WINSLOW-LINDBERGH

REGIONAL AIRPORT

AIRPORT MASTER PLAN

RESOLUTION NO. 1544

A RESOLUTION OF THE COUNCIL OF THE CITY OF WINSLOW, ARIZONA, ADOPTING THE AIRPORT MASTER PLAN AND THE AIRPORT LAYOUT PLAN FOR THE WINSLOW LINDBERGH REGIONAL AIRPORT.

WHEREAS, the City of Winslow contracted with Coffman Associates to prepare an updated Airport Master Plan and Airport Layout Plan for the Winslow Lindbergh Regional Airport; and

WHEREAS, a Planning Advisory Committee (PAC) was created from interested and knowledgeable parties to assist Coffman Associates in preparing a plan that was appropriate for Winslow Lindbergh Regional Airport: and

WHEREAS, said Master Plan's ultimate goal is to provide systematic guidelines for the Winslow Lindbergh Regional Airport's overall development, maintenance, and operation; and

WHEREAS, the Winslow Airport Commission reviewed the proposed Airport Master Plan and Airport Layout Plan at their October 18, 2010 regular meeting and recommended approval.

BE IT THEREFORE RESOLVED BY THE CITY COUNCIL OF THE CITY OF WINSLOW, ARIZONA, that the City Council shall adopt the Airport Master Plan and the Airport Layout Plan for the Winslow Lindbergh Regional Airport as prepared by Coffman Associates, Inc.

PASSED AND ADOPTED BY THE COUNCIL OF THE CITY OF WINSLOW, ARIZONA, this 26th day of October, 2010.

Mayor

ATTEST:

Suzy Wetzel
City Clerk

APPROVED AS TO FORM:

City Attorney

AIRPORT MASTER PLAN

for

WINSLOW-LINDBERGH REGIONAL AIRPORT
Winslow, Arizona

Prepared for the

CITY OF WINSLOW

by

Coffman Associates, Inc.

February 2011

"The contents of this plan do not necessarily reflect the official views or policy of the FAA or ADOT Aeronautics. Acceptance of this document by the FAA and ADOT Aeronautics does not in any way constitute a commitment on the part of the United States or the State of Arizona to participate in any development depicted herein nor does it indicate that the proposed development is environmentally acceptable in accordance with the appropriate public laws."

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Winslow, Arizona

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INTRODUCTION

Introduction

This update of the Winslow-Lindbergh Regional Airport (INW) Master Plan has been undertaken to evaluate the airport's capabilities and role, to review forecasts of future aviation demand, and to plan for the timely development of new or expanded facilities that may be required to meet that demand. The ultimate goal of the master plan is to provide systematic guidelines for the airport's overall development, maintenance, and operation.

The master plan is intended to be a proactive document which identifies and then plans for future facility needs well in advance of the actual need for the facilities. This is done to ensure that the City of Winslow, Arizona Department of Transportation (ADOT), and the Federal Aviation Administration (FAA) can coordinate project approvals, design, financing, and construction to avoid experiencing detrimental effects due to inadequate facilities.

An important result of the master plan is reserving sufficient areas for future facility needs. This protects development areas and ensures they will be readily available when required to meet future demand. The intended result is a development concept which outlines the proposed uses for all areas of airport property.

The preparation of this master plan is evidence that the City of Winslow recognizes the importance of air transportation to their community and the associated challenges inherent in providing for its unique operating and improvement needs. The cost of maintaining an airport is an investment which yields impressive benefits to the community and the region. With a

sound and realistic master plan, Winslow-Lindbergh Regional Airport can maintain its role as an important link to the national air transportation system for the community and maintain the existing public and private investments in its facilities.

MASTER PLAN GOALS AND OBJECTIVES

The primary objective of the master plan is to provide the community and public officials with proper guidance for future development which will address aviation demands and be wholly compatible with the environment. The accomplishment of this objective requires the evaluation of the existing airport and determination of what actions should be taken to maintain an adequate, safe, and reliable airport facility in support of those long term goals. This master plan provides an outline of necessary development and gives those responsible an advance notice of future airport funding needs so that appropriate steps can be taken to ensure that adequate funds are budgeted and planned.

Specific goals for the airport are:

- To preserve and protect public and private investments in existing airport facilities;
- To enhance the safety of aircraft operations;
- To be reflective of community and regional goals, needs, and plans;
- To ensure that future development is environmentally compatible;
- To establish a schedule of development priorities and a program to meet the needs of the proposed improvements in the master plan;
- To develop a plan that is responsive to air transportation demands;
- To develop an orderly plan for use of the airport;
- To coordinate this master plan with local, regional, state, and federal agencies, and;
- To develop active and productive public involvement throughout the planning process.

Specific objectives of this master plan designed to help in attaining these goals include:

- Examining the projected aviation demand and identifying the facilities necessary to accommodate the demand.
- Determining projected needs of airport users for the next 20 years by which to support airport development alternatives.
- Recommending improvements that will enhance the airport's safety and capacity, to the maximum extent possible.
- Completing an environmental overview considering *National Environmental Policy Act* (NEPA) rules and regulations.

- Updating the Master Plan and Airport Layout Plan so that all deliverables comply with all FAA directives, specifically Advisory Circulars 150/5070-6B "Airport Master Plans" and 150/5300-13.

The Master Plan provides recommendations from which the City Of Winslow may take action to improve the airport and all associated services important to public needs, convenience, and economic growth. The plan benefits all residents of the area by providing a single, comprehensive plan which supports and balances the continued growth of aviation activity with the preservation of the surrounding environs.

BASELINE ASSUMPTIONS

A study such as this typically requires several baseline assumptions that were used throughout the analysis. The baseline assumptions for this study are as follows:

- Winslow-Lindbergh Regional Airport will remain as a general aviation airport through the planning period.

- The City of Winslow and Navajo County population, employment, and economy will continue to grow positively through the 20-year period of this Master Plan as forecast by the Arizona Department of Commerce.

- The general aviation industry will continue to grow positively through the planning period as forecast by the FAA in its annual Aerospace Forecasts.

- Civil aviation activity will continue to share the Arizona airspace with the military air installations and its training operations.

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

MASTER PLAN ELEMENTS AND PROCESS

The Winslow-Lindbergh Regional Airport Master Plan was prepared in a systematic fashion following FAA guidelines and industry-accepted principles and practices. The master plan has six chapters that are intended to assist in the discovery of future facility needs and provide the supporting rationale for their implementation.

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

Chapter Two - Forecasts examines the potential aviation demand for aviation activity at the airport. This analysis reviews and updates the

Winslow-Lindbergh Regional Airport demand forecasts previously prepared for the City of Winslow in the 1998 *Winslow-Lindbergh Regional Airport Comprehensive Master Plan*. The forecast effort takes into account local socioeconomic information, as well as national air transportation trends to quantify the levels of aviation activity which can reasonably be expected to occur at Winslow-Lindbergh Regional Airport through the year 2028. The results of this effort are used to determine the types and sizes of facilities which will be required to meet the projected aviation demands on the airport through the planning period.

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

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

Chapter Five – Recommended Master Plan Concept provides both a graphic and narrative description of the recommended plan for the use, development, and operation of the airport. An environmental overview is also provided. The master plan also supports the official Airport Layout Plan (ALP) and detailed technical drawings depicting related airspace, land use, and property data. These drawings are used by the FAA in determining grant eligibility and funding.

Chapter Six - Financial Plan establishes the capital needs program, which defines the schedules and costs for the recommended development projects. The plan then evaluates the potential funding sources to analyze financial strategies for successful implementation of the plan.

Appendices – Appendices will be included in the final Master Plan report. These include a glossary of aviation terms used in the study in Appendix A. The Public Airport Disclosure Map can be found in Appendix B.

COORDINATION

The Winslow-Lindbergh Regional Airport Master Plan is of interest to many within the local community. This includes local citizens, community organizations, airport users, airport tenants, local and state planning agencies, and aviation organizations. As the airport is a strategic component of the state and national aviation systems, the Winslow-Lindbergh Regional Airport Master Plan is of importance to both state and federal agencies responsible for overseeing air transportation.

To assist in the development of the master plan, the City of Winslow identified a group of community members and aviation interest groups to act in an advisory role in the development of the master plan. Members of the Planning Advisory Committee (PAC) reviewed phase reports and provided comments throughout the study to help ensure that a realistic, viable plan was developed.

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

A public information workshop was held as part of the plan coordination. The public information workshop is designed to allow any and all interested persons to become informed and provide input concerning the master plan. Notices of the workshop meeting time and location were advertised through the media as well as local neighborhood associations. The phase reports are also available to the public online through a link on the City of Winslow website.

SUMMARY AND RECOMMENDATIONS

The proper planning of a facility of any type must consider the demand that may occur in the future. For Winslow-Lindbergh Regional Airport, this involved updating forecasts to identify potential future aviation demand. Because of the cyclical nature of the economy, it is virtually impossible to predict with certainty year-to-year fluctuations in activity when looking five, ten, and twenty years into the future.

Recognizing this reality, the Master Plan is keyed more towards potential demand "horizon" levels than future dates in time. These "planning horizons" were established as levels of activity that will call for consideration of the implementation of the next step in the Master Plan program. By developing the airport to meet the aviation demand levels instead of specific points in time, the airport will serve as a safe and efficient aviation facility, which will meet the operational demands of its users while being developed in a cost efficient manner. This program allows the City of Winslow to adjust specific development in response to unanticipated needs or demand. The forecast planning horizons are summarized in **Table A**.

TABLE A
Aviation Demand Planning Horizons
Winslow-Lindbergh Regional Airport

	Base Demand	Short Term	Intermediate Term	Long Term
ANNUAL OPERATIONS				
Military	480	480	480	480
General Aviation				
Itinerant	7,400	8,040	8,900	10,750
Local	950	1,000	1,080	1,250
Total Operations	8,830	9,520	10,460	12,480
Based Aircraft	14	15	17	21

The Airport Layout Plan set has also been updated to act as a blueprint for everyday use by management, planners, programmers, and designers. These plans were prepared on computer to help ensure their continued use as an everyday working tool for airport management.

This Master Plan is an update of the previous Winslow-Lindbergh Regional Airport Master Plan completed in 1998. Since the completion of that plan the airfield has been primarily maintained "as-is." A new hangar facility was constructed on private property southeast of the terminal building. The updated Master Plan focuses on meeting FAA design and safety standards; improving Runway 4-22 and Taxiway B to accommodate the long range design aircraft, the Lockheed P-3 Orion fire fighting aircraft, maintaining existing design standards on Runway 11-29 and Taxiway A; and identifying locations for hangar and apron development. **Exhibit IA** depicts the updated plan.

With two runways, the longest measuring 7,499 feet, the airport currently operates as a general aviation airport. In order to improve operational safety and the safety of the neighboring community, the plan recommends shifting Runway 4-22 1,800 feet to the southwest, which will shift the Runway 22 object free area (OFA), runway safety area (RSA), and runway protection zone (RPZ) from encompassing residential dwellings northeast of the airport. This runway shift would also mitigate potential runway incursions since the runways would no longer intersect.

The plan also recommends extending Runway 4-22 to 9,000 feet to meet the length demands of the aerial firefighting aircraft that operate at the airport. To allow for the extension of Runway 4-22, a portion of the Ruby Wash Diversion Levee is planned to be relocated farther to the west. Runway 11-29 is planned to be maintained at its current length of 7,099 feet.

Additional airfield improvements recommended include the establishment of GPS non-precision instrument approaches to each runway end and the construction of taxiway turnarounds at each end of both taxiways.

The development of additional aircraft storage hangars, parking aprons, and

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Easement 3 acres
Conceptual Cooperstown Bypass Roadway
A1
Runway 11-29 (7,099' x 150')
40'
A2
Taxiway A
Property to be Released
Coopertown Rd.
Aircraft Storage Area
1,800' Pavement to be Removed
25' BRL
Central St.
325'
A4
Barrigan Rd.
Acquire 21 acres
Airport Perimeter Service Road
A5
35' BRL
Ultimate (9,000' x 150')
400'
Airport Rd.
Runway 4-22 (7,499' x 150')
Taxiway B
50'
Approach RPZ
Departure RPZ
Acquire 107 acres
3,301' Extension
50'
1,000'
Airport Road Realignment
Highway 87/99

NORTH

0 1000 2000
SCALE IN FEET

DATE OF PHOTO: 10/20/08

LEGEND

- Airport Property Line
- Ultimate Property Line
- New Pavement
- Ultimate Roads/Parking
- Ultimate Building
- Pavement to be Removed
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Building Restriction Line (BRL)
- Property to be Acquired
- Property to be Released
- Ultimate Easement
- Private Property
- Parcel

Exhibit IA
AIRFIELD DEVELOPMENT
CONCEPT

other aviation services at the airport has been planned to provide adequate facilities for existing and forecast users of the airport.

SHORT TERM PLANNING HORIZON IMPROVEMENTS

- Acquire 149 acres
- Shift Runway 4-22 1,800 feet southwest
- Construct holding aprons
- Construct wash rack
- Relocate Ruby Wash Diversion Levee
- Rehab and preservation of existing airfield pavements

INTERMEDIATE TERM PLANNING HORIZON IMPROVEMENTS

- Expand U.S. Forest Service fire fighting aircraft apron
- Construct airport perimeter service road
- Realign Airport Road
- Expand south general aviation apron
- Pavement preservation

LONG TERM PLANNING HORIZON IMPROVEMENTS

- Relocate Taxiway B to 400-foot separation distance
- Extend Runway 4-22 to 9,000 feet in length
- Expand the south general aviation apron
- Pavement preservation

Detailed costs were prepared for each development item included in the capital improvement program. As shown in **Table B**, implementation of the total program will require a total financial commitment of approximately $65.3 million dollars over the long-term planning horizon. Over 92 percent of the recommended program funding could be funded through state or federal grant-in-aid programs. The source for federal monies is through the Airport Improvement Program (AIP), administered by the FAA, which was established to maintain the integrity of the air transportation system. Federal monies could come from the Aviation Trust Fund, which is the depository for federal aviation taxes such as those from airline tickets, aviation fuel, aircraft registrations, and other aviation-related fees. Federal AIP funding of 95 percent can be received from the FAA for eligible projects.

ADOT also provides a separate state funding mechanism which receives annual funding appropriation from collection of statewide aviation related taxes. Eligible projects can receive up to 90 percent funding from ADOT for non-federally funded projects, and one-half (2.5 percent) of the local share for projects receiving federal AIP funding. The following table depicts the breakdown of federal, state, and local funding for the implementation of the short term capital improvement program.

TABLE B
Development Funding Summary
Winslow-Lindbergh Regional Airport

PLANNING HORIZON	Total Costs	FAA Share	ADOT Share	Local Share
Short Term Program	$30,190,061	$26,878,408	$2,414,627	$897,027
Intermediate Term Program	$13,627,810	$10,385,695	$273,308	$2,968,808
Long Term Program	$21,471,420	$19,831,578	$521,884	$1,117,959
TOTAL PROGRAM COST	$65,289,291	$57,095,680	$3,209,818	$4,983,793

With the airport master plan completed, the most important challenge is implementation. The cost of developing and maintaining aviation facilities is an investment which yields impressive benefits for the community. This plan and associated development program provides the tools the City of Winslow will require to meet the challenges of the future. By providing a safe and efficient facility, Winslow-Lindbergh Regional Airport will continue to be a valuable asset to the City of Winslow and the surrounding region.

Chapter One

INVENTORY

INVENTORY

The initial step in the preparation of the airport master plan for Winslow-Lindbergh Regional Airport (INW) is the collection of information pertaining to the airport and the area it serves. The information summarized in this chapter will be used in subsequent analyses in this study. It includes:

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

The information in this chapter was obtained from several sources, including on-site inspections, interviews with City staff and airport tenants, airport records, related studies, the Arizona Department of Transportation (ADOT), the Federal Aviation Admin-

istration (FAA), and a number of internet sites. A complete listing of the data sources is provided at the end of this chapter.

AIRPORT SETTING

Winslow-Lindbergh Regional Airport is located approximately one mile west of downtown Winslow, south of Interstate Highway 40 and west of State Route 87 as shown on **Exhibit 1A**. Winslow-Lindbergh Regional Airport is situated on 900 acres at 4,941 feet above mean sea level (MSL) and serves as one of seven public-use airport facilities in Navajo County.

Navajo County encompasses approximately 9,959 square miles of northeast Arizona. Winslow, the county's second largest city at 10,135 residents, made up 8.9 percent of the total County population of 113,796 in 2007. Winslow is located on the western border of Navajo County and the eastern border of Coconino County. Over half of Navajo County is made up of Native American Indian reservation land, including portions of the Hopi Indian Reservation, Navajo Indian Reservation, and the Fort Apache Indian Reservation. The geography of the northern portion of the county is made up of mostly arid and desert-like mesas and plateaus. The southern portion of the county is a heavily wooded rugged mountain area.

OWNERSHIP AND MANAGEMENT

Winslow-Lindbergh Regional Airport is owned, operated, and maintained by the City of Winslow. An Airport Commission has advisory and oversight responsibilities for policies and fees. The City Manager oversees general operational activities. City employees conduct general maintenance duties for the airport.

The Winslow City Council has established Airport Rules and Regulations relative to the use and operation of the Winslow-Lindbergh Regional Airport. These Rules and Regulations were designed to facilitate the safe and efficient use of the airport. The Rules and Regulations apply to all users, visitors, and tenants of the airport. Any person entering the airport must comply with these Rules and Regulations as well as the rules, regulations, laws, and codes of all other authority having jurisdiction over the Airport. The Rules and Regulations also identify the authority of the Airport Manager.

The City of Winslow has also established Minimum Standard Requirements for Airport Aeronautical Services at Winslow-Lindbergh Regional Airport. Minimum Standards are established as a threshold entry requirement for any entity wishing to provide aeronautical services to the public at the airport and to ensure and promote fair competition. These Minimum Standards protect both the established aeronautical activity and the airport patrons.

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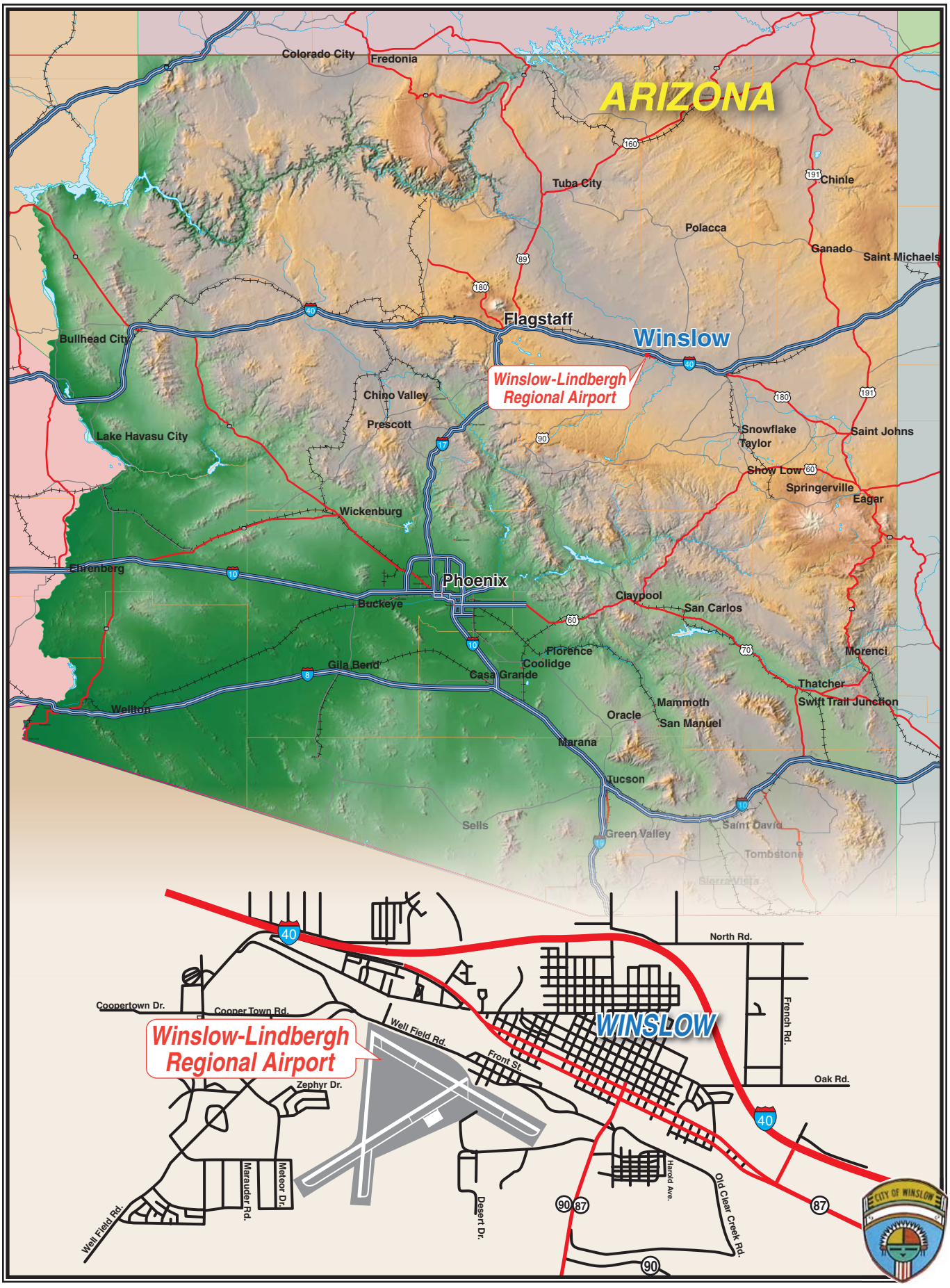


Exhibit 1A
AIRPORT LOCATION

AIRPORT DEVELOPMENT HISTORY

Winslow-Lindbergh Regional Airport (then known as Barrigan Airport) was first constructed in 1929 by Transcontinental Air Transport (TAT). TAT was a transcontinental airline providing service from Los Angeles to New York City. Barrigan Airport was to be used as a regular stop along this route. Original facilities constructed included three asphalt runways, a terminal building, a hangar, and an aircraft parking apron. The terminal building and the hangar still exist at the airport today. The inaugural flight into Winslow for TAT was flown by Charles Lindbergh. The airport has been named to honor Lindbergh's flight.

At the start of World War II, the War Department determined that Barrigan Airport would be a good location for a bomber training base. In May of 1941, the City of Winslow and Trans World Airways (TWA) (formerly TAT) signed an agreement to allow the U.S. Government to further develop the airport to accommodate a bomber training base. Improvements included the construction of additional lighted run-ways, taxiways, expansion of aprons, and drainage improvements.

TWA continued service to Winslow until the early 1950s, at which time Frontier Airlines began service to Winslow. Scheduled airline service was terminated in the early 1980s and has not been re-established since.

GRANT HISTORY

To assist in funding capital improvements, the FAA has provided funding assistance to Winslow-Lindbergh Regional Airport through the Airport Improvement Program (AIP). The AIP is funded through the Aviation Trust Fund, which was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Trust Fund also finances a portion of the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts.

Table 1A summarizes more than $3.4 million in FAA AIP grants received by the City of Winslow since the previous master plan was prepared in 1998.

TABLE 1A
AIP Grants for Winslow-Lindbergh Regional Airport since 1998

AIP Grant Number	Project Description	Total Grant Funds
3-04-0052-016	Rehabilitate Apron; Install Taxiway A & B MITL	$1,280,824
3-04-0052-015	Master Plan Update Study	$268,850
3-04-0052-013	Widen Taxiway A and B to 50 ft.	$570,950
3-04-0052-012	Widen Taxiway A and B – Design	$150,000
3-04-0052-011	Improve the Runway Safety Area; Install MITL; Install PAPI	$415,000
3-04-0052-010	Improve Runway Safety Area, Phase I; Conduct Airport Layout Plan Update	$128,000
3-04-0052-009	Rehabilitate Runways 11-29 & 4-22, Taxiways A & B, and Terminal Apron	$617,533
Total Grant Funds		**$3,431,157**

Source: Airport Records

Table 1B summarizes Arizona Department of Transportation (ADOT), Aeronautics Division, project grants received by the City of Winslow for airport improvements since 1998.

TABLE 1B
State Grants to Winslow-Lindbergh Regional Airport since 1998

ADOT Grant Number	Project Description	Total Grant Funds
E9F22	Rehabilitate Apron; Install Taxiway A & B MITL	$33,707
E8S19	Design Fencing for Runway Safety Area	$45,000
E8S85	South Apron Expansion - Design	$66,600
E5F78	Widen Taxiways A & B to 50 ft. – Design	$3,948
E4F46	Improve the Runway Safety Area; Install MITL; Install PAPI	$20,372
E2F45	Improve Runway Safety Area, Phase I; Conduct Airport Layout Plan Update	$6,284
E2F54	Rehabilitate Runways 11-29 & 4-22, Taxiways A & B, and Terminal Apron	$30,314
Total State Grant Funds		$206,225

Source: Airport Records

THE AIRPORT'S SYSTEM ROLE

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

The previous *Winslow-Lindbergh Regional Airport Master Plan* was approved in 1998. Primary recommendations included:

- Extensions to both Runway 11-29 and 4-22,
- Meeting Airport Reference Code (ARC) C-III airport design standards,
- The installation of medium intensity taxiway lighting (MITL) on all taxiways,
- The replacement of all Visual Approach Slope Indicator (VASI) systems with Precision Approach Path Indicator (PAPI) lighting systems,
- Installation of a medium intensity approach lighting system with runway alignment indicator lights (MALSR) for a precision approach into Runway 11,
- Construction of a paved and lighted Touchdown and Lift-off Area (TLOF) for rotorcraft operations,
- Development of a general aviation terminal building,
- Construction of additional hangar facilities.

Since the last master plan, the terminal building has been remodeled, the south general aviation apron has been resurfaced, MITL has been installed on Taxiways A and B, and a box-hangar facility has been constructed. The airport has grant funds available to widen Taxiways A and B to 50 feet.

At the state level, Winslow-Lindbergh Regional Airport is included in the *Arizona State Aviation System Plan*

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

At the national level, Winslow-Lindbergh Regional Airport is a part of the FAA's *National Plan of Integrated Airport Systems* (NPIAS). Inclusion within the NPIAS is required to be eligible for Federal AIP funding. Winslow-Lindbergh Regional Airport is classified as a general aviation (GA) airport in the NPIAS. There are 3,489 existing and proposed airports included in the NPIAS. Winslow-Lindbergh Regional Airport is one of 59 NPIAS Arizona airports, and one of 39 of the State's airports with a GA classification.

AIRPORT FACILITIES

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

AIRSIDE FACILITIES

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

Runways

Winslow-Lindbergh Regional Airport is served by a dual asphalt runway system. Runway 4-22 is 7,499 feet long and 150 feet wide and oriented in a northeast-southwest direction. Runway 4-22 is strength rated at 50,000 pounds single wheel loading (SWL), 80,000 pounds dual wheel loading (DWL), and 125,000 pounds dual-tandem wheel loading (DTWL). Runway 11-29 is oriented southeast-northwest and measures 7,099 feet in length and 150 feet in width. Runway 11-29 has a strength rating of 60,000 pounds SWL, 70,000 pounds DWL, and 110,000 pounds DTWL. SWL refers to aircraft with a single wheel on each main landing gear, DWL refers to

aircraft having dual wheels on each main landing gear, and DTL refers to aircraft with a dual-tandem or four wheels on each main landing gear. Runway 4-22 slopes from its low point 4,878.6 feet mean sea level (MSL) on the northeast end, to its 4,938.8 feet MSL high point on the southwest end. Thus, the runway gradient (elevation difference between runway high and low points divided by the length of the runway) is 0.8 percent. Runway 11-29 has a high point of 4,896.7 feet MSL at the northwest end dropping to a low point of 4,867.5 feet MSL at the southeast end and resulting in a runway gradient of 0.4 percent.

TABLE 1C
Airside Facility Data
Winslow-Lindbergh Regional Airport

	Runway 4-22		Runway 11-29	
Length (ft.)	7,499		7,099	
Displacement	1,262 ft. Rwy 22		385 ft. Rwy 29	
Width (ft.)	150		150	
Surface Material	Asphalt		Asphalt	
Load Bearing Strength (lbs.)				
Single Wheel Loading (SWL)	50,000		60,000	
Dual Wheel Loading (DWL)	80,000		70,000	
Dual-Tandem Wheel Loading (DTWL)	125,000		110,000	
Instrument Approach Procedures	None		VOR or GPS Rwy 11	
Runway Edge Lighting	Medium Intensity		Medium Intensity	
Pavement Markings	Basic	Basic	Nonprecision	Nonprecision
Taxiway Edge Lighting	Medium Intensity		Medium Intensity	
Approach Aids	**Rwy 4**	**Rwy 22**	**Rwy 11**	**Rwy 29**
Global Positioning System	Yes	Yes	Yes	Yes
Visual Approach Slope Indicators	No	Yes	Yes	Yes
Runway End Identifier Lights	No	Yes	Yes	No
Approach Lighting System	No	No	No	No
End Elevation (ft. MSL)	4,938.8	4,878.6	4,896.7	4,867.5
Fixed-Wing Aircraft Traffic Pattern	Left	Left	Right	Left
Weather or Navigational Aids	Automated Surface Observing System; Segmented Circle; Lighted Wind Sock; Rotating Beacon			

Source: 5010 Airport Master Record; Winslow-Regional Airport, Airport Layout Drawing, 2002.

Taxiways

The existing taxiway system at Winslow-Lindbergh Regional Airport is shown on **Exhibit 1B**. Each runway is equipped with a full-length 50-foot wide parallel taxiway. Taxiway A serves as the parallel taxiway for Runway 11-29, while Taxiway B serves Runway 4-22. Taxiway A has five associated entrance/exit taxiways with widths varying from 50 feet to 96 (Taxiway A3) feet. A portion of Taxiway A has a wingspan limitation of 79 feet due to the proximity of the terminal building. Taxiway B is equipped with three entrance/exit taxiways with widths of 50 feet. The taxiway system at Winslow-Lindbergh Regional Airport is equipped with me-

08MP06-1B-9/23/09

Blast Pad
VASI-4
A1
Runway 11-29 (7,099' x 150')
50'
A2
Taxiway A
Coopertown Rd.
Abandoned Runway
Segmented Circle/
Lighted Wind Indicator
1,262'
A3
Displaced Threshold
96'
35'
330'
A4
Displaced
Threshold
385'
A5
Central St.
Rotating
Beacon
VASI-4
VASI-4
Private Land
Airport Rd.
Barrigan Rd.
Runway 4-22 (7,499' x 150')
50'
B3
50'
50'
B2
330'
Taxiway B
B1
Highway 87/99

LEGEND

Airport Property Line

Private Property

0 1000 2000

SCALE IN FEET

DATE OF PHOTO: 10/20/08

NORTH

CITY OF WINSLOW

Exhibit 1B
AIRFIELD FACILITIES

dium intensity taxiway lighting (MITL).

Pavement Condition

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

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

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

On May 22nd 2006, a pavement inspection was conducted at Winslow-Lindbergh Regional Airport by the Arizona Department of Transportation – Aeronautics Division. Runway 11-29 received a PCI rating of 64 out of a possible 100 with moderate block cracking and longitudinal/transverse cracking, and light depression and weathering/raveling. The runway was found to have low to moderate levels of longitudinal and transverse cracking. Runway 4-22 received a PCI rating of 67 out of a possible 100 with heavy longitudinal/transverse cracking, weathering/raveling, moderate levels of block cracking, and low levels of patching. On the PCI scale, Taxiway A received a rating of 78, Taxiway B received a rating of 66 and Taxiway D (A3) received a rating of 36. The two apron areas were also inspected with the terminal apron receiving a PCI rating of 100 and the south general aviation apron receiving a rating of 56. A portion of the south apron was recently reconstructed and should have a PCI rating of 100. Each of the taxiways and apron areas, with the exception of the terminal apron, were observed to have low to high levels of cracking and weathering.

Airfield Lighting

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

Identification Lighting: The location of an airport at night is universally identified by a rotating beacon. A rotating beacon projects two beams of light, one white and one green, 180 degrees apart. Winslow-Lindbergh Regional Airport's beacon is located immediately southeast of the terminal building and restaurant as shown on **Exhibit 1B**.

Pavement Edge Lighting: Pavement edge lighting utilizes light fix-

tures placed to define the lateral limits of the pavement. This lighting is essential for safe operations at night and/or times of low visibility in order to maintain safe and efficient access to and from the runway and aircraft parking areas. Both runways are equipped with medium intensity runway lighting (MIRL).

Taxiways A and B and their associated entrance/exit taxiways are equipped with MITL.

Runway End Identification Lighting: Runway end identifier lights (REILs) provide rapid and positive identification of the approach end of a runway. REILs are typically used on runways without more sophisticated approach lighting systems. The REIL system consists of two synchronized flashing lights located laterally on each side of the runway facing the approaching aircraft. REILs are installed at the end of Runways 22 and 11.

Visual Approach Lighting: Four-unit visual approach slope indicators (VASI-4s) are available for approaches into Runways 22, 11, and 29. The VASIs provide approach path guidance by giving the pilot an indication of whether their approach is above, below, or on-path through a pattern of red and white lights visible from the light units.

Pilot-Controlled Lighting: Airfield lighting systems (MIRLs, and REILs,) can be controlled through a pilot-controlled lighting system (PCL). PCL allows pilots to turn on or increase the intensity of the airfield lighting systems from the aircraft with the use of the aircraft's radio transmitter. MIRL for both runways are available only after dusk.

Airfield Signs: Airfield identification signs assist pilots in identifying their location on the airfield and directing them to their desired location. Current airfield signage includes lighted signs installed at all taxiway and runway intersections. Runway 11-29 is equipped with distance remaining signage, which indicates to pilots the distance from their location on the runway to the end of runway pavement at 1,000-foot intervals.

Pavement Markings

Pavement markings aid in the movement of aircraft along airport surfaces and identify closed or hazardous areas on the airport. Runway 11-29 is equipped with non-precision runway markings that identify the runway centerline, threshold, designation, touchdown point, and aircraft holding positions. Runway 4-22 is equipped with basic markings, which identify the runway centerline, designation, and aircraft holding positions.

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

Aircraft hold positions are marked at each runway/taxiway intersection. All hold position markings are located 250

feet from the runway centerline and are yellow, glass beaded, and highlighted in black.

Weather Reporting

Winslow-Lindbergh Regional Airport is equipped with an Automated Surface Observing System (ASOS). The ASOS provides automated aviation weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS system reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting (barometric pressure), and density altitude (airfield elevation corrected for temperature).

Winslow-Lindbergh Regional Airport is equipped with a lighted wind sock and segmented circle. The wind sock provides wind direction and speed information to pilots. The segmented circle provides aircraft traffic pattern information. This equipment is located immediately west of the intersection of Runway 11-29 and 4-22.

Area Airspace and Air Traffic Control

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

Airspace Structure

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

Class A Airspace: Class A airspace includes all airspace from 18,000 feet mean sea level (MSL) to flight level (FL) 600 (approximately 60,000 feet MSL). This airspace is designated in Federal Aviation Regulation (F.A.R.) Part 71.193 for positive control of aircraft. The Positive Control Area (PCA) allows flights governed only under instrument flight rules (IFR) operations. The aircraft must have special radio and navigation equip-

ment, and the pilot must obtain clearance from an air traffic control (ATC) facility to enter Class A airspace. In addition, the pilot must possess an instrument rating.

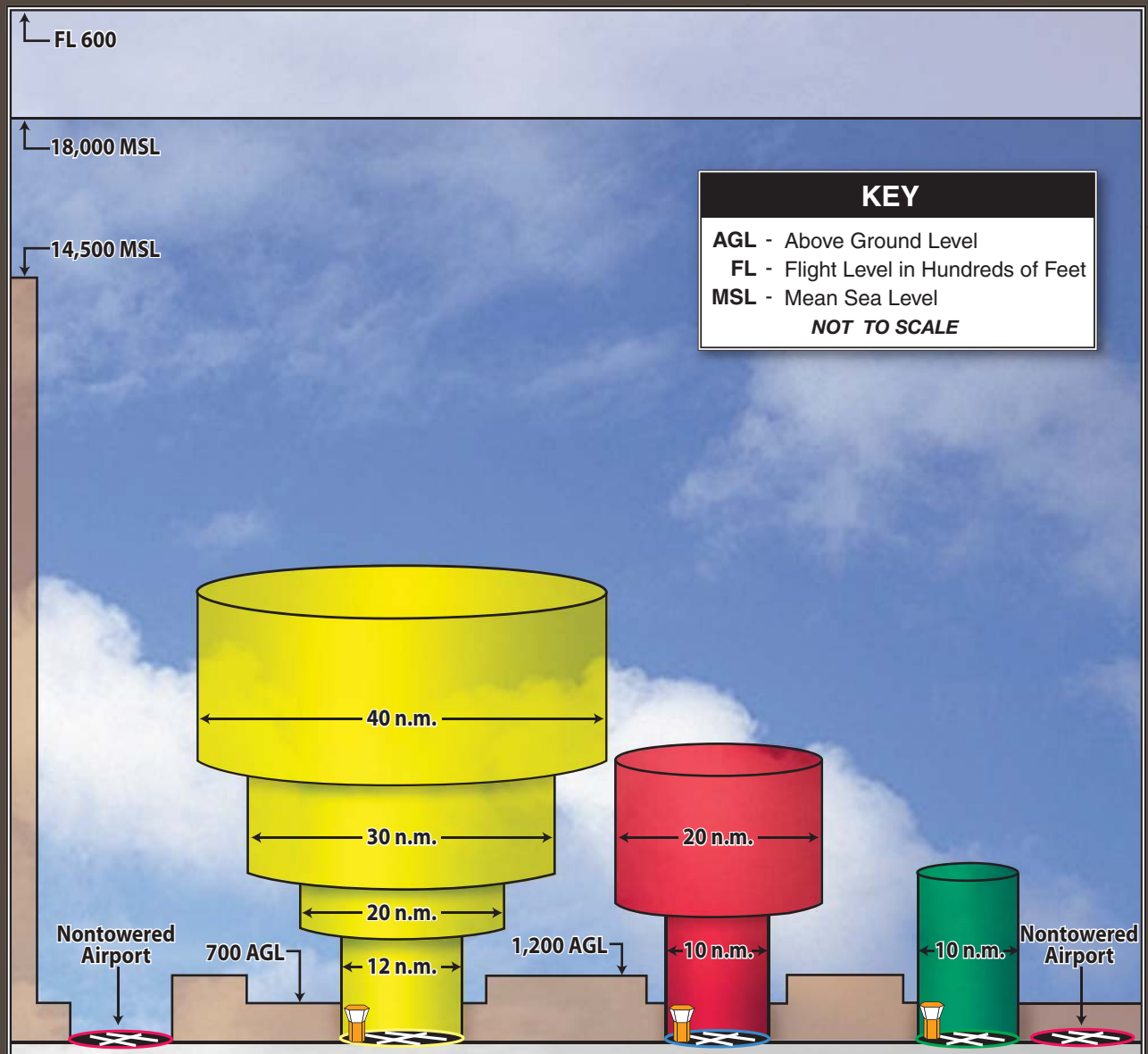
Class B Airspace: Class B airspace has been designated around some of the country's major airports to separate arriving and departing aircraft. Class B airspace is designed to regulate the flow of uncontrolled traffic, above, around, and below the arrival and departure airspace required for high-performance,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

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

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

Class C Airspace: The FAA has established Class C airspace at 120 airports around the country as a means of regulating air traffic in these areas. Class C airspace is designed to regulate the flow of uncontrolled traffic above, around, and below the arrival and departure airspace required for high-performance, passenger-carrying aircraft at major airports. In order to fly inside Class C airspace, the aircraft must have a two-way radio, an encoding transponder, and have established communication with ATC. Aircraft may fly below the floor of the Class C airspace or above the Class C airspace ceiling without establishing communication with ATC. There is no Class C airspace in the vicinity of Winslow-Lindbergh Regional Airport.

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

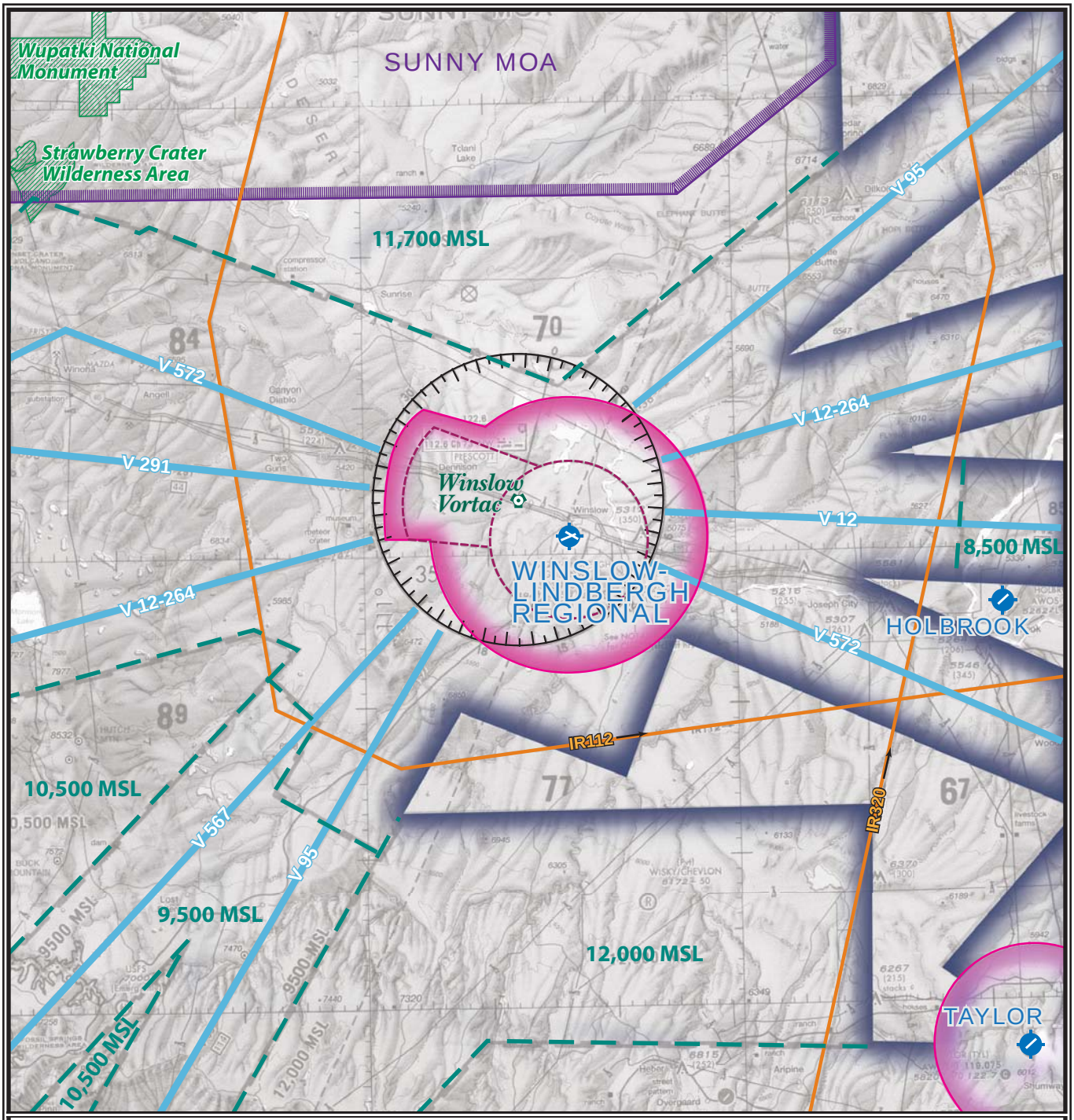


CLASSIFICATION	DEFINITION
CLASS A	Generally airspace above 18,000 feet MSL up to and including FL 600.
CLASS B	Generally multi-layered airspace from the surface up to 10,000 feet MSL surrounding the nation's busiest airports.
CLASS C	Generally airspace from the surface to 4,000 feet AGL surrounding towered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

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

Exhibit 1C
AIRSPACE CLASSIFICATION

08MP06-1D-10/15/08



Airport with hard-surfaced runways 1,500' to 8,069' in length

VORTAC

Compass Rose

Victor Airways

Military Training Routes

Wilderness Area

Class E Airspace (to surface)

Class E Airspace with floor 700 ft. above surface

Class E Airspace with floor 1200 ft. or greater above surface that abuts Class G Airspace

Differentiates floors of Class E airspace greater than 700' above surface

NORTH

NOT TO SCALE

Source: Phoenix North Sectional Charts, Federal Aviation Administration, National Charting Office 7/31/08

Exhibit 1D
AIRPORT VICINITY AIRSPACE

along the approach or departure path. The nearest airport to Winslow-Lindbergh Regional Airport with Class D airspace is Flagstaff Pulliam Airport, which is located 47 nm to the west.

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

Winslow-Lindbergh Regional Airport is in Class E airspace. This area of controlled airspace consists of an inner and outer perimeter. The inner perimeter of Class E airspace begins at the surface and extends to Class A airspace. The inner perimeter has a radius of five nm with an approximately 12 nm extended transition area for instrument approaches into Runway 11. This transition area is intended to provide protection for aircraft transitioning from enroute flights to the airport for landing. The outer perimeter has a floor of 700 feet above the surface extending to Class A airspace. The outer perimeter has a radius of approximately nine nm with an extended transition area of approximately 13 nm for instrument approaches into Runway 11.

Class G Airspace: Airspace not designated as Class A, B, C, D, or E is considered uncontrolled, or Class G, airspace. Air traffic control does not have the authority or responsibility to exercise control over air traffic within this airspace. Class G airspace lies between the surface and the overlaying Class E airspace (700 to 1,200 feet above ground level [AGL]). Class G airspace extends from the surface to 700 feet AGL between the inner and outer perimeters of the Class E airspace at Winslow-Lindbergh Regional Airport.

