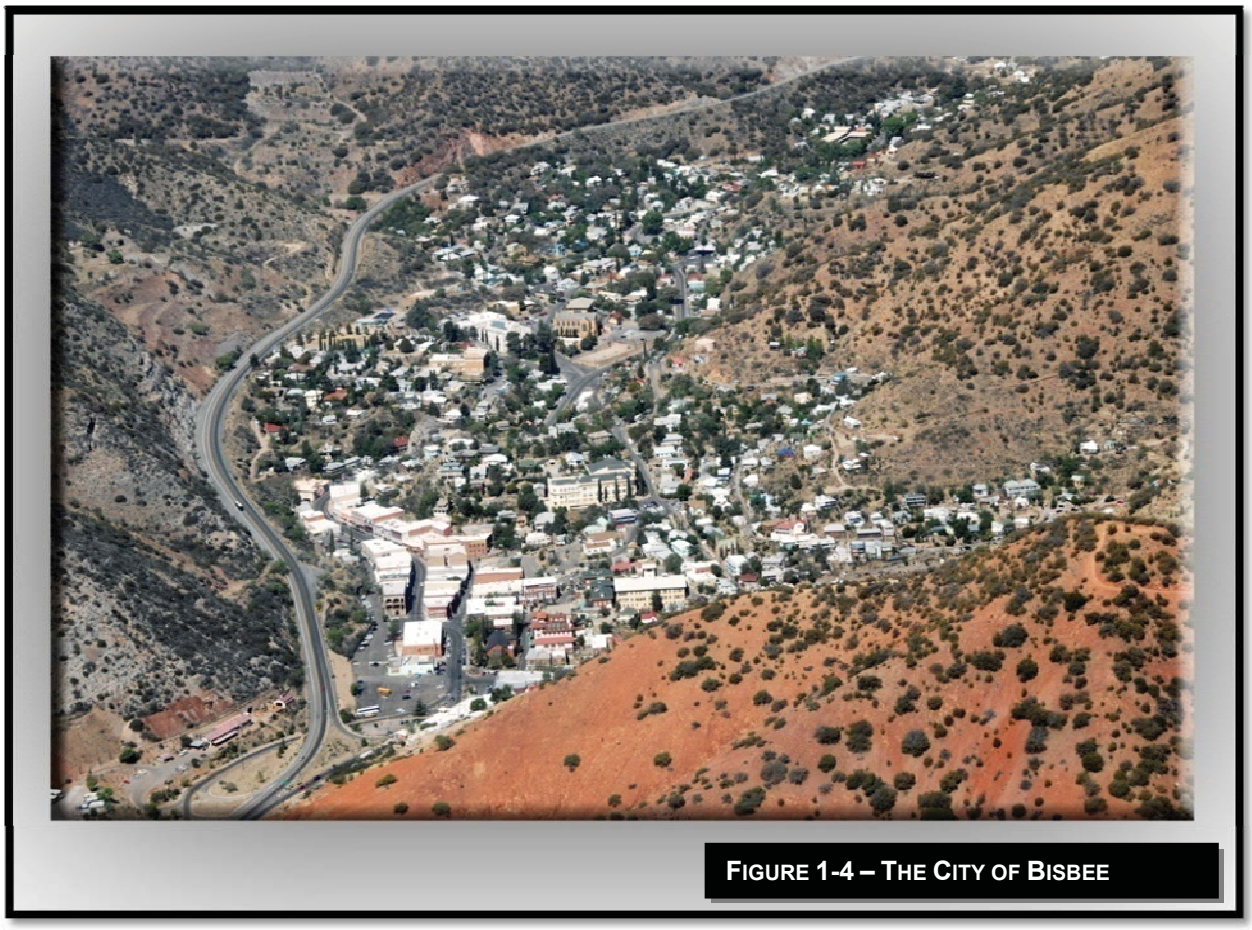


FIGURE 1-4 – THE CITY OF BISBEE

Source: Armstrong Consultants, Inc., 2009

Cochise County was named for the renowned Apache chief in 1881, when it was established during the 11th Territorial Assembly. Tombstone, one of the largest cities on the Western United States in 1881, was designated the first county seat. Like Tombstone, Bisbee was a mining town, site of the Copper Queen Mine and famous Lavender Pit, discovered in 1877. Today, Bisbee is the Cochise County seat and a popular artist community and tourist destination.

1.8.2 POPULATION

As of the 2000 US Census, there were 6,090 people residing in Bisbee. According to population estimates from the Arizona Department of Economic Security and the U.S. Census Bureau, these populations increased moderately from 2000 to 2007. Table 1-3 shows this increasing population trend.

TABLE 1-3 HISTORICAL POPULATION DATA

	2001	2002	2003	2004	2005	2006	2007	2008
Arizona	5,319,785	5,470,720	5,642,725	5,845,250	6,077,740	6,305,210	6,500,194	6,629,455
Cochise County	120,845	123,945	125,430	129,600	131,790	135,150	137,200	139,434
Bisbee	**6,095**	**6,140**	**6,360**	**6,585**	**6,570**	**6,355**	**6,319**	**6,389**
Benson	4,735	4,745	4,775	4,775	4,740	4,820	4,992	5,030
Douglas	16,600	16,990	17,075	17,080	17,195	17,660	18,152	18,207
Huachuca City	1,775	1,800	1,825	1,830	1,830	1,825	1,832	1,952
Sierra Vista	38,740	40,415	40,410	42,725	43,690	44,870	44,736	45,908
Tombstone	1,515	1,535	1,570	1,585	1,610	1,655	1,682	1,709
Willcox	3,775	3,815	3,850	3,870	3,885	3,910	3,913	3,904
Unincorporated	47,610	48,505	49,565	51,150	52,270	54,055	55,583	56,336

Source: Population Statistics Unit, Research Administration, Department of Economic Security

Between 2001 and 2008 the approximate population growth percentages are as follows: 25 percent for the State of Arizona, 16 percent for Cochise County and 5 percent for the City of Bisbee. Population projection estimates shown on Table 1-4 are based on a linear extrapolation of the historical data shown on Table 1-3. This makes the assumption that the population growth trend between 2001 and 2008 will continue throughout the planning horizon. Figure 1-5 shows the historical population data and projection.

TABLE 1-4 POPULATION PROJECTIONS

	2009	2014	2019	2024	2029
Arizona	6,859,689	7,843,915	8,828,142	9,812,368	10,796,595
Cochise County	142,625	156,181	169,738	183,294	196,851
Bisbee	6,505	6,676	6,847	7,019	7,190
Benson	5,009	5,211	5,413	5,616	5,818
Douglas	18,384	19,511	20,637	21,764	22,891
Huachuca City	1,909	1,992	2,075	2,158	2,242
Sierra Vista	47,301	52,427	57,554	62,680	67,807
Tombstone	1,735	1,876	2,017	2,159	2,300
Willcox	3,950	4,045	4,139	4,234	4,328
Unincorporated	57,834	64,445	71,056	77,667	84,277

Source: Armstrong Consultants, Inc., extrapolated from the Population Statistics Unit, Research Administration, Department of Economic Security data

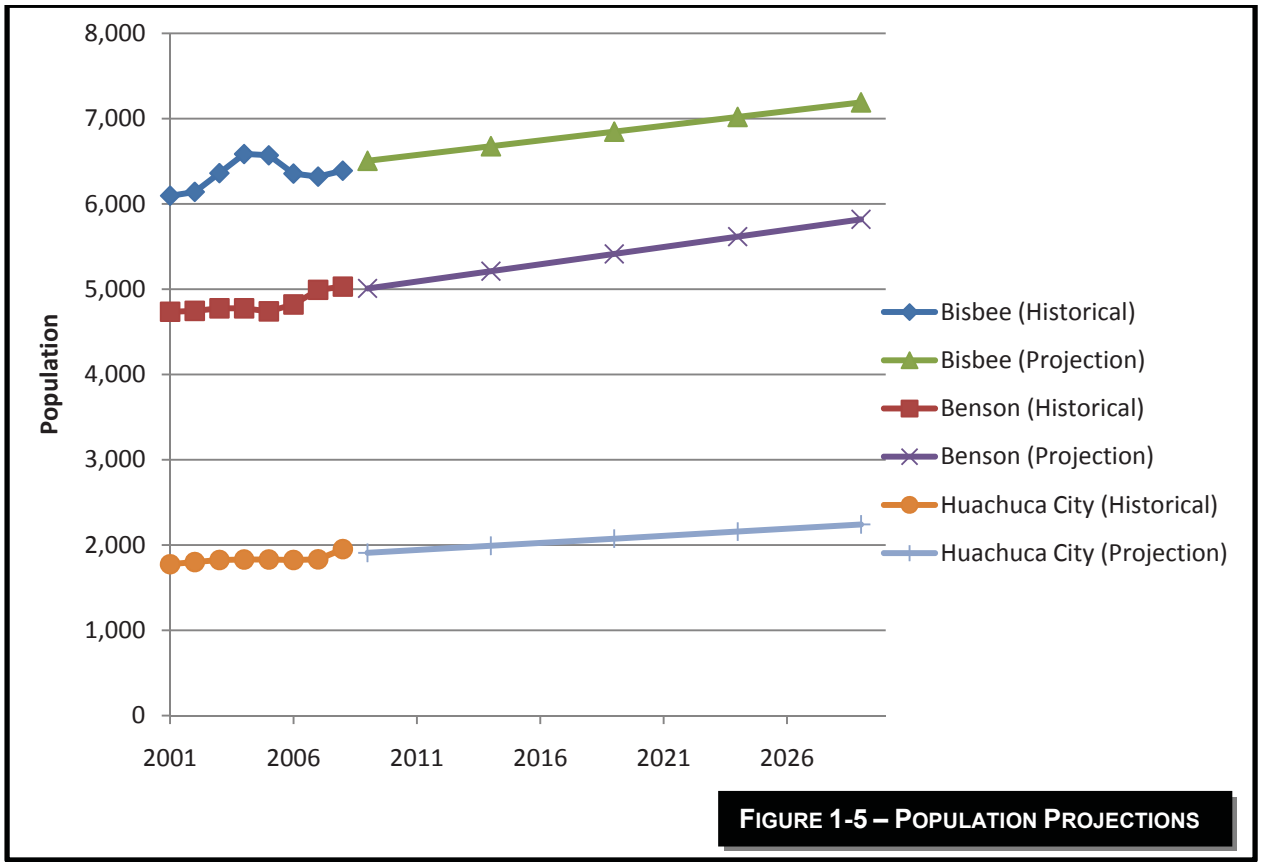


FIGURE 1-5 – POPULATION PROJECTIONS

Source: Population Statistics Unit, Research Administration, Department of Economic Security and extrapolated data.

1.8.3 EMPLOYMENT

Bisbee's diverse economy includes government, light manufacturing, tourism and retirement. Phelps Dodge Corporation still maintains a presence in Bisbee and played a major economic factor in Bisbee's past. Seven miles from the international border with Mexico, Bisbee serves as the major transportation link for the twin plant manufacturing operations in Naco, Cananea, Sonora and Mexico.

Major private employers include: Arizona Southern Distributors, Copper Queen Community Hospital, Copper Queen Hotel, Free-port-McMoRan Copper and Safeway. Major public employers include: Bisbee School District, City of Bisbee and Cochise County. The following tables and figures summarize the key employment indicators for the area.

TABLE 1-5 COCHISE COUNTY EMPLOYMENT DISTRIBUTION

	2007
Government	12,150
Trade, Transportation, and Utilities	6,925
Professional and Business Services	4,875
Educational and Health Services	4,150
Leisure and Hospitality	4,050
Mining and Construction	2,375
Financial Activities	1,000
Other Services	900
Manufacturing	875
Information	525

Source: Arizona Department of Economic Security; Bisbee Community Profile

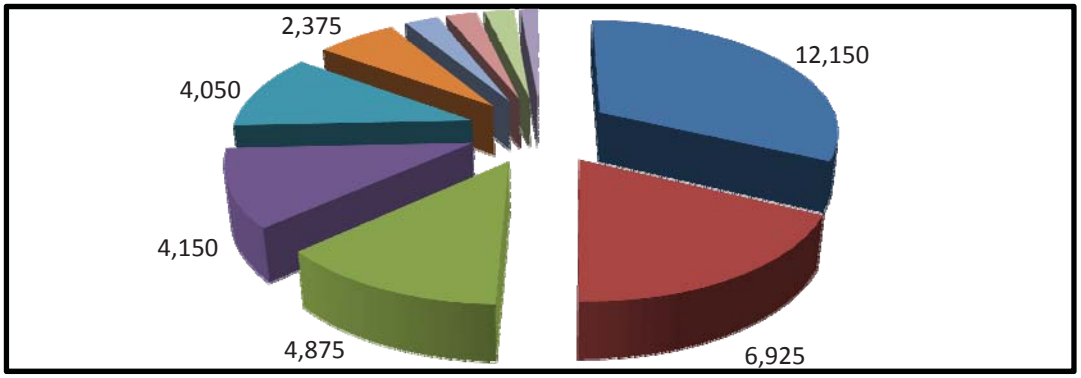


FIGURE 1-6 – COCHISE COUNTY EMPLOYMENT DISTRIBUTION 2007 BY INDUSTRY

Source: Arizona Department of Economic Security; Bisbee Community Profile

TABLE 1-6 BISBEE'S LABOR FORCE DATA

	1990	2000	2007
Civilian Labor Force	2,657	2,803	3,258
Unemployed	176	140	154
Unemployment Rate	6.6%	5.0%	4.7%

Source: Arizona Department of Economic Security; Arizona Department of Commerce: Bisbee Community Profile

TABLE 1-7 BISBEE'S MAJOR EMPLOYERS

	2008
Cochise County	678
Naco Border Patrol Station	300+
Copper Queen Community Hospital	174
Bisbee Unified School District	139
City of Bisbee	112
Bisbee Hospitality Group	87
Catholic Community Service in Southeastern Arizona	81
Safeway	54
Turquoise Valley Golf, Restaurant & RV	31

Source: Cochise College Center for Economic Research

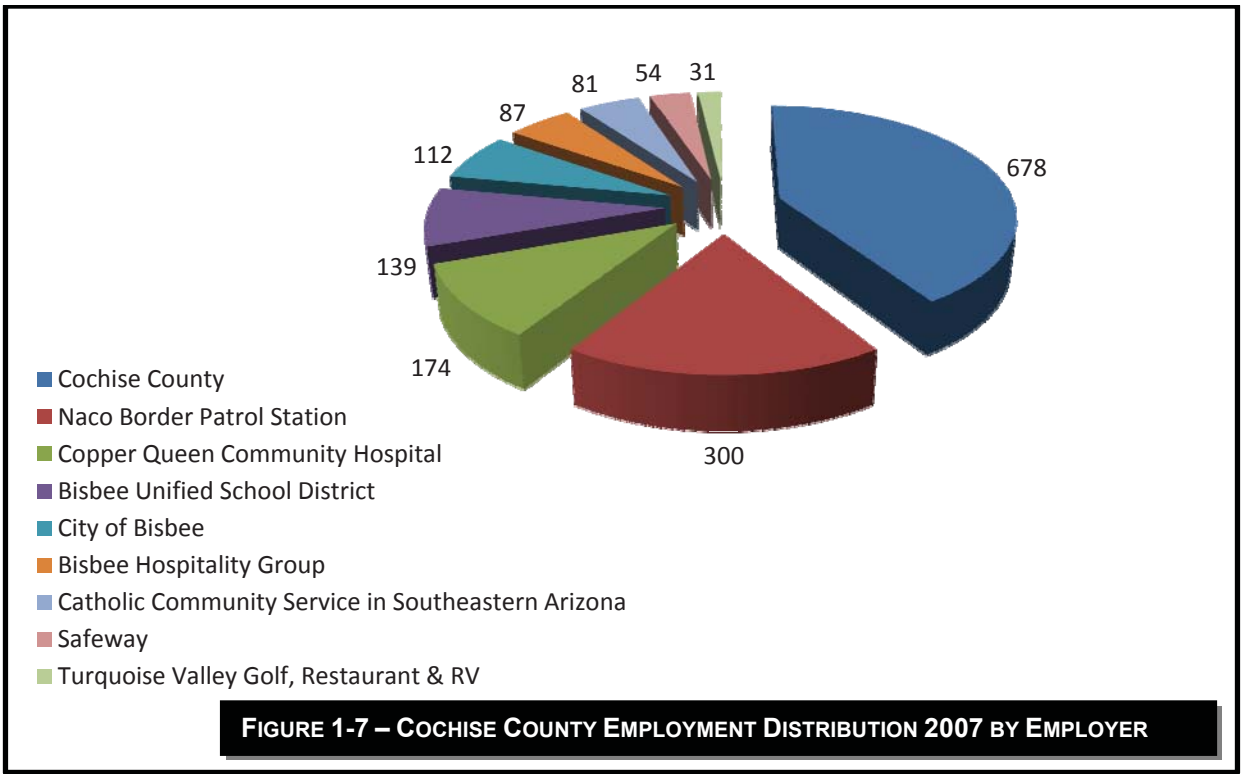


FIGURE 1-7 – COCHISE COUNTY EMPLOYMENT DISTRIBUTION 2007 BY EMPLOYER

Source: Arizona Department of Economic Security; Bisbee Community Profile

1.8.4 INCOME

In 2007, Cochise County had a per capita personal income (PCPI) of $29,890. This PCPI ranked 5th in the state and was 91 percent of the state average of $32,833 and 77 percent of the national average of $38,615. The 2007 PCPI reflected an increase of 5.2 percent from 2006. The 2006-2007 state change was 1.7 percent and the national change was 4.9 percent. Cochise County has shown a consistent growth in PCPI. In 1997 the PCPI of Cochise County was $17,037 and ranked 7th in the state. The 1997-2007 average annual growth rate of PCPI was 5.8 percent. The average annual growth rate for the state was 4.2 percent and for the nation was 4.3 percent. The following tables summarize historical and projected per capita income data for the region.

TABLE 1-8 PER CAPITA INCOME DATA

	2001	2002	2003	2004	2005	2006	2007	2008
Arizona	$26,181	$26,454	$26,959	$28,680	$30,620	$32,285	$32,833	$34,184
Cochise County	$21,169	$22,212	$23,080	$25,155	$27,024	$28,400	$29,890	$31,345
Sierra-Vista Douglas Micropolitan Statistical Area	$21,169	$22,212	$23,080	$25,155	$27,024	$28,400	$29,890	$31,345

Source: Bureau of Economic Analysis, U.S. Department of Commerce, 2009

TABLE 1-9 PER CAPITA INCOME PROJECTIONS

	2009	2014	2019	2024	2029
Arizona	$35,444	$41,744	$48,044	$54,344	$60,644
Cochise County	$32,862	$40,448	$48,034	$55,621	$63,207
Sierra-Vista Douglas Micropolitan Statistical Area	$32,862	$40,448	$48,034	$55,621	$63,207

Source: Extrapolated from Bureau of Economic Analysis, U.S. Department of Commerce data, 2009

1.8.5 GROWTH INDICATORS

Growth can be measured by the number of new building permits and, in the case of a tourist destination like Bisbee, the number of visitors. Table 1-10 indicates a slowdown in new building construction in 2008 which is consistent with the national trend. On the other hand, the number of visitors has consistently increased. As shown of Table 1-11 Cochise County Visitor Center, Visitor Counts, between 2004 and 2008 the annual number of visitors has increased more than 60 percent. Bisbee also has the highest number of visitors among the major cities in Cochise County. Bisbee Airport provides access to air transportation and services to these visitors who are a significant factor to the local economy. Tourism is the core of Bisbee's economy. The Queen Mine Tour attracts over 50,000 visitors annually. Other attractions such as historical museums, annual events, golf courses and parks have also seen a significant increase in the number of visitors.

The visitor center operated by the City of Bisbee has seen more than 60,000 walk-in visitors, received more than 6,000 phone calls, more than 300 emails and over 190,000 website visitors. These indicators show that there is a significant growing interest in tourism activities.

TABLE 1-10 BUILDING PERMITS

	2004	2005	2006	2007	2008	2009
New Building Permits	5	10	6	8	9[(1)]	2*
Total Valuation (Thousands $)	$324	$720	$706	$617	$221	$207*

*Source: Cochise College Center for Economic Research; * As of April, 2009*
(1) Bisbee Economic Focus Report, 2008

TABLE 1-11 COCHISE COUNTY VISITOR CENTER, VISITOR COUNTS

	2004	2005	2006	2007	2008	2009*
Bisbee	37,184	46,248	50,785	57,901	60,923	22,107
Benson	12,183	11,834	14,712	16,151	15,260	6,150
Douglas	3,396	2,104	5,796	6,879	5,157	3,823
Sierra Vista	17,088	16,041	17,020	22,288	26,629	8,518
Tombstone	59,834	57,514	83,349	60,953	44,081	-
Willcox	22,619	19,558	17,597	14,878	26,093	10,571

*Source: Cochise College Center for Economic Research; * As of March, 2009*

1.8.6 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT

The FAA databases of certificated airmen and registered aircraft were reviewed to determine the current distribution of pilots and registered aircraft in Cochise County and the City of Bisbee. This data indicates that there are 25 certificated pilots and 27 aircraft registered in Bisbee. Aircraft are not always based where they are registered, which explains why there are 28 based aircraft at the Bisbee Municipal Airport. Table 1-12 shows a summary of the number of certificated pilots and registered aircraft in Bisbee, Cochise County and Arizona. Table 1-12 shows Certificated Pilots and Registered Aircraft near Bisbee.

TABLE 1-12 CERTIFICATED PILOTS AND REGISTERED AIRCRAFT NEAR BISBEE

	Registered Aircraft	Certificated Pilots
Bisbee	27	25
Cochise County	321	505
Arizona	10,204	17,731

SOURCE: FAA, 2009

Figure 1-8 and Figure 1-9 show the distribution of registered aircraft and certificated pilots in Cochise County based on Zip Codes. It can be observed that the Benson and Sierra Vista have the highest concentration of certificated pilots and registered aircraft.

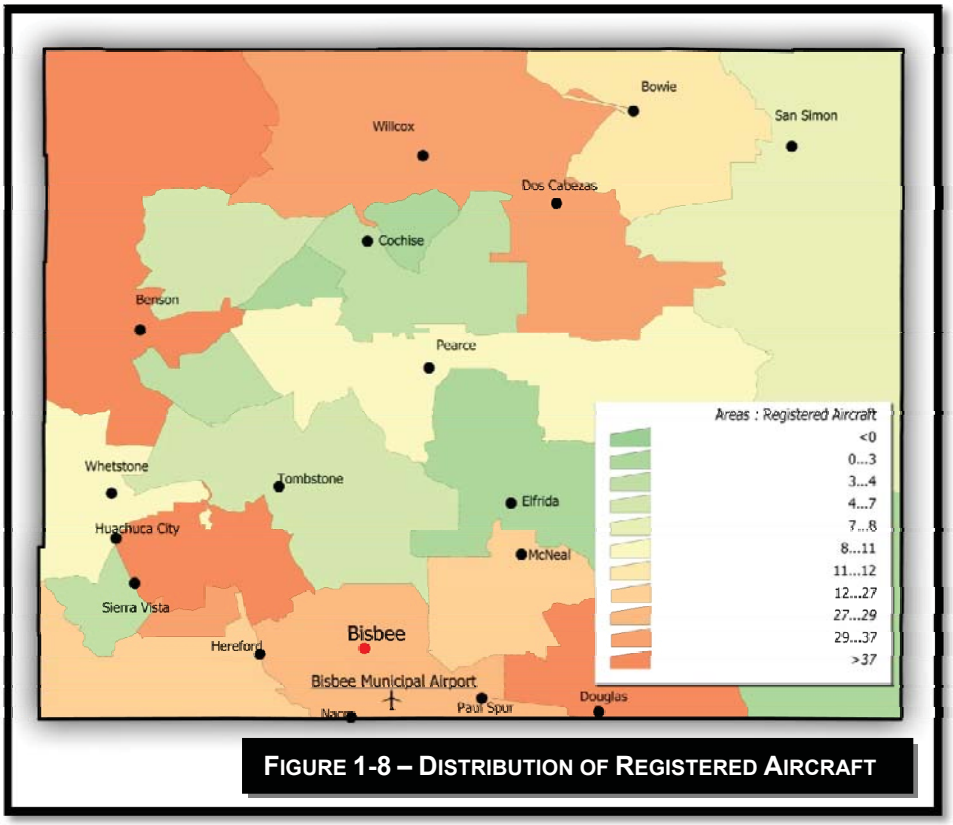


FIGURE 1-8 – DISTRIBUTION OF REGISTERED AIRCRAFT

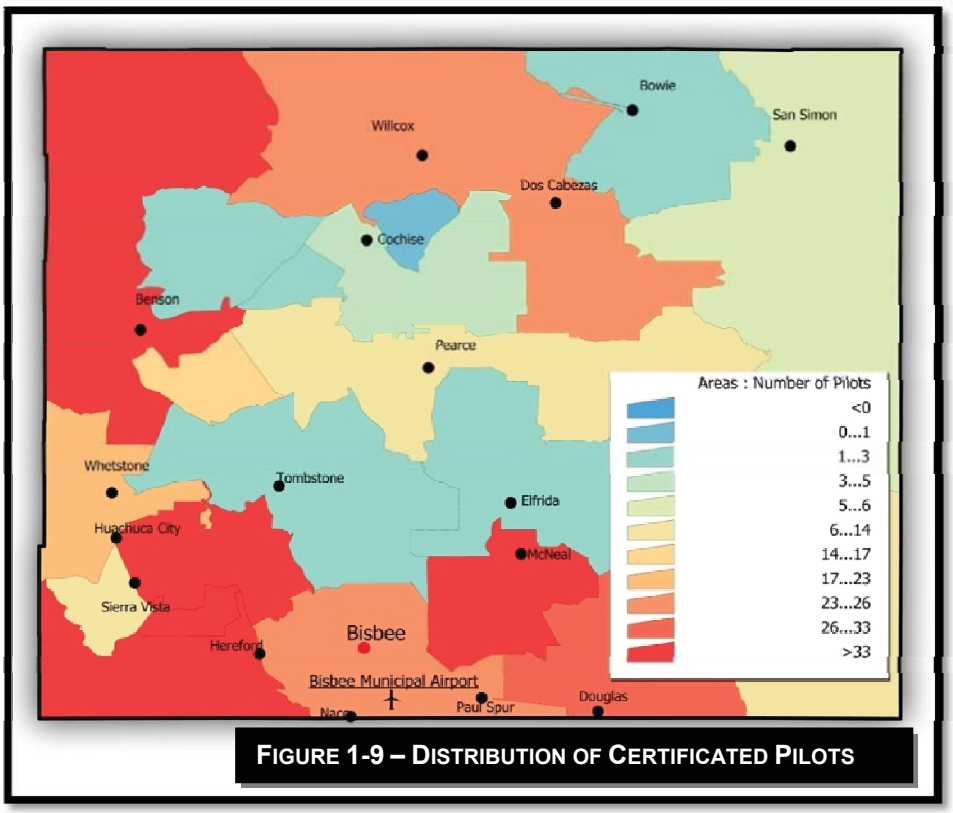


FIGURE 1-9 – DISTRIBUTION OF CERTIFICATED PILOTS

Source Developed based on the FAA databases 2009 and Census Zip Codes

1.9 COMPATIBLE LAND USE

According to the City of Bisbee Comprehensive Plan 2004, land designated as Airport Commercial consists of commercial and light industrial related uses that are compatible with the Bisbee Municipal Airport.

1.9.1 AIRPORT GROWTH AREA GOALS AND POLICIES

According to the City of Bisbee General Plan 2004 the goals and policies of Bisbee Municipal Airport are as follows:

- Continue to support airport improvements in accordance to the Airport Master Plan as funds become available.
- Continue to apply for grants for airport improvements.
- Encourage compatible development around the airport to meet the needs of the airport and the community.
- Encourage the development of a bus/airport terminal. Prior to this development, the existing bus system can be scheduled to be on an on-call basis for pick up at the airport.
    - Adopt an airport compatibility component as part of the Land Use Element that Promotes airport compatible uses, prevents future airport encroachment.
    - Satisfies community needs, respects adjacent rural areas and supports economic development.
- Work with the County to upgrade the existing access roads that serve the Airport growth area.

According to the City of Bisbee Comprehensive Plan 2004, the Airport is identified as a growth area. Land use compatibility conflicts are a common problem around many airports and smaller general aviation facilities. In urban areas, as well as some rural settings, airport owners find that essential expansion to meet the demands of airport traffic is difficult to achieve due to the nearby development of incompatible land uses. Aircraft noise is generally a deterrent to residential development and other noise sensitive uses. In accordance with State of Arizona airport compatibility legislation, residential development should be placed outside of the 65 DNL noise contour.

Conflicts may also exist in the protection of runway approach/departure and transition zones to assure the safety of both the flying public and the adjacent property owners. Adequate land for this use should be either owned in fee or controlled in easements, as recommended in this and future sections of this Airport Master Plan.

The Airport Growth Area provides an opportunity for the identification of airport compatible uses that may benefit from locating near the facility, an example of an airport compatible use is the Bisbee Airpark located at the north end of the airport, which provides commercial hangars for rent or lease. Adequate airport facilities are an important and undeniable factor in the consideration of site selection by new industry and commerce, and are a positive influence on tourism and the general economic health of the area.

According to the City of Bisbee Comprehensive Plan 2004, the goals and policies of the Airport Growth Area are as follows:

- Support and protect the long-term viability of the Bisbee Municipal Airport in conformance with the Airport Master Plan.

- Identify mechanisms and strategies to strengthen the long-term viability of the Bisbee Municipal Airport by promoting airport compatible development within and establishing development standards for, the Airport Growth Area.
- Work with the Bisbee Airport Commission and with Cochise County to establish land uses within the Airport Growth Area that are compatible with the airport and with community needs.
- Prepare a Master Land Use Plan for the entire Airport Growth Area that supports airport compatible uses and prevent future incompatible uses, protects the long-term viability of the Airport Growth Area, protects the needs of the community, respects the adjacent rural areas.
- Work closely with Cochise County to identify infrastructure needs and develop an appropriate circulation plan for the Airport Growth Area.
- Protect the airspace around the airport and approaches to existing and planned runways from the hazards that could affect safe and efficient operation of arriving and departing aircrafts. Adopt development standards for heights of future structures which could pose a potential hazard to air navigation and future runway plans. Identify strategies and mechanisms to boost economic development and attract businesses compatible with the airport and surrounding areas.
- Modify the County Ordinance to include an Airport District.

All of the unincorporated areas of Cochise County have been zoned. The purpose of zoning is to guide the development of land in accordance with the County's Comprehensive Plan, and to promote the public health, safety and general welfare of the County's residents. Zoning districts specify permitted land uses, minimum lot sizes, and certain site development standards. Cochise County encompasses a large and diverse area, there are 34 individual zoning districts. However, for general purposes, the majority of these zoning districts can be classified into three broad groupings: Rural, Residential and Commercial/Industrial.

As shown in Figure 1-10, the Bisbee Municipal Airport is located in a rural land use (RU-4). The Airpark is zoned as Heavy Industrial (HI).

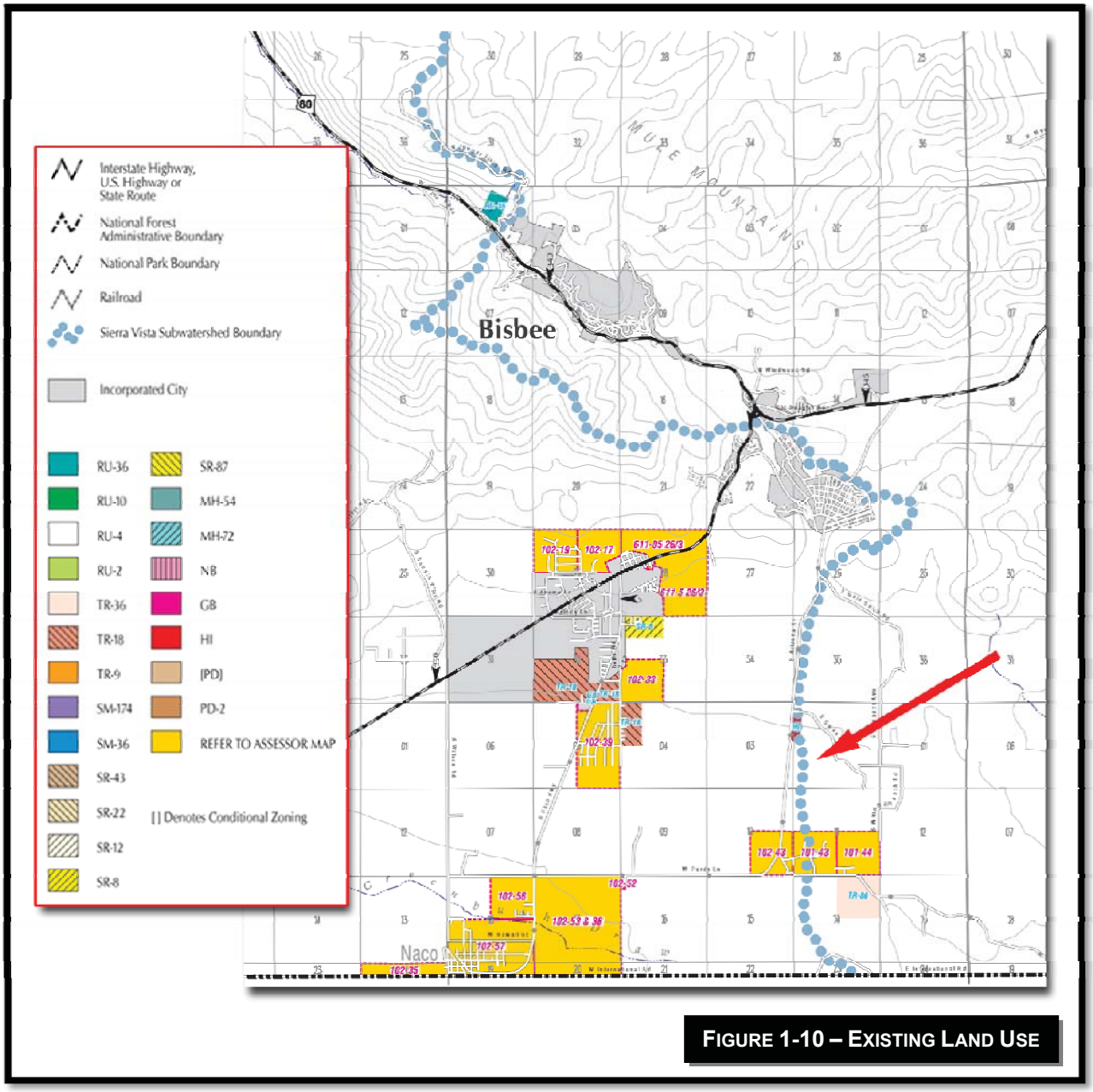


FIGURE 1-10 – EXISTING LAND USE

Source: Adapted from Cochise County Zoning Base Maps, 2007

1.10 CLIMATE AND METEOROLOGICAL CONDITIONS

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

1.10.1 LOCAL CLIMATIC DATA

Bisbee enjoys an annual average temperature of approximately 74 degrees Fahrenheit, with extremes ranging from 15 to 100 degrees Fahrenheit over the seasons. This provides a more comfortable environment than in any of the surrounding communities of Douglas, Sierra Vista, Naco and Tombstone. Precipitation averages about 19 inches per year, which helps to alleviate the more arid climate common among the other communities.

1.10.2 CEILING AND VISIBILITY CONDITIONS

Ceiling and visibility conditions are important considerations since the occurrence of low ceiling and/or poor visibility conditions limit the use of the airport. Under poor visibility conditions or Instrument Meteorological Conditions (IMC), the pilot must operate under Instrument Flight Rules (IFR), rather than Visual Flight Rules (VFR). Under IFR, the pilot maneuvers the aircraft through sole reference to instruments in the aircraft and navigational aids on the ground. When flight conditions are visual or Visual Meteorological Conditions (VMC), the pilot can maneuver the aircraft by reference to the horizon and objects on the ground. VMC conditions are common at Bisbee Municipal Airport.

TABLE 1-13 CEILING AND VISIBILITY CONDITIONS

CONDITION	NUMBER OF OBSERVATIONS
All Weather Conditions	78,405
Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)	78,144
Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)	178
Ceiling < 200 feet and/or visibility < 0.50 miles	52

Source: National Climatic Data Center

1.10.3 WIND CONDITIONS

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

FAA Advisory Circular 150/5300-13, Airport Design, recommends that a runway should yield 95 percent wind coverage under stipulated crosswind components. If one runway does not meet this 95 percent coverage, then construction of an additional runway may be advisable. The crosswind component of wind direction and velocity is the resultant vector, which acts at a right angle to the runway. It is equal to the wind velocity multiplied by the trigonometric sine of the angle between the wind direction and the runway direction. The allowable crosswind component for each Airport Reference Code is shown in Table 1-14.

TABLE 1-14 CROSSWIND COMPONENT

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

Source: FAA

Crosswind coverage from the 1999 Airport Master Plan is shown in Tables 1-15, 1-16, and 1-17. The wind coverage calculation is based on wind data between 1986 and 1996 at Bisbee-Douglas International Airport which is located approximately 19 nautical miles north east of Bisbee Airport. The wind data is represented as a wind rose and shown in Figure 1-12. Based on this data, the primary Runway 17/35 does not have the 95 percent wind coverage recommended for small aircraft. Furthermore, local users support this data by reporting that prevailing winds, especially in high wind conditions are southwesterly to westerly.

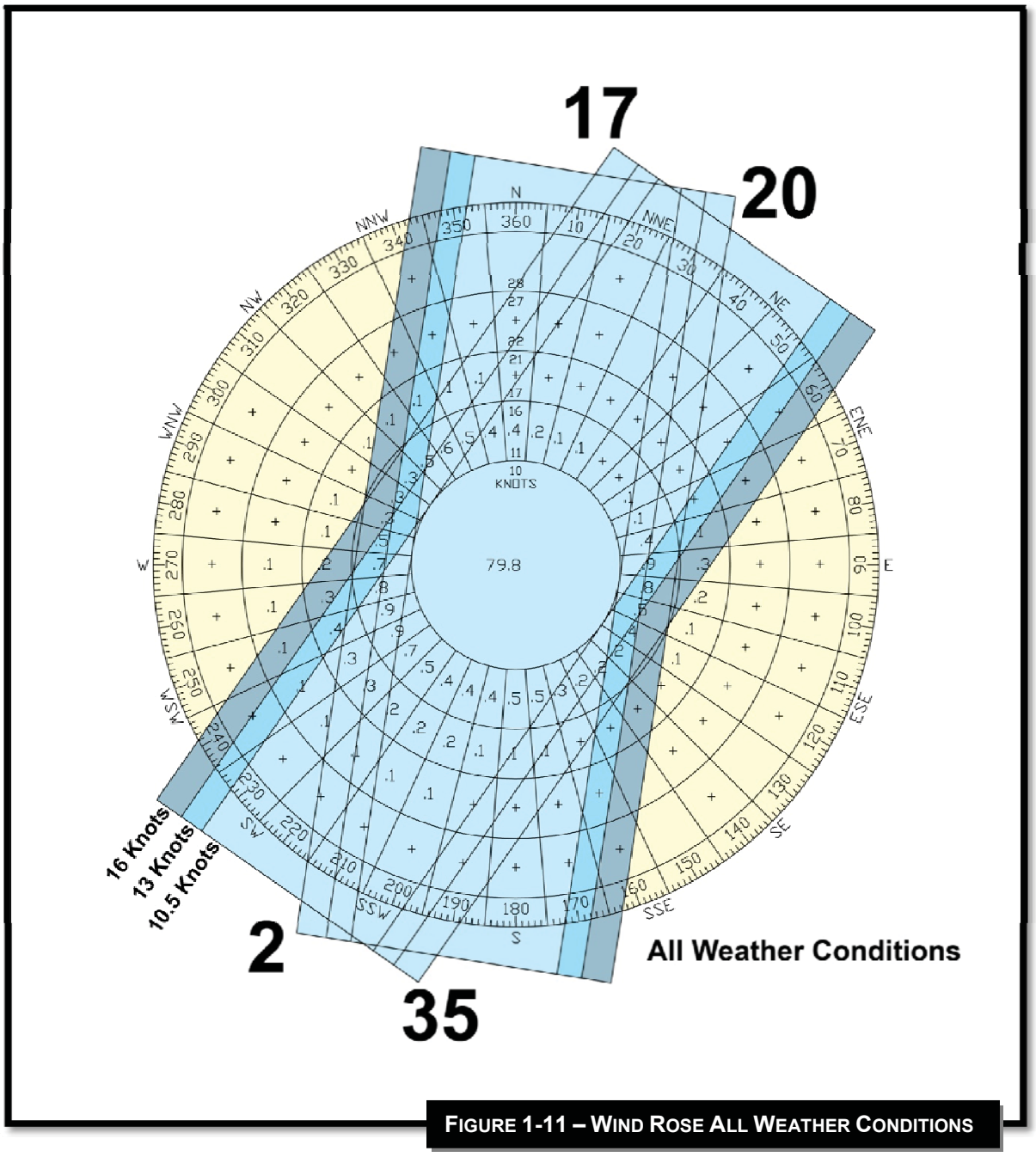


FIGURE 1-11 – WIND ROSE ALL WEATHER CONDITIONS

TABLE 1-15 WIND ANALYSIS – ALL WEATHER

RUNWAY		CROSSWIND COMPONENT			CONDITION
		10.5 KNOTS	13 KNOTS	16 KNOTS	
Runway	17/35	88.40%	92.65%	96.89%	All Weather Conditions
	2/20	90.19%	94.68%	98.21%	
Combined		92.5%	96.16%	98.65%	

Source: National Climatic Data Center

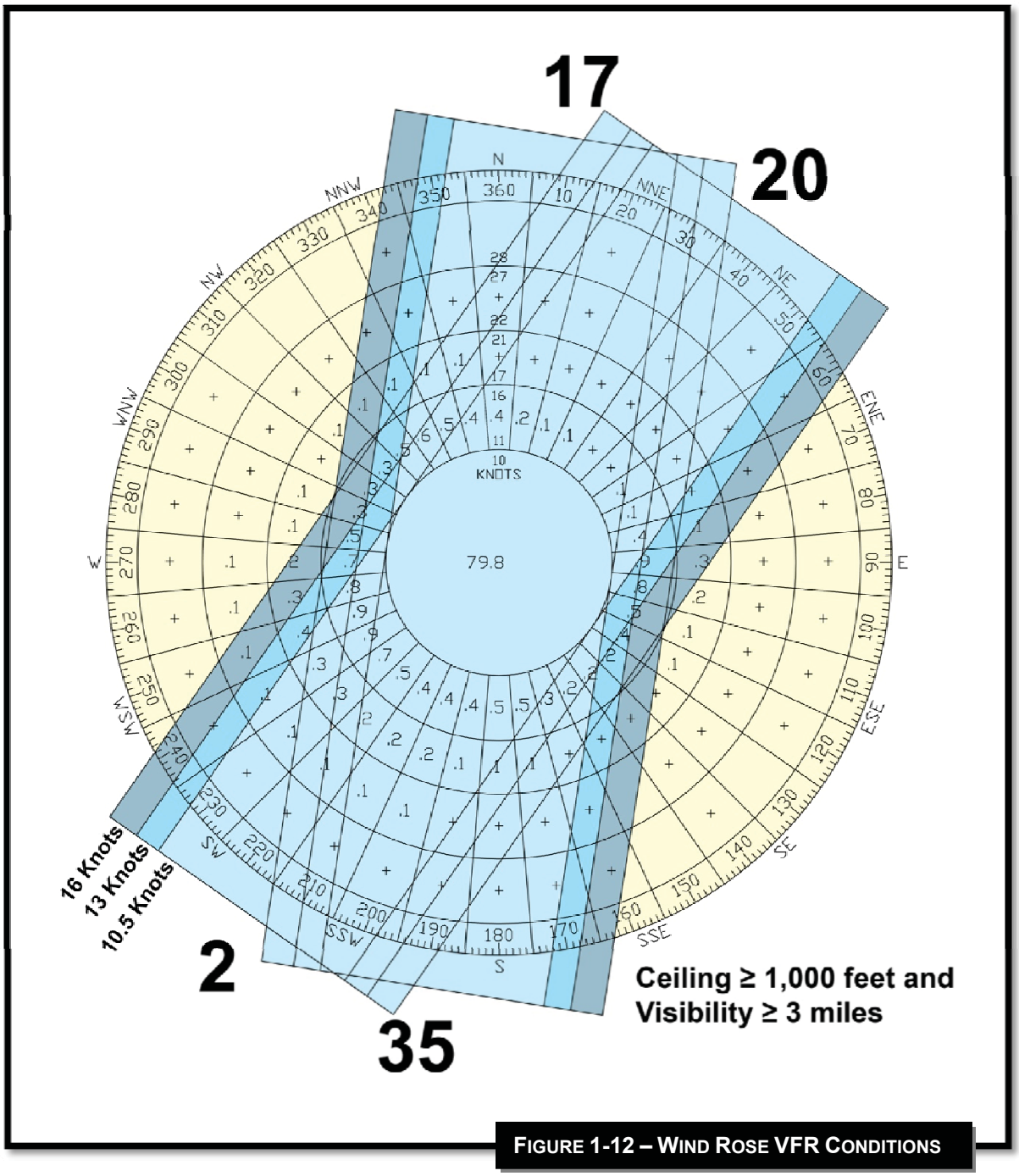


FIGURE 1-12 – WIND ROSE VFR CONDITIONS

TABLE 1-16 WIND ANALYSIS – VFR CONDITIONS

RUNWAY		CROSSWIND COMPONENT			CONDITION
		10.5 KNOTS	13 KNOTS	16 KNOTS	
Runway	17/35	88.40%	92.65%	96.89%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	94.69%	98.21%	
Combined		92.51%	96.10%	98.66%	

Source: National Climatic Data Center

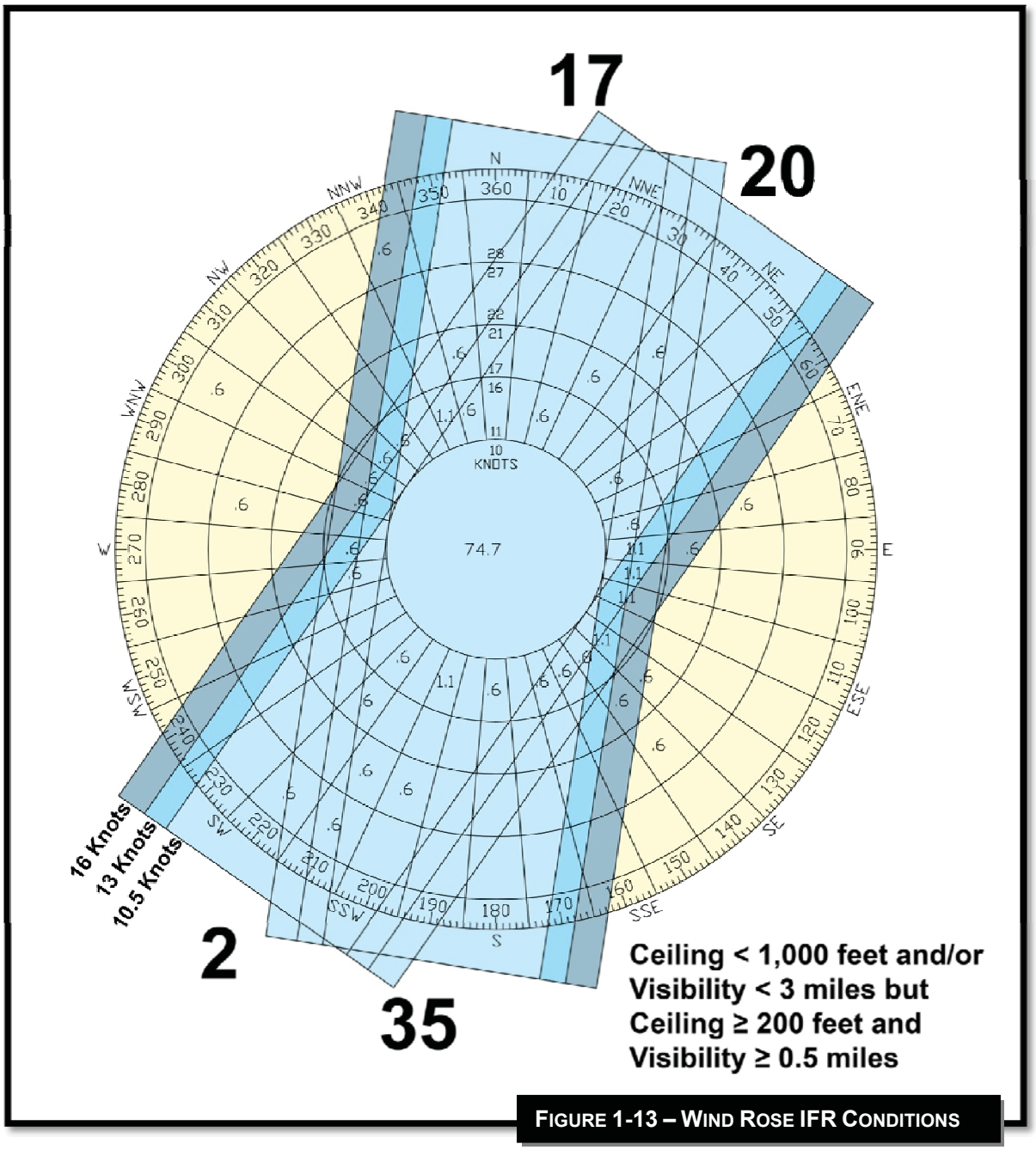


FIGURE 1-13 – WIND ROSE IFR CONDITIONS

TABLE 1-17 WIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT			CONDITION
		10.5 KNOTS	13 KNOTS	16 KNOTS	
Runway	17/35	85.21%	90.24%	95.61%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	89.95%	94.61%	
Combined		88.61%	92.81%	96.56%	

Source: National Climatic Data Center

1.11 EXISTING BASED AIRCRAFT, OPERATIONS AND FLEET MIX BASELINE

The number of based aircraft, number of operations and fleet mix baseline was estimated based on the information received from the airport manager and is shown on Table 1-18. This data was for 2008 and 2009 up to March. The information received included counts of flight activities, visitors, courtesy car usage and persons transported.

TABLE 1-18 BASELINE BASED AIRCRAFT, OPERATIONS, AND FLEET MIX

Type of Aircraft	2008
Based Aircraft	28
Total Operations Annual Operations	4,300
Fixed Wing Single-Engine Aircraft	26
Fixed Wing Multi-Engine Aircraft	0
Rotorcraft	1
Weight-shift Control	1

Source: Bisbee Municipal Airport Management Records, 2008

1.12 DESIGN STANDARDS INVENTORY

FAA AC 150/5300-13, Airport Design, establishes design standards for airports based on the ARC of the airport. When design standard deficiencies exist, the FAA recommends correction of such deficiencies as soon as practicable. Design standards are based on the ARC and approach visibility minimums of the airport. The ARC is a combination of the wingspan, tail height and approach speed of the critical aircraft operating at the airport. Selected design standard categories are discussed below and Table 1-19 shows the current design standards for Runways 17/35 and 2/20.

1.12.1 SAFETY AREAS

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

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

The runway safety areas off the ends of Runway 17/35 and Runway 2/20 at Bisbee Airport are in good condition and satisfy the requirements defined by the standards.

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

The Obstacle Free Zone (OFZ) is a three dimensional volume of airspace which supports the transition of ground to airborne aircraft operations. The clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible visual Navigational Aids (NAVAIDs) that need to be located in the OFZ because of their function. The OFZ is similar to the FAR Part 77 Primary Surface insofar that it represents the volume of space longitudinally

centered on the runway. It extends 200 feet beyond the end of each runway. The Runway Object Free Area (ROFA) is a two-dimensional ground area surrounding the runway. The ROFA standard precludes parked airplanes, agricultural operations and objects, except for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes. Both the OFZ and OFA meet the requirements defined by the standards.

1.12.3 RUNWAY PROTECTION ZONE (RPZ)

The Runway Protection Zone (RPZ) is trapezoidal in shape and centered about the extended runway centerline. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end.

At both ends of Runway 17/35 the RPZ begins 200 feet from the runway threshold and extends for 1,000 feet. The RPZ is 500 feet wide at the inner end and 700 feet wide at the outer end. The land uses not recommended within the RPZ are residences and places of public assembly (churches, schools, hospitals, office buildings, shopping centers and other uses with similar concentrations of persons typify places of public assembly). The FAA recommends the Sponsor control the RPZs through fee simple ownership or avigation easements. The RPZs at Bisbee Municipal Airport meet the required land use standards and are partially owned fee simple and partially controlled through avigation easements.

TABLE 1-19 DESIGN STANDARDS

		RW 17/35		RW 2/20	
	CURRENT STANDARD	CURRENT STANDARD	CURRENT DIMENSION	CURRENT STANDARD	CURRENT DIMENSION
Aircraft Approach Category and Airplane Design Group	B-I	B-II	--	A-I	--
RW Centerline to parallel TW centerline	225’	240’	175’	--	--
RW Centerline to aircraft parking apron	200’	250’	266’	--	--
RW Width	60’	75’	75’	60’	200’
RW Safety Area width	120’	150’	150’	120’	120’
RW Safety Area length beyond RW end	240’	300’	300’	240’	240’
RW Object Free Area width	400’	500’	500’	250’	250’
RW Object Free Area beyond RW end	240’	300’	300’	240’	240’
RW Obstacle Free Zone width	400’	400’	400’	250’	250’
RW Obstacle Free Zone length beyond RW end	200’	200’	200’	200’	200’
TW Width	25’	35	35’	25’	65’
TW Safety Area width	49’	79’	49’	49’	49’
TW Object Free Area width	89’	131’	89’	89’	89’
RW Centerline to aircraft hold lines	200’	200’	125’	--	--

** Based on current approved Airport Layout Plan (Red denotes design standard deficiency)*

1.12.4 FEDERAL AVIATION REGULATION (FAR) PART 77 IMAGINARY SURFACES

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

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

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

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

The Horizontal Surface is a horizontal plane 150 feet above the established airport elevation. The airport elevation is defined as the highest point of an airport's useable runways, measured in feet above mean sea level. The perimeter is constructed by arcs of specified radius from the center of each end of the Primary Surface of each runway. The radius of each arc is 5,000 feet for runways designated as utility or visual and 10,000 feet for all other runways.

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

1.12.5 SUMMARY OF PART 77 IMAGINARY SURFACES DIMENSIONAL CRITERIA

TABLE 1-20 FAR PART 77 AIRSPACE SURFACES FOR RUNWAY 17/35 AND RUNWAY 2/20

	Runway 17/35 Existing	Runway 2/20 Existing
	Visual	Visual-Utility
Primary Surface width	250’	250'
Primary Surface length beyond runway ends	200'	200’
Approach Surface Dimensions	250’x1,250’x5,000’	250’x1,250’x5,000’
Approach Surface slope	20:1	20:1
Transitional Surface slope	7:1	7:1
Horizontal Surface radius from runway	5,000’	5,000’
Conical Surface width	4,000’	4,000’
Conical Surface slope	20:1	20:1

1.12.6 THRESHOLD SITING SURFACE

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

Based on the visual approach and size of aircraft using the Bisbee Municipal Airport, in order to meet FAA design standards, no object should penetrate a surface that starts at the threshold of Runway 17/35 at the elevation of the runway centerline at the threshold and slopes upward from the threshold at a slope of 20 feet (horizontal) to 1 foot (vertical). In the plan view, the centerline of this surface extends 2,250 feet along the extended runway centerline. This surface extends laterally 125 feet on each side of the centerline at the threshold and increases in width to 350 feet at a point 2,250 feet from the threshold. Currently there are no objects penetrating this surface.

1.13 EXISTING AIRSIDE FACILITIES INVENTORY

1.13.1 RUNWAY

Runway 17/35 is 5,900 feet long and 75 feet wide. It was originally constructed in 1978 with a chip seal over 4 inches of aggregate base and 5 inches of select material. The original pavement section was overlaid with a 2 inch lift of asphaltic concrete in 1983, and a ¾ inch asphaltic concrete runway friction course was applied in 1988. A rubbereized chip seal was applied and crack sealing was accomplished in 1997. It was widened to 75 feet in 2008. Runway 2/20 is 2,700 feet in length and 120 feet wide, graded dirt landing strip, originally constructed some time prior to the 1950's.

During the site visit, the pavement on Runway 17/35 was found to be in good condition. Runway 2/20 was also found to be in good condition.

1.13.2 TAXIWAY SYSTEM

The Runway 17/35 parallel Taxiway A and its connector taxiways (A-1 through A-6) were originally constructed in 1989. Taxiway A is 35 feet wide. A rubberize chip seal was applied and crack sealing was accomplished in 1997. The graded taxiway to the Runway 20 departure end is 100 feet wide and 1,100 feet in length.

Taxiway A3 connector from Runway 17/35 to the apron, was originally constructed in 1978 with a chip seal over 4 inch of aggregate base and 5 inch of select material. The original pavement section was overlain with a 2 inch lift of asphaltic concrete in 1983, and a bituminous flush coat preservative seal was applied in 1988. A rubberized chip seal was applied and crack sealing was accomplished in 1997.

In general the condition of Taxiway A is fair with the exception of block cracks in certain areas. Block cracking is interconnected cracks forming large blocks. Blocks may range from one foot to approximately 10 feet. The closer spacing indicates more advanced aging caused by shrinking and hardening of the asphalt over time. Surface treatments applied during the early life stages of the pavement reduce weathering of the asphalt caused by exposure to the sun, moisture and freezing. The south end of Taxiway A is in poor condition. Figure 1-14 shows Taxiway A as seen from Taxiway A3.

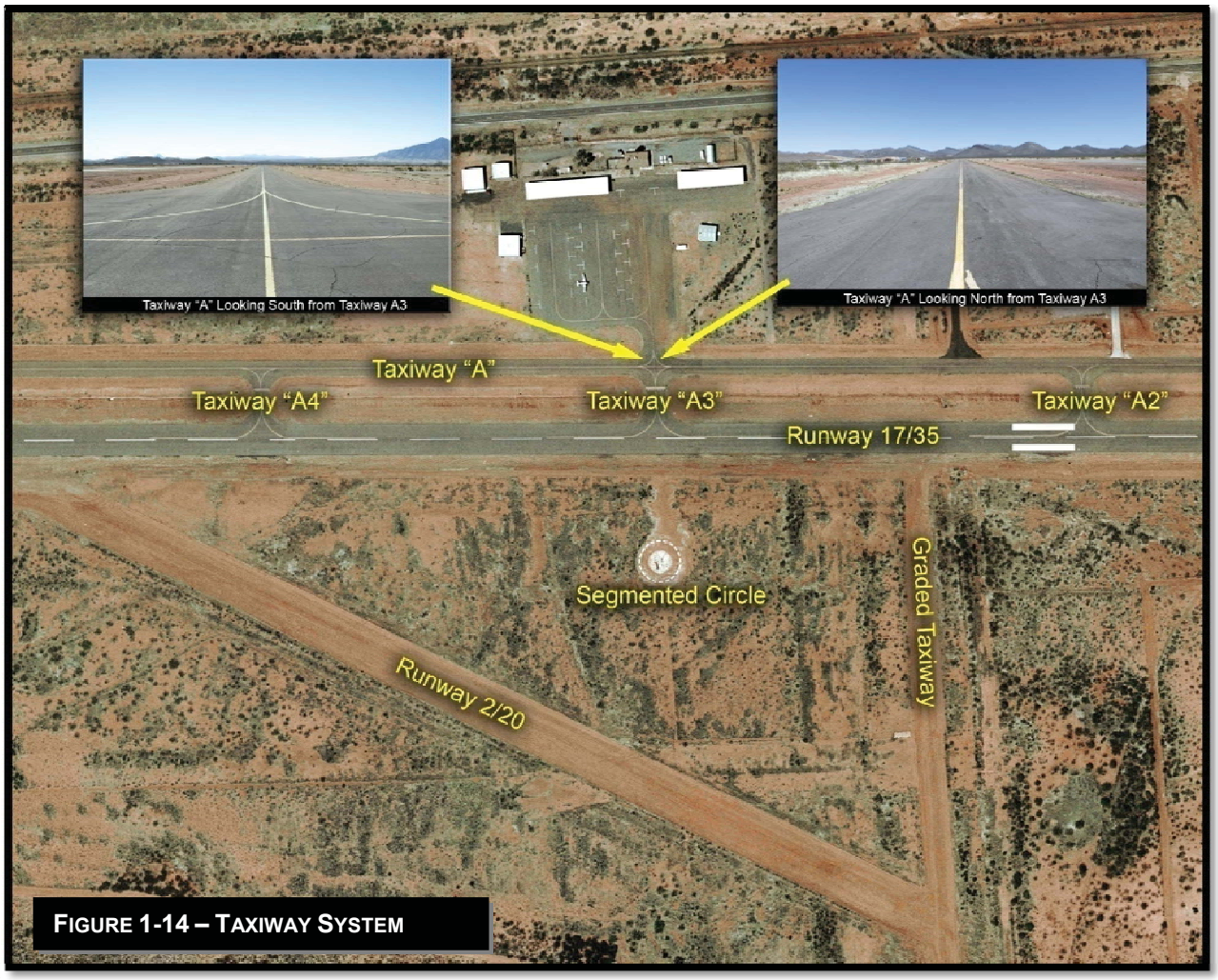


FIGURE 1-14 – TAXIWAY SYSTEM

1.13.3 AIRCRAFT APRON

The north half of the aircraft parking apron was originally constructed in 1978 with a chip seal over 4 inches of aggregate base and 5 inches of select material. The original pavement section was overlaid with a 2 inch lift of asphaltic concrete in 1983, and a bituminous flush coat preservative seal was applied in 1988. A rubberized chip seal was applied and crack sealing was accomplished in 1997. The apron is approximately 12,700 square yards and there are 25 tie-down spaces on the apron.