While aircraft may technically operate within Class G airspace without any contact with ATC, it is unlikely that many aircraft will operate this low to the ground. Furthermore, federal regulations specify minimum altitudes for flight. F.A.R. Part 91.119*, Minimum Safe Altitudes*, generally states that except when necessary for takeoff or landing, pilots must not operate an aircraft over any congested area of a city, town, or settlement, or over any open air assembly of persons, at an altitude of less than 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Over less congested areas, pilots must maintain an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. Finally, this section states that helicopters may be operated at less than the mi-

nimums prescribed above if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the FAA.

Special Use Airspace

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

Military Operating Areas: Military Operating Areas (MOAs) are depicted in **Exhibit 1D** with purple-hatched lines. The nearest MOA to Winslow-Lindbergh Regional Airport is the Sunny MOA, which begins approximately 23 nm to the north of the airport. The Sunny MOA operational altitude is 12,000 feet MSL, and its use can fluctuate (notification by Notice to Airmen [NOTAM] 24 hours in advance).

Military Training Routes: Military training routes near Winslow-Lindbergh Regional Airport are identified with the letters VR and a four-digit number or with IR and a three-digit number. The arrows on the route show the direction of travel. Military aircraft travel on these routes below 10,000 feet MSL and at speeds in excess of 250 knots. **Exhibit 1D** depicts the military training routes in the vicinity of Winslow-Lindberg Regional Airport.

Wilderness Areas/National Monuments: As depicted on **Exhibit 1D**, the Strawberry Crater Wilderness Area and the Wupatki National Monument exist northwest of the airport. Aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface of designated National Park areas, which includes wilderness areas, designated breeding grounds, and national monuments. FAA Advisory Circular 91-36C defines the "surface" as the highest terrain within 2,000 feet laterally of the route of flight or the uppermost rim of a canyon or valley.

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

Airspace Control

The FAA is responsible for the control of aircraft within the Class A, Class C, Class D, and Class E airspace described above. The Albuquerque Air Route Traffic Control Center (ARTCC) controls aircraft operating in Class A airspace. The Albuquerque ARTCC, located in Albuquerque, New Mexico, controls IFR aircraft entering or leaving the Winslow-Lindbergh Regional Airport area. The area of jurisdiction for the Albuquerque center includes

most of the states of New Mexico and Arizona, and portions of Texas, Colorado, and Oklahoma.

Navigational Aids

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

The VOR provides azimuth readings to pilots of properly equipped aircraft by transmitting a radio signal at every degree to provide 360 individual navigational courses. Frequently, distance measuring equipment (DME) is combined with a VOR facility to provide distance as well as direction information to the pilot. Military tactical air navigation aids (TACANs) and civil VORs are commonly combined to form a VORTAC. A VORTAC provides distance and direction information to civil and military pilots.

The Winslow VORTAC, located approximately four nm west of the airfield, serves Winslow-Lindbergh Regional Airport. This facility is identified on **Exhibit 1D**.

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

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

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

Instrument Approach Procedures

Instrument approach procedures are a series of predetermined maneuvers established by the FAA, using electronic navigational aids that assist pilots in locating and landing at an airport, especially during instrument flight conditions. Winslow-Lindbergh Regional Airport has one published non-precision instrument approach.

The capability of an instrument approach is defined by the visibility and cloud ceiling minimums associated with the approach. Visibility minimums define the horizontal distance the pilot must be able to see in order to complete the approach. Cloud ceilings define the lowest level a cloud layer (defined in feet above the ground) can be situated for the pilot to complete the approach. If the observed visibility or cloud ceilings are

below the minimums prescribed for the approach, the pilot cannot complete the instrument approach. **Table 1D** summarizes instrument approach minima for Winslow-Lindbergh Regional Airport.

TABLE 1D
Instrument Approach Data

	WEATHER MINIMUMS BY AIRCRAFT TYPE							
	Category A		Category B		Category C		Category D	
	CH	VIS	CH	VIS	CH	VIS	CH	VIS
VOR or GPS RWY 11								
Straight-In	399	1.0	399	1.0	399	1.25	399	1.5
Circling	479	1.0	499	1.0	539	1.5	579	2.0

Aircraft categories are based on the approach speed of aircraft, which is determined by 1.3 times the stall speed in landing configuration. The approach categories are as follows:
Category A 0-90 knots (Cessna 172)
Category B 91-120 knots (Beechcraft KingAir)
Category C 121-140 knots (Canadair Challenger)
Category D 141-165 knots (Gulfstream IV)

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

Source: U.S. Terminal Procedures, Southwest Volume 4 of 4, September 25, 2008.

Visual Flight Procedures

Most operations at Winslow-Lindbergh Regional Airport are currently conducted under visual flight rules (VFR). Under VFR flight, the pilot is responsible for collision avoidance. Typically, the pilot will make radio calls announcing his/her intentions and the position of the aircraft relative to the airport.

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

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

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

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

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

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

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

Essentially, the traffic pattern defines the side of the runway on which aircraft will operate. For example, runways with a left-hand traffic pattern require aircraft to make left turns from the base leg to final for landing. At Winslow-Lindbergh Regional Airport, Runways 29, 4, and 22 have an established left-hand traffic pattern, while Runway 11 has a right-hand traffic pattern.

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

The TPA is the altitude at which aircraft operating in the traffic pattern fly when on the downwind leg. The TPA is established so that aircraft have a predictable descent profile on base leg to final for landing. The traffic pattern altitude (TPA) for the airport has been established at 5,941 feet MSL.

Area Airports

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

Holbrook Municipal Airport (P14), located approximately 29 nm east of Winslow-Lindbergh Regional Airport, is owned and managed by the City of Holbrook. P14 is equipped with a single asphalt runway that measures 6,698 feet long and 75 feet wide and a 3,200-foot long, 120-foot wide gravel/dirt runway. P14 experiences approximately 3,630 operations annually and has 11 based aircraft. P14 has 100LL Avgas fuel available for purchase. Other general aviation services

offered include transient hangar and tiedown storage.

Taylor Airport (TYL), located approximately 45 nm southeast of Winslow-Lindbergh Regional Airport, is owned and managed by the Town of Taylor. TYL is equipped with a single asphalt runway that measures 7,000 feet long and 75 feet wide. TYL experiences approximately 2,700 operations annually and has 41 based aircraft. TYL has 100LL Avgas available for purchase. Other general aviation services offered include minor airframe and powerplant service and transient tiedown storage.

Flagstaff Pulliam Airport (FLG), located approximately 47 nm west of Winslow-Lindbergh Regional Airport, is owned and managed by the City of Flagstaff. FLG is equipped with a single asphalt runway with a length of 8,800 feet and a width of 150 feet. FLG currently experiences approximately 40,580 operations annually and has 130 aircraft based at the airport. FLG is a primary commercial service airport served by Horizon Air and US Airways Express. In 2007, FLG had 44,238 enplanements, making it the 6th busiest commercial service airport in the State of Arizona. Airport services available include a full range of commercial services as well as general aviation services. 100LL Avgas and Jet A fuel are available for purchase 24 hours a day. Transient hangar and tiedown storage is available as well as major airframe and powerplant services.

Show Low Regional Airport (SOW), located approximately 58 nm northwest of Winslow-Lindbergh Regional Airport is owned and operated by the City of Show Low. SOW has a dual asphalt runway system, with Runway 6-24, the primary runway, measuring 7,200 feet in length and 100 feet in width. Great Lakes Airlines provides scheduled commercial service to Show Low. According to the most recent FAA 5010 Master Record, the airport experiences almost 16,000 annual operations and has 43 total based aircraft. 100LL Avgas and Jet A fuel are available 24 hours a day via self-service fuel stations. Tiedowns are available as well as minor airframe and power plant services.

LANDSIDE FACILITIES

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

Terminal Building

The general aviation terminal building at Winslow-Lindbergh Regional Airport was constructed in 1929 as a part of the original construction of the airport. It is now leased from the City by Wiseman Aviation for its fixed base operator service center and was remodeled in 2007. The 2,100 square-foot terminal building is located immediately south of Taxiway A and east of

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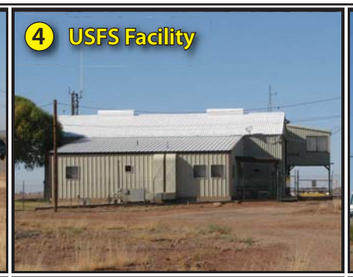


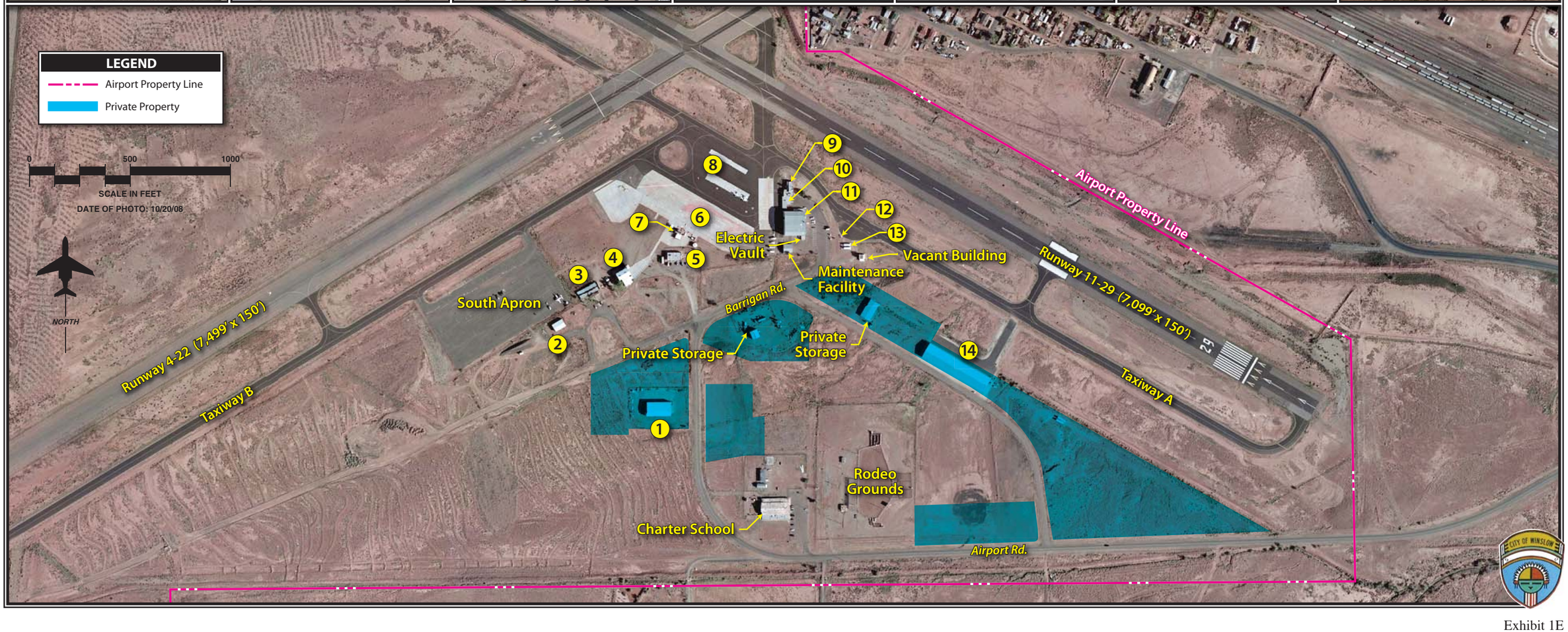


Exhibit 1E
LANDSIDE FACILITIES

the terminal apron. The facility contains offices, a pilot and passenger lobby, a reception desk, a flight planning desk, and restrooms. A restaurant is located in the southern portion of the terminal building. The terminal building is accessible from Highways 87/99 by following Airport Road to Barrigan Road, which enters directly into the parking lot for the terminal building.

Aircraft Hangar Facilities

Aircraft storage hangar facilities at Winslow-Lindbergh Regional Airport consist of the 12,000 square-foot historical TAT conventional hangar, which was constructed in 1929 along with the terminal building, and a 33,300 square foot 8-unit box hangar facility. The TAT conventional hangar is owned by the City and leased by Wiseman Aviation for aircraft storage. The box hangar was constructed on private land.

The airport does not currently have a hangar waiting list.

Fixed Base Operator (FBO)

Wiseman Aviation operates as the lone FBO at the airport. Wiseman Aviation holds leases from the City of Winslow for the use of the terminal building, TAT conventional hangar, apron, fuel storage facilities and fuel trucks. Wiseman Aviation also provides FBO services at the Flagstaff Pulliam Airport. The following is a list of services provided by the Wiseman Aviation at the Winslow-Lindbergh Regional Airport:

- Self-Service or Full-Service Aviation Fuel (100LL)
- Self-Service or Full-Service Jet A Fuel
- Line Services
- Lav Service, Oxygen and Nitrogen
- Aircraft Parking (Ramp or Tiedown)
- Pilots' Lounge
- Public Telephone
- Crew Car, Pilot Supplies
- Catering, Ice, Coffee
- Rental Cars On-site
- Airstairs and Beltloader for up to narrow body transport category aircraft

United States Forest Service (USFS)

The USFS maintains a firefighting air tanker base at the Winslow-Lindbergh Regional Airport. The USFS facilities include a facility west of the terminal area for office space and crew quarters. USFS slurry storage facilities and its approximately 15,750 square yard apron are located southwest of the terminal apron. The USFS operates the Lockheed P-3A Orion and the Lockheed P2-V Neptune both modified for fire suppression missions. These aircraft operate at Winslow-Lindbergh Regional Airport on a seasonal basis, which occurs typically between May and July. Wiseman Aviation provides fueling services to the USFS.

Guardian Air

Guardian Air is a specialty operator located at the Winslow-Lindbergh Regional Airport providing emergency air ambulance services to the State of Arizona. Guardian Air leases a 2,800 square-foot facility southwest of the terminal apron for office space and crew quarters. Guardian Air leases a box-hangar unit for the storage of a Bell 407 helicopter.

National Aeronautics and Space Administration (NASA)

NASA leases land from the City as a base for the Columbia Scientific Balloon Facility. The land leased to NASA is located southwest of the TAT conventional hangar along Barrigan Road. NASA has indicated a possibility of basing a Cessna Citation business jet or a King Air turboprop aircraft at Winslow-Lindbergh Regional Airport to support this research facility.

Non-Aviation Related Tenants

Several non-aviation related businesses and tenants lease airport land and facilities from the City. These businesses include:

- **Winslow Animal Care** – This facility located immediately northwest of the south apron operates as the City's animal shelter.

- **E&O Kitchen** – Mexican style restaurant located in the southern portion of the terminal building.

- **Head Start School** – School located on Airport Road immediately west of Highway 87/99.

- **Rodeo Grounds** – A venue for rodeo events, located along Airport Road on airport property adjacent to the Head Start School.

- **Charter School** – School located on Airport Road adjacent to the Rodeo Grounds. The school offers an aviation-related curriculum.

The airport also leases land to tenants for private storage facilities. These storage facilities, identified on **Exhibit 1E**, do not have direct access to the airfield.

Apron and Aircraft Parking

Winslow-Lindbergh Regional Airport has two general aviation aircraft parking aprons. The main 7,800 square yard terminal apron is located west of the terminal building and has 15 aircraft tie-down parking positions. This apron is typically used by itinerant aircraft. The 28,000 square yard south general aviation apron provides additional aircraft parking area.

The USFS has a 15,750 square yard apron, which is used for the reloading and storage of its fire fighting aircraft.

An additional 1,944 square yard apron is located in front of the privately owned box hangar facility.

Fueling Facilities

Fuel storage tanks at Winslow-Lindbergh Regional Airport are located aboveground south of Taxiway A to the east of the terminal parking lot, as shown on **Exhibit 1E**. The fuel storage facilities are owned by the City of Winslow and consist of two 20,000 gallon tanks for the storage of Avgas (100LL) and Jet A fuel. A self-service station adjacent to the fuel storage tanks allows pilots to fuel their aircraft with either Avgas or Jet A on a 24 hour-a-day basis. Full service fuel services are provided by the FBO with the use of four fuel trucks.

Maintenance and Aircraft Rescue and Firefighting

Maintenance at Winslow-Lindbergh Regional Airport is performed by City of Winslow employees. City-owned equipment is used to perform maintenance when needed. The airport has a maintenance facility located to the south of the TAT conventional hangar.

There are no aircraft rescue and firefighting (ARFF) facilities located on the airport. The nearest local fire station is located approximately 2.2 miles to the east. This station is capable of responding to on-airport emergencies in a matter of minutes.

Utilities

The availability of utilities at the airport is an important factor in determining the development potential of the airport property. Of primary concern in the inventory investigation is the availability of water, sanitary sewer, and electricity. Some, if not all, of these utilities will be necessary for any future development. The water system at the airport follows Airport Road from the east serving the terminal area and extends to the residential area to the north of the airfield. Numerous fire hydrants are available along the water mainline. A 6-inch sanitary sewer line serves the terminal and then extends to the north residential area beyond the airport. An 8-inch sanitary sewer line extends from the Winslow Animal Care facility to the east off airport property. Electricity, telecommunications, and gas utilities are also available in the terminal area.

Security Fencing and Gates

The airport perimeter is equipped with cattle fencing and 6-foot chain link fencing with 3-strand barbed wire. The terminal area is equipped with 6-foot chain link fencing with 3-strand barbed wire. A small section immediately around the terminal building is equipped with 8-foot iron bar fencing. An electronic pad controlled automobile access gate is located between the restaurant facility and the TAT conventional hangar. Manual lock access gates are located at various locations around the airport's perimeter.

ACCESS AND CIRCULATION

The airport is located approximately 3.9 statute miles driving distance south of Interstate Highway 40 and

immediately west of Arizona Highways 87 and 99. Flagstaff, Arizona is located approximately 50 statute miles west of Winslow on Interstate 40. The New Mexico state line is approximately 108 miles to the east of Winslow on Interstate 40, which continues on to Albuquerque approximately 268 statute miles east of Winslow. State Highway 87 is a paved two lane highway, which continues on to the south, reaching Payson in approximately 90 statute miles.

Airport Road, which has a non-lighted intersection with State Highways 87/99 southeast of the terminal area, serves as the airport access/egress roadway. Airport Road is a paved two-lane roadway, which intersects with Barrigan Road immediately south of the landside facilities. The paved, two-lane Barrigan Road enters directly into the terminal parking lot to the east and extends to the south apron to the west. The terminal parking lot, which has approximately 25 individual automobile parking spaces (including two handicapped spaces) lies immediately east of the terminal building, restaurant, and the TAT conventional hangar. Several on-airport operator facilities have parking lots adjacent to their facilities. The airport is not currently equipped with a paved airport perimeter service road.

SOCIOECONOMIC PROFILE

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

POPULATION

Population is a basic demographic element to consider when planning for future needs of the airport. The State of Arizona has been one of the fastest growing states in the country in recent history. **Table 1E** shows the total population growth since 1960 for the State of Arizona, Navajo County, and since 1970 for the City of Winslow. From this data it is clear that the City of Winslow is growing, but at a slower pace than the County and the State. Navajo County's population growth has slowed since 2000, ranking it 8th in the State for population growth over the last seven years.

TABLE 1E
Winslow Area Population Trends

Year	State of Arizona	Avg. Annual % Change	Navajo County	Avg. Annual% Change	City of Winslow	Avg. Annual % Change
1960	1,302,161	--	37,994	--	N/A	--
1970	1,770,900	3.1%	47,559	2.3%	8,066	--
1980	2,718,215	4.4%	67,629	3.6%	7,921	-0.2%
1990	3,665,228	3.0%	77,674	1.4%	9,279	1.6%
2000	5,130,632	3.4%	97,470	2.3%	9,520	0.3%
2007	6,500,194	2.4%	113,796	1.6%	10,135	0.6%

Sources: U.S. Census Bureau (1960-2000)
Arizona Department of Economic Security (2007)

EMPLOYMENT

Employment opportunities affect migration to the area and population ployment rates. This indicates a strong job market and a healthy local growth. As shown in **Table 1F**, the City of Winslow unemployment rate has been consistently lower than the State, County, and national unem economy which promotes population growth.

TABLE 1F
Historical Unemployment Rate
United States, State of Arizona, Navajo County, City of Winslow

Year	United States	State of Arizona	Navajo County	Winslow
2000	4.0%	4.0%	7.3%	3.3%
2001	4.7%	4.7%	7.7%	3.5%
2002	5.8%	6.0%	8.4%	3.9%
2003	6.0%	5.7%	8.5%	3.9%
2004	5.5%	4.9%	8.4%	3.8%
2005	5.1%	4.6%	8.0%	3.6%
2006	4.6%	4.1%	7.1%	3.2%
2007	4.6%	3.8%	6.4%	2.9%
2008	5.4%	4.6%	7.7%	3.5%

Source: Arizona Department of Economic Security

Table 1G summarizes total employment by sector for Navajo County from 1970 to 2007. As shown in the table, total employment in the County has experienced steady growth over this timeframe with an average annual growth rate of 3.4 percent. The sectors that experienced the strongest growth were the "Construction" sector (5.3 percent); "Finance, Insurance and Real Estate" sector (4.9 percent); and the "Services" sector (4.8 percent).

TABLE 1G
Navajo County Employment by Sector

Sector	1970	1980	1990	2000	2007	Avg. Annual % Growth
Farm Employment	230	470	420	560	650	2.8%
Agricultural Services, Other	60	80	170	250	260	4.0%
Mining	140	1,110	1,220	770	690	4.4%
Construction	450	1,460	1,300	2,330	3,010	5.3%
Manufacturing	1,290	1,470	2,030	1,220	1,380	0.2%
Trans., Comm., Util.	1,310	2,030	1,860	1,880	2,210	1.4%
Wholesale Trade	280	170	470	600	720	2.6%
Retail Trade	2,400	3,690	5,010	6,620	7,530	3.1%
Finance, Ins. & Real Estate	510	1,020	950	2,090	2,990	4.9%
Services	1,710	3,080	5,780	6,970	9,550	4.8%
Government	3,170	7,400	7,660	10,740	11,340	3.5%
Total	11,550	21,980	26,870	34,030	40,330	3.4%

Source: Woods & Poole CEDDS 2007

PER CAPITA PERSONAL INCOME

Per capita personal income (PCPI) for the United States, the State of Arizona, and Navajo County is summarized in **Table 1H**. PCPI is determined by dividing total income by population. For PCPI to grow significantly, income growth must outpace population growth. As shown in the table, PCPI average annual growth in Navajo County (1.5 percent) has kept pace with the national PCPI growth rate. However, PCPI figures in Navajo County have historically been significantly lower than state and national PCPI figures.

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

Year	United States	Arizona	Navajo County
1970	$19,888	$18,671	$10,701
1980	$23,186	$21,834	$14,582
1990	$28,150	$24,577	$14,553
2000	$32,739	$28,141	$15,924
2006	$34,401	$29,924	$18,276
Average Annual Growth Rate	1.5%	1.3%	1.5%

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

CLIMATE

Weather plays an important role in the operational capabilities of an airport. Temperature is an important factor in determining runway length required for aircraft operations. The percentage of cloudy days is a factor in determining the use of instrument approach aids.

High temperatures typically range in the low 90s during the summer months, with lows dropping into the

50s and 60s. The hottest month is typically July with an average high of 93.5 degrees. August is the wettest month averaging 1.45 inches of precipitation annually. January is the coldest month with average minimum temperatures around 19.7 degrees. **Table 1J** summarizes typical weather conditions for the Winslow region.

TABLE 1J
Temperature and Precipitation Data
Winslow, Arizona

	Temperature (Fahrenheit)			
	Mean Maximum	Mean Minimum	Precipitation (Inches)	% Cloudy Days
January	46.3	19.7	0.47	39%
February	54.1	24.9	0.47	38%
March	61.7	30.1	0.50	37%
April	70.3	37.0	0.38	33%
May	79.9	44.8	0.30	25%
June	90.5	53.5	0.28	16%
July	93.5	62.1	1.25	30%
August	90.4	60.7	1.45	28%
September	84.5	52.7	0.93	19%
October	72.8	39.9	0.66	24%
November	58.5	27.7	0.46	29%
December	46.9	20.5	0.60	40%
Annual	70.8	39.5	7.74	30%

Source: Western Regional Climate Center

ENVIRONMENTAL INVENTORY

The purpose of this environmental inventory is to disclose potential environmental sensitivities that might affect future improvements at the airport. Available information about the existing environmental conditions at Winslow-Lindbergh Regional Airport was derived from internet resources, agency maps, and existing literature.

A review of available materials was done for each of the 23 environmental impact categories described within the FAA's *Environmental Desk Reference for Airport Actions*. It was determined that the following resources are not present with the airport environs or cannot be inventoried:

- Air Quality (Navajo County is classified as "in attainment" for all federally-designated criteria pollutants)
- Coastal Barriers
- Coastal Zone Management Areas
- Construction Impacts
- Energy Supply, Natural Resources, and Sustainable Design
- Induced Socioeconomic Impacts
- Noise
- Social Impacts
- Wild and Scenic Rivers

Biotic Resources

Biotic resources include the various types of plants and animals that are present in a particular area. The term

also applies to rivers, lakes, wetlands, forests, and other habitat types that support plants, birds, and/or fish. Typically, development in areas such as previously disturbed airport property, populated places, or farmland would result in minimal impacts to biotic resources.

Existing airport property primarily consists of previously disturbed land. No significant biologic resources have been previously indentified within the airport environs. Additionally, a review of the State of Arizona's *On-line Environmental Review Tool* indicates that there are no areas of proposed or designated critical habitat within two miles of the airport site.

Coordination received from the State of Arizona Game and Fish Department as part of the 1998 Winslow-Lindbergh Airport Master Plan states that one state special status plant species, the roundleaf errazurizia, was documented as occurring within the project vicinity. The roundleaf errazurzia is presently listed as a special status plant species by the State of Arizona.

Compatible Land Use

The compatibility of existing and planned land uses in the vicinity of an airport is typically associated with the extent of the airport's noise impacts.

Exhibit 1F depicts the land use plan for the City of Winslow as revised in October 2008. The airport itself is designated for Industrial use. The majority of the surrounding land is designated for compatible land uses such as commercial park to the south, commercial and mixed use to the north, and industrial and commercial to the east. Low and medium density residential uses are also located in the vicinity of the airport both to the west and east.

Chapter 17.49, *Airport Protection Overlay District*, of the City of Winslow municipal code provides for land use controls to promote the compatibility of the airport with the community. The principal purpose of the district is to promote and protect the public health, safety and general welfare in the vicinity of the Winslow-Lindbergh Regional Airport and to protect the long-term viability of Winslow-Lindbergh Regional Airport as a general aviation facility. In addition, it is the purpose of the district to minimize future conflicts between land uses and excessive noise generated by aircraft.

To achieve these goals, the ordinance sets forth geographical districts based upon noise exposure, clear zone standards, and heights of objects. The code establishes permitted uses within each of these districts. Height regulations are based upon 14 CFR Part 77, *Objects Affecting Navigable Airspace*, control surfaces specified by the Airport Layout Plan. These imaginary control surfaces emanate from the runway and specify the acceptable height of objects near the airport. The Noise Overlay is based upon computer-modeled noise exposure from the operation of aircraft at the airport. The Clear Zone Overlay relates to

08MP06-1F-9/23/09

LAND USE

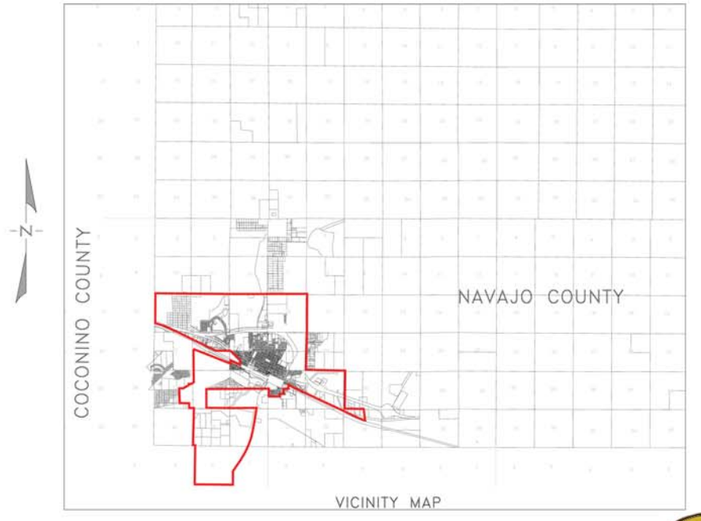
CITY OF WINSLOW

NAVAJO COUNTY
ARIZONA

REVISED:
OCTOBER 2008

LEGEND

RR	Rural Residential
LDR	Low Density Residential
MDR	Medium Density Residential
MFR	Multi Family Residential
C	Commercial
CP	Commerce Park
I	Industrial
MU	Mixed Use
P	Public
	Native American Properties
	Parks/Open Space
	City Limits
	Road Extensions



NOTE: THE INFORMATION PRESENTED ON THIS MAP WAS COLLECTED FROM NAVAJO COUNTY AND CITY OF WINSLOW GIS WEBSITES AND SHOULD BE CONSIDERED AS APPROXIMATE ONLY.

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Exhibit 1F
LAND USE PLAN

areas off the end of the runway with a potential for accidents.

Section 4(f) Resources

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

Two neighborhood parks are located within the vicinity of the airport; one is located along the extended runway centerline of Runway 11, southeast of the airport, and the other is along the extended runway centerline of Runway 4, east of the airport. Additionally, the Winslow Rodeo Grounds are located on the southern portion of the airport property.

No wildlife or waterfowl refuges are located in proximity to the airport. Further discussion regarding historic sites can be found later in this section.

Threatened or Endangered Species

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

Table 1K depicts federally-listed threatened and endangered species in Navajo County. A search of the *On-Line Environmental Review Tool* indicates that no federal or state-listed special status species have been located within two miles of the airport.

TABLE 1K
Threatened, Endangered, or Candidate Species

Common Name	Species Type	Federal Status
Chiricahua Leopard Frog	Amphibians	Threatened
Brown Pelican	Birds	Endangered
California Condor	Birds	Endangered
Mexican Spotted Owl	Birds	Threatened
Southwestern Willow Flycatcher	Birds	Endangered
Yellow-Billed Cuckoo	Birds	Candidate
Apache Trout	Fishes	Threatened
Little Colorado Spinedace	Fishes	Threatened
Loach Minnow	Fishes	Threatened
Spikedace	Fishes	Threatened
Navajo Sedge	Flowering Plants	Threatened
Peebles Navajo Cactus	Flowering Plants	Endangered
Black-Footed Ferret	Mammals	Endangered

Status: Southwest Region U.S. Fish and Wildlife Service, Navajo County, Arizona Species List, accessed December 2008

Environmental Justice

Environmental justice analysis considers the potential for airport development projects to cause disproportionate and adverse effects on low-income or minority populations. According to the Environmental Protection Agency's (EPA's) *Environmental Justice Geographic Assessment Tool*, several of the U.S. Census Bureau blocks within the airport environs contain high percentages of minority populations. Block groups within the airport area do not have high percentages of residents below the poverty level.

Farmland

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and take into account the adverse effects of federal programs on the preservation of farmland, to consider appropriate alternative actions which could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines developed by the U.S. Department of Agriculture (USDA) apply to farmland classified as prime or unique, or of state or local importance as determined by the appropriate government agency, with concurrence by the Secretary of Agriculture.

Coordination received from the Natural Resources Conservation Service (NRCS) during the preparation of the 1998 airport mater plan states that the airport is exempt from the Farmland Protection Policy Act as the land is already committed to urban development, currently used as water storage, or land that is not prime or unique farmland.

Information obtained from the NRCS *Web Soil Survey* indicates that soils on and surrounding the airport are not classified as prime or unique.

Floodplains

Executive Order 11988 directs federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains.

The Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) Number 4017C3015E indicates that a fraction of the airport is located within the 100-year floodplain, but does not include any portion of the runway, taxiway, roadway, or any other critical facility on airport property. Floodplains located on airport property and in the immediate vicinity of the airport are shown on **Exhibit 1G**.

Hazardous Materials

Federal, state, and local laws regulate hazardous materials use, storage, transport, and disposal. These laws may extend to past and future landowners of properties containing these

08MP06-1G-1/27/09

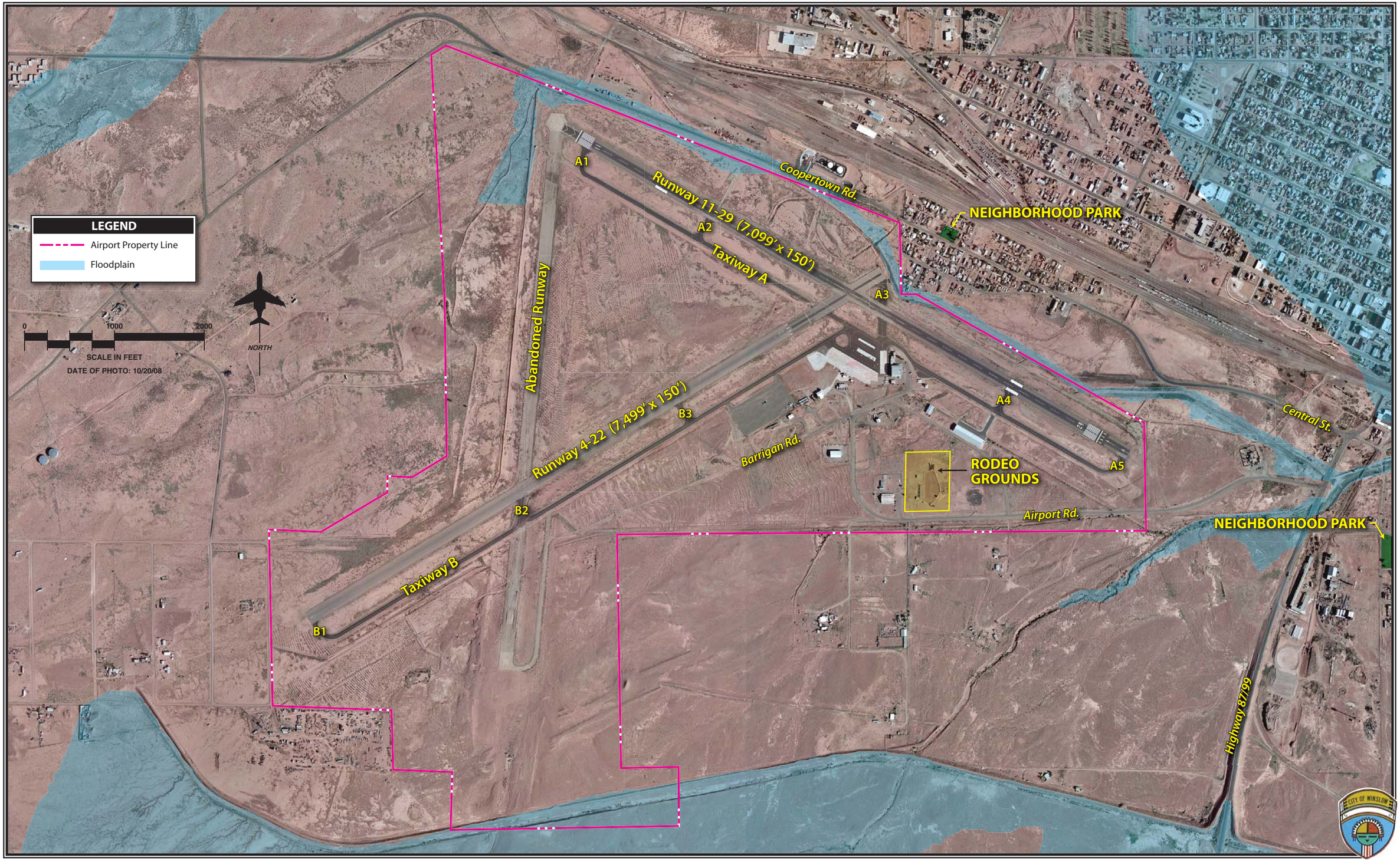

Exhibit 1G
FLOODPLAINS

materials. In addition, disrupting sites containing hazardous materials or contaminates may cause significant impacts to soil, surface water, groundwater, air quality, and the organisms using these resources.

The EPA's *Enviromapper for Envirofacts* was consulted regarding the presence of impaired waters or regulated hazardous sites. No impaired waters are located on or in the vicinity of the airport. According to the map data, three sites are located on or in close proximity to the airport. The first site is listed as the Musket Winslow Bulk Plant used for storing and transferring chemicals. The second site is operated by the Burlington Northern Santa Fe Railroad and is considered a hazardous waste site. The final site is classified as a hazardous waste site and is operated by the Econ Electronic Test Corporation. All three sites are located immediately to the east of the airport.

Historic Properties and Archaeological Resources

Determination of a project's impact to historical and cultural resources is made in compliance with the *National Historic Preservation Act* (NHPA) *of 1966*, as amended for federal undertakings. A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Properties or sites having traditional religious or cultural importance to Native American Tribes may also qualify.

Previously, the Arizona State Parks Department recommended that two buildings at the airport be evaluated for possible inclusion to the National Register of Historic Places. These include the terminal building and the TAT conventional hangar. A review of the NRHP determined that these buildings have not yet been listed and no other listed sites are present at the airport. Due to the past usage of the airport, buildings other than those previously mentioned may need to be evaluated to determine historical significance.

Solid Waste

The nearest landfill facility is the Painted Desert Regional Landfill located approximately 23 miles east of the airport in Joseph City, Arizona.

Water Quality

The *Clean Water Act* provides the authority to establish water quality standards, control discharges, develop waste treatment management plans and practices, prevent or minimize the loss of wetlands, and regulate other issues concerning water quality. Water quality concerns related to airport development most often relate to the potential for surface runoff and soil erosion, as well as the storage and handling of fuel, petroleum products, solvents, etc.

A review of topographic maps and aerial photos indicates that there are several washes within the airport area that the U.S. Army Corps of Engineers

could consider waters of the United States.

As discussed previously, none of the waters within the vicinity of the airport are considered impaired, thereby being in violation of established water quality standards.

Wetlands

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

Based on information from the FWS *Wetlands Geodatabase*, nine wetland areas have been identified within the airport area. Each of these wetlands is approximately one mile from the airport.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

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

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

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

Under the regulation, separate permits are required for construction ac-

tivities that disturb one or more acres of land and for general stormwater permits. Winslow-Lindbergh Regional Airport completed its SWPPP in 2006.

PUBLIC AIRPORT DISCLOSURE MAP

Arizona Revised Statutes (ARS) 28-8486, *Public Airport Disclosure*, provides for a public airport owner to publish a map depicting the "territory in the vicinity of the airport." The territory in the vicinity of the airport is defined as the traffic pattern airspace and the property that experiences 60 day-night noise level (DNL) or higher in counties with a population of more than 500,000 and 65 DNL or higher in counties with less than 500,000 residents. The DNL is calculated for a 20-year forecast condition. ARS 28-8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The disclosure map is recorded with the county. As part of this Master Plan, a Public Airport Disclosure Map has been prepared and can be found in **Appendix B**.

SUMMARY

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

DOCUMENT SOURCES

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

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

Airport/Facility Directory, Southwest U.S., U.S. Department of Transportation, Federal Aviation Administration, National Aeronautical Charting Office, July 31, 2008 Edition

Arizona Department of Economic Security; 2008

Arizona Department of Transportation

Arizona Game and Fish Department, http://www.azgfd.gov/hgis. Accessed, December 2008.

Arizona State Airports System Plan; Airport Inventory & Data Survey, 2008 Winslow-Lindbergh Regional Airport

City of Winslow General Plan, 2002

Environmental Protection Agency, http://www.epa.gov/enviro/ej/. Accessed December 2008.

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

U.S. Census Bureau

United States Department of Agriculture, Natural Resources Conservation Service, http://websoilsurvey.nrcs.usda.gov/app/. Accessed December 2008.

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

U.S. Fish and Wildlife Service. Wetlands Geodatabase. http://wetlandsfws.er.usgs.gov/NWI/100k_scans.html. Accessed December 2008.

U.S. *Terminal Procedures*, Volume 4 of 4, Department of Transportation, Federal Aviation Administration, July 31, 2008 Edition.

Western Regional Climate Center; 2008

Winslow-Lindbergh Regional Airport Master Plan, 1998

Woods & Poole Economics, *The Complete Economic and Demographic Data Source; 2007*

Chapter Two

FORECASTS

FORECASTS

An important factor in facility planning involves a definition of demand that may reasonably be expected to occur during the useful life of the facility's key components. In airport master planning, this involves projecting potential aviation activity over at least a 20-year timeframe. For general aviation airports such as Winslow-Lindbergh Regional Airport, forecasts of based aircraft and general aviation operations (takeoffs and landings) serve as a basis for facility planning.

The Federal Aviation Administration (FAA) has a responsibility to review aviation forecasts that are submitted to the agency in conjunction with airport planning, including master plans, 14 CFR Part 150 Studies, and environmental studies. The FAA reviews such forecasts with the objective of including them in its Terminal Area Forecasts (TAF) and the National Plan of Integrated Airport Systems (NPIAS). In addition, aviation activity forecasts are an important input to the benefit-cost analyses associated with airport development, and the FAA reviews these analyses when federal funding requests are submitted.

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

- Be realistic.
- Be based on the latest available data.
- Reflect current conditions at the airport.
- Be supported by information in the study.

- Provide adequate justification for airport planning and development.

The forecast process for an airport master plan consists of a series of basic steps that can vary depending upon the issues to be addressed and the level of effort required to develop the forecast. The steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and evaluation and documentation of the results.

The following forecast analysis for Winslow-Lindbergh Regional Airport was produced following these basic guidelines. Other forecasts dating back to the previous master plan were examined and compared against current and historic activity. The historical aviation activity was then examined along with other factors and trends that could affect demand. The intent is to provide an updated set of aviation demand projections for Winslow-Lindbergh Regional Airport that will permit the City of Winslow to make planning adjustments as necessary to maintain a viable, efficient, and cost-effective facility.

NATIONAL AVIATION TRENDS

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

The current edition when this chapter was prepared was FAA *Aerospace Forecasts - Fiscal Years 2008-2025*, published in March 2008. The forecasts use the economic performance of the United States as an indicator of future aviation industry growth. Similar economic analyses are applied to the outlook for aviation growth in international markets.

In the seven years prior to the events of September 11, 2001, the U.S. civil aviation industry experienced unprecedented growth in demand and profits. The impacts to the economy and aviation industry from the events of 9/11 were immediate and significant. The economic climate and aviation industry had been recovering until early 2008 when it became clear that an economic downturn was underway. High oil prices and an economic recession caused the FAA to dampen its short term forecasts in its most recent aerospace industry forecasts.

Despite the current recession, the Office of Management and Budget (OMB) expect the U.S. economy to rebound in the short term and continue to grow moderately in terms of Gross Domestic Product (GDP) at an average annual rate of 2.7 percent through 2025. The world GDP is forecast to grow at an even faster rate of 3.2 percent over the same period. This will positively influence the aviation industry, leading to passenger, air cargo, and general aviation growth through-

out the forecast period (assuming there will be no new successful terrorist incidents against either U.S. or world aviation).

Following more than a decade of decline, the general aviation industry was revitalized with the passage of the *General Aviation Revitalization Act* in 1994, which limits the liability on general aviation aircraft to 18 years from the date of manufacture. This legislation sparked an interest to renew the manufacture of general aviation aircraft due to the reduction in product liability, as well as renewed optimism for the industry. The high cost of product liability insurance had been a major factor in the decision by many American aircraft manufacturers to slow or discontinue the production of general aviation aircraft.

The sustained growth in the general aviation industry slowed considerably in 2001, negatively impacted by the events of 9/11. Thousands of general aviation aircraft were grounded for weeks due to no-fly zone restrictions imposed on operations of aircraft in security-sensitive areas. This, in addition to the economic recession that began in early 2001, had a negative impact on the general aviation industry. General aviation shipments by U.S. manufacturers declined for three straight years from 2001 through 2003.

Stimulated by an expanding U.S. economy as well as accelerated depreciation allowances for operators of new aircraft, general aviation staged a relatively strong recovery with over ten percent growth in each of the last three years.

Resilience being demonstrated in the piston aircraft market offers hope that the new aircraft models are attracting interest in the low-end market of general aviation. The introduction of new, light sport aircraft is expected to provide further stimulation in the coming years.

New models of business jets are also stimulating interest for the high-end market. The FAA still expects the business segment to expand at a faster rate than personal/sport flying. Safety and security concerns combined with increased processing time at commercial terminals make business/corporate flying an attractive alternative. In addition, the bonus depreciation provision of President Bush's economic stimulation package began to help business jet sales late in 2004.

In 2008, there were an estimated 228,155 active general aviation aircraft in the United States. **Exhibit 2A** depicts the FAA forecast for active general aviation aircraft. The FAA projects an average annual increase of 1.4 percent through 2025, resulting in 286,500 active aircraft. Piston-powered aircraft are expected to grow at an average annual rate of 0.3 percent. This is driven primarily by a 4.7 percent annual increase in piston-powered rotorcraft and growth in experimental and sport aircraft, as single engine fixed-wing piston aircraft are projected to increase at just 0.5 percent annually, and multi-engine fixed-wing piston aircraft are projected to decrease by 0.9 percent per year. This is due, in part, to declining numbers of multi-engine piston aircraft and the attrition of approximately 1,500 older piston aircraft annually.

In addition, it is expected that the new, light sport aircraft and the relatively inexpensive microjets will dilute or weaken the replacement market for piston aircraft.

Owners of ultralight aircraft began registering their aircraft as "light sport" aircraft in 2005. At the end of 2006, a total of 1,273 aircraft were estimated to be in this category. The FAA estimates there will be a registration of 5,600 aircraft by 2010, and it will grow to 14,700 aircraft by 2025.

Turbine-powered aircraft (turboprop and jet) are expected to grow at an average annual rate of 4.2 percent over the forecast period. Even more significantly, the jet portion of this fleet is expected to almost double in size in 10 years, with an average annual growth rate of 5.6 percent. The total number of jets in the general aviation fleet is projected to grow from 10,997 in 2007, to 29,515 by 2025.

A significant portion of the turbine aircraft growth is anticipated to occur within the very light jet (VLJ), or microjet aircraft, market. Microjets entered the active fleet in 2007, with the delivery of 143 new aircraft. VLJs are commonly defined as jet aircraft that weigh less than 10,000 pounds and include aircraft such as the Eclipse 500 and Adams 700 jets. While not categorized by Cessna Aircraft as a VLJ, the Cessna Mustang is a competing aircraft to many of the VLJs expected to reach the market. These jets cost between $1 and $2 million, can takeoff on runways less than 3,000 feet, and cruise at 41,000 feet at speeds in excess of 300 knots. The VLJ manufacturing industry has fallen on hard times in 2008 due to the global economic crisis with both Adams Aircraft and Eclipse Aviation filing for bankruptcy and halting manufacturing. It is unclear at this point if or when either of these companies will resume its aircraft manufacturing operations. Despite these hardships, the VLJ is still expected to redefine the business jet segment by expanding business jet flying and offering operational costs that can support on-demand air taxi point-to-point service. They are forecast to grow by 400 to 500 aircraft per year, contributing a total of 8,145 aircraft to the jet forecast by 2025.

BASED AIRCRAFT

The number of aircraft based at an airport is, to some degree, dependent upon the nature and magnitude of aircraft ownership in the local area. Therefore, the process of developing forecasts of based aircraft for Winslow-Lindbergh Regional Airport begins with a review of historical aircraft registrations in the area.

REGISTERED AIRCRAFT FORECASTS

Historical records of aircraft ownership in Navajo County, presented on **Table 2A**, were obtained from the U.S. Census of Civil Aircraft for the years 1988 through 1992, Aviation Goldmine for the years 1993 through 2000, and Avantext, Inc., Aircraft & Airmen for the years 2001 to 2008. Since 1988, registered general aviation aircraft in the county have grown from 81 to 198, for an annual average growth rate of 4.6 percent. While Na-

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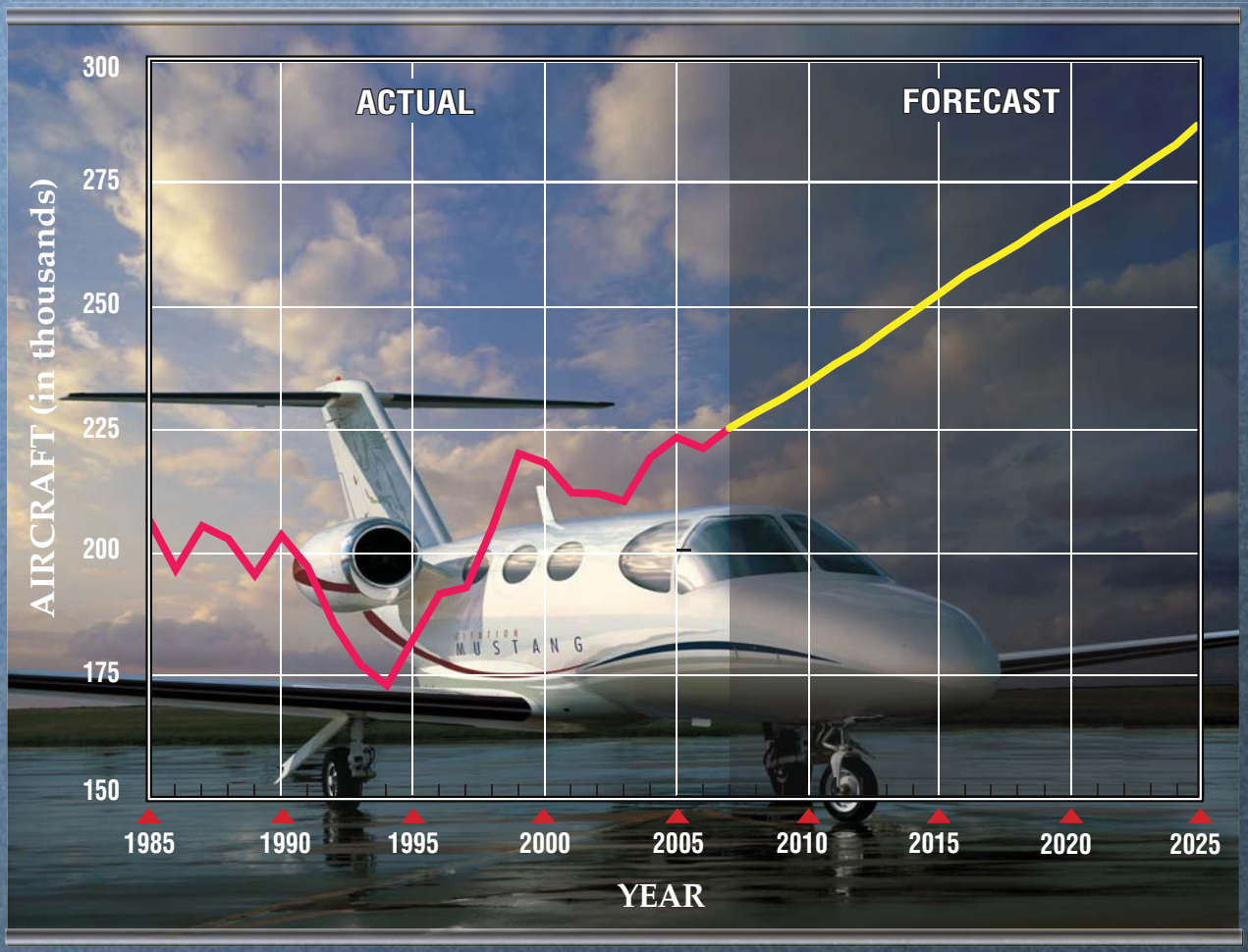
U.S. ACTIVE GENERAL AVIATION AIRCRAFT



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

Year	FIXED WING				ROTORCRAFT		Experimental	Sport Aircraft	Other	Total
	PISTON		TURBINE							
	Single Engine	Multi-Engine	Turboprop	Turbojet	Piston	Turbine				
2007 (Est.)	144.6	18.5	8.2	11.0	3.6	6.0	23.9	2.7	6.4	225.0
2015	145.6	17.2	9.3	19.8	6.2	7.3	29.7	10.5	6.5	252.3
2020	150.0	16.5	10.1	24.9	7.3	7.9	32.6	13.2	6.4	268.9
2025	157.4	15.6	10.8	29.5	8.3	8.6	35.2	14.7	6.4	286.5

Source: FAA Aerospace Forecasts, Fiscal Years 2008-2025.

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

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

vajo County registered aircraft have grown at a strong pace, the local Winslow area has experienced only minimal growth in registered aircraft. The majority of the registered aircraft growth in Navajo County in the past decade has taken place in the local Show Low area. This must be taken into consideration when projecting based aircraft growth at Winslow-Lindbergh Regional Airport.

Table 2A also compares registered aircraft to active general aviation aircraft in the United States. The method used by the FAA to tabulate active general aviation aircraft changed in 1992, which is why annual counts before this time were not included in this study. The Navajo County share of the U.S. market of general aviation aircraft has grown from 0.058 percent in 1992 to 0.087 percent in 2008.

Socioeconomic Trends

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

Table 2A presents historical population data for Navajo County from 1988 to 2008. Population has grown steadily over the past 20 years with an increase of 35,871 residents and an average annual growth rate of 1.8 percent. According to the Arizona Department of Commerce population estimates, the City of Winslow has grown at an average of 0.6 percent each year since 1988, which is significantly slower than the rest of the County.

Navajo County population forecasts were taken from the *2006-2055 ADOC Population Projections* prepared by the Arizona Department of Commerce. These population forecasts, shown in **Table 2A**, increase the County's total population by more than 44,000 residents at an average annual increase of 1.6 percent over the next 20 years. The Arizona Department of Commerce projects the City of Winslow to have a population growth rate of 0.5 percent annually over the same time period.

Historical and projected PCPI for the County is also presented on **Table 2A** and are inflation-adjusted to year 2004 dollars. Inflation-adjusted PCPI for the County has been growing at a slower pace than population at a rate of 1.2 percent annually over the last 20 years. Projected PCPI information gathered from Woods & Poole *CEDDS*, 2008 shows PCPI growing at a slightly faster pace of 1.3 percent over the next 20 years.

Registered Aircraft Projections

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

First, a market share analysis was developed, which keeps Navajo County's share of U.S. active aircraft constant through 2028, resulting in a 1.4 percent annual growth rate. This constant market share projection yields 259 registered aircraft in Navajo County by 2028.

TABLE 2A
Registered Aircraft and Independent Variables
Navajo County

Year	Registered Aircraft	U.S. Active Aircraft	% of U.S. Market	Population	PCPI (2004 $)
1988	81	N/A	N/A	82,100	15,023
1989	85	N/A	N/A	79,300	14,762
1990	88	N/A	N/A	77,674	14,553
1991	106	N/A	N/A	78,700	14,682
1992	108	185,650	0.058%	80,475	15,057
1993	106	177,120	0.060%	80,675	14,817
1994	117	172,935	0.068%	81,750	15,070
1995	122	182,605	0.067%	82,425	14,818
1996	127	187,312	0.068%	84,300	15,232
1997	132	189,328	0.070%	89,225	15,217
1998	142	205,700	0.069%	92,500	15,613
1999	161	219,500	0.073%	93,400	15,953
2000	165	217,533	0.076%	97,470	15,924
2001	154	211,446	0.073%	99,780	16,374
2002	154	211,244	0.073%	101,615	16,626
2003	138	209,606	0.066%	103,790	17,092
2004	150	219,319	0.068%	107,420	17,565
2005	167	224,262	0.074%	109,985	18,113
2006	179	221,942	0.081%	113,470	18,276
2007	200	225,007	0.089%	113,796	18,724
2008	198	228,155	0.087%	117,971	18,927
Constant Share of U.S. Active Aircraft					
2013	213	245,090	0.087%	130,790	20,074
2018	228	262,460	0.087%	142,663	21,414
2023	242	279,155	0.087%	153,192	22,930
2028	259	298,702	0.087%	162,317	24,626

Sources:
Registered Aircraft – U.S. Census of Civil Aircraft (1988-1992), Aviation Goldmine (1993-2000), Avantext, Inc., Aircraft & Airmen (2001-2008).
U.S. Active Aircraft – *FAA Aerospace Forecasts 2008-2025*
Population – Arizona Department of Economic Security (1988-2006), Arizona Department of Commerce (2007-2028)
PCPI – U.S. Department of Commerce, Bureau of Economic Analysis (1988-2006), Woods & Poole *CEDDS*, 2007 (2007-2008, 2013-2028).

A time-series extrapolation of registered aircraft was developed based upon the period from 1988 to 2008. The correlation coefficient, (r^2), was determined to be 0.910 for this time-series extrapolation. The correlation coefficient (Pearson's "r") measures the association between changes in the dependent variable (registered aircraft) and the independent variable(s).

An r^2 greater than 0.900 generally indicates good predictive reliability. A lower value may be used with the understanding that the predictive reliability is lower.

Several regression analyses were prepared to determine the association between U.S. active aircraft, socioeconomic indicators (population and PCPI), and registered aircraft growth. This association is represented by the correlation coefficient. **Table 2B** and **Exhibit 2B** present the resulting projections for comparison with the market share projections.

The outputs of the regression analyses were relatively similar with average annual growth rates ranging between 1.9 percent and 2.1 percent. The market share projection resulted with the lowest projection with a growth rate of 1.4 percent. The selected forecast was generated to fall closely in line with the regression forecasts with a growth rate of 1.9 percent, which equates to approximately five new registered aircraft annually, following closely to the historic trend. The selected forecast yields 215 registered aircraft by 2013, 240 registered aircraft by 2018, 265 registered aircraft by 2023, and 290 registered aircraft by 2028. **Table 2B** summarizes the registered aircraft forecasts developed for Navajo County as well as the selected forecast.

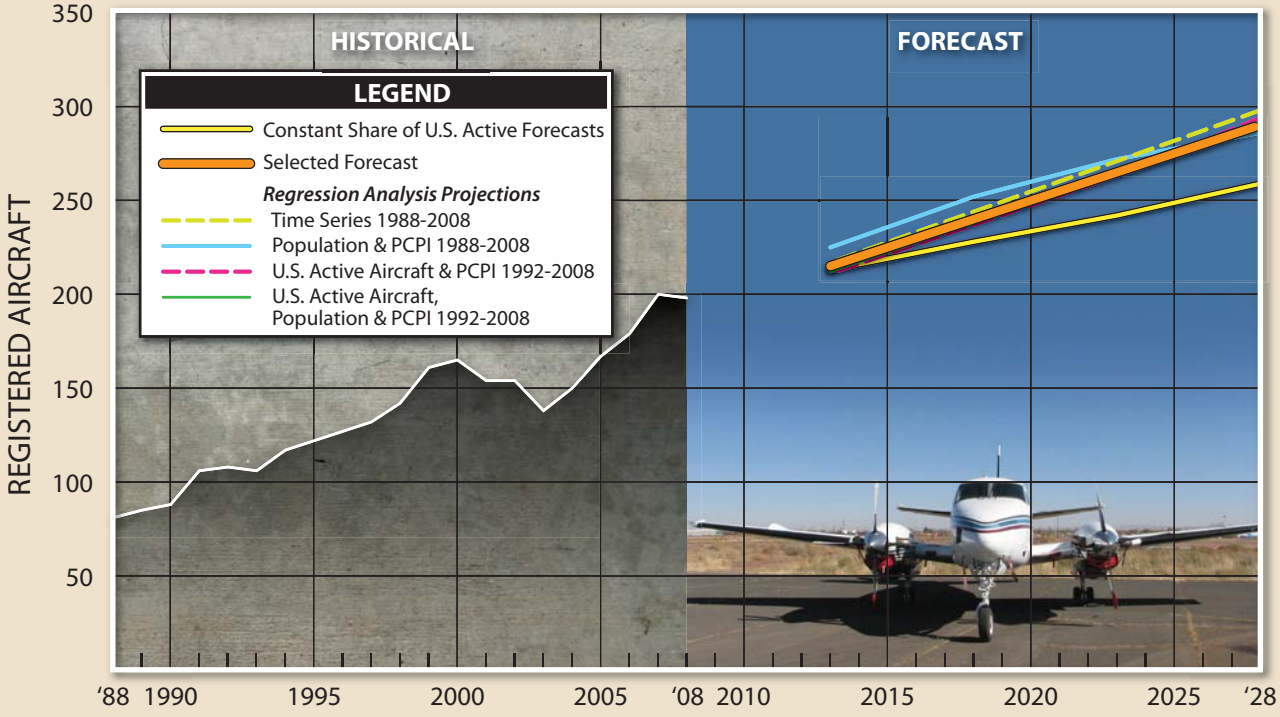
TABLE 2B
Registered Aircraft Projections
Navajo County

	r^2	2008	2013	2018	2023	2028	Avg. Annual Growth Rate
Market Share Projection							
U.S. Active Aircraft		228,155	245,090	262,460	279,155	298,702	1.4%
Constant Share of U.S. Active Aircraft		198	213	228	242	259	1.4%
Regression Analysis Projections							
Time-Series 1988-2008	.910	198	217	244	271	298	2.1%
Population & PCPI 1988-2008	.844	198	225	252	272	286	1.9%
U.S. Active Aircraft & PCPI 1992-2008	.868	198	211	237	263	294	2.0%
U.S. Active Aircraft, Population & PCPI 1992-2008	.868	198	212	238	263	291	1.9%
Selected Forecast		**198**	**215**	**240**	**265**	**290**	**1.9%**

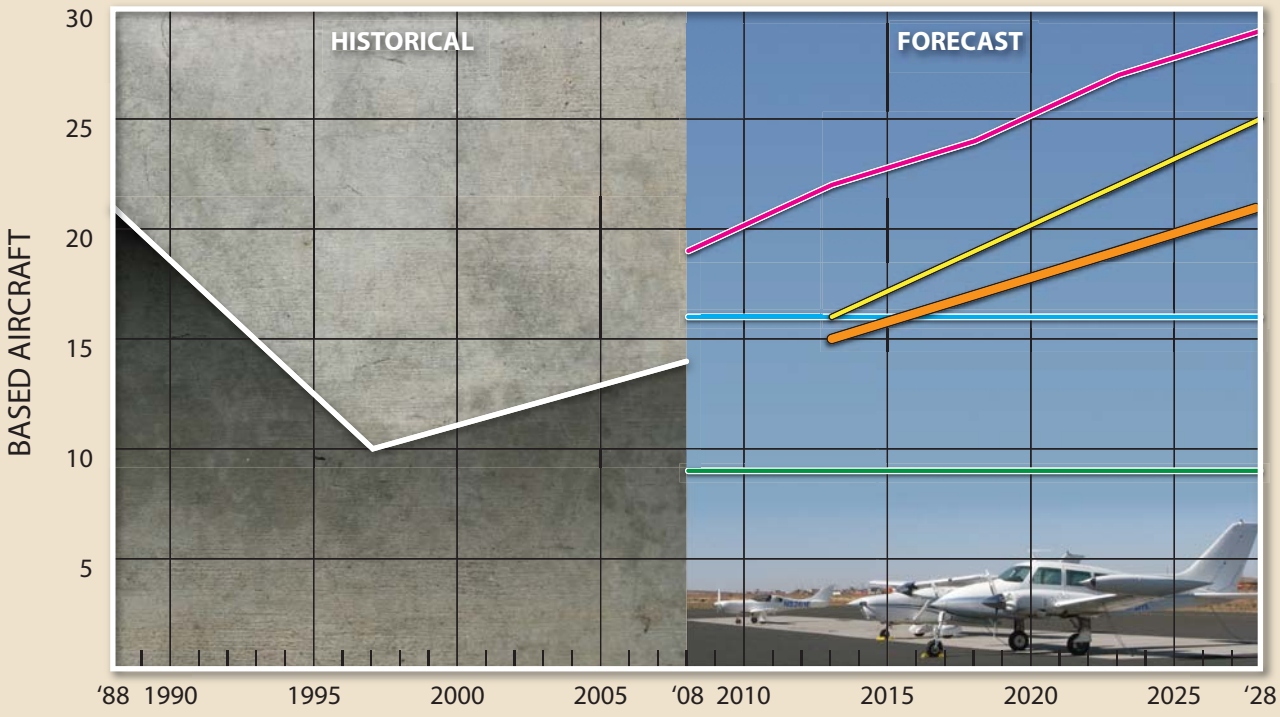
BASED AIRCRAFT FORECAST

Before preparing new forecasts for based aircraft, previous based aircraft projections were reviewed for current validity. These included the FAA *Terminal Area Forecast* (TAF) 2008, Arizona *State Aviation Needs Study* (SANS) 2000, and the previous *Winslow-Lindbergh Regional Airport Master Plan* from 1998. Each of the previous forecasts use different base years as well as projection years. For comparison purposes, the forecasts were interpolated and extrapolated to correlate with this Master Plan's projection years. Each of these previous based aircraft forecasts are presented in **Table 2C**.

REGISTERED AIRCRAFT FORECASTS



BASED AIRCRAFT FORECASTS



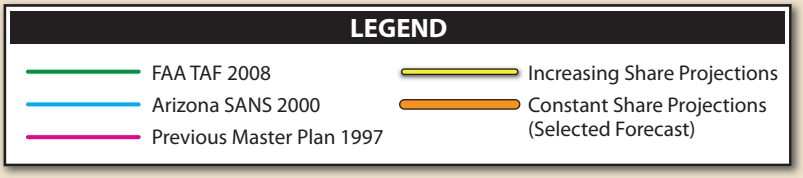


Exhibit 2B
REGISTERED AND BASED
AIRCRAFT FORECASTS

TABLE 2C
Previous Based Aircraft Projections
Winslow-Lindbergh Regional Airport

	Current	2008	2013	2018	2023	2028
Airport Master Record	14					
FAA TAF 2008		9	9	9	9	9
Arizona SANS 2000		16	16	16	16	16
Previous Master Plan 1997		19	22	24	27	29

Since each of these previous studies was prepared at different times, it is expected that they may not match recent historical counts. According to the airport's FAA Form 5010 *Airport Master Record*, the current based aircraft count is 14. The interpolated 2008 projections for these previous studies are relatively close to this number. The FAA TAF projection has based aircraft at Winslow-Lindbergh Regional Airport remaining constant at nine through the planning period. The long-range projection of the SANS also has based aircraft remaining static at 16. An extrapolation of the previous master plan forecast results in 29 based aircraft by 2028

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

TABLE 2D
Updated Based Aircraft Projections
Winslow-Lindbergh Regional Airport

Year	County Registered Aircraft	Winslow Based Aircraft	% of Registered
1988	81	21	25.9
1997	132	10	7.6
2008	198	14	7.1
Average Annual Increase		-2.0%	
Constant Share Projection (Selected Forecast)			
2013	215	15	7.1
2018	240	17	7.1
2023	265	19	7.1
2028	290	21	7.1
Average Annual Increase		1.9%	
Increasing Share Projection			
2013	215	16	7.4
2018	240	19	7.9
2023	265	22	8.3
2028	290	25	8.6
Average Annual Increase		2.9%	

Source: Based Aircraft – 1987 Winslow Municipal Airport Master Plan (1988); Winslow-Lindbergh Regional Airport Master Plan, 1998 (1997); FAA Form 5010 Airport Master Record, (2008)

Between 1988 and 2008, Winslow-Lindbergh Regional Airport based aircraft has decreased by seven at a rate of -2.0 percent annually. However, since the preparation of the previous master plan in 1997, based aircraft has grown slightly. The airport's market share of registered aircraft has however continued to decrease over the past 20 years. This is due to greater registered aircraft growth in the Show Low area than the Winslow area.

Two updated based aircraft projections were prepared based on the airport's market share of registered aircraft in the county. The constant market share projection maintains the airport's current share of registered aircraft through the planning period, resulting in 21 based aircraft by 2028 with an average annual growth rate of 1.9 percent.

An increasing share projection was prepared based on growth potential and development at the airport and in the community, which could attract aircraft owners and other aviation related businesses to the airport. This forecast results in 25 based aircraft by 2028 at an average annual growth rate of 2.9 percent.

It is reasonable to expect similar based aircraft growth at the airport that has occurred over the past decade. The constant share projection maintains this recent growth pattern and is a more feasible forecast when accounting for the state of the economy and aviation industry. Therefore, the constant share projection was selected as the based aircraft forecast for this master plan. The selected based aircraft forecast is shown on **Exhibit 2B** compared to the previous projections as well as the updated projections. The selected forecast has based aircraft growing to 15 by 2013, 17 by 2018, 19 by 2023, and 21 by 2028.

BASED AIRCRAFT FLEET MIX

The based aircraft fleet mix at Winslow-Lindbergh Regional Airport, as shown on **Table 2E**, was compared to the existing and forecast U.S. general aviation fleet mix trends as presented in FAA *Aerospace Forecasts Fiscal Years 2008-2025*. The FAA expects business jets will continue to be the fastest growing general aviation aircraft type in the future. The number of business jets in the industry fleet is expected to almost double in the next 10 years. The influx of microjets on the market will also have a boosting affect on turbine aircraft sales. The affordability and versatility of this aircraft will make them an attractive aircraft to corporations and small business owners. Single engine piston aircraft (including sport aviation and experimental aircraft), helicopter, and turboprop aircraft are expected to grow at slower rates. The number of multi-engine piston aircraft in the U.S. will actually decline slightly as older aircraft are retired, according to FAA forecasts.

Winslow-Lindbergh Regional Airport does not currently have a hangar waiting list; however it has been indicated by NASA that a Cessna Citation jet or a Beechcraft King Air turboprop aircraft could be based at the airport to support its weather balloon project.

The based aircraft mix took this potential into consideration and assumed the short-term addition of a jet aircraft, which is typically more demanding of airport facilities.

TABLE 2E
Based Aircraft Mix Forecast
Winslow-Lindbergh Regional Airport

	Current		2013		2018		2023		2028	
	#	%	#	%	#	%	#	%	#	%
Winslow-Lindbergh Regional Airport Based Aircraft										
Single Engine Piston	9	64.3	9	60.0	11	64.7	12	63.2	14	66.7
Multi-Engine Piston	4	28.6	4	26.7	4	23.5	4	21.1	3	14.3
Turboprop	0	0.0	0	0.0	0	0.0	1	5.3	1	4.8
Jet	0	0.0	1	6.7	1	5.9	1	5.3	2	9.5
Rotorcraft	1	7.1	1	6.7	1	5.9	1	5.3	1	4.8
Totals	**14**	**100.0**	**15**	**100.0**	**17**	**100.0**	**19**	**100.0**	**21**	**100.0**
U.S. Active Aircraft (from FAA Aerospace Fiscal Years [2008-2025])										
Single Engine Piston	172,805	75.7	181,575	74.1	191,985	73.1	202,375	72.5	213,871	71.6
Multi-Engine Piston	18,385	8.1	17,565	7.2	16,775	6.4	15,970	5.7	15,234	5.1
Turboprop	8,300	3.6	9,005	3.7	9,795	3.7	10,545	3.8	11,351	3.8
Jet	12,000	5.3	17,740	7.2	22,910	8.7	27,695	9.9	33,455	11.2
Rotorcraft	10,215	4.5	12,715	5.2	14,570	5.6	16,195	5.8	18,520	6.2
Other	6,450	2.8	6,490	2.6	6,425	2.4	6,375	2.3	6,273	2.1
Totals	**228,155**	**100.0**	**245,090**	**100.0**	**262,460**	**100.0**	**279,155**	**100.0**	**298,702**	**100.0**

Note: Experimental and sport aircraft are included under single engine piston.

GENERAL AVIATION OPERATIONS

General aviation (GA) operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the airport or which executes simulated approaches or touch-and-go operations at the airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use, since business aircraft are operated on a higher frequency.

Winslow-Lindbergh Regional Airport operations are comprised mainly of GA operations. Since Winslow-Lindbergh Regional Airport is not a towered airport, precise operations records are not available. For this study, an FAA approved statistical methodology for estimating general aviation operations using local variables was utilized to update the operations count.

This method, the *Model for Estimating General Aviation Operations at Non-Towered Airports*, was prepared for the FAA Statistics and Forecast Branch in July 2001. This report develops and presents a regression model for estimating general aviation operations at non-towered airports. The model was derived using a combined data set for small towered and non-towered general aviation airports and incorporates a dummy variable to distinguish the two airport types. In addition, the report applies the model to

estimate activity at 2,789 non-towered general aviation airports contained in the FAA *Terminal Area Forecast*. The forecasts of annual operations at Winslow-Lindbergh Regional Airport were computed using the recommended equation (#15) for non-towered airports. Independent variables used in the equation include airport characteristics (i.e., number of based aircraft, number of flight schools), population totals, and geographic location. This equation yields an annual general aviation operations estimate of approximately 4,500 for 2008. Local and itinerant operation percentages for 2008 were derived from the FAA Form 5010 Airport Master Record estimates for 2008 (79 percent and 21 percent respectively). This estimate does not take into account an estimated 200 annual itinerant firefighting operations conducted by the U.S. Forest Service and an estimated 3,650 air ambulance operations conducted by Guardian Air and other operators. With these estimated operations included, a baseline general aviation operations count of 8,350 can be established.

ITINERANT OPERATIONS

Table 2F depicts estimated GA itinerant operations at Winslow-Lindbergh Regional Airport for 2008. This data shows a market share of 0.040 percent of all general aviation itinerant operations reported at airports with an airport traffic control tower. This also equates to 529 itinerant operations per based aircraft.

TABLE 2F
General Aviation Itinerant Operations Forecast
Winslow-Lindbergh Regional Airport

Year	Itinerant Operations	U.S. ATCT GA Itinerant (millions)	Winslow Market Share	Winslow Based Aircraft	Itinerant Ops Per Based Aircraft
2008	7,400	18.64	0.040%	14	529
Constant Market Share Projection					
2013	8,046	20.26	0.040%	15	529
2018	8,752	22.04	0.040%	17	516
2023	9,535	24.01	0.040%	19	509
2028	10,421	26.25	0.040%	21	508
Operations Per Based Aircraft Projection					
2013	7,935	20.26	0.039%	15	529
2018	8,993	22.04	0.041%	17	529
2023	10,051	24.01	0.042%	19	529
2028	11,109	26.25	0.042%	21	529
FAA-TAF Projection					
2013	15,000	20.26	0.074%	9	1,667
2018	15,000	22.04	0.068%	9	1,667
2023	15,000	24.01	0.062%	9	1,667
2028	15,000	26.25	0.057%	9	1,667
Master Plan Forecast					
2013	8,040	20.26	0.040%	15	536
2018	8,900	22.04	0.040%	17	524
2023	9,750	24.01	0.041%	19	513
2028	10,750	26.25	0.041%	21	512

In FAA *Aerospace Forecasts Fiscal Years 2008-2025*, the FAA projects itinerant GA operations at towered airports. **Table 2F** presents this forecast, as well as a projection for Winslow-Lindbergh Regional Airport, based upon maintaining its current share of the itinerant GA operations market. This forecast has itinerant operations exceeding 10,400 by 2028.

The table also displays the findings of an analysis that examined the relationship of annual operations to based aircraft. The second projection in **Table 2F** reflects the itinerant operational levels that could be expected if the operations per based aircraft ratio were to remain constant into the future. This forecast results in over 11,100 itinerant GA operations by 2028.

The selected master plan itinerant GA operations forecast takes into account the growth potential associated with the development of the airport's facilities and the socioeconomic growth of the region. As the airport facilities and services improve over the planning period, it can be expected that more itinerant GA aircraft will utilize Winslow-Lindbergh Regional Airport. The based aircraft to itinerant GA operations ratio should stay relatively static through the planning period, lowering only slightly to 512 by 2028. The selected master plan forecast, shown at the bottom of **Table 2F**, has itinerant GA operations at Winslow-Lindbergh Regional Airport growing to 8,040 by 2013, 8,900 by 2018, 9,750 by 2023, and 10,750 by 2028.

LOCAL OPERATIONS

A similar methodology was utilized to forecast local GA operations. **Table 2G** depicts estimated local operations at Winslow-Lindbergh Regional Airport in 2008 and examines its market share of GA local operations at towered airports in the United States. In 2008, Winslow-Lindbergh Regional Airport is estimated to have experienced 0.006 percent of all local GA operations at towered airports. This equates to 68 local GA operations per based aircraft, which is comparable to other GA airports without major flight training operations.

Table 2G presents a market share projection based upon carrying forward a constant share of 0.006 percent. This projection results in 1,100 local GA operations by 2028.

The second projection in **Table 2G** examines local operations based on the operations per based aircraft remaining static at 68 through the planning period. This projection results in over 1,400 local operations by 2028.

Winslow-Lindbergh Regional Airport does not currently have flight training services; therefore, the airport does not experience heavy local GA operations. The airport is used occasionally as a destination for cross-country and touch-and-go training operations from Flagstaff, Phoenix, and other flight training centers. The airport's role in these training activities is expected to be maintained through the planning

period. Therefore, the selected master plan forecast shown at the bottom of **Table 2G** has maintained a moderate growth rate, resulting in a market share of 0.007 percent and local GA operations per based aircraft ratio in the 60s through the next 20 years. The selected forecast has local GA operations growing to 1,000 by 2013, 1,080 by 2018, 1,165 by 2023, and 1,250 by 2028.

TABLE 2G
General Aviation Local Operations Forecast
Winslow-Lindbergh Regional Airport

Year	Local Operations	U.S. ATCT GA Local (millions)	Winslow Market Share	Winslow Based Aircraft	Local Ops Per Based Aircraft
2008	950	14.78	0.006%	14	68
Constant Market Share Projection					
2013	980	15.25	0.006%	15	64
2018	1,006	15.65	0.006%	17	59
2023	1,058	16.47	0.006%	19	56
2028	1,103	17.16	0.006%	21	54
Operations Per Based Aircraft Projection					
2013	1,020	15.25	0.007%	15	68
2018	1,156	15.65	0.007%	17	68
2023	1,292	16.47	0.008%	19	68
2028	1,428	17.16	0.008%	21	68
FAA-TAF Projection					
2013	4,000	15.25	0.026%	9	444
2018	4,000	15.65	0.026%	9	444
2023	4,000	16.47	0.024%	9	444
2028	4,000	17.16	0.023%	9	444
Master Plan Forecast					
2013	1,000	15.25	0.007%	15	67
2018	1,080	15.65	0.007%	17	64
2023	1,165	16.47	0.007%	19	61
2028	1,250	17.16	0.007%	21	60

GENERAL AVIATION OPERATIONS SUMMARY

Table 2H depicts estimated 2008 GA operations at Winslow-Lindbergh Regional Airport, as well as the updated master plan projections. Total GA operations are projected to reach 12,000 annually by 2028. This is a growth rate of 1.8 percent over the planning period.

TABLE 2H
General Aviation Operations Forecast Summary
Winslow-Lindbergh Regional Airport

Year	Total Operations	Itinerant Operations	Local Operations	Based Aircraft	Itinerant Ops/BA	Local Ops/BA
2008	8,350	7,400	950	14	529	68
Forecast						
2013	9,040	8,040	1,000	15	536	67
2018	9,980	8,900	1,080	17	524	64
2023	10,915	9,750	1,165	19	513	61
2028	12,000	10,750	1,250	21	512	60

MILITARY

Military operations account for the smallest portion of the operational traffic at Winslow-Lindbergh Regional Airport. Military activity has been estimated at approximately 480 operations annually. Unless there is an unforeseen mission change in the area, a significant change from these military operational levels is not anticipated. Therefore, annual military operations have been projected at 480 throughout the planning period. This is consistent with typical industry practices for projecting military operations.

ANNUAL INSTRUMENT APPROACHES (AIAs)

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

Historical data on instrument approaches to Winslow-Lindbergh Regional Airport is not readily available. True instrument weather conditions are not a common occurrence at Winslow and with the airport's smaller operational levels, it can be assumed that there is an insignificant number of AIAs. AIA operations are not anticipated to change through the planning period of this master plan.

SUMMARY

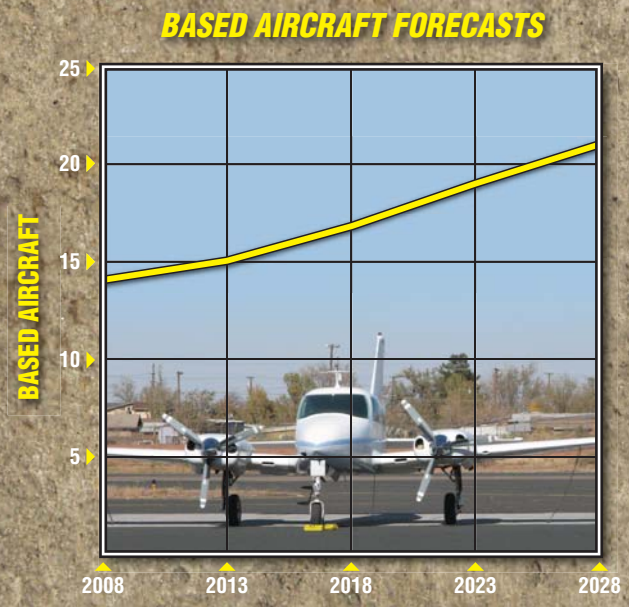
This chapter has outlined the various activity levels that might reasonably be anticipated over the planning period. **Exhibit 2C** is a summary of the aviation forecasts prepared in this chapter. Estimated activity is included for 2008, which was the base year for these forecasts.

Based aircraft at Winslow-Lindbergh Regional Airport are expected to see steady growth over the course of the next 20 years, but the extent of that growth will be dependent upon the availability of services and facilities in the future.

The next step in the planning process is to assess the capabilities of the existing facilities to determine what upgrades may be necessary to meet future demands. The forecasts developed here will be taken forward in the next chapter as planning horizon activity levels that will serve as milestones or activity benchmarks in evaluating facility requirements. Peak activity characteristics will also be determined for the various activity levels for use in determining facility needs.

08MP06-2C-1/8/09

	2008	2013	2018	2023	2028
BASED AIRCRAFT FORECASTS					
Single Engine	9	9	11	12	14
Multi-engine	4	4	4	4	3
Turboprop	0	0	0	1	1
Jet	0	1	1	1	2
Helicopter	1	1	1	1	1
Total Based Aircraft	***14***	***15***	***17***	***19***	***21***
OPERATIONS FORECASTS					
General Aviation					
Itinerant	7,400	8,040	8,900	9,750	10,750
Local	950	1,000	1,080	1,165	1,250
Military	480	480	480	480	480
Annual Operations	***8,830***	***9,520***	***10,460***	***11,395***	***12,480***



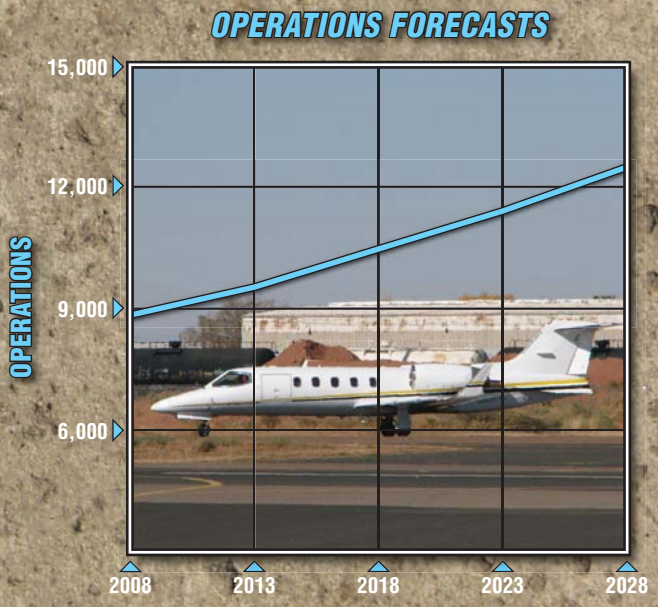


Exhibit 2C
FORECAST SUMMARY

Chapter Three

FACILITY REQUIREMENTS

Facility Requirements

To properly plan for the future of Winslow-Lindbergh Regional Airport, it is necessary to translate forecast aviation demand into the specific types and quantities of facilities that can adequately serve projected demand levels. This chapter uses the results of the forecasts prepared in Chapter Two, as well as established planning criteria, to determine the airfield (i.e., runways, taxiways, navigational aids, marking and lighting) and landside (i.e., hangars, general aviation terminal, aircraft parking apron, fueling, automobile parking and access) facility requirements. Having established these facility requirements, alternatives for providing these facilities will be evaluated in Chapter Four to determine the most cost-effective and efficient means for implementation.

PLANNING HORIZONS

The cost-effective, safe, efficient, and orderly development of an airport should rely more upon actual demand at an airport than a pre-set point in time forecast figure. Thus, in order to develop a master plan that is demand-based rather than time-based, a series of planning horizon milestones have been established that take into consideration the reasonable range of aviation demand projections.

Over time, the actual activity at the airport may be higher or lower than the annualized forecast portrays. By planning according to activity milestones, the resultant plan can accommodate unexpected shifts or changes in the aviation demand in a timely

fashion. The demand-based schedule provides flexibility in development, as the schedule can be slowed or expedited according to actual demand at any given time over the planning period. The resultant plan provides airport officials with a financially responsible and needs-based program. **Table 3A** presents the planning horizon milestones for each activity demand category.

TABLE 3A
Aviation Demand Planning Horizons
Winslow-Lindbergh Regional Airport

	2008	Short Term (± 5 Years)	Intermediate Term (± 10 Years)	Long Term (± 20 Years)
ANNUAL OPERATIONS				
General Aviation				
Itinerant	7,400	8,040	8,900	10,750
Local	950	1,000	1,080	1,250
Military	480	480	480	480
Total Operations	8,830	9,520	10,460	12,480
Based Aircraft	14	15	17	21

PEAKING CHARACTERISTICS

Airport capacity and facility needs analyses typically relate to the levels of activity during a peak or design period. The periods used in developing the capacity analyses and facility requirements in this study are as follows:

- **Peak Month** - The calendar month when peak volumes of aircraft operations occur. This was determined by examining historical fuel flowage records at the airport.

- **Design Day** - The average day in the peak month. This indicator is easily derived by dividing the peak month operations by the number of days in a month.

- **Busy Day** - The busy day of a typical week in the peak month. This descriptor is used primarily to determine general aviation transient ramp space requirements.

- **Design Hour** - The peak hour within the design day.

It is important to note that only the peak month is an absolute peak within a given year. All other peak periods will be exceeded at various times during the year. However, they do represent reasonable planning standards that can be applied without overbuilding or being too restrictive.

Itinerant Operations Peak Periods

Without an airport traffic control tower, operational counts are not available to directly determine peak operational activity at the airport. Therefore, peak period forecasts have been determined according to trends experienced at similar airports. His-

torical fuel flowage data indicated that July experienced an average 19 percent of total annual fuel flowage over the past seven years, making it the peak fuel flowage month. Therefore, 19 percent was used as the estimate for peak month itinerant and total operations. Current busy day operations were calculated as 1.4 times design day activity. This ratio can be expected to decline slightly as activity increases and becomes more balanced throughout the week. Design hour operations were estimated at 20 percent of design day operations in 2008. This percentage can also be expected to decline slightly as activity increases over the long term. **Table 3B** summarizes the peak operations forecast for the airport.

TABLE 3B
Peaking Characteristics
Winslow-Lindbergh Regional Airport

	2008	Short Term (± 5 Years)	Intermediate Term (± 10 Years)	Long Term (± 20 Years)
OPERATIONS				
Itinerant				
Annual	7,880	8,520	9,380	11,230
Peak Month	1,497	1,619	1,782	2,134
Design Day	48	52	57	69
Busy Day	68	72	78	92
Design Hour	10	10	10	11
Total				
Annual	8,830	9,520	10,460	12,480
Peak Month	1,678	1,809	1,987	2,371
Design Day	54	58	64	76
Design Hour	11	11	12	12

AIRFIELD CAPACITY

A demand/capacity analysis measures the capacity of the airfield facilities (i.e., runways and taxiways) in order to identify a plan for additional development needs. The capacity of the airfield is affected by several factors, including airfield layout, meteorological conditions, aircraft mix, runway use, aircraft arrivals, aircraft touch-and-go activity, and exit taxiway locations. An airport's airfield capacity is expressed in terms of its annual service volume (ASV). Annual service volume is a reasonable estimate of the maximum level of aircraft operations that can be accommodated in a year. Pursuant to FAA guidelines detailed in the FAA Advisory Circular (AC 150/5060-5, *Airport Capacity and Delay*), the annual service volume of a dual runway configuration is approximately 230,000 operations at general aviation airports similar to Winslow-Lindbergh Regional Airport. Since the forecasts for the airport indicate that activity throughout the planning period will remain well below 230,000 annual operations, the capacity of the existing airfield system will not be reached, and the airfield is expected to accommodate the forecasted operational demands. Therefore, no additional runways or taxiways are needed for capacity reasons.

CRITICAL AIRCRAFT

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

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

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

Category A: Speed less than 91 knots.

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

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

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

Category E: Speed greater than 166 knots.

The airplane design group (ADG) is based upon the aircraft's wingspan. The six ADGs used in airport planning are as follows:

Group I: Up to but not including 49 feet.

Group II: 49 feet up to but not including 79 feet.

Group III: 79 feet up to but not including 118 feet.

Group IV: 118 feet up to but not including 171 feet.

Group V: 171 feet up to but not including 214 feet.

Group VI: 214 feet or greater.

Exhibit 3A summarizes representative aircraft by ARC.

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A-I

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

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

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

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

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

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

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

A-III, B-III

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

C-I, D-I

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

C-II, D-II, C-III

- Cessna Citation III, VI, VIII, X
- Gulfstream II, III, IV
- **Lockheed P-3 Orion**
- ERJ-135, 145,170, 190
- CRJ-200, 700, 900
- Boeing Business Jet
- A319, A320
- Global Express
- B 737-300 Series

D-III

- **Gulfstream V**

C-IV, D-IV

- **B-757**
- [illegible]7
- C-130
- DC-8-7
- DC-10
- MD-1
- L1011

D-V

- **B-74[illegible] Series**
- B-777

Note: Aircraft pictured is identified in bold type.

Exhibit 3A
AIRPORT REFERENCE CODES

The FAA advises designing airfield facilities to meet the requirements of the airport's most demanding aircraft, or critical aircraft. An aircraft or group of aircraft within a particular Approach Category or ADG must conduct more than 500 itinerant operations annually to be considered the critical design aircraft. In order to determine facility requirements, an ARC should first be determined, and then appropriate airport design criteria can be applied. This begins with a review of aircraft currently using the airport and those expected to use the airport through the planning period. Winslow-Lindbergh Regional Airport is currently used by a variety of general aviation aircraft. General aviation aircraft using the airport include single and multi-engine aircraft less than 12,500 pounds, which fall within Approach Categories A and B and ADG I. The airport experiences moderate use by aircraft in ADG II (such as the Beechcraft King Air 200 and Cessna Citation II). A review of completed instrument flight plans for calendar years 2003 through 2008 reveal that turbojet aircraft conducted, on average, 95 operations annually during this period.

The aviation demand forecasts projected the mix of aircraft to use the airport to consist of mainly the single-engine and multi-engine piston-powered aircraft which fall within Approach Categories A and B and ADGs I and II. The turboprop aircraft projected to base at the airport in the future would also fall within similar categories. While two turbojet aircraft are projected to base at the airport by the end of the planning period, business jet aircraft can include a wide range of Approach Categories and ADGs. The newest microjets that have entered the active fleet fall within ARC A-I. The most common business jet in use today, the Cessna Citation series, falls within ARC B-II and C-II. Some business jets have faster approach speeds and fall within ARCs C-I, C-II, D-I, and D-II.

The United States Forest Service (USFS) operates the Lockheed P-2 Neptune and P-3 Orion aircraft modified for firefighting operations conducted in the region during the fire season, which lasts typically from May to August. These aircraft are categorized as ARC C-III aircraft making them the most demanding aircraft to operate at Winslow-Lindbergh Regional Airport on a consistent basis. The USFS estimates an average of 200 annual operations conducted by the firefighting aircraft. The USFS has no plans to relocate its firefighting base and could potentially operate Douglas DC-6, DC-7, or Lockheed C-130 aircraft at the airport in the future. It is anticipated, however, that the P-3 Orion will be the most demanding fire fighting aircraft at Winslow-Lindbergh Regional Airport.