The apron surrounding the terminal hangar and shade hangar area was constructed some time prior to the 1950's. A bituminous flush coat preservative was applied in 1988 and a rubberized chip seal was applied in 1997.

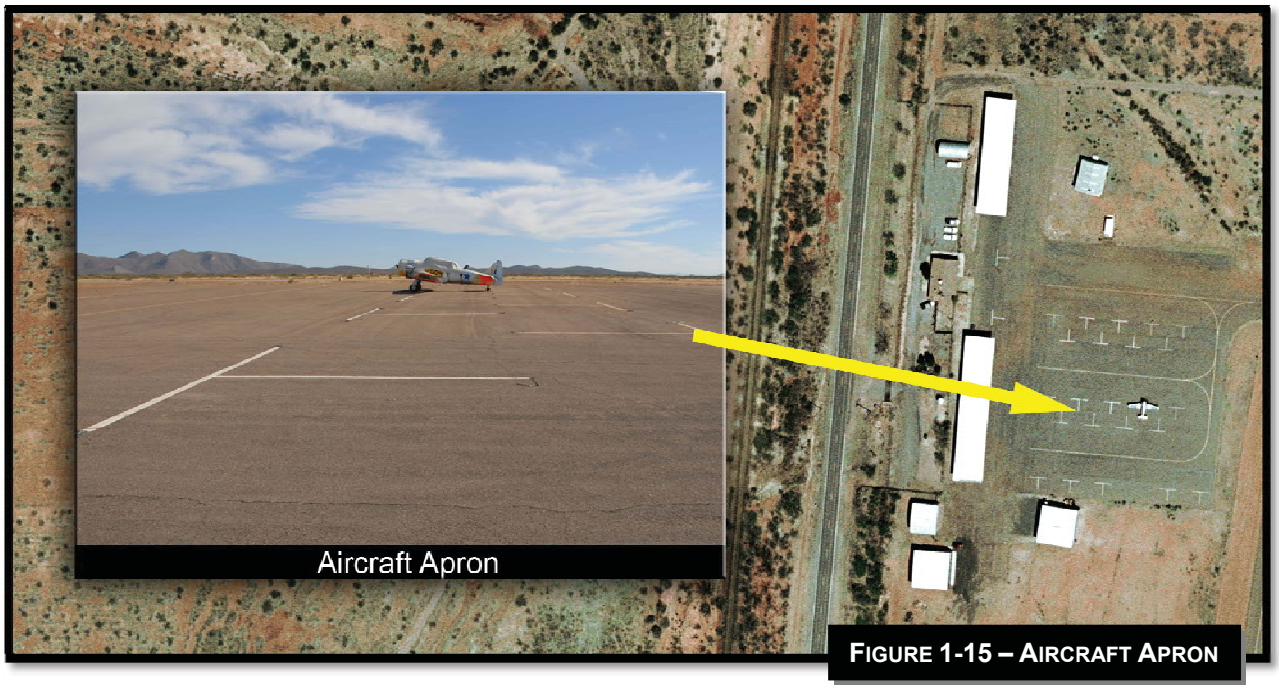


FIGURE 1-15 – AIRCRAFT APRON

1.13.4 AIRFIELD LIGHTING AND VISUAL AIDS

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

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

Existing airport lighting systems at Bisbee include Medium Intensity Runway Lighting (MIRL) on Runway 17/35 and existing lighted taxiway guidance signage. Existing visual aids include the Precision Approach Path Indicators (PAPIs) and REILs on Runways 17 and 35, the airport's rotating beacon, the lighted wind cone and segmented circle. The PAPIs for Runway 17/35 were not in operable condition during the airport inventory inspection. The lighted wind cone and segmented circle were installed in 1980, with a directburial cable system. The cable was replaced and placed in a duct in 1995. The rotating beacon is mounted on the roof of the terminal building. It was installed in 1980 with the original airport lighting systems. There are no lighted hold position signs at the airport.

1.13.5 NAVIGATIONAL AIDS

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

Nondirectional Beacons (NDBs) and Tactical Air Navigational Aids (TACANs), as examples. The airport installed an NDB in 1992; however, the NDB has been deactivated and removed due to damge caused by a lightning strike. The closest ground base NAVAID to the Bisbee Municipal Airport is the Douglas VORTAC about 16 nautical miles northeast of Bisbee Municipal Airport.

1.14 EXISTING LANDSIDE FACILITIES

The landside facilities of an airport consist of those facilities not included as airside characteristics. Examples of landside facilities include any structure adjoining the airfield, terminal buildings, hangar, the access routes to and from the airport, automobile parking areas, airport fencing, utilities, fuel provisions and Aircraft Rescue and Fire Fighting (ARFF) equipment.

1.14.1 AIRPORT SERVICES/FIXED BASE OPERATOR

A fixed base operator (FBO) is usually a private enterprise that leases land from the airport sponsor on which to provide services to based and transient aircraft. The extent of the services provided varies from airport to airport; however, these services frequently include aircraft fueling, minor maintenance and repair, aircraft rental and/or charter services, flight instruction, pilot lounge and flight planning facilities and aircraft tie down and/or hangar storage. Currently there is no FBO at the airport.

1.14.2 TERMINAL BUILDING

The terminal building was originally constructed in the 1970's. It is approximately 45 feet by 33 feet (about 1,520 square feet under roof), and contains the airport manager's residence (about 1,007 square feet), as well as a public area (about 513 square feet) with two restrooms, a small lobby and the manager's office. The building is equipped with evaporative cooling and natural gas heat. Water is provided through the onsite storage tank, and sewer is disposed of through the onsite septic tank system.

The roofing materials were replaced in January of 1999. A small frame electrical vault building is attached to the terminal building. It was added in 1980, as part of the original runway lighting system installation project. There is a public telephone located on the north exterior wall of the terminal building, adjacent to the auto parking area. Figure 1-16 shows the terminal building and its location.

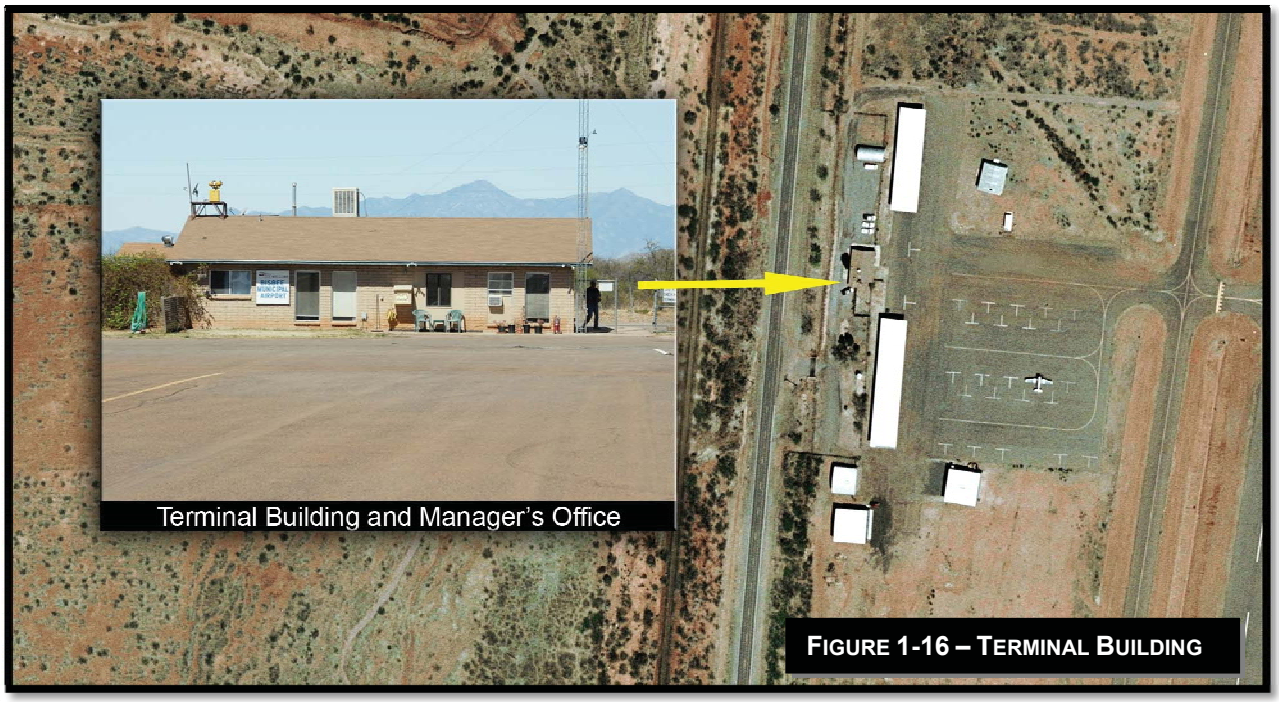


FIGURE 1-16 – TERMINAL BUILDING

1.14.3 HANGARS

Hangars are typically classified as either T-hangars (small multi-unit storage complexes that usually accommodate one single engine aircraft in each unit) or conventional hangars, which accommodate a variety of aircraft types or corporate fleets. T-shade hangars are a variation of the T-hangar without exterior walls. Conventional hangars are also known as box hangars. The number of aircraft that each conventional hangar can hold varies according to the manufacturer and the specifications of the airport owner or operators. There are two T-shades, two of the box hangars and a Quonset type storage building owned by the City of Bisbee. The other two box hangars are privately owned (see Figures 1-17 and 1-19). There are two privately owned box hangars which are shown in Figure 1-18.

The north T-shade is 42 feet wide and 162 feet long and can accommodate 4 aircraft while the south T-shade is 42 feet wide and 205 feet long and can accommodate 5 aircraft. Both T-shade structures were constructed in the mid-1980's.

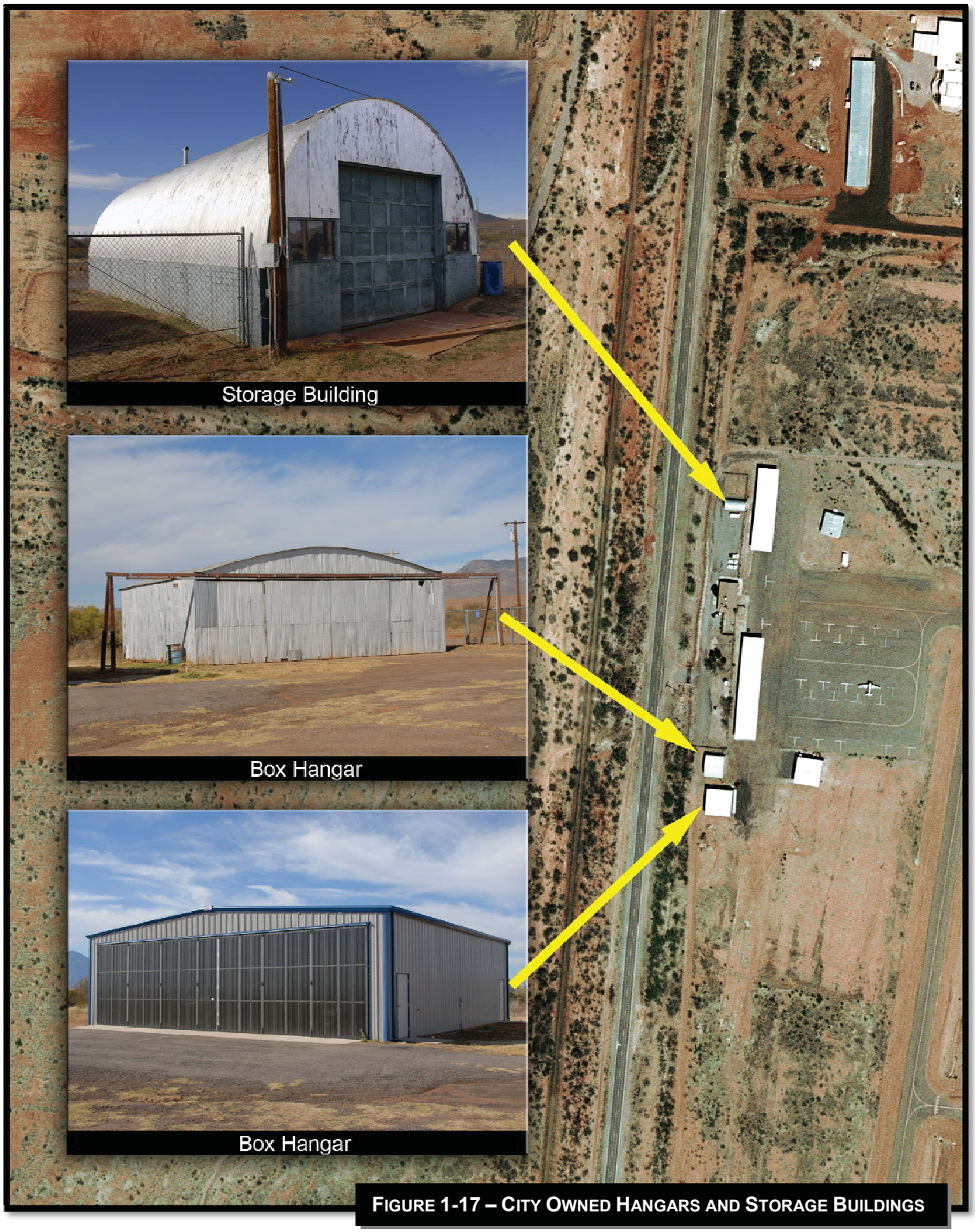


FIGURE 1-17 – CITY OWNED HANGARS AND STORAGE BUILDINGS

FIGURE 1-18 – PRIVATE BOX HANGARS

FIGURE 1-19 – CITY OWNED T-SHADES AND BOX HANGARS

1.14.4 ACCESS ROUTES AND SIGNAGE

The airport terminal can be accessed from South Bisbee Junction Street. Access to the airport is across a cattle guard on the property fence line. A graded dirt road extends to the north along the auto parking area, and continues around the north end of the aircraft parking T-shades. The road provides access to the fuel farm, parking apron, shades and hangars.

1.14.5 AUTOMOBILE PARKING

The automobile parking area adjacent to the terminal building consists of a graded gravel surface, about 50 feet by 100 feet in size, with wooden bumper curbs. The parking area is able to accommodate about a dozen parked cars. There is a single, signed handicapped parking space located adjacent to the terminal building.

1.14.6 UTILITIES

Water is supplied by the Naco Water Company, and is fed to an onsite holding tank, then pumped from the tank to serve the airport's terminal building. Sewage is disposed via an existing septic tank system. The terminal building and a restroom in one hangar are connected to the system. Electric power, 110/220 3-phase service, is available and is provided by Arizona Public Service (APS).

1.14.7 FENCING

The primary purpose of airport fencing is to prevent unwanted intrusions by persons or animals on airport property. Airport fencing provides increased safety and security for the airport. It is normally installed along the perimeter of the airport property and outside any of the safety areas defined by the Federal Aviation Administration (FAA) in Advisory Circular (AC) 150/5300-13, Airport Design and Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace. The airport is currently fenced with four strand barbed wire fence and chain link fence around the terminal area. The airport's barbed wire property line fencing and chain link terminal area security fencing were replaced in 1995. Existing security lighting consists of area floodlights mounted on poles adjacent to the existing hangars.

1.14.8 FUEL FACILITIES

The existing aircraft fueling system consists of a 6,000 gallon Avgas 100LL double walled above ground tank located adjacent to the aircraft parking apron. The tank and delivery equipment is located on a 10 feet by 30 feet concrete slab and is protected by pipe bollards. The fuel system was constructed in 1995. A self-service system is not currently available. The fuel pumps are operated by the airport manager. A fuel truck is not available. Operating hours are generally from 8:00am to 5:00pm. Figure 1-20 shows the existing fuel tank and its location.

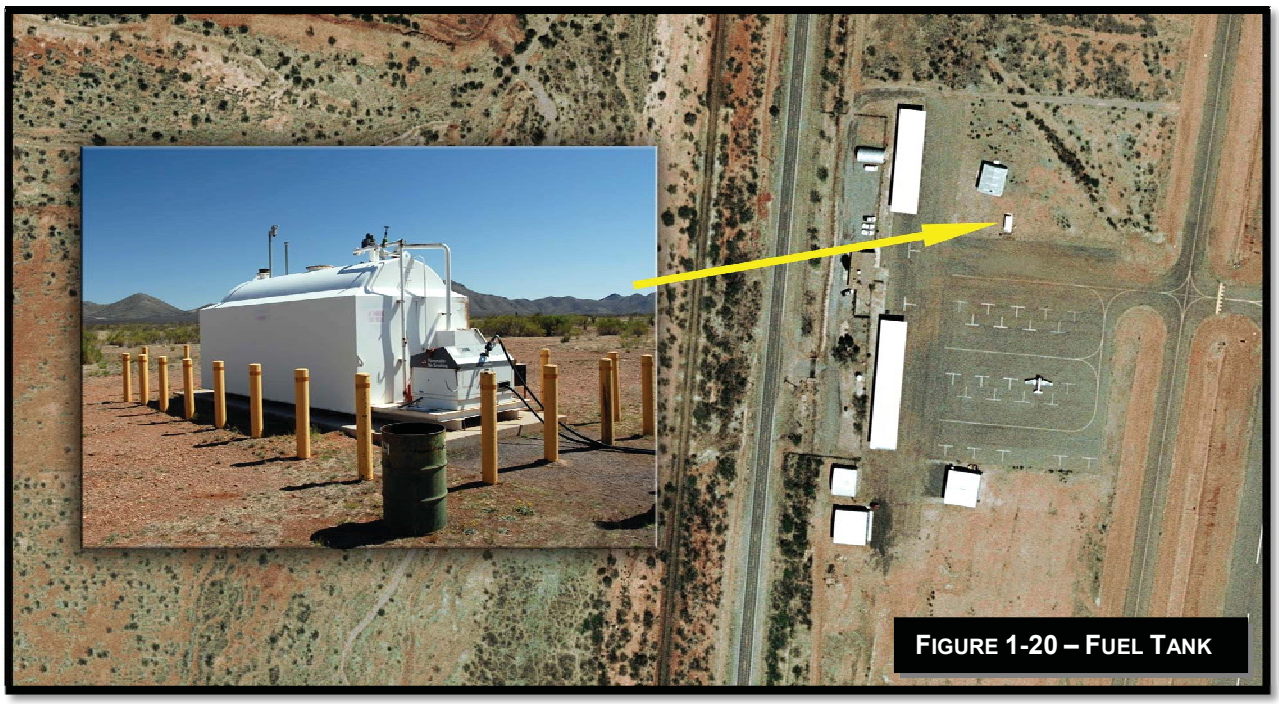


FIGURE 1-20 – FUEL TANK

1.14.9 EMERGENCY SERVICES

The Bisbee Fire Department responds to all types of emergency situations. The Fire Department provides Advanced Life Support Ambulance Service, which includes 400 square miles throughout Cochise County as well as interfacility transports from hospital to hospital. The Bisbee Fire Department consists of two fire stations: Fire Station #1 is located at 192 Highway 92. Fire Station #2 is located at 644 Tombstone Canyon. Fire Station # 1 provides the initial response to emergency situations at Bisbee Municipal Airport.

The Fire Department is also responsible for enforcement of the Uniform Fire Code and inspection of all businesses and public access areas. The Fire Department is charged with investigating the cause and origin of any and all fires when necessary. The Fire Department employs 21 personnel that are trained and certified at different levels to include, Level 1&2 Firefighter, Fire Inspector, Arson investigator, Wildland Firefighter and Fire Instructor. As an EMS provider our personnel are certified as EMT's and Paramedics. The Fire Departments staff includes 1 Fire Chief, 2 Captain EMT's, 1 Captain Paramedic, 1 Lieutenant Paramedic, 11 Firefighter Paramedics, and 5 Firefighter EMT's.

TABLE 1-21 EMERGENCY SERVICES SUMMARY

Personnel	21
Equipment	2,000 gallon engine water tender 1,000 gallon engine water tender 4 ambulances
Fire Station # 1 initial response	Response time, approximately 15 minutes

Source: City of Bisbee Fire Department

The Cochise County Sheriff's Office also provides a range of security patrol and emergency services. The Patrol Division provides service to the 6, 215 square miles that comprise Cochise County, the Sheriff's Office has six dedicated substations and one satellite substation. Area 2 covers the City of Bisbee and surrounding areas. Search and Rescue provides for the search, evacuation, and rescue of victims in distress in limited emergencies. The Cochise County Special Weapons And Tactics unit (SWAT) provides the Sheriff's Office and any other requesting law enforcement agency with the capability to mitigate high-risk or armed resistance incidents through employment of special tactics by personnel with training and equipment not available to regular members of the Sheriff's Office.

1.14.10 ADDITIONAL FACILITIES

A 20 feet by 40 feet Quonset-style building constructed in 1980 is owned by the City and is currently used to store mowing and other grounds maintenance equipment. The building's walls are of concrete masonry unit construction and steel roof system, with 44 inch high stem walls and lightweight galvanized steel barrel trusses above. The roofing material is corrugated galvanized steel. There is an overhead vehicular access door on the east end of the building facing the apron, as well as, an access door on the west end. The building is heated and has electrical outlets along the interior walls. Interior wiring is in steel conduit. A 3-phase electrical service entrance and disconnect is located on a light pole at the southeast corner of the building. The pole is equipped with a floodlight and weatherproof outlet.

1.14.11 THROUGH THE FENCE OPERATIONS

Figure 1-21 shows the existing private development adjacent to the airport property. In 1980, the City of Bisbee granted two permanent taxiway easements. This private development includes three 8-unit T-hangars, three box hangars and three residences.

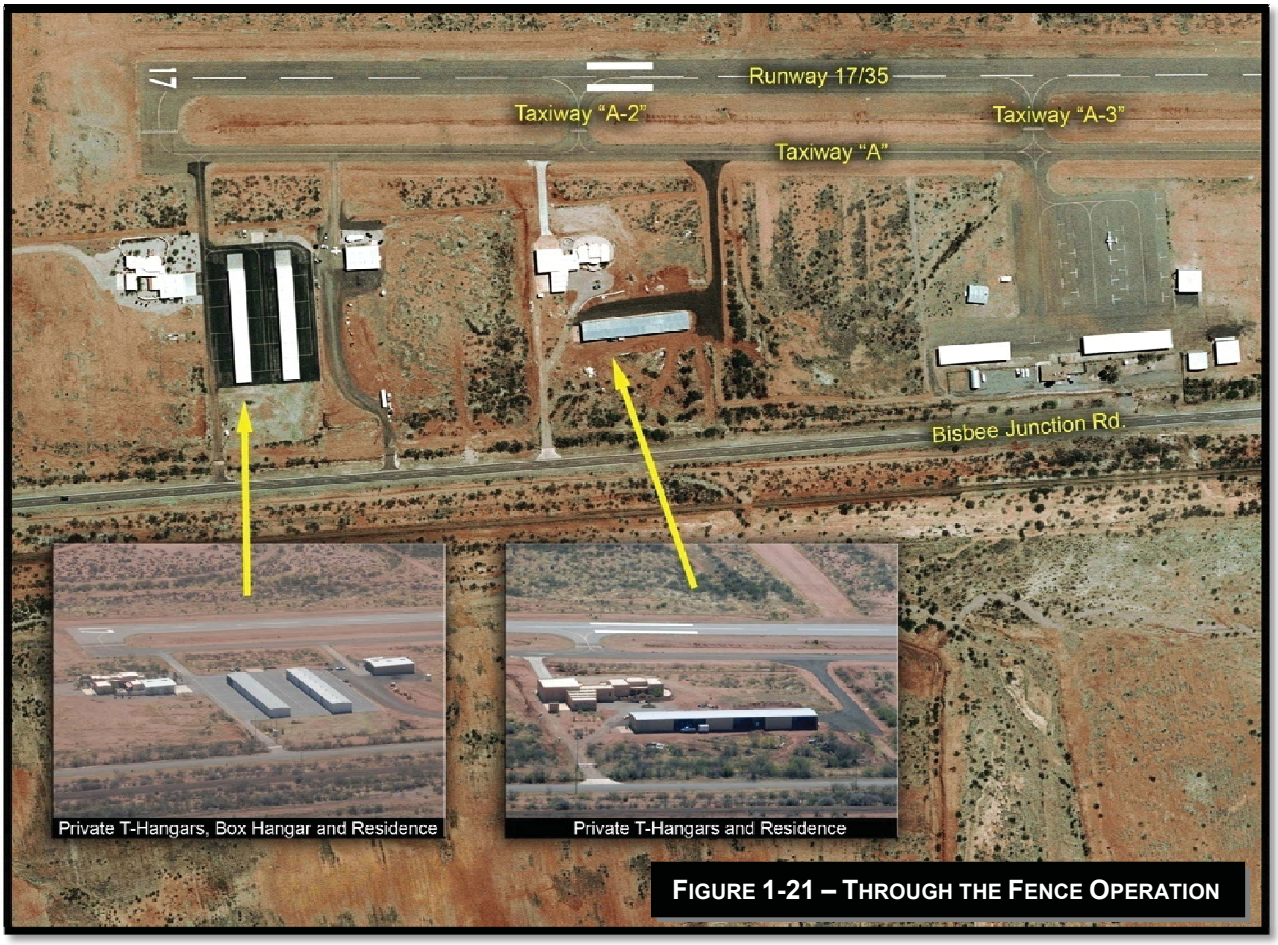


FIGURE 1-21 – THROUGH THE FENCE OPERATION

TABLE 1-22 Bisbee Municipal Airport Inventory

Airport Data		
Identifier	P04	
FAA Site Number	00634.*A	
NPIAS Number	04-0004	
Airport Reference Code	B-I	
Owner/Sponsor	City of Bisbee	
Airport Elevation	4,807.6’	
Runways		Comments/Conditions
Runway 17/35	Length: 5,900 feet Width: 75 feet Surface: Asphalt Marking: Basic visual	 Good
Pavement Strength	SWG 12,500 lbs	
% Effective Gradient	1.18%	
% Maximum Grade	1.34%	
Runway Lighting	MIRL	
Navigational Aids	RW 17: PAPI 2L, REIL; RW 35: PAPI 2L, REIL	
Approach Minimums	None	
Runway 2/20	Length: 2,700 feet Width: 120 feet Surface: Gravel – Dirt	
% Effective Gradient	1.18%	
% Maximum Grade	1.35%	
Runway Lighting	None	
Taxiways		
Taxiway A	Full length parallel taxiway (35’x5,900’)	
Taxiway A1 through A6	Connector taxiways (35’ wide)	
Taxiway Lighting	None	
Aircraft Parking		
Aircraft Apron	12,700 s.y.	
Tie Downs	25	
Navigational Aids		
Radio Navigation Aids	None	
Approach Minimums	None	
Airport Beacon	Clear-Green (Civil Airport)	Dusk to dawn
Wind Indicator	Lighted	
Segmented Circle	Yes	
Unicom	122.800	
Landside Facilities		
T-Shades	9 units	
Box Hangars	4	Two are City owned
Storage Building	1	City owned
T-Hangars	24	On private property
Box Hangars	3	On private property
Terminal Building	1,520 square feet hangar/terminal building	
Automobile Parking	500 s.y.	
Perimeter Fencing	4-strand barbed wire; chain link fence around terminal	
Fuel	6,000 gallon 100 LL AvGas	
Services		
Weather Equipment	None	
FBO	None	
Utilities	Power, Water, Propane, Phone, Septic Tank	

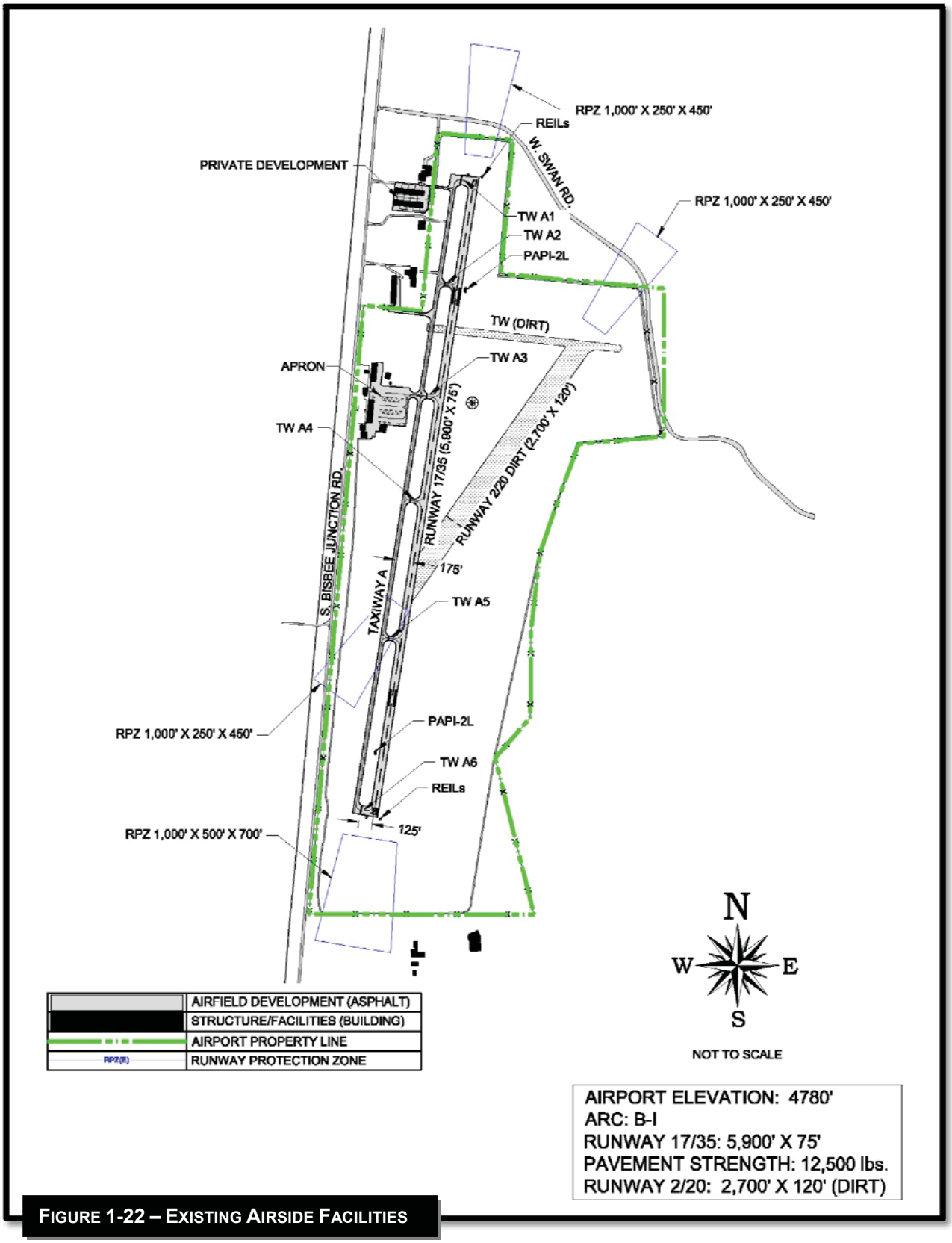


FIGURE 1-22 – EXISTING AIRSIDE FACILITIES

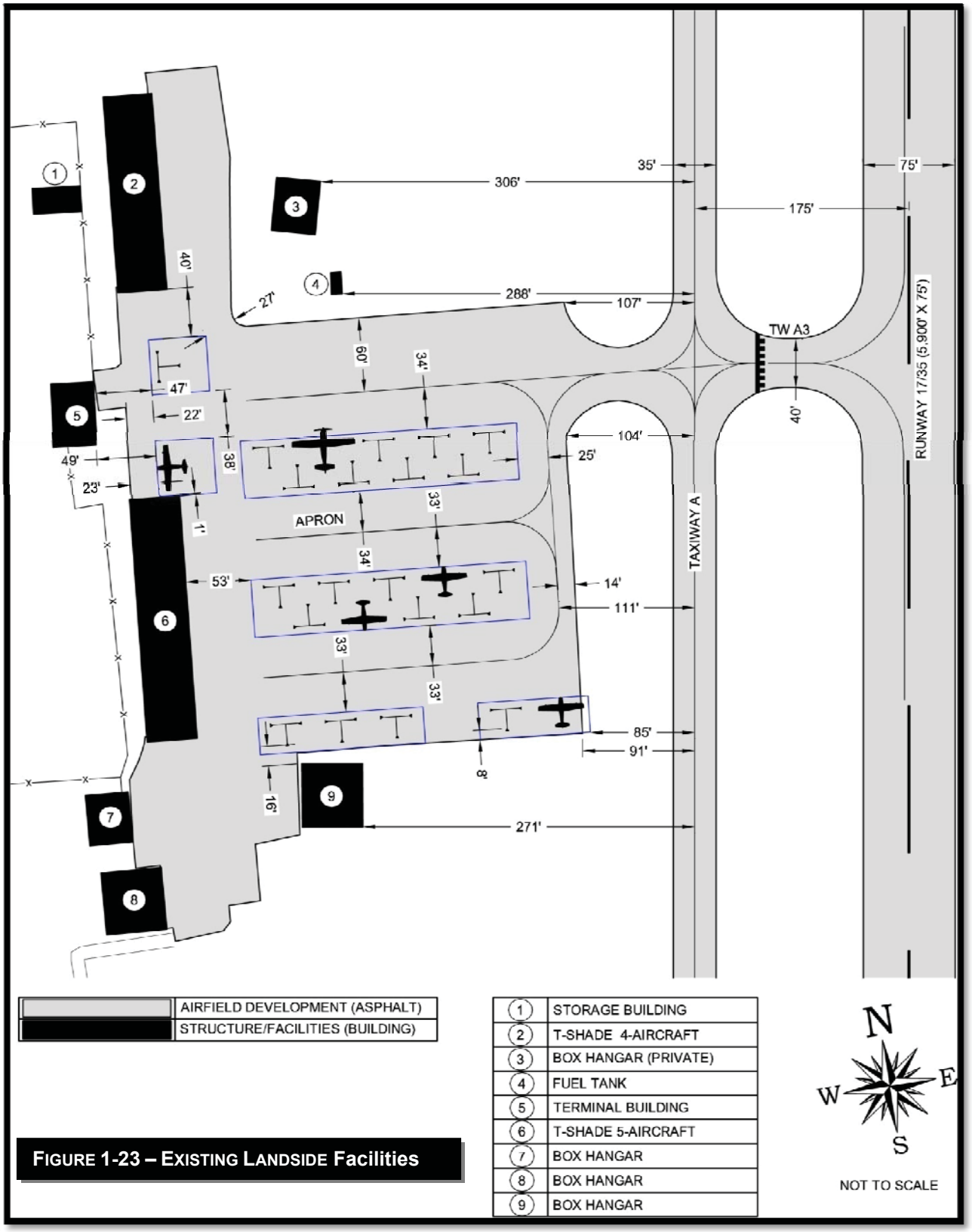


FIGURE 1-23 – EXISTING LANDSIDE FACILITIES

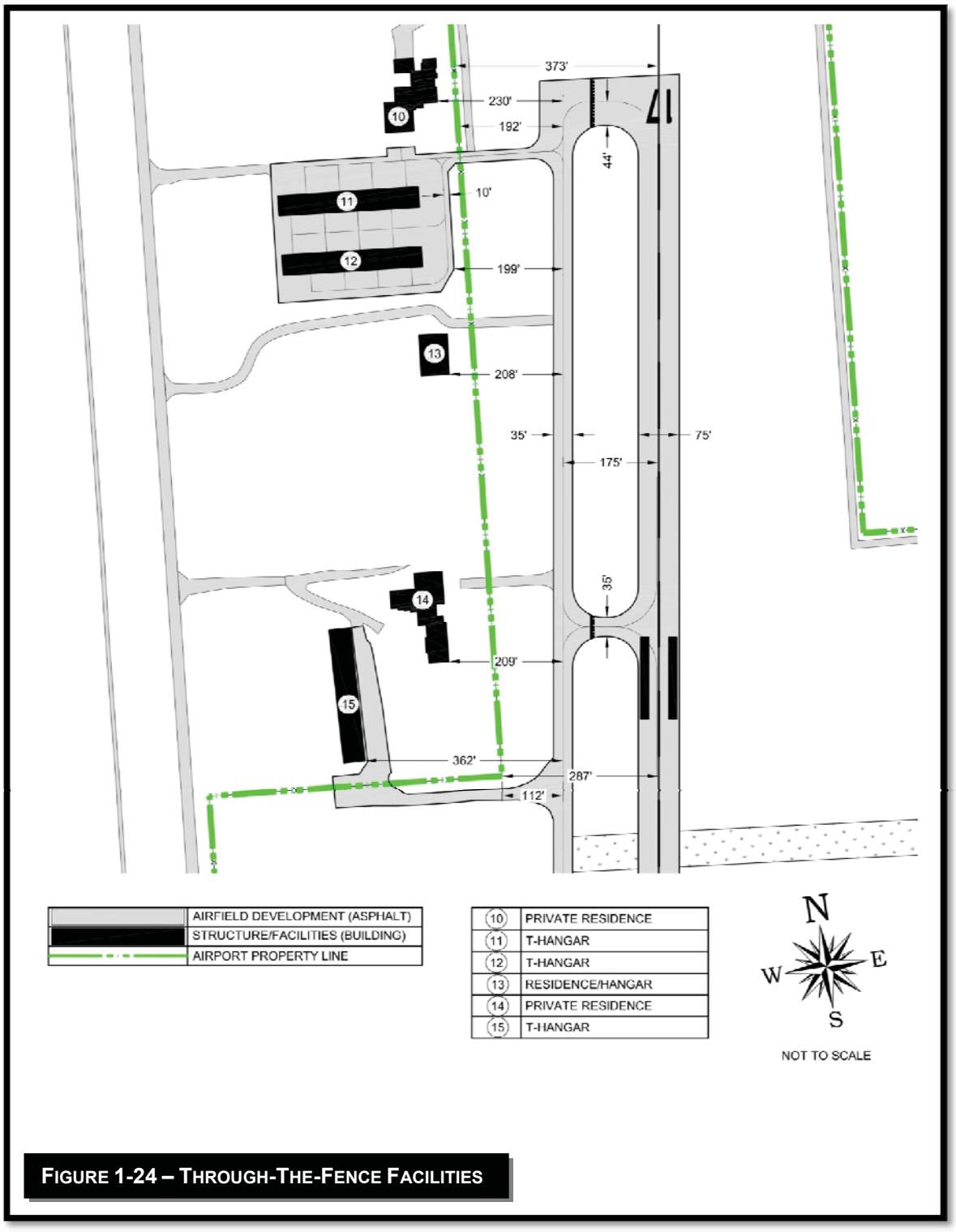


FIGURE 1-24 – THROUGH-THE-FENCE FACILITIES

1.15 AIRSPACE

1.15.1 NATIONAL AIRSPACE SYSTEM

The National Airspace System consists of various classifications of airspace that are regulated by the FAA. Airspace is either controlled or uncontrolled. Pilots flying in controlled airspace are subject to Air Traffic Control (ATC) and must follow either Visual Flight Rule (VFR) or Instrument Flight Rule (IFR) requirements. These requirements include combinations of operating rules, aircraft equipment and pilot certification and vary depending on the Class of airspace and are described in Federal Aviation Regulations (FAR) Part 71, Designation of Class A, Class B, Class C, Class D and Class E Airspace Areas; Airways; Routes; and Reporting Points and FAR Part 91, General Operating and Flight Rules. Figure 1-25 shows the different airspace classes and gives a graphical representation of them.

General definitions of the Classes of airspace are provided below:

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

Figure 1-26 shows that the airspace surrounding Bisbee Municipal Airport is class G from the ground to 14,500 feet MSL and class E airspace between 14,500 feet MSL and 18,000 feet MSL.

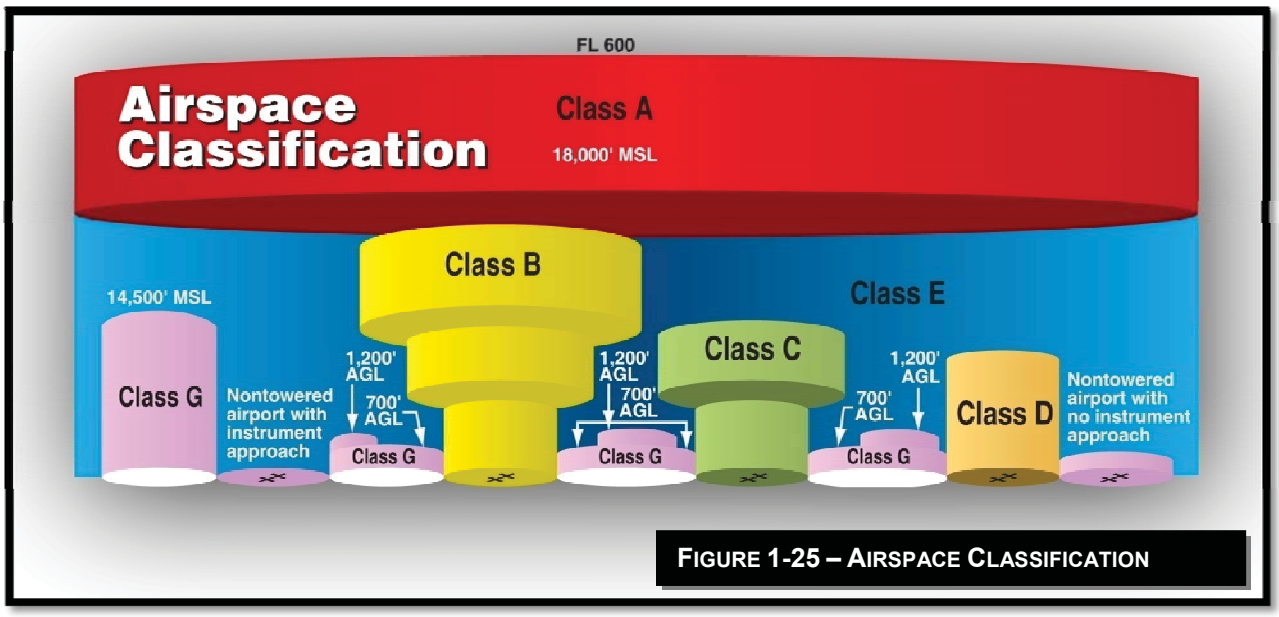


FIGURE 1-25 – AIRSPACE CLASSIFICATION

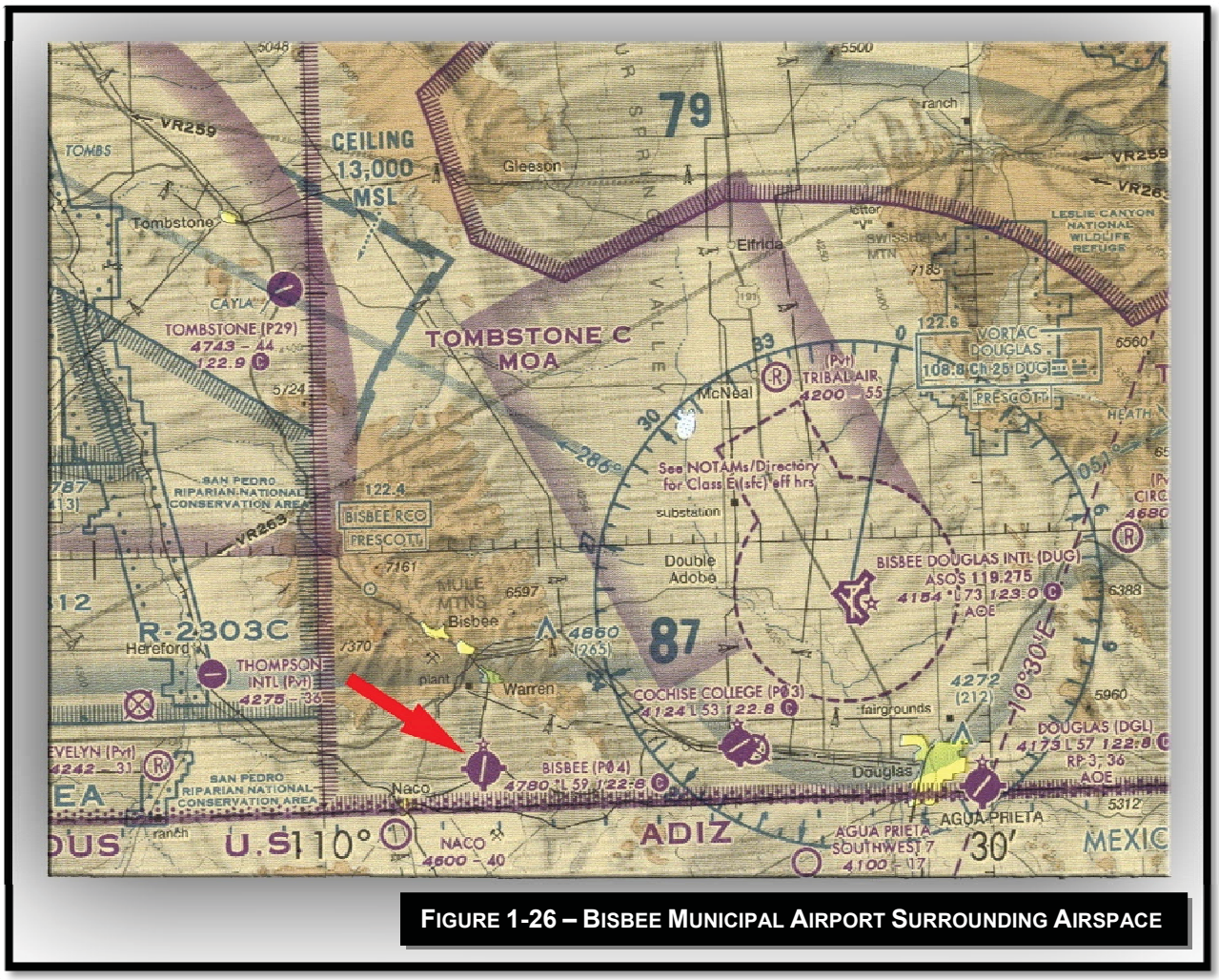


FIGURE 1-26 – BISBEE MUNICIPAL AIRPORT SURROUNDING AIRSPACE

1.15.2 AIRSPACE JURISDICTION

Bisbee Municipal Airport is located within the jurisdiction of the Albuquerque Air Route Control Center (ARTCC) and the Prescott Flight Service Station (FSS) operated by Lockheed Martin. The altitude of radar coverage by the Albuquerque ARTCC may vary as a result of the FAA navigation/radar facilities in operation, weather conditions and surrounding terrain.

1.15.3 AIRSPACE RESTRICTIONS

Military Operation Areas (MOAs) consist of airspace with defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever an MOA is being used, nonparticipating IFR traffic may be cleared through an MOA if IFR separation can be provided by ATC. Otherwise, ATC reroutes or restricts nonparticipating IFR traffic. MOAs are depicted on sectional, VFR terminal area, and en route low altitude charts. The MOA's are also further defined on the back of the sectional charts with times of operation, altitudes affected, and the controlling agency.

Bisbee Municipal Airport is located beneath the Tombstone C MOA, which includes airspace vertically from 14,500 feet Mean Sea Level (MSL) up to, but not including 18,000 feet MSL or Flight Level 180. The MOA is active Monday through Friday from 1300 until 0400 GMT. MOA's are designed to confine military operations within a specific area. They are not restricted airspace. Therefore, civilian pilots may transit an MOA, but should maintain radio communications with the controlling entity in this case Albuquerque Center.

Restricted areas are areas where operations are hazardous to nonparticipating aircraft and contain airspace within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature, or limitations may be imposed upon aircraft operations that are not a part of those activities, or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft (e.g., artillery firing, aerial gunnery, or guided missiles). IFR flights may be authorized to transit the airspace and are routed accordingly. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted Areas may not be entered by civilian aircraft without specific permission from the controlling entity.

The R-2303A and R-2303B Restricted Areas are located directly west of Bisbee Airport. These are roughly centered on the Sierra Vista/Libby AAF airfield. R-2303A includes the airspace from the surface to 15,000 feet MSL. R-2303B includes the airspace from 15,000 ft MSL to Flight Level 250. Both Restricted Areas are active Monday through Friday from 0700 until 1600 GMT, and other times by Notice to Airmen (NOTAM).

Another Restricted Area, R-2312 is located about 25 miles west of Bisbee's airport. This area includes airspace from the surface up to 15,000 ft MSL, and is in operation continuously. The airspace protects a cable-moored surveillance balloon and cable which is used to monitor air traffic through the Contiguous U.S. Air Defense Identification Zone (ADIZ). The Contiguous U.S. Air Defense Identification Zone (ADIZ) parallels the U.S./Mexico border, which is less than 2 miles south of the airport.

A Military Visual Training Route, VR-263, transits the area about 15 miles north of the airport. Most of the military training activity on this route is from the Libby AAF, Davis Monthan (Tucson) and Luke (Phoenix) Air Force Bases. Victor Airway V66 passes about 15 miles north of Bisbee.

V66 is the main route between the Tucson (TUS) and the Douglas (DUG) VORTAC transmitters.

1.16 ENVIRONMENTAL INVENTORY

1.16.1 INTRODUCTION

Analysis of the potential environmental impacts of proposed airport development is an important component of the Airport Master Plan. The primary purpose of environmental evaluation is to assess the proposed development and to identify any potential environmental concerns associated with the proposed developments. Considering environmental factors throughout the Airport Master Planning process helps the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing. An important element in environmental evaluation is the coordination with appropriate federal, state and local agencies to identify potential environmental concerns that should be considered prior to the design and construction of new facilities at the airport.

1.16.2 AIR QUALITY

Air quality attainment maps were obtained from the March, 2009 EPA map of nonattainment areas. The airport is located within a non-attainment area (See Figure 1-27). An attainment area is a zone within which the level of a pollutant is considered to meet National Ambient Air Quality Standards.

In addition to emissions originating in Mexico, unpaved road dust and paved roads, agricultural burning, cleared areas, windblown agricultural land, off road vehicles and unpaved parking lots were identified as contributing sources.

In a 1990 clarification, the Douglas-Paul Spur Group I Area was specified to include all or part of eight contiguous townships in and around the City of Douglas and the Paul Spur unincorporated area. Consistent with EPA's PM10 grouping scheme, the Douglas-Paul Spur Group I Area was designated and classified as a moderate PM10 nonattainment area upon enactment of the 1990 Clean Air Act (CAA) amendments. Arizona Department of Environmental Quality (ADEQ) is currently developing a maintenance plan and request for re-designation for the Douglas-Paul Spur PM10 Nonattainment Area.[1]

Bisbee's air quality is a resource to be protected. Prevailing winds, high altitude and low population contribute to keeping the air clean. The concern over the air quality has lessened since the smelter was closed down. Minimizing use of the automobile by encouraging the use of and providing for other modes of transportation will help to preserve the clean air. The design and mixed uses through a majority of the city limits provides an atmosphere that encourages walking and/or biking.[2] See Figure 1-28.

[1] Arizona Department of Environmental Quality
[2] City of Bisbee General Plan 2004

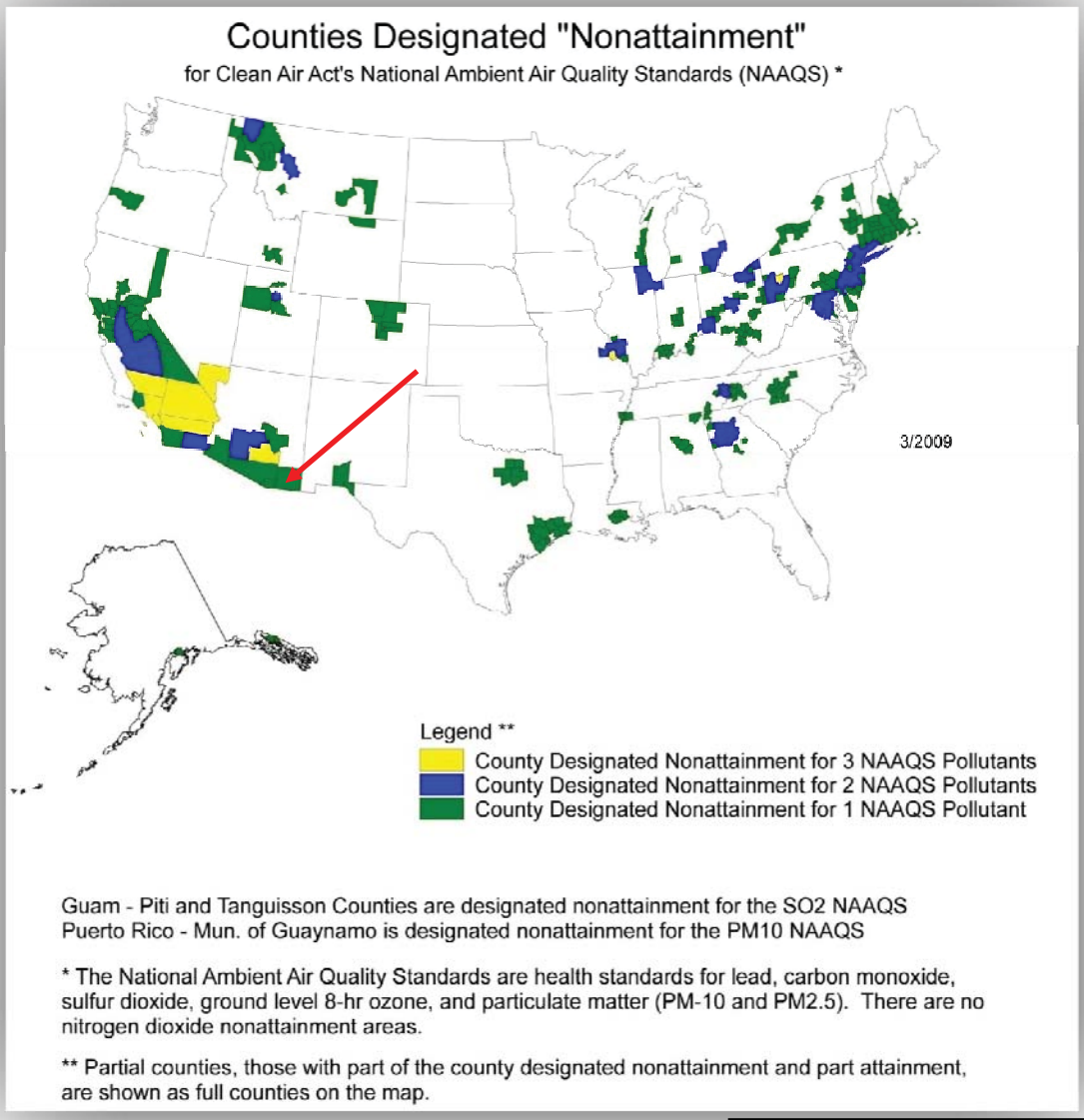


FIGURE 1-27 – AIR QUALITY MAP

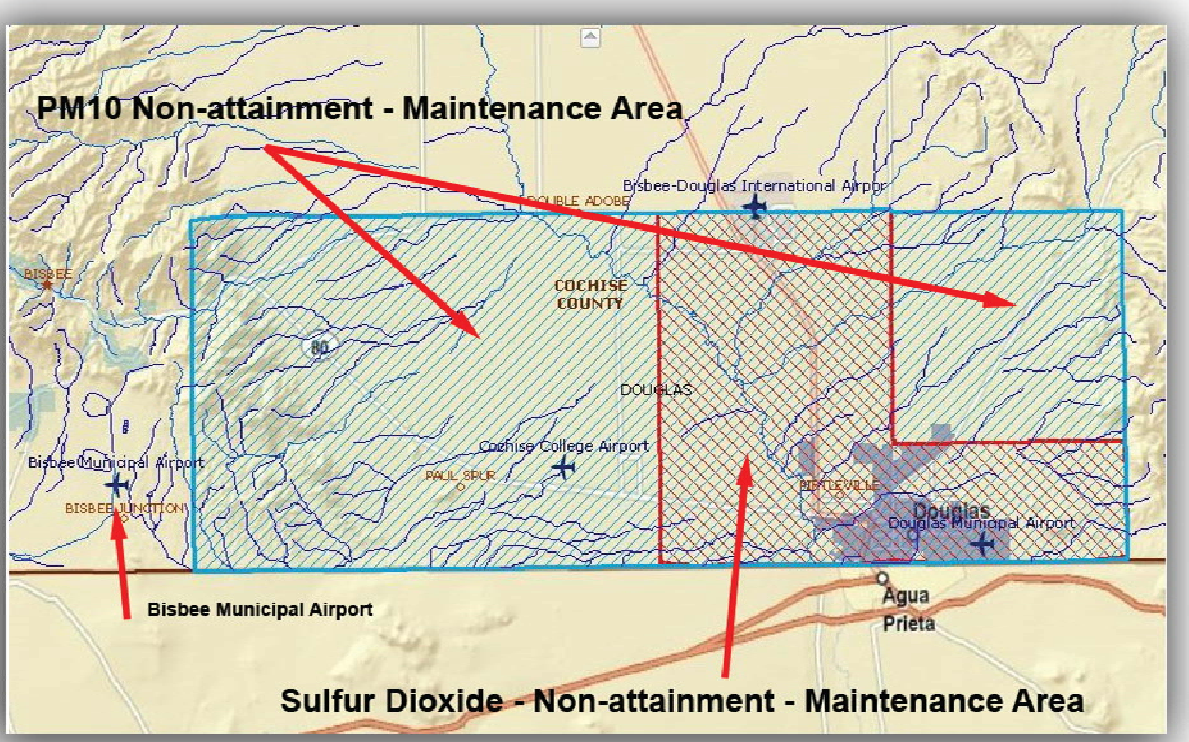


FIGURE 1-28 – AIR QUALITY MAP

1.16.3 FLOODPLAINS

Available Federal Emergency Management Agency (FEMA) floodplain maps indicate that the airport property does not encroach upon any 100-year floodplains (see Figure 1-29). There are no current impacts to existing floodplains.

FIGURE 1-29 – FLOODPLAIN MAP

1.16.4 FISH, WILDLIFE AND PLANTS

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

The species shown on Table 1-23 are currently listed for Cochise County but do not necessarily occur in the vicinity of Bisbee Municipal Airport:

TABLE 1-23 ENDANGERED AND THREATENED SPECIES LIST FOR COCHISE COUNTY

Common Name	Scientific Name	Species Group	Status
Beautiful shiner	*Cyprinella formosa*	Fishes	Threatened
Canelo Hills ladies'-tresses	*Spiranthes delitescen*	Flowering Plants	Endangered
Chiricahua leopard frog	*Rana chiricahuensis*	Amphibians	Threatened
Cochise pincushion cactus	*Coryphantha robbinsorum*	Flowering Plants	Threatened
Desert pupfish	*Cyprinodon macularius*	Fishes	Endangered
Gila chub	*Gila intermedia*	Fishes	Endangered
Gila topminnow (incl. Yaqui)	*Poeciliopsis occidentalis*	Fishes	Endangered
Huachuca springsnail	*Pyrgulopsis thompsoni*	Snails	Candidate
Huachuca water-umbel	*Lilaeopsis haffneriana var. recurva*	Flowering Plants	Endangered
Jaguar	*Panthera onca*	Mammals	Endangered
Lemmon fleabane	*Erigeron lemmonii*	Flowering Plants	Candidate
Lesser long-nosed bat	*Leptonycteris curasoa yerbabuenae*	Mammals	Endangered
Loach minnow	*Tiaroga cobitis*	Fishes	Threatened
Mexican spotted owl	*Strix occidentalis lucida*	Birds	Threatened
New Mexico ridgenose rattlesnake esnake	*Crotalus willardi obscurus*	Reptiles	Threatened
Northern aplomado falcon	*Falco femoralis septentrionalis*	Birds	Endangered
Northern Mexican gartersnake	*Thamnophis eques megalops*	Reptiles	Candidate
Ocelot	*Leopardus (=Felis) pardalis*	Mammals	Endangered
San Bernardino springsnail	*Pyrgulopsis bernardina*	Snails	Candidate
Sonora tiger Salamander	*Ambystoma tigrinum stebbinsi*	Amphibians	Endangered
Southwestern willow flycatcher	*Empidonax traillii extimus*	Birds	Endangered
Spikedace	*Meda fulgida*	Fishes	Threatened
Yaqui catfish	*Ictalurus pricei*	Fishes	Threatened
Yaqui chub	*Gila purpurea*	Fishes	Endangered
Yellow-billed Cuckoo	*Coccyzus americanus*	Birds	Candidate

Source: U.S. Fish and Wildlife

1.16.5 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

An important component of cultural heritage is cultural resources, which are artifacts and places that have significance to people. Cultural resources include archaeological sites, historic buildings and structures, rock art, shrines, trails, human made artifacts (such as pottery, metal objects, tools, projectile points, and grinding stones), traditional cultural places, and traditional cultural landscapes.

Traditional cultural places and traditional cultural landscapes are places and areas that have significant meaning to one or more cultural group, and often incorporate aspects of the natural and the human-made worlds. For example, a traditional cultural landscape may include a mountain that contains archaeological sites, human burials, herb gathering places and other important cultural resources. Human burials are a special type of cultural resource, which are usually, but certainly not always, found in archaeological sites or graveyards.

Cultural heritage planning has four primary goals: conservation, protection, public education, and preservation.

Table 1-24 identifies historical resources within the City of Bisbee registered in the National Register for Historical Resources Information System. There are no known historical, architectural, archeological or cultural resources on the airport.