The previous master plan established the ARC C-III design standards for both runways and all taxiways to accommodate the USFS operational aircraft and anticipated business jet aircraft operational growth. The current airfield is designed to ARC B-I standards, with the Beechcraft King Air 100 as the design aircraft. The existing runway width of 150 feet meets up to ARC D-V design standards. This Master Plan carries forward the ultimate design standard goals from the

previous Master Plan, planning for up to ARC C-III. These design standards will serve a potential increase in USFS operations as well as increased business aircraft operations.

AIRFIELD REQUIREMENTS

The analyses of the operational capacity and the critical design aircraft are used to determine airfield needs. This includes runway configuration, dimensional standards, and pavement strength, as well as navigational aids and lighting.

RUNWAY CONFIGURATION

Key considerations in the runway configuration of an airport involve the orientation for wind coverage and the operational capacity of the runway system. The airfield capacity analysis indicated that additional airfield capacity does not need to be considered through the long-term planning horizon.

FAA Advisory Circular 150/5300-13, *Airport Design,* recommends that a crosswind runway should be made available when the primary runway orientation provides less than 95 percent wind coverage for any aircraft forecast to use the airport on a regular basis. The 95 percent wind coverage is computed on the basis of the crosswind component not exceeding 10.5 knots (12 mph) for ARC A-I and B-I; 13 knots (15 mph) for ARC A-II and B-II; 16 knots (18 mph) for ARC A-III, B-III, and C-I through D-II; and 20 knots (23 mph) for ARC C-III through D-IV.

The most recent wind data for Winslow-Lindbergh Regional Airport was collected from the airport's automated surface observation system (ASOS) for the period 1998-2008. This data is graphically depicted on the wind rose in **Exhibit 3B**. Runway 4-22 provides 90.8 percent coverage for 10.5 knot crosswinds, 94.4 percent coverage for 13 knot crosswinds, 97.5 percent coverage for 16 knot crosswinds, and 99.0 percent coverage for 20 knot crosswinds. Runway 11-29 provides 83.1 percent coverage for 10.5 knot crosswinds, 87.9 percent for 13 knot crosswinds, 92.7 percent coverage for 16 knot crosswinds, and 96.1 percent coverage for 20 knot crosswinds. Combined, the runway system provides 95.9 percent coverage for 10.5 knot crosswinds, 97.9 percent coverage for 13 knot crosswinds, 99.0 percent for 16 knot crosswinds, and 99.7 percent coverage for 20 knot crosswinds. Thus, the existing runway configuration has adequate wind coverage for all sizes and speeds of aircraft. For this reason, an additional runway for crosswind purposes is not necessary.

RUNWAY DIMENSIONAL REQUIREMENTS

Runway dimensional standards include the length and width of the runway, as well as the dimensions associated with runway safety areas and other clearances. These requirements are based upon the design aircraft, or group of aircraft. The runway length must consider the performance cha-

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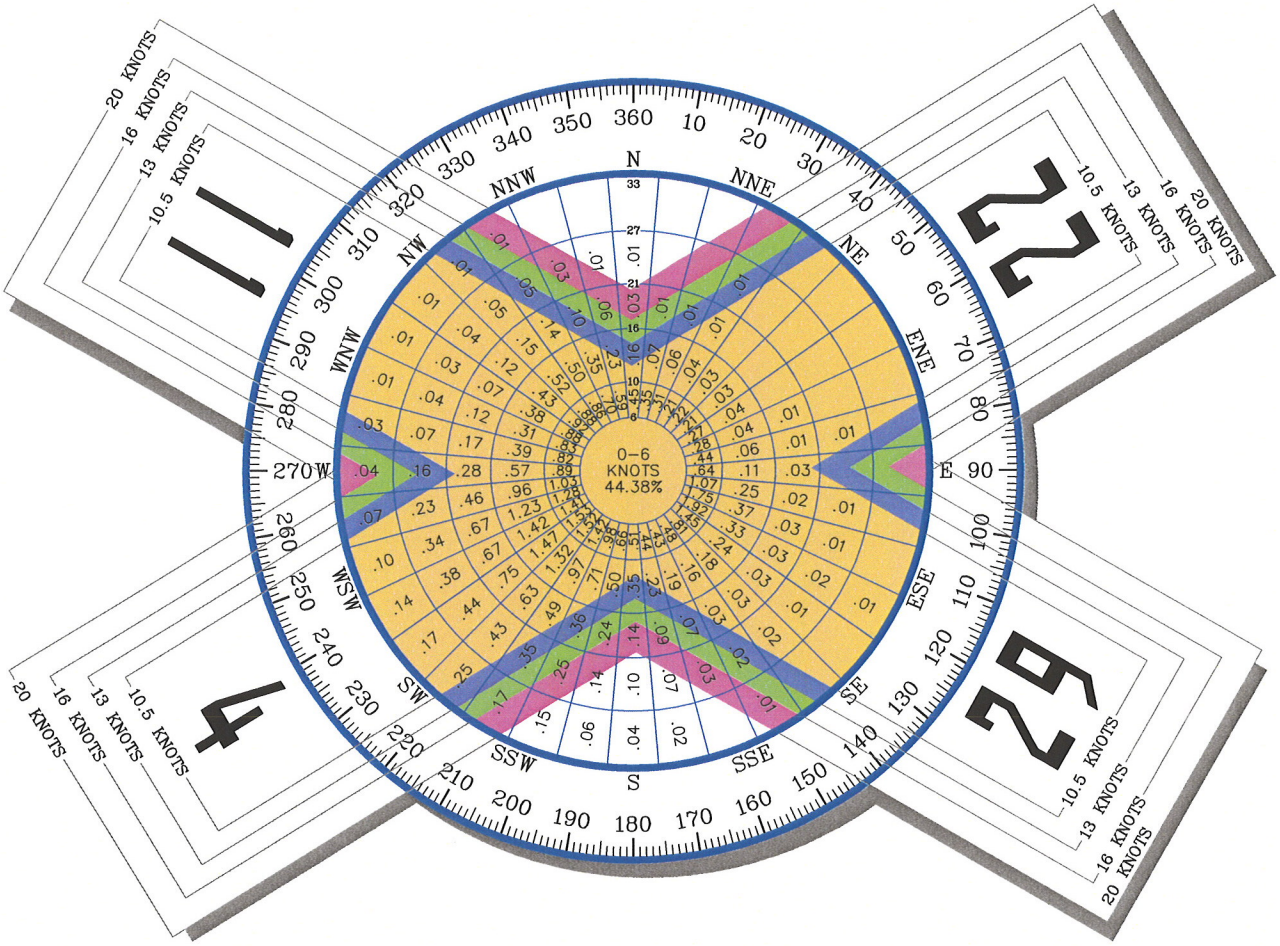
ALL WEATHER WIND COVERAGE

Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 4–22	*90.83%*	*94.43%*	*97.50%*	*99.01%*
Runway 11–29	*83.12%*	*87.89%*	*92.71%*	*96.11%*
Combined	*95.89%*	*97.91%*	*99.02%*	*99.66%*



NORTH

SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Winslow Lindbergh Regional Airport (INW)
Winslow, Arizona

OBSERVATIONS:
93,560 All Weather Observations
11/01/1998–10/01/2008

Magnetic Variance
10° 57' East (September 2009)
Annual Rate of Change
00° 06' West (January 2009)

Exhibit 3B
WINDROSE

racteristics of individual aircraft types, while the other dimensional standards are generally based upon the most critical airport reference code expected to use the runway. The dimensional standards are outlined for the planning period for the primary runway.

Runway Length

The aircraft performance capability is a key factor in determining the runway length needed for takeoff and landing. The performance capability and, subsequently, the runway length requirement of a given aircraft type can be affected by the elevation of the airport, the air temperature, and the operating weight of the aircraft. The airport elevation at Winslow-Lindbergh Regional Airport is 4,941 feet above mean sea level (MSL). The mean maximum daily temperature during the hottest month is 93.5 degrees Fahrenheit.

The first step in evaluating runway length requirements is to determine general runway length requirements for the majority of the aircraft operating at the airport. The overwhelming majority of operations at Winslow-Lindbergh Regional Airport consist of small airplanes weighing 12,500 pounds or less. According to runway length adjustment charts in AC 150/5325-4B, *Runway Length Requirements for Airport Design*, when adjusting for the elevation and temperature of Winslow-Lindbergh Regional Airport, 100 percent of small aircraft can operate on a 6,500-foot long runway. At 7,099 feet (Runway 11-29) and 7,499 feet (Runway 4-22), both runways exceed this length requirement.

The runways should ultimately be planned to a length to allow for the safe operation of its design aircraft. It was determined previously that the ultimate design aircraft for the airport is the Lockheed P-3 Orion aerial firefighting aircraft. The P-3 Orion is capable of operating on the existing runways with a full load (2,550 gallons) of fire retardant; however, the P-3 Orion is exposed to a potentially dangerous safety issue involving the aircraft's refusal speed. An aircraft's refusal speed is the maximum speed that can be achieved with normal acceleration from which a full-stop may be completed within the available runway length. Once the aircraft has exceeded its refusal speed, it is committed to flight despite any malfunctions it may incur during the remaining take-off procedure. At the airport's current runway length, the refusal speed for the P-3 is calculated at 108 knots. The P-3's lift-off speed is 121 knots. As a result, if the P-3 suffers a malfunction once its speed has exceeded 108 knots, it is committed to flight despite the fact that it may still be on the ground. Eliminating this potentially hazardous safety issue would require a runway length of 9,000 feet. This runway length would allow for the P-3 to make a full-stop on the runway up to its lift-off speed.

The extension should be planned for the runway that is used most frequently. Runway use is determined by prevailing winds and according to the wind analysis depicted on **Exhibit**

3B, the runway with the best wind coverage is Runway 4-22. Therefore, it is recommended that Runway 4-22 be extended to a full length of 9,000 feet to meet the safety demand of the airport's design aircraft. Runway 11-29 should be maintained at its current length through the planning period.

Pavement Strength

An important feature of airfield pavement is the ability to withstand repeated use by aircraft of significant weight. Runway 4-22 is strength-rated at 50,000 pounds single wheel loading (SWL), 80,000 pounds dual wheel loading (DWL), and 125,000 pounds dual-tandem wheel loading (DTWL). Runway 11-29 is strength-rated at 60,000 pounds SWL, 70,000 pounds DWL, and 110,000 pounds DTWL. The USFS has indicated that the present runway pavement strengths are adequate for use by their operational aircraft. These pavement strengths are more than adequate to handle a full range of business jet aircraft; therefore, the existing pavement strengths should be maintained through the planning period.

Dimensional Design Standards

Runway dimensional design standards define the widths and clearances required to optimize safe operations in the landing and takeoff areas. These dimensional standards vary depending upon the ARC for the runway. **Table 3C** outlines key dimensional standards for the airport reference codes most applicable to Winslow-Lindbergh Regional Airport, both now and in the future.

The runway system presently meets or exceeds several ARC B-I design standards; however, the runway safety areas (RSA, OFA, RPZs) extend beyond airport property and encompass non-compatible land uses. Ultimately, the airfield will be designed to C-III design standards. The following considers those areas where standards will need to be upgraded for both runways.

Runway Width – The current width of both runways (150 feet) exceeds the 100-foot design requirement for ARC C-III. This width is also adequate for the ultimate design aircraft (Lockheed P-3 Orion).

Runway Safety Area – The runway safety area (RSA) is defined in FAA Advisory Circular 150/5300-13, *Airport Design*, as a surface surrounding the runway, prepared or suitable for reducing the risk of damage to airplanes in the event of an overshoot, undershoot, or excursion from the runway. The RSA is centered on the runway and extends beyond either end. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating fire and rescue vehicles, and free of obstacles not fixed by navigational purpose.

The RSA standard for ARC B-I is 120 feet wide, extending 240 feet beyond the runway end. **Exhibit 3C** depicts the ARC B-I RSA dimensions on the

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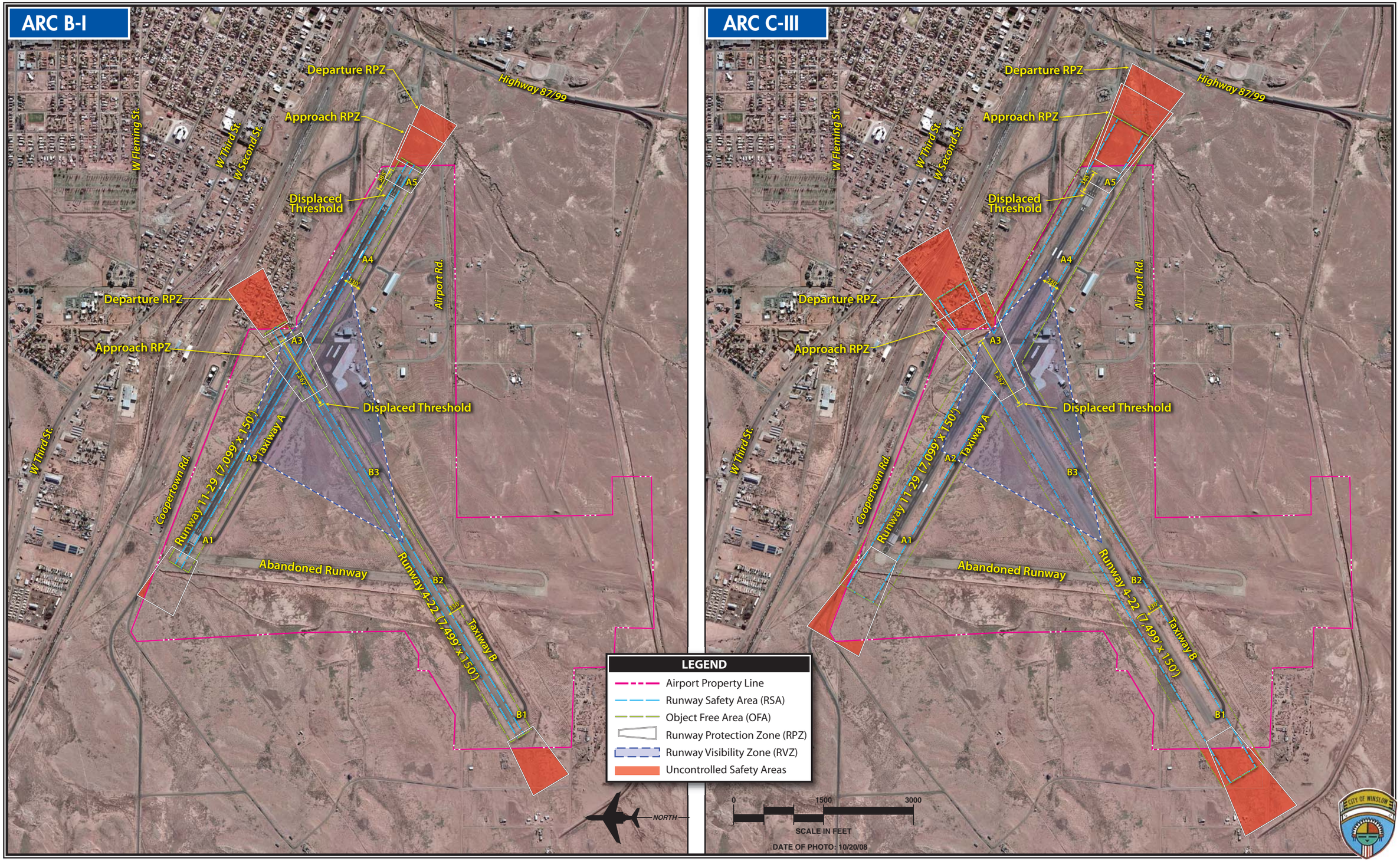


Exhibit 3C
FAA DESIGN
REQUIREMENTS

runway system and highlights areas that are uncontrolled by the airport. These areas include land off the end of Runway 29 and Runway 22. Ultimately, the airport will be designed to ARC C-III design standards. The RSA dimension under ARC C-III is 500 feet wide and 1,000 feet beyond each runway end. **Exhibit 3C** depicts the ultimate layout of the RSA and highlights areas that the airport would ultimately need to control to meet ARC C-III RSA design standards.

TABLE 3C
Airfield Design Standard
Winslow-Lindbergh Regional Airport

	Runway 4-22 & 11-29		
Airport Reference Code (ARC)	**Available (ft.)**	**B-I (ft.)**	**C-III (ft.)**
Runway Width	150	60	100
Runway Safety Area			
Width	120	**120**	**500**
Length Beyond End	240	**240**	**1,000**
Runway Object Free Area			
Width	400	**400**	**800**
Length Beyond End	240	**240**	**1,000**
Runway Blast Pad[1]			
Width	150	80	140
Length	200	100	200
Runway Centerline to:			
Holding Position	250	200	250
Parallel Taxiway	330	225	**400**
Taxiway Width	50	25	50
Taxiway Centerline to:			
Fixed or Moveable Object	75	44.5	**93**
Parallel Taxilane	275	69	152
Taxilane Centerline to:			
Fixed or Moveable Object	81	39.5	81
Parallel Taxilane	150	64	140
Runway Protection Zones -			
One mile or greater visibility			
Inner Width	500	500	500
Length	1,000	1,000	1,700
Outer Width	700	700	1,010
Not Lower than ¾ mile			
Inner Width	N/A	**1,000**	**1,000**
Length	N/A	**1,700**	**1,700**
Outer Width	N/A	**1,510**	**1,510**
Lower than ¾ mile			
Inner Width	N/A	**1,000**	**1,000**
Length	N/A	**2,500**	**2,500**
Outer Width	N/A	**1,750**	**1,750**

*Boldface indicates standards not met
[1] Available Runway 11 End

Runway Object Free Area – The object free area (OFA) is an area centered on the runway to enhance the safety of aircraft operations by having an area free of objects, except for objects that need to be located in the

OFA for air navigation or ground maneuvering purposes. The OFA must provide clearance of all ground-based objects protruding above the RSA edge elevation, unless the object is fixed by a function serving air or ground navigation.

For ARC B-I, the OFA has a width of 400 feet and extends 240 feet beyond the runway end. Ultimately, the OFA dimensions under ARC C-III design standards will extend 1,000 feet beyond the runway end and have a width of 800 feet. The ARC B-I and ARC C-III OFAs are depicted on **Exhibit 3C** highlighting areas that are uncontrolled by the airport. Ultimately, the OFA for both runways will extend beyond airport property and encompass non-compatible surfaces or structures. Actions to comply with existing and ultimate OFA design standards will be addressed in the airport development alternatives analysis.

Aircraft Holding Positions – The current hold positions for both runways are marked 250 feet from the runway centerline. The current position exceeds the ARC B-I design standard of 200 feet. The standard for ARC C-III is 250 feet making the current positions adequate for the long term.

Runway Protection Zones – The runway protection zone (RPZ) is an area beginning 200 feet off the runway end that enhances the protection of people and property on the ground. This is best achieved through airport owner control over the RPZs. Such control includes maintaining RPZ areas clear of incompatible objects and activities.

The RPZ is trapezoidal in shape and is centered on the extended runway centerline. A runway with a displaced threshold has an approach RPZ and a departure RPZ. The approach RPZ is located 200 feet before the runway threshold while the departure RPZ is located 200 feet beyond the length of the runway declared available for takeoff. **Exhibit 3C** depicts the current (ARC B-I) RPZs for both runways including the approach and departure RPZs at the end of Runway 22 and Runway 29. Each RPZ extends beyond airport property and encompasses incompatible land uses. In particular, the approach and departure RPZs off the end of Runway 22 and Runway 4 encompass residential dwellings.

The dimensions of the RPZ are a function of the critical aircraft and the approach visibility minimums associated with the runway. The airport is currently equipped with a single non-precision one-mile visibility instrument approach to Runway 11. **Table 3C** depicts the RPZ requirements for runway ends equipped with low-visibility instrument approach procedures. Based upon the capabilities of any instrument approach procedures developed in the future, the RPZs for each runway end would become larger in the future if instrument approach procedures had visibility minimums less than one mile.

Planning for ARC C-III design standards will also result in larger RPZ

dimensions even if instrument approach procedures remain at one mile or greater visibility. These ARC C-III RPZs are depicted on **Exhibit 3C**. From this depiction, it is clear that there is a large amount of land encompassed by the RPZs beyond airport property. The development of airport alternatives will need to place a priority on finding a solution to the existing and ultimate uncontrolled safety areas at the airport.

Runway Visibility Zone – The runway visibility zone (RVZ) exists to ensure a clear line-of-sight between the ends of intersecting runways. Within the RVZ, terrain needs to be graded and permanent objects designed so that there is an unobstructed line-of-sight from any point five feet above one runway centerline to any point five feet above an intersecting runway centerline. The RVZ is depicted on **Exhibit 3C** showing the existence of permanent structures including the terminal building and TAT conventional hangar and other obstructions to the line-of-sight for the intersecting runways. This issue will be addressed during the development of airport alternatives.

TAXIWAY REQUIREMENTS

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

As detailed in Chapter One, both runways are served by a full-length parallel taxiway equipped with five entrance/exit taxiways. **Table 3C** outlines the runway-to-taxiway centerline separation standards for ARC B-I and C-III. Currently, Taxiways A and B have a separation distance of 330 feet, which exceeds the ARC B-I design standard of 225 feet. The ARC C-III design standard, however, is 400 feet of separation.

Exit taxiways provide a means to enter and exit the runways at various points on the airfield. The type and number of exit taxiways can have a direct impact on the capacity and efficiency of the airport as a whole. Both runways have a total of five entrance/exit taxiways. Exit taxiways are most effective when planned at least 800 feet apart. Each entrance/exit taxiway meets or exceeds this spacing standard. Potential locations for new exit taxiways that may improve capacity or efficiency will be examined in Chapter Four.

Dimensional standards for the taxiways are depicted on **Table 3C**. Taxiway width and clearance standards are based upon the ADG for a particular runway or taxiway. For both runways, the taxiways should meet ADG I standards presently and ultimately meet ADG III standards. The current taxiway system has a width of at least 50 feet or greater with one exception. Approximately 300 feet of Taxiway A adjacent to the terminal building has a width of 35 feet. Advisory signage is displayed in this area to caution pilots that the taxiway is restricted to air-

craft with a wingspan of 79 feet or less.

Holding aprons improve the efficiency of the taxiway system by allowing an area of the taxiway for aircraft to prepare for departure. This allows aircraft ready for departure to by-pass these aircraft. Holding aprons should be planned for each runway end.

NAVIGATIONAL AIDS AND INSTRUMENT APPROACH PROCEDURES

Navigational Aids

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

Instrument Approach Procedures

Instrument approach procedures consist of a series of predetermined maneuvers established by the FAA for navigation during inclement weather conditions. Currently, there is a single VOR or GPS one mile visibility non-precision instrument approach procedure for Winslow-Lindbergh Regional Airport. Only on rare occasions does visibility drop below three miles and/or cloud ceilings fall below 1,000 feet MSL resulting in the need for an instrument approach.

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

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

proach provides both course and descent guidance. A lateral navigation (LNAV) approach only provides course guidance. In the future, as WAAS is upgraded, precision approaches similar in capability to the existing ILS will become available. These approaches are currently categorized as the Global Navigation Satellite System Landing System (GLS). A GLS approach may be able to provide for approaches with one-half mile visibility and 200-foot cloud ceilings. A GLS would be implemented in lieu of an ILS approach.

Both course guidance and descent information is desirable for an instrument approach to each runway end at Winslow-Lindbergh Regional Airport. The GPS APV approach does not require the installation of costly navigation equipment at the airport and will provide the airport with adequate instrument approach capabilities. Therefore, GPS APV approaches with one mile visibility minimums should be planned to each runway end.

AIRFIELD LIGHTING, MARKING, AND SIGNAGE

There are a number of lighting and pavement marking aids serving pilots using the Winslow-Lindbergh Regional Airport. These lighting and marking aids assist pilots in locating the airport during night or poor weather conditions, as well as assist in the ground movement of aircraft.

Identification Lighting

The location of an airport at night is universally indicated by a rotating beacon. The rotating beacon at the airport is located immediately east of the TAT conventional hangar. The rotating beacon is sufficient and should be maintained through the planning period.

Runway and Taxiway Lighting

The medium intensity runway edge lighting (MIRL) currently available on both runways is adequate for the planning period. Both parallel taxiways and connector taxiways are equipped with medium intensity taxiway lights (MITL). MITL should be maintained and planned for any future expansion of the taxiway system.

Airfield Signs

Airfield signage assists pilots in identifying their location on the airport. Signs located at intersections of taxiways provide crucial information to avoid conflicts between moving aircraft and potential runway incursions. Directional signage also instructs pilots as to the location of taxiways and apron areas. This directional signage is sufficient and should be maintained through the planning period.

Visual Approach Lighting

In most instances, the landing phase of any flight must be conducted in vis-

ual conditions. To provide pilots with visual guidance information during landings to the runway, electronic visual approach aids are commonly provided at airports. Runways 11, 29, and 22 are each equipped with visual approach slope indicator (VASI-4) lighting systems. These lighting systems and Runway 4 should be planned to be equipped with precision approach path indicator (PAPI-4) lighting systems. The PAPI-4s provide pilots with more accurate approach slope indications and are better suited for large aircraft operations.

Approach and Runway End Identification Lighting

Runway end identifier lights (REILs) are flashing lights located at the runway end to facilitate identification of the runway end at night and during poor visibility conditions. REILs provide pilots with the ability to identify runway ends and distinguish the runway end lighting from other lighting on the airport and in the approach areas. REILs are installed at the end of Runways 11 and 22. These lighting aids should be maintained through the planning period. Runways 29 and 4 should be planned to have REILs installed as well.

Distance Remaining Signs

Distance remaining signage is installed along runways to notify pilots how far their position is from the end of the runway at 1,000-foot increments. Distance remaining signage is installed on Runway 11-29. This signage should also be installed on Runway 4-22.

Pilot-Controlled Lighting

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

Pavement Markings

In order to facilitate the safe movement of aircraft about the field, airports use pavement markings, lighting, and signage to direct pilots to their destinations. Runway markings are designed according to the type of instrument approach available on the runway. FAA Advisory Circular 150/5340-1H, *Marking of Paved Areas on Airports*, provides the guidance necessary to design airport markings.

Runway 11-29 currently has nonprecision markings. Nonprecision runway markings identify the runway centerline, threshold, aiming point, and designation. These markings will be sufficient for a GPS APV approach to both runways. Runway 4-22 is currently marked with basic markings,

which identify the runway centerline and the runway designation. Nonprecision runway markings will need to be applied to accommodate a GPS APV approach to both runway ends.

Holdlines need to be marked on all taxiways connecting to the runway. The holdlines are currently required to be placed 250 feet from the runway centerline. These markings assist in reducing runway incursions as aircraft must remain behind the holdline until taking the active runway for departure.

Taxiway and apron areas also require marking to assure that aircraft remain on the pavement and clear of any objects located along the taxiway/taxilane. Yellow centerline stripes are currently painted on all taxiways and the terminal apron surface at the airport to provide assistance to pilots in taxiing along these surfaces at the airport. A portion of the south apron has centerline stripes and tie-down markings. Markings should be added to the remainder of the apron during the planning period.

HELIPADS

The airport does not have a designated helipad area. Helicopters utilize the same areas as fixed-wing aircraft. Helicopter and fixed-wing aircraft should be segregated to the extent possible. Facility planning should include establishing a designated transient helipad at the airport, including providing up to two parking positions. Lighting should be provided to allow safe operation to the helipad at night.

WEATHER REPORTING

The airport has a lighted wind cone that provides pilots with information about wind conditions. A segmented circle provides traffic pattern information to pilots. These facilities are sufficient and should be maintained in the future.

The airport is equipped with an automated surface observation system (ASOS). The ASOS provides automated weather observations 24 hours per day. The system updates weather observations every minute, continuously reporting significant weather changes as they occur. The ASOS reports cloud ceiling, visibility, temperature, dew point, wind direction, wind speed, altimeter setting (barometric pressure), and density altitude (airfield elevation corrected for temperature). The ASOS is sufficient and should be maintained through the planning period.

REMOTE COMMUNICATIONS FACILITIES

Winslow-Lindbergh Regional Airport is equipped with a remote communications outlet (RCO) that provides a direct communication link to the Prescott flight service station (FSS). This communication link facilitates the opening and closing of flight plans and should be maintained through the planning period.

LANDSIDE FACILITIES

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

- Hangars
- Aircraft Parking Apron
- General Aviation Terminal Services

HANGARS

The demand for hangar facilities typically depends on the number and type of aircraft expected to be based at the airport. Hangar facilities are generally classified as T-hangars and conventional hangars. Conventional hangars can include individual hangars (box hangars) or multi-aircraft hangars. These different types of hangars offer varying levels of privacy, security, and protection from the elements.

Demand for hangars varies with the number of aircraft based at the airport. Another important factor is the type of based aircraft. Smaller single-engine aircraft usually prefer T-hangars, while larger business jets will prefer conventional hangars. Rental costs will also be a factor in the choice.

Hangar facilities at the airport consist of a 12,000 square-foot conventional hangar (TAT hangar) and an eight-unit 33,300 square-foot box hangar facility. There is presently no hangar unit waiting list indicating that there is no demand for hangar facilities. Analysis of future hangar requirements, as depicted on **Table 3D,** indicates that only a limited amount of hangar position development will be needed through the planning period.

TABLE 3D
Hangar Storage Requirements
Winslow-Lindbergh Regional Airport

	Available	Short Term (± 5 Years)	Intermediate Term (± 10 Years)	Long Term (± 20 Years)
Hangar Positions				
T-Hangars	0	0	2	4
Box/Conventional	14	13	13	15
Total Aircraft to be Hangared	12	13	15	19
Hangar Area Requirements				
T-Hangars (s.f.)	0	0	2,400	4,800
Box/Conventional (s.f.)	45,300	20,500	20,500	25,500
Service Hangar Area (s.f.)	0	2,625	2,975	3,675
Total Hangar Area (s.f.)	45,300	23,125	25,875	33,975

There are currently 14 box/conventional general aviation hangars on the airport totaling approximately 45,300 square feet. This type of hangar is typically used to store multiple aircraft, or one or more corporate aircraft. At Winslow-Lindbergh Regional Airport, the box hangars are used to

store a single aircraft and the TAT conventional hangar stores multiple aircraft. Requirements for maintenance hangar area were estimated at 175 square feet per based aircraft.

AIRCRAFT PARKING APRON

A parking apron should be provided for at least the number of locally based aircraft that are not stored in hangars, as well as transient aircraft. The airport currently provides approximately 35,800 square yards of total apron adjacent to the airport hangar facilities and the airport terminal building. This does not include the apron used by the USFS for its firefighting aircraft. The number of local tie-downs and apron space for the planning period is presented in **Table 3E**.

TABLE 3E
Aircraft Parking Apron Requirements
Winslow-Lindbergh Regional Airport

	Available	Existing Need	Short Term (± 5 Years)	Intermediate Term (± 10 Years)	Long Term (± 20 Years)
Non-hangared Based Aircraft		2	2	2	2
Busy Day Itinerant Operations		68	72	78	92
Local Ramp Positions		2	2	2	2
Transient Ramp Positions		12	13	14	16
Total Ramp Positions	65	14	15	16	18
Apron Area (s.y.)	35,800	6,650	7,000	7,550	8,750

FAA Advisory Circular 150/5300-13, *Airport Design*, suggests a methodology by which transient apron requirements can be determined from knowledge of busy-day operations. At Winslow-Lindbergh Regional Airport, the number of transient spaces required was determined to be approximately 17.5 percent of busy-day itinerant operations. A planning criterion of 360 square yards per local ramp position and 500 square yards per transient ramp position was used to determine future apron requirements. Based on this analysis, the available parking apron area should be adequate through the long term.

The USFS has indicated that up to five or six ramp spaces may be needed in the future for its firefighting aircraft. The existing USFS apron provides approximately 3,333 square feet per parking position. Therefore, an additional 10,000 square yards of USFS ramp should be planned for the long term horizon.

TERMINAL FACILITIES

Terminal facilities are often the first impression of the community that air travelers or tourists encounter. Terminal facilities at an airport provide space for passenger waiting, flight planning, concessions, management, storage, and various other needs. The Winslow-Lindbergh Regional Airport terminal building encompasses approximately 2,100 square feet and is located southeast of the intersection of Runways 4-22 and 11-29.

The methodology used in estimating terminal facility needs was based upon the number of airport users expected to utilize the terminal facilities during the design hour, as well as FAA guidelines. Space requirements for terminal facilities were based on providing 90 square feet per design hour itinerant passenger. **Table 3F** outlines the space requirements for terminal services at Winslow-Lindbergh Regional Airport through the long term planning horizon. Based on this analysis, the existing terminal building should be sufficient through the planning period.

TABLE 3F
Terminal Facility Requirements
Winslow-Lindbergh Regional Airport

	Available	Current Need	Short Term (± 5 Years)	Intermediate Term (± 10 Years)	Long Term (± 20 Years)
Itinerant Operations					
Annual		7,880	8,520	9,380	11,230
Design Hour		10	10	10	11
Passengers per Operation		1.8	1.8	1.8	1.8
Design Hour Passengers		17	18	19	20
Terminal Space (s.f.)	2,100	1,500	1,600	1,675	1,800
Auto Parking Spaces	25	36	37	39	43

SUPPORT REQUIREMENTS

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

- Automobile Parking
- Security
- Perimeter Fencing
- Airport Maintenance
- Aircraft Wash Facility
- Aviation Fuel Storage
- Utilities
- Off-Airport Vehicular Access
- On-Airport Vehicular Access

Automobile Parking

Vehicle parking requirements were examined based on an evaluation of the existing airport use, as well as industry standards. Vehicle parking spaces were calculated at 50 percent of based aircraft plus the product of design hour itinerant passengers and the industry standard of 1.8. The automobile parking requirement summary shown in **Table 3F** indicates that available parking spaces are adequate for the planning period.

Security

In cooperation with representatives of the general aviation community, the

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

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

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

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

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

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

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

Table 3G also ranks Winslow-Lindbergh Regional Airport according to this scale. As shown in the table, the Winslow-Lindbergh Regional Airport ranking on this scale is seven. Points are assessed for the airport having more than 11 based aircraft, having a runway greater than 5,001 feet in length, and having a paved runway surface.

TABLE 3G
Airport Characteristics Measurement Tool

Security Characteristic	Assessment Scale: Public Use Airport	Assessment Scale: Winslow-Lindbergh Regional Airport
Location		
Within 20 nm of mass population areas [1]	5	0
Within 30 nm of a sensitive site[2]	4	0
Falls within outer perimeter of Class B airspace	3	0
Falls within boundaries of restricted airspace	3	0
Based Aircraft		
Greater than 101 based aircraft	3	0
26-100 based aircraft	2	0
11-25 based aircraft	1	1
10 or fewer based aircraft	0	0
Based aircraft over 12,500 pounds	3	0
Runways		
Runway length greater than 5,001 feet	5	5
Runway length less than 5,000 feet, greater than 2,001 feet	4	0
Runway length 2,000 feet or less	2	0
Asphalt or concrete runway	1	1
Operations		
Over 50,000 annual operations	4	0
Part 135 operations	3	0
Part 137 operations	3	0
Part 125 operations	3	0
Flight training	3	0
Flight training in aircraft over 12,500 pounds	4	0
Rental aircraft	4	0
Maintenance, repair, and overhaul facilities conducting long-term storage of aircraft over 12,500 pounds	4	0
Total		**7**

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

As shown in **Table 3H**, a rating of seven points places Winslow-Lindbergh Regional Airport on the fourth tier ranking of security measures by the TSA. This rating clearly illustrates the security needs at Winslow-Lindbergh Regional Airport. The Winslow-Lindbergh Regional Airport rating is not anticipated to change through the course of the planning period.

Based upon the results of the security assessment, the TSA recommends six security enhancements for Winslow-Lindbergh Regional Airport. These enhancements are shown in **Table 3H**. A review of each recommended security procedure is below.

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

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

Source: *Security Guidelines for General Aviation Airports*

Signs: The use of signs provides a deterrent by warning of facility boundaries as well as notifying of the consequences for violation. Winslow-Lindbergh Regional Airport is not currently equipped with security signage.

Documented Security Procedures: This refers to having a written security plan. This plan would include documenting the security initiatives already in place at Winslow-Lindbergh Regional Airport, as well as any new enhancements. This document could consist of, but not be limited to, airport and local law enforcement contact information, including alternates when available, and utilization of a program to increase airport user awareness of security precautions such as an airport watch program. Winslow-Lindbergh Regional Airport does not have a published security procedures document; however, the airport's published Rules and Regulations indicates that the Airport Manager has authority in cases of emergency. Contact information for the Winslow Police Department is also provided in the "Airport Security" section.

Positive/Passenger/Cargo/Baggage ID: A key point to remember regarding general aviation passengers is that the persons on board these flights are generally better known to airport personnel and aircraft operators than the typical passenger on a commercial airliner. Recreational general aviation passengers are typically friends, family, or acquaintances of the pilot in

command. Charter/sightseeing passengers typically will meet with the pilot or other flight department personnel well in advance of any flights. Suspicious activities such as use of cash for flights, probing for information, or inappropriate questions are more likely to be quickly noted and authorities could be alerted. For corporate operations, typically all parties onboard the aircraft are known to the pilots. Airport operators should develop methods by which individuals visiting the airport can be escorted into and out of aircraft movement and parking areas.

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

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

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

- Hold periodic meetings with the airport community.

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

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

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

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

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

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

Perimeter Fencing

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

- Gives notice of the legal boundary of the outermost limits of a facility or security-sensitive area.
- Assists in controlling and screening authorized entries into a secured area by deterring entry elsewhere along the boundary.
- Supports surveillance, detection, assessment, and other security functions by providing a zone for installing intrusion-detection equipment and closed-circuit television (CCTV).
- Deters casual intruders from penetrating a secured area by presenting a barrier that requires an overt action to enter.
- Demonstrates the intent of an intruder by their overt action of gaining entry.
- Causes a delay to obtain access to a facility, thereby increasing the possibility of detection.
- Creates a psychological deterrent.
- Optimizes the use of security personnel while enhancing the capabilities for detection and apprehension of unauthorized individuals.
- Demonstrates a corporate concern for facility security.
- Provides a cost-effective method of protecting facilities.
- Limits inadvertent access to the aircraft operations area by wildlife.

Perimeter fencing has recently been upgraded to 6-foot chainlink adjacent to public roads, airport facilities, and apron/hangar access gates. An automated gate is located south of the terminal building between the restaurant and the TAT hangar.

Airport Maintenance Building

Presently, the airport has a 2,025 square-foot maintenance/storage facility located south of the TAT hangar. This facility houses a limited amount of maintenance equipment with larger equipment stored off airport property. Maintenance operations are conducted by City of Winslow employees. It has been indicated by City staff that this

maintenance facility is adequate for the airport's maintenance needs.

Aircraft Wash Facility

Presently, there is not a designated aircraft wash facility on the airport. Consideration should be given to establishing an aircraft wash facility at the airport to collect aircraft cleaning fluids used during the cleaning process. Potential locations for this wash facility will be presented in the alternatives analysis.

Aviation Fuel Storage

The City of Winslow owns two 20,000-gallon above ground storage tanks and leases them to the airport's fixed base operator (FBO). Forecast operational growth and based aircraft is not anticipated to significantly impact fuel storage requirements. As the storage tanks age it may become necessary to consider replacing the existing storage tanks with underground tanks.

Utilities

Utilities available at the airport include: water, sanitary sewer, and electricity. These utilities presently serve all occupied landside facilities. Utility extensions to new facilities including hangar development areas will be needed through the planning period.

Off-Airport Access

The airport has a single public access point southeast of the terminal area at the intersection of Airport Road with Highway 87/99. Airport Road is a two-lane paved roadway serving all landside facilities. Barrigan Road is a two-lane paved connector road that intersects with Airport Road providing access to the terminal, restaurant, and TAT hangar. It is not anticipated that airport automobile traffic will increase substantially through the planning period. Airport Road and Barrigan Road are in good condition and should be maintained through the planning period.

On-Airport Access

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

Service roads are typically used to segregate vehicles from the aircraft op-

erational areas. The alternatives analysis will examine options for a service road extending around the runway and airport perimeter for airport maintenance and emergency service vehicles.

SUMMARY

The intent of this chapter has been to outline the facilities required to meet aviation demands projected for Winslow-Lindbergh Regional Airport through the long term planning horizon. A summary of the airfield, and general aviation facility requirements are presented on **Exhibit 3D** and **3E**.

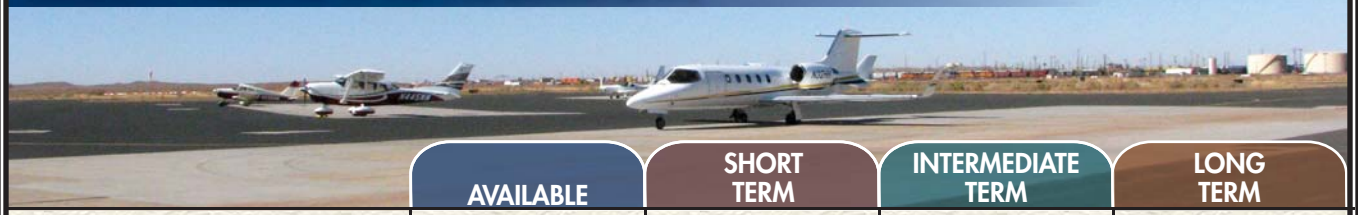
Following the facility requirements determination, the next step is to develop a direction for development to best meet these projected needs. The remainder of the Master Plan will be devoted to outlining this direction, its schedule, and its costs.

08MP06-3D-9/23/09

	EXISTING	SHORT	LONG
RUNWAYS 	**Runway 4-22** 7,499' X 150' Airport Reference Code B-I 50,000#SWL 80,000#DWL 125,000# DTL **Runway 11-29** 7,099' X 150' Airport Reference Code B-I 60,000#SWL 70,000#DWL 110,000# DTL	**Runway 4-22** 7,499' X 150' Airport Reference Code B-I 50,000#SWL 80,000#DWL 125,000# DTL **Runway 11-29** 7,099' X 150' Airport Reference Code B-I 60,000#SWL 70,000#DWL 110,000# DTL	**Runway 4-22** 9,000 X 150' Airport Reference Code C-III 50,000#SWL 80,000#DWL 125,000# DTL **Runway 11-29** 7,099' X 150' Airport Reference Code C-III 60,000#SWL 70,000#DWL 110,000# DTL
TAXIWAYS 	**Taxiway A** 50' Wide 5 Exits 330' Runway Separation Distance **Taxiway B** 50' Wide 5 Exits 330' Runway Separation Distance	**Taxiway A** 50' Wide 5 Exits 330' Runway Separation Distance Holding Aprons **Taxiway B** 50' Wide 5 Exits 330' Runway Separation Distance Holding Aprons	**Taxiway A** 50' Wide 5 Exits 400' Runway Separation Distance Holding Aprons **Taxiway B** 50' Wide 5 Exits 400' Runway Separation Distance Holding Aprons
NAVIGATIONAL AIDS 	Automated Surface Observation System Lighted Wind Indicator Segmented Circle **Runway 4-22** None **Runway 11-29** VOR or GPS Non-Precision Instrument Approach	Automated Surface Observation System Lighted Wind Indicator Segmented Circle **Runway 4-22** GPS - Approach with Vertical Guidance **Runway 11-29** GPS - Approach with Vertical Guidance	Automated Surface Observation System Lighted Wind Indicator Segmented Circle **Runway 4-22** GPS - Approach with Vertical Guidance **Runway 11-29** GPS - Approach with Vertical Guidance
LIGHTING and MARKING 	Airport Beacon Basic Taxiway Marking Medium Intensity Taxiway Lights **Runway 4-22** Visual Approach Slope Indicator-4 (22) Non-Precision Markings Runway End Identifier Lights (22) Medium Intensity Runway Lights **Runway 11-29** Visual Approach Slope Indicator (4) Basic Markings Runway End Identifier Lights (11) Medium Intensity Runway Lights Distance Remaining Signage	Airport Beacon Basic Taxiway Marking Medium Intensity Taxiway Lights **Runway 4-22** Precision Approach Path Indicator-4 Non-Precision Markings Runway End Identifier Lights Medium Intensity Runway Lights Distance Remaining Signage **Runway 11-29** Precision Approach Path Indicator-4 Non-Precision Markings Runway End Identifier Lights Medium Intensity Runway Lights Distance Remaining Signage	Airport Beacon Basic Taxiway Marking Medium Intensity Taxiway Lights **Runway 4-22** Precision Approach Path Indicator-4 Non-Precision Markings Runway End Identifier Lights Medium Intensity Runway Lights Distance Remaining Signage **Runway 11-29** Precision Approach Path Indicator-4 Non-Precision Markings Runway End Identifier Lights Medium Intensity Runway Lights Distance Remaining Signage

Exhibit 3D
AIRFIELD REQUIREMENTS

AIRCRAFT PARKING APRON REQUIREMENTS



	AVAILABLE	SHORT TERM	INTERMEDIATE TERM	LONG TERM
Transient Ramp Positions		13	14	16
Local Ramp Positions		2	2	2
Total Ramp Positions	**65**	**15**	**16**	**18**
Apron Area (s.y.)	35,800	7,000	7,550	8,750
U.S. Forest Service Positions	3	4	5	6
U.S. Forest Service Apron (s.y.)	15,750	19,083	22,416	25,750

HANGAR REQUIREMENTS

Hangar Positions				
T-Hangars	0	0	2	4
Box/Conventional Hangars	14	13	13	15
Total Aircraft to be Hangared	**12**	**13**	**15**	**19**
Hangar Area Requirements				
T-Hangars (s.f.)	0	0	2,400	4,800
Box/Conventional (s.f.)	45,300	20,500	20,500	25,500
Service Hangar Area (s.f.)	0	2,625	2,975	3,675
Total Hangar Area (s.f.)	**45,300**	**23,125**	**25,875**	**33,975**

GENERAL AVIATION TERMINAL FACILITIES

Terminal Building (s.f.)	2,100	1,600	1,675	1,800
Parking Spaces	25	37	39	43

OTHER FACILITIES

Maintenance Facility	Maintenance Facility	Maintenance Facility	Maintenance Facility
20,000 Gallon 100LL Fuel Storage	20,000 Gallon 100LL Fuel Storage	20,000 Gallon 100LL Fuel Storage	20,000 Gallon 100LL Fuel Storage
20,000 Gallon Jet Fuel Storage	20,000 Gallon Jet Fuel Storage	20,000 Gallon Jet Fuel Storage	20,000 Gallon Jet Fuel Storage
		Helicopter Parking Spaces	Helicopter Parking Spaces
			Aircraft Wash Rack

Exhibit 3E
LANDSIDE FACILITY
REQUIREMENTS

Chapter Four

AIRPORT DEVELOPMENT ALTERNATIVES

Airport Development Alternatives

Prior to formulating a development program for Winslow-Lindbergh Regional Airport, it is important to consider development potential and constraints at the airport. The purpose of this chapter is to consider the actual physical facilities which are needed to accommodate projected demand and meet the program requirements as previously defined in Chapter Three, Aviation Facility Requirements.