TABLE 1-24 HISTORICAL PLACES – NATIONAL REGISTER OF HISTORICAL PLACES

Resource Name	Address	Date Listed
Douglas Walter House	201 Cole Avenue	2000
St. Patrick's Roman Catholic Church	Oak Avenue on Higgins Hill	1995
Treu John House	205 W. Vista, Warren Townsite	1995
Bisbee Women's Club Clubhouse	74 Quality Hill	1985
Bisbee Historic District	US 80	1980
Muheim House	207 Youngblood Avenue	1979
Bisbee Mining Museum	Cooper Queen Plaza, intersection of Main Street and Brewery Gulch	1971

Source: National Register of Historical Places

1.17 FINANCIAL DATA INVENTORY

Table 1-25 shows a summary of the available historical financial data for Bisbee Municipal Airport.

TABLE 1-25 ANNUAL AIRPORT REVENUES AND EXPENSES - HISTORICAL

	2004	2005	2006	2007	2008	2009
Airport Revenues						
Gas Revenue	$23,698	$22,000	$58,223	$53,104	$39,665	$43,457
Rents	$9,493	$7,000	$6,969	$8,199	$6,841	$8,616
Bisbee Airpark-Access Fees	$856	$500	$1,840	$1,608	$1,592	$1,392
Airport Property Lease	$342	--	$545	--	--	$379
FBO Sales	$356	--	$832	$284	--	$0
Misc. Revenues	--	--	--	--	$2,210	$0
Transfers from General Fund	$1,004	--	--	$9,109	$105,367	--
Transfers from LTAF	$32,575	$32,723	$31,740	$31,516	$29,172	$26,683
Total Airport Revenues	**$68,324**	**$62,223**	**$100,14**	**$103,82**	**$184,84**	**$80,527**
Airport Expenses						
Overtime – General	--	--	--	$349	$973	$0
Salaries – Part Time	--	--	--	$2,097	$17,874	$4,459
F.I.C.A.	--	--	--	$152	$1,169	$276
Medicare	--	--	--	$35	$273	$65
A.S.R.S	--	--	--	--	$358	$174
Workers Compensation	--	--	--	$70	$420	$129
State Unemployment	--	--	--	--	$32	$0
Electric	$4,371	$3,324	$3,174	$3,025	$3,239	$2,327
Water	$712	$330	$836	$568	$1,285	$962
Sewer and Garbage Serv.	$425	$425	$425	$476	$547	$560
Gas	$603	$840	$1,122	$1,382	$1,006	$909
Telephone and Fax	$743	$581	$595	$770	$739	$550
Other – Equipment NDB	--	$55	--	--	--	--
Disposable Equipment/Tools	--	--	--	--	--	$16
Office Supplies	--	--	$229	$599	$907	$65
Safety Equipment	$99	--	$158		$202	$0
Special Supplies – Other	$394	$627	$604	-$25	$131	$0
Contract Services	$118	--	--	$45	$286	$55
Drinking Water	--	$34	--	$215	$544	$181
Custodial Supplies	--	--	--	$15	--	$0
Repair & Maint. – Bldg.	$30	$816	$445	$2,823	--	$797
Postage	--	--	$100	$479	$48	$0
Advertising	--	$58	$96	$290	$667	$82
Property, Casualty, Liability	$3,965	$4,350	--	$4,350	$3,694	$6,640
Other – FBO Contract	$9,900	$10,800	$11,797	$8,400	--	$24,333
Hangar Royalties	$5,870	$3,271	$4,209	$2,760	--	$0
Fuel Royalties	$817	$1,866	$2,902	$2,034	--	$1,235
Other – Contracts				$2,000	$3,500	$0
Doc Workers	$2,009	$2,550	$1,777	$1,176	$1,991	$1,879
Small Tools & Equipment	$116	--	$363	$27	$135	$0
Fuel	--	--	--	--	--	$0
Insurance	--	--	$4,350	--	--	$0
Repairs and Maint	$1,629	$255	$19	$602	$666	$485
Other – Fuel	$27,320	$25,443	$60,555	$50,845	$32,062	$31,104
Equipment Maintenance	$900	$981	$1,191	$765	$392	$266
Fees – Collections	--	--	$1,675	$1,382	$1,083	$1,356
Principal Payments	$3,767	$25	--	--	--	--
Interest Expense	$1,364	--	--	--	--	--
Electrical Upgrades	--	$104	--	$2,138	--	$0
Equipment & Furniture	$288	--	--	$1,592	$15	$216
Grant Match	--	--	--	--	$73,327	--
Transfers to Debt Service	--	$5,131	$5,131	$5,131	$5,131	$0
Unassigned Expenses	$1,655	--	--	$7,252	$17,651	$466
Transfer to CIP	--	--	--	--	$14,500	$0
Other Expenditures	--	--	--	--	--	$0
Total Airport Expenses	**$67,095**	**$61,866**	**$101,753**	**$103,819**	**$184,847**	**$79,587**
Net Revenue and Expenses	**$1,229**	**$357**	**-$1,604**	**$1**	**$0**	**$940**

Source: City of Bisbee, 2010

Chapter Two
Forecast

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

2.1 INTRODUCTION

Forecasts of aviation activity provide the basis of evaluating the adequacy of existing airport facilities and their capability to handle increased traffic levels or different types of traffic. They are the foundation for effective decisions in airport planning, such as if and when improvements are needed, the level of capital improvements and the timing of the necessary investments.

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

General aviation forecasts are typically based on historical data and broadly accepted industry and governmental estimates of aviation activity, as well as, the primary socio-economic drivers of general aviation activity.

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

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

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

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

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

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

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

Transient operations are defined as the total operations made by aircraft other than those based at the airport under study. These operations typically consist of business or pleasure flights originating at other airports, with termination or a stopover at the study airport. The terms transient and itinerant are sometimes erroneously used interchangeably. This study will confine analysis to local and itinerant operations.

2.2 NATIONAL AND REGIONAL TRENDS

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

The FAA annually convenes expert panels in aviation and develops forecasts for future activity in all areas of aviation, including general aviation. The FAA forecasts the fleet and hours flown for single-engine piston aircraft, multi-engine piston, turboprops, turbojets, rotorcraft (piston, turbine), sport, experiment and other (glider, balloon). The FAA forecasts “active aircraft,” not total aircraft. The FAA uses estimates of fleet size, hours flown, and utilization from the General Aviation and Air Taxi Activity and Avionics Survey (GA Survey) as baseline figures upon which assumed growth rates can be applied.

According to the FAA Aerospace Forecast Fiscal Years 2009-2025 forecast as the demand for business jets has grown over the past several years, the current forecast assumes that business use of general aviation aircraft will expand at a more rapid pace than that for personal/sport use. In addition, corporate safety/security concerns for corporate staff, combined with increasing flight delays at some U.S. airports have made fractional, corporate, and on-demand charter flights practical alternatives to travel on commercial flights.

The active general aviation fleet is projected to increase at an average annual rate of 1.0 percent over the 17-year forecast period, growing from an estimated 234,015 in 2008 to 275,230 aircraft by 2025. The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow at an average of 3.2 percent a year over the forecast period with the turbine jet fleet increasing at 4.8 percent a year.

As recently as 2007, industry experts suggested the market for new Very Light Jets (VLJs) could add 500 aircraft a year to the active fleet by 2010. The relatively inexpensive twin-engine VLJs (priced between $1 and $2 million) were believed by many to have the potential to redefine the business jet segment by expanding business jet flying and offering performance that could support a true on-demand air-taxi business service. However, events since that time have dampened expectations for a rapid penetration of VLJs into the market, most notably the bankruptcy of Eclipse and the demise of DayJet. In 2008, VLJ deliveries fell short of our assumption (262 vs. 400). Despite the challenging economy and the uncertainty surrounding the future of Eclipse, the forecast assumes that about 200 VLJs will enter the active fleet in U.S. over the next 2 years and then increase to a rate of 270 to 300 aircraft a year for the balance of the forecast, totaling 4,875 aircraft by 2025.

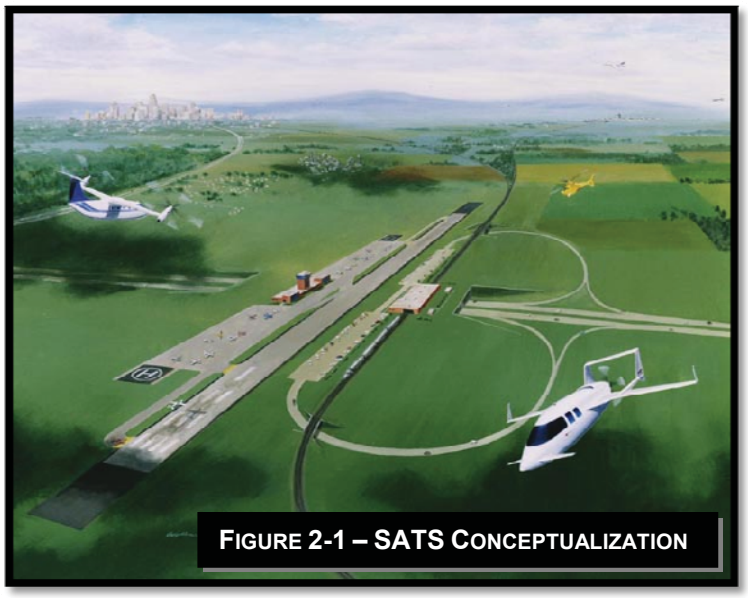


FIGURE 2-1 – SATS CONCEPTUALIZATION

The number of active piston-powered aircraft (including rotorcraft) is projected to decrease from the 2007 total of 169,675 through 2013 as declines in both single and multi-engine aircraft are forecast. Beyond 2013 active piston-powered aircraft are forecast to increase gradually to 170,475 by 2025. Over the forecast period, the average annual increase in piston-powered aircraft is 0.1 percent. Although piston rotorcraft are projected to increase rapidly (3.9 percent a year) they are a relatively small part of this segment of general aviation aircraft. Single-engine fixed-wing piston aircraft, which are much more numerous, are projected to grow at much slower rates (0.1 percent respectively) while multi-engine fixed wing piston aircraft are projected to decline 1.0 percent a year. In addition, it is assumed that VLJs and new light sport aircraft could erode the replacement market for traditional piston aircraft at the high and low ends of the market respectively.

FIGURE 2-2 – LIGHT SPORT AIRCRAFT AT BISBEE

Starting in 2005, a new category of aircraft (previously not included in the FAA's aircraft registry counts) was created: "light sport" aircraft. At the end of 2007 a total of 6,066 aircraft were estimated to be in this category. The forecast assumes the fleet will increase approximately 930 aircraft per year until 2013 including both newly built aircraft and conversions from ultralight trainers. Thereafter the rate of increase in the fleet tapers considerably to about 300 per year. By 2025 a total of 15,865 light sport aircraft are projected to be in the fleet.

The number of general aviation hours flown is projected to increase by 1.8 percent yearly over the forecast period. Much of the increase reflects increased flying by business and corporate aircraft as well as steady if relatively small annual percentage increases in utilization rates for piston aircraft. Hours flown by turbine aircraft (including rotorcraft) are forecast to increase 3.6 percent yearly over the forecast period, compared with 0.4 percent for piston-powered aircraft. Jet aircraft are forecast to account for most of the increase, with hours flown expanding at an average annual rate of 5.2 percent over the forecast period. The large increases in jet hours result mainly from the increasing size of the business jet fleet, including increases in the fractional ownership fleet and its activity levels. Fractional ownership aircraft fly about 800 hours annually compared to approximately 380 hours for all business jets in all applications.

By 2025 the annual utilization rate for all VLJs is forecast to be 432 hours. Traditional (non-VLJ) turbojets are expected to average approximately 368 hours per year by 2025, as VLJs are expected to have a greater share of their use in on-demand air taxi and shared ownership than the traditional turbojets.

The number of active general aviation pilots (excluding air transport pilots) is projected to be 509,900 in 2025, an increase of almost 42,000 (up 0.5 percent yearly) over the forecast period. Commercial pilots are projected to increase from 124,746 in 2008 to 138,700 in 2025, an average annual increase of 0.6 percent. The number of student pilots is forecast to increase at an average annual rate of 0.4 percent over the forecast period, growing from 80,989 in 2008 to 86,600 in 2025. In addition, FAA is projecting that by the end of the forecast period a total of 20,600 sport pilots will be certified. As of December 31, 2008, the number of sport pilot certificates issued was 2,623 reflecting a growing interest in this new “entry level” pilot certificate that was created in 2005. The number of private pilots is projected to remain steady over the forecast period to total 223,400 in 2025.

2.3 AVAILABLE ACTIVITY FORECASTS

The first step in preparing aviation forecasts is to examine historical and existing activity levels and currently available forecasts from other sources. The FAA Terminal Area Forecasts (TAF) (December 2008) indicates 42 existing based aircraft for Bisbee Municipal Airport and 5,150 existing annual operations. The TAF for Bisbee Municipal Airport shows no change in based aircraft and operations over the planning period (see Table 2-1). The TAF for the State of Arizona indicates 7,376 based aircraft and 4,443,432 operations for 2008 and 9,432 based aircraft and 5,268,775 operations in 2025.

2.4 FAA RECORDS OF BASED AIRCRAFT

FAA Form 5010-1, Airport Master Record, is the official record kept by the Federal Aviation Administration to document airport physical conditions and other pertinent information. The record normally includes an annual estimate of aircraft activity as well as the number of based aircraft. This information is normally obtained from the airport sponsor. The accuracy of these documents varies directly with the sponsor’s record keeping system. The FAA Form 5010-1 for the Bisbee Municipal Airport indicates 15 based aircraft and 4,900 annual aircraft operations. This form also breaks down the Bisbee Municipal Airport operations to 1,200 GA Local and 3,700 GA Itinerant operations. Table 2-1 shows a summary of the FAA 2008 Terminal Area Forecast (TAF). Table 2-2 lists the based aircraft with the tail number and type of aircraft.

TABLE 2-1 BISBEE FAA TERMINAL AREA FORECAST (TAF) DETAIL REPORT

Year	Based Aircraft	Local Operations			Itinerant Operations				Total Operations	Instrument Operations
		Civil	Military	Total	AT&C	Civil	Military	Total		
2009	42	1,200	0	1,200	150	3,700	100	3,950	5,150	0
2014	42	1,200	0	1,200	150	3,700	100	3,950	5,150	0
2019	42	1,200	0	1,200	150	3,700	100	3,950	5,150	0
2024	42	1,200	0	1,200	150	3,700	100	3,950	5,150	0
2029	42	1,200	0	1,200	150	3,700	100	3,950	5,150	0

Source: FAA TAF 2008

2.5 EXISTING AVIATION ACTIVITY

According to the PAC, inventory and aircraft movement logs there are 28 based aircraft and approximately 4,200 operations. These totals result in approximately 150 operations per based aircraft (OBPA). This represents the total annual operations divided by the number of based aircraft and includes operations by both based and transient aircraft. The number of operations was estimated based on average monthly operations logs obtained from the airport manager. It was assumed that itinerant operations represent 80 percent of the total operations and local operations represent 20 percent of the total operations because most of the operations originate or terminate at another airport. This was determined based on a review of the comments in the visitor's log maintained by the airport manager.

The airport serves predominately single engine piston and multi-engine piston aircraft, with some use by light turbojet and turbo prop aircraft. In general, uses include:

Aerial Applications: The area surrounding Bisbee is utilized primarily for agricultural activities and the airport serves as a base for several aerial spraying operators for the local area. The aircraft used for aerial spraying are primarily single-engine piston, single-engine turbine and rotorcraft.

Business Transportation: Business aviation users benefit by being able to travel to or from these business centers to conduct business activities in a single day, without requiring an overnight stay or extensive ground travel time. Local and other small businesses will generally utilize single-engine and multi-engine piston aircraft. Medium sized businesses and larger corporations having a need to travel to the Bisbee area would generally utilize multi-engine piston and turboprop aircraft and light to medium business jets respectively. This user category also includes state and federal agencies and travel by government officials.

Personal Transportation: These users desire the utility and flexibility offered by general aviation aircraft. The types of aircraft utilized for personal transportation vary with individual preference and resources and generally include a mix of single-engine, multi-engine and in some cases turbojet aircraft.

Recreational and Tourism: These users include transient pilots flying into the region to visit recreational and tourist attractions. These users mostly utilize single-engine piston aircraft; however, a small percentage may operate multi-engine piston aircraft. Other types of aircraft in this category include home-built, experimental aircraft, gliders and ultralights.

Flight Training: These users conduct local and itinerant flights in order to meet flight proficiency requirements for obtaining FAA pilot certifications. These flights include touch-and-goes, day and night local and cross-country flights and simulated approaches. Pilot certifications include Sport, Private, Instrument, Commercial, Instructor and Airline Transport ratings. Depending on the level of interest and aircraft availability, a multi-engine rating may or may not be available. A commercial rating may be accomplished with either a single-engine or multi-engine aircraft. Air transport ratings are usually obtained at larger regional FAR Part 141 certificated flight schools.

TABLE 2-2 BASED AIRCRAFT

Manufacturer	Model	Tail Number	Type	Airworthiness Classification
Cessna	150	N61099	Fixed Wing Single-Engine	Standard
Cessna	152	N68261	Fixed Wing Single-Engine	Unknown
Cessna	120	N1686U	Fixed Wing Single-Engine	Standard
Beech	Musketeer	N6955Q	Fixed Wing Single-Engine	Standard
Piper	PA-24 Comanche	N7662P	Fixed Wing Single-Engine	Standard
Cessna	172	N84510	Fixed Wing Single-Engine	Standard
Cessna	177	N34666	Fixed Wing Single-Engine	Standard
Cessna	182	N91690	Fixed Wing Single-Engine	Standard
Maule	M-5-210C	N51566	Fixed Wing Single-Engine	Standard
X-Air	Airplane-Xair	N349AZ	Fixed Wing Single-Engine	Experimental
Piper	PA-24-250 Comanche	N6923P	Fixed Wing Single-Engine	Standard
Flight Design	CTSW	N358CT	Fixed Wing Single-Engine	Light Sport
North American	AT-6C	N684RC	Fixed Wing Single-Engine	Standard
Boeing	E75	N75KM	Fixed Wing Single-Engine	Standard
Van's Aircraft	RV-4	N204MW	Fixed Wing Single-Engine	Experimental
Air Creation	Tanarg	N94736	Weight-Shift-Control	Experimental
Van's Aircraft	RV-7A	N728E	Fixed Wing Single-Engine	Experimental
Raj Hamsa Ultralights	X-AIR-S	N3514D	Fixed Wing Single-Engine	Experimental
North American	Navion	N8576H	Fixed Wing Single-Engine	Experimental
Fgil Charles W Iii	CWF 2000 GTX	N7234U	Rotorcraft	Experimental
Cessna	140	N72950	Fixed Wing Single-Engine	Standard
Cessna	206	N3422L	Fixed Wing Single-Engine	Standard
Beech	V35A	N8405N	Fixed Wing Single-Engine	Standard
Dubois Robin	Cozy	N22AZ	Fixed Wing Single-Engine	Experimental
William Seibold	Rutan VariEze	N6VE	Fixed Wing Single-Engine	Experimental
Ronald Vance	Glasair SH-2R	N49RV	Fixed Wing Single-Engine	Experimental
Piper	J3C-65	N3228N	Fixed Wing Single-Engine	Restricted
Cessna	180	N9901V	Fixed Wing Single-Engine	Standard

Source: Bisbee Municipal Airport Management Records, 2009

2.6 FACTORS INFLUENCING AVIATION DEMAND

Aviation activity at any given airport is dependent upon the economic, demographic and geographic characteristics of the airport service area. Several studies have found that factors such as, population, per capita income, employment, airport prominence, complexity of the airport's based aircraft, presence of a flight school and the region in which the airport is located have a significant correlation with aviation activity.

Demographic characteristics of the population have an influence on the level, composition and growth of aviation demand. Per capita income has demonstrated to be an indicator of general aviation purchase and use. The prominence of an airport can be defined as the proportion of its based aircraft and the total based aircraft in the airport service area, or its attractiveness to pilots due to the services that are offered. A prominent airport usually has adequate facilities and services such as, Fixed Base Operators (FBO), hangars, fuel services, airfield lighting and instrument approach procedures that make the airport more attractive to local and transient users. The complexity of the airport's based aircraft is defined as the ratio of single engine piston based aircraft to all of the based aircraft. Airport with instrument approaches and longer runways tend to attract owners of larger and more complex aircraft, such as high performance multi-engine airplanes. The presence of a pilot training school at an airport, or a nearby airport, is another factor that can significantly increase the number of local operations. Various destination attractions in or near the airport service area are also a factor in forecasting aviation activity.

Airport management records indicate that business, dining, golf and tourism are the primary reasons given by airport visitors for using the airport. The following are some of the primary drivers influencing aviation activity at Bisbee Municipal Airport:

- Mining business.
- Local tourist attractions.
- Local restaurants.
- Golf course.

2.7 FORECAST METHODOLOGY

The preferred forecast methodology is one that has been used at other airports and which has some intuitive merit. If one knows or assumes no radical change in the aviation environment in the recent past, one can start with the premise that the amount of present aviation activity is proportionally related to the most reliable determinants of GA activity, which is population growth and per capita income. One then calculates the "per capita trend" for each aviation activity of interest using best-estimate or baseline present activity and present population and per capita income data. That trend value is then applied to reliable forecasts of population growth and per capita income to generate forecasts of the selected aviation activities. Finally, professional judgment is applied to make adjustments for any near-term perturbations.

2.8 BASED AIRCRAFT FORECAST

A comparative analysis of based aircraft forecasts was accomplished using three methodologies to derive a preferred forecast. Method 1 (low) is based on the population growth in the City of Bisbee. The results of Method 1 are shown on Table 2-3. Method 2 (high) is based on the per capita income growth of the Sierra-Vista-Douglas Micropolitan Statistical Area and is shown on Table 2-4. Method 3 is the average between the results of Method 1 and Method 2. The results of Method 3 are shown on Table 2-5 and Figure 2-3.

TABLE 2-3 BASED AIRCRAFT FORECAST BASED ON BISBEE'S POPULATION GROWTH – METHOD 1

Year	Bisbee's Population[1]	Based Aircraft
2008[2]	6,389	28
2009	6,505	29
2014	6,676	30
2019	6,847	31
2024	7,019	31
2029	7,190	32

[1] Extrapolated from Population Statistics Unit, Arizona Department of Commerce data
[2] Base Year

TABLE 2-4 BASED AIRCRAFT FORECAST BASED ON SIERRA VISTA-DOUGLAS MICROPOLITAN STATISTICAL AREA PER CAPITA INCOME – METHOD 2

Year	MSA's Per Capita Income[1]	Based Aircraft
2008[2]	$29,890[3]	28
2009	$32,862	30
2014	$40,448	37
2019	$48,034	43
2024	$55,621	50
2029	$63,207	57

[1] Extrapolated from Bureau of Economic Analysis (BEA) U.S. Department of Commerce data.
[2] Base Year; [3] 2007 Data

TABLE 2-5 PREFERRED BASED AIRCRAFT FORECAST – METHOD 3

Year	Based Aircraft
2008	28
2009	30
2014	34
2019	37
2024	41
2029	45

2.9 OTHER BASED AIRCRAFT FORECASTS EVALUATED

For comparative purposes, forecasts based on the State wide growth in based aircraft and the 2008 Arizona State Airports Systems Plan (SASP) growth rates were developed and compared to the preferred forecasts and the FAA TAF. The result of this analysis is shown on Table 2-6, Table 2-7 and Figure 2-3.

TABLE 2-6 BASED AIRCRAFT FORECAST BASED ON STATE WIDE BASED AIRCRAFT GROWTH

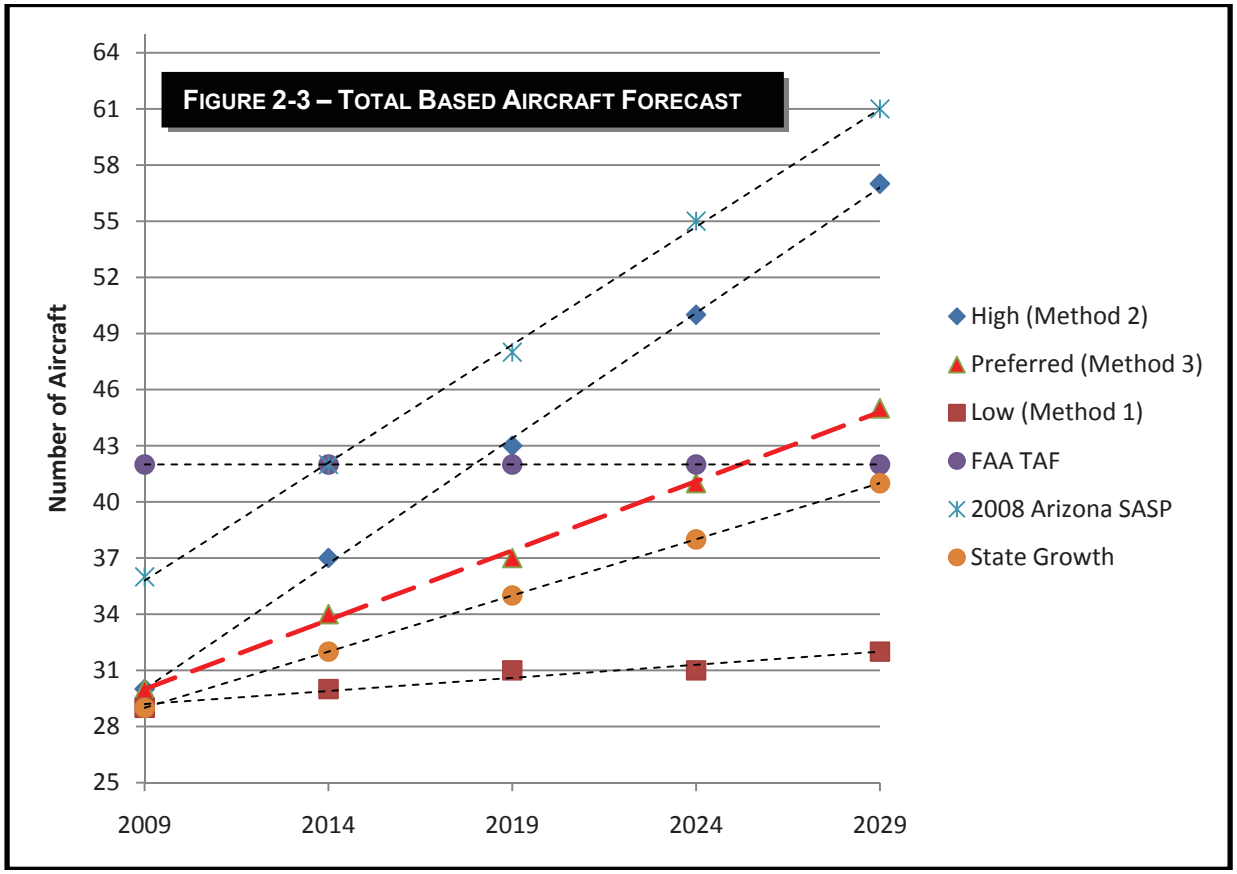
Year	Arizona Based Aircraft[1]	Bisbee Based Aircraft	Average Annual Growth Rate
2008[2]	7,376	28	--
2009	7,480	29	1.41%
2014	8,025	32	1.46%
2019	8,624	35	1.50%
2024	9,150	38	1.22%
2029	--	41	1.22%

[1] FAA TAF 2008; [2] Base Year

TABLE 2-7 BASED AIRCRAFT FORECAST FROM THE 2008 ARIZONA STATE AIRPORTS SYSTEMS PLAN (SASP)

Year	Based Aircraft
2007	34
2009	36
2014	42
2019	48
2024	55
2029	61

Source: 2008 Arizona State Airports Systems



2.10 ANNUAL AIRCRAFT OPERATIONS FORECAST

A comparative analysis of operations forecasts was accomplished using three methodologies to derive a preferred forecast. Method 1 (low) is based on the population growth in the City of Bisbee. The results of Method 1 are shown on Table 2-8. Method 2 (high) is based on the per capita income growth in the Sierra-Vista-Douglas Micropolitan Statistical Area and is shown on Table 2-9. Method 3 is the average between the results of Method 1 and Method 2. The results of Method 3 are shown on Table 2-10 and Figure 2-4.

TABLE 2-8 OPERATIONS FORECAST BASED ON BISBEE'S POPULATION GROWTH – METHOD 1

Year	Bisbee's Population[1]	Bisbee Operations
2008[2]	6,389	4,200
2009	6,505	4,284
2014	6,676	4,393
2019	6,847	4,512
2024	7,019	4,620
2029	7,190	4,728

[1] Extrapolated from Population Statistics Unit, Arizona Department of Commerce data
[2] Base Year

TABLE 2-9 OPERATIONS FORECAST BASED ON SIERRA VISTA-DOUGLAS MICROPOLITAN STATISTICAL AREA PER CAPITA INCOME – METHOD 2

Year	MSA's Per Capita Income[1]	Bisbee Operations
2008[2]	$29,890	4,200
2009	$32,862	4,404
2014	$40,448	5,424
2019	$48,034	6,444
2024	$55,621	7,464
2029	$63,207	8,472

[1] Extrapolated from Bureau of Economic Analysis (BEA) U.S. Department of Commerce data; [2] Base Year

TABLE 2-10 PREFERRED OPERATIONS FORECAST FORECAST – METHOD 3

Year	Bisbee Operations
2008	4,300
2009	4,404
2014	5,424
2019	6,444
2024	7,464
2029	8,472

2.11 OTHER OPERATIONS FORECASTS EVALUATED

For comparative purposes, forecasts based on the State wide aircraft operations growth and the 2008 Arizona State Airports Systems Plan (SASP) growth rate were developed and compared to the preferred forecasts and the FAA TAF. The result of this analysis is shown on Table 2-11, Table 2-12, Table 2-13 and Figure 2-4.

TABLE 2-11 OPERATIONS FORECAST BASED ON STATE WIDE AIRCRAFT OPERATIONS GROWTH

Year	Arizona Aircraft Operations[1]	Bisbee Operations	Average Annual Growth Rate
2008[2]	4,338,125	4,200	--
2009	4,298,179	4,161	-0.93%
2014	4,541,136	4,399	1.14%
2019	4,851,885	4,703	1.38%
2024	5,124,132	4,972	1.14%
2029	--	5,256	1.14%

[1] FAA TAF; [2] Base Year (forecast)

TABLE 2-12 ARIZONA STATE AIRPORTS SYSTEMS PLAN (SASP) 2008 OPERATIONS FORECAST

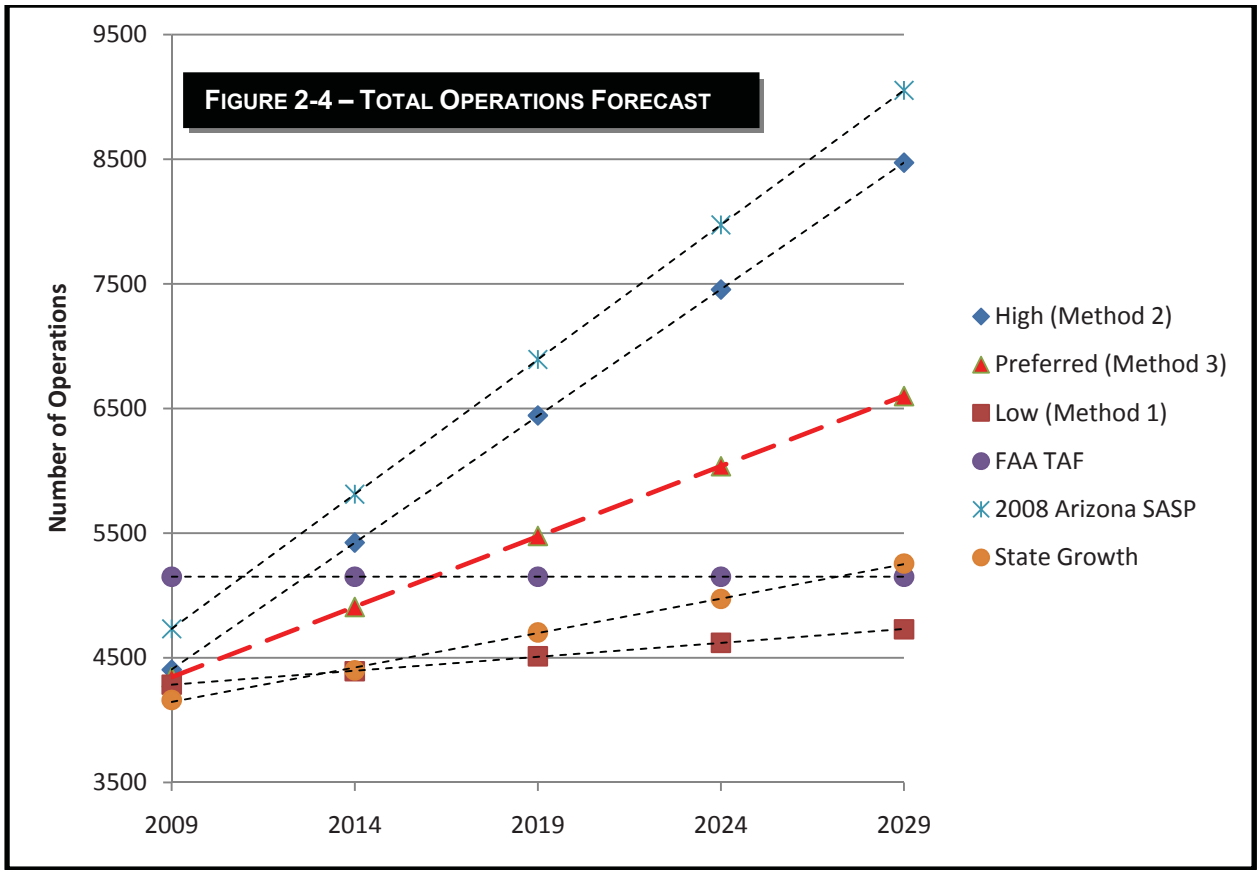
Year	Bisbee Operations[1]
2009	4,732
2014	5,812
2019	6,893
2024	7,973
2029	9,053

[1] Interpolated from the medium forecast

TABLE 2-13 FAA TERMINAL AREA FORECAST (TAF)

Year	Bisbee Based Aircraft	Bisbee Operations
2007[1]	42	5,150
2008[2]	42	5,150
2009	42	5,150
2014	42	5,150
2019	42	5,150
2024	42	5,150
2029	42	5,150

[1] Base Year; [2] Forecast data



2.12 PREFERRED FORECAST

All master planning forecasts represent a significant "cone of uncertainty" as the planning horizon lengthens and all forecasts will inevitably be wrong to some degree. It is the planner's responsibility to provide a forecast that is reasonable, that will guide development actions as the needs arises and will not be "so wrong" as to impair the airport's healthy future development. To that end, the preferred forecast model for this master plan is the average of the per capita income growth and the population growth. Table 2-14 shows the preferred forecast for Bisbee Municipal Airport.

TABLE 2-14 PREFERRED FORECAST

Year	Based Aircraft[1]	Average Annual Growth Rate	Operations	Average Annual Growth Rate
2008[1]	28	--	4,200	--
2009	30	7.15%	4,344	3.43%
2014	34	2.66%	4,908	2.60%
2019	37	1.76%	5,478	2.33%
2024	41	2.16%	6,037	2.04%
2029	45	1.95%	6,600	1.87%

[1] Base year

2.12.1 ITINERANT AND LOCAL OPERATIONS FORECAST

Local operations consist primarily of training and recreational flights in the area. The remaining itinerant flights primarily consist of personal transportation, business transportation and recreational flights to and from other airports. The percentage of local versus itinerant operations is expected to remain fairly constant over the 20 year planning period. Anticipated users whose operations would likely be considered local include ranchers, aerial observation and surveying, recreation, aerial firefighting and flight training. It was assumed that itinerant operations represent 80 percent of the total operations and local operations represent 20 percent of the total operations because most of the operations originate or terminate at another airport. This was determined based on a review of the comments in the visitor's log maintained by the airport manager. The preferred forecast for itinerant and local operations is shown on Table 2-15.

2.12.2 INSTRUMENT OPERATIONS FORECAST

According to the FAA TAF, 21 percent of the total aircraft operations in Arizona are instrument operations. This number is forecast to increase to 24 percent by 2025. Since virtually all commercial and business jet flights and most military aircraft flights are IFR, the number of instrument operations does not reflect the occurrence of instrument weather or the provision of instrument approaches at airports. At most general aviation airports with an instrument approach and no commercial service or military activity, instrument operations will comprise approximately 2.5 percent of total operations. The majority of general aviation operations are under VFR. Business transportation and air medivac/air ambulance are the most likely users of the instrument approaches at Bisbee Municipal Airport. Given most of the traffic at Bisbee Airport consists of light single-engine aircraft, a high volume of instrument operations are not expected. However, an increasing number of single-engine aircraft are being equipped for known-icing conditions and with approach certified GPS receivers; and most turboprops and VLJs are certified for known-icing. A future instrument approach at Bisbee airport would be expected to be used approximately 1.5 percent of the time. Table 2-15 shows the instrument operations forecast for Bisbee; however, given the low relative cost of a GPS approach it could prove beneficial for the air medevac flights.

TABLE 2-15 PREFERRED FORECAST OF AVIATION ACTIVITY

Year	Based Aircraft	Local Operations	Itinerant Operations	Total Operations	Instrument Operations
2008[(1)]	28	840	3,360	4,200	0
2009	30	868	3,476	4,344	0
2014	34	981	3,927	4,908	74
2019	37	1,095	4,383	5,478	83
2024	41	1,207	4,830	6,037	91
2029	45	1,320	5,280	6,600	100

(1) Base year

2.12.3 AVIATION ACTIVITY FORECAST BY AIRCRAFT TYPE

The preferred forecast by aircraft type is shown in Table 2-16. Local and itinerant operations are expected to be conducted by predominately single-engine aircraft operations with slightly increasing activity by light twins, turboprops and light jets including VLJs.

TABLE 2-16 DETAILED FORECASTS BY AIRCRAFT TYPE

		2009	2014	2019	2024	2029
Single Engine Aircraft (standard)		16	17	19	19	19
	Operations	2,230	2,466	2,711	2,950	3,177
Multi Engine Piston/Turbo-Prop Aircraft		0	1	1	1	2
	Operations	150	175	250	250	350
Turbo Jet Aircraft		0	0	0	0	0
	Operations	20	50	100	200	200
Rotorcraft (standard)		0	0	0	0	0
	Operations	20	50	50	75	75
Rotorcraft experimental)		1	1	1	1	2
	Operations	100	150	150	150	200
Experimental & Other		12	12	12	13	13
	Operations	1,884	2,017	2,217	2,412	2,598
Total Based		**30**	**34**	**37**	**41**	**45**
Annual Operations		**4,344**	**4,908**	**5,478**	**6,037**	**6,600**

2.13 AIRPORT SEASONAL USE DETERMINATION

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

Non-towered airports generally experience a substantially higher number of operations in summer months than off-season months. The average seasonal use trend for FAA towered airports from the 1979-1984 records (total aircraft operations handled by tower facilities nationally from FAA Statistical Handbook of Aviation) was used as a baseline for determining seasonal use trends. As discussed above, the seasonal fluctuation is more pronounced at non-towered airports than towered airports. The seasonal use trend for towered airports was adjusted to approximate seasonal use trends at non-towered airports. This is presented in Table 2-17 and in Figure 2-5.

TABLE 2-17 SEASONAL USE TREND

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

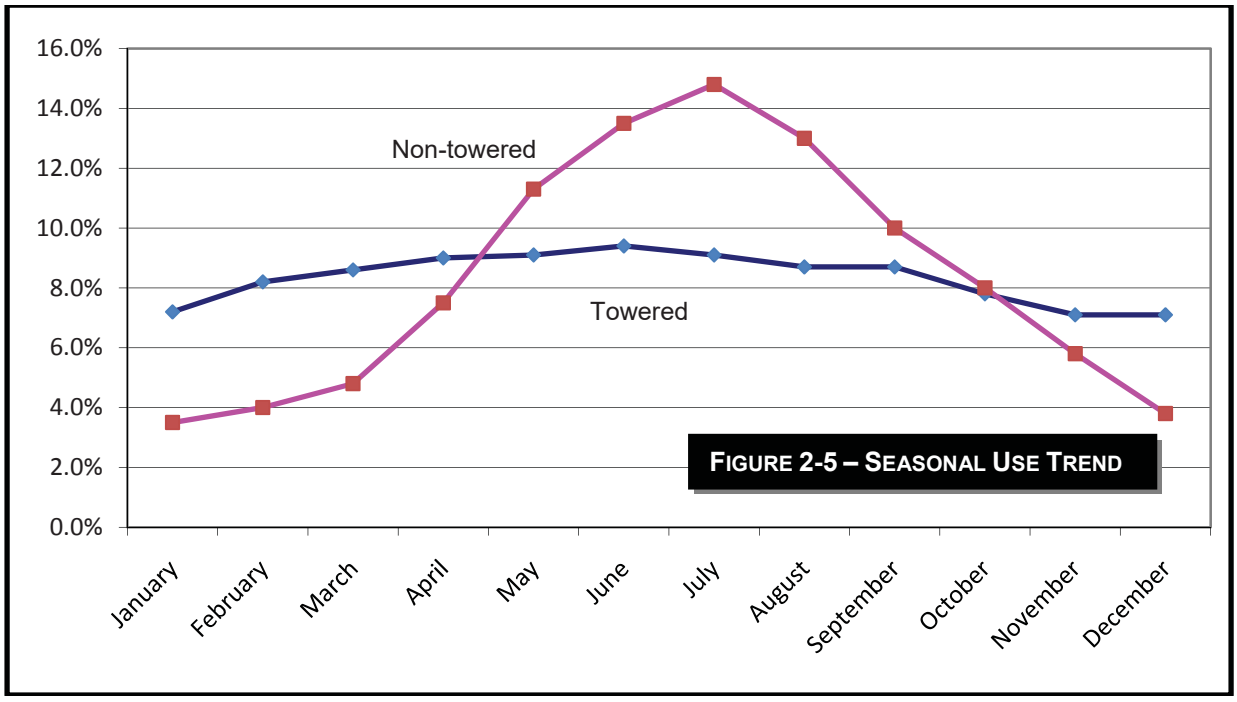


FIGURE 2-5 – SEASONAL USE TREND

2.13.1 HOURLY DEMAND AND PEAKING TENDENCIES

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

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

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

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

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

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

The Seasonal Use Trend Curve, as presented in Figure 2-5, was used as a tool to determine the peaking characteristics for the Bisbee Municipal Airport. Using the Seasonal Use information, a formula was derived which will calculate the average daily operations in a given month, based on the percentage of the total annual operations for that month, as determined by the curve. The formula is as follows:

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

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

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

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

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

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

The calculations were made for each month of each phase of the planning period. The results of the calculations are shown in Table 2-18. It is evident that the Design Day and Design Hour peak demand in the planning year occurs under VFR weather conditions in the month of July (highlighted in bold in each Table), with 28 daily operations and approximately 3.2 operations per hour in 2029.

TABLE 2-18 ESTIMATED HOURLY DEMAND/MONTH

Planning Year: 2014
Operations: 4,908

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	172	6	0.7
February	4.0	196	6	0.7
March	4.8	236	8	0.9
April	7.5	368	12	1.4
May	11.3	555	18	2.0
June	13.5	663	22	2.5
July	**14.8**	**726**	**24**	**2.7**
August	13.0	638	21	2.4
September	10.0	491	16	1.8
October	8.0	393	13	1.5
November	5.8	285	9	1.0
December	3.8	187	6	0.7

Planning Year: 2019
Operations: 5,478

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	192	6	0.7
February	4.0	219	7	0.8
March	4.8	263	9	1.0
April	7.5	411	14	1.6
May	11.3	619	20	2.3
June	13.5	740	24	2.7
July	**14.8**	**811**	**27**	**3.0**
August	13.0	712	23	2.6
September	10.0	548	18	2.0
October	8.0	438	14	1.6
November	5.8	318	10	1.1
December	3.8	208	7	0.8

Planning Year: 2024
Operations: 6,037

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	211	7	0.8
February	4.0	241	8	0.9
March	4.8	290	10	1.1
April	7.5	453	15	1.7
May	11.3	682	22	2.5
June	13.5	815	27	3.0
July	**14.8**	**893**	**29**	**3.3**
August	13.0	785	26	2.9
September	10.0	604	20	2.3
October	8.0	483	16	1.8
November	5.8	350	12	1.4
December	3.8	229	8	0.9

Planning Year: 2029
Operations: 6,600

Month	% Use	Operations Monthly	Operations Daily	Operations Hourly
January	3.5	231	8	0.9
February	4.0	264	9	1.0
March	4.8	317	10	1.1
April	7.5	495	16	1.8
May	11.3	746	25	2.8
June	13.5	891	29	3.3
July	**14.8**	**977**	**32**	**3.6**
August	13.0	858	28	3.2
September	10.0	660	22	2.5
October	8.0	528	17	1.9
November	5.8	383	13	1.5
December	3.8	251	8	0.9

2.14 FORECAST SUMMARY

Multiple forecasts were prepared for the Bisbee Municipal Airport to determine a probable range of future aircraft activity levels. Activity estimates were made for based aircraft operations and the ultimate fleet mix at the airport. A summary of the forecasts of aviation activity are provided in Table 2-19 and are provided in accordance with the FAA forecast format in Appendix B.

A review of the Master Plan forecast and TAF indicates that the Master Plan forecasts exceed the TAF operations by more than 10 percent. The TAF shows no growth for operations and the existing operations numbers shown on the TAF are incorrect due to expired data collected by the FAA. The projected growth of the community explains why the Master Plan preferred forecasts exceed the TAF by more than 10 percent.

TABLE 2-19 FORECAST SUMMARY

	Enplanements			Itinerant Operations					Local Operations					
Year	AC	COMM	TOTAL	AC	AT & COM	GA	MIL	TOTAL	GA	MIL	TOTAL	TOT OPS	INST OPS	BASED AC
2009	0	0	0	0	174	3,267	35	3,476	868	0	868	4,344	0	30
2014	0	0	0	0	197	3,690	40	3,927	981	0	981	4,908	74	34
2019	0	0	0	0	220	4,119	44	4,383	1,095	0	1,095	5,478	83	37
2024	0	0	0	0	241	4,540	49	4,830	1,207	0	1,207	6,037	91	41
2029	0	0	0	0	264	4,963	53	5,280	1,320	0	1,320	6,600	100	45

Chapter Three
Facility Requirements

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

3.1 INTRODUCTION

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

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

3.2 AIRPORT REFERENCE CODE

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

TABLE 3-1 AIRPORT REFERENCE CODE

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

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

AI

Primarily Single-Engine Propeller Aircraft, some light twins

Example Type: Cessna 172 Skyhawk

BI

Primarily Light Twin-Engine Propeller Aircraft

Example Type: Piper Navajo

BII

(<12,500 lbs)
Primarily Light Turboprops

Example Type: Beechcraft King Air

BII

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

Example Type: Cessna Citation II

A/BIII

Primarily large commuter-type aircraft

Example Type: De Havilland Dash 8

CI, DI

Primarily small and fast corporate jets

Example Type: Lear Jet 36

C/DII

Large corporate jets and regional-type commuter jets

Example Type: Gulfstream IV

C/DIII

Commercial airliners (approx. 100-200 seats)

Example Type: Boeing 737

C/DIV

Large commercial airliners (approx. 200-350 seats)

Example Type: Boeing 767

DV

Jumbo commercial airliners (approx. 350+ seats)

Example Type: Boeing 747

FIGURE 3-1 AIRPORT REFERENCE CODE (ARC)

To ensure that all airport facilities are designed to accommodate the expected air traffic and to meet FAA criteria, the specific ARC for the airport must be determined. In order to designate a specific ARC for an airport, aircraft in that ARC should perform a minimum of 500 annual itinerant operations. The majority of aircraft currently using the Bisbee Municipal Airport have an ARC of A-I and B-I. Airport users and fleet mix were discussed in Chapter 2. Examples of aircraft with an ARC of A-I and B-I are listed in Table 3-2. Examples of aircraft with an ARC of A-II and B-II are listed in Table 3-3. Aircraft with an ARC of A-I through B-II are expected to utilize the airport in the short, medium and long-term time frames.

The previous Airport Layout Plan for Bisbee Municipal Airport indicated an existing ARC of B-II. Based on the results of the inventory and discussions with the airport sponsor and FAA the current ARC is B-I. The plan should be developed to meet the design standards for ARC B-I with a 30,000 pounds pavement strength.

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

Aircraft	Approach Speed (knots)	Wingspan (feet)	Tail Height (feet)	Max T.O. Weight (pounds)
Beech Baron 58P	101	37.8	9.1	6,200 (small)
Beech Bonanza V35B	70	33.5	6.6	3,400 (small)
Beech King Air B100	111	45.9	15.3	11,799 (small)
Cessna 150	55	33.3	8.0	1,670 (small)
Cessna 172	60	36.0	9.8	2,200 (small)
Cessna 177	64	35.5	8.5	2,500 (small)
Cessna 182	64	36.0	9.2	2,950 (small)
Cessna 340	92	38.1	12.2	5,990 (small)
Cessna 414	94	44.1	11.5	6,750 (small)
Cessna Citation I	108	47.1	14.3	11,850 (small)
Gates Learjet 28/29	120	42.2	12.3	15,000
Mitsubishi MU-2	119	39.1	13.8	10,800 (small)
Piper Archer II	86	35.0	7.4	2,500 (small)
Piper Cheyenne	110	47.6	17.0	12,050 (small)
Rockwell Sabre 40	120	44.4	16.0	18,650
Swearingen Merlin	105	46.3	16.7	12,500
Raytheon Beechjet	105	43.5	13.9	16,100
Eclipse 500 Jet	90	37.9	13.5	5,920 (small)
Cessna Citation Mustang	98	43.2	13.5	8,645 (small)

Source: FAA AC 150/5300-13, Airport Design and Aircraft Manufacturer's Data

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

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

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

3.3 AIRSIDE FACILITY REQUIREMENTS

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

3.3.1 RUNWAY REQUIREMENTS

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

Furthermore, the FAA has developed a computer software program entitled "Airport Design." The program provides the user with recommended runway lengths and other facilities on an airport according to FAA design standards. The FAA Airport Design Program was used to calculate the ASV for a single runway airport with the forecasted operation levels determined in Chapter 2. Annual Service Volume for the runway configuration is 230,000 operations per year. Under these conditions, the existing runway facilities will adequately meet the demand within the time frame of this study.

Runway Length: FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design, provides guidance for determining runway length requirements. The FAA Airport Design Program was used to calculate recommended runway length requirements, the information required to execute the program for recommended runway lengths, includes airfield elevation, mean maximum temperature of the hottest month and the effective gradient for the runway. The input data for the Bisbee Municipal Airport is listed below:

Field Elevation: 4,807.6 feet MSL
Mean Maximum Temperature of Hottest Month: 90˚ F (July)
Effective Gradient: 75 feet

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

With this data, the Airport Design program provides several runway length recommendations for both small and large aircraft according to varying percentages of aircraft fleet and associated takeoff weights. A summary of the data provided by the program is listed in Table 3-4.

TABLE 3-4 RECOMMENDED RUNWAY LENGTH

	Runway Length
Existing Runway Length	**5,900'**
Small Aircraft (<12,500 lbs.)	
Less than 10 passenger seats	
75 percent of these small airplanes	4,500'
95 percent of these small airplanes	5,980'
100 percent of these small airplanes	6,190'
10 or more passenger seats	6,190'
Large Aircraft (>12,500 lbs., <60,000 lbs.)	
75 percent of these planes at 60 percent useful load	7,320'
75 percent of these planes at 90 percent useful load	9,350'
100 percent of these planes at 60 percent useful load	10,870'
100 percent of these planes at 90 percent useful load	11,750'

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

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

The existing runway length of 5,900 feet accommodates nearly 95 percent of the small aircraft fleet. A 300 foot extension to a length of 6,200 feet would accommodate 100 percent of these aircraft. A reasonable range of heavier aircraft could be accommodated by a further extension to a length between 7,320 and 9,350 feet. The feasibility of achieving a longer runway length will be evaluated in the next Chapter.

Runway Strength and Width: Runway strength requirements are normally based upon the design aircraft that may be expected to use the airport on a regular basis. The existing strength of Runway 17/35 is 30,000 pounds. The existing pavement strength is considered adequate for the planning period.

FAA design standards for runways serving aircraft having an ARC of B-II require a minimum runway width of 75 feet. The existing Runway 17/35 meets this standard. It is further recommended that the airport maintain the 75 foot runway width in the long-term to enhance the safety and utility of operations in high crosswind conditions.

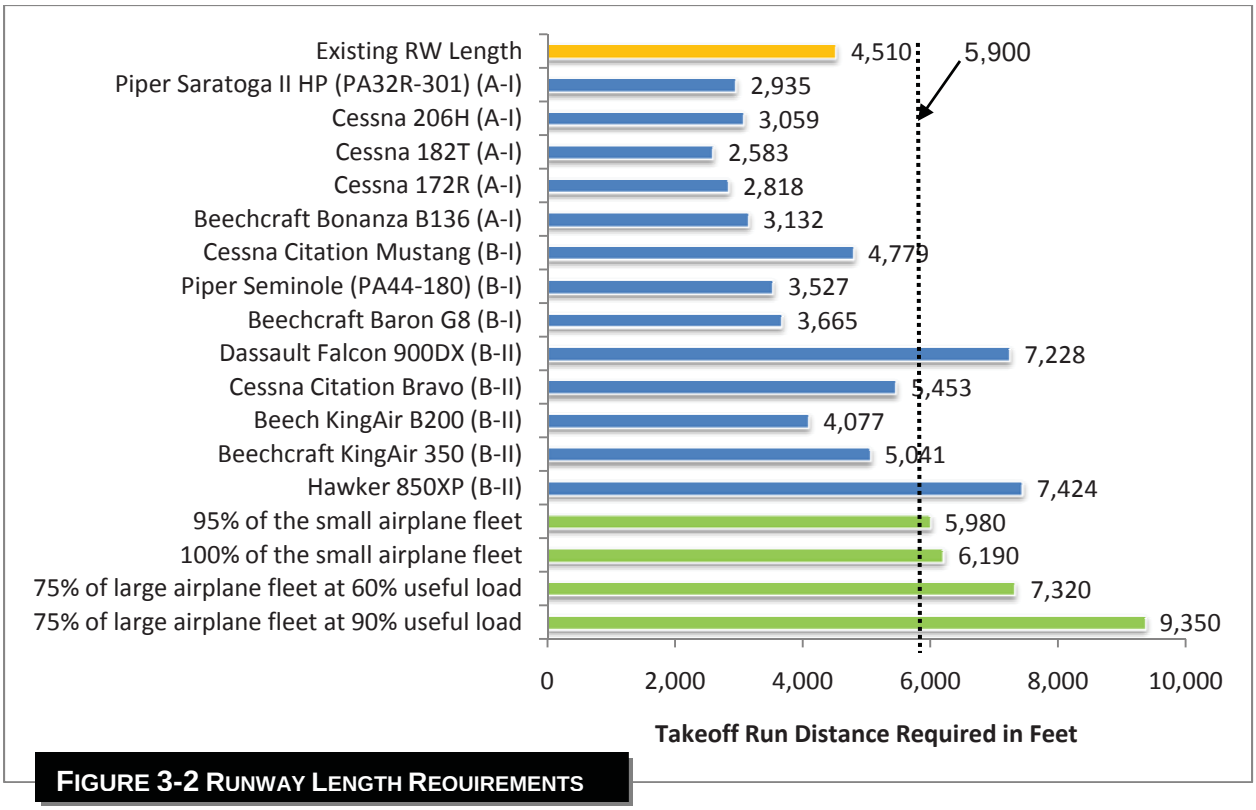


FIGURE 3-2 RUNWAY LENGTH REQUIREMENTS

3.3.2 CROSSWIND RUNWAY REQUIREMENTS

The FAA recommends that a runway's orientation provide at least 95 percent crosswind coverage. If the wind coverage of the runway does not meet this 95 percent minimum for the appropriate ARC, then a crosswind runway should be considered. Crosswind coverage for Runway 17/35 is 91.80 percent for a 10.5 knot crosswind and 95.66 percent for a 13.0 knot crosswind; therefore a crosswind runway is justified for A-I and B-I aircraft operations. Runway 2/20 provides 94.14 percent wind coverage at 10.5 knots and 95.66 percent at 13 knots. The combined wind coverage of 95.63 percent at 10.5 knots and 98.20 percent at 13 knots. If financially and physically feasible a runway length of 5,980 feet and a width of 60 feet is recommended.

3.3.3 RUNWAY INCURSIONS

There are currently no runway incursion mitigation measures in place at the Bisbee Municipal Airport. There are currently no runway hold position signs. It is recommended that the airport install lighted holding position signs to increase awareness of runways.

3.3.4 TAXIWAY REQUIREMENTS

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

According to FAA Advisory Circular 150/5300-13, Airport Design, the required runway to taxiway centerline separation for a runway with an ARC of B-I is 225 feet and B-II is 240 feet. There is

currently a full length parallel Taxiway A for Runway 17/35. Taxiway A is currently 35 feet wide and located 175 feet from runway centerline to taxiway centerline. Alternatives for meeting the required runway to taxiway separation will be evaluated in the next Chapter. In general the condition of Taxiway A is fair to poor with the block cracking cracks and resulting in certain areas. Block cracking is interconnected cracks forming large block. Block may range from one foot to approximately 10 feet. The closer spacing indicates more advanced aging caused by shrinking and hardening of the asphalt over time. Surface treatments applied during the early stages to reduce weathering of the asphalt caused by exposure to the sun, moisture and freezing help to preserve the pavement. The south end of Taxiway is in poor condition.

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

It is recommended the runway-taxiway separation be increased to 225 feet (to meet B-I standards) or 240 feet (to meet B-II standards). Alternatives for meeting runway-taxiway separation standards are evaluated in the next chapter.

3.3.5 AIRCRAFT APRON

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

Apron Requirements: Generally speaking, an apron tiedown area should allow approximately 360 square yards per transient aircraft and 300 square yards per based aircraft. This square yardage per aircraft provides adequate space for tiedowns, circulation and fuel truck movement. Bisbee Municipal Airport should plan for additional apron expansion and taxilane expansion to hangar development areas.

Future apron space should be planned for both transient and based aircraft. The existing aircraft parking apron is considered adequate for the short and medium term. An apron expansion is recommended in the long term to accommodate based and transient aircraft. Options for apron expansion are included in the development alternatives in Chapter 4.

Tiedown Requirements: Aircraft tiedowns should be provided for those small and medium sized aircraft utilizing the airport. These aircraft risk being damaged or may cause damage or injury in sudden wind gusts if not properly secured. A number of tiedowns are required to accommodate the peak daily transient aircraft and overnight transient aircraft, plus based aircraft that are not hangared. The current tiedown layout is based on Group I taxilane OFAs. The future apron layout should be planned to provide an area for Group II taxilane OFAs. Typically large aircraft, including business jets, are not tied down and can usually occupy multiple tiedown spaces.

Future apron square yardage should be planned for both transient and based aircraft. An apron expansion is recommended to accommodate based and transient aircraft including helicopters.

3.3.6 NAVIGATIONAL AIDS

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

There are no existing NAVAIDs in working conditions at the Bisbee Municipal Airport and no ground based navigational aids are recommended.

3.3.7 APPROACH PROCEDURES

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

A future GPS approach would increase the dimensions of several imaginary surfaces surrounding the airport including Federal Aviation Regulation (FAR) Part 77 Airspace surfaces. A future GPS non-precision instrument approach with 1-mile visibility minimums to the Bisbee Municipal Airport is recommended. This will require an obstruction survey and modifications to the runway marking and some lighting.

3.3.8 AIRFIELD LIGHTING, SIGNAGE, MARKING AND VISUAL AIDS

Airport lighting enhances safety during periods of inclement weather and nighttime operations by providing visual guidance to pilots in the air and on the ground. Lighting and visual aids can consist of a variety of equipment or a combination thereof as described in Chapter 1. The airport's existing inventory of lighting and visual aids includes a rotating airport beacon, medium intensity runway lights (MIRLs) which are in good condition, visual runway markings and a segmented circle and PAPIs. The installation of lighted hold position and taxiway signs is recommended. It is also recommended to replace the damaged PAPI's at Runway 17. The lighting of the taxiways with medium intensity taxiway lights (MITLs) and the installation of reflectors on the taxilanes is recommended. It is also recommended to upgrade the current airport beacon since it has not been upgraded since its installation in 1980.

Runway 17/35 is currently marked with visual runway markings on both ends. Runway markings are in good condition. If an instrument approach is developed for the airport the runway end markings would need to be changed to non-precision markings.

3.4 LANDSIDE FACILITY REQUIREMENTS

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

3.4.1 TERMINAL BUILDING

A terminal building at any airport offers several amenities to passengers, local and transient pilots and airport management. Terminal buildings (often called pilot lounges at general aviation airports) most often house public restrooms, public telephones, a pilot's lounge and information

regarding airport services. The terminal building at Bisbee includes a lobby area, restrooms, telephone, a flight planning room and airport management office. The terminal building is in fair condition and provides adequate space and amenities to accommodate existing demand. The airport sponsor has the desire to expand the terminal in the future to include other services such as a restaurant. It is also recommended in the future that the terminal building be remodeled to include access to weather through a computer which is considered essential at general aviation terminal buildings.

3.4.2 HANGAR FACILITIES

Hangars are typically classified as either T-hangars, (small multi-unit storage complexes that usually accommodate one single engine aircraft in each unit) or conventional box hangars, (small to very large units), which accommodate a variety of aircraft types or corporate fleets. The number of aircraft that each conventional hangar can hold varies according to the manufacturer and the specifications of the airport owner or operators.

Based Aircraft Hangar Requirements: The facility requirements for based aircraft typically determine the number of tiedown locations, number of shaded spaces, number of T-hangars and number of conventional type hangars required for the future. Development areas will be identified on the ALP for a mix of T-hangars, box hangars and larger corporate style hangars.

Transient Aircraft Hangar Requirements: Transient single-engine aircraft operators generally do not require aircraft storage facilities unless there is inclement weather expected (such as hail or snow) or if the operator is planning an extended stay. Some higher performance single-engine and multi-engine aircraft operators may desire overnight aircraft storage or a heated hangar in the winter. There is currently no dedicated transient aircraft hangar space at the airport. It is recommended that a future hangar be provided for transient aircraft.

General: The airport sponsor should consider providing long-term land leases to interested parties for the construction of aircraft storage hangars. Allowing the tenant to retain ownership of the hangar while leasing the ground reduces capital outlay requirements for the City of Bisbee. Tenant ownership also provides motivation for the tenant to maintain the hangar in good condition to maximize resale value at the end of the lease period. Previous legislation has made aircraft hangars an eligible cost under the Airport Improvement Program (AIP). While this creates an opportunity for airport sponsors willing to build hangars to meet existing demand, hangars are considered a very low priority by the FAA. Standard rates and ground lease package has been established by the City of Bisbee.

It is also recommended the development of a through-the-fence agreement for the existing hangars not located on existing airport property to ensure that those outside airport properties do not have an unfair economic advantage.

3.4.3 AVIATION FUEL FACILITIES

It is recommended that a self-serve credit card reader fueling system be installed to provide 24-hour fuel access at the airport. For the ultimate development a 10,000 gallon storage tank and a fuel truck for Jet-A is also recommended.

3.4.4 AIRPORT ACCESS AND VEHICLE PARKING

Currently there are approximately 12 automobile parking spaces available adjacent to the apron area this is considered adequate for the short-term time frame, approximately 20 automobile parking spaces should be made available for the medium and long-term time frames to accommodate airport users and visitors. A secure long-term vehicle parking area has been discussed.

3.4.5 FENCING

The Bisbee Municipal Airport is currently fenced with 4-strand barbed wire fencing that follows the existing airport property line. The terminal area is surrounded by chain link fence with a manual vehicle access gate. The existing fencing is considered adequate for the planning period, however, an electric vehicle access gate with a keypad entry controller would provide convenient access and enhanced security.

3.4.6 AIRPORT RESCUE AND FIRE FIGHTING (ARFF) STORAGE BUILDING

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

3.4.7 GROUNDS MAINTENANCE EQUIPMENT AND STORAGE BUILDING

Bisbee Airport Management is responsible for grounds maintenance and snow removal at the airport. The airport requires only a minimal amount of snow removal equipment due to the minimal snow conditions at the airport. Multi-function grounds maintenance equipment capable of snow removal, mowing and sweeping is recommended. This type of equipment helps to maintain the safety areas as well as remove objects from the apron, taxiway and runway to minimize foreign object damage (FOD). A storage building to house all the maintenance equipment and its accessories is also recommended.

3.5 UTILITIES

The existing utilities are considered adequate for the planning period with the exception of the existing potable water systems. Currently water is supplied by the Naco Water Company and is fed to an onsite holding tank, then pumped from the tank to serve the airport's terminal building. It is recommended that an upgraded potable water system be installed to accommodate existing and future demand in the short term.

3.6 WEATHER REPORTING SYSTEMS

Local weather information is currently not available at the airport. The closest automated weather reporting system is located at Bisbee Douglas International Airport which often varies from conditions at Bisbee Airport. The installation of an Automated Weather Observation System (AWOS) is recommended. AWOS uses various sensors, a voice synthesizer and a radio transmitter to provide real-time weather data. There are four types of AWOS. An AWOS-A only reports altimeter setting while an AWOS-1 also measures and reports wind speed, direction, gusts, temperature and dew point. AWOS-2 provides visibility information in addition to everything reported by an AWOS-1. The most capable system, the AWOS-3 also includes cloud and ceiling data. The AWOS transmits over a VHF frequency or the voice portion of a navaid. The transmission can be received within 25 nautical miles of the site or above 3,000 feet above ground level (AGL). The frequency for the AWOS is published on Aeronautical charts as well as in the airport facilities directory. The AWOS should be connected to the telephone service allowing pilots to check current weather conditions at the airport.

It is recommended that when Bisbee Municipal Airport obtains an AWOS that it be connected to the National Airspace Data Interchange Network (NADIN). This will allow national dissemination of the AWOS observations and allow the National Oceanic and Atmospheric Administration (NOAA) to digitally record the hourly observations and disseminate real-time weather information to Flight Service Stations and other sources.

3.7 AIRSPACE REQUIREMENTS

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

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

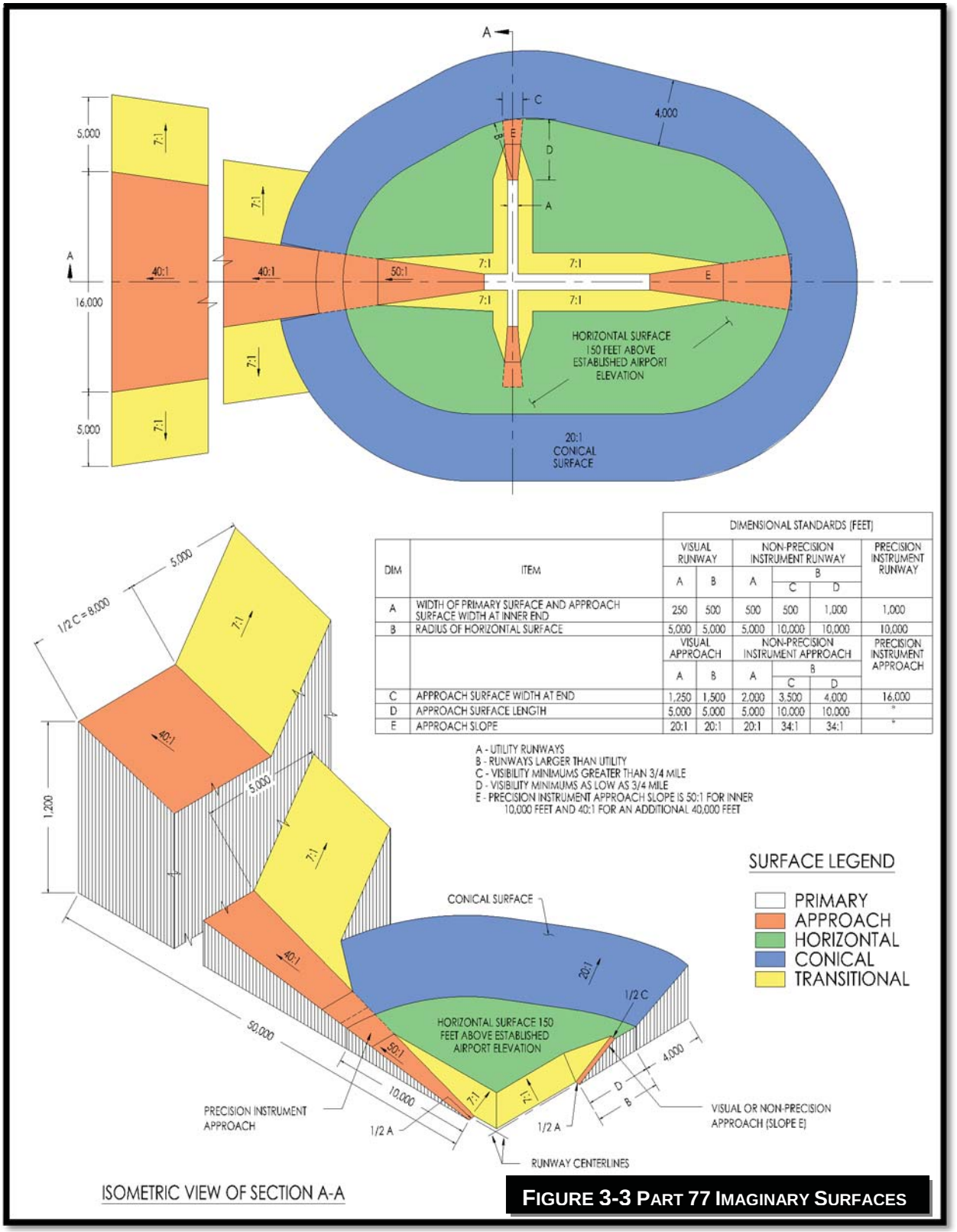
The current Primary Surface width for Runway 17/35 is 500 feet. This would remain 500 feet if the airport develops a non-precision instrument approach. Primary and transitional surface penetrations are often acceptable provided they are marked and lighted and the OFZ remains clear. however, the OFZ would remain clear.

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

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

The Horizontal Surface is considered necessary for the safe and efficient operation of aircraft in the vicinity of an airport. As specified in FAR Part 77, the Horizontal Surface is a horizontal plane 150 feet above the established airport elevation. The airport elevation is defined as the highest point of an airport's useable runways, measured in feet above mean sea level. The perimeter is constructed by arcs of specified radius from the center of each end of the Primary Surface of each runway. The radius of each arc is 5,000 feet for runways designated as utility or visual and 10,000 feet for all other runways.

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



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

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

SURFACE LEGEND
PRIMARY
APPROACH
HORIZONTAL
CONICAL
TRANSITIONAL

FIGURE 3-3 PART 77 IMAGINARY SURFACES

3.8 LAND USE COMPATIBILITY AND CONTROL

3.8.1 AIRPORT PROPERTY

The existing airport property line encompasses approximately 143 acres according to the airport legal description. Land located within the Runway Protection Zones should be controlled either fee simple or through avigation easements in the future. Should the runway(s) be expanded or extended adequate land will need to be acquired to accommodate the aeronautical operations areas and runway protection zones.

3.8.2 COMPATIBILITY WITH STATE/REGIONAL PLANS

The Master Plan for the Bisbee Municipal Airport should conform to all additional state and regional transportation plans. There is a brief discussion of the Bisbee Municipal Airport within the 2004 City of Bisbee Comprehensive Plan.

3.8.3 HEIGHT RESTRICTION ZONING

Development around airports can pose certain hazards to air navigation if appropriate steps are not taken to ensure that buildings and other structures do not penetrate the FAR Part 77 Airspace Surfaces (described in the following section). The FAA, therefore, recommends that all Airport Sponsors implement height restrictions in the vicinity of the airport to protect these Part 77 Surfaces. The City does not have an existing airport overlay zone for height restrictions surrounding the airport.

3.8.4 COMPATIBLE LAND USE

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

A recommended Compatible Land Use and Height Restriction Plan is included in the Appendix of this report.

3.9 SUMMARY OF FACILITY REQUIREMENTS

TABLE 3-5 SUMMARY OF AIRPORT FACILITY REQUIREMENTS

Facility		Existing	Future
Runways			
17/35	Length (feet)	5,900’	6,190’ or 7,320 if feasible
	Width (feet)	75’	75’
	Strength (pounds)	12,500 (SWG)	30,000 (SWG)
Marking	Runway 17	Visual	Non-Precision
	Runway 35	Visual	Non-Precision
2/20	Length	2,700’	5,980’ (or as long as practicable)
	Width	120’	60’
	Strength (pounds)	Dirt	12,500 (SWG)
Markings	Runway 2	None	Visual
	Runway 20	None	Visual
Taxiways			
	Parallel RW 17/35	Yes	Yes
	Width (feet)	35’	35’ (25’ if B-I)
	Strength (pounds)	12,500 (SWG)	30,000 (SWG)
Apron			
	Tie Downs	25	*
NAVAID			
	Approaches	Visual	GPS-NPI
	Minimums	Visual	1-mile
Lighting & Visual Aids			
	Signs	None	Lighted
	Runway Edge	MIRL	MIRL
	Taxiway/Apron Edge	None	MITL
	Threshold Lights	Yes	Yes
	REILs	Yes	Yes
	Approach Slope Indicator (PAPI)	PAPI-2	PAPI-2
	Segmented Circle/Wind Cone	Yes	Yes
	Rotating Beacon	Yes	Yes
	Approach Lighting System	No	No
Access & Parking			
	Automobile	12	20*
Hangar Facilities			
	T-Shades (City Owned)	9 units	*
	Box Hangars (City Owned)	2	*
	T-Hangars (City Owned) Box Hangars (Private) T-Hangars (Private-TTF)	0 4 24	*
Fuel Storage			
	100 LL (gallons)	6,000 Tank	10,000 gallon tank
	Jet-A (gallons)	None	10,000 gallon tank; fuel truck
	Self-Serve	No	Yes
Other			
	AWOS	No	Yes (AWOS III)
	Unicom	Yes	Yes
	Terminal Building	Yes	Yes

**As required based on demand*

3.9.1 SUMMARY OF DESIGN STANDARDS

Table 3-6 summarizes the FAA design standards (described in Chapter 1) for the recommended airport facilities.

TABLE 3-6 SUMMARY OF DIMENSIONAL CRITERIA RUNWAY 17/35

DESIGN CRITERIA	EXISTING	FUTURE
AIRPORT REFERENCE CODE	B-I	B-I
Approach Type	Visual >Utility	NPI >Utility, 1-mile visibility minimums
RUNWAY CENTERLINE TO PARALLEL TAXIWAY CENTERLINE	225' (175' Actual)	225'
RUNWAY CENTERLINE TO EDGE OF AIRCRAFT PARKING APRON	200' (323' Actual)	200'
RUNWAY WIDTH	60' (75' Actual)	60' (75' Recommended)
RUNWAY SHOULDER WIDTH	10'	10'
RUNWAY SAFETY AREA WIDTH	120'	120'
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END	240'	240'
RUNWAY OBJECT FREE AREA WIDTH	400''	400''
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END	240''	240''
RUNWAY OBSTACLE FREE ZONE WIDTH	400'	400'
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200'	200'
RUNWAY PROTECTION ZONE	1,000'x500'x700'	1,000'x500'x700'
TAXIWAY WIDTH	25' (35' Actual)	25'
TAXIWAY SAFETY AREA WIDTH	49'	49'
TAXIWAY OBJECT FREE AREA WIDTH	89'	89'
TAXILANE OBJECT FREE AREA WIDTH	79'	79'
RUNWAY CENTERLINE TO AIRCRAFT HOLD LINES	200' (125' Actual)	200'
AIRSPACE SURFACES (PART 77)		
PRIMARY SURFACE WIDTH	250'	500'
PRIMARY SURFACE LENGTH BEYOND RUNWAY ENDS	200'	200'
APPROACH SURFACE DIMENSIONS RW 17	250'x1,250'x5,000'	500'x3,500'x10,000'*
APPROACH SURFACE DIMENSIONS RW 35	250'x1,250'x5,000'	500'x1,500'x5,000'
APPROACH SURFACE SLOPE RW 17	20:1	20:1
APPROACH SURFACE SLOPE RW 35	20:1	34:1*
TRANSITIONAL SURFACE SLOPE	7:1	7:1
HORIZONTAL SURFACE RADIUS FROM RUNWAY	5,000'	10,000'
CONICAL SURFACE WIDTH	4,000'	4,000'

* Depending on obstruction and approach analysis

TABLE 3-7 SUMMARY OF DIMENSIONAL CRITERIA RUNWAY 2/20

DESIGN CRITERIA	EXISTING	FUTURE
AIRPORT REFERENCE CODE	A-I (SMALL)	A-I (SMALL)
Approach Type	Visual >Utility	Visual ->Utility
RUNWAY CENTERLINE TO PARALLEL TAXIWAY CENTERLINE	150’	150’
RUNWAY CENTERLINE TO EDGE OF AIRCRAFT PARKING APRON	125’	125’
RUNWAY WIDTH	60’ (200’ Actual)	60’
RUNWAY SHOULDER WIDTH	10’	10’
RUNWAY SAFETY AREA WIDTH	120’	120’
RUNWAY SAFETY AREA LENGTH BEYOND RUNWAY END	240’	240’
RUNWAY OBJECT FREE AREA WIDTH	250’	250’
RUNWAY OBJECT FREE AREA LENGTH BEYOND RUNWAY END	240’	240’
RUNWAY OBSTACLE FREE ZONE WIDTH	250’	250’
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200’	200’
RUNWAY PROTECTION ZONE	1,000’x250’x450’	1,000’x250’x450’
TAXIWAY WIDTH	25’	25’
TAXIWAY SAFETY AREA WIDTH	49’	49’
TAXIWAY OBJECT FREE AREA WIDTH	89	89
TAXILANE OBJECT FREE AREA WIDTH	79	79
RUNWAY CENTERLINE TO AIRCRAFT HOLD LINES	125’	125’
AIRSPACE SURFACES (PART 77)		
PRIMARY SURFACE WIDTH	250’	250’
PRIMARY SURFACE LENGTH BEYOND RUNWAY ENDS	200’	200’
APPROACH SURFACE DIMENSIONS RW 2	250’x1,250’x5,000’	250’x1,250’x5,000’
APPROACH SURFACE DIMENSIONS RW 20	250’x1,250’x5,000’	250’x1,250’x5,000’
APPROACH SURFACE SLOPE RW 2	20:1	20:1
APPROACH SURFACE SLOPE RW 30	20:1	20:1
TRANSITIONAL SURFACE SLOPE	7:1	7:1
HORIZONTAL SURFACE RADIUS FROM RUNWAY	5,000’	5,000’
CONICAL SURFACE WIDTH	4,000’	4,000’

* Depending on obstruction and approach analysis

Chapter Four
Development Alternatives

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

CHAPTER FOUR – DEVELOPMENT ALTERNATIVES

4.1 INTRODUCTION

Airports have a wide variety of development options, so an organized approach to identifying and evaluating development alternatives is essential for effective planning. The purpose of this Chapter is to identify and evaluate various alternatives for providing the facilities identified in the facility requirements Chapter for the 20-year planning horizon. While there are theoretically a wide range of options and variations for each aspect of airport development, this study will only address those alternatives that reasonably meet demand and community objectives for airport development at the lowest reasonable financial and environmental costs, while not constraining future development beyond the 20-year planning horizon. Primary consideration will be given to issues of operational safety, airfield standards, efficiency of aeronautical operations and meeting the identified aeronautical demand.

For some airport elements, one alternative may be simply do nothing, while for other elements various alternatives that satisfy the facility requirements may exist. Usually, the selection of a favored project can result from a straightforward and logical evaluation of the options at hand. The discussion of facility requirements presented in this report provides the basis for the airport development concepts described in this section. The improvements evaluated in this Chapter are developed from an analysis of projected needs. Though the needs were determined by the best methodology available, it should not be assumed that future trends will not change these needs.

The following discussion evaluates airside and landside development alternatives that meet B-I and/or B-II ARC and provide for the operational demands of existing and future airport users.

4.2 ALTERNATIVE EVALUATION OBJECTIVES

The following objectives discussed in FAA AC 150/5070-6B, generally apply to the evaluation of master plan development alternatives; and serve the planner, airport owner and community well:

- Conforms to best practices for safety and security.
- Conforms to the intent of FAA and other appropriate design standards.
- Satisfies user needs.
- Is technically and financially feasible.
- Allows for forecast growth throughout the planning period.
- Provides for growth beyond the planning horizon.
- Provides for the “highest and best” land use on and off airport.
- Provides balance between development elements.
- Provides flexibility to adjust to unforeseen changes.
- Conforms to the airport owner’s strategic vision.
- Conforms to relevant local, regional and state transportation plans.
- Is socially and politically feasible.

4.3 ALTERNATIVES EVALUATED

Table 4-1 summarizes the alternatives evaluated in this chapter.

TABLE 4-1 ALTERNATIVES EVALUATED

ALTERNATIVE		OPTION	ARC	DIMENSIONAL CHARACTERISTICS	WIND COVERAGE	FIGURE
1	No action		B-I (small)	Runway centerline to taxiway centerline: 175 feet. Taxiway width: 25 feet. Taxiway object free area width: 89 feet	92.5 %	4-1
2	Relocate Taxiway A, Pave new crosswind runway	2A	B-I	Runway centerline to taxiway centerline: 225 feet. Taxiway width: 25 feet. Taxiway object free area width: 89 feet.	95.04%	4-2
		2B	B-II	Runway centerline to taxiway centerline: 240 feet. Taxiway width: 35 feet. Taxiway object free area width (TOFA): 131 feet. Land acquisition required to satisfy TOFA requirements.	95.04%	
3	Relocate Runway 17/35, Pave new crosswind runway	3A	B-I	Runway centerline to taxiway centerline: 225 feet. Taxiway object free area width: 89 feet. Runway width: 60 feet.	95.04%	4-4
		3B	B-II	Runway centerline to taxiway centerline: 240 feet. Increase Taxiway A width to 35 feet. Taxiway object free area width: 131 feet. Runway width: 75 feet	95.04%	
4	New Runway 4/22 East Side	4A	B-I	Runway width: 60 feet. Bypass taxiway centerline to runway centerline 240 feet	95.04%	4-5
		4B	B-II	Runway width: 75 feet. Bypass taxiway centerline to runway centerline 240 feet.	95.04%	
5	New Runway 10/28 West Side	5A	B-I	Runway width: 60 feet. Bypass taxiway centerline to runway centerline 240 feet.	99.16%	4-6
		5B	B-II	Runway width: 75 feet. Bypass taxiway centerline to runway centerline 240 feet.	99.16%	

4.4 AIRSIDE DEVELOPMENT CONFIGURATION

Airside facilities are the initial focus of alternative development and typically presented first because they occupy the majority of airport property, have strict geometric layout standards and are central to performing the airport's aeronautical function. In this study, airside alternatives will consider runways, taxiways and aircraft operational areas. Runway alternatives will focus mostly on maximizing wind coverage and meeting ARC design standards.

4.4.1 ALTERNATIVE 1: MAINTAIN THE AIRPORT IN ITS CURRENT CONFIGURATION

Retain and rehabilitate as needed Runway 17/35 and Taxiway A in its present configuration and strength. Retain and rehabilitate as needed Runway 2/20 in its present configuration to allow operations of small aircraft to operate during high crosswind conditions.

This alternative would also entail standard maintenance of the runways such as the application of fog and slurry seals as well as, repainting the runway markings. This would also include the reconstruction of the existing pavements at the end of their useful life.

TABLE 4-2 ALTERNATIVE 1 CROSSWIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT AND ARC		CONDITION
		10.5 KNOTS A-I AND B-I	13 KNOTS A-II AND B-II	
Runway	17/35	88.40%	92.65%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	--	
Combined		92.51%		
Runway	17/35	85.21%	90.24%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	--	
Combined		88.61%		

Source: National Climatic Data Center

ADVANTAGES

- ARC A-I and B-I (small) design standards would be satisfied.
- No new capital investment required.
- This runway configuration meets the FAA design standards for A-I and B-I (small) aircraft, except for crosswind coverage.
- Runway rehabilitation and preventive maintenance would substantially reduce the need for expensive repairs in the future.
- No environmental impacts.

DISADVANTAGES

- The required combined crosswind component coverage for the current ARC (B-I) is not satisfied (see Table 1-15).
- Constrains the airport from meeting B-II design standards in the future.
- Does not provide the FAA recommended 95 percent wind coverage.

4.4.2 ALTERNATIVE 2: RELOCATE TAXIWAY A

In this alternative Taxiway A would be relocated to 225 feet west of Runway 17/35 centerline to satisfy the runway centerline to taxiway centerline of ARC B-I or to 240 feet to satisfy the requirements of ARC B-II. Taxiway A would be relocated at the end of the useful life of the pavement. Figure 4-3 shows in detail the possible impact that the taxiway relocation would have on the existing landside development. The primary difference in cost is the taxiway in Alternative 2A would be constructed 25 feet wide (B-I standard width) and 35 feet wide (B-II standard width) in Alternative 2B.

Alternative 2 would also include increasing the length of Runway 17/35 from 5,900 feet to 6,190 feet to accommodate existing and future users.

As shown in Table 4-4, the current airside configuration does not meet the recommended 95 percent wind coverage. An additional paved crosswind runway with a true bearing of 49 degrees (Runway 4/22) would be added to meet the recommended 95 percent wind coverage at 10.5 knots. The existing dirt Runway 2/20 would be retained to accommodate users desiring to operate off the unimproved surface.

TABLE 4-3 ALTERNATIVE 2 CROSSWIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT AND ARC		CONDITION
		10.5 KNOTS A-I AND B-I	13 KNOTS A-II AND B-II	
Runway	17/35	88.40%	92.65%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	--	
	4/22	91.30%		
Combined		95.04%		
Runway	17/35	85.21%	90.24%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	--	
	4/22	84.99%		
Combined		90.52%		

Source: National Climatic Data Center

ADVANTAGES

- Meets design standards for B-I or B-II aircraft depending on the location of Taxiway A.
- Provides the recommended runway length.
- Reduced potential environmental impacts.
- No land acquisition required if Taxiway A is relocated to 225 feet. Additional land is required to satisfy the TOFA requirements if Taxiway A is relocated to 240 feet.
- No road relocation required.

DISADVANTAGES

- The relocation of the taxiway constrains future landside developments.
- Carefully consideration should be given before relocating Taxiway A 225 to feet because future expansion to B-II standards would be constrained.
- An additional paved crosswind runway is required to satisfy the recommended 95 percent wind coverage.

TABLE 4-4 OPTION 2A: TAXIWAY RELOCATION TO 225 FEET ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$201,000	$190,950	$5,025	$5,025
Taxiway Construction	$1,350,000	$1,282,500	$33,750	$33,750
Land Acquisition and Fencing	$0	$0	$0	$0
Runway and Taxiway Lighting	$381,000	$361,950	$9,525	$9,525
Crosswind Runway	$1,652,000	$1,569,400	$41,300	$41,300
Road Relocation	$0	$0	$0	$0
Total	$3,584,000	$3,404,800	$89,600	$89,600

TABLE 4-5 OPTION 2B: TAXIWAY RELOCATION TO 240 FEET ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$250,000	$237,500	$6,250	$6,250
Taxiway Construction	$2,042,000	$1,939,900	$51,050	$51,050
Land Acquisition and Fencing	$50,000	$47,500	$1,250	$1,250
Runway and Taxiway Lighting	$382,000	$362,900	$9,550	$9,550
Crosswind Runway	$1,652,000	$1,569,400	$41,300	$41,300
Road Relocation	$0	$0	$0	$0
Total	$4,376,000	$4,157,200	$109,400	$109,400

4.4.3 ALTERNATIVE 3: RELOCATE RUNWAY 17/35 TO THE EAST

In this alternative Runway 17/35 would be relocated to provide a 225 foot runway to taxiway separation to accommodate B-I aircraft or a 240 foot runway to taxiway separation to accommodate B-II aircraft. The existing runway length would be increased from 5,900 feet to 6,190 feet to accommodate existing and future users.

As shown in Table 4-7, the current airside configuration does not meet the recommended 95 percent wind coverage. An additional paved crosswind runway with an alignment of 4/22 would be added to meet the recommended 95 percent wind coverage at 10.5 knots. The existing dirt Runway 2/20 would be retained to accommodate users desiring to operate off the unimproved surface.

TABLE 4-6 ALTERNATIVE 3 CROSSWIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT AND ARC		CONDITION
		10.5 KNOTS A-I AND B-I	13 KNOTS A-II AND B-II	
Runway	17/35	88.40%	92.65%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	--	
	4/22	91.30%		
Combined		95.04%		
Runway	17/35	85.21%	90.24%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	--	
	4/22	84.99%		
Combined		90.52%		

Source: National Climatic Data Center

ADVANTAGES

- Meets design standards for B-I or B-II aircraft depending on the location of Runway 17/35.
- Provides the recommended runway length.
- Reduced potential environmental impacts.
- No additional constraint is placed on existing landside development.
- No land acquisition required.
- No road relocation required.

DISADVANTAGES

- Higher Capital costs than Alternative 2.
- An additional paved crosswind runway is required to satisfy the recommended 95 percent wind coverage.
- Reduces the available length of Runway 2/20.
- Impacts to aircraft operations during runway construction.

TABLE 4-7 OPTION 3A: RUNWAY 17/35 RELOCATION TO 225 FEET ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$2,900,000	$2,755,000	$72,500	$72,500
Taxiway Construction	$181,000	$181,000	$171,950	$4,525
Land Acquisition and Fencing	$0	$0	$0	$0
Runway and Taxiway Lighting	$601,000	$570,950	$15,025	$15,025
Crosswind Runway	$1,652,000	$1,569,400	$41,300	$41,300
Road Relocation	$0	$0	$0	$0
Total	$5,334,000	$5,067,300	$133,350	$133,350

TABLE 4-8 OPTION 3B: RUNWAY 17/35 RELOCATION TO 240 FEET ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$3,560,000	$3,382,000	$89,000	$89,000
Taxiway Construction	$181,000	$171,950	$4,525	$4,525
Land Acquisition and Fencing	$0	$0	$0	$0
Runway and Taxiway Lighting	$602,000	$571,900	$15,050	$15,050
Crosswind Runway	$1,652,000	$1,569,4000	$41,300	$41,300
Road Relocation	$0	$0	$0	$0
Total	$5,995,000	$5,695,250	$149,875	$149,875

4.4.4 ALTERNATIVE 4: NEW RUNWAY 4/22 EAST SIDE

In this alternative Runway 17/35 and Taxiway A would be retained in their current configuration. A new B-I or B-II runway would be constructed to the east. The runway would be constructed with an alignment of 4/22 to a length of 6,190 feet by 60 feet or 75 feet. The layout is shown in Figure 4-4.

TABLE 4-9 ALTERNATIVE 4 CROSSWIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT AND ARC		CONDITION
		10.5 KNOTS A-I AND B-I	13 KNOTS A-II AND B-II	
Runway	17/35	88.40%	92.65%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	--	
	4/22	91.30%	95.52%	
Combined		95.04%	97.83%	
Runway	17/35	85.21%	90.24%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	--	
	4/22	84.99%	90.51%	
Combined		90.52%	94.56%	

Source: National Climatic Data Center

ADVANTAGES

- Meets design standards for B-I or B-II aircraft depending on the runway width selected.
- Provides the recommended runway length.
- Satisfies the recommended 95 percent wind coverage.

DISADVANTAGES

- High development costs due to terrain and earth work requirements.
- Possible terrain penetrations of the FAR Part 77 surfaces.
- Requires road relocation.
- Higher potential environmental impacts.

TABLE 4-10 OPTION 4A: CONSTRUCT RUNWAY 4/22 TO B-I DESIGN STANDARDS, ESTIMATED COSTS

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$4,400,000	$4,180,000	$110,000	$110,000
Taxiway Construction	$611,000	$580,450	$15,275	$15,275
Land Acquisition and Fencing	$395,000	$375,250	$9,875	$9,875
Runway and Taxiway Lighting	$375,000	$356,250	$9,375	$9,375
Road Relocation	$935,000	$888,250	$23,375	$23,375
Total	$6,716,000	$6,380,200	$167,900	$167,900

TABLE 4-11 OPTION 4B: CONSTRUCT RUNWAY 4/22 TO B-II DESIGN STANDARDS, ESTIMATED COSTS

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$4,950,000	$4,702,500	$123,750	$123,750
Taxiway Construction	$860,000	$817,000	$21,500	$21,500
Land Acquisition and Fencing	$395,000	$375,250	$9,875	$9,875
Runway and Taxiway Lighting	$375,000	$356,250	$9,375	$9,375
Road Relocation	$1,125,000	$1,068,750	$28,125	$28,125
Total	$7,705,000	$7,319,750	$192,625	$192,625

4.4.5 ALTERNATIVE 5: NEW RUNWAY 10/28 WEST SIDE

For this alternative Runway 17/35 and Taxiway A would be retained and maintained in its present configuration and a new B-I runway 6,190 feet long and 60 feet wide or B-II runway 6,190 feet long and 75 feet wide would be constructed east of the current runway with a true bearing of 108 degrees.

TABLE 4-12 ALTERNATIVE 5 CROSSWIND ANALYSIS

RUNWAY		CROSSWIND COMPONENT AND ARC		CONDITION
		10.5 KNOTS A-I AND B-I	13 KNOTS A-II AND B-II	
Runway	17/35	88.40%	92.65%	Ceiling ≥ 1,000 feet and visibility ≥ 3 miles (VFR)
	2/20	90.19%	--	
	10/28	91.68%	95.26%	
Combined		99.16%	98.97%	
Runway	17/35	85.21%	90.24%	Ceiling < 1,000 feet and/or visibility < 3 miles but ceiling ≥ 200 feet and visibility ≥ 0.5 miles (IFR)
	2/20	84.75%	--	
	10/28	88.71%	92.11%	
Combined		98.22%	98.32%	

Source: National Climatic Data Center

ADVANTAGES

- Meets design standards for B-I or B-II aircraft depending on the runway width selected.
- Provides the recommended runway length.
- Satisfies the recommended 95 percent wind coverage.

DISADVANTAGES

- High development costs due to terrain and earth work requirements.
- Requires road relocation.
- Higher potential environmental impacts.

TABLE 4-13 OPTION 5A: NEW B-I RUNWAY 10/28 WEST SIDE ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$2,885,000	$2,740,750	$72,125	$72,125
Taxiway Construction	$900,000	$855,000	$22,500	$22,500
Land Acquisition and Fencing	$785,000	$745,750	$19,625	$19,625
Runway and Taxiway Lighting	$390,000	$370,500	$9,750	$9,750
Road Relocation	$1,681,000	$1,596,950	$42,025	$42,025
Total	$6,641,000	$6,308,950	$166,025	$166,025

TABLE 4-14 OPTION 5B: NEW B-II RUNWAY 10/28 WEST SIDE ESTIMATED COST

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Runway Construction	$3,660,000	$3,477,000	$91,500	$91,500
Taxiway Construction	$1,010,000	$959,500	$25,250	$25,250
Land Acquisition and Fencing	$785,000	$745,750	$19,625	$19,625
Runway and Taxiway Lighting	$390,000	$370,500	$9,750	$9,750
Road Relocation	$1,681,000	$1,596,950	$42,025	$42,025
Total	$7,526,000	$7,149,700	$188,150	$188,150

4.5 LANDSIDE DEVELOPMENT CONFIGURATION

4.5.1 APRON DEVELOPMENT

Potential apron development is shown in Figure 4-6. This apron configuration is based on the most restrictive configuration which includes the relocation of Taxiway A to 240 feet from the runway centerline. This apron configuration allows for 33 tiedown spaces while satisfying B-II taxiway and taxilane clearance requirements. This apron configuration also includes two helicopter parking positions and a taxilane that allows future hangar and terminal airport building development. The existing hangar should be removed to allow the construction of the apron.

This apron configuration has been designed to be constructed in phases based on actual demand. The final apron layout configuration is dependent upon the preferred airside development alternative.

4.5.2 HANGAR AND TERMINAL BUILDING DEVELOPMENT

Potential locations for hangar development are shown on Figure 4-6. This configuration includes a mix of box hangars and T-hangars. Vehicle access and parking is provided in order to minimize the need for vehicles to access hangars via the apron and taxiway.

4.5.3 AVIATION FUEL FACILITIES DEVELOPMENT

A possible location for the aviation fuel facilities is shown in Figure 4-6. The planned fuel facilities consist of a 10,000 gallon Avgas fuel tank and a 10,000 gallon Jet-A fuel tank. The fuel facilities would be located close to the terminal building and allow unconstrained aircraft circulation on the apron.

TABLE 4-15 LANDSIDE DEVELOPMENT ESTIMATED COSTS

PROJECT	TOTAL COST	FAA SHARE	STATE SHARE	LOCAL SHARE
Taxilanes	$212,000	$201,400	$5,300	$5,300
Apron	$1,500,000	$1,425,000	$37,500	$37,500
Access Roads	$204,000	$193,800	$5,100	$5,100
Parking	$82,000	$77,900	$2,050	$2,050
Fuel Tanks (2x10,000 gallon)	$300,000	$285,000	$7,500	$7,500
Total	$2,298,000	$2,183,100	$57,450	$57,450

4.6 ENVIRONMENTAL IMPACTS

Based on an initial review none of the alternatives appear to result in any significant environmental impacts. Major improvements, such as new runways or runway extensions, would require an environmental assessment including field surveys for cultural resources and threatened and endangered species; minor projects would require a categorical exclusion analysis.

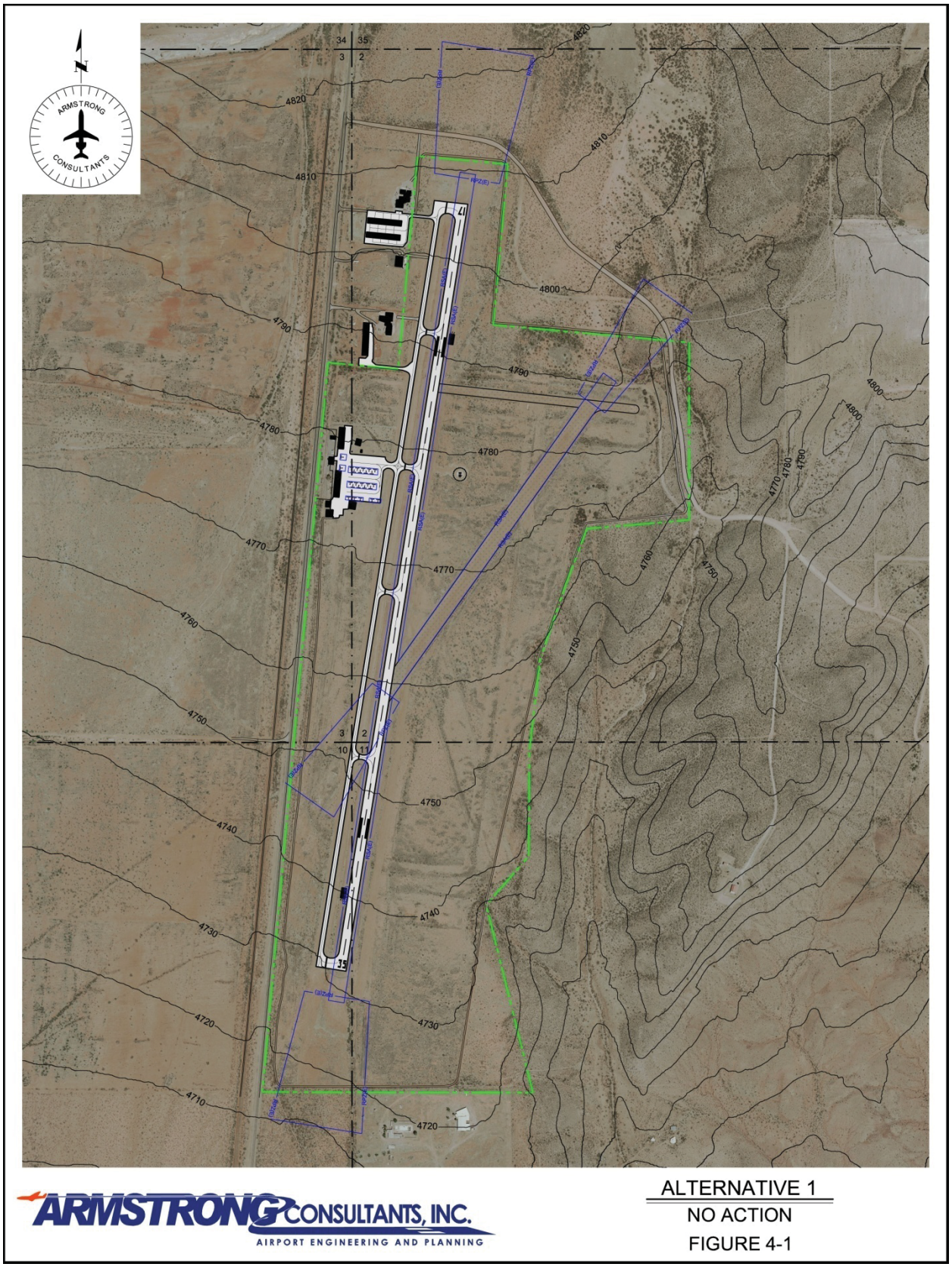
TABLE 4-16 COMPARISON OF POTENTIAL ENVIRONMENTAL IMPACTS

ENVIRONMENTAL CATEGORY	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	ALTERNATIVE 5
Air Quality	◉	◉	◉	◉	◉
Coastal Resources	○	○	○	○	○
Compatible Land Use	○	○	○	◉	○
Construction Impacts	○	◉	◉	◉	◉
DOT Act Section 4(F)	○	○	○	○	○
Farmlands	○	○	○	○	○
Fish, Wildlife and Plants	○	○	○	○	○
Floodplains	○	○	○	○	○
Hazardous Materials Pollution Prevention and Solid Waste	○	○	○	○	○
Historical, Architectural, Archaeological and Cultural Resources	○	○	○	○	○
Light Emissions and Visual Impacts	○	○	○	○	○
Natural Resources and Energy Supply	○	○	○	○	○
Noise	○	○	○	○	○
Secondary (Induced) Impacts	○	○	○	◉	◉
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health	○	○	○	◉	◉
Water Quality	○	○	○	◉	○
Wetlands	○	○	○	○	○
Wild and Scenic Rivers	○	○	○	○	○

Legend:
○ No Impact
◉ Minor Impact
● Significant Impact

4.7 SELECTION OF THE PREFERRED AIRPORT LAYOUT

A Planning Advisory Committee (PAC) meeting was held to discuss the Development Alternatives and solicit feedback on the preferred development to be carried forward on the Airport Layout Plan. As a result, the Airport Commission recommended, and the Mayor and Council approved Alternative 2A for the Master Plan. This alternative would relocate Taxiway to meet the FAA runway centerline to taxiway centerline for B-I aircraft. The alternative would also include the development of a paved crosswind Runway 4/22 (3,200 feet x 60 feet) which would provide the recommended 95 percent crosswind coverage. Runway 17/35 would also be extended to from 5,900 feet to 6,190 feet in order to accommodate existing and future users. The terminal area has been configured to be developed in phases to meet actual demand. Figure 4-8 shows the recommended airport development.


N
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ARMSTRONG CONSULTANTS, INC.
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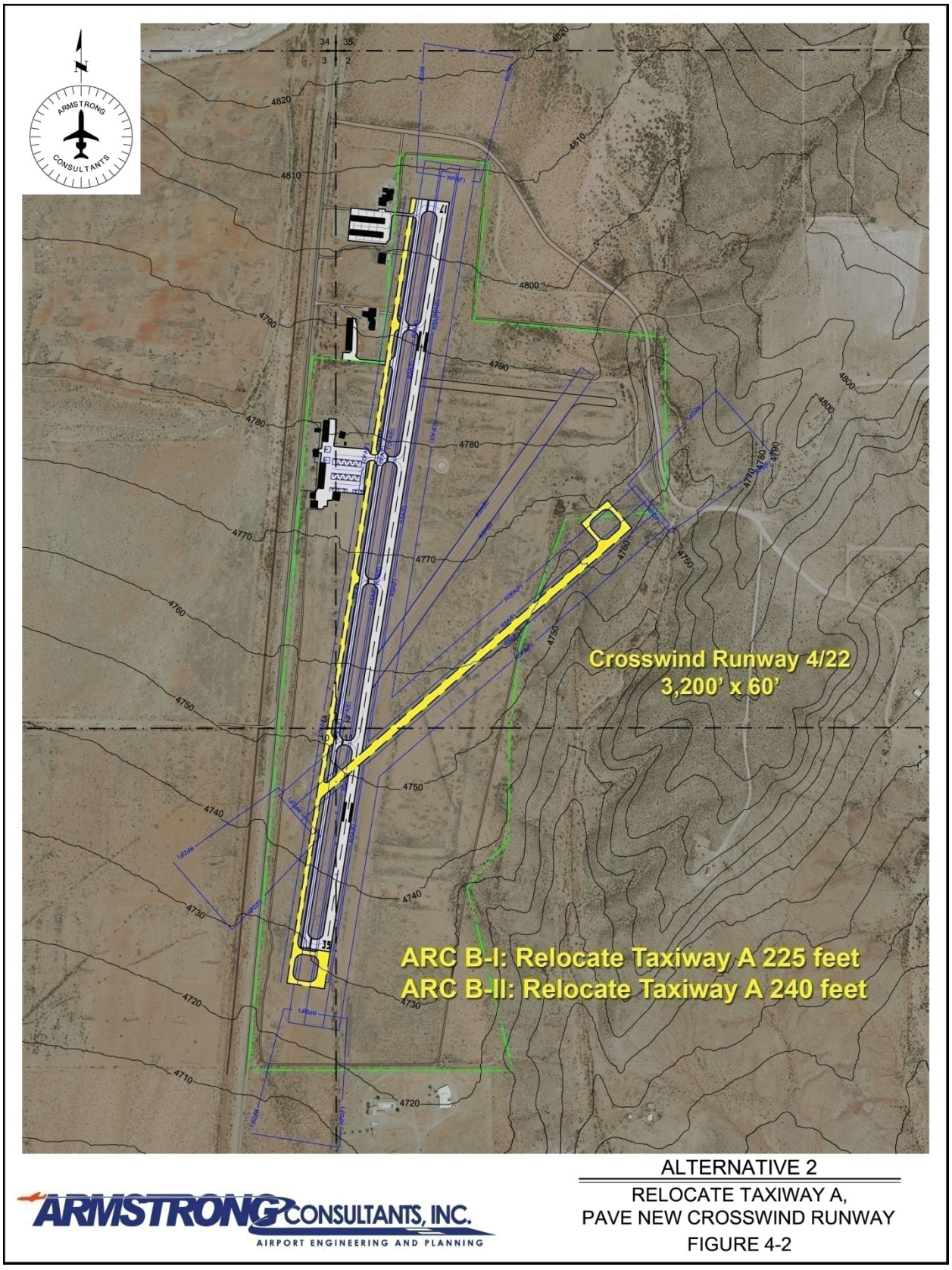
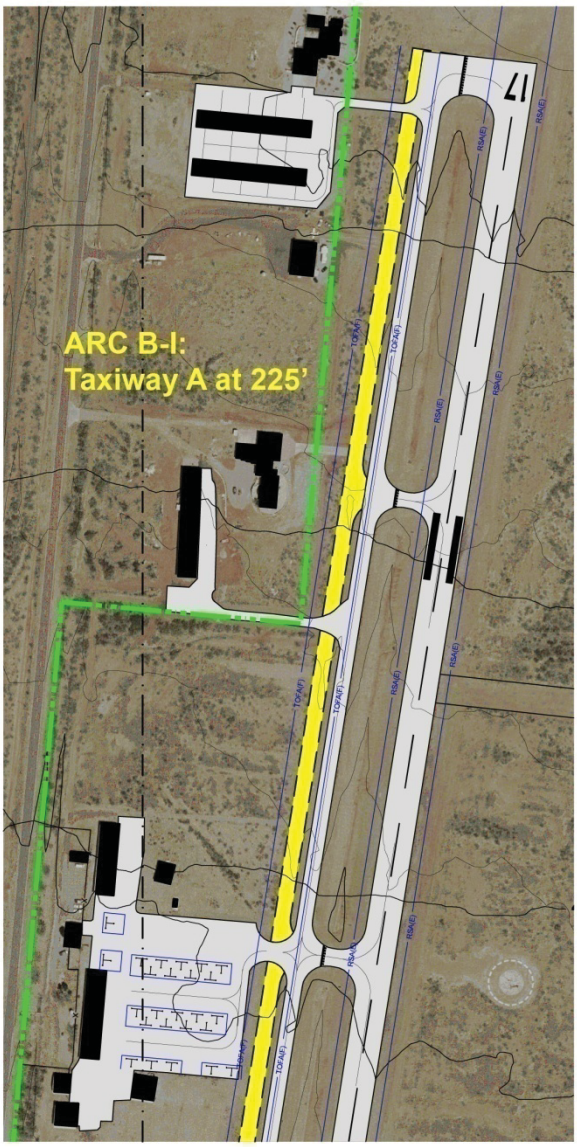
ALTERNATIVE 1
NO ACTION
FIGURE 4-1



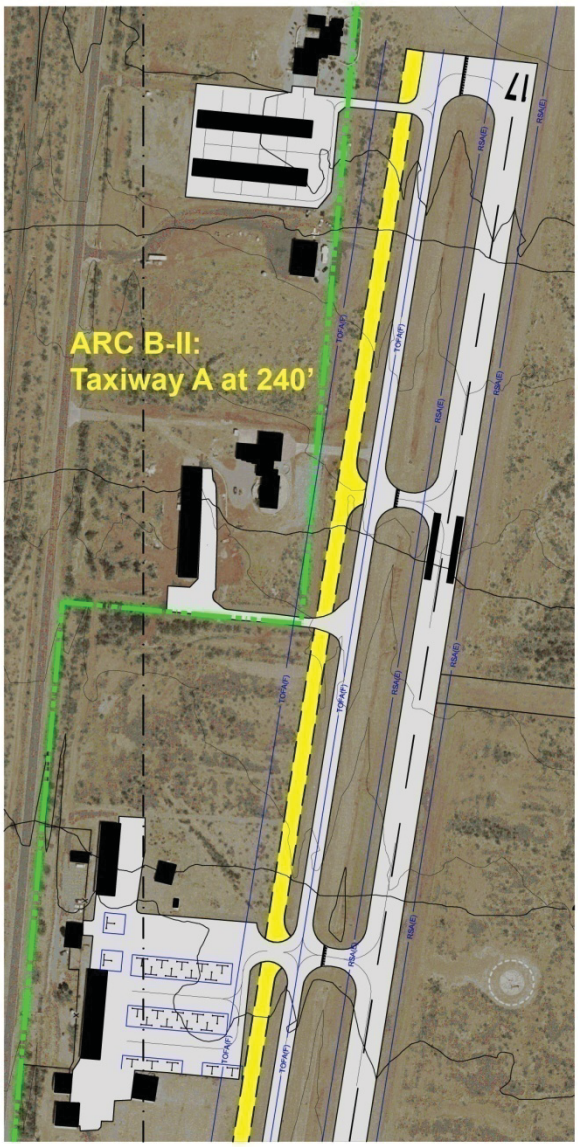
ALTERNATIVE 2

RELOCATE TAXIWAY A,
PAVE NEW CROSSWIND RUNWAY
FIGURE 4-2

OPTION 2A



OPTION 2B



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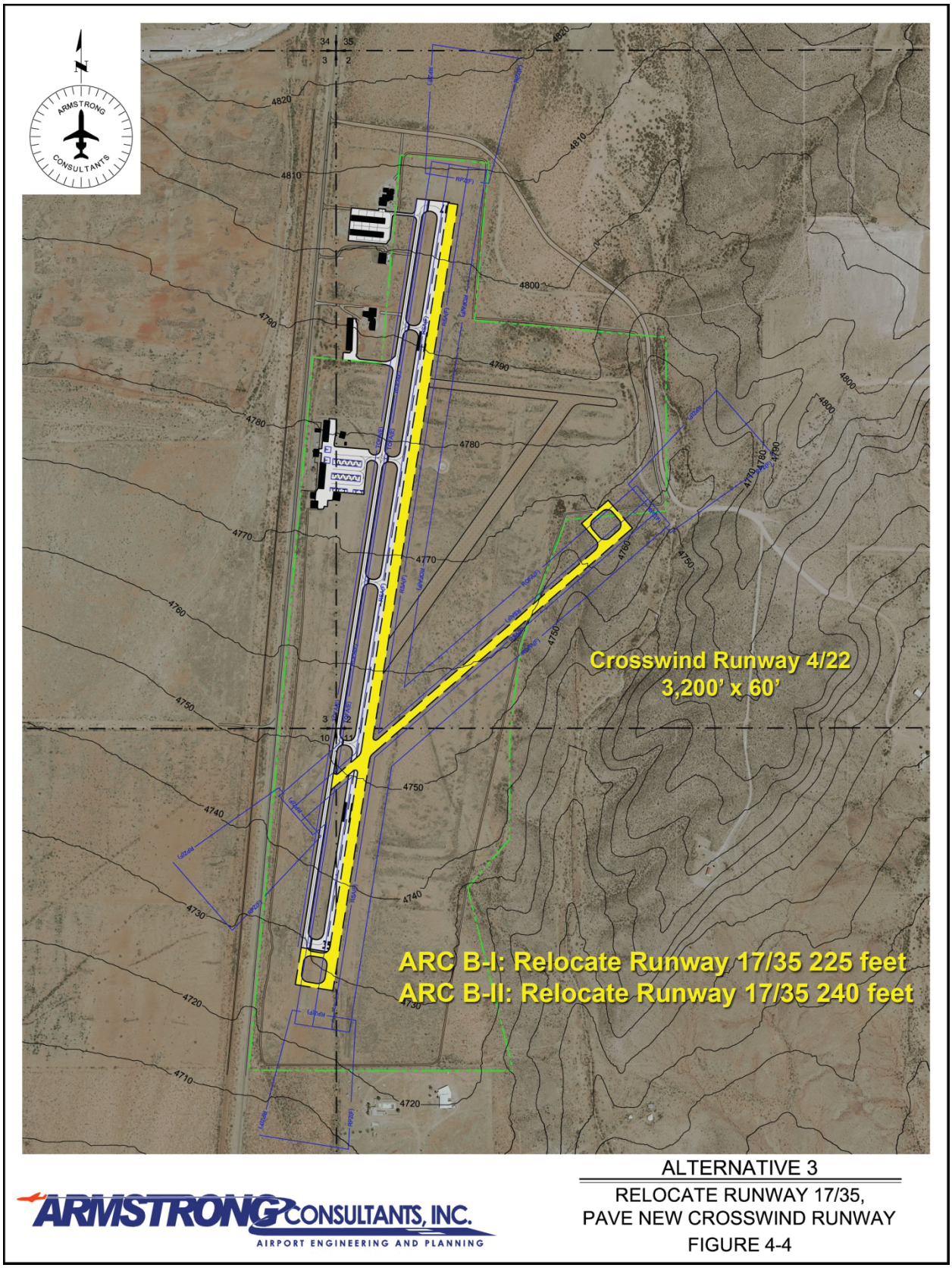
ALTERNATIVE 2
DETAILS

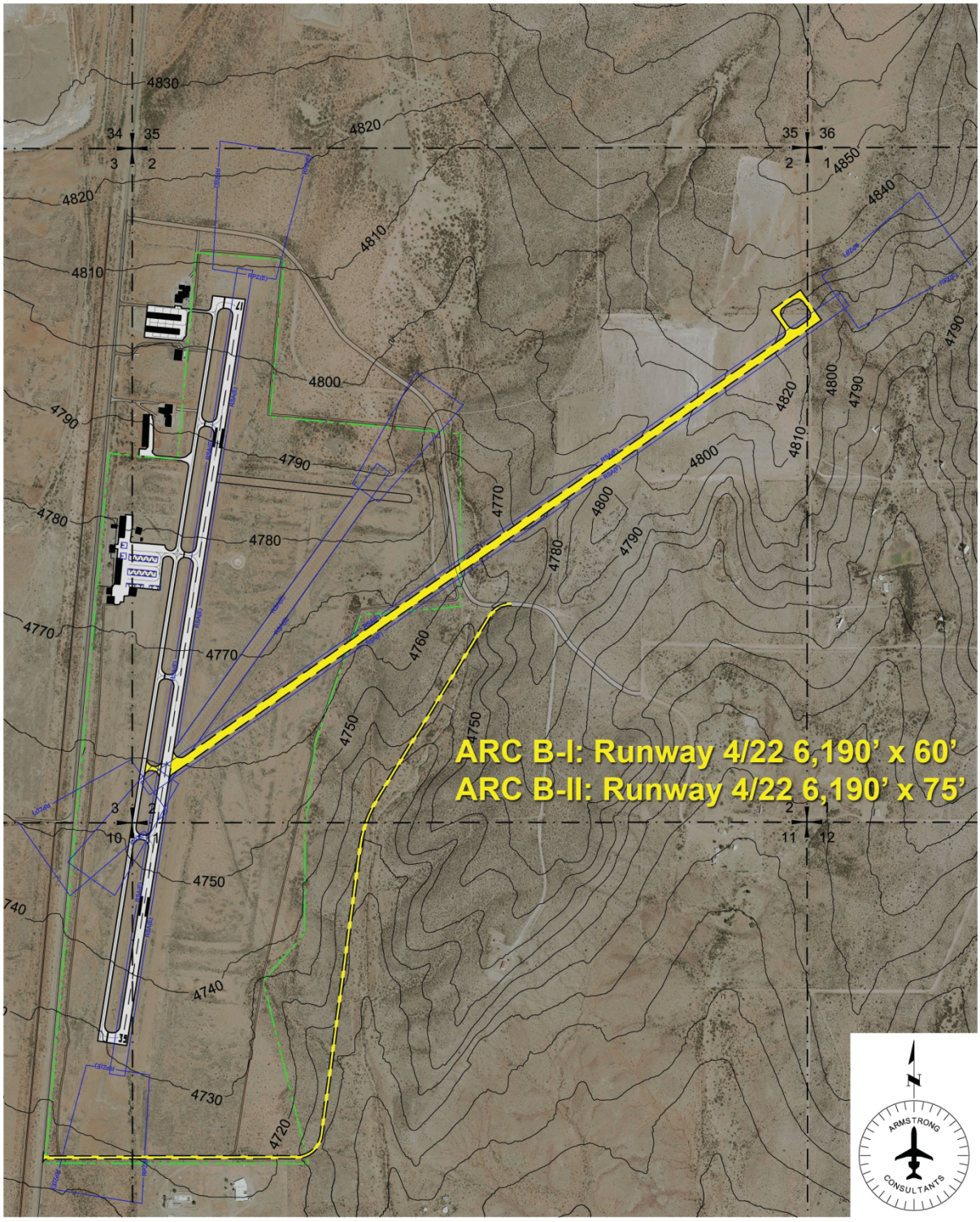
FIGURE 4-3



ALTERNATIVE 3

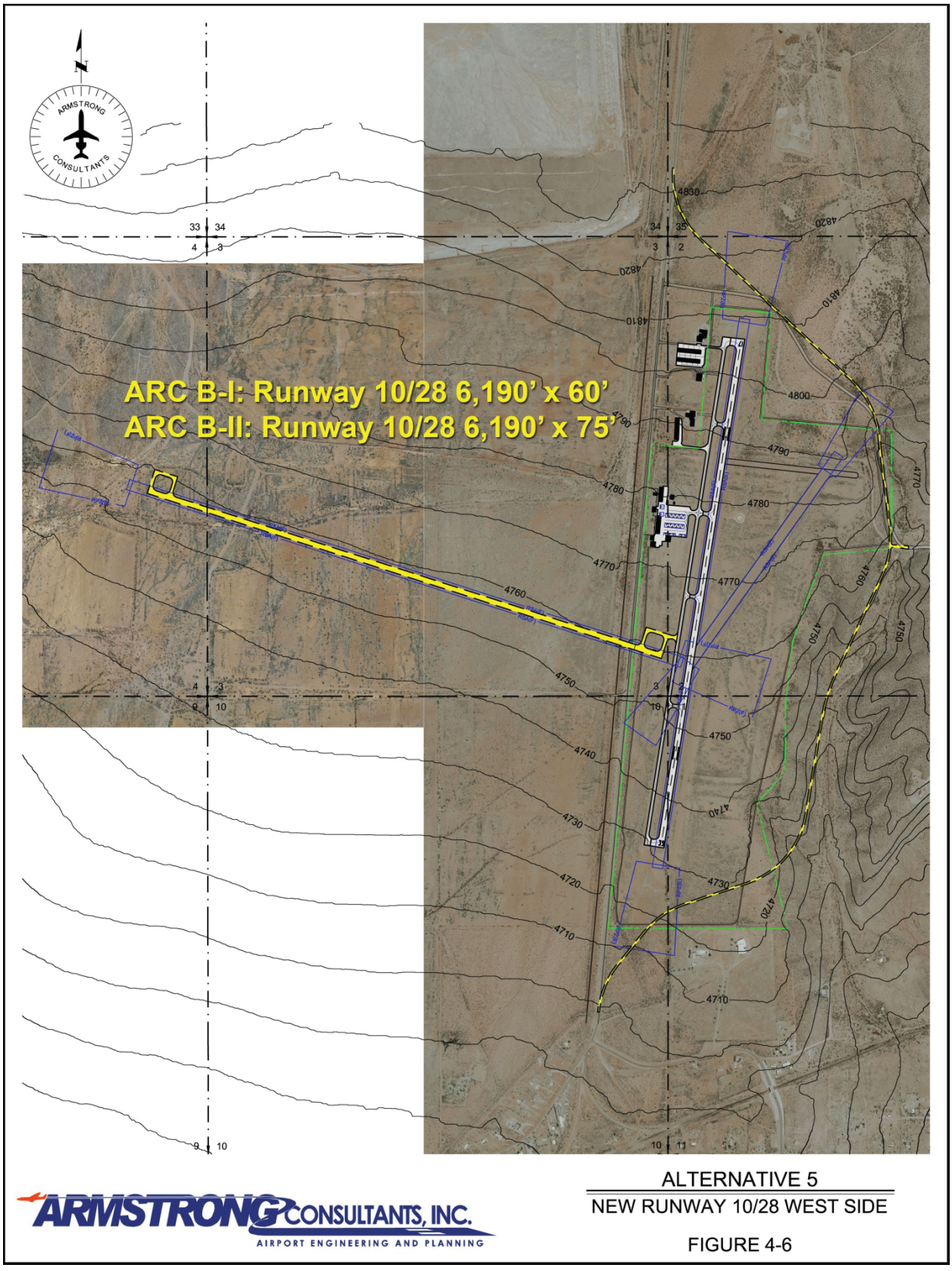
RELOCATE RUNWAY 17/35,
PAVE NEW CROSSWIND RUNWAY

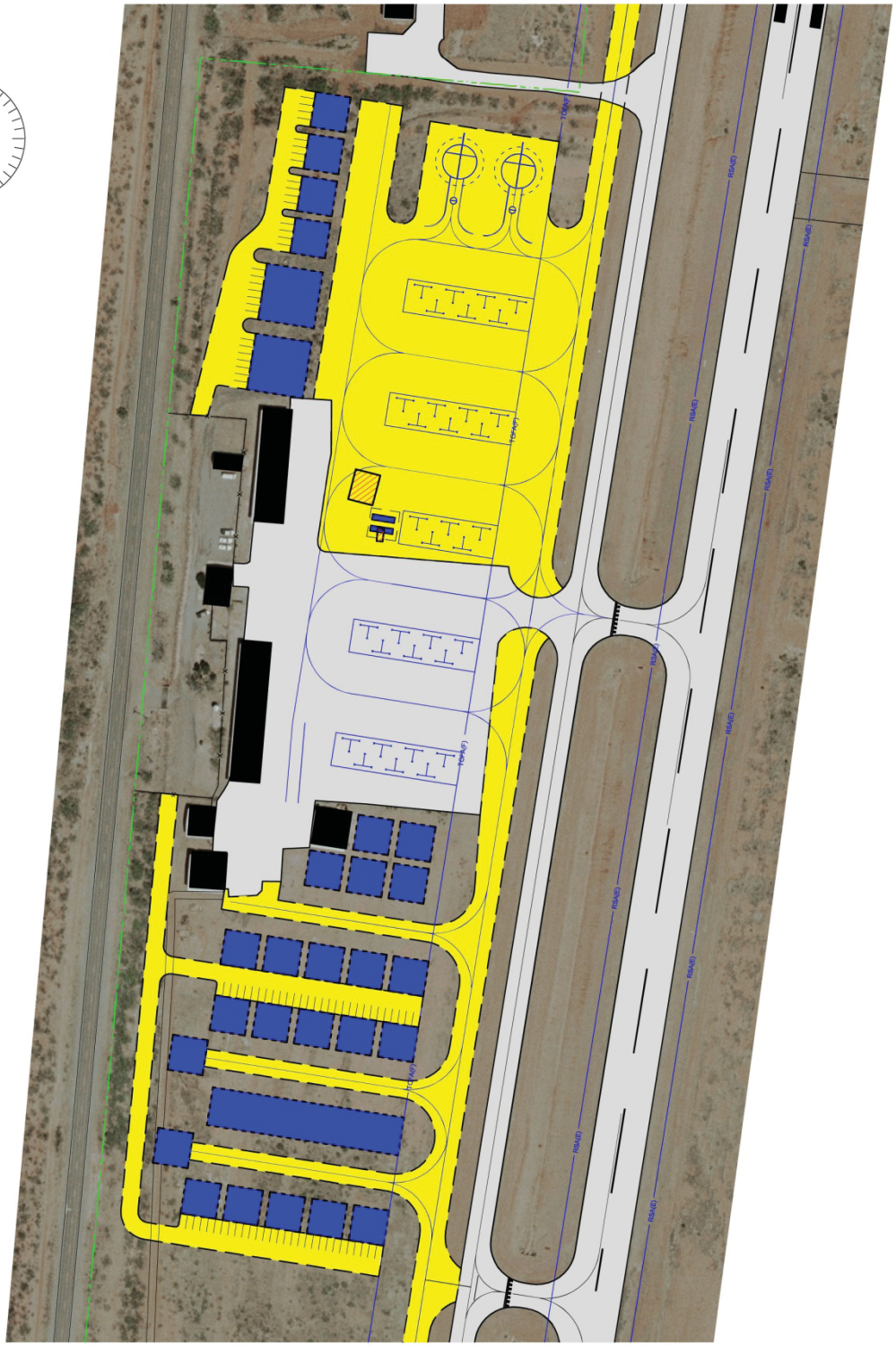
FIGURE 4-4



ALTERNATIVE 4
NEW RUNWAY 4/22 EAST SIDE

FIGURE 4-5


ARC B-I: Runway 10/28 6,190' x 60'
ARC B-II: Runway 10/28 6,190' x 75'
ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING
ALTERNATIVE 5
NEW RUNWAY 10/28 WEST SIDE
FIGURE 4-6