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

Any development proposed by a master plan evolves from an analysis of projected needs. Though the needs were determined by the best methodology available, it cannot be assumed that future events will not change these needs. Therefore, to ensure flexibility in planning and development to respond to unforeseen needs, the landside alternatives consider the maximum development potential of airport property.

The alternatives presented in this chapter have been developed to meet

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

REVIEW OF PREVIOUS PLANNING DOCUMENTS

The most recent planning document prepared for Winslow-Lindbergh Regional Airport was the *Winslow-Lindbergh Regional Airport Comprehensive Master Plan* completed in 1998. The master plan study recommended the continued development of the existing airport into the long-term horizon.

Recommended airfield developments were based on meeting ultimate airport reference code (ARC) C-III design standards. This included an extension of Runway 11-29 to an ultimate length of 8,698 feet, the strengthening of both runways, and widening the taxiway system to 50 feet. Landside recommendations included the construction of a commuter airline terminal building to accommodate potential commuter airline services, the expansion of automobile parking lot capacity, and expansion of aircraft storage hangar capacity. Since the time of these recommendations, the airfield has been primarily maintained as-is. A new hangar facility was constructed on private property southeast of the terminal building.

The airport layout plan (ALP) drawing shown on **Exhibit 4A** depicts the airside and landside improvements recommended in the previous master plan.

NON-DEVELOPMENT ALTERNATIVES

Non-development alternatives include the "No Action" or "Do Nothing" alternative, transferring service to an existing airport, or developing an airport at a new location. Several previous planning efforts have also considered these alternatives. All have resulted in the same conclusion: continue to develop the existing airport site to meet the general aviation needs of the Winslow community.

NO ACTION

In analyzing and comparing the advantages and disadvantages of various development alternatives, it is important to consider the consequences of no future development at Winslow-Lindbergh Regional Airport. The "no-build" or "Do Nothing" alternative essentially considers keeping the airport in its present condition and not providing for any type of expansion or improvement to the existing facilities (other than general airfield, pavement, and terminal building maintenance projects). The primary result of this alternative, as with any growing air

08MP06-4A-4/28/09

AIRPORT LAYOUT DRAWING
WINSLOW-LINDBERGH REGIONAL AIRPORT
Winslow, Arizona

DATE OF DRAWING: SEPT 5, 2002

PLANNER: [signature] 09/05/02

ENGINEER: [signature] 09/05/02

SHEET 2 OF 11

RUNWAY DATA TABLE

	RUNWAY 11–29		RUNWAY 4–22	
	EXISTING	ULTIMATE	EXISTING	ULTIMATE
DESIGN CATEGORY (ARC)	ARC C-II (e)	ARC C-III (f)	ARC C-II (e)	ARC C-III (f)
RUNWAY DIMENSIONS (g)	7,099' X 150' (h)	8,699' X 150'	7,499' X 150'	7,499' X 150'
RUNWAY TRUE BEARING	N 60°00'24" W	N 60°00'24" W	S 58°55'08" W	S 58°55'08" W
PAVEMENT STRENGTH	60,000# SWG (a)	110,000# DWG (b)	50,000# SWG (a)	110,000# DWG (b)
RUNWAY SAFETY AREA (RSA) (g)	9,499' X 500'	10,699' X 500'	9,499' X 500'	9,499' X 500'
RSA LENGTH BEYOND RUNWAY END	1,000'	1,000'	1,000'	1,000'
OBJECT FREE AREA (OFA)	800'W X 1,000'L	800'W X 1,000'L	800'W X 1,000'L	800'W X 1,000'L
OBSTACLE FREE ZONE (OFZ)	400'W X 200'L	400'W X 200'L	400'W X 200'L	400'W X 200'L
RUNWAY LIGHTING	MIRL	MIRL	MIRL	MIRL
RUNWAY MARKING	NONPRECISION	PRECISION	NONPRECISION	NONPRECISION
EFFECTIVE GRADIENT (%)	0.41%	0.63%	0.80%	0.80%
TYPE OF APPROACH	1 MILE	<3/4 MILE	1 MILE	1 MILE
APPROACH SLOPES	11=34:1 29=34:1	11=50:1 29=34:1	4=34:1 22=34:1	4=34:1 22=34:1
MAXIMUM ELEVATION ABOVE MSL	4896.72	4925.0	4938.75	4938.75
RUNWAY NAVAIDS AND VISUAL AIDS	VASI(11/29),REIL(11)	MALSR, PAPI, DGPS	VASI (22),REIL(22)	PAPI & REIL (4/22)
FAR PART 77 CATEGORY (c)	11=NP 29=NP	11=P 29=NP	4=V 22=V	4=NP 22=NP
WIND COVERAGE (13/16 KNOT) (d)	93.48%/96.86%		97.66%/99.18%	
WIND COVERAGE (10.5 KNOT) (d)	89.93%		95.86%	

(a) SWG = SINGLE WHEEL GEAR
(b) DWG = DUAL WHEEL GEAR
(c) P=Precision(GPS) /NP=Nonprecision(VOR/GPS) /V=Visual
(d) 10.5 KNOTS = 12 MPH / 13 KNOTS = 15 MPH
(e) EXISTING CRITICAL AIRCRAFT = GULFSTREAM III
(f) ULTIMATE CRITICAL AIRCRAFT = BOEING 737–200
(g) LENGTHS ARE ROUNDED TO NEAREST FOOT
(h) TOTAL PAVEMENT LENGTH IS 7,498'

NOTE: ALL RUNWAYS AND TAXIWAYS ARE OF ASPHALTIC CONCRETE CONSTRUCTION.

MODIFICATIONS TO CURRENT FAA STANDARDS

1. EXISTING BUILDINGS IN TERMINAL AREA DO NOT COMPLY WITH CURRENT RUNWAY VISIBILITY ZONE REQUIREMENTS (AC 150/5300-13, PAR. 503, LINE OF SIGHT STANDARDS).
2. EXISTING TERMINAL BUILDING IS WITHIN THE TAXIWAY OBJECT FREE AREA (OFA) (AC 150/5300-13, PAR. 404, TAXIWAY AND TAXILANE OFA).
3. EXISTING PARALLEL TAXIWAY SEPARATIONS DO NOT COMPLY WITH CURRENT STANDARDS (AC 150/5300-13, PAR. 209, RUNWAY TO PARALLEL TAXIWAY AND TAXILANE SEPARATION).

LEGEND

EXISTING	ULTIMATE	
		PROPERTY LINE
	N.A.	LEASED AREAS
		PAVEMENT EDGES
	N.A.	PAVEMENT EDGES – ORIGINAL AIRFIELD (ABANDONED)
		BUILDING
OFZ	OFZ	RUNWAY OBJECT FREE AREA (OFA)
		RUNWAY OBSTACLE FREE ZONE (OFZ)
		RUNWAY PROTECTION ZONE (RPZ)
		AIRPORT REFERENCE POINT (ARP)
		ROTATING BEACON
		WIND CONE OR TEE
	N.A.	TREES AND BRUSH
		VISUAL APPROACH PATH INDICATOR (PAPI,VASI)
	N.A.	SWAMP (WETLANDS)
		FENCE
	N.A.	ANTENNA
	N.A.	POWER POLES
	N.A.	LIGHT POLES
RSA	RSA	RUNWAY SAFETY AREA (RSA)
895	N.A.	GROUND CONTOURS
		EASEMENTS
BRL	BRL	BUILDING RESTRICTION LINES (BRL)
RVZ	RVZ	RUNWAY VISIBILITY ZONE (RVZ)
		RUNWAY THRESHOLD AND EDGE LIGHTING

NOTE: ALL LATITUDE/LONGITUDE COORDINATES ARE NORTH AMERICAN DATUM OF 1983 (NAD83).

GRAPHIC SCALE IN FEET
0 500 1,000 1,500
1" = 500'

MAGNETIC DECLINATION
12°16.8' E (JULY, 1998)
ANNUAL RATE OF CHANGE=0.95' W
(CALCULATED WITH DEFENSE MAPPING AGENCY "GEOMAG" PROGRAM)

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

Approved conditionally 9/23/02
Subject to comments contained in our letter dated: 11/1/02
Revalidated 11/18/02
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By [signature]
Supervisor, Standards Section

APPROVED [signature]
City of Winslow
Date 9/12/02

No.	BY	DATE	CHANGE
			TERMINAL AREA MODIFIED TO REFLECT CURRENT DESIGN.
			RUNWAY 22 & 29 THRESHOLD MARKING CORRECTED
			RUNWAY END COORDINATES CORRECTED (EXISTNG RWY 22 & 29 THRESHOLDS)
1	NJP	09/05/02	EXISTING A.R.P. CORRECTED

REVISIONS

Prepared by
NICHOLAS J. PELA and ASSOCIATES
AVIATION PLANNERS
and
Gannett Fleming
ENGINEERS AND PLANNERS

Exhibit 4A
1998 WINSLOW-LINDBERGH
REGIONAL AIRPORT ALP

transportation market, would be the eventual inability of the airport to satisfy the increasing demands of the airport service area. Forecast activity growth at Winslow-Lindbergh Regional Airport is a result of economic and population growth in the local area, as well as growth within the general aviation industry as a whole. Air travel is the fastest means to cover long distances, and it provides businesses the capability to expand their markets nationally and globally. It provides tourists the means to maximize their vacation experience within the time available. It can be argued that the airlines provide the most successful form of mass transportation in the United States today.

Winslow-Lindbergh Regional Airport's role as a general aviation airport will continue to be important to the area transportation system as it serves aerial fire fighting, air ambulance, business, and recreational aviation users. The airport's forecasts and analysis indicate future needs for improvements throughout the facility. The airport's runway system will need to be upgraded to accommodate increased use by aerial fire fighting aircraft and business jet aircraft.

Following the no-build alternative would not support the private businesses that have made investments at Winslow-Lindbergh Regional Airport. As these businesses grow, the airport will need to be able to accommodate the infrastructure needs of new hangars, expanded apron areas, and automobile parking needs. Each business on the field provides jobs for local residents, interjects economic revenues into the community, and pays taxes for local government operations.

By owning and operating Winslow-Lindbergh Regional Airport, the City of Winslow is charged with the responsibility of developing aviation facilities necessary to accommodate aviation demand and to minimize operational constraints. Flexibility must be programmed into airport development to assure adequate capacity should market conditions change unexpectedly. While these objectives may not be all-inclusive, they should provide a point of reference in the alternatives evaluation process.

In essence, the no-build alternative is inconsistent with the long-term goals of the Arizona Department of Transportation (ADOT) – Aeronautics Division and the FAA, which are to enhance local and interstate commerce. This alternative, if pursued, would affect the long-term viability of the airport and its services to the local area.

TRANSFERRING AVIATION SERVICES

Transferring services to another airport, existing or new, is one that will typically be favored by many residing close to an existing airport. Relocating an airport, however, is very complex and expensive.

In addition to the major financial investment, the development of a new general aviation airport also takes a commitment of extensive land area. The location for a new site is usually undeveloped. As a result, the poten-

tial for impacts to wildlife habitat and cultural resources is higher than at an existing site, which still has development capability.

A new airport also requires the duplication of investment in airport facilities, supporting access, and infrastructure that are already available at the existing airport site. A new airport site would require the construction of an entirely new airfield, landside support facilities, as well as ground access. In addition, utilities such as water, sewer, electricity, and gas would have to be extended to a new site.

The economic realities of relocating to a new airport must also be considered. The construction of a new general aviation airport can require a financial commitment of several million dollars. Virtually the entire cost of this development is financed by taxes, rates, and charges that are being paid by air travelers and the aviation industry as a whole. While it is appropriate that the airport user pay for aviation facilities and its operation, the airport proprietor still has a duty to be fiscally responsible.

The costs associated with new airport development will continue to limit the number of new major facilities that the aviation industry and the public can absorb. Therefore, it is prudent to maximize existing public investment to meet future needs before abandoning that investment simply to duplicate it elsewhere.

The alternative of relocating services to another airport in the region has also been considered. The closest airport with similar facilities is Flagstaff Pulliam Airport (FLG) in Flagstaff, Arizona, located approximately 47 nautical miles west of Winslow-Lindbergh Regional Airport. FLG is a primary commercial service airport with scheduled airline operations as well as a mixture of general aviation activity. According to the 2008 *Arizona State Airports System Plan* (SASP) enplanement and operational activity at FLG is forecast to grow through 2030. To accommodate this growth, FLG has developed its own plan for airfield and landside development. Taking on Winslow's projected operational and based aircraft demand, in addition to the relocation of the U.S. Forest Service (USFS) aerial fire fighting operations, would tax the capabilities of FLG's plan. In addition, FLG is located a considerable distance from the Winslow-Lindbergh Regional Airport service area, which encompasses the City of Winslow and the immediate regional area. Relocating services to FLG would ultimately be a disservice to the local Winslow community.

In summary, the development of a new airport or upgrade of an existing airport to replace Winslow-Lindbergh Regional Airport would be more expensive, more time-consuming, provide less convenient service, could potentially create a direct cost burden on the local tax base, and would decrease the County's capacity to handle aviation activity. The size and magnitude of the facilities required for a full replacement of Winslow-Lindbergh Regional Airport would dictate extensive airfield, landside, and building construction, as well as infrastructure development. The distance from Win-

slow to any other airport would result in higher costs and inconvenience to existing airport users.

Given the major investment in the existing facilities at Winslow-Lindbergh Regional Airport, relocation to another location is not prudent or feasible at this time since the existing airport has the capability to accommodate future demands with far less additional capital.

AIRSIDE DEVELOPMENT CONSIDERATIONS

The purpose of this section is to identify and evaluate various airside development considerations at Winslow-Lindbergh Regional Airport to meet program requirements set forth in Chapter Three. Airfield facilities are, by nature, the focal point of an airport complex. Because of their primary role and the fact that they physically dominate airport land use, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. In particular, the runway system requires the greatest commitment of land area and defines minimum building set-back distances from the runways and object clearance standards. These criteria, depending upon the areas around the airport, must be defined first in order to ensure that the fundamental needs of the airport are met. Therefore, airside requirements will be considered prior to detailing land use development alternatives.

The issues to be considered in this analysis are summarized on **Exhibit 4B**. These issues are the result of the findings of the Aviation Demand Forecasts and Aviation Facility Requirements evaluations, and they include input from the PAC and City of Winslow staff.

AIRPORT REFERENCE CODE (ARC) DESIGNATION

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

It was determined in Chapter Three, Facility Requirements, that Winslow-Lindbergh Regional Airport is currently designed to ARC B-I standards. The USFS currently operates the Lockheed P-3 Orion aerial fire fighting aircraft at the airport and plans to continue the use of this aircraft into the future. The P-3 Orion is an ARC C-III aircraft and is considered the ultimate design aircraft for the airport, which means that it is anticipated to be the most demanding aircraft to operate at the airport on a regular basis. Therefore, airfield facilities at Winslow-Lindbergh Regional Airport

should be planned to ARC C-III design standards.

One of the most notable effects of upgrading to ARC C-III design standards is that the runway safety area (RSA) and object free area (OFA) will widen and extend 1,000 feet beyond the runway end. Having this extra length and width will make operations safer for aircraft with faster landing and takeoff speeds and larger wingspans. In addition, the runway-to-parallel taxiway separation distance standard is increased to 400 feet. Each airfield development alternative will address options for the incorporation of ARC C-III design standards.

RUNWAY LENGTH

The facility requirements indicated a runway length of 6,500 feet would accommodate 100 percent of small aircraft. The vast majority of operations at Winslow-Lindbergh Regional Airport are anticipated to be conducted by small aircraft through the planning period. Therefore, the existing runway lengths are adequate to meet this type of demand.

The USFS operational aircraft (P-3 Orion) is capable of operating on the existing runway system; however, due to the aircraft's refusal speed, existing runway lengths expose the aircraft to a potentially dangerous safety issue (this issue was discussed in detail in the Runway Length section of Chapter 3). To maximize safety for the operation of the P-3 Orion a runway length of 9,000 feet is required. Since Runway 4-22 was determined to have the best wind coverage of the two runways, it was recommended that it be extended to 9,000 feet.

Due to the location of residential structures and railroad tracks northeast of the airfield, an extension in that direction is considered impractical. Therefore, a southwesterly extension to Runway 4-22 will be examined during the airfield alternatives analysis. Runway 11-29's current length of 7,099 feet should be adequate through the planning period.

RUNWAY VISIBILITY ZONE

The runway visibility zone (RVZ) exists to ensure a clear line-of-sight between the ends of intersecting Runways 11-29 and 4-22. Within the RVZ, terrain needs to be graded and permanent objects designed so that there is an unobstructed line-of-sight. Most of the existing landside facilities are located within this boundary and cause an obstruction to the line-of-sight. Two options are available for meeting RVZ standards. The first is to remove all existing structures within the RVZ including the terminal building and the TAT hangar and relocate them to locations outside of the RVZ. The second option is to shift the Runway 22 threshold by the removal of pavement so that the runways no longer intersect. These options will be analyzed further in the airfield development alternatives to follow.

AIRFIELD CONSIDERATIONS

- Meet ARC C-III airfield design standards
- Extend Runway 4-22 to 9,000'
- Increase runway / taxiway separation distance to 400'
- Improve instrument approach capabilities utilizing GPS technology
- Protection of runway approaches
- Meet runway visibility zone standards
- Construct airport perimeter service road

LANDSIDE CONSIDERATIONS

- Locations for aircraft storage hangar development
- Apron expansion
- Vehicle parking lot expansion
- Locations for an aircraft wash rack

Exhibit 4B
KEY PLANNING ISSUES

INSTRUMENT APPROACH

The facility requirements analysis indicated a need for improved instrument approach capabilities at Winslow-Lindbergh Regional Airport. Runway 11 is currently equipped with a VOR or GPS non-precision instrument approach, which provides only course guidance to pilots. This non-precision instrument approach is available for use in visibility conditions down to a minimum of one-mile.

It is desirable to have both course guidance and descent information at each runway end on the airport. This can be achieved with a GPS approach procedure with vertical guidance (APV) one-mile instrument approach. These approaches do not require the installation of expensive equipment that would be needed for an instrument landing system (ILS) and will meet the needs of airport users through the planning period. The GPS APV would meet the FAA recommendation that all runway ends be equipped with a GPS instrument approach. Each airfield development alternative includes the addition of GPS APV instrument approaches to each runway end.

LAND ACQUISITIONS

When considering different alternatives for airfield expansion, it is common that ultimate facilities and safety areas may extend beyond current airport property boundaries. In these cases, it is recommended that land beyond current airport property boundaries that may be needed for future projects or for the protection of runway approaches is acquired through fee simple acquisition. An alternative to fee simple acquisition is for the airport to acquire an avigation easement from the land owner to prevent incompatible development. Each airfield alternative will plan for the acquisition or easement of various land areas depending on the proposed airfield developments.

AIRPORT PERIMETER SERVICE ROAD

A paved airport perimeter service road is proposed to provide service and emergency vehicles access to all areas of the airfield. The airfield alternatives show proposed alignments for this perimeter service road, which should encompass all airfield facilities. The perimeter service road would be closed to public traffic by use of security gates, which would limit access to authorized personnel.

AIRSIDE ALTERNATIVES

AIRFIELD DEVELOPMENT ALTERNATIVE I

The proposed airside configuration of Airfield Development Alternative 1 is shown on **Exhibit 4C**. This alternative incorporates the following:

1. Extension of Runway 4-22 1,501 feet to the southwest achieving a full length of 9,000 feet.

2. Incorporation of ARC C-III design standards for Runways 4-

22 and 11-29. This includes the increase of the runway/parallel taxiway separation distance to 400 feet. All taxiways are planned for a width of 50 feet. Runway protection zones (RPZs) for each runway end increase in size by approximately 16 acres.

This airfield development alternative maintains the Runway 22 threshold in its current location. As a result, the runway's approach and departure RPZs continue to encompass residential dwellings and other facilities beyond airport property. To mitigate these incompatible land uses to the greatest extent possible, the alternative calls for the acquisition of approximately 14 acres of land encompassed by the RSA and the OFA northeast of the Runway 22 end. All structures within this area would need to be removed to comply with FAA design standards. An additional 25 acres of land encompassed primarily by the RPZ is planned for easement acquisition. These acquisitions are designed to protect the approach and departure surfaces of the runway to maximize the safety of operations.

The southwesterly 1,501-foot extension to Runway 4-22 will require the acquisition of approximately 75 acres of land. This will facilitate the extension of the runway, Taxiway B, the protection of land encompassed by the RPZ, OFA, and RSA, and the construction of an airport perimeter service road.

The parallel taxiways for both runways are planned to be relocated 400 feet from the runway centerline at a width of 50 feet meeting ARC C-III design standards. Existing taxiway pavement will be removed and some existing apron will be displaced by the larger separation distance. Holding aprons are proposed at the end of each runway. These holding aprons will help reduce taxiway congestion, while providing a location for pre-flight engine run-ups.

This alternative proposes maintaining the intersection of Runways 4-22 and 11-29. As a result, the RVZ will be in effect. Maintaining the RVZ will result in the removal of all permanent objects and structures protruding higher than five feet above the runway centerline. This includes the terminal building and the TAT hangar as well as several other landside facilities. In addition, aircraft will not be able to park on the existing aprons. Each of these landside facilities will need to be relocated outside the RVZ. The relocation of these landside facilities will be more closely analyzed in the landside development alternative section.

An additional 59 acres of land is proposed for acquisition to protect the Runway 11-29 RPZs and safety areas. The increased safety areas result in Airport Road penetrating into the ultimate RSA and OFA. Therefore, Airport Road is proposed to be realigned so that it avoids penetrating these safety areas and the RPZs. This alternative proposes a total of approximately 173 acres of land for either acquisition or easement.

Overall, Airfield Development Alternative 1 meets ARC C-III design standards on both runways and provides appropriate runway length on Runway 4-22 for the safe operation of the ulti-

08MP06-4C-9/23/09

Acquire 14 acres

Coopertown Rd.

Acquire 14 acres
Structures to
be removed

Easement
25 acres

Runway 11-29 (7,099' x 150')

50'

Taxiway A

Abandoned Runway

25' BRL

Acquire 45 acres

Central St.

35' BRL

400'

50'

Barrigan Rd.

Airport Perimeter
Service Road

Ultimate (9,000'x 150')

Airport Rd.

Runway 4-22 (7,499' x 150')

400'

Taxiway B

Realigned Airport Road

Highway 87/99

Acquire 75 acres

1,501 Extension

50'

Approach RPZ

Departure RPZ

LEGEND

- Airport Property Line
- Ultimate Property Line
- New Pavement
- Pavement to be Removed
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Building Restriction Line (BRL)
- Property to be Acquired
- Ultimate Easement
- Runway Visibility Zone

Note: All permanent objects protruding higher than 5 feet above the runway centerline within the RVZ must be removed.

0 1000 2000

SCALE IN FEET

NORTH

DATE OF PHOTO: 10/20/08

Exhibit 4C
AIRFIELD DEVELOPMENT
ALTERNATIVE 1

mate design aircraft (P-3 Orion). However, it is a less desirable alternative due to the need to acquire lands beyond airport property currently occupied by residential dwellings. The removal of the existing dwellings and the relocation of the residents of the dwellings can be very costly and has the potential to disturb the community. In addition, the location of the RVZ will result in the removal of essentially all landside facilities, including historical buildings such as the terminal building and the TAT hangar which date back to the origin of the airport. The removal and resulting reconstruction of these structures and aprons within the RVZ will be very costly and time-consuming.

AIRFIELD DEVELOPMENT ALTERNATIVE 2

The proposed airside configuration of Airfield Development Alternative 2 is shown in **Exhibit 4D**. The following projects proposed in Airfield Development Alternative 2 differ from Airfield Development Alternative 1:

1. Runway 4-22 is planned to be extended by 2,763 feet to achieve an ultimate length of 9,000 feet. This extension includes the shifting of 1,262 feet of runway pavement beyond the Runway 22 threshold. The 1,262 feet of pavement is planned to be removed so that the runways will no longer intersect, eliminating the need for an RVZ.

2. Runway 4-22 is planned to meet ARC C-III design standards. This includes increasing the runway/parallel taxiway separation distance to 400 feet and widening to 50 feet.

3. Runway 11-29 is planned to maintain currently met ARC B-I design standards. These design standards will allow for the safe operation of the majority of aircraft users at the airport through the planning period.

The elimination of runway pavement at the Runway 22 end will shift the RSA, OFA, and RPZ to the southwest. As a result, approximately seven acres of easement would be needed for land encompassed by the RPZ for the protection of the runway approach. To accommodate the runway extension, 96 acres of property are proposed for acquisition.

Runway 11-29 is planned to maintain ARC B-I design standards in this airfield development alternative. This will allow Taxiway A to be maintained at its current runway/taxiway separation distance and will avoid the need to relocate the terminal building and other landside facilities that would need to be relocated under ARC C-III design standards. Maintaining ARC B-I design standards will reduce the amount of land beyond airport property encompassed by RPZs. Approximately 21 acres are proposed for acquisition at the southeast end and three acres are proposed for easement at the northwest end to protect the

approaches into Runway 11-29. The total amount of non-airport owned land affected by this alternative totals approximately 127 acres.

Airfield Development Alternative 2 satisfies each of the airfield considerations. Advantages of this alternative are that it eliminates the RVZ, which will allow existing landside facilities to be maintained in their current location. The amount of non-airport owned property is significantly smaller from Airfield Development Alternative 1. A disadvantage of this alternative is that a significant portion of the Runway 22 RPZ will still encompass non-compatible land uses, which results in serious safety concerns.

AIRFIELD DEVELOPMENT ALTERNATIVE 3

The proposed airside configuration of Airfield Development Alternative 3 is shown in **Exhibit 4E**. The following projects proposed in Airfield Development Alternative 3 differ from the previous airfield alternatives:

1. Construction of a 3,301-foot extension of Runway 4-22 achieving an ultimate length of 9,000 feet. This extension includes shifting 1,800 feet of pavement from the northeast end to allow for the Runway 22 RPZ to lie within airport property.

A disadvantage of Airfield Development Alternative 2 was that the Runway 22 RPZ would extend beyond airport property and encompass incompatible land uses. Airfield Development Alternative 3 proposes shifting the Runway 22 threshold to the southwest, removing approximately 1,800 feet of pavement to eliminate these incompatible land uses from the RPZ. The elimination of runway pavement would again eliminate the need for an RVZ.

As a result of shifting the Runway 22 threshold, a greater extension will be needed on the Runway 4 end. The 3,301-foot extension would require the acquisition of approximately 128 acres. As in the previous airfield development alternative, Runway 4-22 is designed to ARC C-III design standards and Runway 11-29 is designed to ARC B-I design standards. Total non-airport owned land affected by this alternative totals approximately 152 acres.

The distinct advantage of this airfield alternative is that it removes the Runway 22 RPZ from encompassing non-compatible land uses. As a result, it would not be necessary to acquire land or easements for the residential area beyond the Runway 22 threshold.

Airfield Development Alternative 3 proposes setting aside airport land adjacent to the abandoned runway for an aircraft storage area. Aircraft storage areas, commonly referred to as "bone yards," are common in the State of Arizona. Due to the dry conditions typical of a desert-like environment, aircraft are typically better preserved than at other locations in the country. It is desirable to attract businesses that provide aircraft storage services to generate revenue for the airport sponsor through the leasing of airport

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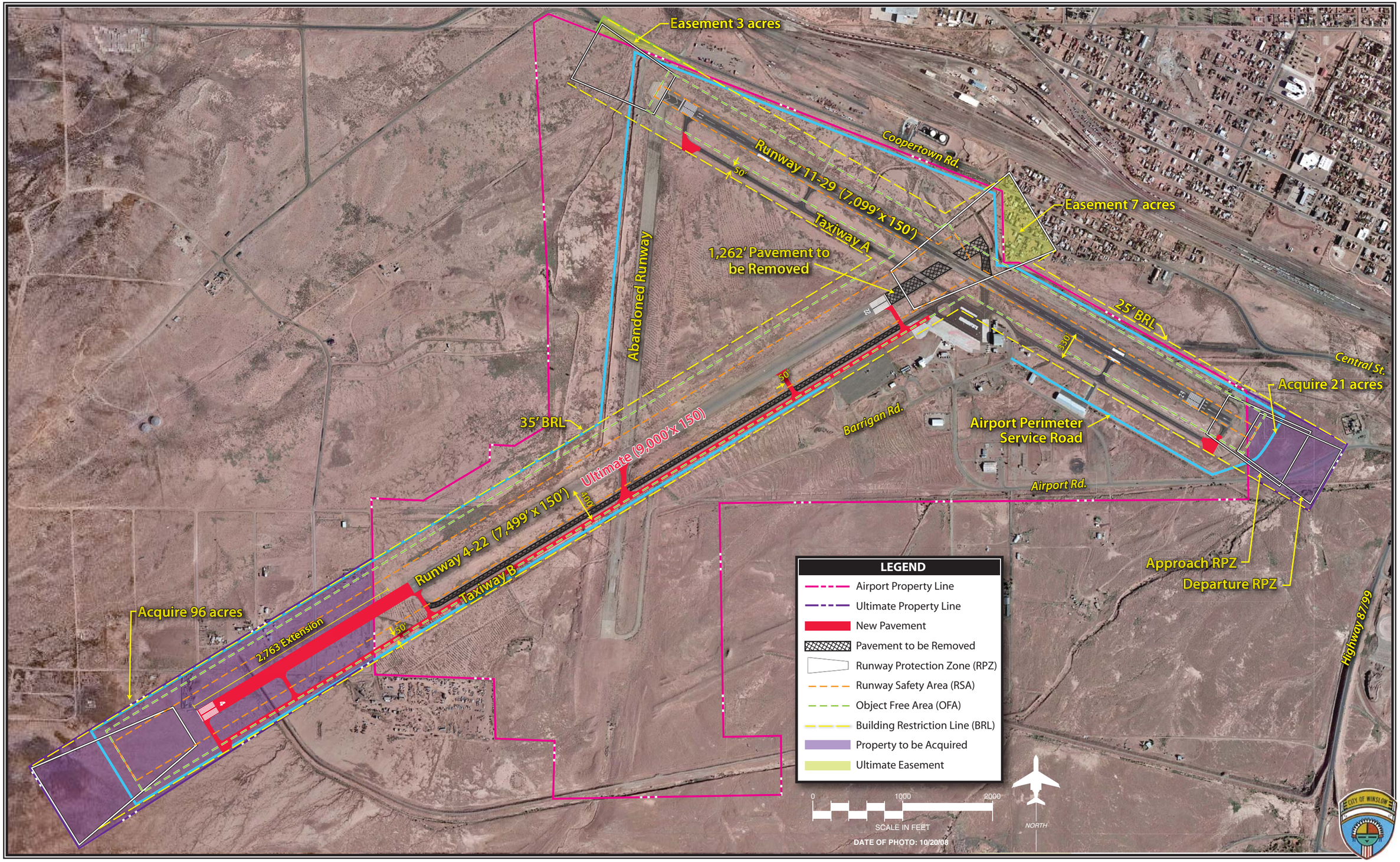

Exhibit 4D
AIRFIELD DEVELOPMENT
ALTERNATIVE 2

08MP06-4E-9/23/09

Easement 3 acres
A1
Runway 11-29 (7,099' x 150')
50'
A2
Taxiway A
Coopertown Rd.
Aircraft Storage Area
1,800' Pavement to be Removed
25' BRL
330'
A4
Central St.
Acquire 21 acres
Airport Perimeter Service Road
A5
35' BRL
Ultimate (9,000' x 150')
400'
Runway 4-22 (7,499' x 150')
Taxiway B
50'
Barrigan Rd.
Airport Rd.
Acquire 128 acres
3,301' Extension
1,000'
Approach RPZ
Departure RPZ
Highway 87/99

LEGEND

- Airport Property Line
- Ultimate Property Line
- New Pavement
- Roads/Parking
- Building
- Pavement to be Removed
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Building Restriction Line (BRL)
- Property to be Acquired
- Ultimate Easement
- Private Property
- Parcel

NORTH

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SCALE IN FEET

DATE OF PHOTO: 10/20/08

CITY OF WINSLOW

Exhibit 4E
AIRFIELD DEVELOPMENT
ALTERNATIVE 3

property. To attract aircraft storage business, the airport must have a dedicated aircraft storage area planned. This aircraft storage area consists of taxilanes designed to separation standards to accommodate up to Airplane Design Group IV aircraft with wingspans up to but not including 171 feet.

LANDSIDE DEVELOPMENT CONSIDERATIONS

The purpose of this section is to identify and evaluate various viable landside development alternatives at Winslow-Lindbergh Regional Airport to meet program requirements set forth in Chapter Three. While the airfield is comprised of facilities where aircraft movement occurs (runways, taxiways, ramps), other "landside" functions occur outside of this area. The primary functions to be accommodated on the landside of Winslow-Lindbergh Regional Airport include terminal services, aircraft storage hangar development, aircraft parking aprons, and automobile parking and access. The interrelationship of these functions is important to defining a long-range landside layout for general aviation uses at the airport. Runway frontage should be reserved for those uses with a high level of airfield interface or need of exposure. Other uses with lower levels of aircraft movements or little need for runway exposure can be planned in more isolated locations.

Landside development considerations are summarized on **Exhibit 4B**. The following sections briefly describe proposed landside facility improvements.

AIRCRAFT STORAGE HANGARS

The facility requirements analysis indicated a need for the development of various types of aircraft storage hangars. This includes single aircraft storage facilities such as T-hangars, box hangars, and clearspan conventional hangars for accommodating several aircraft simultaneously. Limited utility services are needed for these areas. Typically, this involves electricity, but may also include water and sanitary sewer.

AIRCRAFT PARKING APRON

As activity increases at Winslow-Lindbergh Regional Airport it will be increasingly important to have identified locations for aircraft parking apron expansion. It will also be important to identify areas for the growth of the USFS landside facilities. It has been indicated that the aerial fire fighting fleet at Winslow-Lindbergh Regional Airport could double over the course of the planning period. Plans must be in order to accommodate this potential growth.

AUTOMOBILE PARKING

As based aircraft and operations at Winslow-Lindbergh Regional Airport grow, automobile parking spaces will need to be increased. Existing automobile parking spaces at the airport are located adjacent to the terminal

building. Future areas of automobile parking expansion will be examined in each landside alternative. This will primarily consist of parking lots adjacent to the conventional hangar developments.

AIRCRAFT WASH RACK

Consideration is given to developing an aircraft wash/maintenance facility to provide a suitable area for the washing of aircraft. This location would provide for the proper disposal of aircraft cleaning fluids.

LANDSIDE ALTERNATIVES

LANDSIDE DEVELOPMENT ALTERNATIVE 1

The layout for Landside Development Alternative 1 is depicted on **Exhibit 4F**. This and each subsequent landside development alternative is based on its corresponding airfield development alternative (Airfield Development Alternative 1 and Landside Development Alternative 1). Landside Development Alternative 1 must take into account the removal of all permanent structures within the RVZ, essentially duplicating all existing facilities and providing for locations for on-airport tenants to relocate their facilities.

Landside development in this alternative includes the construction of a new 7,500 square foot terminal building adjacent to a large terminal apron located along Taxiway B outside of the RVZ. The apron would have locations for helicopter parking and an aircraft wash rack. Additional airport support facilities located in this area include relocated fuel storage tanks and a dedicated airport maintenance facility. The maintenance facility would serve as a storage location for materials and equipment used in regular maintenance of airfield facilities and provide office space for maintenance personnel.

Proposed hangar facilities include two 10,000 square foot conventional hangars adjacent to the terminal building. These conventional hangars could be utilized by an FBO or other specialty operator such as an aircraft maintenance business. Two 22-unit T-hangar facilities are located to the east of the terminal facility.

The USFS facilities are planned to be relocated to the proposed terminal area as well. USFS facilities include a 27,000 square yard apron and two slurry storage facilities which would allow for increased aerial fire fighting capacity. A 3,500 square foot office and personnel facility for the USFS is located at the east end of the apron.

A 7.0 acre parcel located along the flight line has been identified for the future expansion of apron and hangar facilities should demand exceed the capacity of the proposed facilities in this landside development alternative. An additional six revenue support parcels are identified to the east of the terminal area ranging in size from 0.9 acres to 3.7 acres. These parcels would serve as a location for on-airport tenants to relocate to if their existing facility is located within the RVZ. These parcels can also be used for

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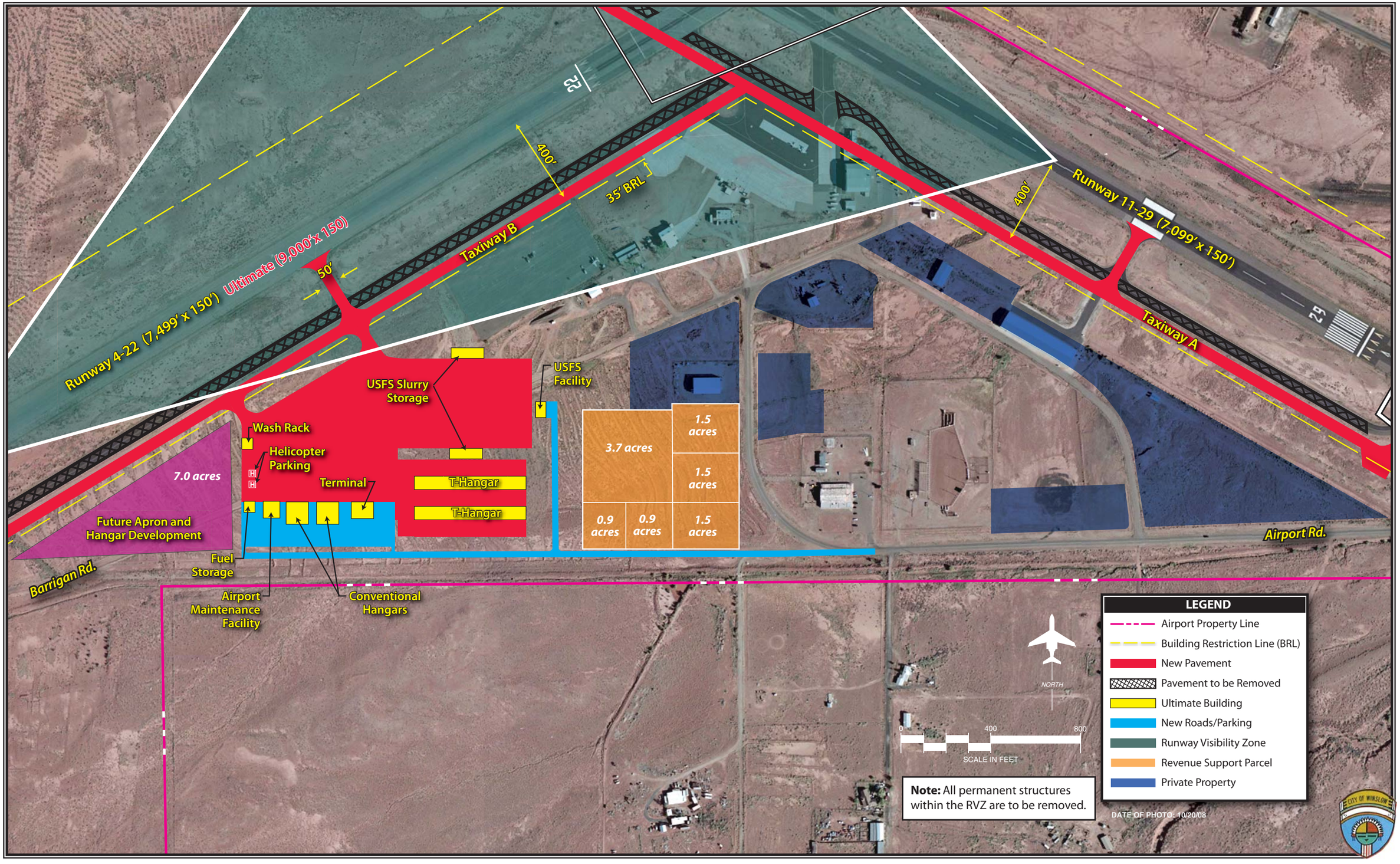

Exhibit 4F
LANDSIDE DEVELOPMENT
ALTERNATIVE 1

hangar development and other aviation-related uses. This land would be leased by the City to generate revenue at the airport.

Landside Alternative 1 provides for an additional two conventional hangar facilities and approximately 44 individual T-hangar units. Apron capacity in this alternative totals approximately 64,000 square yards. A disadvantage of this landside development alternative is that most all existing facilities will need to be duplicated outside of the RVZ resulting in large costs for the City and for airport tenants.

LANDSIDE DEVELOPMENT ALTERNATIVE 2

The layout for Landside Development Alternative 2 is depicted on **Exhibit 4G**. This landside alternative corresponds to the projects proposed in Airfield Development Alternative 2. With the elimination of the RVZ, existing landside facilities will be maintained in their current locations. The focus of this landside development alternative is to develop the flight line along Taxiway B in an efficient manner so that new facilities compliment existing facilities.

The expansion of USFS facilities in this landside alternative is planned for the immediate vicinity of existing USFS facilities. This expansion includes an additional 9,700 square yards of apron and an additional slurry storage facility. The existing south apron is proposed for the location of seven 5,625 square foot box-hangar facilities. The south apron is proposed to be expanded by approximately 31,400 square yards. This expanded apron would include helicopter parking spaces and an aircraft wash rack. Five 10-unit T-hangar facilities are planned to be located along the southeastern portion of the expanded apron. An 11.0 acre parcel is planned adjacent to the expanded south apron and T-hangar development area. This parcel is reserved for the continued expansion of the apron and hangar development.

A 1.4 acre revenue support parcel is planned adjacent to the TAT hangar and the terminal parking lot expansion area. This site currently has an abandoned structure that could be renovated or demolished. The parcel is in a prime location with apron and airfield access.

Landside Development Alternative 2 provides for an additional seven box hangars and 50 individual T-hangar units. Apron expansion in this alternative totals approximately 41,100 square yards. An advantage of this alternative is that facilities are expanded from their existing location and no duplication of facilities is needed due to the elimination of the RVZ. This alternative also provides a mixture of hangar types in prime locations along the flight line.

LANDSIDE DEVELOPMENT ALTERNATIVE 3

The layout for Landside Development Alternative 3 is depicted on **Exhibit 4H**. This landside alternative correlates to Airfield Development

Alternative 3. The primary focus of this alternative is relocating the USFS facilities to the southwest along Taxiway B to segregate the aerial fire fighting activities from the terminal area general aviation activities. In addition, non-aviation related tenants would be relocated to allow for the development of the flight line.

This landside development alternative proposes relocating several existing facilities to allow for the connection of the terminal apron and the south apron. This 12,700 square yard apron expansion would allow for helicopter parking spaces and consolidate the two general aviation aprons. An aircraft wash rack is proposed adjacent to the existing USFS apron. The Guardian Air facility is planned to be maintained on this apron on a 0.6 acre parcel. An additional 1.4 acre revenue support parcel is proposed on the site of an abandoned building.

Four 17-unit T-hangar facilities are planned at the southeast end of this apron area. A 23.6 acre parcel southeast of the T-hangars is reserved for future apron and hangar development. This parcel includes the acquisition of approximately 4.3 acres of private property. Several revenue support parcels ranging in size from 0.9 acres to 2.1 acres are located in the vicinity to allow for displaced tenants to lease land from the City for their facilities.

The USFS facilities are proposed to be relocated southwest of the general aviation apron. Facilities include a 22,300 square yard apron, two slurry storage facilities, and a 5,000 square foot personnel facility. In this location, terminal area general aviation operations can be segregated from the fire fighting operations to a greater extent. This will improve the overall safety of operations at the airport.

Landside Development Alternative 3 provides for an additional 68 individual T-hangar units and apron expansion totals approximately 35,000 square yards. An advantage to this alternative is it results in the segregation of fire fighting and general aviation activities. It also consolidates the two existing aprons, making landside circulation more efficient. In addition, non-aviation related tenants are relocated to revenue support parcels opening up prime flight line land for aviation-use development.

SUMMARY

The process utilized in assessing airside and landside development alternatives involved a detailed analysis of short and long-term requirements, as well as future growth potential. Current airport design standards were considered at each stage of development.

These alternatives present an ultimate configuration of the airport that would need to be able to be developed over a long period of time. The next phase of the Master Plan will define a reasonable phasing program to implement a preferred master plan development concept over time.