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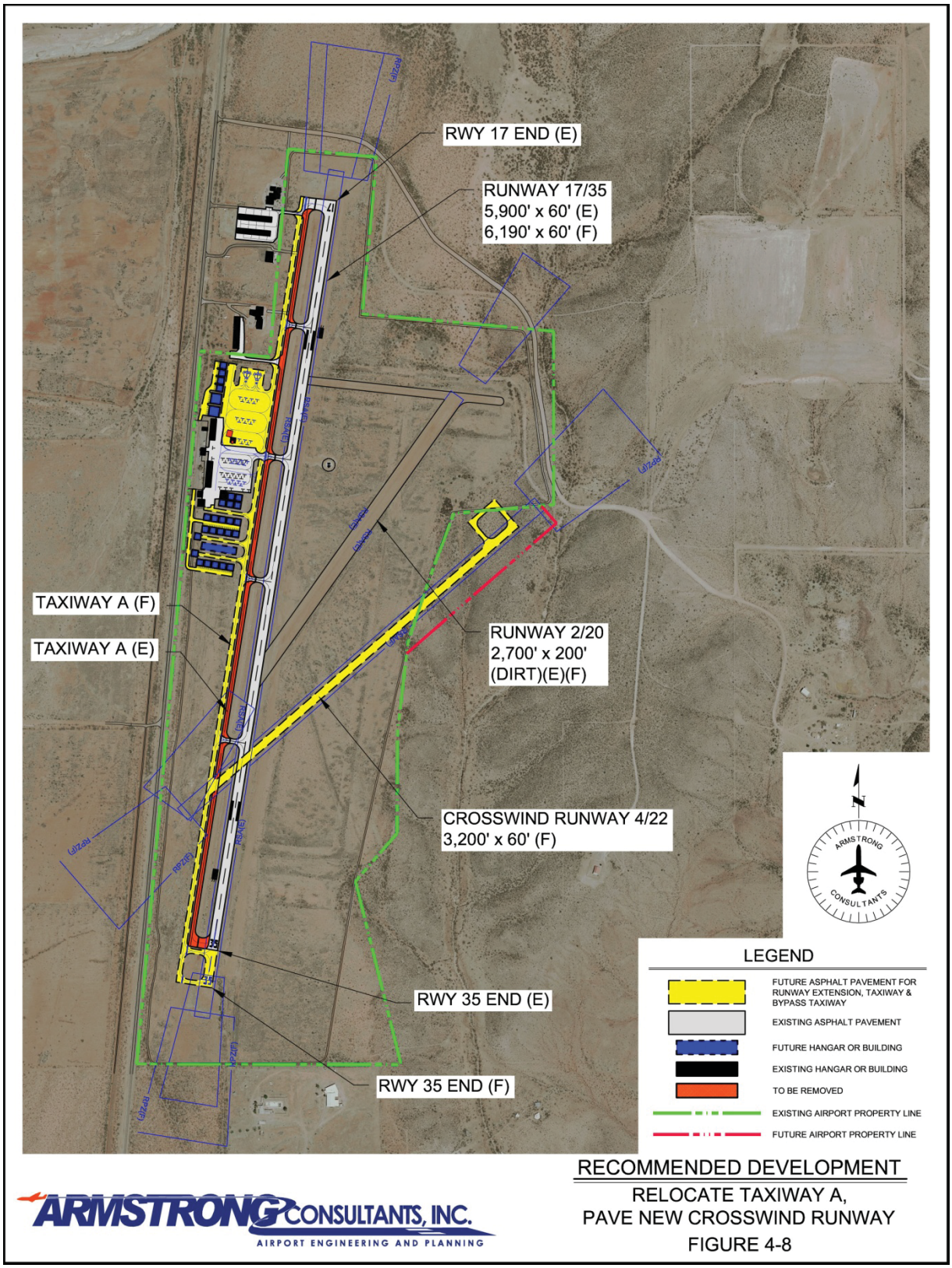
LANDSIDE DEVELOPMENT

FIGURE 4-7


RWY 17 END (E)
RUNWAY 17/35
5,900' x 60' (E)
6,190' x 60' (F)
TAXIWAY A (F)
TAXIWAY A (E)
RUNWAY 2/20
2,700' x 200'
(DIRT)(E)(F)
CROSSWIND RUNWAY 4/22
3,200' x 60' (F)
RWY 35 END (E)
RWY 35 END (F)
N
ARMSTRONG CONSULTANTS
LEGEND
FUTURE ASPHALT PAVEMENT FOR RUNWAY EXTENSION, TAXIWAY & BYPASS TAXIWAY
EXISTING ASPHALT PAVEMENT
FUTURE HANGAR OR BUILDING
EXISTING HANGAR OR BUILDING
TO BE REMOVED
EXISTING AIRPORT PROPERTY LINE
FUTURE AIRPORT PROPERTY LINE
ARMSTRONG CONSULTANTS, INC.
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RECOMMENDED DEVELOPMENT
RELOCATE TAXIWAY A,
PAVE NEW CROSSWIND RUNWAY
FIGURE 4-8

Chapter Five
Airport Layout Plans

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AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

BISBEE MUNICIPAL AIRPORT

BISBEE, ARIZONA

AIRPORT LAYOUT PLANS

PREPARED BY:

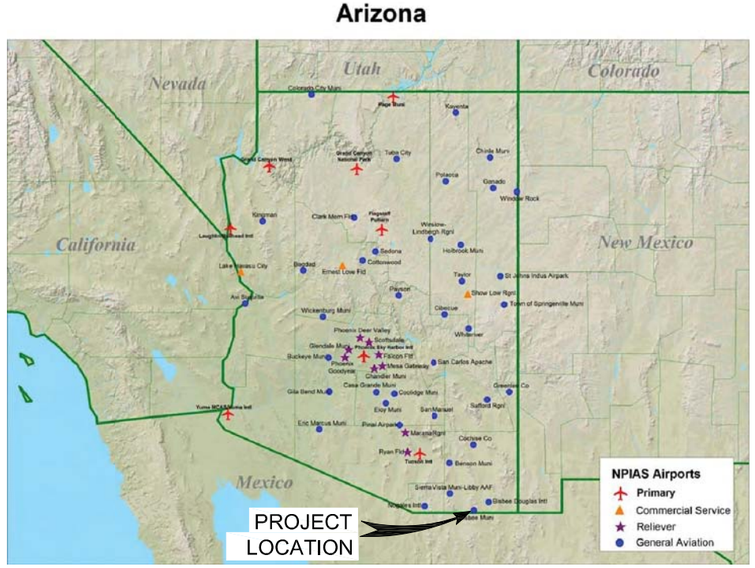
ARMSTRONG CONSULTANTS, INC.

A.I.P. NO. 3-04-0004-009-2009

A.C.I. PROJECT NO. 095909

DATE: JANUARY 4, 2011

VICINITY MAP



INDEX TO SHEETS

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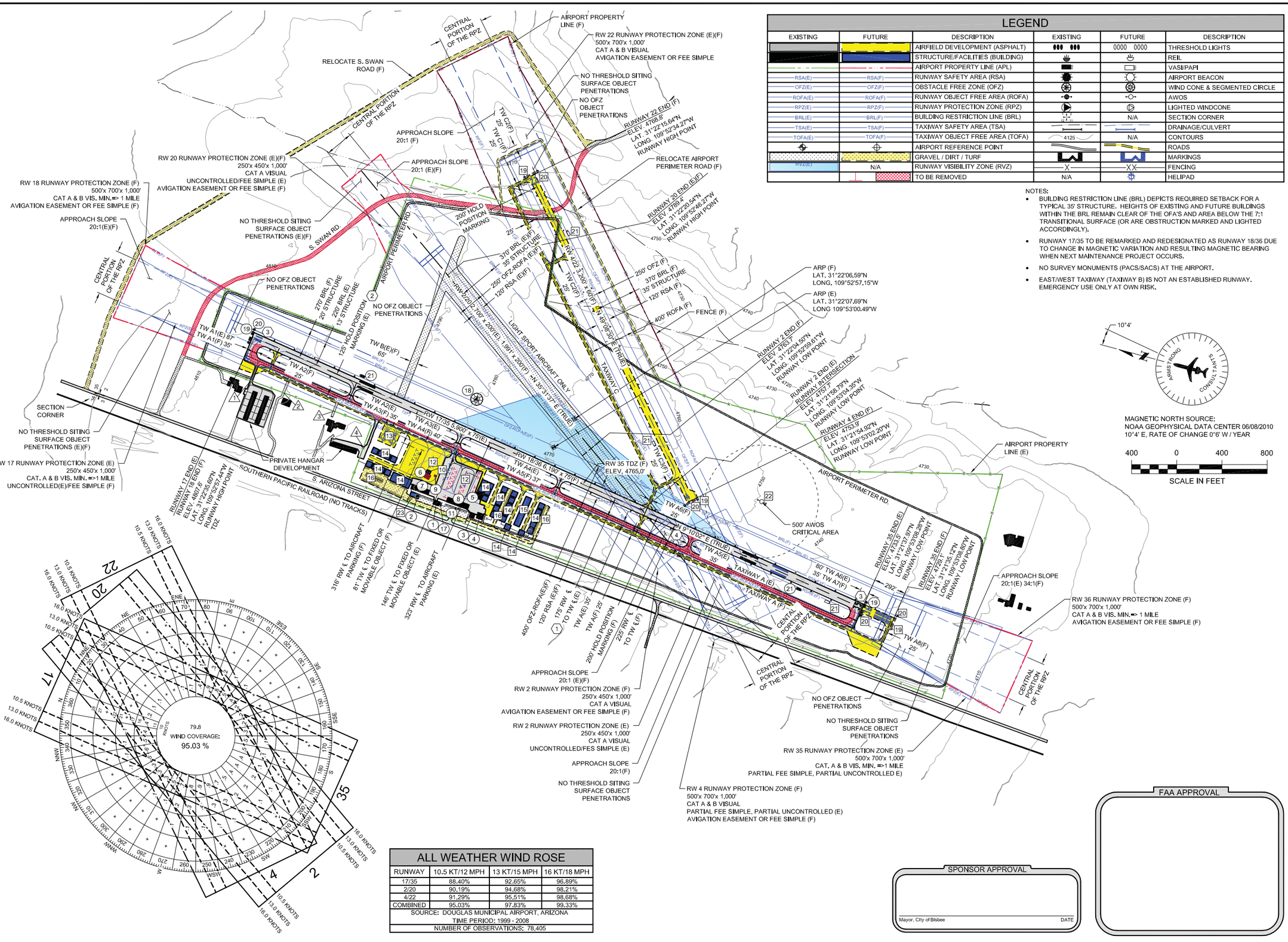
5909501



LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT BEACON
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			LIGHTED WINDCONE
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
		AIRPORT REFERENCE POINT			ROADS
		GRAVEL / DIRT / TURF			MARKINGS
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			FENCING
		TO BE REMOVED	N/A		HELIPAD

NOTES:

- BUILDING RESTRICTION LINE (BRL) DEPICTS REQUIRED SETBACK FOR A TYPICAL 35' STRUCTURE. HEIGHTS OF EXISTING AND FUTURE BUILDINGS WITHIN THE BRL REMAIN CLEAR OF THE OFA'S AND AREA BELOW THE 7:1 TRANSITIONAL SURFACE (OR ARE OBSTRUCTION MARKED AND LIGHTED ACCORDINGLY).
- RUNWAY 17/35 TO BE REMARKED AND REDESIGNATED AS RUNWAY 18/36 DUE TO CHANGE IN MAGNETIC VARIATION AND RESULTING MAGNETIC BEARING WHEN NEXT MAINTENANCE PROJECT OCCURS.
- NO SURVEY MONUMENTS (PACS/SACS) AT THE AIRPORT.
- EAST/WEST TAXIWAY (TAXIWAY B) IS NOT AN ESTABLISHED RUNWAY. EMERGENCY USE ONLY AT OWN RISK.

ALL WEATHER WIND ROSE

RUNWAY	10.5 KT/12 MPH	13 KT/15 MPH	16 KT/18 MPH
17/35	88.40%	92.65%	96.89%
2/20	90.19%	94.68%	98.21%
4/22	91.29%	95.51%	98.68%
COMBINED	95.03%	97.83%	99.33%

SOURCE: DOUGLAS MUNICIPAL AIRPORT, ARIZONA
TIME PERIOD: 1999 - 2008
NUMBER OF OBSERVATIONS: 78,405

SPONSOR APPROVAL

Mayor, City of Bisbee DATE

FAA APPROVAL

ARMSTRONG CONSULTANTS, INC.
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BISBEE MUNICIPAL AIRPORT
BISBEE, ARIZONA

AIP No. 3-04-0004-009-2009

AIRPORT LAYOUT PLANS

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Apprvd.
3	095909	01/2011	A.C.I. MASTER PLAN	5909502	LKB	HMD	JZP
2	N/A	8/30/01	DATE OF PRIOR APPROVAL				
1	N/A	7/1/88	DATE OF PRIOR APPROVAL				

AIRPORT LAYOUT PLAN

Sheet: 2 of: 16

RUNWAY DATA

ITEM		RW 17/35 EXISTING(E)	RW 18/36* FUTURE(F)	RW 2/20 ** EXISTING(E)	RW 2/20 ** FUTURE (F)	RW 4/22 FUTURE(F)
RUNWAY REFERENCE CODE		B-I	B-I	A-I (SMALL)	SAME	B-I
APPROACH MINIMUMS		VISUAL	RW 18 VISUAL / RW 36 1-MILE	VISUAL	SAME	VISUAL
APPROACH TYPE		UTILITY	NPI >UTILITY	UTILITY	SAME	UTILITY
FAR PART 77 APPROACH SLOPE		20:1	RW 18 20:1 / RW 36 34:1	20:1	SAME	20:1
RUNWAY LENGTH		5,900'	6,190'	2,700'	1,991'	3,200'
RUNWAY WIDTH		75'	SAME	200'	SAME	60'
RUNWAY & TAXIWAY PAVEMENT		ASPHALT	SAME	DIRT	SAME	ASPHALT
PAVEMENT STRENGTH (LBS)		12,500 SWG	30,000 SWG	NONE	SAME	12,500 SWG
RUNWAY LIGHTING		MIRL	SAME	NONE	SAME	MIRL
TAXIWAY LIGHTING		NONE	MITL	NONE	SAME	MITL
RUNWAY MARKING		VISUAL	NPI	NONE	SAME	VISUAL
% EFFECTIVE GRADIENT		1.18%	1.20%	1.18%	SAME	0.66%
% MAXIMUM GRADE		1.34%	1.50%	1.35%	SAME	0.66%
LINE OF SIGHT REQUIREMENTS MET		YES	SAME	YES	SAME	YES
VISUAL APPROACH AIDS		RW 17: PAPI-2, REIL RW 35: PAPI-2, REIL	RW 18: PAPI-2, REIL RW 36: PAPI-2 REIL	RW 2: NONE RW 20: NONE	SAME SAME	RW 4: PAPI-2, REIL RW 22: PAPI2, REIL
INSTRUMENT APPROACH AIDS		NONE	GPS	NONE	SAME	NONE
DESIGN AIRCRAFT	DESIGN AIRCRAFT	CESSNA CITATION I	SAME	CESSNA 162	SAME	CESSNA 421
	WINGSPAN	46.8'	SAME	30.8'	SAME	41.7'
	APPROACH SPEED	108 kts.	SAME	50 kts.	SAME	96 kts.
	MGTOW	10,400 lbs.	SAME	1,320 lbs.	SAME	7,450 lbs.
	UNDERCARRIAGE WIDTH	13.0'	SAME	7.3'	SAME	14.7'
	TAIL HEIGHT	13.8'	SAME	7.0'	SAME	11.6'
RUNWAY SAFETY AREA (RSA)	WIDTH	120'	SAME	120'	SAME	120'
	LENGTH BEYOND RW END	240'	SAME	240'	SAME	240'
RUNWAY OBJECT FREE AREA (ROFA)	WIDTH	400'	SAME	250'	SAME	400'
	LENGTH BEYOND RW END	240'	SAME	240'	SAME	240'
OBSTACLE FREE ZONE (OFZ) (NO OFZ OBJECT PENETRATIONS)	WIDTH	400'	SAME	250'	SAME	250'
	LENGTH BEYOND RW END	200'	SAME	200'	SAME	200'
RUNWAY END ELEVATIONS (NAVD 88)	RW 17/18	4807.6'	SAME	-	-	-
	RW 35/36	4733.5'	4729.1'	-	-	-
	RW 2	-	-	4757.7'	4763.7'	-
	RW 20	-	-	4789.4'	4789.4'	-
	RW 4	-	-	-	-	4753.9'
	RW 22	-	-	-	-	4768.8'
TOUCHDOWN ZONE (TDZ)	RW 17/18	NONE	NONE	NONE	SAME	NONE
	RW 35/36	NONE	4765.0'	NONE	SAME	NONE
HIGH POINT		4807.6'	4807.6'	4789.4'	4789.4'	4768.8'
LOW POINT		4733.5'	4729.1'	4757.7'	4763.7'	4753.9'
RUNWAY PROTECTION ZONE DIMENSIONS		1,000' x 500' x 700'	SAME	1,000' x 250' x 450'	SAME	1,000' x 500' x 700'
RUNWAY CENTERLINE TO HOLD BARS & SIGNS		200' (125' ACTUAL)	200'	NONE	SAME	200'
RUNWAY / PARALLEL TAXIWAY C/L SEPARATION		225 (175' ACTUAL)	225'	NONE	SAME	225'
TAXIWAY OBJECT FREE AREA WIDTH		89'	SAME	NONE	SAME	89'
TAXIWAY SAFETY AREA WIDTH		49'	SAME	NONE	SAME	49'
TAXIWAY WING TIP CLEARANCE		26'	SAME	NONE	SAME	26'
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT		44.5'	SAME	NONE	SAME	44.5'
TAXIWAY WIDTH		VARIES 35' to 87'	VARIES 25' TO 87'	NONE	SAME	25'
TAXIWAY SURFACE		TW A - ASPHALT	TW A - ASPHALT	TW B - DIRT	SAME	TW C - ASPHALT
APPROACH SURFACE DIMENSIONS		250' x 1,250' x 5,000'	RW 18: 500' x 1,500' x 5,000' RW 36: 500' x 3,500' x 10,000'	250' x 1,250' x 5,000'	SAME	250' x 1,250' x 5,000'

NOTE:

* RUNWAY 17/35 TO BE REMARKED AND REDESIGNATED AS RUNWAY 18/36 DUE TO CHANGE IN MAGNETIC VARIATION AND RESULTING MAGNETIC BEARING.

** FOR LIGHT SPORT AIRCRAFT ONLY, NOT A.I.P. ELIGIBLE.

BUILDINGS/FACILITIES

EXISTING	FUTURE	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (FT MSL) (ESTIMATED)
1		TERMINAL BUILDING	21	4798
2		STORAGE BUILDING	21	4801
3		BOX HANGAR	21	4796
4		BOX HANGAR	21	4795
5		BOX HANGAR	21	4797
6		HANGAR (TO BE REMOVED)	21	4801
7		T-SHADES	15	4795
8		T-SHADES	15	4791
9		100LL FUEL TANK AND PUMP	12	4791
	10	JET-A & 100LL FUEL TANK AND PUMP	12	4791
11		WATER TANK	10	4786
12	12	APRON TIE-DOWNS	N/A	N/A
	13	HELICOPTER PARKING	N/A	N/A
	14	BOX HANGAR	21	4789-4806
	15	T-HANGAR	15	4786
16	16	VEHICLE PARKING	N/A	N/A
17		BEACON	35	4815
18		WIND CONE / SEGMENTED CIRCLE	20	4800
19		THRESHOLD LIGHTS	N/A	N/A
20	20	REIL'S	3-4	-
21	21	PAPI'S	3-4	-
	22	AWOS	17	4766
	23	AIRSIDE GROUNDS MAINTENANCE EQUIPMENT BUILDING	21	4797

AIRPORT DATA

ITEM		EXISTING(E)	FUTURE(F)
AIRPORT ELEVATION (NAVD 88)		4807.6'	4807.6'
AIRPORT REFERENCE POINT (ARP) COORDINATES (NAD 83)	LATITUDE	31°22'07.69"N	31°22'06.59"N
	LONGITUDE	109°53'00.49"W	109°52'57.15"W
MEAN MAXIMUM TEMPERATURE HOTTEST MONTH		90° (JULY)	SAME SAME
COMBINED WIND COVERAGE	12 MPH / 10.5 kts	95.03%	SAME
	15 MPH / 13kts	97.83%	SAME
AIRPORT REFERENCE CODE		B-I	B-I
NPIAS ROLE		GENERAL AVIATION	SAME
MAGNETIC VARIATION, 2010		10°4' E CHANGING BY 0'6" W/ YEAR	
NAVAIDS		BEACON	GPS (WAAS), BEACON

RUNWAY END COORDINATES (NAD 83)

	EXISTING		FUTURE	
	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE
RW (17) (18) END	31° 22' 35.60" N	109° 52' 57.44" W	SAME	SAME
RW (35) (36) END	31° 21' 37.97" N	109° 53' 08.28" W	31° 21' 35.12" N	109° 53' 08.80" W
RW 2 END	31°21'58.79"N	109°53'04.35"W	31°22'04.50" N	109°52'59.61" W
RW 20 END	31°22'20.54"N	109°52'46.27"W	SAME	SAME
RW 4 END	NONE	NONE	31°21'54.92" N	109°53'02.20" W
RW 22 END	NONE	NONE	31°22'15.664" N	109°52'34.27" W

NOTE: NAD 83 COORDINATES AND NAVD 88 ELEVATIONS BASED ON SURVEY PERFORMED BY WOOLPERT, INC. - JULY, 2009.

NON-STANDARD CONDITIONS

NUMBER	RW DESIGN CATEGORY	STANDARD	NON-STD CONDITION	PROPOSED ACTION
1	B-I	RUNWAY ℄ TO TAXIWAY ℄ SEPARATION 225'	175'	RELOCATE TAXIWAY TO 225'
2	B-I	RUNWAY ℄ TO HOLD BARS 200'	125'	RELOCATE TW TO 225' AND HOLD BARS TO 200'
3	-	RUNWAY NUMBERING WITHIN 5° OF MAGNETIC BEARING	RUNWAY 17/35 WITH A 359°/179° BEARING	REMARK RUNWAY AS 18/36
4	-	RUNWAY 2 SAFETY AREA GRADES - >5%	GRADES EXCEED MAXIMUM ALLOWED	RELOCATE RUNWAY THRESHOLD

THROUGH THE FENCE ACCESS POINTS

1	ACCESS POINT (E)
2	ACCESS POINT (E)
3	ACCESS POINT (E)
4	ACCESS POINT (E)

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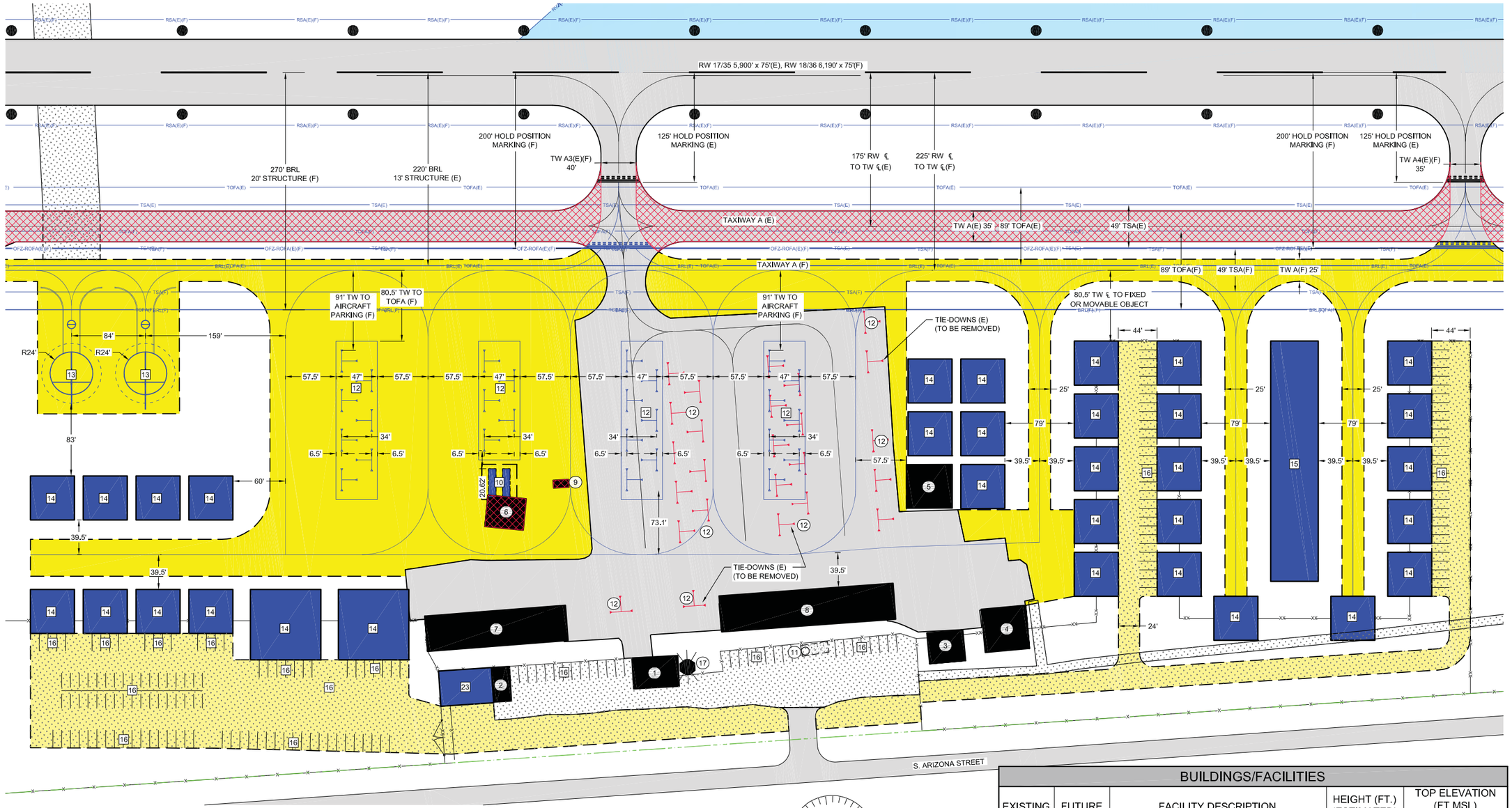
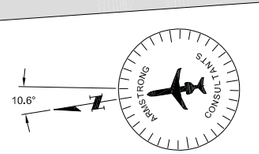
2	N/A	8/30/01	DATE OF PRIOR APPROVAL				
1	N/A	7/1/88	DATE OF PRIOR APPROVAL				

AIRPORT DATA SHEET



LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)			AIRPORT BEACON
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			LIGHTED WINDCONE
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)		N/A	SECTION CORNER
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)	4125	N/A	CONTOURS
		AIRPORT REFERENCE POINT			ROADS
		GRAVEL / DIRT / TURF			MARKINGS
RVZ(E)	RVZ(F)	RUNWAY VISIBILITY ZONE (RVZ)	X	XX	FENCING
		TO BE REMOVED	N/A		HELIPAD



MAGNETIC NORTH SOURCE:
NOAA GEOPHYSICAL DATA CENTER 02/08/2010
10°4' E, RATE OF CHANGE 0°6' W / YEAR

60 0 60 120
SCALE IN FEET

NOTE:
THE HANGAR LAYOUT SHOWN ON THE DRAWING IS SHOWN FOR CONCEPTUAL PLANNING PURPOSES ONLY. THE ULTIMATE LAYOUT OF THE HANGARS WILL DEPEND ON ACTUAL DEMAND FOR THE VARIOUS SIZES, STYLES AND DEPTH OF HANGARS. HOWEVER, A REVIEW OF EACH PROPOSED HANGAR CLUSTER SHOULD BE MADE PRIOR TO CONSTRUCTION TO ENSURE PROPER SET BACKS ARE MET.

BUILDINGS/FACILITIES

EXISTING	FUTURE	FACILITY DESCRIPTION	HEIGHT (FT.) (ESTIMATED)	TOP ELEVATION (FT MSL) (ESTIMATED)
1		TERMINAL BUILDING	21	4798
2		STORAGE BUILDING	21	4801
3		BOX HANGAR	21	4796
4		BOX HANGAR	21	4795
5		BOX HANGAR	21	4797
6		HANGAR (TO BE REMOVED)	21	4801
7		T-SHADES	15	4795
8		T-SHADES	15	4791
9		100LL FUEL TANK AND PUMP	12	4791
	10	JET-A & 100LL FUEL TANK AND PUMP	12	4791
11		WATER TANK	10	4786
12	12	APRON TIE-DOWNS	N/A	N/A
	13	HELICOPTER PARKING	N/A	N/A
	14	BOX HANGAR	21	4789-4806
	15	T-HANGAR	15	4786
16	16	VEHICLE PARKING	N/A	N/A
17		BEACON	35	4815
18		WIND CONE / SEGMENTED CIRCLE	20	4812
19		THRESHOLD LIGHTS	N/A	N/A
20		REIL'S	N/A	N/A
21	21	PAPI'S	N/A	N/A
	22	AWOS	17	4766
	23	AIRSIDE GROUNDS MAINTENANCE EQUIPMENT BUILDING	21	4797

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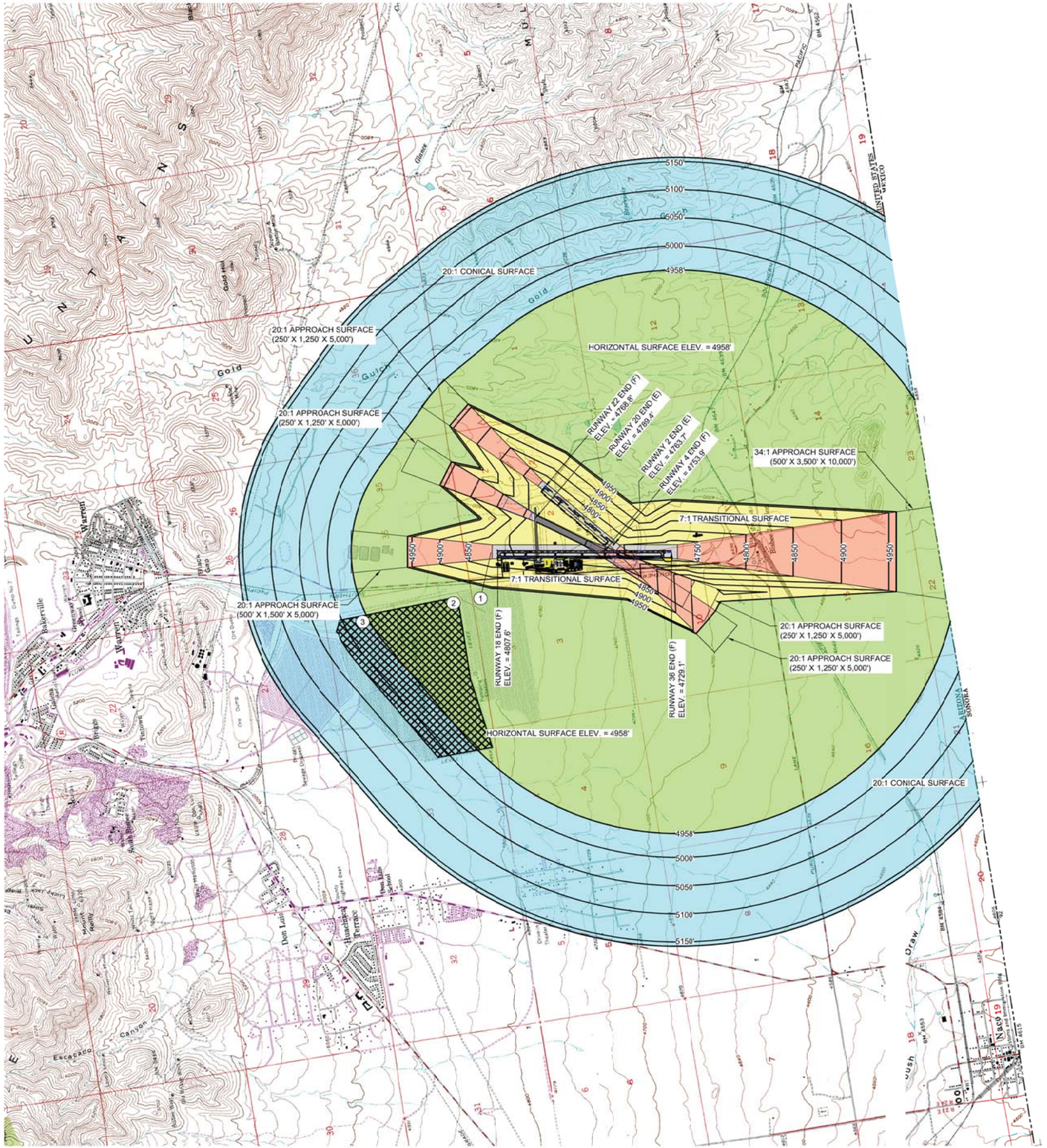
0	095909	10/2010	A.C.I. MASTER PLAN	5909503	LKB	HMD	JZP

TERMINAL AREA DRAWING

Sheet: 4 of: 16



OBSTRUCTION CHART				
SURFACE	DESCRIPTION	TOP ELEVATION	PENETRATION	REMARKS
PRIMARY	NONE	----	----	----
APPROACH	(1) SEE INNER APPROACH DRAWING 7	VARIES	VARIES	VARIES
TRANSITIONAL	NONE	----	----	----
HORIZONTAL	(2) TAILINGS PILE	5018'	60'	----
CONICAL	(3) TAILINGS PILE	5018'	60'	----

NOTES

1) NO CURRENT HEIGHT RESTRICTION ZONING IN EFFECT

2) REFER TO "INNER PORTION OF THE APPROACH SURFACE" DRAWING FOR DETAILS ON CLOSE-IN APPROACH OBSTRUCTIONS.

3) APPROACH SURFACES BASED ON ULTIMATE CONDITION

2000 0 2000 4000

SCALE IN FEET

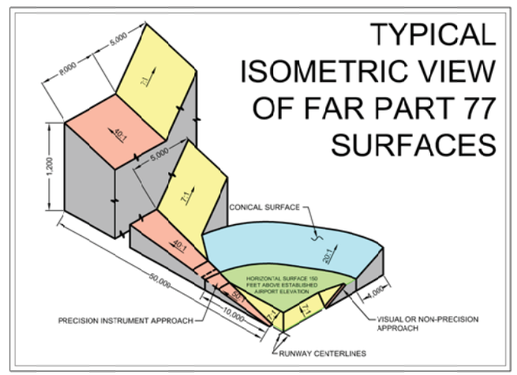
TRANSITIONAL SURFACE

HORIZONTAL SURFACE

APPROACH SURFACE

CONICAL SURFACE

PRIMARY SURFACE



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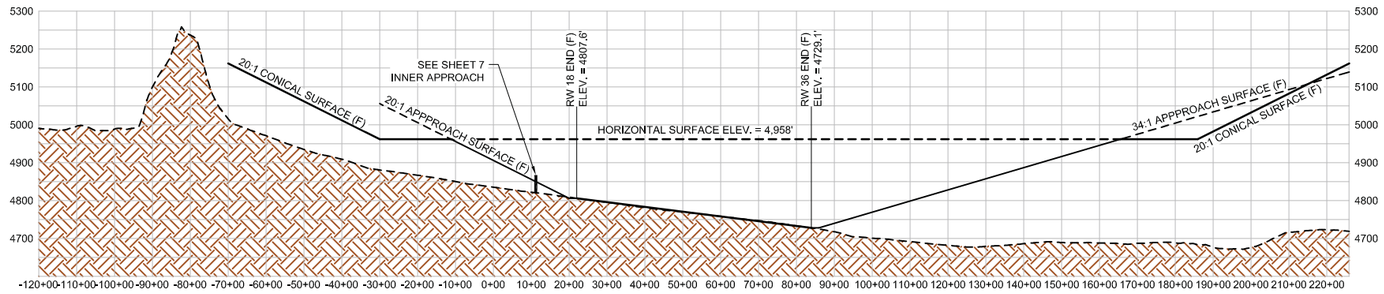
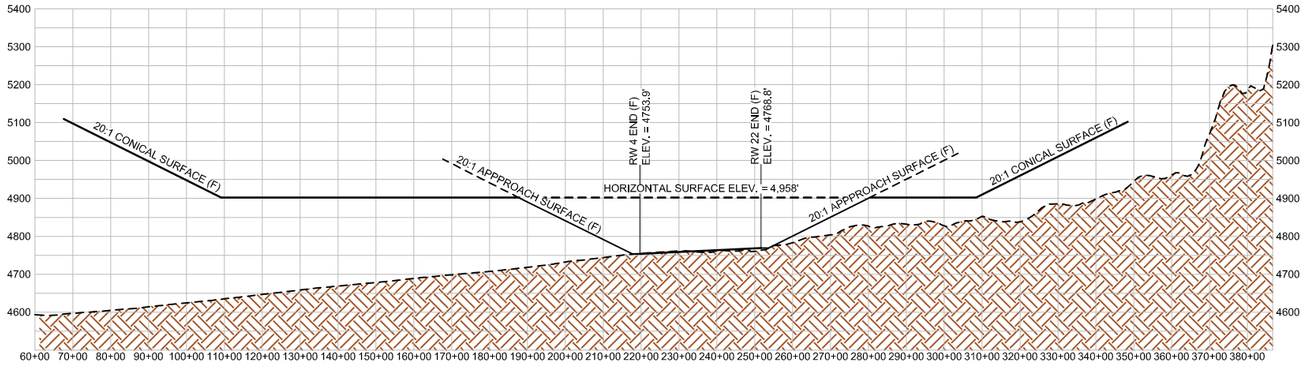
FAR PART "77" DRAWING



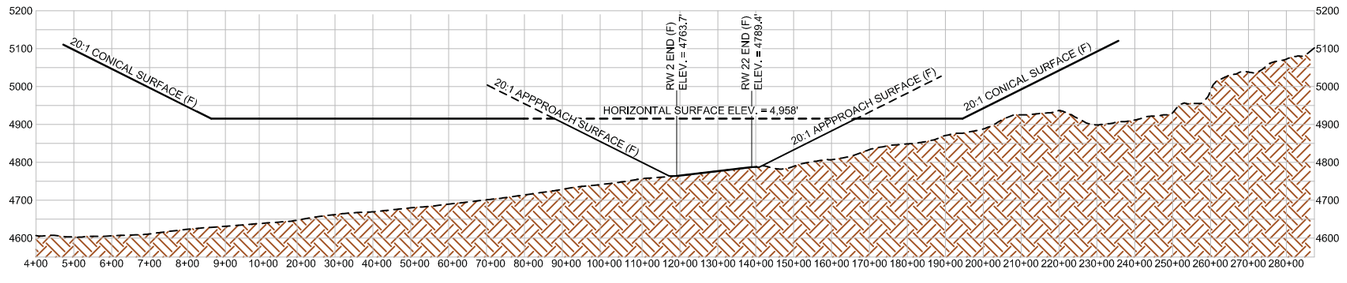
RUNWAY 18/36 PROFILE

SCALE: PER GRID



RUNWAY 4/22 PROFILE

SCALE: PER GRID



RUNWAY 2/20 PROFILE

SCALE: PER GRID

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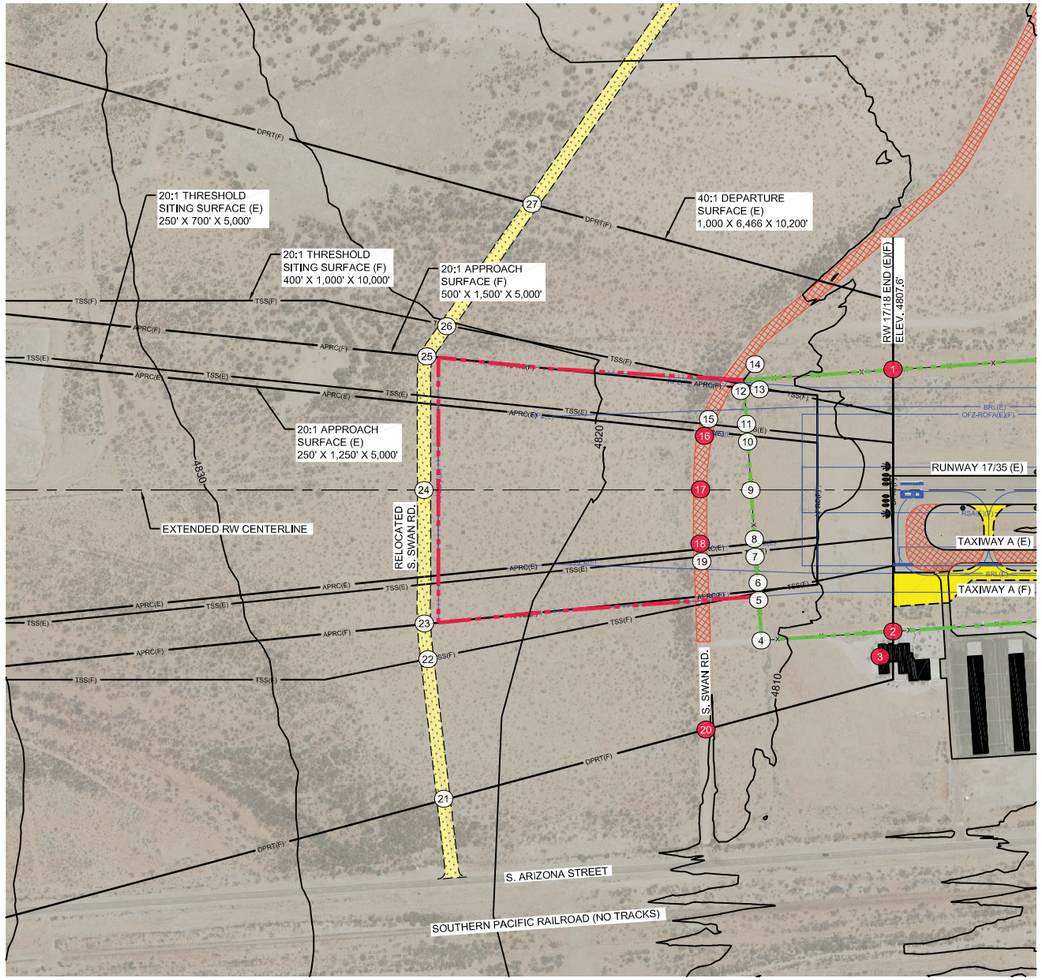
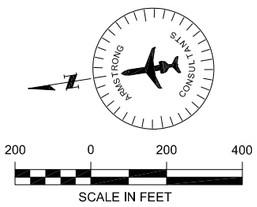
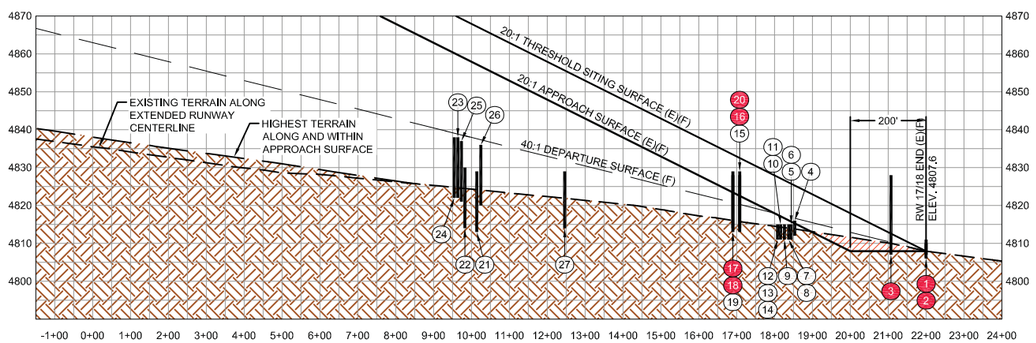
FAR PART
"77"
PROFILES



PLAN RW 17/18 END (E)(F)

SCALE: PER BAR SCALE





PROFILE RW 17/18 END (E)(F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 17/18 INNER APPROACH SURFACE (APRC), THRESHOLD SITING SURFACE (TSS) AND DEPARTURE SURFACE (DPRT) (E)(F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (E)	20:1 APRC PENETRATION (E)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	40:1 DPRT PENETRATION (F)	PROPOSED ACTION
1	FENCE (E)	4806'	4'	4810'	-	-	-	-	+2'	O.L.
2	FENCE (E)	4807'	4'	4811'	-	-	-	-	+3'	O.L.
3	BUILDING (E)	4807'	15'	4822'	-	-	-	-	+18'	O.L.
4	FENCE (E)	4812'	4'	4816'	-	-	-	-	NONE	N/A
5	FENCE (E)	4811'	4'	4815'	-	-	NONE	-	NONE	N/A
6	FENCE (E)	4811'	4'	4815'	-	-	NONE	NONE	NONE	N/A
7	FENCE (E)	4811'	4'	4815'	NONE	-	NONE	NONE	NONE	N/A
8	FENCE (E)	4811'	4'	4815'	NONE	NONE	NONE	NONE	NONE	N/A
9	FENCE (E)	4811'	4'	4815'	NONE	NONE	NONE	NONE	NONE	N/A
10	FENCE (E)	4811'	4'	4815'	NONE	NONE	NONE	NONE	NONE	N/A
11	FENCE (E)	4811'	4'	4815'	NONE	-	NONE	NONE	NONE	N/A
12	FENCE (E)	4811'	4'	4815'	-	-	NONE	NONE	NONE	N/A
13	FENCE (E)	4811'	4'	4815'	-	-	NONE	-	NONE	N/A
14	FENCE (E)	4811'	4'	4815'	-	-	-	-	NONE	N/A
15	ROAD (E)	4813'	16'	4829'	NONE	-	-	-	-	RELOCATE ROAD
16	ROAD (E)	4813'	16'	4829'	NONE	+6'	-	-	-	RELOCATE ROAD
17	ROAD (E)	4813'	16'	4829'	NONE	+5'	-	-	-	RELOCATE ROAD
18	ROAD (E)	4813'	16'	4829'	NONE	+5'	-	-	-	RELOCATE ROAD
19	ROAD (E)	4814'	16'	4830'	NONE	-	-	-	-	RELOCATE ROAD
20	ROAD (E)	4814'	16'	4830'	-	-	-	-	+10'	O.L.
21	ROAD (F)	4823'	16'	4839'	-	-	-	-	NONE	N/A
22	ROAD (F)	4824'	16'	4840'	-	-	NONE	-	NONE	N/A
23	ROAD (F)	4822'	16'	4838'	-	-	NONE	NONE	NONE	N/A
24	ROAD (F)	4822'	16'	4838'	-	-	NONE	NONE	NONE	N/A
25	ROAD (F)	4821'	16'	4837'	-	-	NONE	NONE	NONE	N/A
26	ROAD (F)	4820'	16'	4836'	-	-	NONE	-	NONE	N/A
27	ROAD (F)	4815'	16'	4831'	-	-	-	-	NONE	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT GROUND ELEVATIONS ARE BASED ON SURVEY BY WOOLPERT, INC. - JULY, 2009. TOP ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

RUNWAY 18/36 DEPARTURE SURFACE TERRAIN PENETRATIONS OF APPROXIMATELY 161' EXISTING AT 10,000' FROM RUNWAY 18 END, BEYOND LIMITS OF THIS DRAWING.

STRUCTURE 3 PENETRATES THE FUTURE RUNWAY 36 40:1 DEPARTURE SURFACE, BY LESS THAN 35 FEET. DEVELOPMENT WITHIN THIS AREA IS ALLOWABLE PROVIDED FUTURE STRUCTURES ARE LOWER THAN 35 FEET IN HEIGHT, OBSTRUCTION LIGHTED AND REVIEWED BY THE FAA AND DETERMINED TO BE NO HAZARD TO AIR NAVIGATION THROUGH THE 7460-1 NOTICE OF PROPOSED CONSTRUCTION PROCESS.

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)		0000 0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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BISBEE MUNICIPAL AIRPORT
BISBEE, ARIZONA

AIP No. 3-04-0004-009-2009
AIRPORT LAYOUT PLANS

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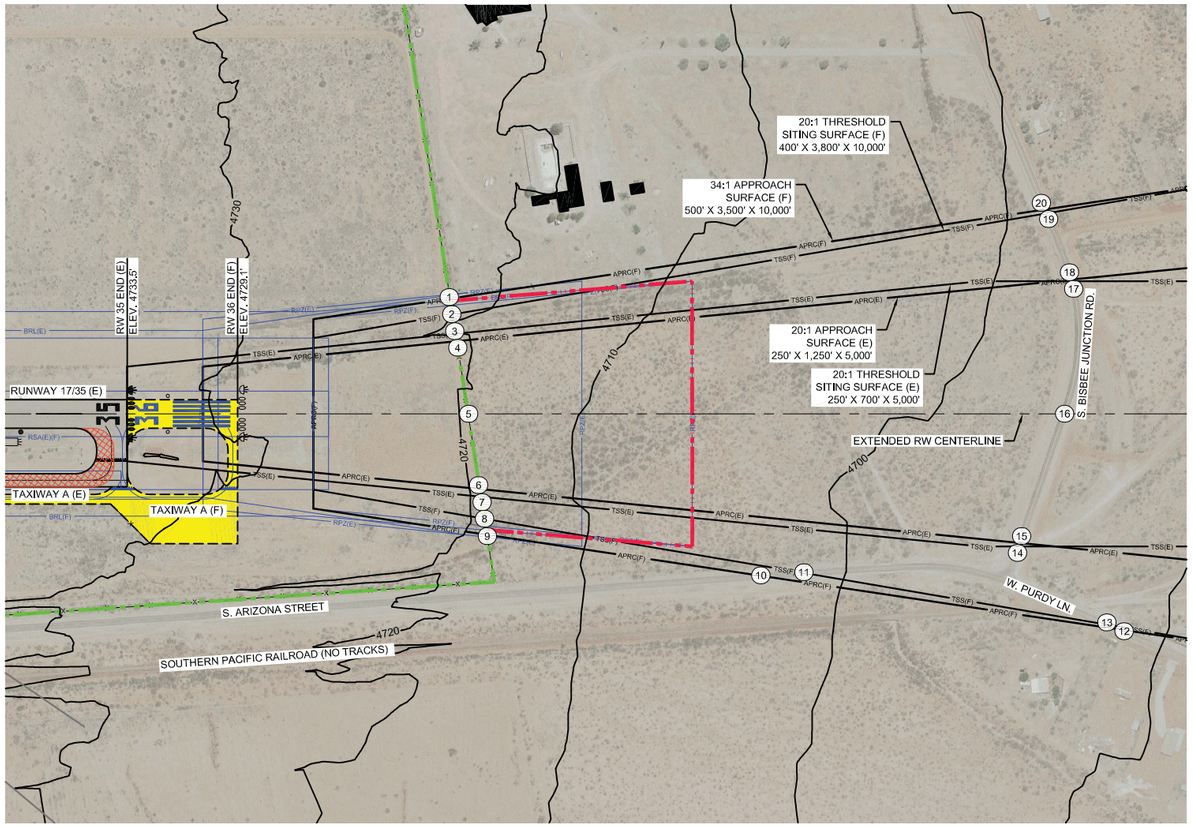
0	095909	01/2011	A.C.I. MASTER PLAN	5909505	LKB	HMD	JZP

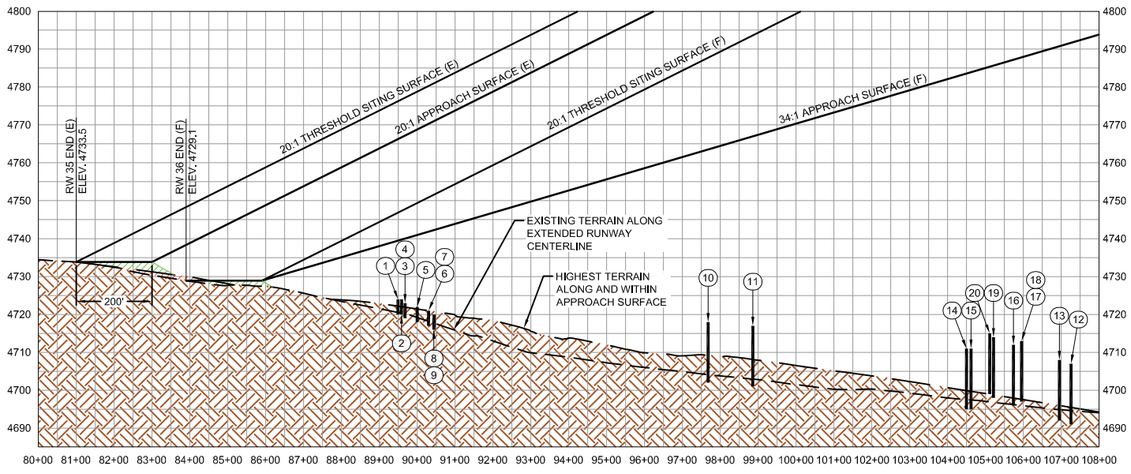
RUNWAY 17/18 INNER APPROACH (E)(F)

Sheet: 7 of: 16



PLAN RW 35/36 END (E)(F)

SCALE: PER BAR SCALE



PROFILE RW 35/36 END (E)(F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 35/36 INNER APPROACH SURFACE (APRC), THRESHOLD SITING SURFACE (TSS) AND DEPARTURE SURFACE (DPRT) (E)(F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (E)	20:1 APRC PENETRATION (E)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	PROPOSED ACTION
1	FENCE (E)	4720'	4'	4724'	-	-	-	NONE	N/A
2	FENCE (E)	4720'	4'	4724'	-	-	NONE	NONE	N/A
3	FENCE (E)	4719'	4'	4723'	NONE	-	NONE	NONE	N/A
4	FENCE (E)	4719'	4'	4723'	NONE	NONE	NONE	NONE	N/A
5	FENCE (E)	4718'	4'	4722'	NONE	NONE	NONE	NONE	N/A
6	FENCE (E)	4717'	4'	4721'	NONE	NONE	NONE	NONE	N/A
7	FENCE (E)	4717'	4'	4721'	NONE	-	NONE	NONE	N/A
8	FENCE (E)	4716'	4'	4720'	NONE	NONE	NONE	NONE	N/A
9	FENCE (E)	4716'	4'	4720'	-	-	-	NONE	N/A
10	ROAD (E)	4702'	16'	4718'	-	-	-	NONE	N/A
11	ROAD (E)	4701'	16'	4717'	NONE	-	NONE	NONE	N/A
12	ROAD (E)	4691'	16'	4707'	-	-	-	NONE	N/A
13	ROAD (E)	4692'	16'	4708'	-	-	NONE	NONE	N/A
14	ROAD (E)	4695'	16'	4711'	NONE	-	NONE	NONE	N/A
15	ROAD (E)	4695'	16'	4711'	NONE	NONE	NONE	NONE	N/A
16	ROAD (E)	4696'	16'	4712'	NONE	NONE	NONE	NONE	N/A
17	ROAD (E)	4697'	16'	4713'	NONE	NONE	NONE	NONE	N/A
18	ROAD (E)	4697'	16'	4713'	-	NONE	NONE	NONE	N/A
19	ROAD (E)	4698'	16'	4714'	-	-	NONE	NONE	N/A
20	ROAD (E)	4699'	16'	4715'	-	-	-	NONE	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT GROUND ELEVATIONS ARE BASED ON SURVEY BY WOOLPERT, INC. - JULY, 2009. TOP ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

200 0 200 400
SCALE IN FEET

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)	0000	0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF	X	X	FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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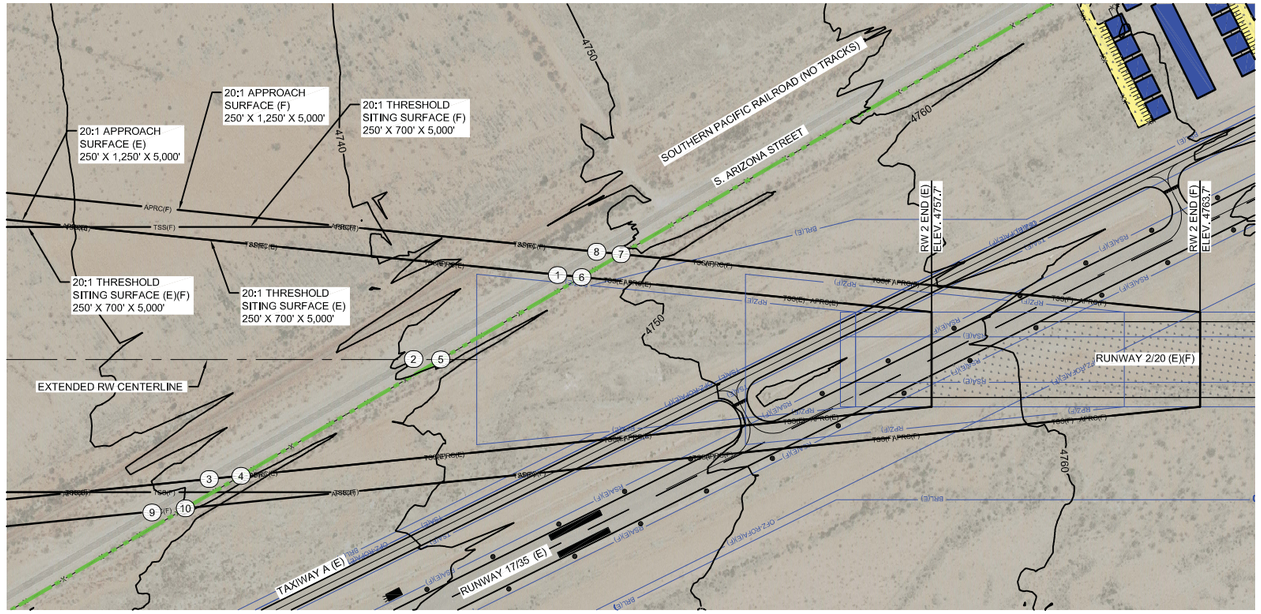
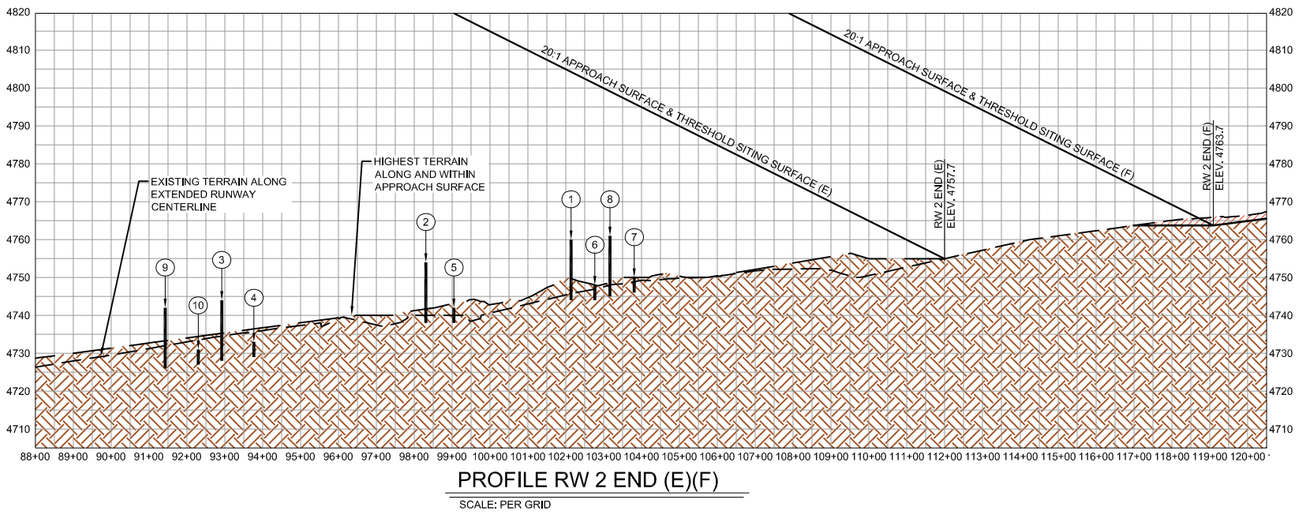
0	095909	01/2011	A.C.I. MASTER PLAN	5909505	LKB	HMD	JZP