Upon review of this chapter by the City of Winslow and the PAC, a final Master Plan concept can be formed. The

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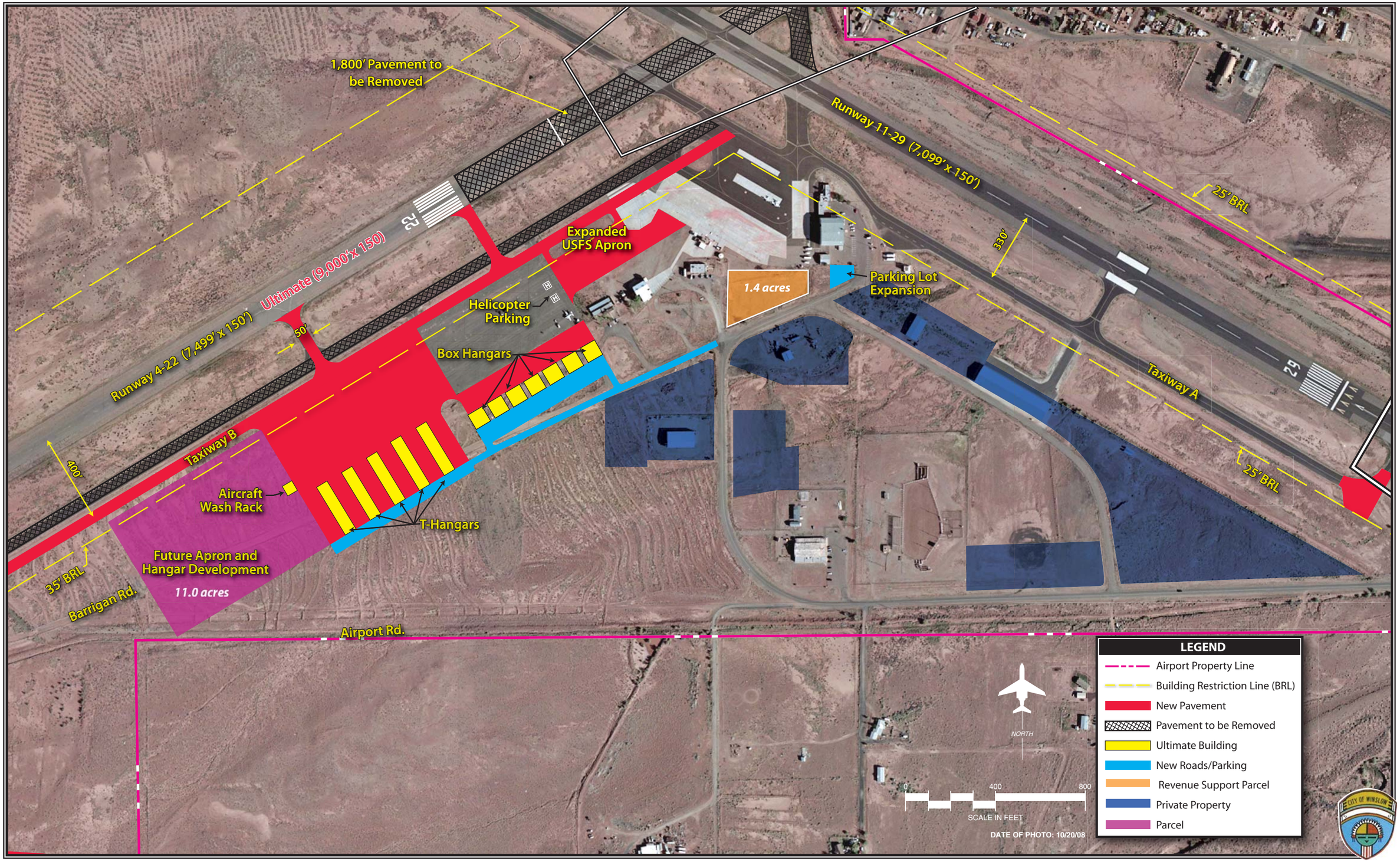

Exhibit 4G
LANDSIDE DEVELOPMENT
ALTERNATIVE 2

08MP06-4E-4/20/09

1,800' Pavement to be Removed

Helicopter Parking

Aircraft Wash Rack

0.6 acres

1.4 acres

Parking Lot Expansion

330'

Taxiway A

T-Hangars

Taxiway B

Relocated USFS Facility

400'

Acquire private property

0.9 acres

0.9 acres

0.9 acres

Future Apron and Hangar Development

23.6 acres

1.9 acres

2.1 acres

1.3 acres

USFS Slurry Storage

35' BRL

Barrigan Rd.

Airport Rd.

NORTH

0 400 800

SCALE IN FEET

DATE OF PHOTO: 10/20/08

LEGEND

- Airport Property Line
- Building Restriction Line (BRL)
- New Pavement
- Pavement/Building to be Removed
- Ultimate Building
- New Roads/Parking
- Revenue Support Parcel
- Private Property

Exhibit 4H
LANDSIDE DEVELOPMENT
ALTERNATIVE 3

resultant plan will represent an airside facility that fulfills safety and design standards, and a landside complex that can be developed as demand dictates.

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

The remaining chapters will be dedicated to refining these basic alternatives into a final development concept with recommendations to ensure proper implementation and timing for a demand-based program.

Chapter Five

AIRPORT PLANS

AIRPORT PLANS

The planning process for the Winslow-Lindbergh Regional Airport Master Plan has included several analytic efforts in the previous chapters, intended to project potential aviation demand, establish airside and landside facility needs, and evaluate options for improving the airport to meet those airside and landside facility needs. The process, thus far, has included the presentation of two draft phase reports (representing the first four chapters of the Master Plan) to the Planning Advisory Committee (PAC) and the City of Winslow. A plan for the use of Winslow-Lindbergh Regional Airport has evolved considering their input. The purpose of this chapter is to describe, in narrative and graphic form, the plan for the future use of Winslow-Lindbergh Regional Airport.

AIRFIELD PLAN

The airfield plan for Winslow-Lindbergh Regional Airport focuses on meeting Federal Aviation Administration (FAA) design and safety standards; improving Runway 4-22 and Taxiway B to accommodate the long range design aircraft, the Lockheed P-3 Orion; maintaining existing design standards on Runway 11-29 and Taxiway A; and establishing one-mile visibility global positioning system (GPS) localizer performance with vertical guidance (LPV) instrument approaches to each runway end. It also preserves the ability to lengthen primary Runway 4-22 3,301 feet to the southwest to achieve an ultimate length of 9,000 feet. **Exhibit 5A** graphically depicts the proposed airfield improvements. The following text summarizes the elements of the airfield plan.

AIRFIELD DESIGN STANDARDS

The FAA has established design criterion to define the physical dimensions of runways and taxiways and the surrounding imaginary surfaces that protect the safe operation of aircraft at the airport. FAA design standards also define the separation criteria for the placement of landside facilities. As discussed previously in Chapter Three, FAA design criteria are a function of the critical design aircraft's (the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations [take-offs and landings] per year at the airport) wingspan and approach speed, and in some cases, the runway approach visibility minimums. The FAA has established the Airport Reference Code (ARC) to relate these factors to airfield design standards.

Winslow-Lindbergh Regional Airport is currently used by a wide variety of general aviation aircraft, ranging from general aviation turboprop and occasional business jet aircraft to general aviation recreational aircraft. Aircraft within ARC A-I to ARC B-I are the primary users of the airport. ARC B-I aircraft, such as the Beechcraft King Air 100, is the most demanding, conducting more than 500 annual operations. Through the planning period of this master plan the potential exists for the U.S. Forest Service (USFS) to increase its fleet operations at Winslow-Lindbergh Regional Airport, which would result in total operations by aerial firefighting aircraft exceeding 500 annually. The most demanding aircraft used for aerial fire fighting operations is the Lockheed P-3 Orion, an ARC C-III aircraft. To safely accommodate the P-3 Orion, the primary runway (Runway 4-22) and its associated parallel taxiway (Taxiway B) will be planned to meet ARC C-III design standards. These design standards will also accommodate the growing corporate aircraft fleet in the U.S., including the Cessna Citation X and the Gulfstream IV. However, these corporate aircraft are not anticipated to exceed 500 annual operations.

Crosswind Runway 11-29 should be designed to safely accommodate the primary users of the airport. The primary users are expected to remain within ARC A-I and ARC B-I design categories. Maintaining ARC B-I design standards on Runway 11-29 and its associated parallel taxiway (Taxiway A) will be sufficient to meet this demand.

The airfield presently meets or exceeds many of the ARC B-I design standards; however, the runway protection zones (RPZs) and object free areas (OFAs) for both runways extend, in some cases greatly, beyond airport property. The runway visibility zone (RVZ), which is intended to maintain a clear line-of-sight between the intersecting runways, encompasses most of the landside facilities, including the terminal building and the TAT conventional hangar. These safety issues were the primary concern when establishing the recommended development concept. The development concept will address each safety area issue and recommend projects to ensure control of all safety areas is maintained by the airport sponsor.

Table 5A summarizes the ARC C-III airfield safety and facility dimensions to be applied to Winslow-Lindbergh Regional Airport planning and design.

08MP06-4E-7/15/10

Easement 3 acres
Conceptual Cooperstown Bypass Roadway
A1
Runway 11-29 (7,099' x 150')
50'
A2
Taxiway A
Property to be Released
Coopertown Rd.
Aircraft Storage Area
1,800' Pavement to be Removed
25' BRL
Central St.
330'
A4
Barrigan Rd.
Acquire 21 acres
Airport Perimeter Service Road
25'
A5
35' BRL
Ultimate (9,000' x 150')
400'
Airport Rd.
Runway 4-22 (7,499' x 150')
Taxiway B
50'
Acquire 128 acres
3,301' Extension
50'
1,000'
Airport Road Realignment
Highway 87/99
Relocated Ruby Wash Diversion Levee

NORTH

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SCALE IN FEET

DATE OF PHOTO: 10/20/08

LEGEND

- Airport Property Line
- Ultimate Property Line
- New Pavement
- Ultimate Roads/Parking
- Ultimate Building
- Pavement to be Removed
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Building Restriction Line (BRL)
- Property to be Acquired
- Property to be Released
- Ultimate Easement
- Private Property
- Parcel

Exhibit 5A
AIRFIELD DEVELOPMENT
CONCEPT

TABLE 5A
Airfield Design Standards
Winslow-Lindbergh Regional Airport

Airport Reference Code (ARC)	Runway 11-29 B-I (ft.)	Runway 4-22 C-III (ft.)
Runway Safety Area		
Width	120	500
Length Beyond End	240	1,000
Runway Object Free Area		
Width	400	800
Length Beyond End	240	1,000
Runway Blast Pad		
Width	80	140
Length	100	200
Runway Centerline to:		
Holding Position	250	250
Parallel Taxiway	230	400
Taxiway Width	50 (25 Standard)	50
Taxiway Centerline to:		
Fixed or Moveable Object	44.5	93
Parallel Taxilane	69	152
Taxilane Centerline to:		
Fixed or Moveable Object	39.5	81
Parallel Taxilane	64	140
Runway Protection Zones - One mile or greater visibility		
Inner Width	500	500
Length	1,000	1,700
Outer Width	700	1,010

AIRFIELD DEVELOPMENT

The components of the planned airfield development are summarized below.

- **Acquire lands for runway approach protection and future airport expansion.**

As it was stated earlier in this chapter, existing airport safety areas including the OFA and the RPZs for both runways extend beyond airport property and are uncontrolled by the airport. The Runway 22 RPZ overlies a significant portion of a residential neighborhood northeast of the airport. This is a safety concern and should be a top priority for correction. Relocating the Runway 4-22 safety areas so that they do not extend beyond airport property will be accomplished by closing an 1,800-foot section of pavement on the Runway 22 end and extending the Runway 4 end to the southwest. This will shift the Runway 22 RPZ and the OFA to the southwest onto existing airport property. Extending the runway to the southwest to meet the ultimate runway length of 9,000 feet and ensuring the airport controls the safety areas will require the acquisition of approximately 128 acres. The Runway 29 runway safety area (RSA), OFA, and RPZ extend beyond airport property to the southeast. An acquisition of approximately 21 acres of property is required to ensure these safety areas are controlled by the airport.

The Runway 11 RPZ extends off airport property, however only very slightly. An avigation easement of approximately three acres will be sufficient to ensure the protection of the Runway 11 approach. The land area beyond airport property planned for acquisition or avigation easement to protect runway approaches and to allow for future airport expansion totals approximately 152 acres.

- **Maintain Airport Reference Code (ARC) C-III design standards on Runway 4-22.**

The potential exists in the future for the USFS to increase its fire fighting operations at Winslow-Lindbergh Regional Airport by the most demanding aircraft in its fleet, the Lockheed P-3 Orion. If this should occur, Runway 4-22 will need to be designed to ensure the safe operation of this aircraft. The upgrade from ARC B-I design standards to ARC C-III design standards includes the relocation of Taxiway B from a runway/taxiway separation distance of 330 feet to 400 feet and the expansion of the safety areas including the RSA, OFA and RPZ. The changes in design standards are shown on **Table 5A**.

- **The extension of Runway 4-22 to 9,000 feet.**

The master plan development concept includes extending Runway 4-22 3,301 feet to the southwest to achieve a runway length of 9,000 feet. An 1,800-foot portion of this extension makes up for the 1,800 feet of pavement planned for removal from the Runway 22 end to shift the safety areas onto airport property. As a result of the removal of this runway pavement, Runways 4-22 and 11-29 will no longer intersect, eliminating the RVZ. The full 9,000-foot runway length will allow the Lockheed P-3 Orion to operate at Winslow-Lindbergh Regional Airport more safely.

The proposed extension to Runway 4-22 is included in this Master Plan for planning purposes only. This is to aid in local land use planning to ensure that appropriate land use measures are put into place to allow for this extension in the future if it is needed. By planning for a runway extension, the City and County can take appropriate measures to ensure there are no hazards or obstacle penetrations to the 14 Code of Federal Regulations (CFR) Part 77 airspace in the future that could prevent the extension, and to allow for compatible land use to be planned in the extended runway approach/departure area. Detailed justification for constructing the runway extension will be required with the environmental assessment and benefit-cost analysis. This justification will require letters of support from users detailing 500 annual operations by the critical aircraft requiring the additional runway length.

- **Removal of the Runway 29 displaced threshold.**

The Runway 29 threshold is currently displaced 385 feet, limiting the landing distance available to 6,714 feet. Analysis shows that if the threshold were removed, no objects would pene-

trate Part 77 surfaces, allowing for the full runway pavement length of 7,099 feet to be used for landing operations. Also, with the acquisition of property off the end of the runway, the RSA, OFA, and OFZ would be contained within airport property if the displaced threshold were removed. Therefore, the master plan recommends eliminating the displaced threshold on Runway 29.

- **Establishing LPV non-precision instrument approaches to each runway end.**

The airfield plan reserves the potential for the FAA to establish localizer performance with vertical guidance (LPV) one-mile visibility non-precision instrument approaches to each runway end. The implementation of the LPV instrument approach would not require the installation of expensive equipment and would provide near-precision minimums. The LPV utilizes the GPS wide area augmentation system (WAAS), which underwent an expansion completed in 2008.

- **Upgrade visual approach lighting to PAPI-4s.**

Runways 11, 29, and 22 are currently equipped with visual approach slope indicator (VASI-4) lighting systems. To provide pilots with more accurate approach slope indications, precision approach path indicator (PAPI-4) lighting systems are planned to be installed at each runway end.

- **Holding apron construction.**

Piston-powered aircraft must complete a series of engine run-up tests before departure. Holding aprons at the runway ends allow these activities to take place off the active taxiway surface, allowing ready-for-departure aircraft to bypass those aircraft holding or completing engine run-up tests. Holding aprons are planned at the end of both Taxiway A and Taxiway B.

- **Distance Remaining Signage.**

Distance remaining signage is installed along runways to notify pilots of the distance from their position to the runway end. This signage is installed at 1,000-foot increments to improve safety of operations. This signage system is presently installed on Runway 11-29 and is planned to be installed on Runway 4-22.

- **Coopertown Bypass Roadway**

The City of Winslow is considering constructing a bypass roadway for the Coopertown community located immediately northeast of the airport. This bypass roadway would eliminate heavy semi-truck traffic from passing through the Coopertown community. The conceptual location for this roadway is depicted on **Exhibit 5A**.

If the bypass roadway were to be constructed in this conceptual location, it would encroach upon approximately 4.4 acres of airport property. The 4.4

acres, located immediately northeast of the ultimate Runway 22 RPZ, would not be a prime location for hangar or other aviation related developments. Therefore it is planned to be released from airport use or swapped for property southwest of the airport needed for the extension of Runway 4-22. In either case, coordination with the FAA will be necessary to ensure the proper course of action is pursued.

The conceptual Coopertown Bypass Roadway also penetrates the Runway 11-29 Part 77 Primary Surface by approximately 50 feet. Currently, Runway 11 is equipped with a published non-precision instrument approach with minimums down to one-mile visibility. The recommended Master Plan development concept plans for one-mile GPS LPV approaches to each end of both runways. Since Runway 4-22 is the primary runway, it is anticipated that the impact to the Runway 11-29 primary surface by the Coopertown Bypass Roadway will have a minimal impact on the long term instrument approach capabilities of the airport.

LANDSIDE PLAN

Examples of landside facilities include aircraft storage hangars, terminal buildings, aircraft parking aprons, hangar and apron access taxilanes, and vehicle parking lots. The landside plan for Winslow-Lindbergh Regional Airport has been devised to efficiently accommodate potential aviation demand and provide revenue enhancement possibilities by designating the use of certain portions of airport property for aviation-related uses.

The development of landside facilities will be demand-based. In this manner, the facilities will only be constructed if required by verifiable demand. For example, T-hangars will only be constructed if an adequate number of new based aircraft owners desire enclosed aircraft storage. The landside plan is based on projected needs that can change over time and was planned with flexibility in mind to ensure the orderly development of the airport should this demand materialize.

The landside plan focuses the majority of the landside development along the Taxiway B flightline. This development plan will integrate well with existing landside facilities, while providing for the expansion of the USFS apron, expansion of the south general aviation apron, development of aircraft storage facilities and parcels, construction of an aircraft wash rack, and designated helicopter parking spaces. Landside improvements are shown in detail on **Exhibit 5B** and summarized below.

- **USFS apron expansion.**

The USFS has plans to increase the number of aircraft operating out of Winslow-Lindbergh Regional Airport in the future. When this fleet expansion occurs it will be necessary to expand the apron to accommodate these aerial firefighting aircraft. The recommended development concept includes a 9,700 square yard expansion

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1,800' Pavement to be Removed

Conceptual Cooperstown Bypass Roadway

Runway 11-29 (7,099' x 150')

25' BRL

330'

Expanded USFS Apron

Ultimate (9,000' x 150')

Runway 4-22 (7,499' x 150')

50'

Helicopter Parking

1.4 acres

Parking Lot Expansion

Barrigan Rd.

Box Hangars

Aircraft Wash Rack

Taxiway A

Airport Perimeter Service Road

Taxiway B

400'

25' BRL

T-Hangars

Future Apron and Hangar Development

11.0 acres

35' BRL

Airport Rd.

LEGEND

- Airport Property Line
- Building Restriction Line (BRL)
- New Pavement
- Pavement to be Removed
- Ultimate Building
- Ultimate Roads/Parking
- Revenue Support Parcel
- Private Property
- Parcel

NORTH

0 400 800

SCALE IN FEET

DATE OF PHOTO: 10/20/08

Exhibit 5B
LANDSIDE DEVELOPMENT CONCEPT

of the USFS apron, which would accommodate an additional three aerial firefighting aircraft.

- **Expansion of the south general aviation apron.**

The south general aviation apron is planned to be expanded by 38,733 square yards to provide additional itinerant and local aircraft parking positions. This apron expansion will also provide areas for hangar development and sites for additional fixed base operators (FBOs) or specialty operators to conduct aviation-related businesses.

An aircraft wash rack facility is planned to be constructed at the southwest end of the existing south general aviation apron. The aircraft wash rack would provide an area for aircraft cleaning and the proper collection of the aircraft cleaning solvents and contaminants removed from the aircraft hull during cleaning.

Two helicopter parking spaces are planned to be located on the existing south general aviation apron in the vicinity of the Guardian Air facility. These helicopter parking spaces will provide a location for air ambulance helicopters and other local and transient helicopters to park.

- **Aircraft storage hangar development.**

As aircraft storage hangar demand develops, the City may choose to construct hangars and lease them to private aircraft owners or it could lease land to developers for the construction of hangar facilities. The recommended landside development concept plans for the construction of seven 5,625 square foot conventional box hangars to the southeast of the existing south general aviation apron. These box hangars could be utilized for the private storage of aircraft or by aviation-related businesses. Five 10-unit T-hangar facilities are planned to the southwest of the future box hangars. T-hangar facilities provide a more economical option to aircraft owners wishing to store their aircraft in an enclosed structure. The proposed hangar facilities in this recommended development concept will expand the storage hangar area at Winslow-Lindbergh Regional Airport by more than 114,000 square feet. All proposed hangar facilities would have vehicle access via an extension of Barrigan Road and parking adjacent to each facility.

- **Revenue generating parcels.**

In addition to the hangar facilities planned, which will provide the City with revenue either from leasing land to a developer or from renting out hangar space, the plan identifies parcels to be utilized for revenue generation. An 11.0 acre parcel at the southwest end of the south general aviation apron expansion has been set aside for future expansion of the apron or hangar development. Another 1.4 acre parcel adjacent to the TAT conventional hangar is planned to be leased out to specialty operators. A portion of this parcel is already leased to NASA to provide a base for weather balloon studies. These parcels provide ample leasing area for the development of hangar facilities or other avia-

tion-related facilities, which will provide revenue to the City and boost the local economy.

In addition to these parcels, an aircraft storage area north of Runway 4-22 adjacent to the abandoned runway is planned and identified on **Exhibit 5A**. This area can be leased out by the City to an operator for the storage of aircraft that are under refurbishment. The plan shows the construction of individual taxilanes extending to the west designed to park aircraft with wingspans up to 170 feet. However, it will be the decision of the operator how to develop this area to most efficiently work for the types of aircraft planned for storage.

- **Terminal parking lot expansion.**

The terminal parking lot is planned to be expanded by 920 square yards. This expansion will increase the terminal parking lot capacity and better serve airport users as airport activity increases over time.

- **Construction of an airport perimeter service road.**

An airport perimeter road is planned to be constructed to provide vehicle access to the perimeter of the airport. This allows maintenance and emergency vehicles access around the airport without utilizing aircraft operational areas such as the runway and taxiways. This increases safety by reducing the potential for runway incursions. The road has been designed to remain clear of airport safety areas where possible. **Exhibit 5A** depicts the alignment for the airport perimeter road.

- **Airport access road realignment.**

The existing Airport Road extends through the Runway 29 RPZ. While the FAA design standards do not specifically prohibit roadways from extending through RPZs, the FAA generally desires that public roadways remain clear of RPZs. The recommended development concept realigns Airport Road so that it bends to the southeast and intersects with Highway 87/99 south of the existing intersection avoiding the Runway 29 RPZ. This realignment is depicted on **Exhibit 5A**.

ENVIRONMENTAL EVALUATION

Analysis of the potential environmental impacts of proposed airport development projects is an important component of the Airport Master Plan process. The primary purpose of this section is to evaluate the proposed development program for the Winslow-Lindbergh Regional Airport to determine whether proposed development actions could individually or collectively affect the quality of the environment.

Construction of the improvements depicted on the Airport Layout Plan will require compliance with the *National Environmental Policy Act* (NEPA) *of 1969*, as amended, to receive federal financial assistance. For projects not

"categorically excluded" under FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, compliance with NEPA is generally satisfied through the preparation of an Environmental Assessment (EA). In instances in which significant environmental impacts are expected, an Environmental Impact Statement (EIS) may be required. While this portion of the Master Plan is not designed to satisfy the NEPA requirements for a categorical exclusion, EA, or EIS, it is intended to supply a preliminary review of environmental issues that would need to be analyzed in more detail within the NEPA process. This evaluation considers all environmental categories required for the NEPA process as outlined in FAA Order 1050.1E and Order 5050.4B, *National Environmental Policy Act (NEPA) Implementation Instructions for Airport Actions.*

During the inventory process for this master plan, the existing environmental condition was researched and documented within Chapter One. This evaluation will determine if any previously identified resources could be impacted by the proposed airport development projects discussed in this chapter and depicted on **Exhibits 5A** and **5B**.

AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible short term and long term concentrations of various air contaminants. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants, which include: Ozone (O_3), Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Particulate matter (PM_{10} and $PM_{2.5}$), and Lead (Pb). Potentially significant air quality impacts, associated with an FAA project or action, would be demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed. Various levels of air quality impact review apply within both NEPA and permit requirements. According to the most recent update contained on the EPA's Greenbook website, Navajo County is currently in attainment for all criteria pollutants. An attainment area is defined as a geographical area where the levels of all criteria pollutants meet the NAAQS.

A number of projects planned at the airport could have temporary air quality impacts during construction. Emissions from the operation of construction vehicles and fugitive dust from pavement removal are common air pollutants during construction. However, with the use of best management practices (BMPs) during construction, these air quality impacts can be significantly lessened.

COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act* (CBRA), the *Coastal Zone Management Act* (CZMA), and E.O. 13089, Coral Reef Protection.

The airport is not located within a Coastal Management Zone or Coastal Barrier Area.

COMPATIBLE LAND USE

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Typically, significant impacts will occur over noise-sensitive areas within the 65 DNL noise contour.

Noise contours were prepared for the existing (2008) and the future (2028) conditions and are depicted on **Exhibit 5C** and **Exhibit 5D**. According to the existing noise contours, the 65 DNL noise contour extends beyond airport property and encompasses residential land use off the Runway 22 end. Ultimately, the airfield plan shifts the Runway 22 threshold to the southwest. This will result in the future 65 DNL noise contour remaining entirely on airport property. There are no noise-sensitive land uses located within the 65 DNL noise contour ultimately.

The proposed extension of Runway 4-22 and construction of an airport perimeter service road will require the acquisition of property as will RSA and approach protection projects for Runway 11-29. The City of Winslow Land Use Plan 2008 identifies the land southwest of the airport planned for acquisition to accommodate the runway extension as low density residential land. The land proposed for acquisition off the end of Runway 29 is identified as industrial and commercial park land use. These land use designations would be considered compatible land uses with airport operations. As shown on **Exhibit 5E**, three recreational areas are located within the vicinity of the airport. One neighborhood park is located east of the airport along the extended runway centerline of Runway 4-22, another is located southeast of the airport along the extended runway centerline of Runway 11-29, and the Winslow Rodeo Grounds are located on the southern portion of airport property.

As a part of the Master Plan process, an airport disclosure map is being created which depicts the airport influence area. This area, which encompasses land surrounding the airport, is determined by the airport traffic patterns and noise exposure contours, among other factors. This disclosure map will be filed with the State of Arizona Department of Real Estate. Any person purchasing property that is located within the boundaries of the airport influence area will be made aware of the property's proximity to the airport.

CONSTRUCTION IMPACTS

Construction impacts typically relate to the effects on specific impact categories, such as air quality or noise, during construction. The use of BMPs during construction is typically a requirement of construction-related permits such as an NPDES (AZDES) permit. Use of these measures typically alleviates potential resource impacts.

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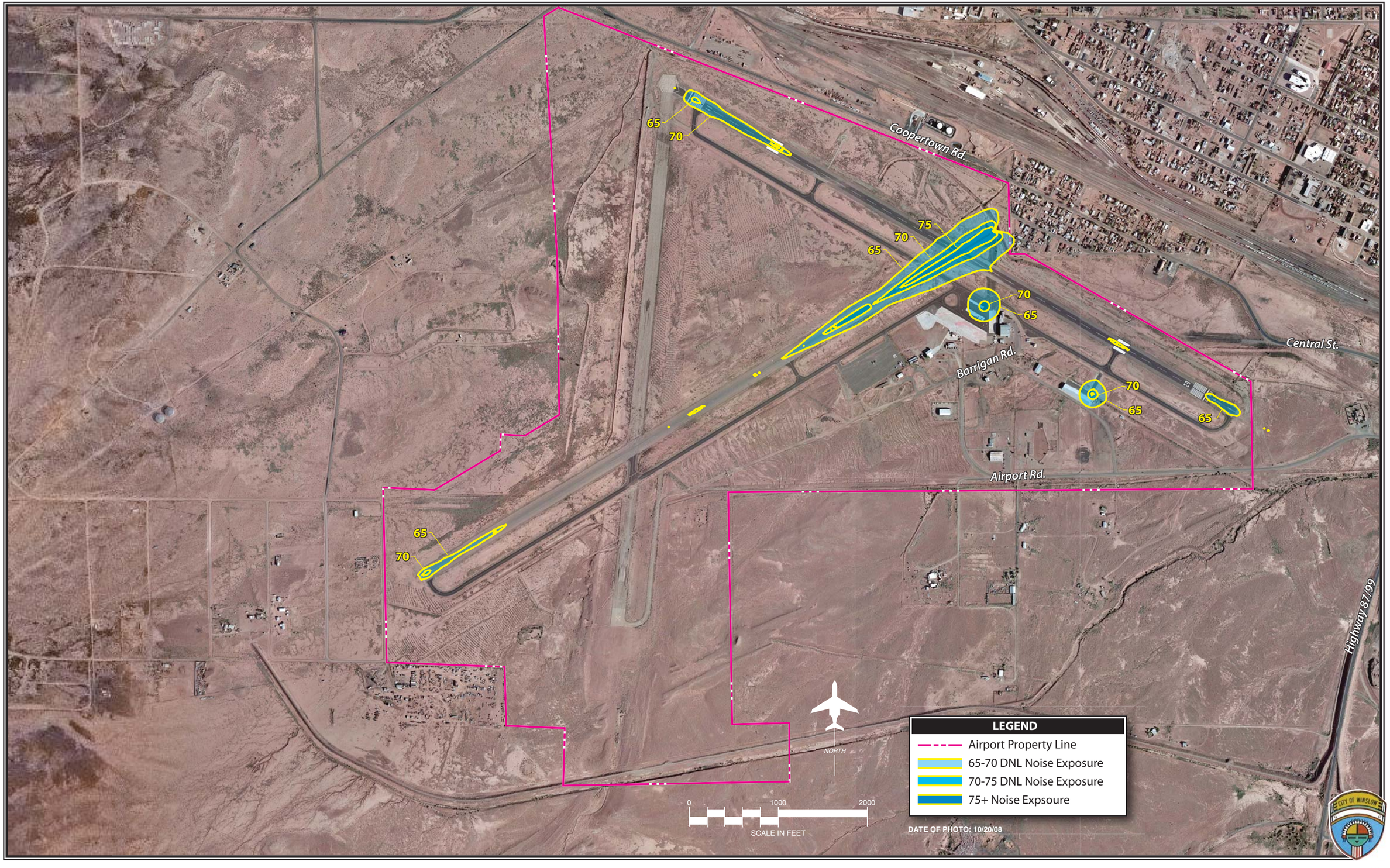

Exhibit 5C
EXISTING AIRCRAFT NOISE EXPOSURE

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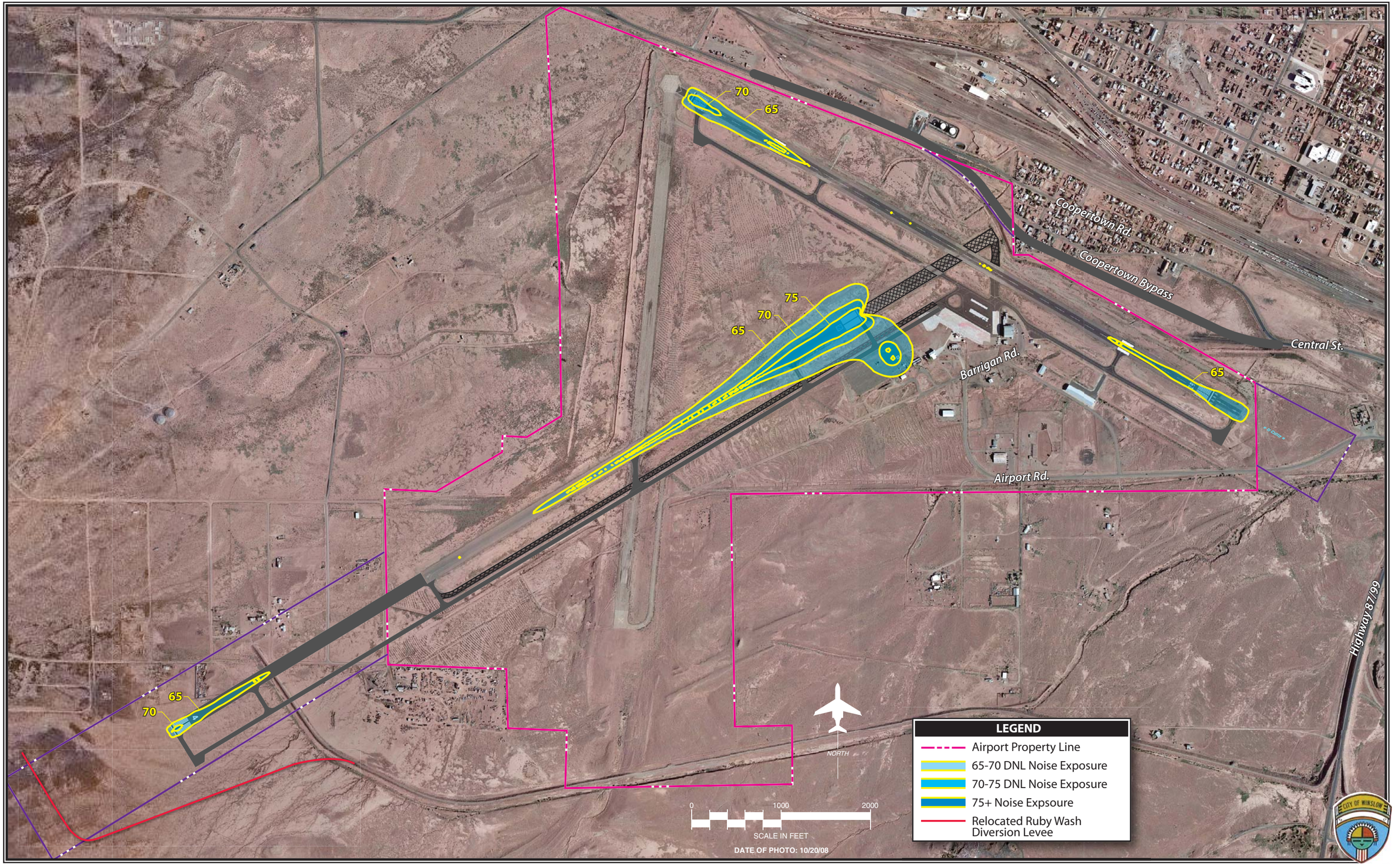

Exhibit 5D
FUTURE AIRCRAFT NOISE EXPOSURE

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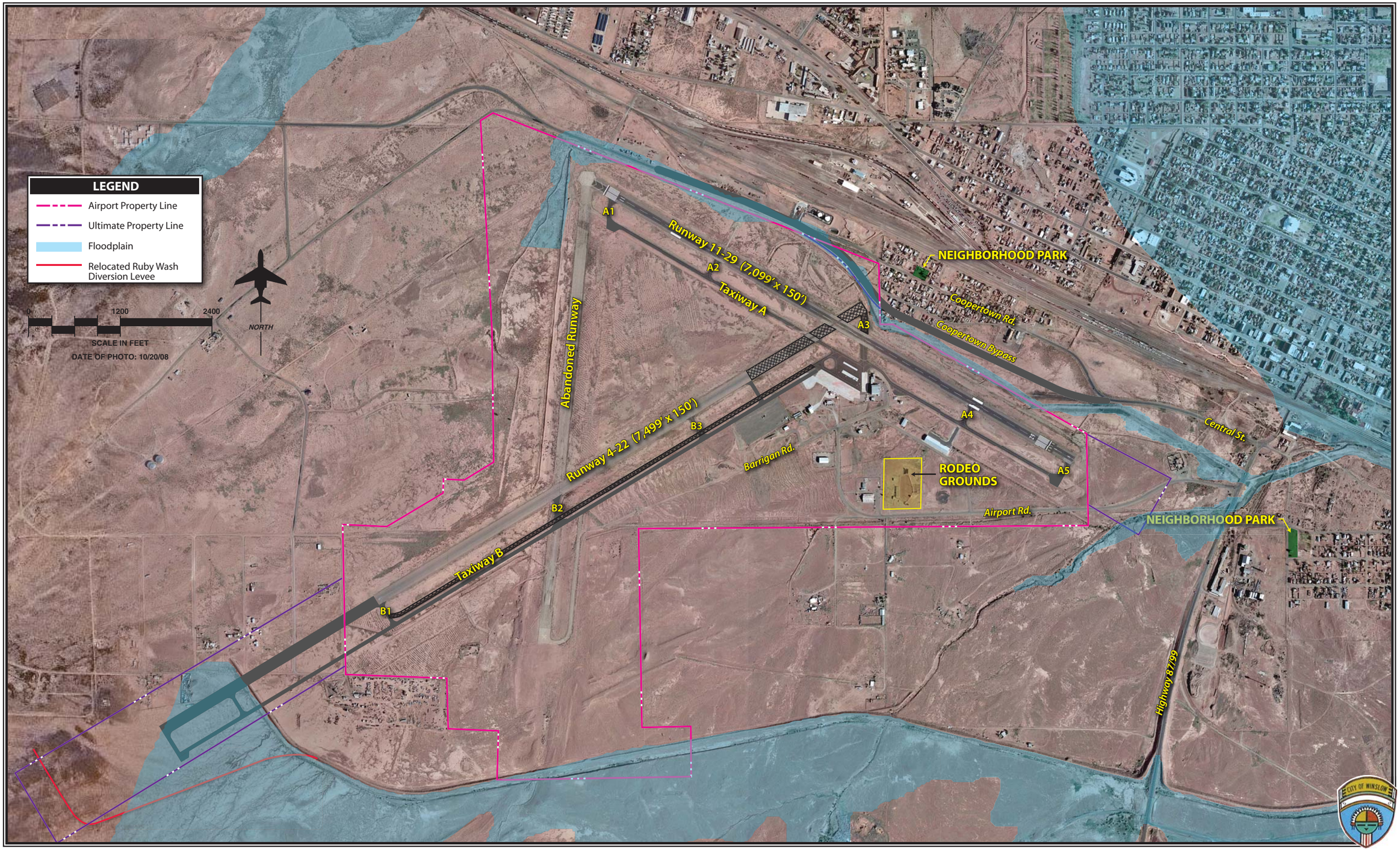


Exhibit 5E
FLOODPLAINS

Short term construction-related noise impacts could occur with implementation of the proposed project as the area immediately northeast of the airport contains residential land uses. However, these impacts typically do not arise unless construction is being undertaken during early morning, evening, or nighttime hours.

Construction-related air quality impacts can be expected. Air emissions related to construction activities will be short term in nature and will be included in the air emission inventory, as required for NEPA documentation efforts.

DEPARTMENT OF TRANSPORTATION ACT SECTION 4(f)

A significant impact would occur when a proposed action involves more than a minimal physical use of a Section 4(f) property (publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from a historic site of national, state, or local significance) or is deemed a "constructive use" substantially impairing the Section 4(f) property where mitigation measures do not reduce or eliminate the impacts. Substantial impairment would occur when impacts to Section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

As previously discussed, a number of potential Section 4(f) resources are located in proximity to the airport. One neighborhood park is located east of the airport along the extended runway centerline of Runway 4-22, another is located southeast of the airport along the extended runway centerline of Runway 11-29, and the Winslow Rodeo Grounds are located on the southern portion of airport property. The neighborhood park located northeast of Runway 22 is currently encompassed by the RPZ. The recommended development concept shifts the RPZ off the park to ensure compliance with FAA RPZ guidelines. None of these potential Section 4(f) resources are contained within the 65 DNL noise contour.

FARMLAND

Under the *Farmland Protection Policy Act* (FPPA), federal agencies are directed to identify and take into account the adverse effects of federal programs on the preservation of farmland to consider appropriate alternative actions which could lessen adverse effects, and to assure that such federal programs are, to the extent practicable, compatible with state or local government programs and policies to protect farmland. The FPPA guidelines apply to farmland classified as prime or unique, or of state or local importance as determined by the appropriate government agency, with concurrence by the Secretary of Agriculture.

In the State of Arizona, prime and unique farmland is characterized as any farmland which is currently irrigated. The proposed airport development projects, including land

acquisition, do not involve the use of irrigated farmland; therefore, the proposed project will not impact farmland protected under the FPPA.

FISH, WILDLIFE, AND PLANTS

Through consultation with the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) the FAA determines that a significant impact to fish, wildlife, or plants will result when the proposed action would likely jeopardize the continued existence of a species in question, or would result in the destruction or adverse modification of federally designated critical habitat in the area. Lesser impacts, as outlined by agencies and organizations having jurisdiction, can also result in a significant impact.

Table 5B lists the state and federally listed threatened, endangered, and candidate species with the potential to occur in Navajo County.

TABLE 5B
Federal and State Listed Species
Navajo County

Common Name	Species Type	Federal Status	State Status
Chiricahua Leopard Frog	Amphibians	Threatened	Wildlife of Special Concern
Northern Leopard Frog	Amphibian	-	Wildlife of Special Concern
Northern Goshawk	Birds	-	Wildlife of Special Concern
Brown Pelican	Birds	Endangered	-
Ferruginous Hawk	Birds	-	Wildlife of Special Concern
American Peregrine Falcon	Birds	-	Wildlife of Special Concern
Bald Eagle (winter population)	Birds	-	Wildlife of Special Concern
Osprey	Birds	-	Wildlife of Special Concern
California Condor	Birds	Endangered	-
Mexican Spotted Owl	Birds	Threatened	Wildlife of Special Concern
Southwestern Willow Flycatcher	Birds	Endangered	-
Yellow-Billed Cuckoo	Birds	Candidate	-
Apache Trout	Fishes	Threatened	-
Little Colorado Sucker	Fishes	-	Wildlife of Special Concern
Roundtail Chub	Fishes	-	Wildlife of Special Concern
Little Colorado Spinedace	Fishes	Threatened	Wildlife of Special Concern
Loach Minnow	Fishes	Threatened	-
Spikedace	Fishes	Threatened	-
Grey Wolf	Mammals	Threatened	-
Black-Footed Ferret	Mammals	Endangered	-
Jaguar	Mammals	Endangered	Wildlife of Special Concern
Navajo Mexican Vole	Mammals	-	Wildlife of Special Concern
Northern Mexican Gartersnake	Reptiles	Candidate	-

Status: Southwest Region U.S. Fish and Wildlife Service, Navajo County, Arizona Species List, accessed September, 2009.

As indicated in the table, several of the listed species, such as the fish and amphibians, require riparian habitat which is not present at the airport. Potential presence of the remaining species may require field investigation prior to commencing with the planned development projects. As discussed in Chapter One, a search of the *Online Environmental Review Tool* indicates that no federal special status species have been located within two miles of

the airport. However, coordination with the U.S. Fish and Wildlife Service may be needed prior to project implementation.

FLOODPLAINS

Significant impacts to floodplains occur when a proposed action results in notable adverse impacts on natural and beneficial 100-year floodplain values. According to the Federal Emergency Management Agency (FEMA) Federal Insurance Rap Maps (FIRM), the project area is located within a 100-year floodplain. An existing earthen levee, located south of the airport, confines the 100-year flow. The proposed project to extend Runway 4-22 will impact the westernmost section of the levee; therefore, the levee will need to be realigned. As shown on **Exhibit 5E**, the project will extend into an area currently designated as a 100-year floodplain. During NEPA documentation and the design of the Runway 4-22 extension, coordination will need to be undertaken with the U.S. Army Corps of Engineers, the Navajo County Flood Control District, and the City of Winslow Community Development Department. Once construction plans are developed for the levee, a Conditional Letter of Map Revision (CLOMR) could be processed with FEMA to conditionally revise the floodplain. Subsequent to approval of the CLOMR and construction of the levee realignment, a final Letter of Map Revision (LOMR) may be pursued.

HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

The airport must comply with applicable pollution control statutes and requirements. Impacts may occur when changes to the quantity or type of solid waste generated, or type of disposal, differ greatly from existing conditions. According to the EPA's *Enviromapper for Envirofacts*, there are no impaired waters in the vicinity of the airport. Three EPA-regulated facilities are located in close proximity to the airport. The first site is listed as the Musket Winslow Bulk Plant used for storing and transferring chemicals. The second site is operated by the Burlington Northern Santa Fe Railroad and is considered a hazardous waste site. The final site is classified as a hazardous waste site and is operated by the Econ Electronic Test Corporation. All three sites are located immediately to the east of the airport.

According to the EPA's National Priorities List (NPL), there are no active Superfund sites located in the vicinity of the airport. Winslow-Lindbergh Municipal Airport operates in conformance with Section 402(p) of the *Clean Water Act*. The airport has a current Storm Water Pollution Prevention Plan (SWPPP). As development occurs at the airport, the SWPPP will need to be modified to reflect the additional impervious surfaces and stormwater retention facilities. The addition and removal of impervious surfaces may require modifications to this plan should drainage patterns be modified.

As a result of increased operations at the airport, solid waste may slightly increase; however, these increases are not anticipated to be significant. The nearest landfill facility is the Painted Desert Regional Landfill located approximately 23 miles east of the airport in Joseph City, Arizona.

HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Impacts may occur when the proposed project causes an adverse effect on a property which has been identified (or is unearthed during construction) as having historical, architectural, archaeological, or cultural significance.

Previous studies recommended that the terminal building and the TAT conventional hangar be evaluated for possible inclusion to the National Register of Historic Places (NRHP). These buildings have not yet been listed. Certain proposed projects will disturb land which has not been previously surveyed. Coordination with the State Historic Preservation Office (SHPO) will be needed prior to project implementation to determine if field surveys are warranted. Projects including the apron and hangar facilities planned south of Runway 4-22, portions of the aircraft storage area, and portions of the Runway 4-22 extension will occur in areas which are previously disturbed.

LIGHT EMISSIONS AND VISUAL IMPACTS

Airport lighting is characterized as either airfield lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). Generally, airport lighting does not result in significant impacts unless a high intensity strobe light, such as a Runway End Identifier Light (REIL), would produce glare on any adjoining site, particularly residential uses.

Impacts of airport lighting on surface transportation must be considered. When activated, strobe lights from REIL, PAPI, and related lighting systems can cause major distractions and dazzle drivers of vehicles on West Central Street, BVD Road, and the West Winslow Industrial Spur.

Visual impacts relate to the extent that the proposed development contrasts with the existing environment and whether a jurisdictional agency considers this contrast objectionable. The visual sight of aircraft, aircraft contrails, or aircraft lights at night, particularly at a distance that is not normally intrusive, should not be assumed to constitute an adverse impact.

Airside development will include a 3,301-foot extension to Runway 4-22, the relocation of Taxiway B, and the

construction of taxiway holding aprons. The runway extension will result in the extension of runway and taxiway lighting.

Landside development at the airport will create new hangar space, aviation use revenue support parcels, aviation use support parcels, and an airport perimeter service road.

Extension of the runway and taxiway will introduce an increase of light emissions from the airport.

If the potential for lighting or visual impacts is determined to be associated with the planned development, consultation with local residents and the owners of light-sensitive sites may be needed to determine possible alternatives to minimize these effects without risking aviation safety or efficiency. Additional coordination with State, regional, or local art or architecture councils, tribes, or other organizations having an interest in airport-associated visual effects may be necessary.

NATURAL RESOURCES AND ENERGY SUPPLY

In instances of proposed actions, such as the expansion of utilities, power companies or other suppliers of energy will need to be contacted to determine if the proposed project demands can be met by existing or planned facilities.

Increased use of energy and natural resources are anticipated as the operations at the airport grow. None of the planned development projects are anticipated to result in significant increases in energy consumption.

NOISE

The Yearly Day-Night Average Sound Level (DNL) is used in this study to assess aircraft noise. DNL is the metric currently accepted by the FAA, EPA, and Department of Housing and Urban Development (HUD) as an appropriate measure of cumulative noise exposure. These three federal agencies have each identified the 65 DNL noise contour as the threshold of incompatibility.

Noise contours were prepared for the existing (2008) and future (2028) conditions at the airport. As indicated on **Exhibit 5C**, the 65 DNL noise contour extends beyond airport property off the end of Runway 22 and encompasses residential land use. The airfield plan calls for the shift of the Runway 22 threshold to the southwest, which will also shift the future noise exposure contours away from residential property. The future aircraft noise exposure contours are depicted on **Exhibit 5D**, showing no noise-sensitive land uses located within the 65 DNL noise contour.

SECONDARY (INDUCED) IMPACTS

These impacts address those secondary impacts to surrounding communities resulting from the proposed development, including shifts in patterns of population growth, public service demands, and changes in business and

economic activity to the extent influenced by airport development.

Significant shifts in patterns of population movement or growth or public service demands are not anticipated as a result of the proposed development. It could be expected, however, that the proposed development would potentially induce positive socioeconomic impacts for the community over a period of years. The airport, with expanded facilities and services, would be expected to attract additional users. It is also expected to encourage industry and trade, and to enhance the future growth and expansion of the community's economic base. Future socioeconomic impacts resulting from the proposed development are anticipated to be primarily positive in nature.

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

Impacts occur when disproportionately high and adverse human health or environmental effects occur to minority and low-income populations; disproportionate health and safety risks occur to children; and extensive relocation of residents, businesses, and disruptive traffic patterns are experienced.

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions, including alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project.

The acquisition of real property or displacing people or businesses is required to conform to the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (URARPAPA). These regulations mandate that certain relocation assistance services be made available to owners/tenants of the properties.

The proposed airport development concept includes shifting the Runway 22 threshold to the southwest to remove the RPZ from encompassing residential dwellings northeast of the airport. The Runway 4-22 extension to the southwest includes the acquisition of approximately 128 acres. This acquisition is recommended so the airport will have ownership of the RPZ to prevent incompatible land uses within the RPZ. The acquisition would potentially include the relocation of residents or businesses which would require conformance with the regulations outlined in URARPAPA. The future noise contours do not include any noise-sensitive land uses. Additionally, the construction of the Runway 4-22 extension may result in alterations to local traffic patterns and disruption to residential areas located west of the airport.

The proposed action includes the development of an airport perimeter service road. This road will be located entirely on airport property and will not be accessible to the public.

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations,* and the accompanying Presidential Memorandum, and Order DOT 5610.2, *Environmental Justice*, require FAA to provide for meaningful public involvement by minority and low-income populations, as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

According to the Environmental Protection Agency's (EPA's) *Environmental Justice Geographic Assessment Tool* accessed in December of 2008, several of the U.S. Census Bureau blocks within the airport environs contain high percentages of minority populations. Block groups within the airport area do not have high percentages of residents below the poverty level.

Pursuant to Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they may be exposed.

During construction of the projects outlined within the master plan, appropriate measures should be taken to prevent access by unauthorized persons to construction project areas. Additionally, BMPs should be implemented to decrease environmental health risks to children.

WATER QUALITY

Water quality concerns associated with airport expansion most often relate to domestic sewage disposal, increased surface runoff and soil erosion, and the storage and handling of fuel, petroleum, solvents, etc.

A drainage channel is located along the northern boundary of the airport. The proposed perimeter service road and aircraft storage area may impact the drainage channel.

As discussed previously, Winslow-Lindbergh Regional Airport operates in conformance with Section 402(p) of the *Clean Water Act*. The airport has a current SWPPP. The airport will need to acquire and comply with an AZPDES operations permit. As facilities develop on the airport and impervious surfaces increase, the airport may be affected by increased water runoff. Retention ponds may need to be considered to limit the amount of impact on airport facilities by water runoff. With regard to construction activities, the airport and all applicable contractors will need to obtain and comply with the requirements and procedures of the construction-related AZPDES General Permit number AZG2003-001, including the preparation of a *Notice of Intent* and a *Stormwater Pollution Prevention Plan,* prior to the initiation of product construction activities.

During construction of any of the planned improvements at the airport, it is suggested that mitigation measures from FAA Advisory Circular 150/5370-10A, *Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control*, be incorporated into project design specifications to further mitigate potential water quality impacts. These standards include temporary measures to control water pollution, soil erosion, and siltation through the use of berms, fiber mats, gravels, mulches, slope drains, and other erosion control methods.

Additionally, as development occurs at the airport, the SWPPP will need to be modified to reflect the additional impervious surfaces and any stormwater retention facilities. The addition and removal of impervious surfaces may require modifications to this plan should drainage patterns be modified.

WETLANDS

Wetlands are defined by Executive Order 11990*, Protection of Wetlands*, as those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances, does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

The Fish and Wildlife Service (FWS) *Wetlands Geodatabase* identifies nine wetland areas within one mile of the airport. Impacts to wetlands are not anticipated as a result of proposed projects.

WILD AND SCENIC RIVERS

Wild and scenic rivers (WSR) are designated by the *Wild and Scenic River Act*. A National Rivers Inventory (NRI) is maintained to identify those river segments which are protected under this act. No wild and scenic rivers are located in the vicinity of the airport.

AIRPORT LAYOUT PLAN DRAWINGS

Per FAA and Arizona Department of Transportation (ADOT) requirements, an official Airport Layout Plan (ALP) has been developed for Winslow-Lindbergh Regional Airport. The ALP drawing set (Sheets 1 through 14) can be found at the end of this chapter. The airport layout drawing (ALD) **(Sheet 2)** graphically presents the existing and ultimate airport layout. The ALP is used, in part by the FAA and ADOT, to determine funding eligibility for future development projects.

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

more detail concerning existing conditions as made available through design surveys.

Related drawings, which depict the ultimate terminal area developments, airport airspace, approach and departure surfaces, land uses, and airport property map are included with the ALD. The following provides a brief discussion of the additional drawings:

Cover Sheet (Sheet 1) – The cover sheet provides a drawing index and depicts the airport's wind rose, location map, and vicinity map.

Terminal Area Drawing (Sheet 3) – The terminal area drawings provide greater detail concerning landside improvements on the east side of the runway and at a larger scale than on the ALP.

Airport Airspace Drawing (Sheet 4) – The Airport Airspace Drawing is a graphic depiction of the Title 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*, regulatory criterion. The Airport Airspace Drawing is intended to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. This plan should be coordinated with local land use planners.

Approach Surface Profiles/Inner Portion of the Approach Surface Drawings (Sheets 5 through 9) – The approach surface drawing provides profile views of the 14 CFR Part 77 approach surfaces for each runway end. The Inner Portion of the Approach Surface Drawings are scaled drawings of the runway protection zone (RPZ) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions (as appropriate).

On-Airport Land Use Drawing (Sheet 10) – The On-Airport Land Use Drawing is a graphic depiction of the land use recommendations. When development is proposed, it should be directed to the appropriate land use area depicted on this plan.

Departure Surface Drawings (Sheets 11 and 12) – The departure surface drawing depicts the 14 CFR 77 departure surfaces for each runway end. A composite profile of the extended ground line is depicted. Obstructions are shown where appropriate.

"Exhibit A" Airport Property Map (Sheets 13 and 14) – The Airport Property Map provides information on the acquisition and identification of all land tracts under the control of the airport. Both existing and future property holdings are identified on the "Exhibit A" Airport Property Map.

The ALP set has been developed in accordance with accepted FAA and Arizona Department of Transportation (ADOT) – Aeronautics Division standards. The ALP set has not been approved by the FAA and is subject to FAA airspace review. Land use and other changes may result.

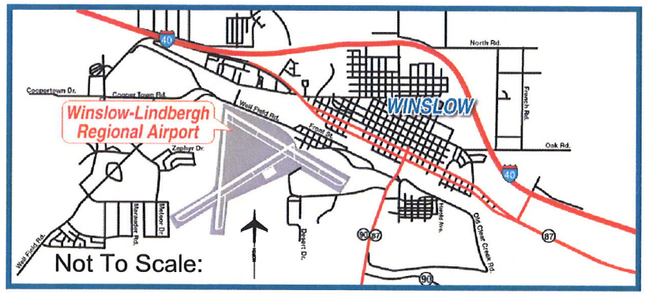
SUMMARY

The Master Plan for Winslow-Lindbergh Regional Airport has been developed in cooperation with the PAC, interested citizens, and the City of Winslow. It is designed to assist the City in making decisions relative to the future use of Winslow-Lindbergh Regional Airport as it is maintained and developed to meet its role as defined in Chapter Two.

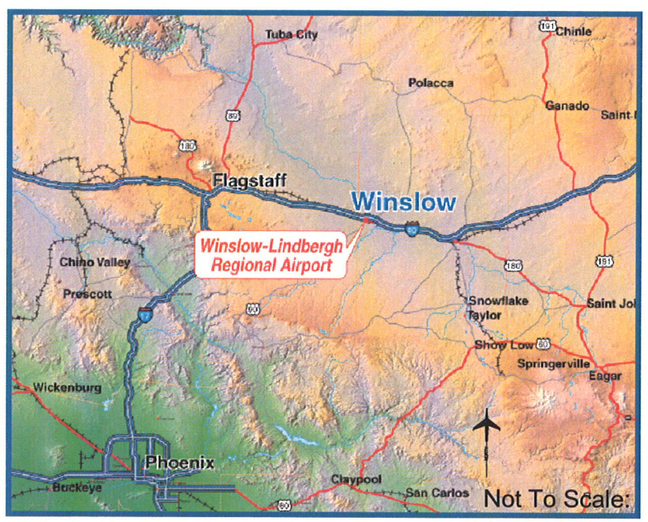
Flexibility will be a key to the plan, since activity may not occur exactly as forecast. The Master Plan provides the City with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain its viability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

WINSLOW-LINDBERGH REGIONAL AIRPORT
AIRPORT LAYOUT PLANS

PREPARED FOR THE CITY WINSLOW, ARIZONA



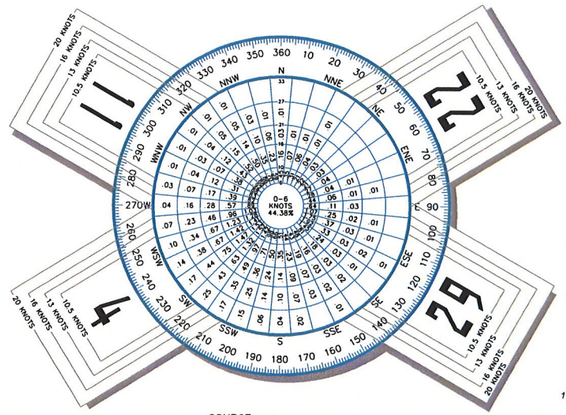
LOCATION MAP



VICINITY MAP

DRAWING INDEX

ALL WEATHER WIND COVERAGE				
Runways	10.5 Knots	13 Knots	16 Knots	20 Knots
Runway 4–22	90.83%	94.43%	97.50%	99.01%
Runway 11–29	83.12%	87.89%	92.71%	96.11%
Combined	95.89%	97.91%	99.02%	99.66%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Winslow Lindbergh Regional Airport (INW)
Winslow, Arizona

OBSERVATIONS:
93,580 All Weather Observations
11/01/1998-10/01/2008

Magnetic Declination
10° 57' East (October 2009)
Annual Rate of Change
0° 6' West (October 2009)

February 2011

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RUNWAY DATA	RUNWAY 4-22				RUNWAY 11-29			
	EXISTING		ULTIMATE		EXISTING		ULTIMATE	
	4	22	4	22	11	29	11	29
AIRCRAFT APPROACH CATEGORY-DESIGN GROUP	B-I		C-III		B-I		B-I	
FAR PART 77 CATEGORY	Visual	Visual	Nonprecision	Nonprecision	Nonprecision	Visual	Nonprecision	Nonprecision
APPROACH VISIBILITY MINIMUMS	Visual	Visual	1 Mile	1 Mile	1 Mile	Visual	1 Mile	1 Mile
DESIGN CRITICAL AIRCRAFT	King Air 100		Lockheed P-3 Orion		King Air 100		King Air 100	
WINGSPAN OF DESIGN AIRCRAFT	45.8'		99.7'		45.8'		45.8'	
UNDERCARRIAGE WIDTH OF DESIGN AIRCRAFT	13.0'		31.2'		13.0'		13.0'	
APPROACH SPEED (KNOTS) OF DESIGN AIRCRAFT	111		134		111		111	
MAXIMUM CERTIFIED TAKEOFF WEIGHT (LBS) OF DESIGN AIRCRAFT	11,800		135,000[2]		11,800		11,800	
RUNWAY EFFECTIVE GRADIENT	0.8%		0.9%		0.4%		0.4%	
RUNWAY MAXIMUM GRADIENT	0.8%		0.9%		0.4%		0.4%	
PAVEMENT DESIGN STRENGTH (in thousand lbs.)[1]	50(S), 80(D), 125(DT)		50(S), 80(D), 125(DT)		60(S), 70(D), 110(DT)		60(S), 70(D), 110(DT)	
APPROACH SLOPE	20:1	20:1	34:1	34:1	34:1	20:1	34:1	34:1
RUNWAY END ELEVATION (MSL)	4944.1'	4881.1'	4980.0'	4895.3'	4899.3'	4870.0	4899.3'	4870.0
RUNWAY TOUCHDOWN ZONE ELEVATION (MSL)	4941.1'	4914.2'	4980.0'	4918.7'	4899.3'	4882.7'	4899.3'	4881.0
RUNWAY HIGH POINT ELEVATION (MSL)	4941.1'		4980.0'		4899.3'		4899.3'	
RUNWAY LOW POINT ELEVATION (MSL)	4881.1'		4895.3'		4870'		4870'	
LINE OF SIGHT REQUIREMENT MET	NO		YES		NO		YES	
RUNWAY LENGTH	7499'		9000'		7099'		7099'	
RUNWAY WIDTH	150'		150'		150'		150'	
RUNWAY BEARING (TRUE)	58.60°	238.61°	58.6°	238.61°	119.66°	299.67°	119.66°	299.67°
RUNWAY SAFETY AREA LENGTH BEYOND STOP END OF RUNWAY	240'	240'	1000'	1000'	240'	240'	240'	240'
RUNWAY SAFETY AREA WIDTH	120'		500'		120'		120'	
RUNWAY OBJECT FREE AREA LENGTH BEYOND STOP END OF RUNWAY	240'	240'	1000'	1000'	240'	240'	240'	240'
RUNWAY OBJECT FREE AREA WIDTH	400'		800'		400'		400'	
RUNWAY OBSTACLE FREE ZONE LENGTH BEYOND RUNWAY END	200'	200'	200'	200'	200'	200'	200'	200'
RUNWAY OBSTACLE FREE ZONE WIDTH	400'		400'		400'		400'	
DISTANCE FROM RUNWAY CENTERLINE TO HOLD BARS AND SIGNS	200'		250'		250' (125' Standard)		250' (125' Standard)	
RUNWAY MARKING	V	V	NP	NP	NP	NP	NP	NP
STANDARD SEPARATION - RUNWAY CL TO PARALLEL TAXIWAY CL	225'		300'		329' (225' Standard)		329' (225' Standard)	
STANDARD SEPARATION - TAXIWAY CL TO FIXED OR MOVABLE OBJECT	44.5'		93'		44.5'		44.5'	
RUNWAY THRESHOLD DISPLACEMENT	0'	1262'	0'	0'	0'	385'	0'	0'
RUNWAY SURFACE/PAVEMENT MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
RUNWAY PAVEMENT SURFACE TREATMENT	None		None		None		None	
RUNWAY LIGHTING	MIRL		MIRL		MIRL		MIRL	
TAXIWAY WIDTH	50' (25' Standard)		50'		50' (25' Standard)		50' (25' Standard)	
TAXIWAY SURFACE MATERIAL	Asphalt		Asphalt		Asphalt		Asphalt	
TAXIWAY OBJECT FREE AREA WIDTH	89'		186'		89'		89'	
TAXIWAY SAFETY AREA WIDTH	49'		118'		49'		49'	
TAXIWAY WINGTIP CLEARANCE	20'		34'		20'		20'	
TAXIWAY LIGHTING	MITL		MITL		MITL		MITL	
TAXIWAY MARKING	Centerline		Centerline		Centerline		Centerline	
RUNWAY NAVIGATIONAL AIDS	None		GPS (LPV)		VOR, GPS		VOR, GPS (LPV)	
RUNWAY VISUAL AIDS	REIL (22) VASI-4L (22)		PAPI-4 (4,22) REIL (4,22)		REIL (11) VASI-4 (11,29)		PAPI-4 (11, 29) REIL (11, 29)	

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

2. The Lockheed P-3 Orion is utilized by the US Forest Service for aerial firefighting operations. The operating weight for these operation does not exceed the pavement strength capabilities of either runway.

AIRPORT DATA

OWNER: City of Winslow	AIRPORT NPIAS CODE:	GA
CITY: Winslow, Arizona	COUNTY:	Navajo
TOWNSHIP: T 19 N	RANGE:	R 15 E

WINSLOW-LINDBERGH REGIONAL AIRPORT (INW)		EXISTING	ULTIMATE
AIRPORT REFERENCE CODE		B-I	C-III
AIRPORT ELEVATION (NAVD88)		4941.1' MSL	4980.0' MSL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		93.5° July	93.5° July
AIRPORT REFERENCE POINT (NAD 83)	Latitude	35° 01' 18.900" N	35° 01' 10.777" N
	Longitude	110° 43' 21.100" W	110° 43' 37.256" W
PUBLISHED INSTRUMENT APPROACH		VOR, GPS (RW 11)	VOR, GPS
NAVAIDS		Airport Beacon ASOS VASI-4 (11,22,29) REIL (11,22)	Airport Beacon ASOS PAPI-4 (4,22,11,29) REIL (4,22,11,29)

1. All coordinates are horizontal NAD83 and vertical NAVD88

SURVEY CONTROL STATIONS

ID	PERMANENT IDENTIFIER	LATITUDE	LONGITUDE
INW A	AC6845	35° 01' 27.020" N	110° 43' 13.786" W
INW AP STA A	AC6846	35° 01' 11.223" N	110° 42' 25.431" W
INW AP STA B	AC6847	35° 01' 47.926" N	110° 43' 43.769" W

INW A: SET IN ROCK OUTCROP;
INW AP STA A: SET IN TOP OF A 10" CONCRETE POST 2" BELOW GROUND;
INW AP STA B: SET IN TOP OF A 10" CONCRETE POST 3" BELOW GROUND.

RUNWAY COORDINATES (NAD 83)

RUNWAY	LATITUDE	LONGITUDE
EXISTING RUNWAY 4 END	35° 00' 51.368" N	110° 44' 16.361" W
ULTIMATE RUNWAY 4 END	35° 00' 34.383" N	110° 44' 50.241" W
EXISTING RUNWAY 22 END	35° 01' 29.992" N	110° 42' 59.422" W
EXISTING RUNWAY 22 DISPLACED THRESHOLD 385'	35° 01' 23.490" N	110° 43' 12.378" W
RELOCATED RUNWAY 22 END	35° 01' 20.756" N	110° 43' 17.874" W
EXISTING RUNWAY 11 END	35° 01' 44.903" N	110° 43' 40.359" W
EXISTING RUNWAY 29 END	35° 01' 10.154" N	110° 42' 26.196" W
EXISTING RUNWAY 29 DISPLACED THRESHOLD 1262'	35° 01' 12.040" N	110° 42' 30.220" W

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		PARCEL BOUNDARY
32|33 5/8		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
BRL	BRL	BUILDING RESTRICTION LINE
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
		FENCING
		AIRPORT PAVEMENT
		REMOVE PAVEMENT
N/A	H	HELICOPTER PARKING
		HOLD MARKING
	INW	AIRPORT CONTROL STATION
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ	RPZ(U)	RUNWAY PROTECTION ZONE
RVZ	N/A	RUNWAY VISIBILITY ZONE
VASI-4	PAPI-4	VGSI
		RUNWAY END IDENTIFIER LIGHTS (REILS)
		LIGHTED WINDSOCK
		TOPOGRAPHY
		RUNWAY PROTECTION ZONE (RPZ)
		MIRL

Magnetic Declination
10° 57' East (October 2009)
Annual Rate of Change
0° 6' West (October 2009)

SCALE IN FEET 0 500 1000

EXISTING AIRPORT BUILDING TABLE

EXIST	DESCRIPTION	TOP ELEV
1	STORAGE FACILITY	4908.1'
2	WINSLOW ANIMAL CARE FACILITY	4903.4'
3	USFS FACILITY	4916.5'
4	USFS SLURRY STORAGE	4903.0'
5	GUARDIAN AIR	4905.3'
6	VACANT BUILDING	4896.7'
7	MAINTENANCE FACILITY	4897.1'
8	ELECTRICAL VAULT	*
9	TERMINAL	4896.7'
10	RESTAURANT	4896.7'
11	CONVENTIONAL HANGAR	4916.7'
12	SELF-SERVICE FUEL PUMPS	*
13	FUEL STORAGE	*
14	AIRPORT BEACON	4898.9'
15	PRIVATE STORAGE BUILDING	4908.1'
16	PRIVATE STORAGE BUILDING	4905.2'
17	PRIVATE STORAGE BUILDING	4896.0'
18	8-UNIT BOX HANGAR	4900.0'
19	SCHOOL	4908.8'

* NOT AVAILABLE

PROPOSED AIRPORT BUILDING TABLE

ULT	DESCRIPTION	TOP ELEV
101	T-HANGAR	21' AGL
102	T-HANGAR	21' AGL
103	T-HANGAR	21' AGL
104	T-HANGAR	21' AGL
105	T-HANGAR	21' AGL
106	WASH RACK	0' AGL
107	CONVENTIONAL HANGAR	21' AGL
108	CONVENTIONAL HANGAR	21' AGL
109	CONVENTIONAL HANGAR	21' AGL
110	CONVENTIONAL HANGAR	21' AGL
111	CONVENTIONAL HANGAR	21' AGL
112	CONVENTIONAL HANGAR	21' AGL
113	CONVENTIONAL HANGAR	21' AGL

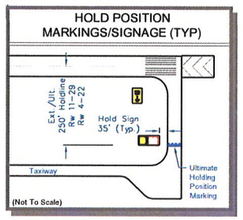
EXISTING BUILDING ELEVATIONS OBTAINED AERIAL MAPPING COMPANY, INC., PHOENIX, ARIZONA.

ULTIMATE BUILDING ELEVATIONS ARE SHOWN AS ABOVE GROUND LEVEL (AGL) ELEVATIONS AND BASED UPON STANDARD HANGAR HEIGHTS. TOP ELEVATIONS FOR ULTIMATE STRUCTURES WILL BE CONTINGENT UPON A FINAL GRADING AND DRAINAGE PLAN.

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS

DEVIATION DESCRIPTION	PROPOSED ACTION
EXISTING BUILDINGS IN TERMINAL AREA DO NOT COMPLY WITH CURRENT RUNWAY VISIBILITY ZONE REQUIREMENTS. (AC 150/5300-13, PAR 503)	RELOCATE RUNWAY 22 END

HOLD POSITION MARKINGS/SIGNAGE (TYP)



GENERAL NOTES:

1. HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 - NAD83; VERTICAL DATUM: NORTH AMERICAN DATUM 1988 - NAVD88. FROM AERIAL MAPPING COMPANY, INC., PHOENIX, ARIZONA.
2. ALL EXISTING RUNWAY END ELEVATIONS, COORDINATES, AND BEARINGS NOTED IN THIS ALP FROM ASIS DATASHEET SYSTEMS, http://avnwww.jccbi.gov/datasheet/
3. ULTIMATE COORDINATES CALCULATED USING THE U.S. DOT/FAA GEODETIC COMPUTATION PROGRAM COMPSYS 21, http://avn.faa.gov/index.asp?xml=naco/online/compsys
4. SEE SHEET 3, TERMINAL AREA DRAWING FOR CLOSE-IN DETAILS.
5. THE BRL BOUNDARY LOCATION OCCURS COINCIDENT WITH THE ULTIMATE OBJECT FREE AREA (OFA), RUNWAY VISIBILITY ZONE (RVZ), AND THE VOR/DME CLEAR AREA.
6. MAGNETIC DECLINATION VALUE CALCULATED FROM THE NOAA GEOPHYSICAL DATA CENTER, http://www.ngdc.noaa.gov/geomagmodels/Declination.jsp

FOR APPROVAL BY
City of Winslow

Mr. Jon Ferguson
City Administrator DATE:

FAA APPROVAL STAMP

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

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

WINSLOW-LINDBERGH REGIONAL AIRPORT

AIRPORT LAYOUT DRAWING

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 SHEET 2 OF 14

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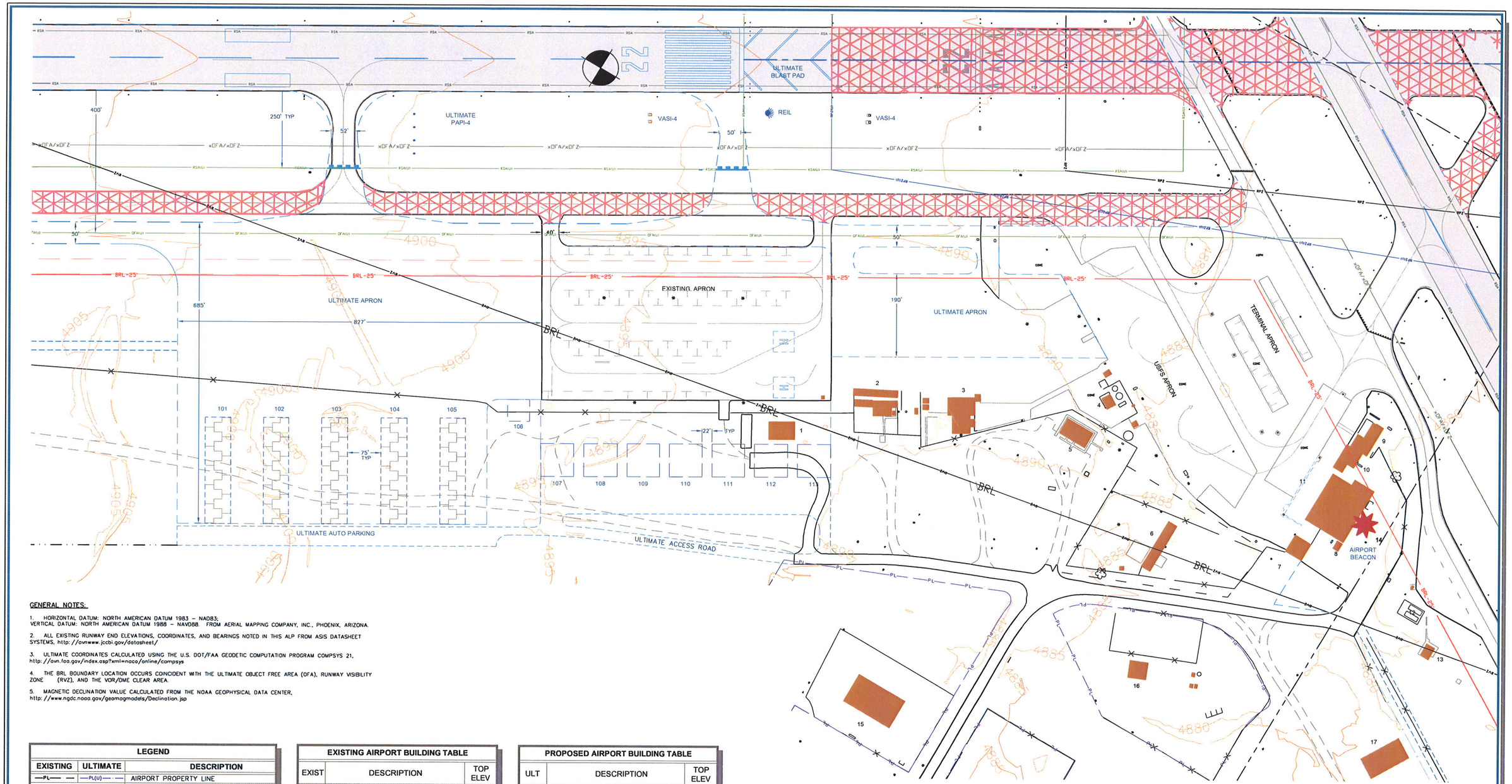

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LEGEND

EXISTING	ULTIMATE	DESCRIPTION
PL	PL(U)	AIRPORT PROPERTY LINE
		PARCEL BOUNDARY
		SECTION CORNERS
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
BRL		BUILDING RESTRICTION LINE
		STRUCTURES ON AIRPORT
		STRUCTURE OFF AIRPORT
		FENCING
		AIRPORT PAVEMENT
		REMOVE PAVEMENT
N/A	H	HELICOPTER PARKING
		HOLD MARKING
		AIRPORT CONTROL STATION
OFA	OFA(U)	OBJECT FREE AREA
RSA	RSA(U)	RUNWAY SAFETY AREA
OFZ	OFZ(U)	OBSTACLE FREE ZONE
RPZ	RPZ(U)	RUNWAY PROTECTION ZONE
RVZ	N/A	RUNWAY VISIBILITY ZONE
VASI-4	PAPI-4	VGSI
		RUNWAY END IDENTIFIER LIGHTS (REILS)
		LIGHTED WINDSOCK
		TOPOGRAPHY

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6	VACANT BUILDING	4896.7'
7	MAINTENANCE FACILITY	4897.1'
8	ELECTRICAL VAULT	*
9	TERMINAL	4896.7'
10	RESTAURANT	4896.7'
11	CONVENTIONAL HANGAR	4916.7'
12	SELF-SERVICE FUEL PUMPS	*
13	FUEL STORAGE	*
14	AIRPORT BEACON	4898.9'
15	PRIVATE STORAGE BUILDING	4908.1'
16	PRIVATE STORAGE BUILDING	4905.2'
17	PRIVATE STORAGE BUILDING	4896.0'
18	8-UNIT BOX HANGAR	4900.0'
19	SCHOOL	4908.8'

* NOT AVAILABLE

PROPOSED AIRPORT BUILDING TABLE

ULT	DESCRIPTION	TOP ELEV
101	T-HANGAR (10 units)	21' AGL
102	T-HANGAR (10 units)	21' AGL
103	T-HANGAR (10 units)	21' AGL
104	T-HANGAR (10 units)	21' AGL
105	T-HANGAR (10 units)	21' AGL
106	WASH RACK	0' AGL
107	CONVENTIONAL HANGAR	21' AGL
108	CONVENTIONAL HANGAR	21' AGL
109	CONVENTIONAL HANGAR	21' AGL
110	CONVENTIONAL HANGAR	21' AGL
111	CONVENTIONAL HANGAR	21' AGL
112	CONVENTIONAL HANGAR	21' AGL
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NORTH (TRUE)

Magnetic Declination
10° 57' East (October 2009)
Annual Rate of Change
0° 6' West (October 2009)

0 100 200
SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

TERMINAL AREA DRAWING

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeffer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 | SHEET 3 OF 14

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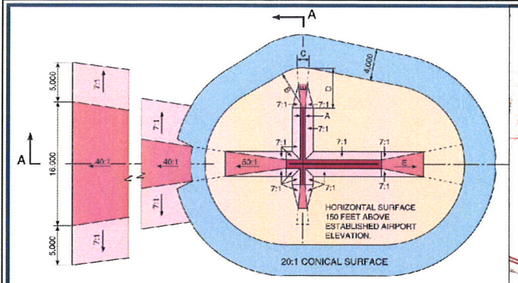
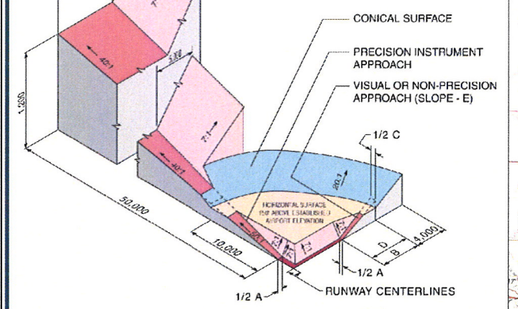


DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B C	B 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
* - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

SOURCE: 14 CFR Part 77, Section 77.25, Civil Airport Imaginary Surfaces.

GENERAL NOTES:

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2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, is illustrated on the AIRPORT AIRSPACE DRAWINGS, sheet 4.
3. Depiction of features and objects within the outer portion of the approach surfaces, is illustrated on the APPROACH SURFACE PROFILES. sheet 5.
4. Depiction of features and objects within the inner portion of the approach surfaces, is illustrated on the INNER PORTION OF THE RUNWAY APPROACH SURFACE DRAWINGS, sheets 6, 7, 8 and 9.
5. NGS 405 SURVEY DATED 1/5/2007.
6. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWINGS.

AIRPORT-EL. 4980.0
HORIZONTAL SURFACE-EL. 5130.0

EL. 6330.0
EL. 6280.0
EL. 6230.0
EL. 6180.0
20:1 CONICAL SURFACE
HORIZONTAL SURFACE EL. 5130.0
EL. 5230
EL. 5330
EL. 5280
EL. 5180
EL. 5130
10,000' R
4000' @ 20:1
EL. 4895.3
EL. 4870.0
EL. 4980.0
HORIZONTAL SURFACE EL. 5130.0
20:1 CONICAL SURFACE
EL. 5180.0
EL. 5230.0
EL. 5280.0
EL. 5330.0
4000' @ 20:1
Five Mountain Butte
TUCKER
TOLTEC
SANTA FE
DIVIDE
Wash
Cottonwood Wash
Jacks Canyon
COCONINO CO
NAVAJO CO
Model A Tank
Radio Facility
GRAVEL PIT

OBSTRUCTION LEGEND

- OBSTRUCTION
- GROUP or MULTIPLE OBSTRUCTIONS
- TOPOGRAPHIC OBSTRUCTION

OBSTRUCTION TABLE

Object Description/ Elevation (MSL)	Primary Surface	Approach Surface	Transitional Surface	Horizontal Surface	Conical Surface	Penetrate Surface	Proposed Disposition
1. Gravel EL. 5177 (Topographic)			-	5130 MSL		47'	ADD OBST. LIGHT

Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

TRUE NORTH
10° 57' East

0 2000 4000 6000
SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

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WINSLOW-LINDBERGH REGIONAL AIRPORT

AIRPORT AIRSPACE DRAWING

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 | SHEET 4 OF 14

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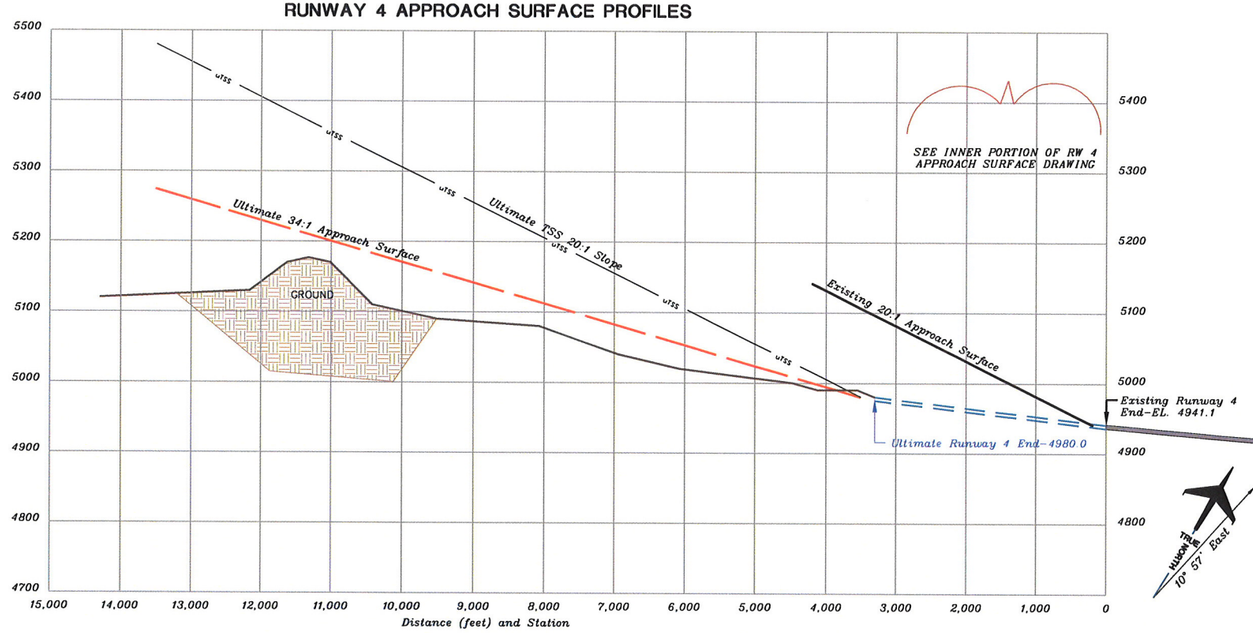
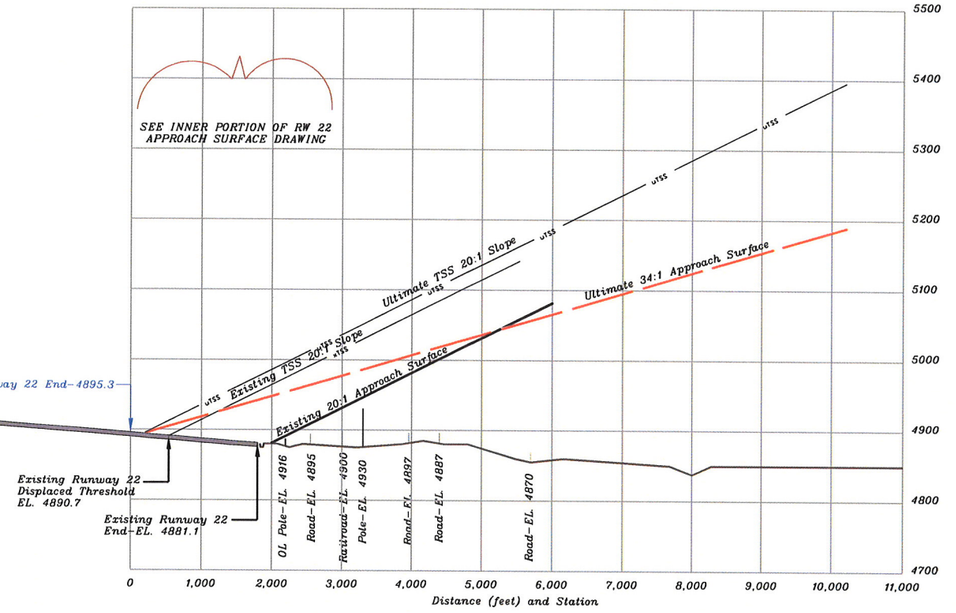
RUNWAY 4 APPROACH SURFACE PROFILES



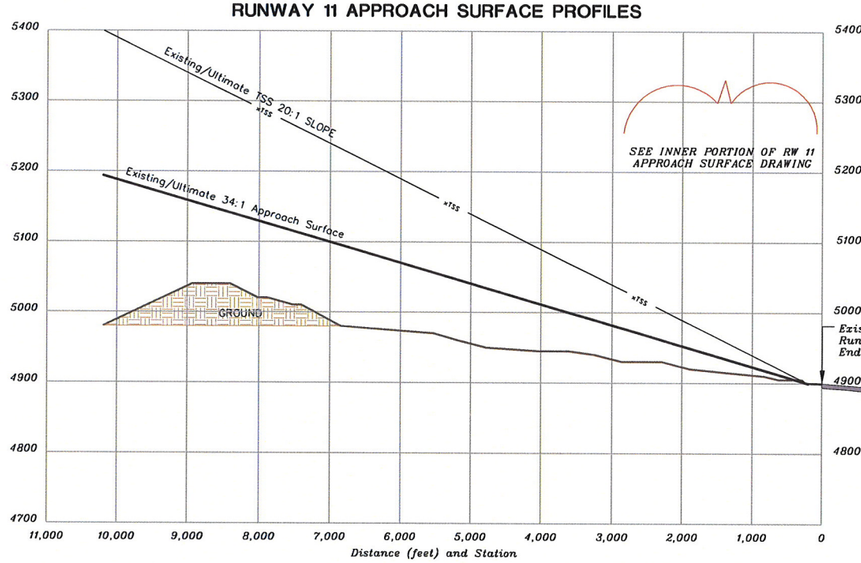
OBSTRUCTION TABLE				
Runway 4 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
– NONE, See Note 4.	–	–	–	–

RUNWAY 22 APPROACH SURFACE PROFILES



OBSTRUCTION TABLE				
Runway 22 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
– NONE, See Note 4.	–	–	–	–

RUNWAY 11 APPROACH SURFACE PROFILES



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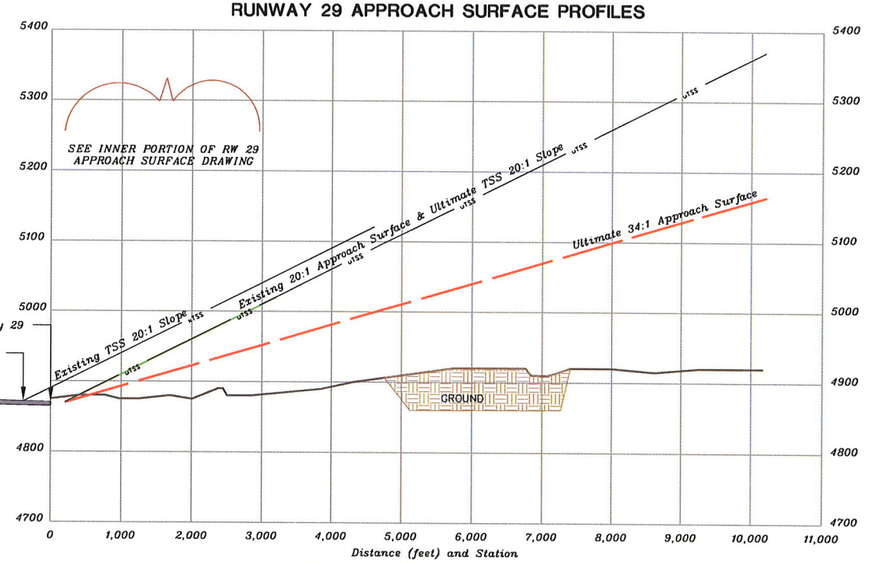
5. NGS 405 SURVEY DATED 1/5/2007.
6. Existing and future height and hazard ordinances are to be amended and/or referenced upon approval of updated AIRPORT AIRSPACE DRAWINGS.

RUNWAY 29 APPROACH SURFACE PROFILES



OBSTRUCTION TABLE				
Runway 11 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
– NONE	–	–	–	–

OBSTRUCTION TABLE				
Runway 29 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
– NONE	–	–	–	–

Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 1000 2000 3000
HORIZONTAL SCALE IN FEET

0 100 200 300
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

APPROACH SURFACE PROFILES

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 | SHEET 5 OF 14

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Ultimate uTSS 20:1 TSS Surface

Ultimate 34:1 Approach Surface

Existing 20:1 Approach Surface

Ultimate Part 77 Surface
500' x 10,000' x 3500'
34:1 Nonprecision Approach

Ultimate TSS 20:1 Slope
800' x 10,000' x 3,800'
ADR Runway Type (VI)

Existing Part 77 Surface
500' x 5,000' x 1500'
20:1 Visual Approach

Existing TSS 20:1 Slope
400' x 10,000' x 3400'
ADR Runway Type (IV)

REIL

Asphalt Blastpad

Ultimate PAPI-4

Ultimate Runway 4
End-EL. 4980.0

Existing TSS 20:1 Slope

Existing Runway 4
End-EL. 4941.1

Ultima

Ult

Ultimate 20:1 TSS Surface

Existing 20:1 Approach Surface

RUNWAY 4 APPROACH SURFACE PROFILE

Elevation (MSL)

5080 5060 5040 5020 5000 4980 4960 4940 4920

uTSS

Ultimate TSS 20:1 Slope

Ultimate 34:1 Approach Surface

GROUND

Perimeter Road-EL. 5014

Perimeter Road-EL. 5014

Grade Ult Perimeter Road-EL. 5000

Grade (ROFA) Ground-EL. 4990

Ultimate Runway 4
End-EL. 4980.0

200'

xTSS

Existing TSS 20:1 Slope

Existing 20:1 Approach Surface

ROAD-EL 4969

BUILDING-EL 4972

BUILDING-EL 4978

ROAD-EL 4961

ROAD-EL 4954

Existing
Runway 4
EL. 4941.1

3301' Runway Extension

6200 6000 5800 5600 5400 5200 5000 4800 4600 4400 4200 4000 3800 3600 3400 3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

Distance (feet) and Station

OBSTRUCTION TABLE

Runway 4 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
1. Ground	34:1 Approach	9'	8'	To Be Graded
2. Ground	34:1 Approach	8'	0'	To Be Graded

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt Roads or private Roads, 15' for noninterstate Roads, 17' for interstate Roads, and 23' for railroad.