RUNWAY 35/36 INNER APPROACH (E)(F)



PLAN RW 2 END (E)(F)

SCALE: PER BAR SCALE



PROFILE RW 2 END (E)(F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 2 INNER APPROACH SURFACE (APRC) AND THRESHOLD SITING SURFACE (TSS) (E)(F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (E)	20:1 APRC PENETRATION (E)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	PROPOSED ACTION
1	ROAD (E)	4744'	16'	4765'	NONE	NONE	NONE	NONE	N/A
2	ROAD (E)	4738'	16'	4754'	NONE	NONE	NONE	NONE	N/A
3	ROAD (E)	4728'	16'	4744'	NONE	NONE	NONE	NONE	N/A
4	FENCE (E)	4729'	4'	4733'	NONE	NONE	NONE	NONE	N/A
5	FENCE (E)	4738'	4'	4742'	NONE	NONE	NONE	NONE	N/A
6	FENCE (E)	4744'	4'	4748'	NONE	NONE	NONE	NONE	N/A
7	FENCE (E)	4746'	4'	4750'	-	-	NONE	NONE	N/A
8	ROAD (E)	4745'	16'	4761'	-	-	NONE	NONE	N/A
9	ROAD (E)	4726'	16'	4742'	-	-	-	NONE	N/A
10	FENCE (E)	4727'	4'	4731'	-	-	-	NONE	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT GROUND ELEVATIONS ARE BASED ON SURVEY BY WOOLPERT, INC. - JULY, 2009. TOP ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

200 0 200 400
SCALE IN FEET

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)		0000 0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF			FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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BISBEE MUNICIPAL AIRPORT
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AIP No. 3-04-0004-009-2009
AIRPORT LAYOUT PLANS

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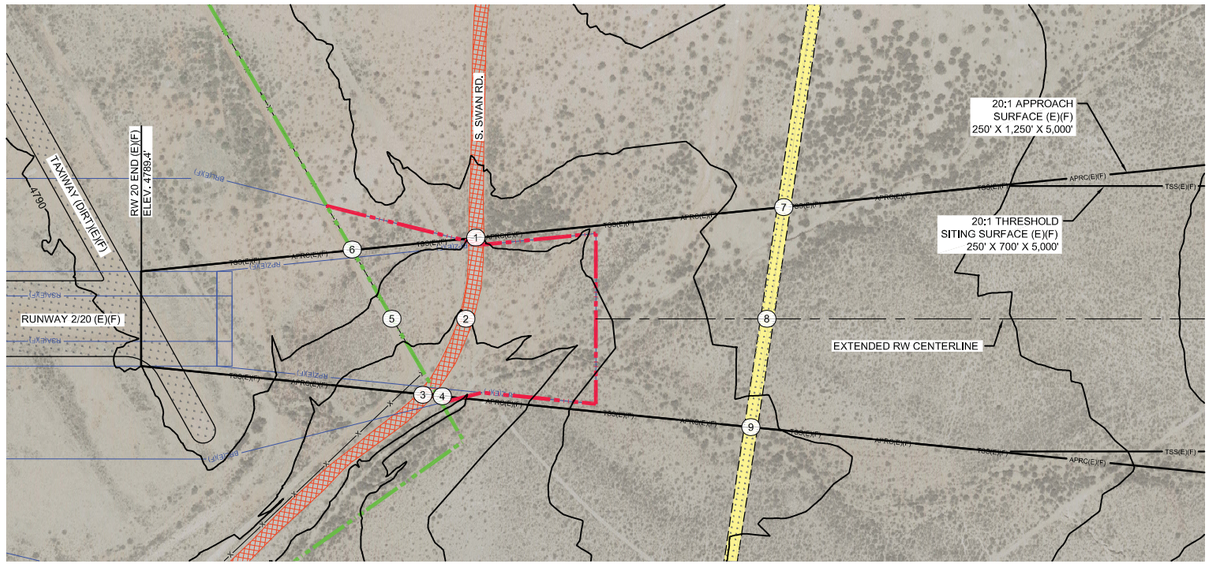
0	095909	01/2011	A.C.I. MASTER PLAN	5909505	LKB	HMD	JZP

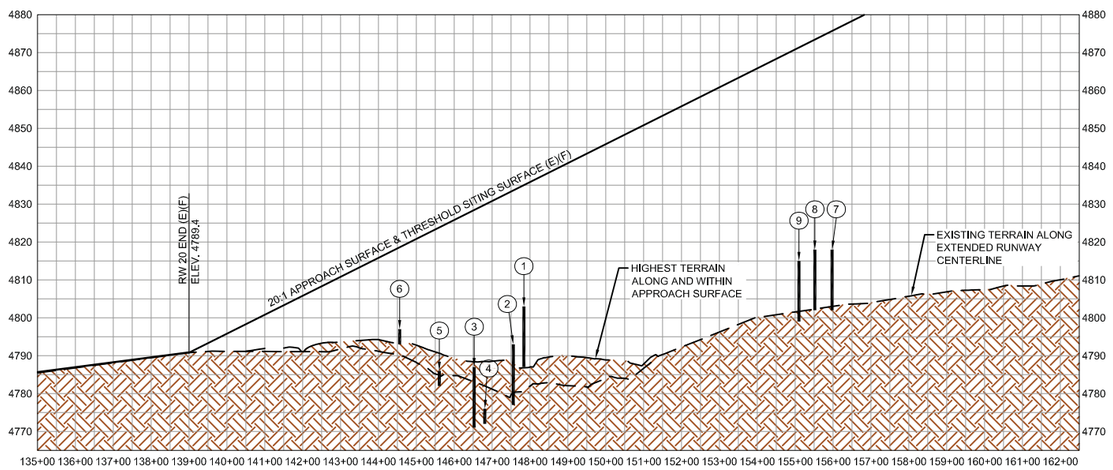
RUNWAY 2 INNER APPROACH (E)(F)

Sheet: 9 of: 16



PLAN RW 20 END (E)(F)

SCALE: PER BAR SCALE



PROFILE RW 20 END (E)(F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 20 INNER APPROACH SURFACE (APRC) AND THRESHOLD SITING SURFACE (TSS) (E)(F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (E)	20:1 APRC PENETRATION (E)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	PROPOSED ACTION
1	ROAD (E)	4787'	16'	4803'	NONE	NONE	-	-	N/A
2	ROAD (E)	4777'	16'	4793'	NONE	NONE	-	-	N/A
3	ROAD (E)	4771'	16'	4787'	NONE	NONE	-	-	N/A
4	FENCE (E)	4772'	4'	4776'	NONE	NONE	NONE	NONE	N/A
5	FENCE (E)	4782'	4'	4786'	NONE	NONE	NONE	NONE	N/A
6	FENCE (E)	4793'	4'	4797'	NONE	NONE	NONE	NONE	N/A
7	ROAD (F)	4802'	16'	4818'	-	-	NONE	NONE	N/A
8	ROAD (F)	4802'	16'	4818'	-	-	NONE	NONE	N/A
9	ROAD (F)	4799'	16'	4815'	-	-	NONE	NONE	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT GROUND ELEVATIONS ARE BASED ON SURVEY BY WOOLPERT, INC. - JULY, 2009. TOP ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

200 0 200 400
SCALE IN FEET

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)		0000 0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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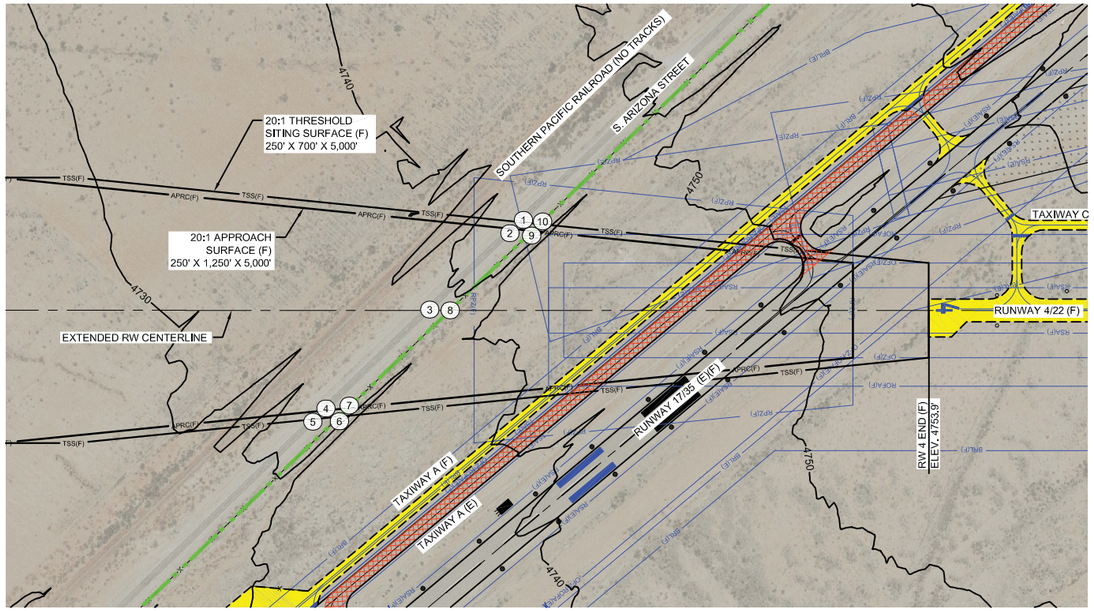
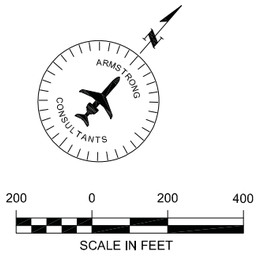
RUNWAY 20
INNER
APPROACH
(E)(F)



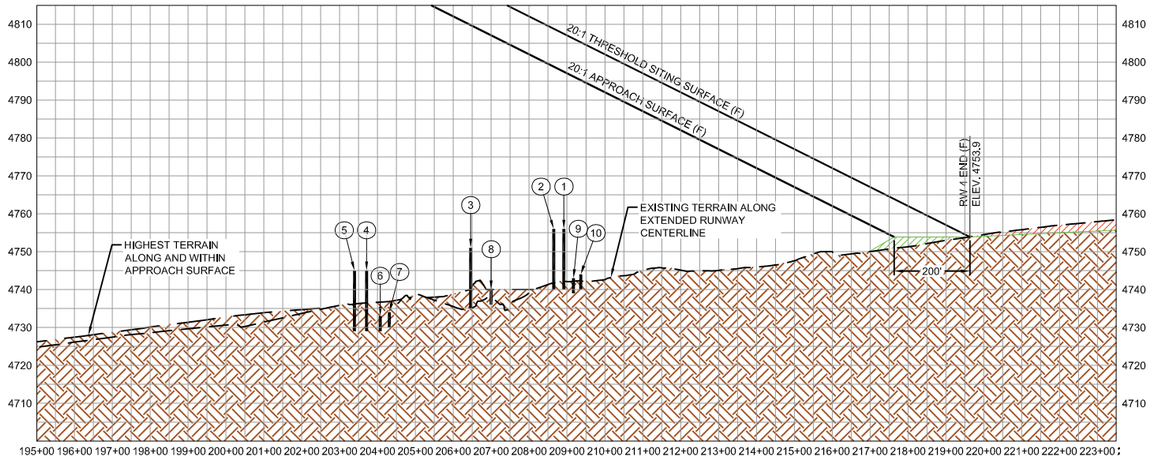
PLAN RW 4 END (F)

SCALE: PER BAR SCALE



200 0 200 400

SCALE IN FEET



PROFILE RW 4 END (F)

SCALE: PER GRID

OBJECTS WITHIN RUNWAY 4 INNER APPROACH SURFACE (APRC) AND THRESHOLD SITING SURFACE (TSS) (F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	PROPOSED ACTION
1	ROAD (E)	4740'	16'	4756'	NONE	-	N/A
2	ROAD (E)	4740'	16'	4756'	NONE	NONE	N/A
3	ROAD (E)	4735'	16'	4751'	NONE	NONE	N/A
4	ROAD (E)	4729'	16'	4745'	NONE	NONE	N/A
5	ROAD (E)	4729'	16'	4745'	NONE	-	N/A
6	FENCE (E)	4729'	4'	4733'	NONE	-	N/A
7	FENCE (E)	4730'	4'	4734'	NONE	NONE	N/A
8	FENCE (E)	4736'	4'	4740'	NONE	NONE	N/A
9	FENCE (E)	4739'	4'	4743'	NONE	NONE	N/A
10	FENCE (E)	4740'	4'	4744'	NONE	-	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT GROUND ELEVATIONS ARE BASED ON SURVEY BY WOOLPERT, INC. - JULY, 2009. TOP ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)		0000 0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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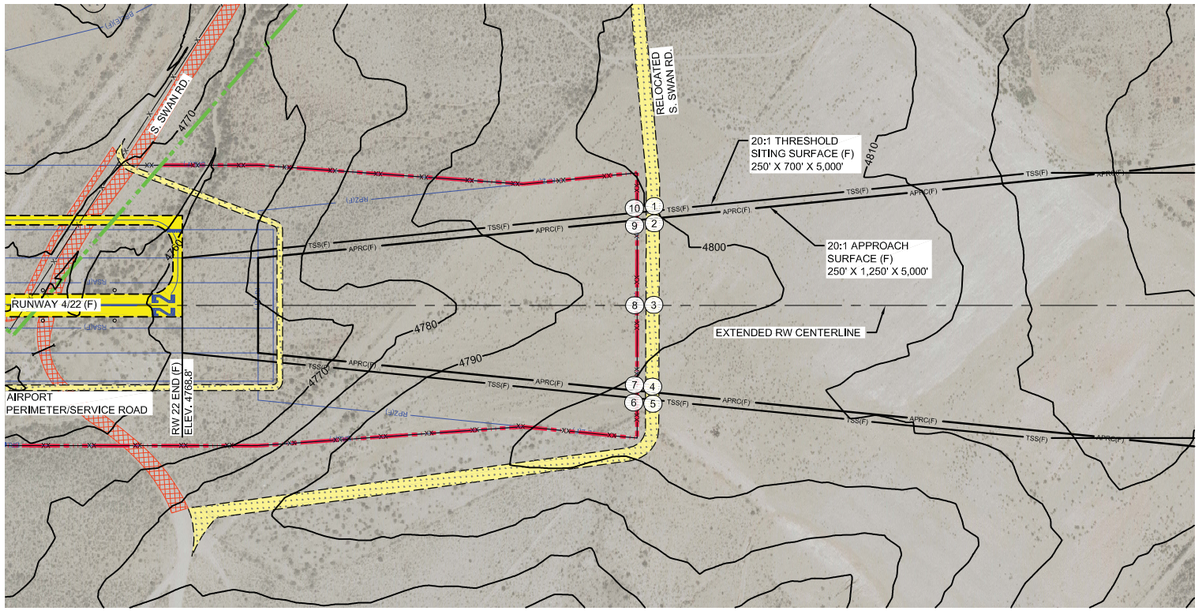
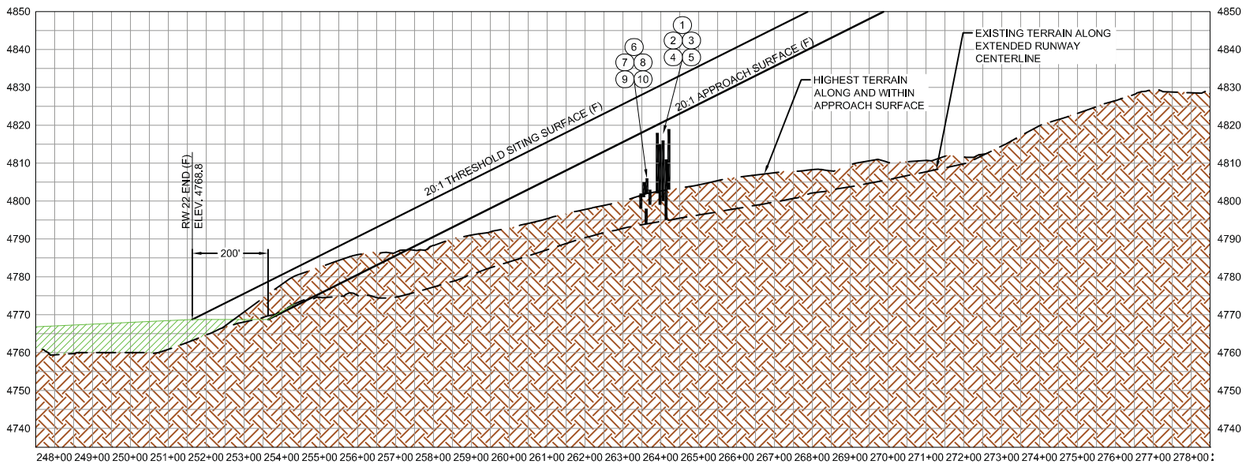
RUNWAY 4 INNER APPROACH (F)

Sheet: 11 of: 16



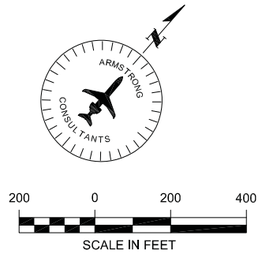
PLAN RW 22 END (F)

SCALE: PER BAR SCALE



PROFILE RW 22 END (F)

SCALE: PER GRID



OBJECTS WITHIN RUNWAY 22 INNER APPROACH SURFACE (APRC) AND THRESHOLD SITING SURFACE (TSS) (F)

No.	OBJECT	GROUND ELEVATION	ESTIMATED OBJECT HT.	TOP ELEVATION (MSL)	20:1 TSS PENETRATION (F)	20:1 APRC PENETRATION (F)	PROPOSED ACTION
1	ROAD (F)	4800'	16'	4816'	NONE	-	N/A
2	ROAD (F)	4799'	16'	4815'	NONE	NONE	N/A
3	ROAD (F)	4795'	16'	4811'	NONE	NONE	N/A
4	ROAD (F)	4802'	16'	4818'	NONE	NONE	N/A
5	ROAD (F)	4803'	16'	4819'	NONE	-	N/A
6	FENCE (F)	4802'	4'	4806'	NONE	-	N/A
7	FENCE (F)	4801'	4'	4805'	NONE	NONE	N/A
8	FENCE (F)	4794'	4'	4798'	NONE	NONE	N/A
9	FENCE (F)	4798'	4'	4802'	NONE	NONE	N/A
10	FENCE (F)	4799'	4'	4803'	NONE	-	N/A

NOTE: OBJECT ELEVATIONS IN FEET MSL (VERTICAL DATUM NAVD88).
OBJECT ELEVATIONS ARE ESTIMATED AND NOT BASED ON A SURVEY.
- = OBJECT IS NOT LOCATED WITHIN THIS SURFACE.
O.L. = OBSTRUCTION LIGHT
= OBJECT PENETRATION LOCATION

NO THRESHOLD SITING SURFACE PENETRATIONS

AIRPORT PERIMETER/SERVICE ROAD NOT CONSIDERED AN OBSTRUCTION - RESTRICTED ACCESS/USE.

LEGEND

EXISTING	FUTURE/ULTIMATE	DESCRIPTION	EXISTING	FUTURE/ULTIMATE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)	APRC(E)	APRC(F)	APPROACH SURFACE
		STRUCTURE/FACILITIES (BUILDING)	DPRT(E)	DPRT(F)	DEPARTURE SURFACE
		AIRPORT PROPERTY LINE (APL)	TSS(E)	TSS(F)	THRESHOLD SITING SURFACE
RSA(E)	RSA(F)	RUNWAY SAFETY AREA (RSA)		0000 0000	THRESHOLD LIGHTS
OFZ(E)	OFZ(F)	OBSTACLE FREE ZONE (OFZ)			REIL
ROFA(E)	ROFA(F)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)	RUNWAY PROTECTION ZONE (RPZ)			DRAINAGE/CULVERT
BRL(E)	BRL(F)	BUILDING RESTRICTION LINE (BRL)	4125	N/A	CONTOURS
TSA(E)	TSA(F)	TAXIWAY SAFETY AREA (TSA)			ROAD
TOFA(E)	TOFA(F)	TAXIWAY OBJECT FREE AREA (TOFA)			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCE
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			CUT / FILL
		TO BE REMOVED			

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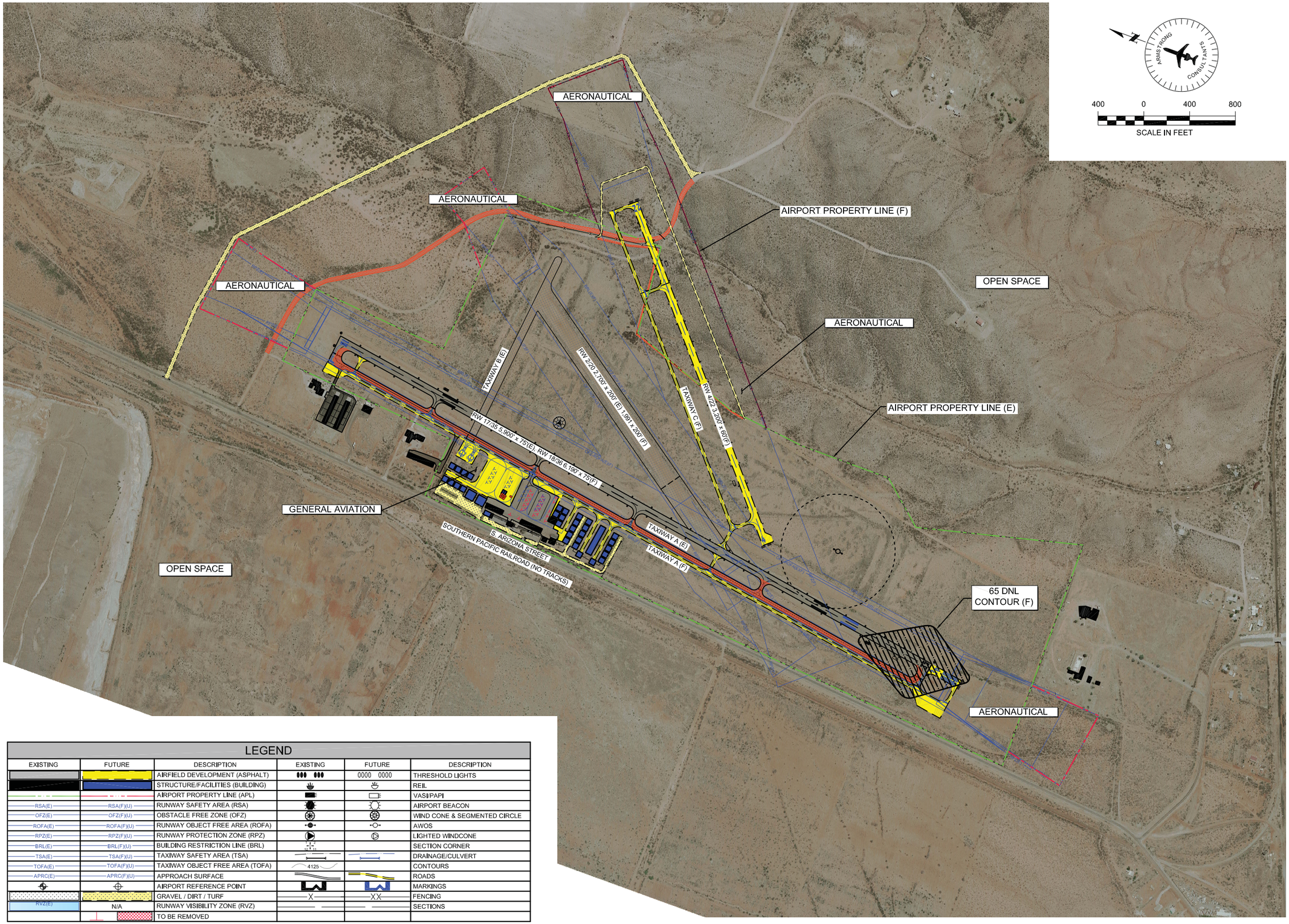
BISBEE MUNICIPAL AIRPORT
BISBEE, ARIZONA

AIP No. 3-04-0004-009-2009
AIRPORT LAYOUT PLANS

No.	Project No.	Date	Revision / Description	File	Drwn.	Chkd.	Approvd.
0	095909	01/2011	A.C.I. MASTER PLAN	5909505	LKB	HMD	JZP

RUNWAY 22
INNER
APPROACH (F)



LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)			THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)			AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)			WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)			LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)			SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125		CONTOURS
APRC(E)	APRC(F)(U)	APPROACH SURFACE			ROADS
		AIRPORT REFERENCE POINT			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCING
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			SECTIONS
		TO BE REMOVED			

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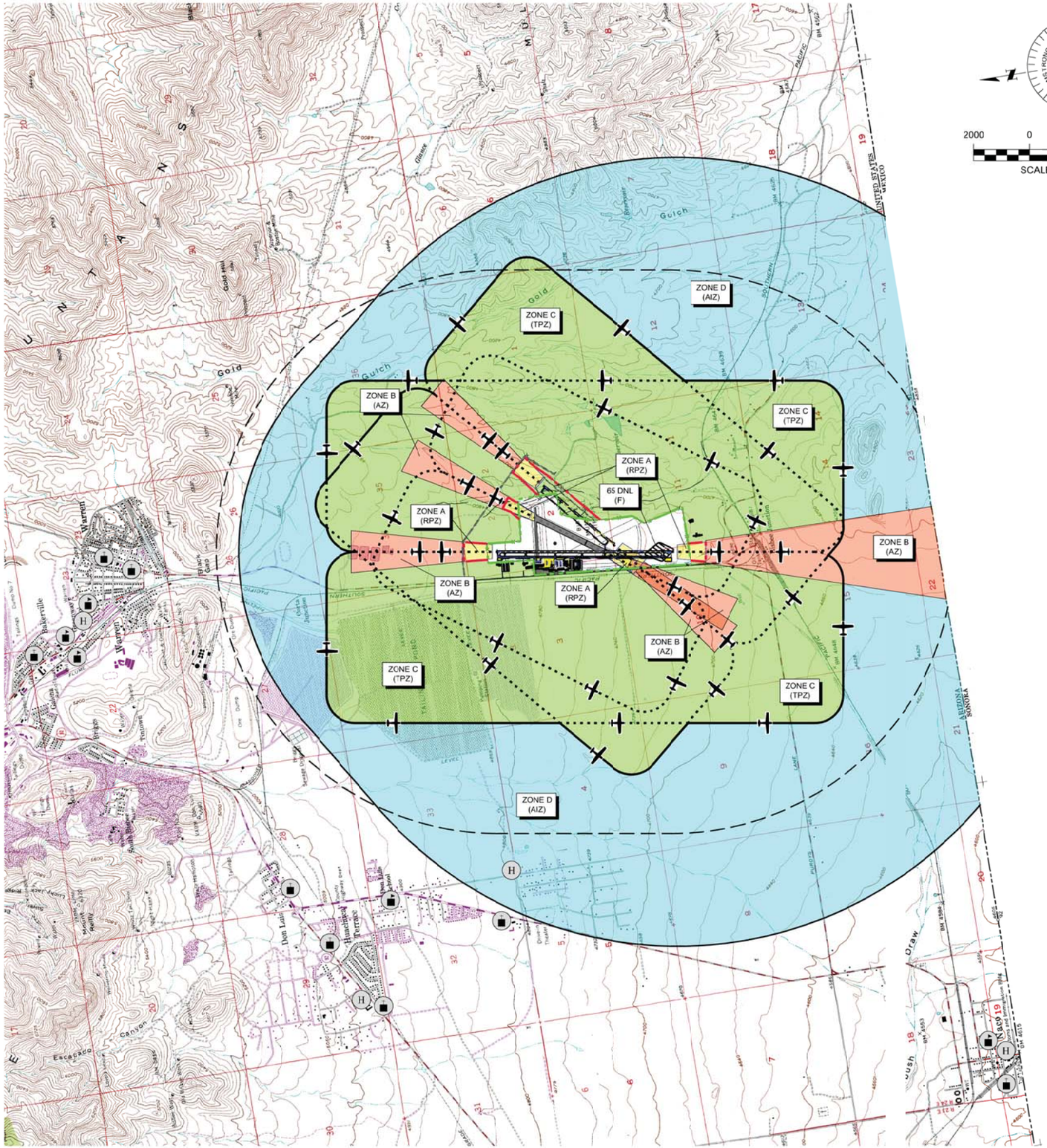
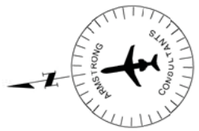
ON AIRPORT LAND USE

Sheet: 13 of: 16





2000 0 2000 4000

SCALE IN FEET

LAND USE COMPATIBILITY GUIDELINES

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

NOTE: DEVELOPMENT PROJECTS WHICH ARE WILDLIFE ATTRACTANT, INCLUDING SEWERAGE PONDS AND LANDFILLS, WITHIN 10,000 FEET OF THE AIRPORT ARE UNACCEPTABLE. (REF.: FAA AC 150/5200-33)

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

CRITERIA

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

NOTICE OF PROPOSED CONSTRUCTION

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

LEGEND

CHURCH

SCHOOL

HOSPITAL

TYPICAL TRAFFIC PATTERN DIRECTION AND FLIGHT TRACK AREA.

RUNWAY PROTECTION ZONE (RPZ) AS DIMENSIONED ON SHEET 2 OF AIRPORT LAYOUT PLAN.

APPROACH SURFACE AS DESCRIBED ON THE FAR PART 77 DRAWING OF THE AIRPORT LAYOUT PLAN.

EXISTING AIRPORT PROPERTY LINE

FUTURE AIRPORT PROPERTY LINE

NO HAZARDOUS WILDLIFE ATTRACTANT RING

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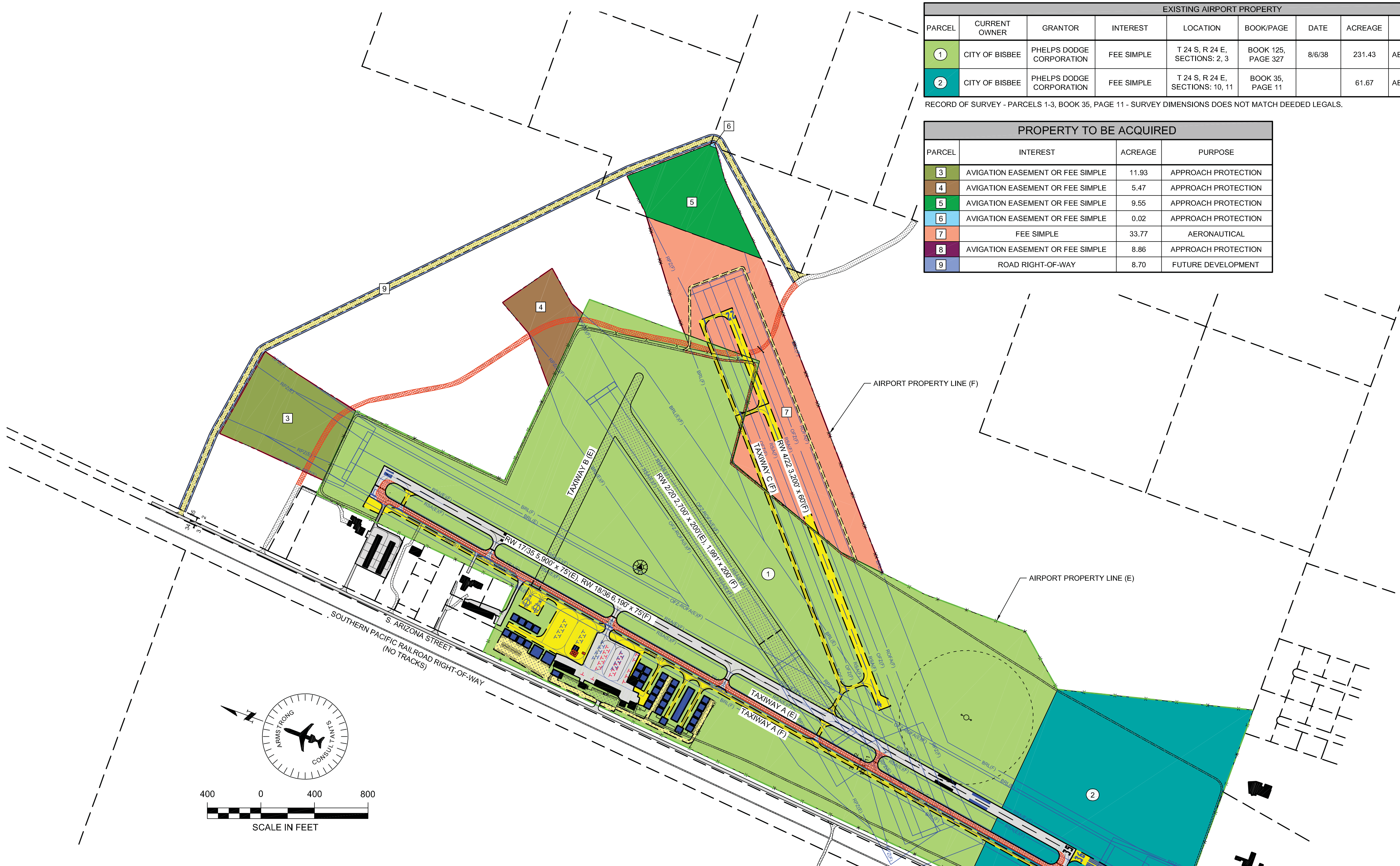
OFF AIRPORT LAND USE



EXISTING AIRPORT PROPERTY

PARCEL	CURRENT OWNER	GRANTOR	INTEREST	LOCATION	BOOK/PAGE	DATE	ACREAGE	PURPOSE	FEDERAL PARTICIPATION
1	CITY OF BISBEE	PHELPS DODGE CORPORATION	FEE SIMPLE	T 24 S, R 24 E, SECTIONS: 2, 3	BOOK 125, PAGE 327	8/6/38	231.43	AERONAUTICAL	NONE
2	CITY OF BISBEE	PHELPS DODGE CORPORATION	FEE SIMPLE	T 24 S, R 24 E, SECTIONS: 10, 11	BOOK 35, PAGE 11		61.67	AERONAUTICAL	NONE

RECORD OF SURVEY - PARCELS 1-3, BOOK 35, PAGE 11 - SURVEY DIMENSIONS DOES NOT MATCH DEEDED LEGALS.

PROPERTY TO BE ACQUIRED

PARCEL	INTEREST	ACREAGE	PURPOSE
3	AVIGATION EASEMENT OR FEE SIMPLE	11.93	APPROACH PROTECTION
4	AVIGATION EASEMENT OR FEE SIMPLE	5.47	APPROACH PROTECTION
5	AVIGATION EASEMENT OR FEE SIMPLE	9.55	APPROACH PROTECTION
6	AVIGATION EASEMENT OR FEE SIMPLE	0.02	APPROACH PROTECTION
7	FEE SIMPLE	33.77	AERONAUTICAL
8	AVIGATION EASEMENT OR FEE SIMPLE	8.86	APPROACH PROTECTION
9	ROAD RIGHT-OF-WAY	8.70	FUTURE DEVELOPMENT

LEGEND

EXISTING	FUTURE	DESCRIPTION	EXISTING	FUTURE	DESCRIPTION
		AIRFIELD DEVELOPMENT (ASPHALT)		0000 0000	THRESHOLD LIGHTS
		STRUCTURE/FACILITIES (BUILDING)			REIL
		AIRPORT PROPERTY LINE (APL)			VASI/PAPI
RSA(E)	RSA(F)(U)	RUNWAY SAFETY AREA (RSA)			AIRPORT BEACON
OFZ(E)	OFZ(F)(U)	OBSTACLE FREE ZONE (OFZ)			WIND CONE & SEGMENTED CIRCLE
ROFA(E)	ROFA(F)(U)	RUNWAY OBJECT FREE AREA (ROFA)			AWOS
RPZ(E)	RPZ(F)(U)	RUNWAY PROTECTION ZONE (RPZ)			LIGHTED WINDCONE
BRL(E)	BRL(F)(U)	BUILDING RESTRICTION LINE (BRL)	1 2 12 11		SECTION CORNER
TSA(E)	TSA(F)(U)	TAXIWAY SAFETY AREA (TSA)			DRAINAGE/CULVERT
TOFA(E)	TOFA(F)(U)	TAXIWAY OBJECT FREE AREA (TOFA)	4125		CONTOURS
APRC(E)	APRC(F)(U)	APPROACH SURFACE			ROADS
		AIRPORT REFERENCE POINT			MARKINGS
		GRAVEL / DIRT / TURF	X	XX	FENCING
RVZ(E)	N/A	RUNWAY VISIBILITY ZONE (RVZ)			SECTIONS
		TO BE REMOVED			

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EXHIBIT "A"
PROPERTY MAP

AERIAL PHOTOGRAPH OBTAINED FROM WOOLPERT, INC. - JULY 2009

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THE PREPARATION OF THE DOCUMENT WAS FINANCED IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM (AIP) FROM FEDERAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA AND DO NOT BIND THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY FUTURE DEVELOPMENT PROJECT(S) RECOMMENDED IN THIS REPORT. ACCEPTANCE OF THIS REPORT DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT BY THE FAA TO FUND ANY PROJECT OR TO APPROVE ANY AIRPORT DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE OR WOULD HAVE JUSTIFICATION IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

AERIAL PHOTOGRAPH

Sheet: 16 of: 16

Chapter Six
Environmental Overview

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

6.1 INTRODUCTION

This environmental overview examines the potential environmental impacts associated with the proposed airport improvements from the preferred development alternative(s) selected in Chapter 4 and listed in the Capital Improvement and Financial Plans in the following Chapter. The proposed improvements most likely to result in environmental impacts include the extension of Runway 17/35, the construction of the crosswind Runway 4/22 and the landside development. All other improvements occur on existing airport property and are less likely to impact the natural environment. This Chapter is intended to provide an overview of the potential impacts and identify additional environmental documentation that may be required as a prerequisite to development.

6.2 AIR QUALITY

The Clean Air Act of 1970 was enacted to reduce emissions of specific pollutants via uniform Federal standards. These standards include the National Ambient Air Quality Standards (NAAQS) which set maximum allowable ambient concentrations of ozone (O3), nitrogen dioxide (NO2), sulfur dioxide (SO2), carbon monoxide (CO), lead (Pb) and particulate matter 10 microns or smaller (PM10). Section 176(c) of the Act, in part, states that no Federal agency shall engage in, support in any way or provide financial assistance for, license or permit or approve any activity that does not conform to the State Implementation Plan.

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

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

Correspondence was sent to the Arizona Department of Environmental Quality (ADEQ) Office. The ADEQ responded with recommendations to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site. A copy of the letter can be found in Appendix D.

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

I. Site Preparation and Construction.

A. Minimize land disturbance.
B. Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air.
C. Cover trucks when hauling dirt or debris.
D. Minimize soil track-out by washing or cleaning truck wheels before leaving the construction site.
E. Use windbreaks to prevent any accidental dust pollution.
F. Segregate storm water drainage from construction sites and material piles.

II. Construction Phase.
    A. Cover trucks when transferring materials.
    B. Minimize unnecessary vehicular and machinery activities.
III. Completion Phase.
    A. Revegetate any disturbed land not used.
    B. Remove unused material and dirt piles.
    C. Remove soil piles via covered trucks.

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

6.3 COASTAL RESOURCES

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

6.4 COMPATIBLE LAND USE

Land use compatibility considerations include safety, height hazards and noise exposure. Although extremely rare, most aircraft accidents occur within 5,000 feet of a runway. Therefore, the ability of the pilot to bring the aircraft down in a manner that minimizes the severity of an accident is dependent upon the type of land uses within the vicinity of the airport. Land uses are reviewed in three zones surrounding the airport: the Runway Protection Zone (RPZ), the Approach Zone, the Traffic Pattern Zone and the Airport Influence Zone. These zones are depicted on the Off Airport Land Use drawing contained within the Airport Layout Plan drawing set in Chapter 5. The RPZ is a trapezoidal area extending 1,200 feet beyond the ends of the runway and is typically included within the airport property boundary. Residential and other uses that result in congregations of people are prohibited within the runway protection zone. The approach zone generally falls within the FAR Part 77 Approach Surface area. Within the approach zone, public land uses, such as schools, libraries, hospitals and churches should be avoided. New residential developments within the approach zone should include avigation easements and disclosure statements. The Traffic Pattern Zone is generally the area within one mile of the airport. Within the Traffic Pattern Zone, avigation easements should be considered for residential and public uses within this area and disclosure statements should be included. The Airport Influence Zone is the area where aircraft are transitioning to or from enroute altitude or airport over-flight altitude to or from the standard traffic pattern altitude of 800 to 1,000 feet above airport elevation.

The closest populated areas to the Bisbee Municipal Airport are Huachuca Terrace, Arizona located approximately 2 miles west, Warren, Arizona located approximately 2.5 miles to the north and several individual residences located immediately east of the airport. The airport has standard left hand traffic pattern to both ends of Runway 17/35, Runway 2/20 and Runway 4/22.

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, provides imaginary surfaces surrounding an airport that should be protected from penetration by objects.

These include the approach surface, horizontal surface and conical surface. These surfaces were described in Chapter 3. Proposed structures in the vicinity of the airport should be reviewed against the Part 77 criteria to ensure hazards to air navigation are not created. There are no penetrations to the existing approach surfaces. Future objects penetrating these surfaces could result in a hazard to air navigation.

The airport is located within unincorporated Cochise County. The County has not implemented an Airport Zoning Ordinance for the Bisbee Municipal Airport. The Airport Zone is used as a tool by the planning and zoning department to ensure proposed development surrounding the airport is compatible with the airport. The Airport Zone should coincide with the planned airport configuration airspace and design included in this Master Plan and ALP. A copy of a proposed ordinance and zoning maps are included in Appendix H. If adopted and enforced, this ordinance and drawings would protect the airport from future incompatible land uses and objects that may be considered hazards to air navigation. Bisbee Municipal Airport is currently surrounded by open space and rural residential uses zoned as rural with minimum lot size of 4 acres.

There are times when a sponsor will enter into an agreement that permits access to the airfield by aircraft based on land adjacent to, but not a part of, the airport property. This type of an arrangement has frequently been referred to as a “through-the-fence" operation even though a perimeter fence may not be visible. Guidance on “through-the-fence” operations can be found in FAA Order 5190.6B Chapter 12. “Through-the-fence” arrangements can place an encumbrance upon the airport property and reduce the airport’s ability to meet its federal obligations. As a general principle, the FAA does not support agreements that grant access to the public landing area by aircraft stored and serviced offsite on adjacent property. Thus this type of agreement is to be avoided since these agreements can create situations that could lead to violations of the airport’s federal obligations. (“Through-the-fence” access to the airfield from private property also may be inconsistent with Transportation Security Administration security requirements.) Under no circumstances is the FAA to support any “through-the-fence” agreement associated with residential use since that action will be inconsistent with the federal obligation to ensure compatible land use adjacent to the airport.

In the past poorly written “through-the-fence” agreements and activities without any written agreements have resulted in safety and security problems, unfair economic advantages, and land use incompatibilities. Therefore, the FAA has taken a general policy to discourage “through-the-fence” agreements. However, the FAA recently released guidance on how “through-the-fence” should be structured and how “through-the-fence” activities can be conducted so that the airport can continue to meet safety and security standards and remain in compliance with their AIP Grant Assurances.

Future through-the-fence agreements, including the renewal of existing agreements, should be reviewed in accordance with FAA policy and regulations to ensure the airport remains in good standing with the FAA and State Grant Assurance. Figure 6-1 shows an aerial view of the land surrounding the airport.

FIGURE 6-1 BISBEE MUNICIPAL AIRPORT SURROUNDING LAND

6.5 CONSTRUCTION IMPACTS

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

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

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

Construction projects will comply with guidelines set forth in FAA Advisory Circular 150/5370-10E, Standards for Specifying the Construction of Airports. The contractor will obtain the required construction permits. The contractor will also prepare Storm Water Pollution

Prevention and Fugitive Dust Control Plans for construction. These requirements will be specified in the contract documents for the construction of the proposed improvements.

6.6 DOT ACT – SECTION 4(F)

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

There are no public parks, recreation area or wildlife and waterfowl refuges of National, State or local significance surrounding the airport. The nearest recreation area is located in the City of Bisbee over 5 miles from the airport. Pilots are requested to remain at least 2,000 feet Above Ground Level (AGL) over all wilderness areas.

6.7 FARMLANDS

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

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

Figure 6-2 shows the land surrounding the Bisbee Municipal Airport in red which indicates that the land is not classified as prime or unique by the U.S. Department of Agriculture (USDA).

FIGURE 6-2 FARMLAND MAP

6.8 FISH, WILDLIFE AND PLANTS

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

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

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

The Arizona Game and Fish Department conducted a search using its On-Line Environmental Review Tool and found no Listed Threatened, Endangered or Candidate Species and no Designated or Proposed Critical Habitat within 3 miles of the project area (see letter in Appendix C).

The US Fish and Wildlife Service (USFWS) was contacted requesting information on the potential impact to endangered, threatened, proposed and or candidate species or designated critical habitat from the proposed development at the Bisbee Municipal Airport. No response was received; however, the USFWS typically only responds to a specific determination from the FAA with respect to a specific project.

Table 6-1 lists each of the species currently listed as threatened, endangered, or candidate for Cochise County. The list provides the biological basis for including or excluding each species from further evaluation of potential impacts from the Bisbee Municipal Airport. None of the species are known to occur within the project area. Therefore, none of the planned projects would impact any threatened and endangered species and no further site surveys would be required.

TABLE 6-1 ENDANGERED AND THREATENED SPECIES LIST FOR COCHISE COUNTY

Species[1]	ESA Status	Habitat Requirements	Habitat Present[2]
Beautiful shiner *Cyprinella formosa*	FT	Small to medium sized streams and ponds with sand, gravel, and rock bottoms. < 4,500 ft	NP
Canelo Hills ladies'-tresses *Spiranthes delitescen*	FE	Finely grained, highly organic, saturated soils of cienegas. ~ 5,000 ft	NP
Chiricahua leopard frog *Rana chiricahuensis*	FT	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs. 3,300-8,900 ft	NP
Cochise pincushion cactus *Coryphantha robbinsorum*	FT	Semidesert grassland with small shrubs, agave, other cacti, and grama grass. > 4,200 ft	NS
Desert pupfish *Cyprinodon macularius*	FE	Shallow springs, small streams, and marshes. Tolerates saline and warm water. < 4,000 ft	NP
Gila chub *Gila intermedia*	FE	Pools, springs, cienegas, and streams. 2,000-5,500 ft	NP
Gila topminnow (incl. Yaqui) *Poeciliopsis occidentalis*	FE	Small streams, springs, and cienegas vegetated shallows. < 4,500 ft	NP
Huachuca springsnail *Pyrgulopsis thompsoni*	FC	Aquatic areas, small springs with vegetation and slow to moderate flow. 4,500-7,200 ft	NP
Huachuca water-umbel *Lilaeopsis haffneriana var. recurva*	FE	Cienegas, perennial low gradient streams, wetlands. 3,500-6,500 ft	NP
Jaguar *Panthera onca*	FE	Found in Sonoran desertscrub up through subalpine conifer forest. 1,600-9,000 ft	NS
Lemmon fleabane *Erigeron lemmonii*	FC	Grows in dense clumps in crevices, ledges, and boulders in canyon bottoms in pine-oak woodland. 1,500-6,000 ft	NP
Lesser long-nosed bat *Leptonycteris curasoa yerbabuenae*	FE	Desert scrub habitat with agave and columnar cacti present as food plants. 1,600-11,500 ft	NS
Loach minnow *Tiaroga cobitis*	FT	Benthic species of small to large perennial streams with swift shallow water over cobble and gravel. Recurrent flooding and natural hydrograph important. < 8,000 ft	NP
Mexican spotted owl *Strix occidentalis lucida*	FT	Nests in canyons and dense forests with multi-layered foliage structure. 4,100-9,000 ft	NP
New Mexico ridgenose rattlesnake Esnake *Crotalus willardi obscurus*	FT	Primarily canyon bottoms in pine-oak communities. 5,000-6,600 ft	NP
Northern aplomado falcon *Falco femoralis septentrionalis*	FE	Grassland and savannah 3,500-9,000 ft	NS

TABLE 6-1 CONTINUED

Species[1]	ESA Status	Habitat Requirements	Habitat Present[2]
Ocelot *Leopardus (=Felis) pardalis*	FE	Desert scrub in Arizona. Humid tropical and sub-tropical forests, and savannahs in areas south of the U.S. < 8,000 ft	NS
San Bernardino springsnail *Pyrgulopsis bernardina*	FC	Springs with firm substrate composed of cobble, gravel, woody debris, and aquatic vegetation. 3,806 ft	NP
Sonoran tiger Salamander *Ambystoma tigrinum stebbinsi*	FE	Stock tanks and impounded cienegas; rodent burrows, rotted logs, and other moist cover sites. 4,000-6,300 ft	NP
Southwestern willow flycatcher *Empidonax traillii extimus*	FE	Cottonwood/willow and tamarisk vegetation communities along rivers and streams. < 8,500 ft	NP
Spikedace *Meda fulgida*	FE	Medium to large perennial streams with moderate to swift velocity waters over cobble and gravel substrate. Recurrent flooding and natural hydrograph important to withstand invading exotic species. < 6,000 ft	NP
Yaqui catfish *Ictalurus pricei*	FT	Moderate to large streams with slow current over sand and rock bottoms. 4,000-5,000 ft	NP
Yaqui chub *Gila purpurea*	FE	Deep pools of small streams near undercut banks and debris; pools associated with springheads, and artificial ponds. 4,000-6,000 ft	NP
Yellow-billed Cuckoo *Coccyzus americanus*	FC	Large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). < 6,500 ft	NP
Arizona treefrog (Huachuca/Canelo DPS) *Hyla wrightorum*	FC	Madrean oak woodlands, savannah, pine-oak woodlands, and mixed conifer forests. 5,000-8,500 ft	NP

ESA = Endangered Species Act; FE = Federally Endangered; FT = Federally Threatened; FC = Federal Candidate
K = Known, documented observation within the project area.
S = Habitat suitable and species suspected to occur within the project area.
NS = Habitat suitable but species is not suspected to occur within the project area.
NP = Habitat not present and species unlikely to occur within the project area.

[1] *Source: U.S. Fish and Wildlife*
[2] *Source: Arizona Game and Fish Department letter dated March 9, 2010 (see Appendix C).*

6.9 FLOODPLAINS

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

As described in FAA Order 5050.4B, an airport development project would be a significant impact pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values. Mitigation measures for base floodplain encroachments may include committing to special flood related design criteria, elevating facilities above base flood level, locating nonconforming structures and facilities out of the floodplain or minimizing fill placed in floodplains.

Based on available Federal Emergency Management Agency (FEMA) floodplain maps the airport is not located within the vicinity of any 100-year floodplain (see Figure 6-3). Therefore the proposed action would not result in any impacts on floodplains.

FIGURE 6-3 FLOODPLAIN MAP

Source: FEMA 2010

6.10 HAZARDOUS MATERIALS, POLLUTION PREVENTION AND SOLID WASTE

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

There is no indication of buried storage tanks or land uses that would indicate the presence of hazardous materials. A windshield tour was conducted of the airport property during the inventory of the Bisbee Municipal Airport.

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

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

6.11 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL AND CULTURAL RESOURCES

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

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

According to the Arizona State Historic Preservation Office, the area of potential effect has never been assessed for historical, cultural and archeological resources. Therefore, an archaeological/historical survey of the entire project area prior to development on ground that has not been previously disturbed is recommended (see letter in Appendix D).

6.12 LIGHT EMISSIONS AND VISUAL IMPACTS

Airfield lighting is the main source of light emissions from an airport. Rotating airport beacons are provided so pilots can identify the location of an airport at night or in reduced visibility conditions. Rotating beacons consist of alternating white and green lights rotating at 24-30 flashes per minute. Beacons are typically mounted on a tower or on top of a hangar or other building. Specifications for spotting airport beacons allow the beam to be angled from 2 degrees to 12 degrees above the horizon. The standard setting is 6 degrees. If necessary, the beacon can be shielded to reduce visibility of the beacon from below the horizon line. Medium Intensity Runway Edge Lights (MIRLs) are single white or yellow lights mounted on 14-30 inch posts spaced at 200 foot intervals along both edges of the runway. They define the boundaries of the runway surface usable for takeoff and landing. Precision Approach Path Indicators (PAPIs) are used for visual descent guidance and consist of two or four light units located to the left of the runway and perpendicular to the runway centerline. The lights are directed at a glide path angle of 3 degrees above the runway. If the aircraft is above the glide path, the pilot will see all white lights. If the pilot is on the proper glide path, the light unit closest to the runway will be red and the unit farthest from the runway will be white. When the pilot is below the glide path the light units will be red. PAPIs have an effective visual range from the air of approximately five miles during the day and up to twenty miles at night. These visual aids are extremely useful and enhance safety in situations where there are few visual references surrounding the airport. Runway End Identifier Lights (REILs) are synchronized flashing lights located laterally on each side of the runway threshold. They are angled upward and outward from the runway and provide rapid and positive identification of the threshold of a runway. This is especially useful in metropolitan and densely developed areas where lights in the vicinity of the airport make it difficult to identify the runway.

Proposed improvements will primarily replace existing lighting and add lighting to the new crosswind runway. These improvements will not substantially increase light emission impacts at the Bisbee Municipal Airport. If complaints are received, runway and taxiway lights can be shielded/baffled.

6.13 NATURAL RESOURCES, ENERGY SUPPLY AND SUSTAINABLE DESIGN

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

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

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

Energy requirements are not expected to significantly increase as a result of the proposed improvements. During its reconstruction process, the existing pavement on Taxiway A would be pulverized, recycled and used for the construction of the relocated Taxiway A.

Recycling of asphalt pavement is recommended. Recycling can save money and save energy when recycling is done on site, conserve diminishing resources of aggregates and petroleum products, and help reduce disposal of pavement materials.

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

6.14 NOISE

Noise analysis considerations include whether the Federal thresholds of noise exposure are exceeded, whether the 65 day-night level (DNL) noise contour extends beyond airport property and if there are any residences, churches, schools or hospitals within the 65 DNL noise contour. The basic measure of noise is the sound pressure level that is recorded in decibels (dBA). The important point to understand when considering the impact of noise on communities is that equal levels of sound pressure can be measured for both high and low frequency sounds. Generally, people are less sensitive to sounds of low frequency than they are to high frequencies. An example of this might be the difference between the rumble of automobile traffic on a nearby highway and the high-pitched whine of jet aircraft passing overhead. At any location, over a period of time, sound pressure fluctuates considerably between high and low frequencies. Figure 6-4 depicts a Sound Level Comparison of different noise sources.

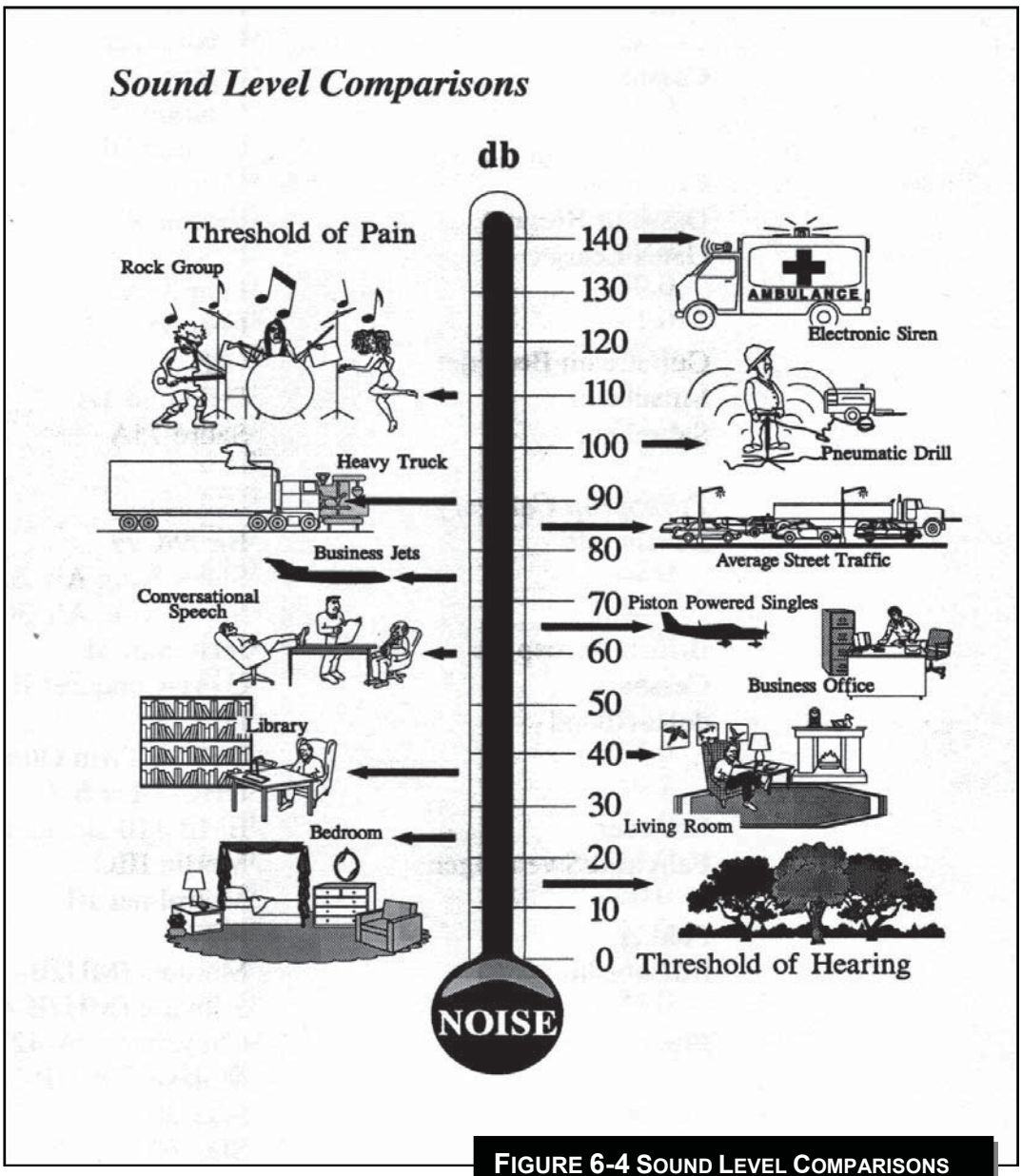

FIGURE 6-4 SOUND LEVEL COMPARISONS

The identification of airport generated noise impacts and implementation of noise abatement measures is a joint responsibility of airport operators and users. FAA Order 5050.4B states that "no noise analysis is needed for proposals involving Design Group I and II airplanes operating at airports whose forecast operations in the period covered by the EA do not exceed 90,000 annual adjusted propeller operations or 700 annual adjusted jet operations . . .". Noise analysis is not required for the Bisbee Municipal Airport since operations are forecasted to be 6,600 in 2029. However, noise contours were generated for the future operations at the airport using the current version of the FAA's Integrated Noise Model (INM) program. The noise contours are shown in Figure 6-5.

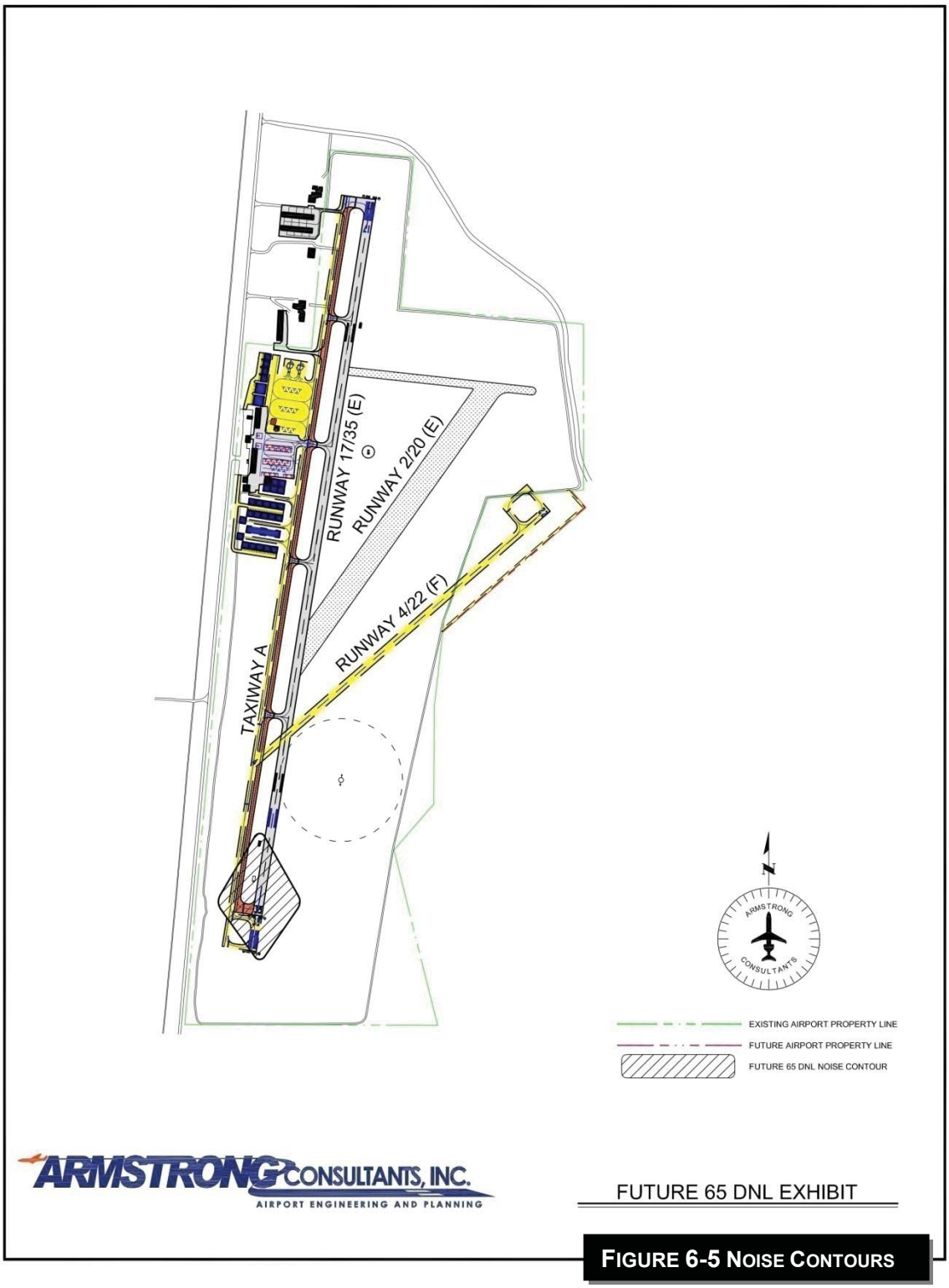

FIGURE 6-5 NOISE CONTOURS

6.14.1 VOLUNTARY NOISE ABATEMENT PROGRAM

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

Pilots:

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

Instructors:

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

Fixed Base Operators (FBOs):

- Identify noise-sensitive areas and work with customers to create voluntary noise abatement procedures.
- Post any noise abatement procedures in a prominently visible area and remind pilots of the importance of adhering to them.
- Call for the use of the least noise sensitive runway whenever wind conditions permit.
- Initiate pilot education programs to teach and explain the rationale for noise abatement procedures and positive community relations.

Airport Owner and Surrounding Jurisdictions:

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

- Publish voluntary noise procedures on the Internet.
- Publish voluntary calm runway use procedures.

Source: Aircraft Owners and Pilots Association (AOPA)

6.15 SECONDARY (INDUCED) IMPACTS

These secondary or induced impacts involve major shifts in population, changes in economic climate or shifts in levels of public service demand. The effects are directly proportional to the scope of the project under consideration. Assessment of induced socioeconomic impacts is usually only associated with major development at large air carrier airports, which involve major terminal building development or roadway alignments and similar work.

The extent of the indirect socioeconomic impacts of the proposed development is not of the magnitude that would normally be considered significant; however, positive impacts can be expected in the form of direct, indirect and induced economic benefits generated from the airport.

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

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

6.16.1 SOCIOECONOMIC IMPACTS

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

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

6.16.2 ENVIRONMENTAL JUSTICE

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

The proposed action is not expected to result in any significant negative impacts to any population groups and therefore, would not result in disproportionate negative impacts to any special population group. Socioeconomic and induced economic impacts are expected to be positive in nature and are expected to benefit all population groups in the area.

6.16.3 CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

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

6.17 WATER QUALITY

Water quality considerations related to airport development often include increased surface runoff and erosion and pollution from fuel, oil, solvents and deicing fluids. Potential pollution could come from petroleum products spilled on the surface and carried through drainage channels off of the airport. State and Federal laws and regulations have been established to safeguard these facilities. These regulations include standards for above ground and underground storage tanks, leak detection and overflow protection. An effective Storm Water Pollution Prevention Plan (SWPPP) identifies storm water discharge points on the airport, describes measures and controls to minimize discharges and details spill prevention and response procedures. In July of 2002, the EPA amended the Oil Pollution Prevention Regulation at Title 40 of the Code of Federal Regulations, Part 112 (40 CFR Part 112). Subparts A through C of this regulation are often referred to as the "SPCC rule" because they describe requirements for certain facilities (including airports) to prepare and implement Spill Prevention Control and Countermeasure (SPCC) Plans.

Before a facility is subjected to the SPCC rule it must meet three criteria: 1) it must be non-transportation related; (non-transportation-related facilities may include the following but are not limited to airports, oil drilling, power generators, oil refineries, marinas, fish canneries, farms, construction sites, oil storage and oil production) 2) it must have an aggregate aboveground storage capacity greater than 1,320 gallons, or a completely buried storage capacity greater than 42,000 gallons; and 3) there must be a reasonable expectation of a discharge into or upon Navigable Waters of the United States.

In accordance with Section 402(p) of the Clean Water Act, a National Pollution Discharge Elimination System (NPDES) General Permit is required from the Environmental Protection Agency for construction projects that disturb at least one acres of land. Applicable contractors will be required to comply with the requirement and procedures of the NPDES General Permit,

including the preparation of a Notice of Intent and a Storm Water Pollution Prevention Plan, prior to the initiation of construction activities.

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

Future fuel storage and dispensing facilities should be designed, constructed, operated and maintained in accordance with Federal, State and Local regulations. Waste fluids, including oils, coolants, degreasers and aircraft wash facility wastewater will be managed and disposed of in accordance with applicable Federal, State and Local regulations.

Correspondence was sent to the Arizona Department of Environmental Quality (ADEQ) Office. The ADEQ responded with recommendations on several key items including; adherence to water quality standards, project work responsibility, activities on impaired waters, construction general permit, best management practices and hazardous and deleterious materials. A copy of the letter can be found in Appendix D.

6.18 WETLANDS

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

Correspondence was sent to the US Army Corps of Engineers, Arizona-Nevada Area Office regarding potential impacts to wetlands and waters of the US. A response from the US Army Corps of Engineers indicated that at the Bisbee Municipal Airport there is an ephemeral wash along the eastern boundary of the airport property that may be a Water of the United States subject to regulation under Section 404 of the Clean Water Act. If an airport maintenance or improvement activity occurs near or in this wash a jurisdictional determination from the US Army Corps of Engineers Los Angeles District should be requested. If the jurisdictional determination concludes that this wash is a Water of the United States or other Waters of the United States are delineated within the airport property then an application for a Section 404 permit should be submitted. A copy of the letter is located in Appendix D. The airport perimeter road is the only project in the vicinity of the wash. The perimeter road will remain outside of the wash.

6.19 WILD AND SCENIC RIVERS

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

The Wild and Scenic River list from the National Park Service indicated two Wild and Scenic Rivers listed in Arizona. The Fossil Creek and Verde River are the closest river listed as wild and scenic to the Bisbee Municipal Airport. Both rivers are located more than 200 miles north of the airport and would therefore not be affected by the proposed improvements.

6.20 MEANS TO MITIGATE AND/OR MINIMIZE ADVERSE ENVIRONMENTAL IMPACTS

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

- Maintain compatible land uses in the vicinity of the airport;
- Acquire land for the runway extension and new crosswind runway in accordance with federal regulations;
- Utilize pilot controlled lighting on all airfield lighting. Utilize timers or motion sensors for apron and automobile parking area lights;
- Adhere to FAA AC 150/5370-10E, Standards for Specifying the Construction of Airports and best management practices to minimize or eliminate impacts to water quality and air quality during construction;
- Evaluate the future development areas to avoid/mitigate potential jurisdictional wetland impacts.

6.21 SUMMARY AND CONCLUSIONS OF ENVIRONMENTAL IMPACTS

Table 6-2 provides a summary of the analysis ratings for the eighteen environmental impact categories with respect to the proposed airport improvements. While some categories indicate a potential impact, they are all estimated to be below the threshold of significance as described in FAA Order 5050.4B. In most cases a Categorical Exclusion will be the applicable NEPA environmental determination. However, for some projects, such as the runway extension or land acquisition of more than three acres, a full Environmental Assessment may be required to comply with FAA policy.

TABLE 6-2 RECOMMENDED DEVELOPMENT POTENTIAL ENVIRONMENTAL IMPACTS

ENVIRONMENTAL CATEGORY	IMPACT LEVEL	DESCRIPTION
Air Quality	◉	Short-term dust and exhaust
Coastal Resources	○	
Compatible Land Use	○	
Construction Impacts	◉	Short-term dust and exhaust, erosion
DOT Act Section 4(F)	○	
Farmlands	○	
Fish, Wildlife and Plants	○	
Floodplains	○	
Hazardous Materials Pollution Prevention and Solid Waste	○	Prepare SPCC plan
Historical, Architectural, Archaeological and Cultural Resources	○	
Light Emissions and Visual Impacts	○	
Natural Resources and Energy Supply	○	
Noise	○	
Secondary (Induced) Impacts	◉ Positive	Economic benefit from airport
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health	◉ Positive	Economic benefit from airport
Water Quality	◉	Storm water runoff, prepare SPCC plan
Wetlands	○	Avoid Waters of the U.S.
Wild and Scenic Rivers	○	

Legend:
○ No Impact
◉ Minor Impact
● Significant Impact

Chapter Seven
Airport Development and Financial Plan

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

CHAPTER SEVEN – AIRPORT DEVELOPMENT AND FINANCIAL PLAN

7.1 INTRODUCTION

A program of recommended airport development for the Bisbee Municipal Airport has been formulated to guide the sponsor in the systematic development of the airport and to aid the Federal Aviation Administration, Arizona Department of Transportation Aeronautics Group and the City in allocating funding over the planning period. In Arizona, projects eligible for Airport Improvement Program (AIP) participation are normally funded at 95 percent by the FAA, 2.5 percent by the State and 2.5 percent by the Sponsor. Grant eligible items typically include airfield and aeronautical related facilities such as runways, taxiways, aprons, lighting and visual aids as well as land acquisition and environmental tasks needed to accomplish the improvements. The public use (non-revenue generating) portions of passenger and general aviation terminal buildings are also grant eligible. In addition, recent AIP legislation has made fuel systems and hangars eligible, however, these items are considered a low priority for FAA funding and require airside development needs to be met first.

7.2 AIRPORT DEVELOPMENT PLAN

Future airport development at the Bisbee Municipal Airport, as included in this study, covers a twenty-year period and it is summarized in Figure 7-2. Development items are grouped into three phases. Phase I is short-term (1-5 years), Phase II is medium-term (6-10 years) and Phase III is long-term (11-20 years). Estimated development costs are based on the proposed improvements (as shown on the airport layout plan) and are included for each item in the financial development plan. Proposed improvements are based on the recommended facility requirements discussed in Chapter 3 and the selected alternatives in Chapter 4 as shown in Figure 7-1. The phasing of projects assists the airport sponsor in budgetary planning for construction projects. A drawing showing the phasing of each project is included at the end of this Chapter in Figure 7-2. The sequence in which the projects are completed is important as the ultimate configuration of the airport will require numerous projects.

Phase I (1-5 Years)

Acquire Fuel Card Reader
Pavement Preservation
Relocation and Construction of Taxiway A (design only)
Relocation and Construction of Taxiway A (including lighting)
Install AWOS
Taxilanes and Apron Expansion Phase I
Environmental Assessment for Crosswind Runway (3,200'x60') and Related Land Acquisition
Acquire Land for Construction of Crosswind Runway

Phase II (6-10 Years)
Construct Crosswind Runway
Apron Expansion Phase II
Pavement Maintenance
Fuel Tanks
Construct Taxilanes Phase II
Equipment Storage Building
ALP Update

Phase III (11-20 Years)
Relocate Road Around RPZs
Extend Runway 17/35
Extend Crosswind Runway
Apron Expansion Phase III
Construct Taxilanes Phase III
Pavement Maintenance
Airport Master Plan Update

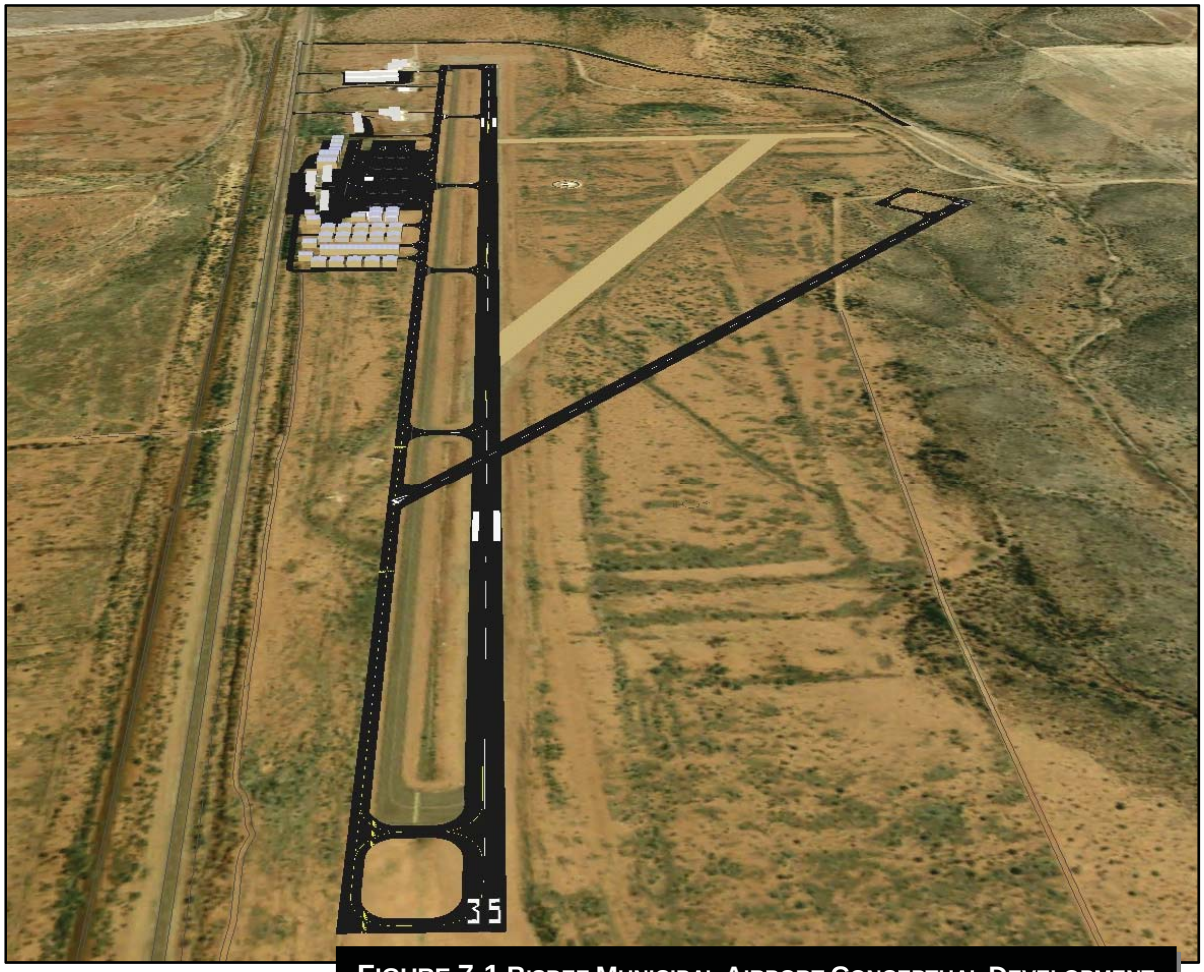

FIGURE 7-1 BISBEE MUNICIPAL AIRPORT CONCEPTUAL DEVELOPMENT

TABLE 7-1 20-YEAR FINANCIAL DEVELOPMENT PLAN

PHASE I: SHORT-TERM DEVELOPMENT ITEMS		TOTAL	FAA	STATE	LOCAL
A1	Fuel Card Reader	$30,000	$28,500	$750	$750
A2	Construct Taxilanes Phase I	$150,000	$142,500	$3,750	$3,750
A3	Relocation and Construction of Taxiway A (design only)	$250,000	$237,500	$6,250	$6,250
A4	Relocation and Construction of Taxiway A	$2,381,000	$2,261,950	$59,525	$59,525
A5	Install AWOS	$240,000	$228,000	$6,000	$6,000
A6	Obstruction Survey	$75,000	$71,250	$1,875	$1,875
A7	Apron Expansion Phase I	$284,000	$269,800	$7,100	$7,100
A8	Construct Taxilanes Phase I	$150,000	$142,500	$3,750	$3,750
A9	Access Roads and Parking Phase I	$66,000	$62,700	$1,650	$1,650
A10	Environmental Assessment for Crosswind Runway (3,200'x60') and Related Land Acquisition	$185,000	$175,750	$4,625	$4,625
A11	Acquire Land for Construction of Crosswind Runway	$150,000	$142,500	$3,750	$3,750
TOTAL SHORT TERM COST		**$3,961,000**	**$3,762,950**	**$99,025**	**$99,025**
PHASE II: MEDIUM-TERM DEVELOPMENT ITEMS		**TOTAL**	**FAA**	**STATE**	**LOCAL**
B1	Construct Crosswind Runway	$1,258,000	$1,195,100	$31,450	$31,450
B2	Apron Expansion Phase II	$350,000	$332,500	$8,750	$8,750
B3	Access Roads and Parking Phase II	$28,000	$26,600	$700	$700
B4	Pavement Maintenance	$150,000	$142,500	$3,750	$3,750
B5	Fuel Tanks	$300,000	$285,000	$7,500	$7,500
B6	Construct Taxilanes Phase II	$150,000	$142,500	$3,750	$3,750
B7	Equipment Storage Building	$400,000	$380,000	$10,000	$10,000
B8	ALP Update	$100,000	$95,000	$2,500	$2,500
TOTAL MEDIUM-TERM COST		**$2,736,000**	**$2,599,200**	**$68,400**	**$68,400**
PHASE III: LONG-TERM DEVELOPMENT ITEMS		**TOTAL**	**FAA**	**STATE**	**LOCAL**
C1	Relocate Roads Around PRZs	$640,000	$608,000	$16,000	$16,000
C2	Extend Runway 4/22	$394,000	$374,300	$9,850	$9,850
C1	Environmental Assessment for Runway Extension	$225,000	$213,750	$5,625	$5,625
C2	Extend Runway 17/35	$201,000	$190,950	$5,025	$5,025
C3	Apron Expansion Phase III	$593,000	$563,350	$14,825	$14,825
C4	Construct Taxilanes Phase III	$150,000	$142,500	$3,750	$3,750
C5	Access Roads and Parking Phase III	$107,000	$101,650	$2,675	$2,675
C6	Pavement Maintenance	$150,000	$142,500	$3,750	$3,750
C7	Airport Master Plan Update	$150,000	$142,500	$3,750	$3,750
TOTAL LONG-TERM COST		**$2,610,000**	**$2,479,500**	**$65,250**	**$65,250**
TOTAL		**$9,307,000**	**$8,841,650**	**$232,675**	**$232,675**

Cost estimates in 2010 dollars includes engineering, administration and contingency

7.3 CAPITAL DEVELOPMENT

Federal Grant Assistance: The phasing of projects assists the airport sponsor in budgetary planning for construction improvements that are needed to provide safe and functional facilities for aviation demands. Phased development schedules also assist the airport sponsor in contingencies and construction. Table 7-1 assumes that the Federal Aviation Administration will participate with funding from the Airport Improvement Program (AIP) of 95 percent of eligible items and the Arizona Department of Transportation (ADOT) Aeronautics Group will contribute 2.5 percent towards capital improvements. The City of Bisbee would then be responsible for providing 2.5 percent matching funds for grant eligible projects. The City may meet its local share requirements through cash, in-kind service, force-account, donations or private/third party participation.

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

State Assistance: ADOT Aeronautics Group participates in funding airport development and maintenance projects in the State of Arizona. ADOT normally contributes 90 percent to projects without Federal participation and contributes 2.5 percent matching funds to the FAA's 95 percent funding of Federally eligible capital improvement projects. The resulting local share is generally 2.5 percent for FAA and State funded projects and 10 percent for State only funded projects. Due to the current financial situation of the State of Arizona there is a possibility of deferred payments or possible lesser share or no match; however, this condition appears to be improving and the State is now making the deferred grant payments and issuing new matching grants.

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

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

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

Self-liquidating General Obligation Bonds: As with General Obligation bonds, Self-liquidating General Obligation Bonds are secured by the issuing government agency. They are retired,

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

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

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

Force Accounts, In-kind Service, Donations: Depending on the capabilities of the Sponsor, the use of force accounts, in-kind service, or donations may be approved by the FAA and the State for the Sponsor to provide their share of the eligible project costs. An example of force accounts would be the use of heavy machinery and operators for earthmoving and site preparation of runways or taxiways; the installation of fencing; or the construction of improvements to access roads. In-kind service may include surveying, engineering or other services. Donations may include land or materials such as gravel or water needed for the project. The values of these items must be verified and approved by the FAA prior to initiation of the project.

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

7.4 FINANCIAL PLAN

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

However, while most airports the size of Bisbee Municipal Airport are not able to become self-sustaining, the intrinsic value of such a well-maintained airport for the community or region exceeds the day-to-day operational and maintenance costs of the airport. In other words, the dollars spent in the community or the region by individuals or businesses that use the airport exceeds the expenses that are incurred as a result of operation of the airport. Furthermore, the Bisbee Municipal Airport provides access for valuable services to the City of Bisbee. The financial plan for Bisbee Municipal Airport is summarized in Table 7-3 and 7-4.

7.5 PROJECTED REVENUES AND EXPENDITURES

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

Revenues: Airport revenues generally consist of land leases, user fees and property taxes generated from on-airport improvements. Table 7-2 shows the current rates and charges at the Bisbee Municipal Airport.

Land Leases: Property on the airport that is not devoted to airfield use, vehicle parking or contained within areas required to be cleared of structures may be leased to individual airport users or aviation related businesses. Typically, the individual is provided a long-term lease on which to construct a hangar, business or other facility. At the termination of the lease, the lessee has the option to renew the lease, sell or lease the buildings or to remove the buildings.

Hangar Leases: Hangars on the airport owned by the airport sponsor can be leased to private aircraft operators or businesses. Typically, as with land leases, the individual or business is provided a long-term lease of the hangar. At the termination of the lease, the lessee has the option to renew the lease or cease use of the hangar.

Hangar Rental: The fees are usually established on a nightly rate for transient aircraft or monthly rate for based aircraft.

Tie-Down Fees: A fee is typically established for the use of fixed ramp tiedowns on paved apron areas. The fees are usually established on a monthly or annual basis for based aircraft and on an overnight basis for transient aircraft.

Through-the-Fence Fees (Airport/Airpark Access Fee): A fee is typically charged to adjacent landowners who are provided access directly from their private parcel to the public use airport facilities. This fee ensures that the level of rates and charges assessed to on-airport users is equitable to off-airport users and that there is not an unfair economic advantage to operating "through-the-fence". Additionally, through-the-fence operators are required to maintain a secure airport perimeter with fencing and/or gates and to construct paved access taxiways to the airport operating areas.

Fuel Flowage Fee: This fee is typically imposed on all aircraft fuels delivered to the airport and would include all fuels used by aircraft including AvGas, Jet-A, and MoGas. The fee would apply to fixed base operators, self-fueling (if authorized) and through-the-fence operators who conduct self-fueling.

Airport Usage Fee: This fee is typically imposed on charter aircraft and can be waived if the operator purchases a minimum amount of fuel. The airport has no usage fee.

Commercial Activity Fee: This fee is typically imposed on commercial activities operating "for profit" at the airport. Typical commercial activities may include fixed base operators, maintenance services, air taxi or charter services, automobile rental, restaurants, retail or other goods and services which may be provided at the airport. The Bisbee Municipal Airport has no existing commercial activity fee.

Non-Aeronautical Revenue Generating: This fee is imposed on leases of land that are allocated as airport property but have not access and or use for aeronautical activities and are therefore used for non-aeronautical uses. The fee for these areas must be setup at fair market value and all revenue generated from these leases must remain within the airport fund.

In accordance with FAA Grant Assurance number 25 and Arizona State Grant Assurances all revenues generated by the airport must be expended by the airport for the capital or operating costs of the airport. No revenue generated on the airport may go into the general fund for the City of Bisbee.

TABLE 7-2 EXISTING AIRPORT RATES CHARGES

	CURRENT RATES
Airport/Airpark Access Fees	
Single Engine	$ 8 / month
Twin Engine	$ 12 / month
Turbine/Jet Aircraft	$ 15 / month
Hangars Fees	
City Hangar	$ 120 / month
City Shade	$ 45 / month
Based Aircraft Tiedown Fees	
Single Engine Aircraft	$ 15 / month
Twin Engine Aircraft	$ 20 / month
Turbine / Jet Aircraft	$ 50 / month
Single Rotor Helicopter < 12,500 pounds	$ 15 / month
Single Rotor Helicopter > 12,500 pounds	$ 20 / month
Twin Rotor Helicopter	$ 50 / month
Transient Aircraft Parking Fees	
Single Engine	$ 6 / night
Twin Engine	$ 8 / night
Turbine / Jet Aircraft	$ 10 / night
Single Rotor Helicopter < 12,500 pounds	$ 6 / night
Single Rotor Helicopter > 12,500 pounds	$ 8 / night
Twin Rotor Helicopter	$ 10 / night
Land lease	$0.25 per square feet per month
No transient parking fee is charged for the first night of parking if the aircraft is fueled at the Bisbee Municipal Airport	

Source: City of Bisbee, City Code, Section 14.1.16 (December, 2009)

TABLE 7-3 ANNUAL AIRPORT REVENUES AND EXPENSES - HISTORICAL

	2004	2005	2006	2007	2008	2009
Airport Revenues						
Gas Revenue	$23,698	$22,000	$58,223	$53,104	$39,665	$43,457
Rents	$9,493	$7,000	$6,969	$8,199	$6,841	$8,616
Bisbee Airpark-Access Fees	$856	$500	$1,840	$1,608	$1,592	$1,392
Airport Property Lease	$342	--	$545	--	--	$379
FBO Sales	$356	--	$832	$284	--	$0
Misc. Revenues	--	--	--	--	$2,210	$0
Transfers from General Fund	$1,004	--	--	$9,109	$105,367	--
Transfers from LTAF	$32,575	$32,723	$31,740	$31,516	$29,172	$26,683
Total Airport Revenues	**$68,324**	**$62,223**	**$100,149**	**$103,820**	**$184,847**	**$80,527**
Airport Expenses						
Overtime – General	--	--	--	$349	$973	$0
Salaries – Part Time	--	--	--	$2,097	$17,874	$4,459
F.I.C.A.	--	--	--	$152	$1,169	$276
Medicare	--	--	--	$35	$273	$65
A.S.R.S	--	--	--	--	$358	$174
Workers Compensation	--	--	--	$70	$420	$129
State Unemployment	--	--	--	--	$32	$0
Electric	$4,371	$3,324	$3,174	$3,025	$3,239	$2,327
Water	$712	$330	$836	$568	$1,285	$962
Sewer and Garbage Serv.	$425	$425	$425	$476	$547	$560
Gas	$603	$840	$1,122	$1,382	$1,006	$909
Telephone and Fax	$743	$581	$595	$770	$739	$550
Other – Equipment NDB	--	$55	--	--	--	--
Disposable Equipment/Tools	--	--	--	--	--	$16
Office Supplies	--	--	$229	$599	$907	$65
Safety Equipment	$99	--	$158		$202	$0
Special Supplies – Other	$394	$627	$604	-$25	$131	$0
Contract Services	$118	--	--	$45	$286	$55
Drinking Water	--	$34	--	$215	$544	$181
Custodial Supplies	--	--	--	$15	--	$0
Repair & Maint. – Bldg.	$30	$816	$445	$2,823	--	$797
Postage	--	--	$100	$479	$48	$0
Advertising	--	$58	$96	$290	$667	$82
Property, Casualty, Liability	$3,965	$4,350	--	$4,350	$3,694	$6,640
Other – FBO Contract	$9,900	$10,800	$11,797	$8,400	--	$24,333
Hangar Royalties	$5,870	$3,271	$4,209	$2,760	--	$0
Fuel Royalties	$817	$1,866	$2,902	$2,034	--	$1,235
Other – Contracts				$2,000	$3,500	$0
Doc Workers	$2,009	$2,550	$1,777	$1,176	$1,991	$1,879
Small Tools & Equipment	$116	--	$363	$27	$135	$0
Fuel	--	--	--	--	--	$0
Insurance	--	--	$4,350	--	--	$0
Repairs and Maint	$1,629	$255	$19	$602	$666	$485
Other – Fuel	$27,320	$25,443	$60,555	$50,845	$32,062	$31,104
Equipment Maintenance	$900	$981	$1,191	$765	$392	$266
Fees – Collections	--	--	$1,675	$1,382	$1,083	$1,356
Principal Payments	$3,767	$25	--	--	--	--
Interest Expense	$1,364	--	--	--	--	--
Electrical Upgrades	--	$104	--	$2,138	--	$0
Equipment & Furniture	$288	--	--	$1,592	$15	$216
Grant Match	--	--	--	--	$73,327	--
Transfers to Debt Service	--	$5,131	$5,131	$5,131	$5,131	$0
Unassigned Expenses	$1,655	--	--	$7,252	$17,651	$466
Transfer to CIP	--	--	--	--	$14,500	$0
Other Expenditures	--	--	--	--	--	$0
Total Airport Expenses	**$67,095**	**$61,866**	**$101,753**	**$103,819**	**$184,847**	**$79,587**
Net Revenue and Expenses	**$1,229**	**$357**	**-$1,604**	**$1**	**$0**	**$940**

Source: City of Bisbee, 2010

TABLE 7-4 ANNUAL AIRPORT REVENUES AND EXPENSES - PROJECTED

	2010	2014	2019	2024	2029
Airport Revenues					
Gas Revenue	$40,000	$41,213	$43,318	$45,530	$47,855
Rents	$7,200	$7,419	$7,800	$8,200	$8,620
Bisbee Airpark-Access Fees	$1,600	$1,650	$1,737	$1,828	$1,924
Airport Property Lease	$235	$244	$259	$274	$289
FBO Sales	$0	$0	$0	$0	$0
Misc. Revenues	$0	$0	$0	$0	$0
Transfers from General Fund	$9,100	$19,905	$19,905	$15,650	$7,880
Transfers from LTAF	$0	$0	$0	$0	$0
Total Airport Revenues	**$58,135**	**$70,431**	**$73,019**	**$71,482**	**$66,568**
Airport Expenses					
Overtime – General	$0	$0	$0	$0	$0
Salaries – Part Time	$0	$0	$0	$0	$0
F.I.C.A.	$0	$0	$0	$0	$0
Medicare	$0	$0	$0	$0	$0
A.S.R.S	$0	$0	$0	$0	$0
Workers Compensation	$0	$0	$0	$0	$0
State Unemployment	$0	$0	$0	$0	$0
Electric	$3,650	$3,762	$3,956	$4,160	$4,375
Water	$550	$550	$550	$550	$550
Sewer and Garbage Serv.	$600	$600	$600	$600	$600
Gas	$800	$800	$800	$800	$800
Telephone and Fax	$600	$600	$600	$600	$600
Other – Equipment NDB	--	--	--	--	--
Disposable Equipment/Tools	$0	$0	$0	$0	$0
Office Supplies	$100	$100	$100	$100	$100
Safety Equipment	$100	$100	$100	$100	$100
Special Supplies – Other	$400	$400	$400	$400	$400
Contract Services	$0	$0	$0	$0	$0
Drinking Water	$0	$0	$0	$0	$0
Custodial Supplies	$200	$200	$200	$200	$200
Repair & Maint. – Bldg.	$1,500	$1,500	$1,500	$1,500	$1,500
Postage	$0	$0	$0	$0	$0
Advertising	$0	$0	$0	$0	$0
Property, Casualty, Liability	$4,350	$4,350	$4,350	$4,350	$4,350
Other – FBO Contract	$0	$0	$0	$0	$0
Hangar Royalties	$0	$0	$0	$0	$0
Fuel Royalties	$185	$191	$201	$216	$231
Other – Contracts	--	--	--	--	--
Doc Workers	$0	$0	$0	$0	$0
Small Tools & Equipment	$0	$0	$0	$0	$0
Fuel	$0	$0	$0	$0	$0
Insurance	$0	$0	$0	$0	$0
Repairs and Maint	$500	$500	$500	$500	$500
Other – Fuel	$32,000	$32,971	$34,656	$36,427	$38,288
Equipment Maintenance	$1,000	$1,000	$1,000	$1,000	$1,000
Fees – Collections	$2,500	$2,500	$2,500	$2,500	$2,500
Principal Payments	--	--	--	--	--
Interest Expense	--	--	--	--	--
Electrical Upgrades	$0	$0	$0	$0	$0
Equipment & Furniture	$0	$0	$0	$0	$0
Grant Match*	$9,100	$19,905	$19,905	$15,650	$7,880
Transfers to Debt Service	$0	$0	$0	$0	$0
Unassigned Expenses	$0	$0	$0	$0	$0
Transfer to CIP	$0	$0	$0	$0	$0
Other Expenditures	$0	$0	$0	$0	$0
Total Airport Expenses	**$58,135**	**$70,029**	**$71,918**	**$69,653**	**$63,974**
Net Revenue and Expenses	**$0**	**$402**	**$1,101**	**$1,829**	**$2,594**

Projections based on the last year of each time period (in 2010 dollars).
*Average over 5-year period, except for 2010.

7.6 RECOMMENDATIONS

A review of airport revenues indicates that the level of rates and charges at the Bisbee Municipal Airport are comparatively low compared with other similar sized airports; however, these low fees provide a competitive advantage and contribute to aviation demand at the airport. Any decision to increase fees should be balanced against the potential opportunity costs of lost based aircraft and/or fuel sales. The most effective means of increasing revenue at the Bisbee Municipal Airport is to accommodate existing unmet demand and to continue to attract new and additional users.

Increasing aircraft storage hangars at the airport would result in not only increased direct revenues generated through land leases, but would also produce indirect revenue through increased use of airport services and facilities, such as increased fuel purchases. Installing a credit card reader to provide self-service fueling will also enhance fuel sales. Locations for additional nested T-hangars and individual box hangars have been identified on the Terminal Area Drawing (TAD) included in Chapter 5. Business/corporate tenants are typically flight departments for local businesses and provide employment in the local community. They generally operate multi-engine turboprop or business jet aircraft. Their land lease parcels are usually large, the aircraft are typically operated two to three times per week and fuel purchases are typically larger than other general aviation user's (several hundred gallons per fueling).

Whether the improved Bisbee Municipal Airport operates at an annual surplus or subsidy depends greatly on the amount of activity and facilities that are constructed at the airport. Existing demand is currently constrained by the lack of aircraft storage facilities. The most efficient way for the City to accommodate this demand is to construct taxilanes and provide land leases for hangars. If demand for basing aircraft at the Bisbee Municipal Airport continues in the long-term, the City should consider constructing multi-unit T-hangars and/or box hangars. If federal funding is approved to construct these hangars and vacancy rates are low, the City could potentially increase revenues to the point where they meet or exceed expenditures.

7.7 COMMUNITY SUPPORT

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

The use of corporate and business aircraft is an increasing trend across the US. The movement of American industry from large metropolitan areas to smaller communities that offer lower taxes and labor costs and a better working environment has influenced this trend. Time is money in the business environment and corporate aircraft are answering the need for quick and convenient access to and from these new locations for both executives and management personnel. The ability of a community to provide convenient access to corporate aircraft will be reflected not only in benefits to existing businesses and industries but will be a strong factor in

attracting new industry. The events of September 11, 2001, have also resulted in increased corporate and business aviation activity as companies are looking to avoid delays and inconveniences associated with commercial airline travel.

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

7.8 CONTINUOUS PLANNING PROCESS

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

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

Appendix A
Design Standards Inventory

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

Airside Inventory Checklist

Airport	Bisbee Municipal Airport	ARC	B-I
City	City of Bisbee, Arizona	Approach Type	Basic Visual
Contact	Russ McConnell	Date Inventoried	April 21, 2009
Phone No.	520-432-6262	Inspected By	HD

Runway 17/35 Inventory	**Published**	**Required B-I**	**Actual**
Distance To:			
Hold lines from centerline	--	200'	125'
Parallel taxiway from centerline	--	225'	175'
Aircraft parking from centerline	--	200'	316'
Runway width	75'	60'	75'
Runway length	5,929'	--	5,900'
RSA width	--	120'	120'
ROFA width	--	400'	250'
Primary/transitional surface penetrations	--	Clear	Clear
Longitudinal grade - site distance problems	--	2%, RVZ Clear	1.18% RVZ Clear
OFZ	--	400'	400'
Pavement marking type	Basic Visual	Basic	Basic Visual
Pavement marking condition	Good	--	Fair
Pavement strength	SW 12.5	--	SW 12.5
Pavement condition	Good	--	Fair/Poor
Runway 17 End Inventory			
RSA beyond runway end	--	240'	240'
ROFA beyond runway end	--	240'	240'
Approach obstructions	--	--	Yes
Runway end elevation	--	--	4,807.6'
RPZ	--	Owned in Fee	Uncontrolled/Fee Simple
Runway 35 End Inventory			
RSA beyond runway end	--	300'	240'
ROFA beyond runway end	--	300'	240'
Approach obstructions	Brush	--	None
Runway end elevation	--	--	4,733.5'
RPZ	--	Owned in Fee	Uncontrolled/Fee Simple
Runway Lighting Inventory			
Distance from pavement edge	--	10' Max	10' Max
Maximum distance between lights	--	200' Max	200' Max
Type	MIRL	Optional	Optional
Condition	--	--	--
Color	--	White	White
Runway 17 Threshold			
Distance from pavement edge	--	10' Max	10' Max
Maximum distance between lights	--	Varies	Varies
Color/Number of Lights	--	Red/Green/6	Red/Green/6
Runway 35 Threshold			
Distance from pavement edge	--	10' Max	10' Max
Maximum distance between lights	--	Varies	Varies
Color/Number of Lights	--	Red/Green/6	Red/Green/6

COMMENTS

Airside Inventory Checklist

Airport	Bisbee Municipal Airport	ARC	B-I
City	City of Bisbee, Arizona	Approach Type	Basic Visual
Contact	Russ McConnell	Date Inventoried	April 21, 2009
Phone No.	520-432-6262	Inspected By	HD

Runway 2/20 Inventory	Published	Required B-I (small)	Actual
Distance To:			
Hold lines from centerline	--	125'	--
Parallel taxiway from centerline	--	150'	--
Aircraft parking from centerline	--	125'	--
Runway width	110'	60'	200'
Runway length	2,650'	--	2,700'
RSA width	--	120'	120'
ROFA width	--	250'	250'
Primary/transitional surface penetration	--	Clear	Clear
Longitudinal grade - site distance proble	--	2%, RVZ Clear	2%, RVZ Clear
OFZ	--	250'	250'
Pavement marking type	--	Basic	None
Pavement marking condition	--	--	--
Pavement strength	--	--	--
Pavement condition	--	--	--
Runway 2 End Inventory			
RSA beyond runway end	--	240'	240'
ROFA beyond runway end	--	240'	240'
Approach obstructions	Brush	--	--
Runway end elevation	--	--	--
RPZ		Owned in Fee	Uncontrolled/Fee Simple
Runway 20 End Inventory			
RSA beyond runway end	--	240'	240'
ROFA beyond runway end	--	240'	240'
Approach obstructions	--	--	--
Runway end elevation	--	--	--
RPZ	--	Owned in Fee	Uncontrolled/Fee Simple
Runway Lighting Inventory			
Distance from pavement edge	--	10' Max	--
Maximum distance between lights	--	200' Max	--
Type	--	Optional	--
Condition	--	--	--
Color	--	White	--
Runway 2 Threshold			
Distance from pavement edge	--	10' Max	--
Maximum distance between lights	--	Varies	--
Color/Number of Lights	--	Red/Green/6	--
Runway 20 Threshold			
Distance from pavement edge	--	10' Max	--
Maximum distance between lights	--	Varies	--
Color/Number of Lights	--	Red/Green/6	--

COMMENTS

Airside Inventory Checklist

Airport	Bisbee Municipal Airport	ARC	B-I
City	City of Bisbee, Arizona	Approach Type	Basic Visual
Contact	Russ McConnell	Date Inventoried	April 21, 2009
Phone No.	520-432-6262	Inspected By	HD

Taxiway A Inventory	Published	Required B-I	Actual
Taixway width	--	25'	35'
TSA width	--	49'	49'
TOFA width	--	89'	89'
Dist. from centerline to fixed or movable obj	--	44.5	44.5'
Pavement marking type	--	Centerline	Centerline
Pavement marking condition	--	--	Fair/Poor
Pavement strength	--	--	SW 12.5
Pavement condition	--	--	Fair/Poor
Taxiway Lighting Inventory			
Distance from pavement edge	--	10'	--
Maximum distance between lights	--	100'	--
Type	--	--	--
Condition	--	--	--
Color	--	Blue	--
Miscellaneous			
Type of beacon	Clear-Green	Yes	Yes, clear-green
Size of beacon		--	--
Visual Aids (i.e. PAPI, VASI, REIL, etc.)	P2L	--	P2L; out of service
Windcone (condition & compliance)	Yes-L	Yes	Yes
Segmented circle (condition & compliance)	Yes	Yes	Yes
Traffic Pattern Indicator	--	Yes	Yes
Fencing	--	Perimeter	Perimeter
Signs (type, condition, placement)	--	Yes	Yes

COMMENTS

Airside Inventory Checklist

Airport	Bisbee Municipal Airport	ARC	B-I
City	City of Bisbee, Arizona	Approach Type	Basic Visual
Contact	Russ McConnell	Date Inventoried	
Phone No.	520-432-6262	Inspected By	

Taxiway B Inventory	Published	Required B-I/B-II	Actual
Taxiway width		25'/35'	
TSA width		49'/79'	
TOFA width		89'/131'	
Dist. from centerline to fixed or movable ol		44.5/65.5'	
Pavement marking type		Centerline	
Pavement marking condition		-	
Pavement strength		-	
Pavement condition		-	
Taxiway Lighting Inventory			
Distance from pavement edge		10'	
Maximum distance between lights		100'	
Type		-	
Condition		-	
Color		Blue	

COMMENTS Only partial parallel to Runway 20, no parallel to Runway 2

Landside Inventory Checklist

Airport	Bisbee Municipal Airport	ARC	B-I
City	City of Bisbee, Arizona	Approach Type	Basic Visual
Contact	Russ McConnell	Date Inventoried	April 21, 2009
Phone No.	520-432-6262	Inspected By	HD

Facilities	Existing	Notes
Tie-downs	25	
T-hangars	--	24 through the fence
Box hangars	4	
Apron		
Size	12,700 square yards	
Pavement strength	SW 12.5	
Pavement condition	Fair/Poor	
Pavement marking	Fair/Poor	
Pavement marking condition	Fair/Poor	
Automobile parking	500 square yards	
Weather equipment	None	
Fuel storage	6,000 gallons	
Fuel type available	AvGas 100LL	
FBO/Terminal building	Yes	no FBO
Port-a-port hangar	--	

COMMENTS

Appendix B
Forecast Summary in FAA Format

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

	Year	Airport Forecast	TAF	AF/TAF (% Difference)
Passenger Enplanements				
Base yr.	2010	0	0	#DIV/0!
Base yr. + 5yrs.	2015	0	0	#DIV/0!
Base yr. + 10yrs.	2020	0	0	#DIV/0!
Base yr. + 15yrs.	2025	0	0	#DIV/0!
Commercial Operations				
Base yr.	2010	0	0	#DIV/0!
Base yr. + 5yrs.	2015	0	0	#DIV/0!
Base yr. + 10yrs.	2020	0	0	#DIV/0!
Base yr. + 15yrs.	2025	0	0	#DIV/0!
Total Operations				
Base yr.	2010	4,412	3,630	21.5%
Base yr. + 5yrs.	2015	5,036	3,630	38.7%
Base yr. + 10yrs.	2020	5,659	3,630	55.9%
Base yr. + 15yrs.	2025	6,282	3,630	73.1%

NOTES: TAF data is on a U.S. Government fiscal year basis (October through September).
AF/TAF (% Difference) column has embedded formulas.

A. Forecast Levels and Growth Rates

AIRPORT NAME: Bisbee Municipal Airport **Specify base year:** 2008

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.	Average Annual Compound Growth Rates: Base yr. to +1	Base yr. to +5	Base yr. to +10	Base yr. to +15
Passenger Enplanements									
Air Carrier	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Commuter	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TOTAL	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Operations									
Itinerant									
Air carrier						#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Commuter/air taxi						#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Total Commercial Operations	336	353	403	453	503	5.1%	3.7%	3.0%	2.7%
General aviation	2,990	3,142	3,585	4,029	4,472	5.1%	3.7%	3.0%	2.7%
Military	34	35	41	45	51	2.9%	3.8%	2.8%	2.7%
Local									
General aviation	840	882	1,007	1,132	1,256	5.0%	3.7%	3.0%	2.7%
Military	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
TOTAL OPERATIONS	4,200	4,412	5,036	5,659	6,282	5.0%	3.7%	3.0%	2.7%
Instrument Operations	0	0	76	85	94	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Peak Hour Operations	3	3	3	3	4	0.0%	0.0%	1.7%	1.7%
Cargo/mail (enplaned+deplaned tons)	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Based Aircraft									
Single Engine (Nonjet)	7	7	7	7	8	0.0%	0.0%	0.0%	0.9%
Multi Engine (Nonjet)	0	0	0	1	1	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Jet Engine	0	0	1	1	1	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Helicopter	0	0	0	1	1	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Other	7	7	7	7	7	0.0%	0.0%	0.0%	0.0%
TOTAL	14	14	15	17	18	0.0%	1.4%	2.0%	1.7%

B. Operational Factors

	Base Yr. Level	Base Yr. + 1yr.	Base Yr. + 5yrs.	Base Yr. + 10yrs.	Base Yr. + 15yrs.
Average aircraft size (seats)					
Air carrier	0.0	0.0	0.0	0.0	0.0
Commuter	0.0	0.0	0.0	0.0	0.0
Average enplaning load factor					
Air carrier	0.0%	0.0%	0.0%	0.0%	0.0%
Commuter	0.0%	0.0%	0.0%	0.0%	0.0%
GA operations per based aircraft	274	287	306	304	318

Note: Show base plus one year if forecast was done. If planning effort did not include all forecast years shown interpolate years as needed, using average annual compound growth rates.

NOTE: Right hand side of worksheet has embedded formulas for average annual compound growth rate calculations.

Appendix C
Agency Coordination Letters

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

February 9, 2010

ACI# 095909

Mr. Bret Parke
Arizona Department of Environmental Quality
Administrative Council
1110 West Washington St.
Phoenix, AZ 85007

RE: Bisbee Municipal Airport Master Plan

Dear Mr. Parke:

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to air quality, water quality and any permitting requirements.

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans Dorries
Airport Planner

Enclosures

861 Rood Avenue • Grand Junction, Colorado 81501
www.armstrongconsultants.com
tel 970.242.0101
fax 970.241.1769

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

February 9, 2010

ACI# 095909

State Historic Preservation Office
Arizona State Parks
1300 W. Washington Street
Phoenix, AZ 85007

RE: Bisbee Municipal Airport Master Plan

Attn. Executive:

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to any historical, cultural and archeological resources.

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans L. Dorries

Hans Dorries
Airport Planner

Enclosures

861 Rood Avenue • Grand Junction, Colorado 81501
www.armstrongconsultants.com
tel 970.242.0101
fax 970.241.1769

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

February 9, 2010

ACI# 095909

Mr. Steve Spangle
U.S. Fish and Wildlife Service
Field Supervisor
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021

RE: Bisbee Municipal Airport Master Plan

Dear Mr. Spangle:

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to any area threatened or endangered species.

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans Dorries
Airport Planner

Enclosures

861 Rood Avenue • Grand Junction, Colorado 81501
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tel 970.242.0101
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ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

February 9, 2010

ACI# 095909

Ms. Sallie McGuire
U.S. Army Corps of Engineers
Arizona Regulatory Office
3636 N. Central Ave. Suite 900
Phoenix, AZ 85012-1939

RE: Bisbee Municipal Airport Master Plan

Dear Ms. McGuire

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to any wetlands or waters of the U.S.

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans Dorries
Airport Planner

Enclosures

861 Rood Avenue • Grand Junction, Colorado 81501
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ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

February 9, 2010

ACI# 095909

Ms. Laura Canaca
Project Evaluation Program
Arizona Game & Fish Department
WMHB - Project Evaluation Program
5000 W. Carefree Hwy
Phoenix, AZ 85086-5000

RE: Bisbee Municipal Airport Master Plan

Dear Ms. Canaca

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to any area threatened or endangered species or state sensitive species.

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

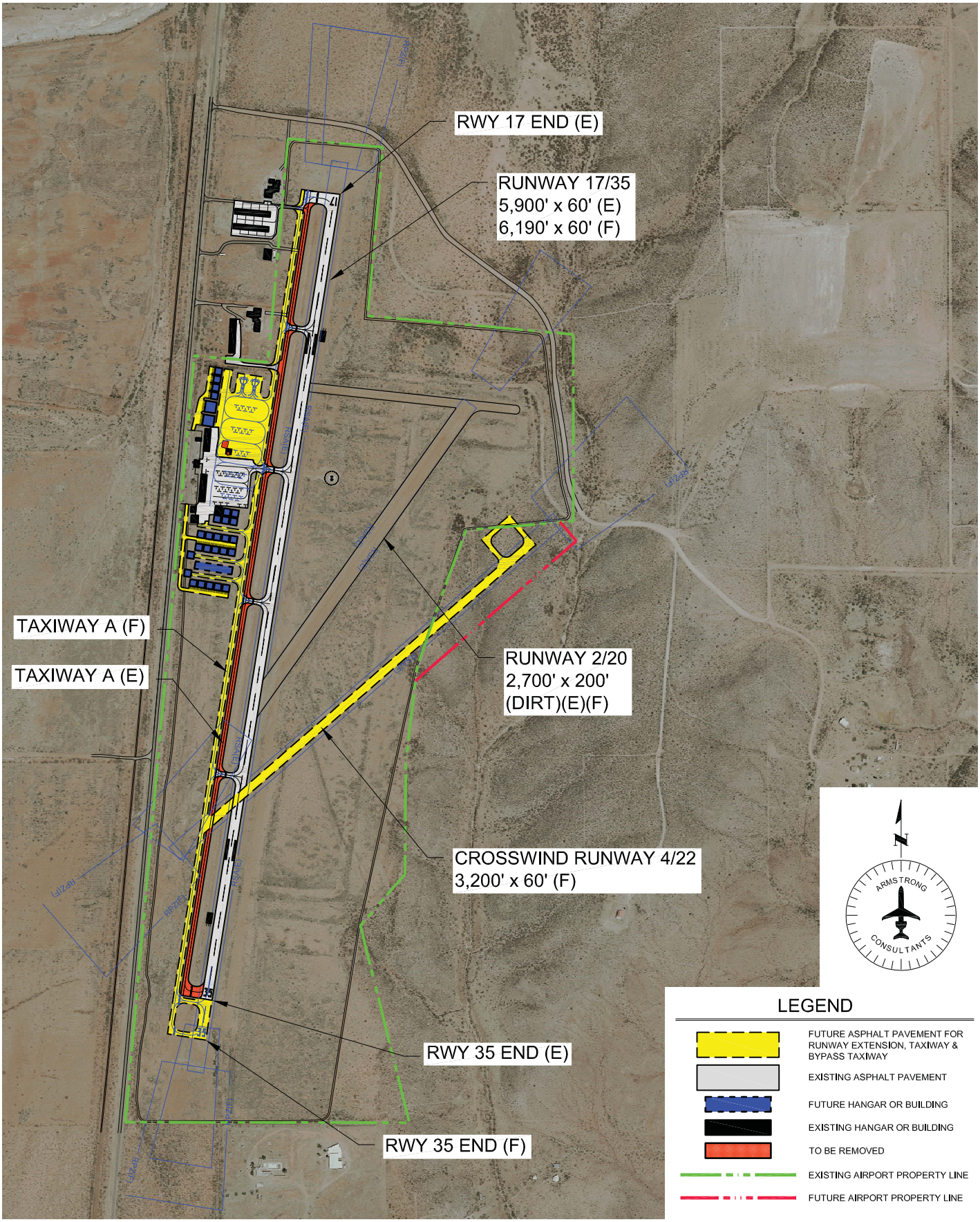
Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans Dorries
Airport Planner

Enclosures

861 Rood Avenue • Grand Junction, Colorado 81501
www.armstrongconsultants.com
tel 970.242.0101
fax 970.241.1769



ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

RECOMMENDED DEVELOPMENT

RELOCATE TAXIWAY A,
PAVE NEW CROSSWIND RUNWAY

FIGURE 4-8

Appendix D
Agency Response Letters

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Benjamin H. Grumbles
Director

February 22, 2010

Mr. Hans Dorries, Airport Planner
Armstrong Consulting, Inc.
861 Rood Avenue
Grand Junction, CO 81501

Project Location: Scoping Letter: Bisbee Municipal Airport Master Plan Update
Environmental Assessment: ACI# 095909

Dear Mr. Dorries:

On February 12, 2010, the Air Quality Division of the Arizona Department of Environmental Quality received your National Environmental Policy Act (NEPA) Scoping Input request for the proposed Bisbee Municipal Airport Master Plan Update, which includes an extension and relocation of the Airport Runway as well as paving of the Crosswind Runway, in addition to construction of future hangars or buildings.

The Air Quality Division reviewed the project described in your letter and is responding by providing information to aid in the reduction of emissions during the construction processes. These emissions could include particulate matter (dust). Both particulate matter 10-microns (PM_{10}) and particulate matter 2.5-microns ($PM_{2.5}$) in size are subject to National Ambient Air Quality Standards (NAAQS). PM_{10} and smaller can penetrate the lungs of human beings and animals, and $PM_{2.5}$ and smaller is difficult for lungs to expel and has been linked to increases in death rates and heart attacks by disturbing heart rhythms and increasing plaque and clotting; respiratory infections, asthma attacks and chronic obstructive pulmonary disease (COPD) aggravation.

To comply with applicable air pollution control requirements and minimize adverse impacts on public health and welfare, the following information is provided:

REDUCE DISTURBANCE of PARTICULATE MATTER during CONSTRUCTION

The following measures are recommended to reduce disturbance of particulate matter, including emissions caused by strong winds as well as machinery and trucks tracking soil off the construction site:

I. Site Preparation and Construction

A. Minimize land disturbance;
B. Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust entering ambient air
C. Cover trucks when hauling soil;
D. Minimize soil track-out by washing or cleaning truck wheels before leaving construction site;
E. Stabilize the surface of soil piles; and
F. Create windbreaks

II. Site Restoration
A. Revegetate any disturbed land not used;
B. Remove unused material; and
C. Remove soil piles via covered trucks.

The following rules are applicable to reducing dust during construction, demolition and earth moving activities are enclosed:

- ☐ Arizona Administrative Code R18-2-604 through -607
- ☐ Arizona Administrative Code R18-2-804

Should you have further questions, please do not hesitate to call A. "Bonnie" Cockrell at (602) 771-2378 or Dave Biddle at (602) 771-2376 of the Planning Section Staff.

Very truly yours,

Diane L. Arnst, Manager
Air Quality Planning Section

Enclosure

cc: Henry R. Darwin, EV Administrative Counsel
A. "Bonnie" Cockrell, Environmental Program Specialist, Air Planning
File No. 229252

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

SHPO-2010-0263 (76873)

RECEIVED MAR 0 1 2010

February 9, 2010

ACI# 095909

State Historic Preservation Office
Arizona State Parks
1300 W. Washington Street
Phoenix, AZ 85007

RECEIVED
DJ
FEB 18 2010
2/22/10
ARIZONA STATE PARKS/S.H.P.O.

RE: Bisbee Municipal Airport Master Plan

Attn. Executive:

Armstrong Consultants has been retained to prepare an updated Airport Master Plan for the Bisbee Municipal Airport in Bisbee, AZ. To assist us in preparing this Master Plan and to comply with the requirements of NEPA and the Federal Aviation Administration, we request your comments concerning potential impacts to any historical, cultural and archeological resources.

Area has never been assessed for

DFT
23FEB10

Enclosed for your reference is a drawing of the proposed improvements to the Bisbee Municipal Airport. The Bisbee Municipal Airport is located within Sections 2, 3, 10 and 11, Township 24 South, Range 24 East of the Arizona Meridian. Please forward any comments at your earliest convenience. Please contact me at (970) 242-0101 if you have any questions regarding this project. Thank you for your assistance.

Sincerely,

ARMSTRONG CONSULTANTS, INC.

Hans L. Dorries

Hans Dorries
Airport Planner

Enclosures

This NEPA submittal does not constitute consultation under Section 106 of the National Hist. Preservation Act. Provisions at 36 CFR Part 800.8 must be followed in order for this Office to accept NEPA documentation as Section 106 compliance consultation.

861 Road Avenue • Grand Junction, Colorado 81501
www.armstrongconsultants.com
tel 970.242.0101
fax 970.241.1769

THE STATE OF ARIZONA
GAME AND FISH DEPARTMENT
5000 W. CAREFREE HIGHWAY
PHOENIX, AZ 85086-5000
(602) 942-3000 • WWW.AZGFD.GOV

March 9, 2010

Hans Dorries
Armstrong Consultants
861 Rood Avenue
Grand Junction, Colorado 81501

Re: Environmental Review for Bisbee Airport.

Dear Mr. Dorries:

The Arizona Game and Fish Department (Department) has reviewed your request, dated February 9, 2010 regarding environmental resources and sensitivities associated with the above-referenced project area. A search using our On-Line Environmental Review Tool (receipt 20100309011608) found no Listed Threatened, Endangered or Candidate Species and no Designated or Proposed Critical Habitat within 3 miles of your project area.

The Department has no further comments at this time. If you have any questions regarding this letter, please contact me at (623) 236-7513. General status information, county and watershed distribution lists and abstracts for some special status species are also available on our web site at http://www.azgfd.gov/hdms.

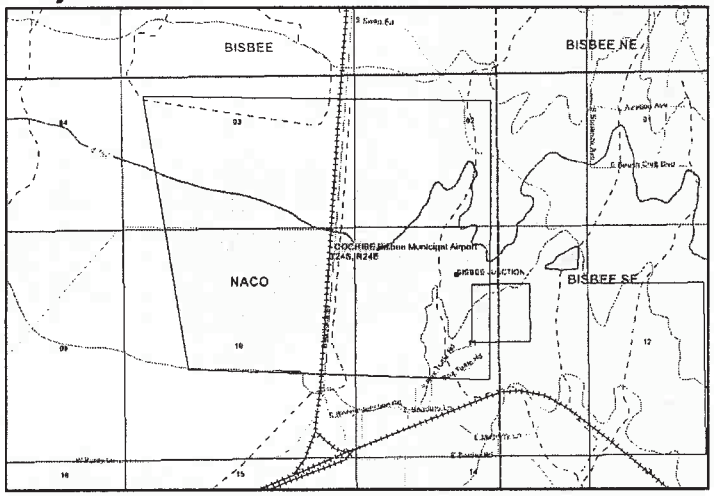
Sincerely,

Daniel E. Nelson
Project Evaluation Specialist
(623) 236-7513

CC: John Windes, AGFD
M10-02113803

Arizona's On-line Environmental Review Tool
Search ID: 20100309011608
Project Name: bisbe airport
Date: 3/9/2010 10:43:36 AM

Project Location



Project Name: bisbe airport
Submitted By: PEP Project Evaluation Program
On behalf of: CONSULTING
Project Search ID: 20100309011608
Date: 3/9/2010 10:43:32 AM
Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities
Project Coordinates (UTM Zone 12-NAD 83): 605819.573, 3470598.019 meter
Project Area: 1065.759 acres
Project Perimeter: 8369.730 meter
County: COCHISE
USGS 7.5 Minute Quadrangle ID: 1951
Quadrangle Name: NACO
Project locality is not anticipated to change

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available.

Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	FWS	USFS	BLM	State
Sceloporus slevini	Slevin's Bunchgrass Lizard		S		

 APPLICATION INITIALS: _____

Please review the entire receipt for project type recommendations and/or species or location information and retain a copy for future reference. If any of the information you provided did not accurately reflect this project, or if project plans change, another review should be conducted, as this determination may not be valid.

Arizona's On-line Environmental Review Tool:

1. This On-line Environmental Review Tool inquiry has generated recommendations regarding the potential impacts of your project on Special Status Species (SSS) and other wildlife of Arizona. SSS include all U.S. Fish and Wildlife Service federally listed, U.S. Bureau of Land Management sensitive, U.S. Forest Service sensitive, and Arizona Game and Fish Department (Department) recognized species of concern.
2. These recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation). These recommendations are preliminary in scope, designed to provide early considerations for all species of wildlife, pertinent to the project type you entered.
3. This receipt, generated by the automated On-line Environmental Review Tool does not constitute an official project review by Department biologists and planners. Further coordination may be necessary as appropriate under the National Environmental Policy Act (NEPA) and/or the Endangered Species Act (ESA).

The U.S. Fish and Wildlife Service (USFWS) has regulatory authority over all federally listed species under the ESA. Contact USFWS Ecological Services Offices: http://arizonaes.fws.gov/.

Phoenix Main Office
2321 W. Royal Palm Road, Suite 103
Phoenix, AZ 85021
Phone 602-242-0210
Fax 602-242-2513

Tucson Sub-Office
201 North Bonita, Suite 141
Tucson, AZ 85745
Phone 520-670-6144
Fax 520-670-6154

Flagstaff Sub-Office
323 N. Leroux Street, Suite 101
Flagstaff, AZ 86001
Phone 928-226-0614
Fax 928-226-1099

Disclaimer:

1. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area.
2. The Department's Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there.
3. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HDMS data contains information about species occurrences that have actually been reported to the Department.

Arizona Game and Fish Department Mission

To conserve, enhance, and restore Arizona's diverse wildlife resources and habitats through aggressive protection and

 APPLICATION INITIALS: _____

management programs, and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation, and use by present and future generations.

Project Category: Transportation & Infrastructure,Airports,Construction of new runways, terminals/concourses, other facilities

Project Type Recommendations:

Based on the project type entered; coordination with Arizona Department of Environmental Quality may be required (http://www.azdeq.gov/).

Based on the project type entered; coordination with County Flood Control districts may be required.

Based on the project type entered; coordination with State Historic Preservation Office may be required http://azstateparks.com/SHPO/index.html

Based on the project type entered; coordination with U.S. Army Corps of Engineers may be required (http://www.spl.usace.army.mil/regulatory/phonedir.html)

Based on the project type entered; coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (http://arizonaes.fws.gov/)

Consider designs and tower modifications that reduce or eliminate impacts to migratory birds. Please refer to the U.S. Fish and Wildlife Service's page on cellular towers in Arizona http://www.fws.gov/arizonaes/CellTower.htm. On this page there are guidelines for tower siting, construction, operation, and decommissioning. Also see the Service's Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommissioning, http://www.fws.gov/habitatconservation/communicationtowers.htm.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (including spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project

 APPLICATION INITIALS: _____

Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

Planning: consider impacts of lighting intensity on mammals and birds and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly.

Recommendations Disclaimer:

1. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project.
2. These recommendations are proposed actions or guidelines to be considered during **preliminary project development**.
3. Additional site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. The Department is interested in the conservation of all fish and wildlife resources, including those Special Status Species listed on this receipt, and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
6. **Further coordination requires the submittal of this initialed and signed Environmental Review Receipt with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map).**
7. Upon receiving information by AZGFD, please allow 30 days for completion of project reviews. Mail requests to:

Project Evaluation Program, Habitat Branch
Arizona Game and Fish Department
5000 West Carefree Highway
Phoenix, Arizona 85086-5000
Phone Number: (623) 236-7600
Fax Number: (623) 236-7366

Terms of Use

By using this site, you acknowledge that you have read and understand the terms of use. Department staff may revise these terms periodically. If you continue to use our website after we post changes to these terms, it will mean that you accept such changes. If at any time you do not wish to accept the Terms, you may choose not to use the website.

1. This Environmental Review and project planning website was developed and intended for the purpose of screening projects for potential impacts on resources of special concern. By indicating your agreement to the terms of use for this website, you warrant that you will not use this website for any other purpose.
2. Unauthorized attempts to upload information or change information on this website are strictly prohibited and may be punishable under the

 APPLICATION INITIALS: _____

Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act .
3. The Department reserves the right at any time, without notice, to enhance, modify, alter, or suspend the website and to terminate or restrict your access to the website.
4. This Environmental Review is based on the project study area that was entered. The review must be redone if the project study area, location, or the type of project changes. If additional information becomes available, this review may need to be reconsidered.
5. A signed and initialed copy of the Environmental Review Receipt indicates that the entire receipt has been read by the signer of the Environmental Review Receipt.

Security:

The Environmental Review and project planning web application operates on a complex State computer system. This system is monitored to ensure proper operation, to verify the functioning of applicable security features, and for other like purposes. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, system personnel may provide the evidence of such monitoring to law enforcement officials. Unauthorized attempts to upload or change information; to defeat or circumvent security measures; or to utilize this system for other than its intended purposes are prohibited.

This website maintains a record of each environmental review search result as well as all contact information. This information is maintained for internal tracking purposes. Information collected in this application will not be shared outside of the purposes of the Department.

If the Environmental Review Receipt and supporting material are not mailed to the Department or other appropriate agencies within six (6) months of the Project Review Receipt date, the receipt is considered to be null and void, and a new review must be initiated.

Print this Environmental Review Receipt using your Internet browser's print function and keep it for your records. Signature of this receipt indicates the signer has read and understands the information provided.

Signature:_____

Date: _____

Proposed Date of Implementation: _____

Please provide point of contact information regarding this Environmental Review.

Application or organization responsible for project implementation

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

 APPLICATION INITIALS: _____

Phone: _____

E-mail: _____

Person Conducting Search (if not applicant)

Agency/organization:_____

Contact Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

 APPLICATION INITIALS: _____

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3636 NORTH CENTRAL AVENUE, SUITE 900
PHOENIX, ARIZONA 85012-1939

REPLY TO
ATTENTION OF:

February 23, 2010

Office of the Chief
Regulatory Branch

Hans Dorries
Armstrong Consultants, Inc.
861 Rood Avenue
Grand Junction, Colorado 81501

File Number: SPL-1999-16357-RJD

Dear Mr. Wilcox:

I received your letter, dated February 9, 2010, requesting my comments on the updated Airport Master Plan for the Bisbee Municipal Airport and its potential to impact to wetlands and other waters of the United States. The Bisbee Municipal Airport is located (LAT/LON N31.36755/W109.88333; Sections 2, 3, 10, and 11, T24S, T24E) approximately six miles southeast of Bisbee, Cochise County, Arizona.

Please be advised that any discharge of dredged or fill material into a jurisdictional watercourse would require a Department of the Army permit issued under Section 404 of the Clean Water Act. A Section 404 permit is required for the discharge of dredged or fill material into any "water of the United States," including adjacent wetlands. If the following activities occur within a water of the United States a permit is typically required; 1) placing bank protection, 2) temporary or permanent stock-piling of excavated material for a utility line, 3) backfilling of the utility line trench, 3) grading a road, 4) grading (including vegetative clearing operations) that involves the filling of low areas or leveling the land, 5) constructing weirs or diversion dikes, 6) constructing approach fills, and 6) discharging dredged or fill material as part of any other activity.

At the Bisbee Municipal Airport there is an ephemeral wash along the eastern boundary of the airport property that may be a water of the United States subject to regulation under Section 404 of the Clean Water Act. If an airport maintenance or improvement activity occurs near or in this wash you should request a jurisdictional determination from my office before undertaking the activity. If the jurisdictional determination concludes that this wash is a water of the United States or other waters of the United States are delineated within the airport property then you should contact my office about submitting an application for a Section 404 permit.

Jurisdictional determination and permit application information are enclosed. This information can also be found at http://www.spl.usace.army.mil/regulatory. If you have

any questions, please contact Robert J. Dummer at (602) 640-5385 x 224 or email him at robert.j.dummer@usace.army.mil. Please refer to file number SPL-1999-16357-RJD in your reply.

Sincerely,

Sallie McGuire

Sallie D. McGuire
Chief, Arizona Branch
Regulatory Division

Enclosure

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • www.azdeq.gov

Janice K. Brewer
Governor

Benjamin H. Grumbles
Director

February 23, 2010

RECEIVED MAR 0 1 2010

Hans Dorries
Armstrong Consultants, Inc.
861 Rood Avenue
Grand Junction, CO 81501

Re: Master Plan Bisbee Municipal Airport

Dear Mr. Dorries:

Thank you for the February 9, 2010 letter regarding a NEPA assessment for the Bisbee Municipal Airport's updated Airport Master Plan. From the information submitted, future projects include: asphalt pavement for runway extension, taxiway, and bypass taxiway; constructing hangers or buildings; and removing portions of existing taxiways. The Arizona Department of Environmental Quality, Water Quality Division (ADEQ) is responsible for ensuring the delivery of safe drinking water to customers of regulated public water systems under the Safe Drinking Water Act, permits for proposed discharges to surface waters of the United States under the federal Clean Water Act (CWA), permits under the state Aquifer Protection Program, and water quality certifications of certain federal licenses and permits. ADEQ would like to make you aware of some water quality issues that may need to be considered.

Stormwater: Stormwater discharges associated with construction activities (clearing, grading, or excavating) that disturb one acre or more must obtain a general permit for coverage of stormwater discharges under the Arizona Pollutant Discharge Elimination System's (AZPDES) Construction General Permit. As part of permit coverage, a Stormwater Pollution Prevention Plan (SWPPP) must be prepared, and implemented during the course of construction. The SWPPP must comply with ADEQ's Construction General Permit's SWPPP requirements, and must identify such elements as the project scope, anticipated acreage of land disturbance, and the best management practices that would be implemented to reduce soil erosion, and contain or minimize the pollutants that might be released to waters of the U.S. In addition to preparing the SWPPP, the project proponent must file for permit coverage before construction. If the Municipal Airport project will disturb the applicable acreage, then Construction General Permit coverage is required. The Construction General Permit, SWPPP checklist, and associated forms are available on ADEQ's website at: http://www.azdeq.gov/environ/water/permits/stormwater.html#const. For questions, please contact Chris Henninger in our Stormwater and General Permits Unit at (602) 771-4508 or by e-mail at cph@azdeq.gov.

CWA 401 Water Quality Certification: If project activities will occur inside the Ordinary High Water Mark of any water of the U.S., then a CWA section 404 permit (a.k.a. dredge and fill), issued by the U.S. Army Corps of Engineers, may be required. If a 404 permit (or any other federal permit) is required for the project, a state-issued CWA section 401 certification of the permit may be required to ensure that the permitted activities will not result in a violation of Arizona's surface water quality standards. For questions, please contact Bob Scalamera at (602) 771-4502 or by e-mail at rs3@azdeq.gov. The CWA 401 application form can be downloaded from ADEQ's website at: http://www.azdeq.gov/function/forms/appswater.html#dredge.

Multi-Sector General Permit (MSGP): ADEQ is developing an MSGP for stormwater discharges associated with industrial activity, based on the U.S. Environmental Protection Agency version, but tailored to the distinct Arizona environment. Airports and other air transportation facilities that have stormwater discharges are required to obtain MSGP coverage as a Sector S industry. All facilities in Arizona (excluding Indian Country lands) must apply for permit coverage when ADEQ issues its new MSGP. ADEQ anticipates that it will begin the public notice for the MSGP during the winter of 2010. For questions on MSGP coverage, please contact Dennis Turner at (602) 771-4501 or by e-mail at dt1@azdeq.gov.

We appreciate the opportunity to review and provide comments. If you need further information, please contact Wendy LeStarge of my staff at (602) 771-4836 or via e-mail at wl1@azdeq.gov, or myself at (602) 771-4416 or via e-mail at lc1@azdeq.gov.

Sincerely,

Linda Taunt, Deputy Director
Water Quality Division

Appendix E
Public Involvement

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

Bisbee Municipal Airport Meeting Summary
April 21, 2009 11:00 AM, Bisbee Municipal Airport Terminal Building

A Planning Advisory Committee (PAC) Kickoff meeting was held on April 21, 2009 to present the Airport Master Planning process to the Bisbee Airport Master Plan Working Group. Attendance at the meeting comprised of 5 individuals, including representatives from the Bisbee Airport Advisory Committee (BAAC), City Staff, the Airport and Armstrong Consultants (see attached meeting sign in sheet).

The Working Group (WG) will be included in all aspects of the airport master plan process including the review of working papers, draft reports and drawings. The goals of the airport master plan were presented along with the role of the WG. The process and schedule for the airport master plan were discussed.

An introduction was given on the status of the airport and the impact the airport has on the local economy. The types and volumes of activity that are currently taking place were discussed which includes business, recreation, search and rescue operations, border patrol, tourism and itinerant general aviation aircraft for fuel. According to the airport manager there are currently 28 based aircraft at the airport and approximately 5,000 annual operations.

Airport Reference Codes (ARCs) were described and the existing airport reference code was discussed. The design standards were briefly covered and included impacts associated with an ARC upgrade. The possibility of implementing a GPS approach was also discussed.

The existing airside and landside layouts were discussed including the constraints of the existing configuration. The aeronautical publications have not been updated with the new 75' runway width. Several airside development possibilities were discussed, including relocation of Taxiway A to meet B-II design standards, pave and extend the existing crosswind Runway 2/20, and building a new east-west primary runway while maintaining Runway 17/35 as a crosswind runway. Landside development, hangar and taxilane development, helicopter parking, a credit card reader for the fuel system, and installation of an AWOS were also discussed. There are several options for the future airside and landside configuration which will be further evaluated during the development alternatives section.

The existing parallel taxiway is in fair to poor condition. A pavement preservation or rehabilitation project, such as a crack seal and seal coat, will be needed to extend the life of he pavement until a long-term decision is made on the disposition of the taxiway.

A question regarding future land use compatibility surrounding the airport was raised. Land use compatibility will be addressed as part of the airport master plan. An airport overlay zone will be developed and a zoning ordinance for potential adoption by the City and County will be provided.

The next step will be to develop Inventory, Forecast and Facility Requirements Chapters. This information will be distributed in a working paper to participating parties for review and comment.

Meeting Sign-In Sheet

Project:	Bisbee Municipal Airport Kickoff Meeting	Meeting Date:	04/21/09

Name	Title	Company	Phone	Fax	E-Mail	P.A.C. Member
Dennis Corsi	Vice President	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	dennis@armstrongconsultants.com	
Hans Dorries	Airport Planner	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	hans@armstrongconsultants.com	
Russ McConnell	Public Works Director	City of Bisbee	(520) 432-6212	(520) 432-2748	RMcconnell@cityofbisbee.com	
Gordon Lewis	BAAC	City of Bisbee	(520) 366-560	—	ranchogulag@gmail.com	
Ken Pakorski	Airport Manager		520 432-6030	—	WACOZPFT@Yahoo	

Bisbee Municipal Airport Meeting Summary
November 18, 2009 11:00 AM at the Airport

A Planning Advisory Committee (PAC) development alternatives meeting was held on November 18, 2009 to present the Airport Master Planning process to the Bisbee Airport Advisory Commission (BAAC), City Staff and interested community members. Attendance at the meeting comprised of 8 individuals, including representatives from the Bisbee Airport Advisory Commission (BAAC), City Staff and Armstrong Consultants (see attached meeting sign in sheet). FAA and ADOT representatives participated via conference call.

The airport master plan schedule was discussed. The Airport Reference Code (ARC) and the associated design standards were reviewed. Forecast of based aircraft and aviation activity was briefly discussed. It was noted that the airport had about 10 jet operations per year (Cessna Citation).

The PAC noted the following concerns about the existing facilities:

- Taxiway A is in poor condition and it does not have the same strength as the runway. Therefore, relocating Taxiway A to satisfy the design requirements would be a preferred alternative.
- Adequate water and sewer service is not available at the airport. The possibility of providing water and sewer from the existing service north of the airport was discussed.
- There is not sufficient vehicle parking at the airport to allow special events such as airshows.

The five alternatives described in Working Paper # 2 were presented and discussed. Alternative 1 would retain and rehabilitate as needed Runway 17/35 and Taxiway A in its present configuration and strength; and retain and rehabilitate as needed Runway 2/20 in its present configuration to allow operations of small aircraft to operate during high crosswind conditions. This alternative would also entail standard maintenance of the runways such as the application of fog and slurry seals as well as, repainting the runway markings. This would also include the reconstruction of the existing pavements at the end of their useful life. It was discussed that this alternative would not satisfy the recommended 95 percent crosswind coverage. The PAC also explained that Taxiway A has reached its useful life and would need to be reconstructed soon.

In Alternative 2, Taxiway A would be relocated to 225 feet west of Runway 17/35 centerline to satisfy the runway centerline to taxiway centerline of ARC B-I or to 240 feet to satisfy the requirements of ARC B-II. Runway 17/35 would also be extended to 6,190 feet. The benefits of planning for B-II standards rather than B-I standards were discussed.

In Alternative 3, Runway 17/35 would be relocated to the east to provide a 225 foot runway to taxiway separation to accommodate B-I aircraft or a 240 foot runway to taxiway separation to accommodate B-II aircraft. The existing runway length would be increased from 5,900 feet to 6,190 feet to accommodate existing and future users. The PAC pointed out that in this alternative Taxiway A would still need to be reconstructed

since it has reached its useful life; thus significantly increasing the cost of this alternative.

In Alternative 4, Runway 17/35 and Taxiway A would be retained in their current configuration. A new B-I or B-II runway would be constructed to the east. The runway would be constructed with an alignment of 4/22 to a length of 6,190 feet by 60 feet or 75 feet. It was pointed out that this alternative would require significant earth work to achieve the required grading standards. The PAC pointed out that the approach and departure for the new Runway 4/22 would be affected if the copper mine is reactivated in the future.

In Alternative 5, Runway 17/35 and Taxiway A would be retained and maintained in its present configuration and a new B-I runway 6,190 feet long and 60 feet wide or B-II runway 6,190 feet long and 75 feet wide would be constructed west of the current runway with an alignment of 10/28. The PAC pointed out that land acquisition west of the current location would be difficult and airspace might be affected if the copper mine is reactivated in the future.

Alternative 2B, relocating the taxiway to 240 feet from the existing runway centerline was favored but no final decision was made during the meeting. Land acquisition requirements associated with this alternative were discussed. The possibility for this land to be donated by the owner was also discussed.

In relation to landside development, it was suggested adding sufficient vehicle parking to facilitate events at the airports such as air shows and EAA Young Eagle flights. The possibility to connect the existing water and sewer located north of the airport was also recommended as part of the hangar and taxilane expansion project.

The next steps will be to select a preferred alternative, complete the draft ALP, financial plan, environmental overview and distribute the draft report.

Meeting Sign-In Sheet

Project:	Bisbee Municipal Airport, Development Alternatives Meeting	Meeting Date:	11/18/08

Name	Title	Company	Phone	Fax	E-Mail
Dennis Corsi	Vice President	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	dennis@armstrongconsultants.com
Hans Dorries	Airport Planner	Armstrong Consultants, Inc.	(970) 242-0101	(970) 241-1769	hans@armstrongconsultants.com
Jim Gutowski		City of Bisbee	520 249 5401	520 432 3106	JGUTOWSKI@CITYOFBISBEE.COM
MARILYN SEIBOLD			" 432-7687		mabi@theriver.com
Kim Christian			432-5244		christian549@netscape.com
BILL SEIBOLD			520-432-7687		MABI@THERIVER.COM
Russ McConnell		City of Bisbee	520.432.6262	520.432.2649	RMCconnell@cityofbisbee.com
Gordon Lewis	BHC		520-366 5560		ranchogulag@o.mail.com

BISBEE MUNICIPAL AIRPORT AIRPORT MASTER PLAN UPDATE NEWSLETTER

Issue 1

INSIDE THIS ISSUE:

This is the first of four newsletters that will be distributed during the Airport Master Plan Study. An outline of the process is included on page 3 of this publication. The purpose of the newsletters is to provide updates on the progression of the study, announce upcoming meetings, and to ensure the involvement of the community in order that all interested parties are given consideration and that they remain informed about the progress of the Airport Master Plan.

AIRPORT MASTER PLAN STUDY

Overview

The City of Bisbee has received a grant from the Federal Aviation Administration (FAA) to conduct a Master Plan Update for the Bisbee Municipal Airport in Bisbee, Arizona. Armstrong Consultants, an Airport Planning and Engineering firm from Grand Junction, Colorado has been retained to complete the study. The previous Airport Master Plan for Bisbee Municipal Airport was completed in 1999. The updated Airport Master Plan will update user information provide direction for airport development consistent with the airports role and considering the potential for environmental and socioeconomic impacts. The plan serves as a guide to decision makers, airport users and the general public for implementing airport development actions while considering both airport and community concerns and objectives. Typical components of the Master Plan Process include the following:

- Airport Inventory
- Aviation Forecasts and Facility Requirements
- Development Alternatives
- Environmental Overview
- Financial Analysis and Capital Improvement Program
- Airport Layout Drawings
- Public Involvement

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

PLANNING ADVISORY COMMITTEE

Completion of the Study will require contact with and input from many activities on the airport, community agencies both governmental and non-governmental, airport users, pilots, (passengers, shippers, etc.), residents of the community and others. A Planning Advisory Committee (PAC) has been identified and asked to assist in the ongoing review and participation in the planning process. The PAC will provide input on the recommendations in the study through meetings and review of draft Working Papers, Reports and Drawings. Meetings will be held throughout the planning process to provide information and to accept oral and written comments on the plan.

PURPOSE OF THE AIRPORT MASTER PLAN

The last Airport Master Plan study was completed in 1999. This Updated Airport Master Plan will provide updated information on the airport and direction for future improvements. There are 28 based aircraft at the airport with a user fleet mix of single engine pistons, multiengine pistons and turbo props. The trend in general aviation is an increase in light jets and fractional business jet ownership as well as experimental and light sport aircraft. An Airport Master Plan study is needed to provide a plan consistent with the types of aircraft currently using and expected to use the airport in the future. The objectives of the Master Plan include:

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

Bisbee Municipal Airport Terminal Building

Points of Contact

Tom Klimek
City of Bibee
118 Arizona Street
Bisbee, AZ 85603
Phone: (520) 432-6002
rmcconnell@cityofbisbee.com

Hans Dorries
Airport Planner
Armstrong Consultants, Inc.
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THE AIRPORT MASTER PLAN STUDY PROCESS

The Airport Master Plan process (as shown in the flow chart below) began with the City's application for and acceptance of a Federal grant offer. The next step is to complete Phase I.

Phase I of this process includes an inventory of existing airport facilities, forecasts of aviation activity and a listing of facility requirements at the airport. Phase II includes alternatives for meeting airside and landside development needs. Phase III is the completion of a detailed set of Airport Layout Plan (ALP) drawings, a Capital Improvement Plan (CIP) and implementation plans for the airport.

THE BISBEE MUNICIPAL AIRPORT MASTER PLAN SCHEDULE

Bisbee Municipal Airport / Airport Master Plan Schedule

Task Description	Months (from Notice to Proceed)											
	0	1	2	3	4	5	6	7	8	9	10	11
Scope of Work, Contract, & Grant Offer												
PAC Meeting												
Inventory Process												
Forecasts												
Facility Requirements												
Alternatives Analysis												
PAC & Public Meeting												
Airport Layout Plans												
Capital Improvement & Financial Plans												
Environmental Overview												
Pre-Draft ALP Drawings & Narrative												
Sponsor, State & FAA Review												
Draft ALP Drawings & Report												
Sponsor, State & FAA Airspace Review												
PAC Meeting												
Final ALP Narrative & Drawings												

City of BISBEE

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

BISBEE MUNICIPAL AIRPORT
AIRPORT MASTER PLAN UPDATE
NEWSLETTER

Issue 2

INSIDE THIS ISSUE:

This is the second of four newsletters that will be distributed during the Bisbee Municipal Airport Master Plan Update. The purpose of the newsletters is to provide updates on the progression of the study, announce upcoming meetings and to ensure the involvement of the community. This will allow all interested parties to provide input and remain informed on the progress of the Airport Master Plan.

Inventory, Forecast, Facility Requirements

Bisbee Municipal Airport

Overview

The first Working Paper for the Bisbee Municipal Airport Master Plan has been distributed to the City, Planning Advisory Committee (PAC), the Federal Aviation Administration (FAA) and the Arizona Department of Transportation Aeronautics Group for review and comment. Working Paper 1 includes an inventory of the existing airport facilities, aviation forecasts, and facility requirements.

Baseline information relating to the airport's property, facilities, services and local vicinity were collected during site visits and interviews with airport management, City staff, airport tenants and users. Airport and other public documents were also examined. Forecasts of aviation activity provide the basis for evaluating the adequacy of existing airport facilities and their capacity to handle increased traffic levels or different traffic types. They are the foundation for effective decision making in airport planning, such as if and when improvements are needed, the level of capital improvements and the timing of necessary investments.

One of the primary objectives of this planning study is to determine the size and configuration of airport facilities need to accommodate the types and volume of aircraft expected to utilize the airport. Data from forecasts and facility requirements are coupled with established planning criteria to determine what improvements are necessary to airside and landside areas

INVENTORY

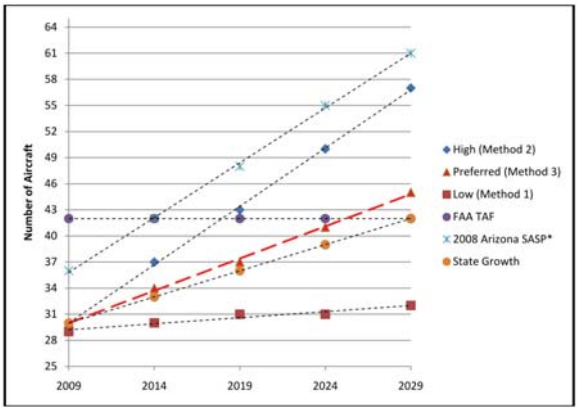
An Inventory of the Bisbee Municipal Airport was conducted and presented in Working Paper 1. The Inventory Chapter provided an overview of the airport development and FAA and State Aeronautics grant histories. The service level of the airport was discussed, including information on the users of the airport. The existing activity levels for the airport from the Terminal Area Forecast (TAF), Airport Master Record Form and airport management records were also presented. According to airport management records there are 28 based aircraft, approximately 4,200 annual operations. The existing Airport Reference Code (ARC) is B-I. Design standards were inventoried and it was determined that separation between Runway 17/35 centerline and Taxiway A centerline does not satisfy the requirements of ARC B-I standards. The Inventory Chapter also discussed the existing airside and landside facilities including the size of the terminal building, number of hangars, tiedowns and apron space available for airport users.

The Inventory Chapter included an overview of the socioeconomic conditions of Cochise County and the City of Bisbee. Conditions such as population growth, employment and income can affect demand for aviation services in the area and must be taken into consideration when planning for future aviation needs of the area.

The Inventory Chapter also documented the environmental resources that may be affected by potential airport development. The information that was gathered will be used later in the study in evaluating potential airport development alternatives and to identify environmental related permits that may be required for recommended development projects. Existing financial data was compiled to determine the existing financial condition of the airport. Four years of data was collected showing the financial trends.

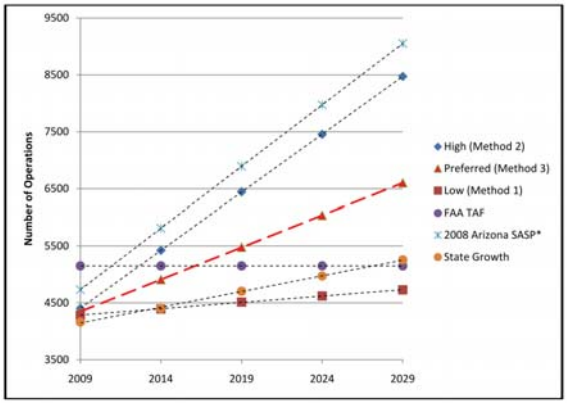
FORECASTS

Working Paper 1 also provided forecasts of aviation activity. A comparative analysis of based aircraft forecasts was accomplished using three methodologies to derive a preferred forecast. Method 1 (low) is based on the population growth in the City of Bisbee. Method 2 (high) is based on the per capita income growth in Cochise County. Method 3 is the average between the results of Method 1 and Method 2.



All master planning forecasts represent a significant "cone of uncertainty" as the planning horizon lengthens and all forecasts will inevitably be wrong to some degree. It is the planner's responsibility to provide a forecast that is reasonable, that will guide development actions as the needs arises and will not be "so wrong" as to impair the airport's healthy future development. To that end, the preferred forecast model for based aircraft is the average of the per capita income growth and the population growth (Method 3).

The number of operations at the airport were calculated based on the same three methods previously describe. The preferred forecast model for airport operations is based on the average of the per capita income growth and the population growth (Method 3).



Forecast of Aviation Demand					
Year	**2009**	**2014**	**2019**	**2024**	**2029**
Based Aircraft	30	34	37	41	45
Operations	4,344	4,908	5,478	6,037	6,600

FACILITY REQUIREMENTS

The time frame for addressing development needs usually involves Short-Term (1-5 years), Medium-Term (6-10 years) and Long-Term (11-20 years) periods. Long-term planning primarily focuses on the ultimate role of the airport. Medium-term planning focuses on a more detailed assessment of needs, while the short-term analysis focuses on immediate action items and may include details not geared towards long-term development.

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

Several needs were identified in Working Paper 1 for the Bisbee Municipal Airport including:

- Increase distance between Runway 17/35 centerline to Taxiway A centerline to meet the recommended design standards.
- Extend Runway 17/35 to meet the existing and forecasted fleet mix.
- Construct a paved crosswind runway to meet the recommended 95% wind coverage.
- Maintain the existing dirt Runway 2/20.
- Remodel the existing terminal building to satisfy user requirements.
- Provide adequate utilities to the terminal building; particularly potable water and sewer.
- Provide adequate grounds maintenance equipment and storage building.
- Install an Automated Weather Observation System (AWOS).
- Provide demand based apron expansion and hangar space.
- Development of a nonprecision GPS approach with vertical guidance.

In summary, the facility requirements for Bisbee Municipal Airport are based on the types and volume of aircraft expected to use the airport in the short and long-term timeframes. These facilities will enable the airport to serve its users in a safe and efficient manner.

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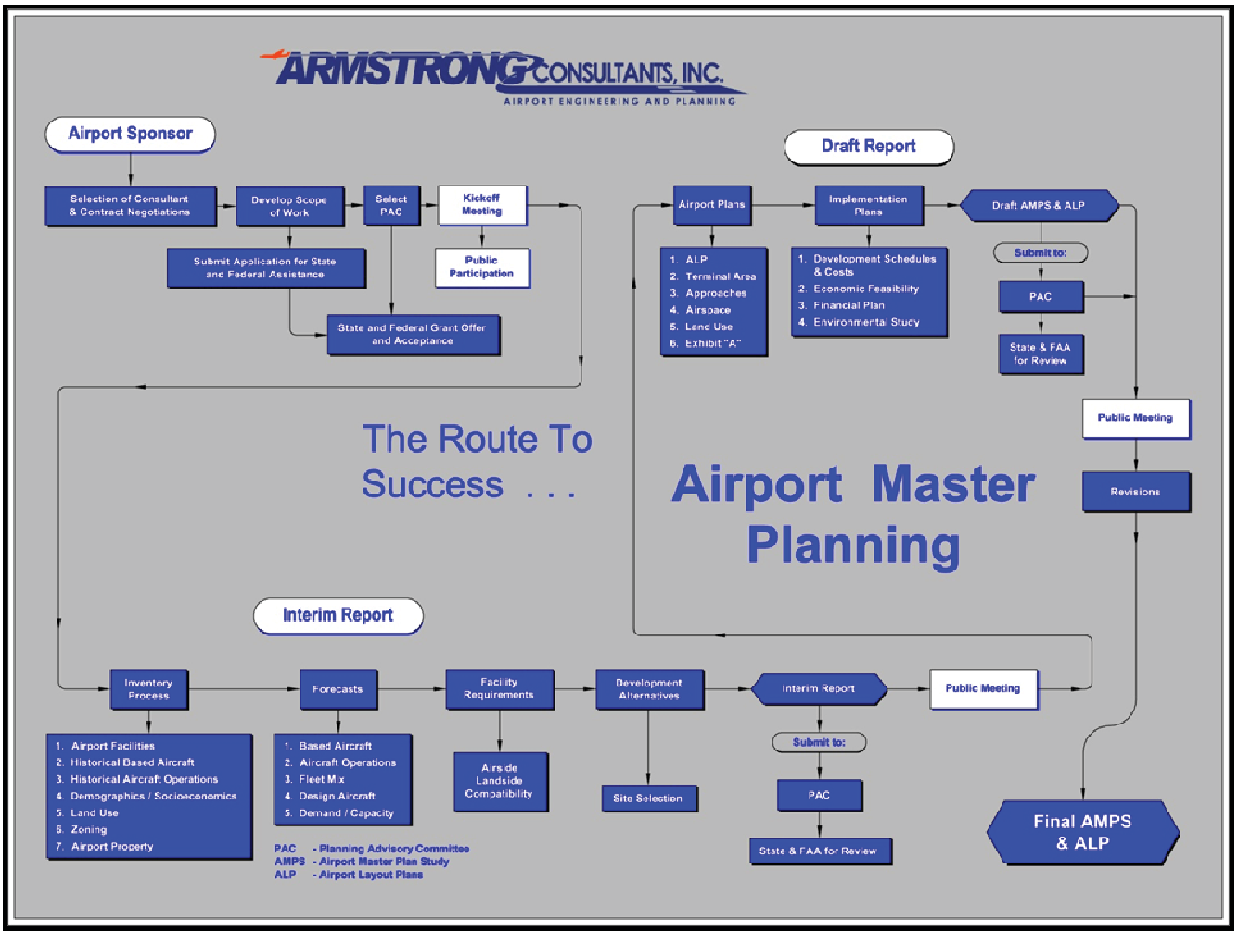
NEXT STEPS

The next steps for the Airport Master Plan Study are to complete the Development Alternatives Chapter and send out for review.



BISBEE MUNICIPAL AIRPORT AIRPORT MASTER PLAN UPDATE NEWSLETTER

Issue 3

INSIDE THIS ISSUE:

This is the third of four newsletters that will be distributed during the Bisbee Municipal Airport Master Plan Update. The purpose of the newsletters is to provide updates on the progression of the study, announce upcoming meetings and to ensure the involvement of the community. This will allow all interested parties to provide input and remain informed on the progress of the Airport Master Plan.

Development Alternatives

Overview

The first two Working Papers for the Bisbee Municipal Airport Master Plan have been submitted to the City, the Federal Aviation Administration (FAA) and the Arizona Department Transportation Aeronautics Group for review and comment. Working Paper 1 included an inventory of the existing airport facilities, aviation forecasts, and facility requirements. Working Paper 2 presented the recommendations for airside development including runway, taxiway and instrument approach minimums.

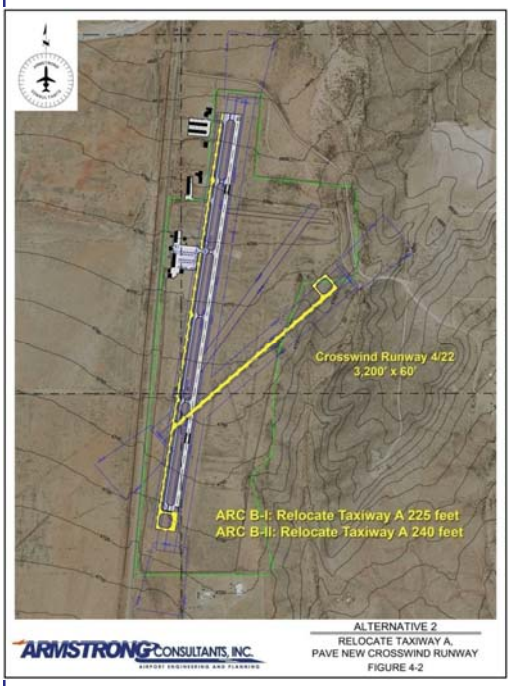
The Facilities Requirements Chapter provided the basis for the formulation of development alternative concepts. Working Paper 2 focuses on the logical development of the Bisbee Municipal Airport.

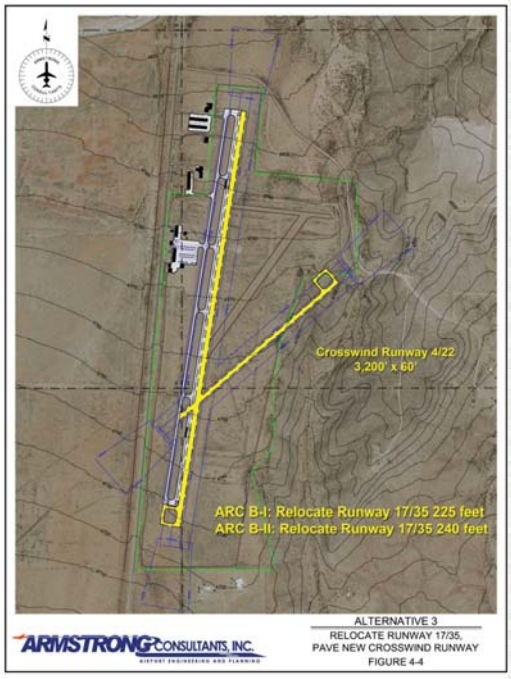
In order to recommend a development concept, several important questions need to be answered:

- How can the existing facilities accommodate the future aviation activity at the airport?
- What are the benefits and impacts of a future GPS instrument approach for the airport?
- How should short-term and long-term hangar development be accommodated?
- How can the airport be developed in an environmentally and fiscally responsible way?

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

AIRSIDE DEVELOPMENT





In Alternative 2, Taxiway A would be relocated 225 feet west of Runway 17/35 centerline to satisfy the runway centerline to taxiway centerline distance required by an Airport Reference Code (ARC) B-I or to 240 feet to satisfy the requirements of ARC B-II. Taxiway A would be relocated at the end of the useful life of the pavement. This alternative would also include increasing the length of Runway 17/35 from 5,900 feet to 6,190 feet to accommodate existing and future users.

Alternative 3 would relocate Runway 17/35 to provide a 225 feet (ARC B-I) or 240 feet (ARC B-II) runway to taxiway separation.

An additional paved crosswind runway with a true bearing of 49 degrees (Runway 4/22) would be added to meet the recommended 95 percent wind coverage at 10.5 knots.

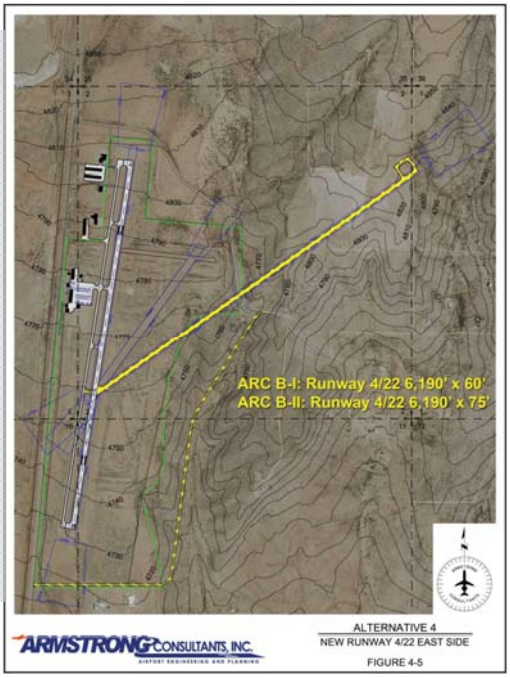
The existing dirt Runway 2/20 would be retained to accommodate users desiring to operate off the unimproved surface.

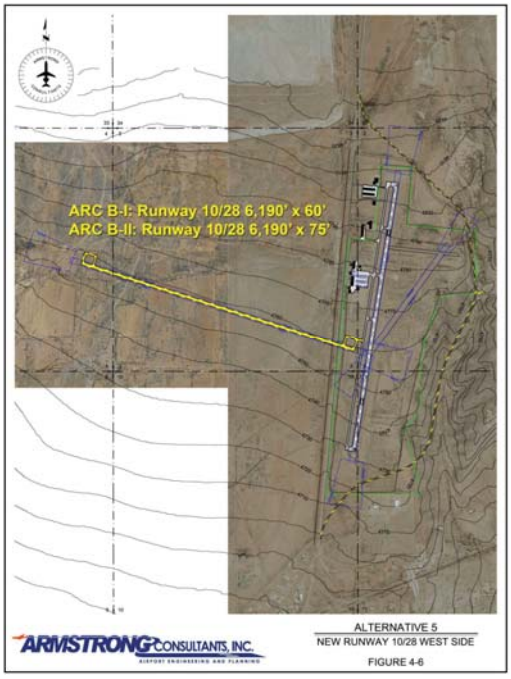
Alternative 4 would retain Runway 17/35, Taxiway A, and Runway 2/20 in its current configuration.

A new ARC B-I or B-II runway would be constructed with an alignment 4/22 to a length of 6,190 feet by 60 feet (B-I) or 75 feet (B-II)

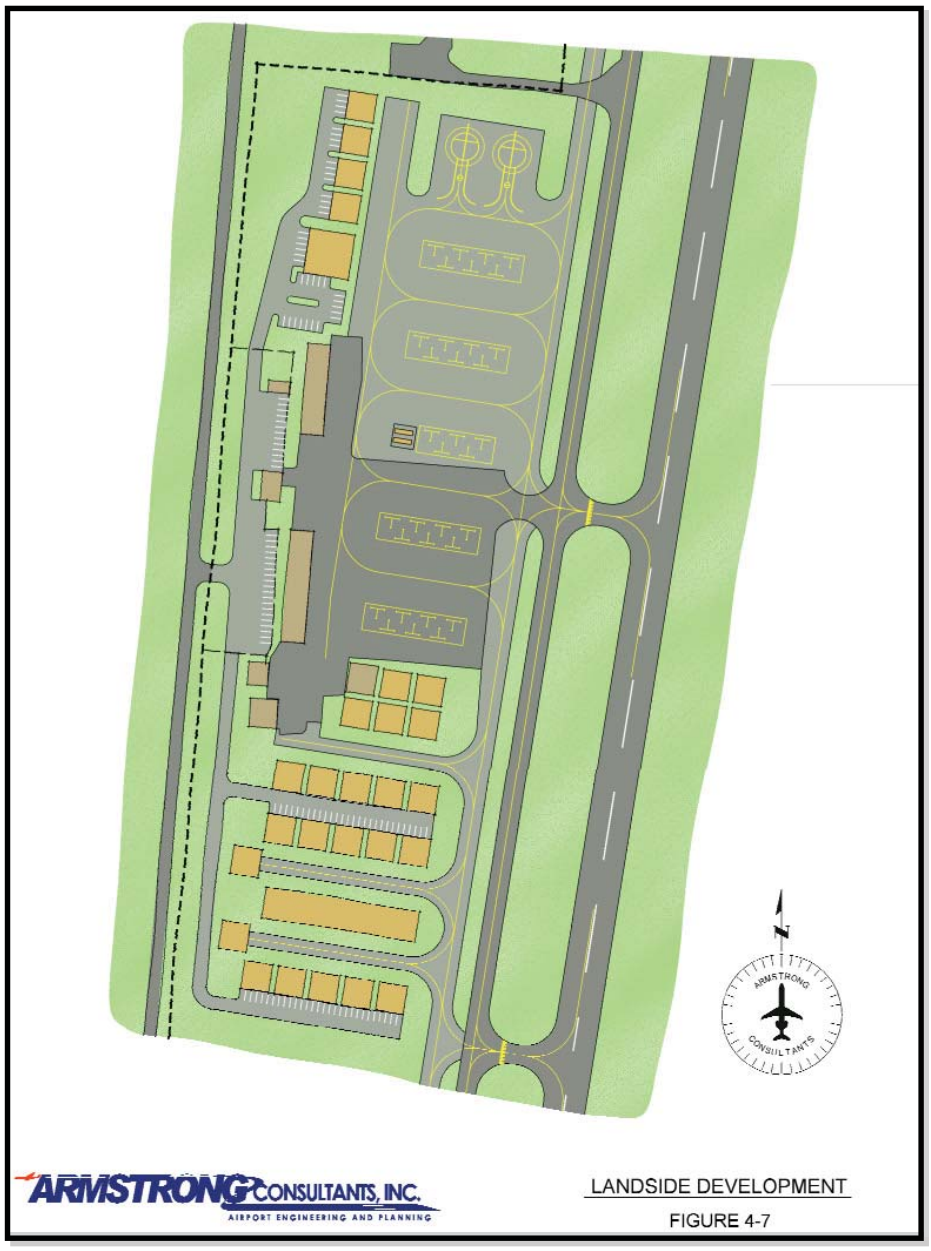
Alternative 5 would retain Runway 17/35, Taxiway A, and Runway 2/20 in its current configuration.

A new B-I runway 6,190 feet long and 60 feet wide or B-II runway 6,190 feet long and 75 feet wide would be constructed east of the current runway with a true bearing of 108 degrees (Runway 10/28).





LANDSIDE DEVELOPMENT



A conceptual demand based landside layout was developed based on the most restrictive configuration which includes the relocation of Taxiway A to 240 feet from Runway 17/35 centerline. This apron configuration allows for 33 tiedown spaces while satisfying B-II taxiway and taxilane clearance requirements. This apron also includes two helicopter parking positions and a taxilane that allows future hangar and terminal airport building development.

This apron configuration has been laid out to be constructed in phases based on actual demand. Potential locations for hangar development include a mix of box hangars and T-hangars. Vehicle access and parking is provided in order to minimize the need for vehicles to access hangars via the apron and taxiway.

This conceptual layout also includes a possible location for aviation fuel facilities consisting of a 10,000 gallon Avgas fuel tank and a 10,000 gallon Jet-A fuel tank. The fuel facilities would be located close to the terminal building and allow unconstrained aircraft circulations on the apron.

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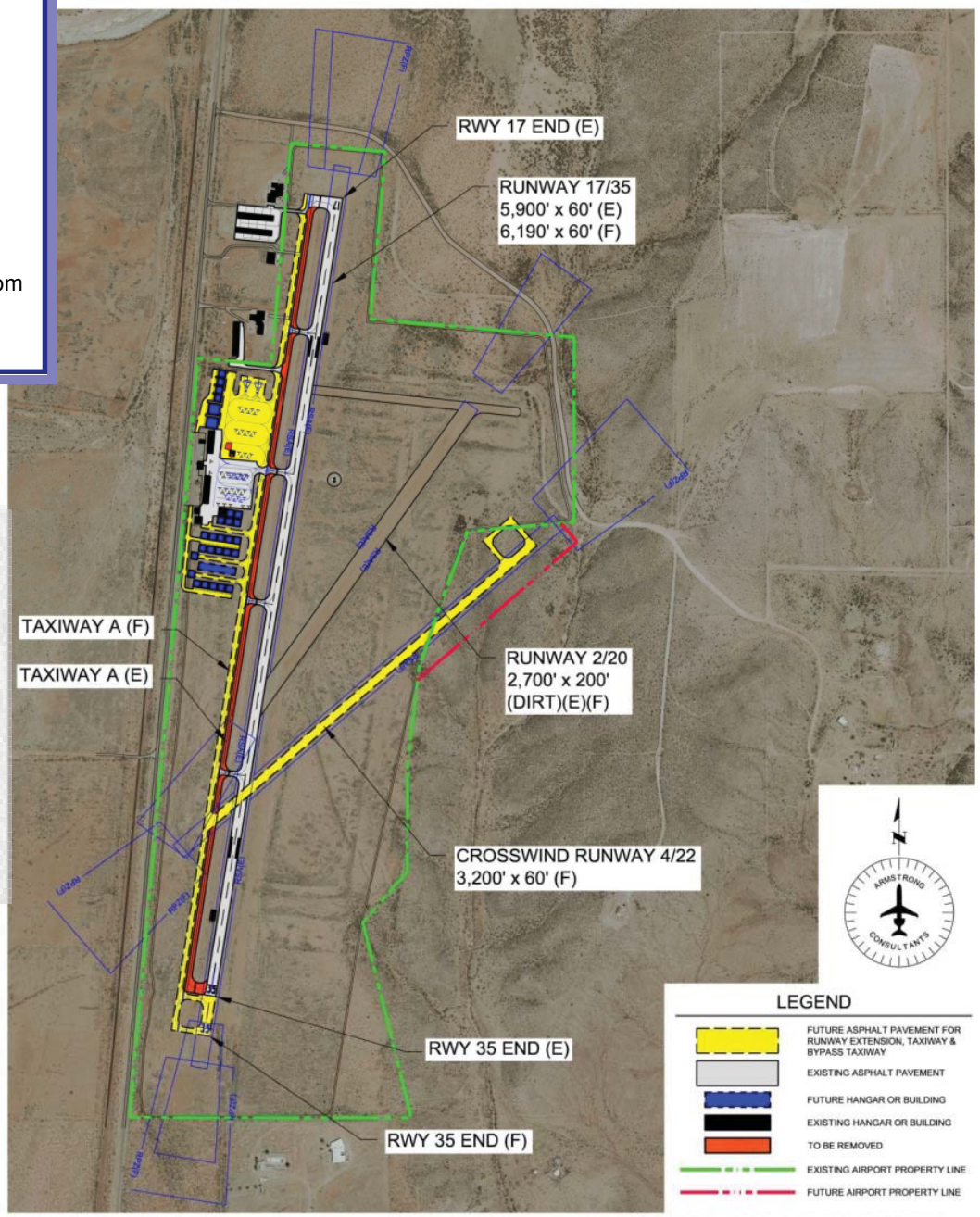
A meeting was held on November 18, 2009 to discuss the development alternatives with the Planning Advisory Committee (PAC).
As a result the Airport Commission recommended and the Mayor and Council approved Alternative 2A as the recommended development.

Alternative 2A includes relocating Taxiway A to 225 feet to meet the FAA runway to taxiway separation requirements for an Airport Reference Code (ARC) B-I. This alternative would also include the development of a crosswind Runway 4/22 (3,200 feet x 60 feet) which would provide the recommended 95% crosswind coverage. Runway 17/35 would also be extended from 5,900 feet to 6,190 feet to accommodate existing and future users.



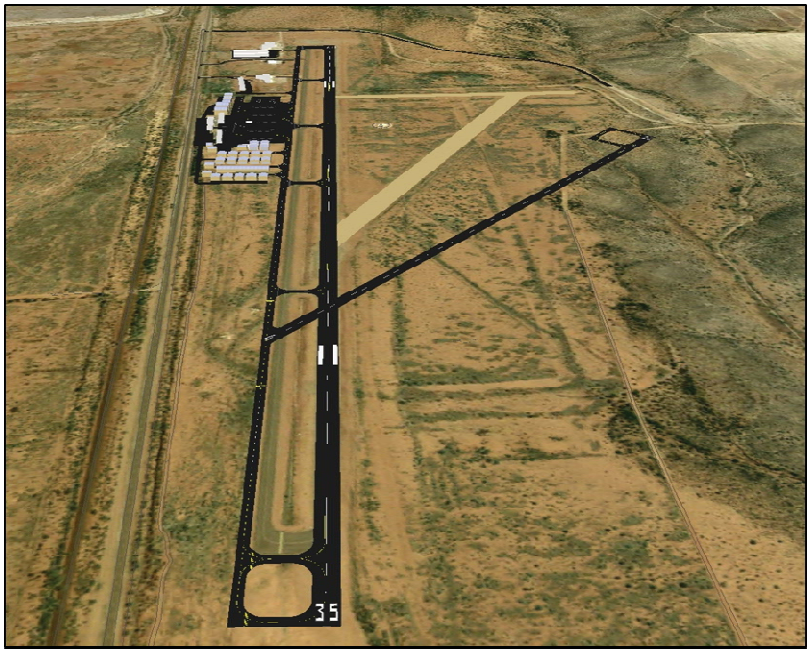
BISBEE MUNICIPAL AIRPORT
AIRPORT MASTER PLAN UPDATE
NEWSLETTER

Issue 4

INSIDE THIS ISSUE:

This is the fourth of four newsletters that will be distributed during the Bisbee Municipal Airport Master Plan Update. The purpose of the newsletters is to provide updates on the progression of the study, announce upcoming meetings and to ensure the involvement of the community. This will allow all interested parties to provide input and remain informed on the progress of the Airport Master Plan.

Capital Improvement Program, Environmental Overview, and Financial Analysis



OVERVIEW

The Airport Development and Financial Plan includes estimated development costs based on the airport layout plan and are included for each item in the Airport Development Plan.

Recommended developments are based on the facility requirements discussed in Chapter Three of the Master Plan Report and the development projects selected in Chapter Four. The phasing of projects assists the airport sponsor in budgetary planning for construction improvements that are needed to provide safe and functional facilities for aviation demand. Phased development schedules also assist the airport sponsor in contingencies and construction.

The environmental overview examined the potential environmental impacts associated with the proposed airport improvements listed in the recommended development plan. The environmental overview is intended to provide an overview of the potential impacts and identify additional documentation that may be required as a prerequisite to future development.

AIRPORT DEVELOPMENT AND FINANCIAL PLAN

20-YEAR FINANCIAL DEVELOPMENT PLAN

PHASE I: SHORT-TERM DEVELOPMENT ITEMS		TOTAL	FAA	STATE	LOCAL
A1	Pavement Maintenance	$150,000	$142,500	$3,750	$3,750
A2	Relocation and Construction of Taxiway A (design only)	$250,000	$237,500	$6,250	$6,250
A3	Relocation and Construction of Taxiway A	$2,381,000	$2,261,950	$59,525	$59,525
A4	Install PAPI and REILs Runway 17/35	$150,000	$142,500	$3,750	$3,750
A5	Install AWOS	$240,000	$228,000	$6,000	$6,000
A6	Obstruction Survey	$75,000	$71,250	$1,875	$1,875
A7	Apron Expansion Phase I	$284,000	$269,800	$7,100	$7,100
A8	Construct Taxilanes Phase I	$150,000	$142,500	$3,750	$3,750
A9	Access Roads and Parking Phase I	$66,000	$62,700	$1,650	$1,650
A10	Environmental Assessment for Crosswind Runway (3,200'x60') and Related Land Acquisition	$185,000	$175,750	$4,625	$4,625
A11	Acquire Land for Construction of Crosswind Runway	$50,000	$47,500	$1,250	$1,250
TOTAL SHORT TERM COST		**$3,981,000**	**$3,781,950**	**$99,525**	**$99,525**
PHASE II: MEDIUM-TERM DEVELOPMENT ITEMS		**TOTAL**	**FAA**	**STATE**	**LOCAL**
B1	Construct Crosswind Runway	$1,652,000	$1,569,400	$41,300	$41,300
B2	Apron Expansion Phase II	$350,000	$332,500	$8,750	$8,750
B3	Access Roads and Parking Phase II	$28,000	$26,600	$700	$700
B4	Pavement Maintenance	$150,000	$142,500	$3,750	$3,750
B5	Fuel Tanks	$300,000	$285,000	$7,500	$7,500
B6	Construct Taxilanes Phase II	$150,000	$142,500	$3,750	$3,750
B7	Snow Removal Equipment Building	$400,000	$380,000	$10,000	$10,000
B8	ALP Update	$100,000	$95,000	$2,500	$2,500
TOTAL MEDIUM-TERM COST		**$3,130,000**	**$2,973,500**	**$78,250**	**$78,250**
PHASE III: LONG-TERM DEVELOPMENT ITEMS		**TOTAL**	**FAA**	**STATE**	**LOCAL**
C1	Environmental Assessment	$225,000	$213,750	$5,625	$5,625
C2	Extend Runway 17/35	$201,000	$190,950	$5,025	$5,025
C3	Apron Expansion Phase III	$593,000	$563,350	$14,825	$14,825
C4	Construct Taxilanes Phase III	$150,000	$142,500	$3,750	$3,750
C5	Access Roads and Parking Phase III	$107,000	$101,650	$2,675	$2,675
C6	Pavement Maintenance	$150,000	$142,500	$3,750	$3,750
C7	Airport Master Plan Update	$150,000	$142,500	$3,750	$3,750
TOTAL LONG-TERM COST		**$1,576,000**	**$1,497,200**	**$39,400**	**$39,400**
TOTAL		**$8,687,000**	**$8,252,650**	**$217,175**	**$217,175**

Cost estimates in 2010 dollars includes engineering, administration and contingency

ENVIRONMENTAL OVERVIEW

The Potential Environmental Impacts table provides a summary of the analysis ratings for the eighteen environmental impact categories with respect to the recommended airport improvements. While some categories indicate a potential impact, they are all estimated to be below the threshold of significance as described in FAA Order 5050.4B.

RECOMMENDED DEVELOPMENT POTENTIAL ENVIRONMENTAL IMPACTS

ENVIRONMENTAL CATEGORY	IMPACT LEVEL	DESCRIPTION
Air Quality	◉	Short-term dust and exhaust
Coastal Resources	○	
Compatible Land Use	○	
Construction Impacts	◉	Short-term dust and exhaust, erosion
DOT Act Section 4(F)	○	
Farmlands	○	
Fish, Wildlife and Plants	○	
Floodplains	○	
Hazardous Materials Pollution Prevention and Solid Waste	○	Prepare SPCC plan
Historical, Architectural, Archaeological and Cultural Resources	○	
Light Emissions and Visual Impacts	○	
Natural Resources and Energy Supply	○	
Noise	○	
Secondary (Induced) Impacts	◉ Positive	Economic benefit from airport
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health	◉ Positive	Economic benefit from airport
Water Quality	◉	Storm water runoff, prepare SPCC plan
Wetlands	○	Avoid Waters of the U.S.
Wild and Scenic Rivers	○	

Legend:
○ No Impact
◉ Minor Impact
● Significant Impact

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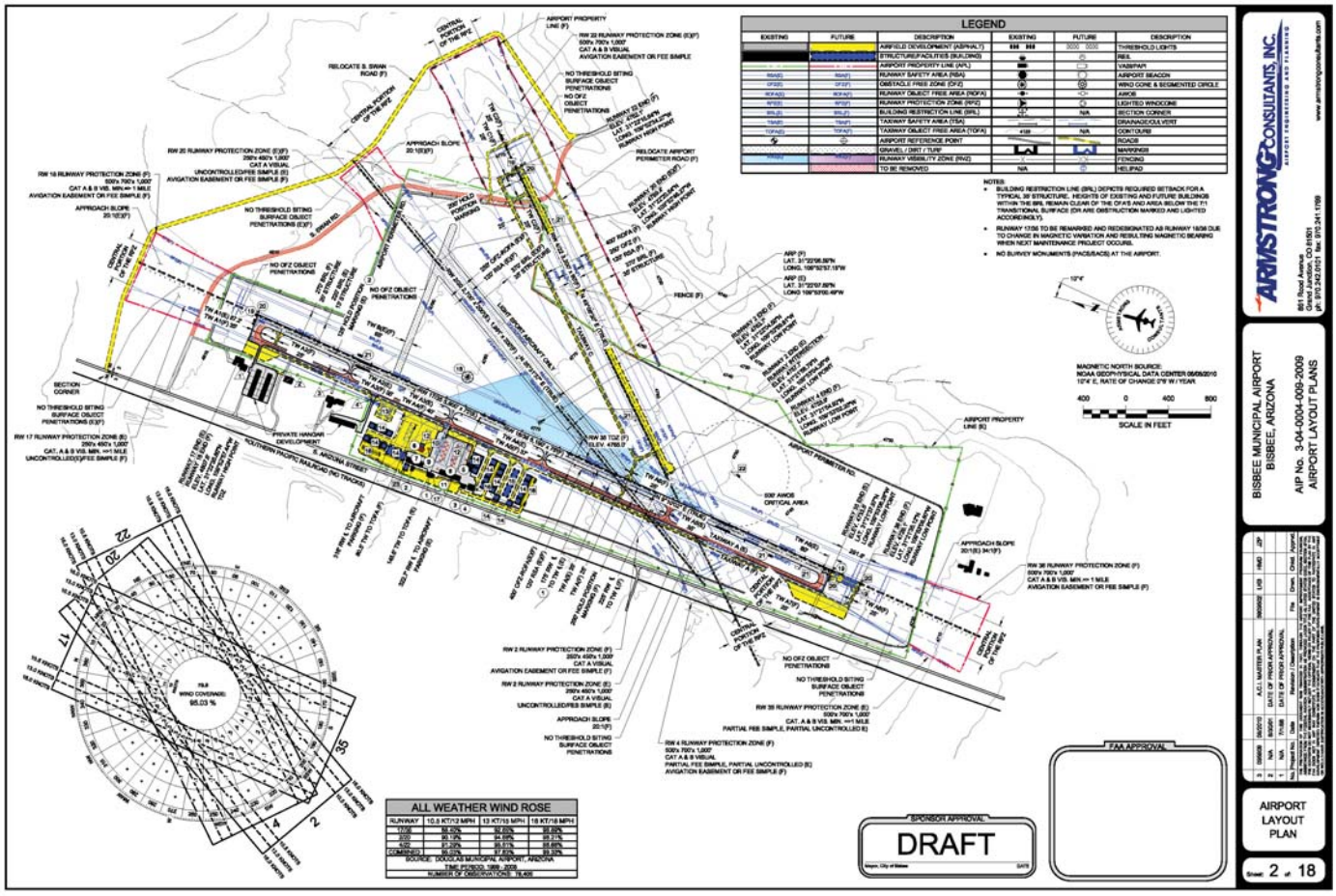
SUMMARY

A meeting was held on November 18, 2009 to discuss the development alternatives with the Planning Advisory Committee (PAC). As a result the Airport Commission recommended and the Mayor and Council approved Alternative 2A as the recommended development.



ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Appendix F
Acronyms

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

COMMONLY USED ACRONYMS

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

Appendix G
Glossary of Terms

ARMSTRONG CONSULTANTS, INC.
AIRPORT ENGINEERING AND PLANNING

Bisbee Municipal Airport
Airport Master Plan

GLOSSARY OF TERMS

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

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

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

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

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

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

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

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