NORTH
10° 57' East

Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 20 40 60

VERTICAL SCALE IN FEET

0 200 400 600

HORIZONTAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

INNER PORTION OF RUNWAY 4 APPROACH SURFACE DRAWING

~~DRAFT~~

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer

DETAILED BY: Larry D. Johnson / Diana L. Hopkins

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

February 21, 2011

SHEET 6 OF 14

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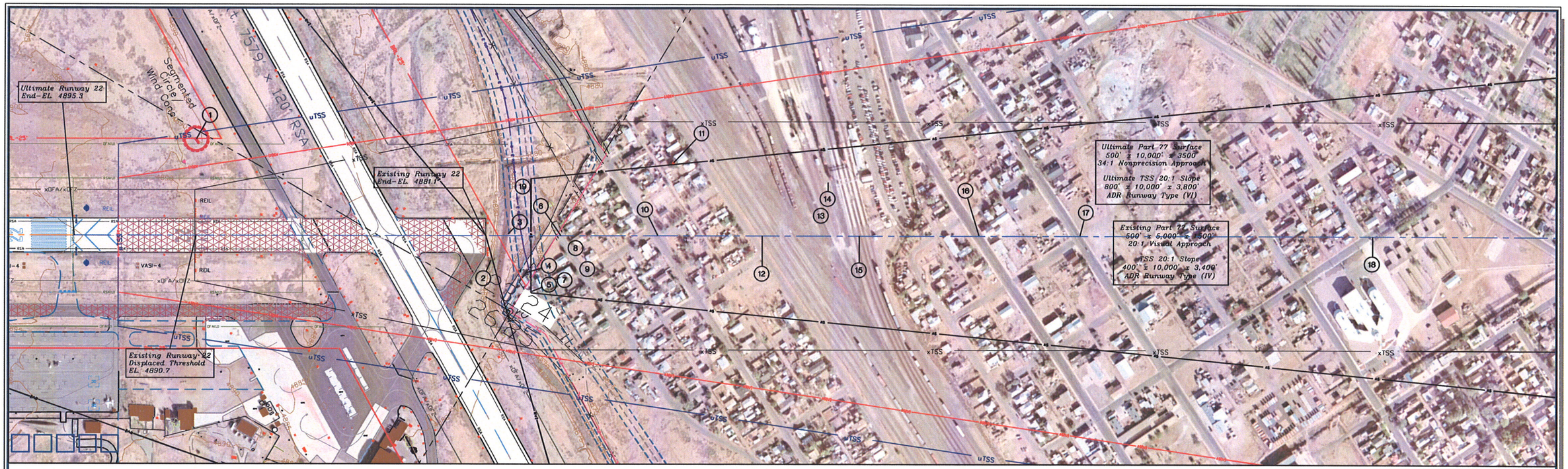
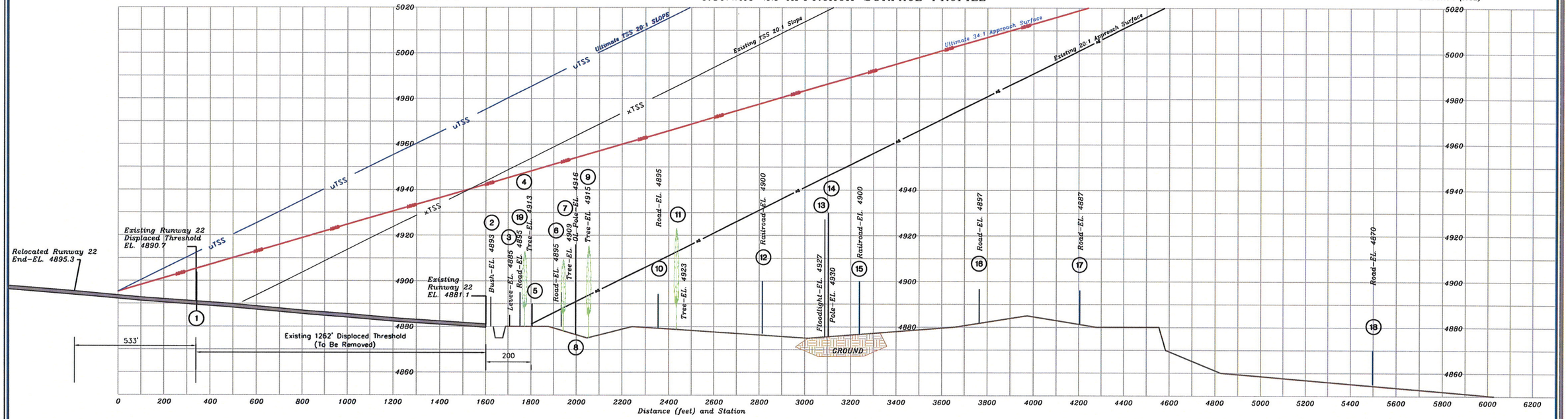


RUNWAY 22 APPROACH SURFACE PROFILE



OBSTRUCTION TABLE

Runway 22 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
NONE	–	–	–	–

GENERAL NOTES:

1. Obstructions, clearances, and locations are calculated from ultimate runway end elevations and ultimate approach surfaces, unless otherwise noted. Road obstructions reflect a safety clearance of 10' for dirt Roads or private Roads, 15' for noninterstate Roads, 17' for interstate Roads, and 23' for railroad.

Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 20 40 60
VERTICAL SCALE IN FEET
0 200 400 600
HORIZONTAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APP'D
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

INNER PORTION OF RUNWAY 22 APPROACH SURFACE DRAWING

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson / Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 SHEET 7 OF 14

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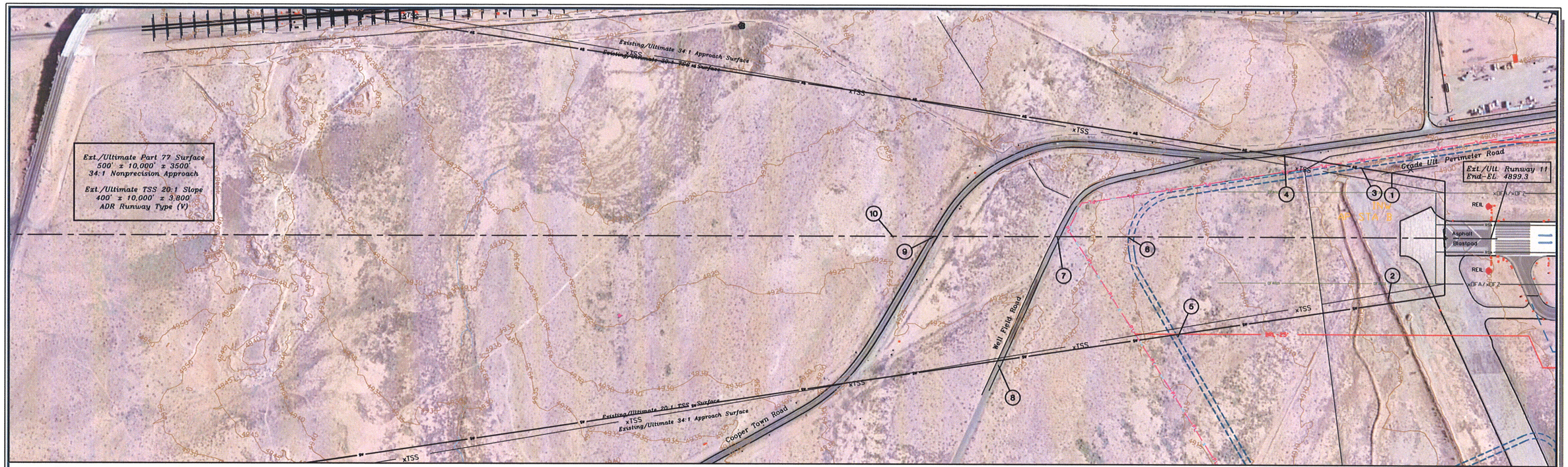
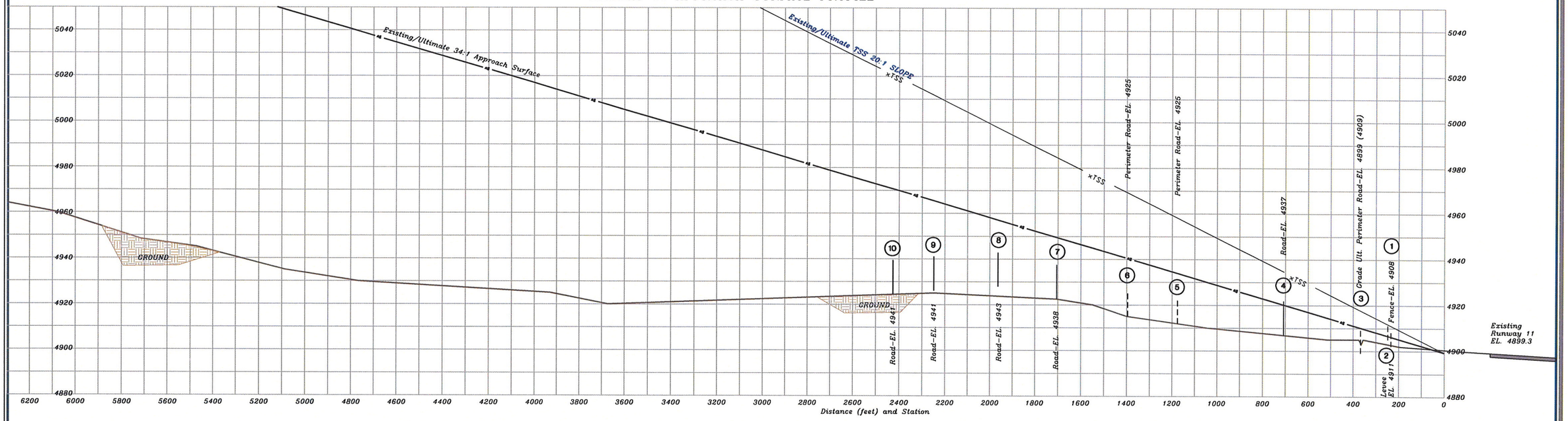


RUNWAY 11 APPROACH SURFACE PROFILE



OBSTRUCTION TABLE

Runway 11 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
1. Fence–EL. 4908	*Approach Surface*	2'	0'	*No Action*
2. Levee–EL. 4911	*Approach Surface*	1	0'	*No Action*
4. Road–EL. 4937	*Approach Surface*	2'	0'	*No Action*

GENERAL NOTES:

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10° 57' EAST TRUE NORTH

Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 20 40 60
VERTICAL SCALE IN FEET
0 200 400 600
HORIZONTAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
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WINSLOW-LINDBERGH REGIONAL AIRPORT

INNER PORTION OF RUNWAY 11 APPROACH SURFACE DRAWING

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
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APPROVED BY: James M. Harris, P.E.

February 21, 2011

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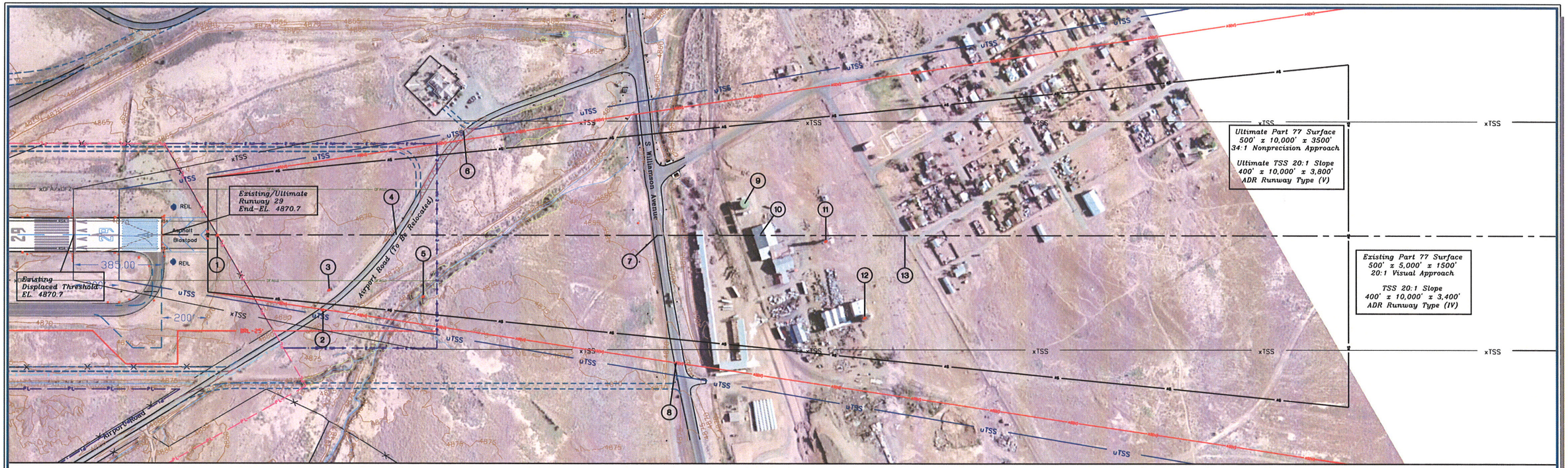
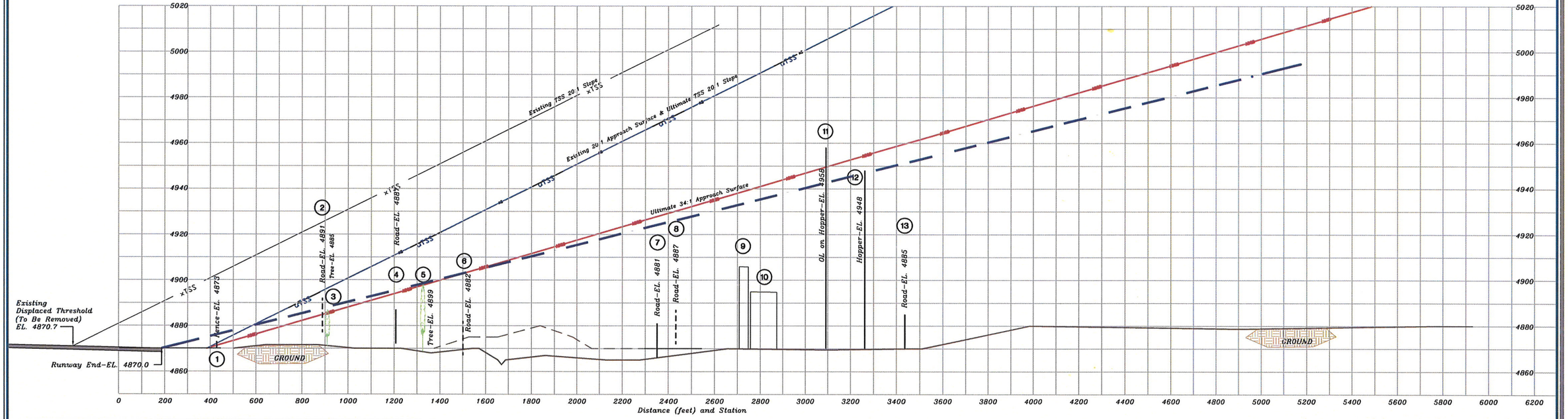


RUNWAY 29 APPROACH SURFACE PROFILE



OBSTRUCTION TABLE

Runway 29 Object Description/Elevation	Obstructed Part 77 Surface	Object Penetration	TSS 20:1 Penetration	Proposed Object Disposition
1. Fence-EL. 4873	Approach Surface	2'	1'	To Be Relocated
2. Private Road-EL. 4885	Approach Surface	4'	0'	Private Road (No Action)
3. Road-EL. 4891	Approach Surface	7'	0'	To Be Relocated
5. Tree-EL. 4899	Approach Surface	1'	0'	Remove
11. OL on Hopper-EL. 4958	Approach Surface	8.4'	0'	To Remain Lighted
12. OL on Hopper-EL. 4955	Approach Surface	5.4'	0'	To Remain Lighted

GENERAL NOTES:

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Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

VERTICAL SCALE IN FEET
0 20 40 60

HORIZONTAL SCALE IN FEET
0 200 400 600

No.	REVISIONS	DATE	BY	APPD.
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1	ALP Approved Conditional	9/23/98	NJP&A	FAA

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WINSLOW-LINDBERGH REGIONAL AIRPORT

INNER PORTION OF RUNWAY 29 APPROACH SURFACE DRAWING

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011 | SHEET 9 OF 14

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Cooper Town Road

Well Field Road

EX RW 11
END EL 4899.3
N 35° 01' 44.903"
W 110° 43' 40.359"

EXISTING RUNWAY 11 RPZ
1000'X500'X700'
PARTIALLY OWNED

W 2nd Street

Atchison Topeka and Santa Fe Railroad

EXISTING RUNWAY 22
DEPARTURE RPZ
1000'X500'X700'
PARTIALLY OWNED

EXISTING RUNWAY 22
APPROACH RPZ
1000'X500'X700'
PARTIALLY OWNED

EX RW 22
END EL 4881.1'
N 35° 01' 29.992"
W 110° 42' 59.422"

EX RW 22
DISPLACED THRESHOLD
EL 4890.7
N 35° 01' 23.490"
W 110° 43' 12.378"

ULT RW 22
END EL 4895.3
N 35° 01' 20.750"
W 110° 43' 17.574"

ULTIMATE RUNWAY 22 RPZ
1700'X500'X1010'
OWNED IN FEE

1 MILE APPROACH

Conceptual Cooperstown Bypass Roadway

TRUE BEARING 113.66°

TRUE BEARING 58.6°

EX RW 29
DISPLACED THRESHOLD
EL 4870.7
N 35° 01' 12.040"
W 110° 42' 30.220"

Central Street

EXISTING RUNWAY 29
DEPARTURE RPZ
1000'X500'X700'
PARTIALLY OWNED

RODEO GROUNDS

EXISTING RUNWAY 20 RPZ
1000'X500'X700'
ULTIMATE-FEE SIMPLE

S Williamson Ave

Reclaimed Airport Road

EX RW 29
END EL 4870.0
N 35° 01' 10.154"
W 110° 42' 26.196"

EX RW 4
END EL 4941.1
N 35° 00' 51.368"
W 110° 44' 16.361"

EXISTING RUNWAY 4 RPZ
1000'X500'X700'
PARTIALLY OWNED

ULT RW 4
END EL 4880.0'
N 35° 00' 34.383"
W 110° 44' 50.241"
HIGH POINT

ULTIMATE RUNWAY 4 RPZ
1700'X500'X1010'
OWNED IN FEE

22 23
27 26

26 25
35 36

AO Airfield Operations
GA General Aviation
RS Revenue Support
OS Open Space
R SURPLUS PROPERTY (TO BE RELEASED)

65 2028 Noise Contour
65 2008 Noise Contour

NORTH (TRUE)

Magnetic Declination
10° 57' East (October 2009)
Annual Rate of Change
0° 6' West (October 2009)

0 500 1000
SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
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WINSLOW-LINDBERGH REGIONAL AIRPORT

LAND USE DRAWING

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson / Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011

SHEET 10 OF 14

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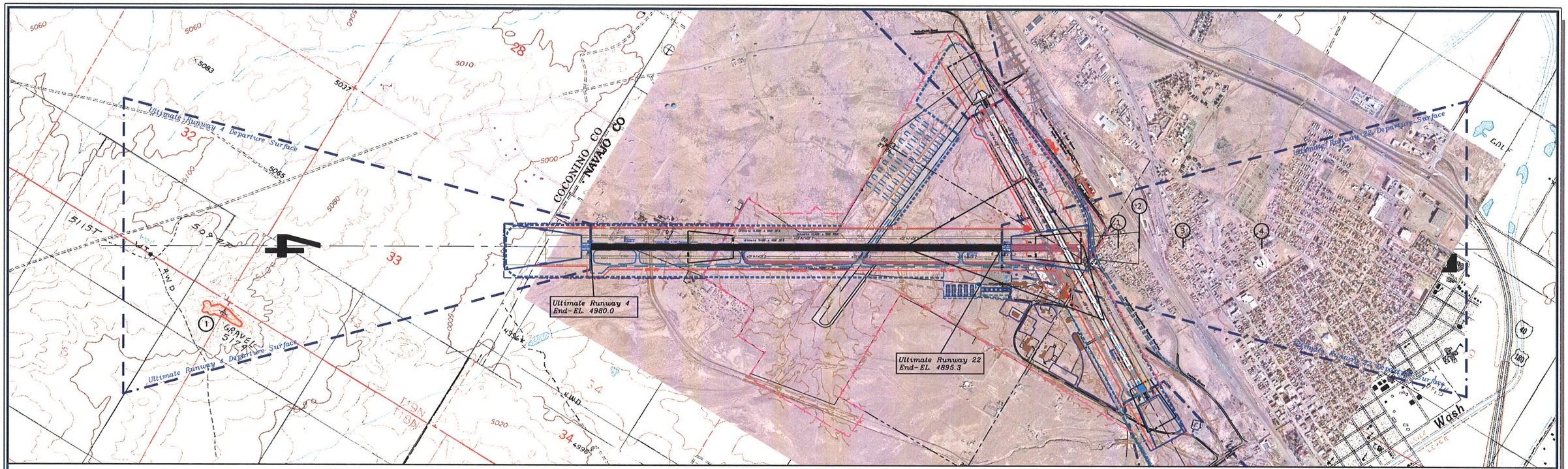
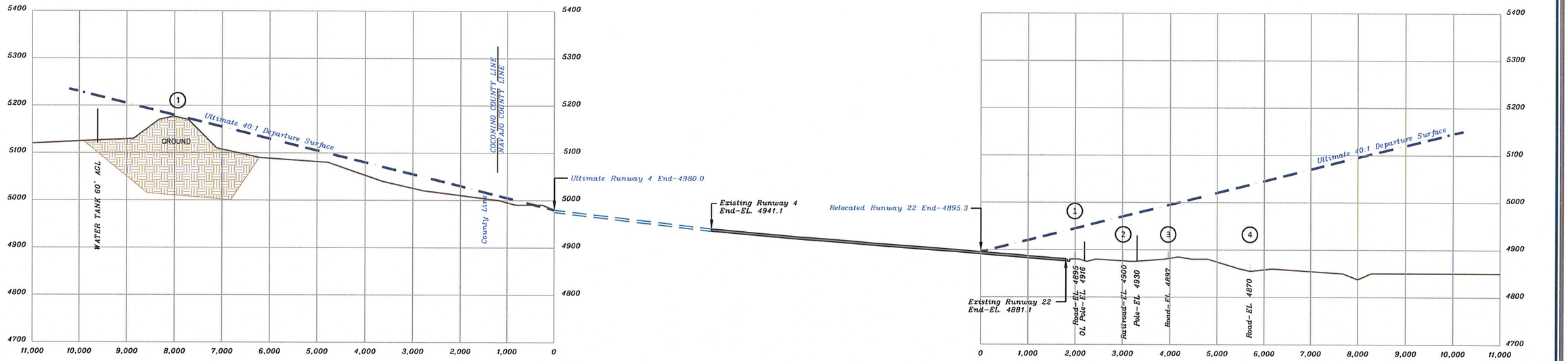
Coffman Associates-LDJ K:\W_airl10_LUP.dwg Tuesday, November 23, 2010 5:47pm



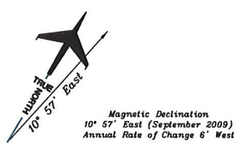


OBSTRUCTION TABLE

Runway 4 Object Description/Elevation	Obstructed Departure Surface	Object Penetration	Proposed Object Disposition
1. Gravel	5177 MSL	0'	Request Aeronautical Study

OBSTRUCTION TABLE

Runway 22 Object Description/Elevation	Obstructed Departure Surface	Object Penetration	Proposed Object Disposition
NONE	–	–	–



Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 1000 2000 3000
HORIZONTAL SCALE IN FEET

0 100 200 300
VERTICAL SCALE IN FEET

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

RUNWAY 4-22 DEPARTURE SURFACE DRAWING

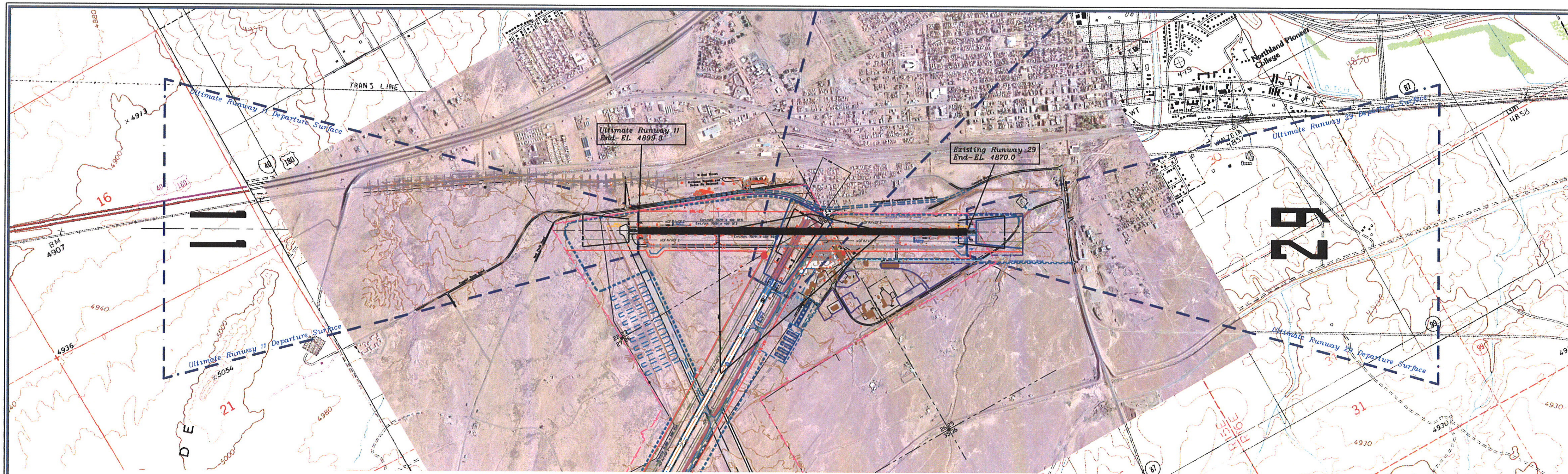
Winslow, Arizona

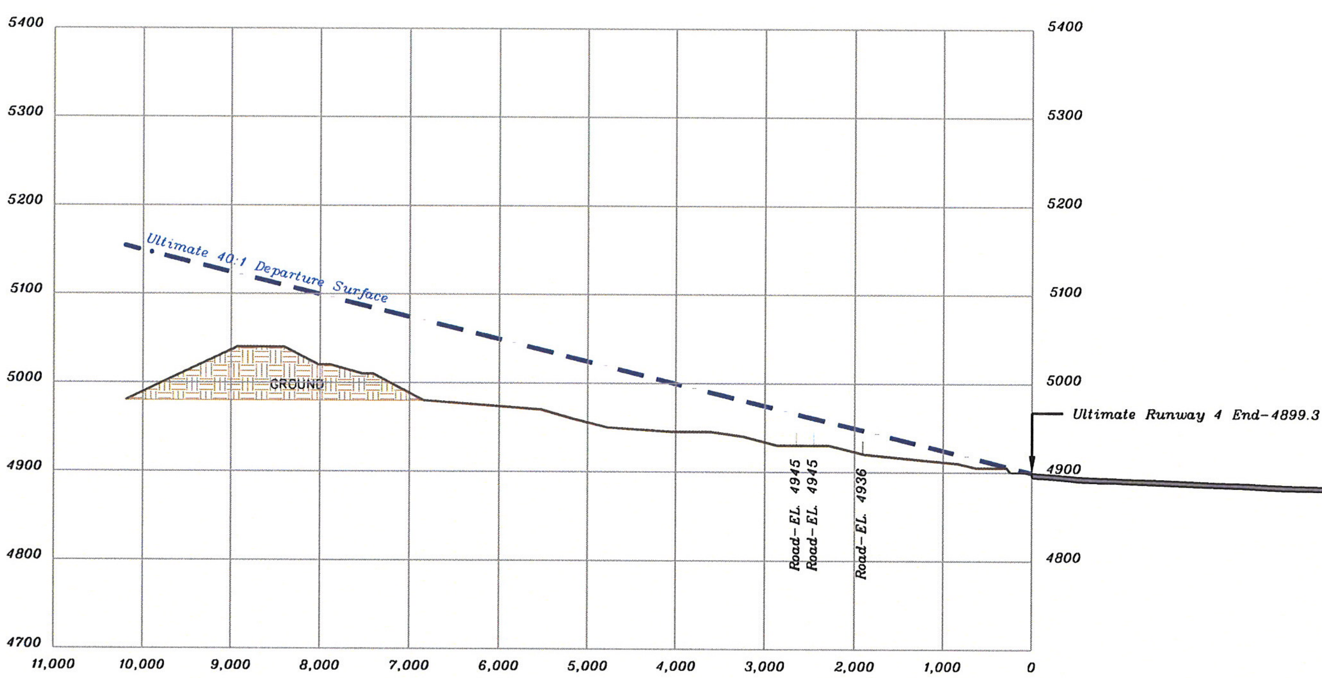
DRAFT

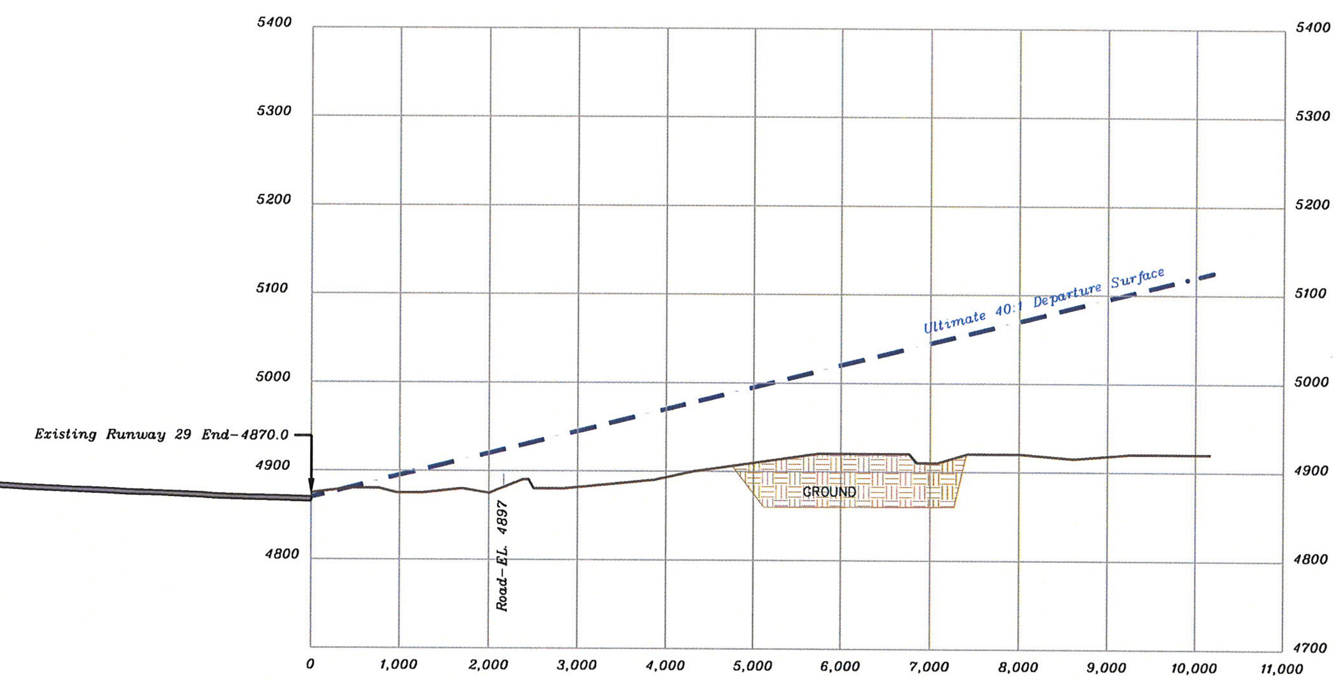
PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

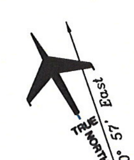
February 21, 2011

Coffman Associates
Airport Consultants
www.coffmanassociates.com









Magnetic Declination
10° 57' East (September 2009)
Annual Rate of Change 6' West

0 1000 2000 3000
HORIZONTAL SCALE IN FEET

0 100 200 300
VERTICAL SCALE IN FEET

OBSTRUCTION TABLE

Runway 11 Object Description/Elevation	Obstructed Departure Surface	Object Penetration	Proposed Object Disposition
None	–	–	–

OBSTRUCTION TABLE

Runway 29 Object Description/Elevation	Obstructed Departure Surface	Object Penetration	Proposed Object Disposition
NONE	–	–	–

No.	REVISIONS	DATE	BY	APP'D.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

WINSLOW-LINDBERGH REGIONAL AIRPORT

RUNWAY 11-29 DEPARTURE SURFACE DRAWING

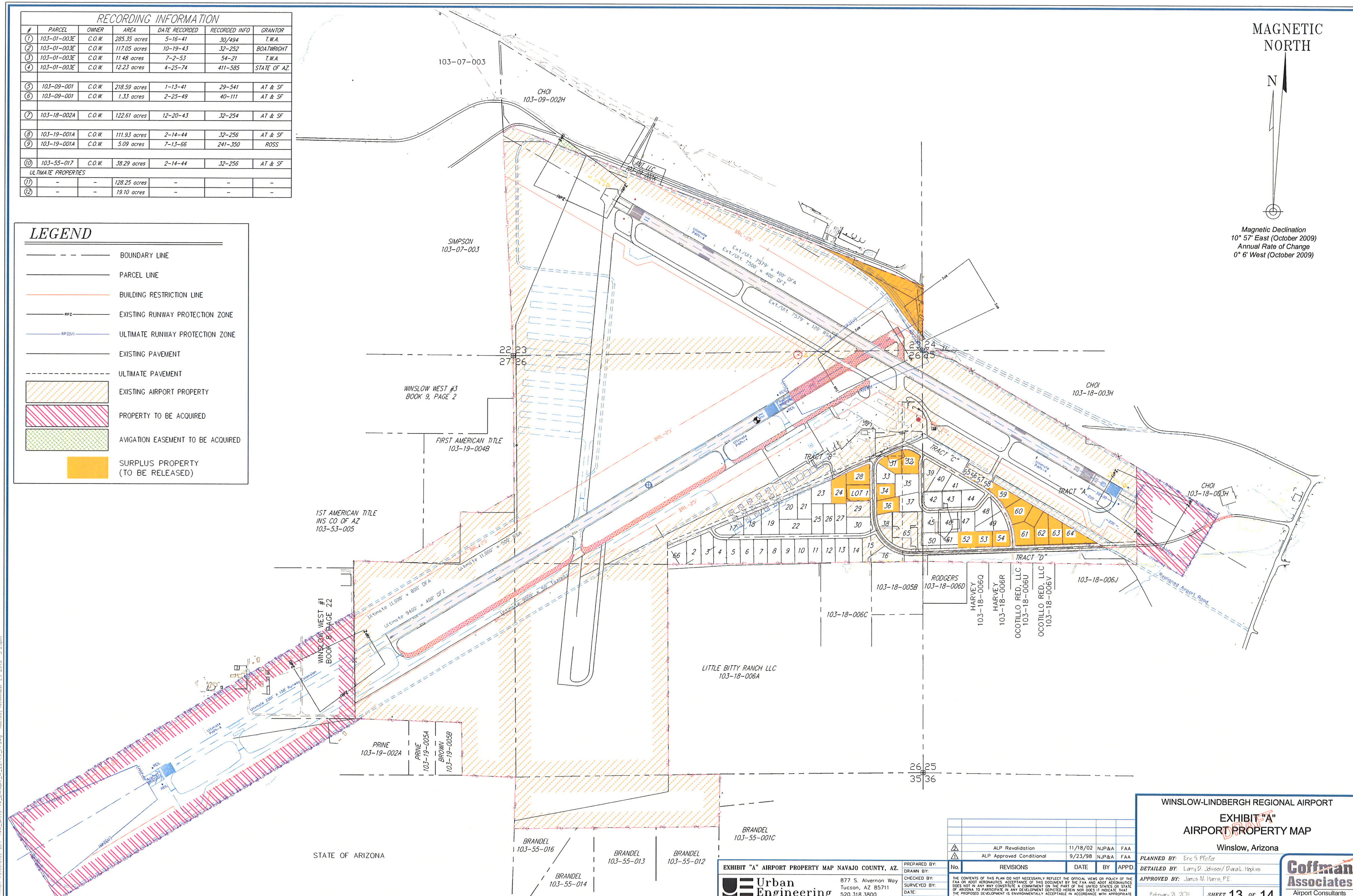
DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011

Coffman Associates
Airport Consultants
www.coffmanassociates.com



RECORDING INFORMATION

#	PARCEL	OWNER	AREA	DATE RECORDED	RECORDED INFO	GRANTOR
1	103-01-003E	C.O.W.	285.35 acres	5-16-41	30/494	T.W.A.
2	103-01-003E	C.O.W.	117.05 acres	10-19-43	32-252	BOATWRIGHT
3	103-01-003E	C.O.W.	11.48 acres	7-2-53	54-21	T.W.A.
4	103-01-003E	C.O.W.	12.23 acres	4-25-74	411-585	STATE OF AZ.
5	103-09-001	C.O.W.	218.59 acres	1-13-41	29-541	AT & SF
6	103-09-001	C.O.W.	1.33 acres	2-25-49	40-111	AT & SF
7	103-18-002A	C.O.W.	122.61 acres	12-20-43	32-254	AT & SF
8	103-19-001A	C.O.W.	111.93 acres	2-14-44	32-256	AT & SF
9	103-19-001A	C.O.W.	5.09 acres	7-13-66	241-350	ROSS
10	103-55-017	C.O.W.	38.29 acres	2-14-44	32-256	AT & SF
ULTIMATE PROPERTIES						
11	–	–	128.25 acres	–	–	–
12	–	–	19.10 acres	–	–	–

LEGEND

- BOUNDARY LINE
- PARCEL LINE
- BUILDING RESTRICTION LINE
- EXISTING RUNWAY PROTECTION ZONE
- ULTIMATE RUNWAY PROTECTION ZONE
- EXISTING PAVEMENT
- ULTIMATE PAVEMENT
- EXISTING AIRPORT PROPERTY
- PROPERTY TO BE ACQUIRED
- AVIGATION EASEMENT TO BE ACQUIRED
- SURPLUS PROPERTY (TO BE RELEASED)

No.	REVISIONS	DATE	BY	APP'D.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

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

EXHIBIT "A" AIRPORT PROPERTY MAP NAVAJO COUNTY, AZ.

Urban Engineering
877 S. Alvernon Way
Tucson, AZ 85711
520.318.3800

PREPARED BY:
DRAWN BY:
CHECKED BY:
SURVEYED BY:
DATE:
JOB No.

WINSLOW-LINDBERGH REGIONAL AIRPORT

EXHIBIT "A"
AIRPORT PROPERTY MAP

DRAFT

Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011

SHEET 13 OF 14

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WINSLOW AIRPORT INDUSTRIAL PARK
BOOK 19, PAGE 30

Surplus Property to be Released

SUBDIVISION LOT RECORDING INFORMATION

LOT #	PARCEL	OWNER	AREA	RECORDED INFO	LOT #	PARCEL	OWNER	AREA	RECORDED INFO	LOT #	PARCEL	OWNER	AREA	RECORDED INFO
1	103-01-003B	GRAYBEAL	1.37 acres		23	103-01-023	C.O.W.	1.46 acres	BY PLAT	45	103-01-045	C.O.W.	1.27 acres	BY PLAT
2	103-62-002	C.O.W.	1.33 acres	BY PLAT	24	103-62-024	GRAYBEAL	1.49 acres	1998-02446	46	103-62-046	C.O.W.	1.25 acres	BY PLAT
3	103-62-003	C.O.W.	1.36 acres	BY PLAT	25	103-62-025	C.O.W.	1.27 acres	BY PLAT	47	103-62-047	C.O.W.	1.25 acres	BY PLAT
4	103-62-004	C.O.W.	1.16 acres	BY PLAT	26	103-62-026	C.O.W.	1.27 acres	BY PLAT	48	103-62-048	C.O.W.	1.40 acres	BY PLAT
5	103-62-005	C.O.W.	1.18 acres	BY PLAT	27	103-62-027	C.O.W.	1.27 acres	BY PLAT	49	103-62-049	C.O.W.	1.46 acres	BY PLAT
6	103-62-006	C.O.W.	1.18 acres	BY PLAT	28	103-62-028	MARTINEZ	1.45 acres	2005-15550	50	103-62-050	C.O.W.	1.01 acres	BY PLAT
7	103-62-007	C.O.W.	1.18 acres	BY PLAT	29	103-62-029	C.O.W.	1.39 acres	BY PLAT	51	103-62-051	C.O.W.	1.01 acres	BY PLAT
8	103-62-008	C.O.W.	1.18 acres	BY PLAT	30	103-62-030	C.O.W.	1.43 acres	BY PLAT	52	103-62-052	HAMILTON	1.01 acres	2005-02062
9	103-62-009	C.O.W.	1.18 acres	BY PLAT	31	103-62-031	KOONTZ	1.27 acres	2003-29448	53	103-62-053	HAMILTON	1.01 acres	2005-02062
10	103-62-010	C.O.W.	1.18 acres	BY PLAT	32	103-62-032	JUERGENS	1.43 acres	2008-2198	54	103-62-054	TA CHI NII	1.01 acres	2005-14872
11	103-62-011	C.O.W.	1.18 acres	BY PLAT	33	103-62-033	C.O.W.	1.05 acres	BY PLAT	55	103-62-055A	STEWART	0.25 acres	2002-22991
12	103-62-012	C.O.W.	1.18 acres	BY PLAT	34	103-62-034	McNEELY	1.04 acres	2005-02063	56	103-62-055A	STEWART	0.25 acres	2002-22991
13	103-62-013	C.O.W.	1.18 acres	BY PLAT	35	103-62-035	C.O.W.	1.74 acres	BY PLAT	57	103-62-055A	STEWART	0.25 acres	2002-22991
14	103-62-014	C.O.W.	1.18 acres	BY PLAT	36	103-62-036	McNEELY	1.19 acres	2005-02063	58	103-62-055A	STEWART	0.25 acres	2002-22991
15	103-62-015	C.O.W.	1.31 acres	BY PLAT	37	103-62-037	C.O.W.	1.29 acres	BY PLAT	59	103-62-059	PEARSON	1.30 acres	2004-17701
16	103-62-016	C.O.W.	1.33 acres	BY PLAT	38	103-62-038	C.O.W.	1.18 acres	BY PLAT	60	103-62-060	TURRELL	1.53 acres	2004-25579
17	103-62-017	C.O.W.	1.20 acres	BY PLAT	39	103-62-039	C.O.W.	1.14 acres	BY PLAT	61	103-62-061	TURRELL	1.63 acres	2004-25579
18	103-62-018	C.O.W.	1.40 acres	BY PLAT	40	103-62-040	C.O.W.	1.12 acres	BY PLAT	62	103-62-062	TURRELL	1.43 acres	2004-25579
19	103-62-019	C.O.W.	1.84 acres	BY PLAT	41	103-62-041	C.O.W.	1.12 acres	BY PLAT	63	103-62-063	BREWSTER	1.33 acres	2005-00552
20	103-62-020	C.O.W.	1.43 acres	BY PLAT	42	103-62-042	C.O.W.	1.08 acres	BY PLAT	64	103-62-064	PRATT	1.45 acres	2005-01263
21	103-62-021	C.O.W.	1.43 acres	BY PLAT	43	103-62-043	C.O.W.	1.19 acres	BY PLAT	65	103-62-065	C.O.W.	3.95 acres	BY PLAT
22	103-62-022	C.O.W.	1.77 acres	BY PLAT	44	103-62-044	C.O.W.	1.19 acres	BY PLAT	66	103-62-066	C.O.W.	1.33acres	BY PLAT

SUBDIVISION TRACT RECORDING INFORMATION

TRACT	PARCEL	OWNER	AREA	RECORDED INFO
A	103-62-999	TURRELL	0.79 acres	2004-25579
B	103-62-998	C.O.W.	0.25 acres	BY PLAT
C	103-62-997B	JUERGENS	2.92 acres	
	103-62-997A	C.O.W.	0.47 acres	BY PLAT
D	103-62-996	C.O.W.	7.94 acres	BY PLAT

No.	REVISIONS	DATE	BY	APPD.
2	ALP Revalidation	11/18/02	NJP&A	FAA
1	ALP Approved Conditional	9/23/98	NJP&A	FAA

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EXHIBIT "A" AIRPORT PROPERTY MAP NAVAJO COUNTY, AZ.

PREPARED BY:
DRAWN BY:
CHECKED BY:
SURVEYED BY:
DATE:
JOB No.

Urban Engineering
877 S. Alvernon Way
Tucson, AZ 85711
520.318.3800

WINSLOW-LINDBERGH REGIONAL AIRPORT
EXHIBIT "A"
AIRPORT PROPERTY MAP
(AIRPORT INDUSTRIAL PARK)
Winslow, Arizona

PLANNED BY: Eric S. Pfeifer
DETAILED BY: Larry D. Johnson/ Diana L. Hopkins
APPROVED BY: James M. Harris, P.E.

February 21, 2011

SHEET 14 OF 14

Coffman Associates
Airport Consultants
www.coffmanassociates.com

Coffman Associates-LD: INW_gr113-14_EXHIBIT_A_22709_r1.dwg Tuesday November 23, 2010 3:20pm

Chapter Six

CAPITAL IMPROVEMENT PROGRAM

Capital Improvement Program

The implementation of the Winslow-Lindbergh Regional Airport Master Plan will require sound judgment on the part of airport management. Among the more important factors influencing decisions to carry out a recommendation are timing and airport activity. Both of these factors should be used as references in plan implementation.

Experience has indicated that problems can materialize from the standard time-based format of traditional planning documents. The problems typically center on inflexibility and an inability to deal with unforeseen changes that may occur.

While it is necessary for scheduling and budgeting purposes to consider timing of airport development, the actual need for facilities is established by airport activity. Proper master planning implementation suggests the use of airport activity levels, rather than time, as guidance for development.

This section of the Master Plan is intended to become one of the primary references for decision-makers responsible for implementing master plan recommendations. Consequently, the narrative and graphic presentations must provide understanding of each recommended development item. This understanding will be critical in maintaining a realistic and cost-effective program that provides maximum benefit to the community.

AIRPORT DEVELOPMENT SCHEDULES AND COST SUMMARIES

Once the specific needs and improvements for the airport have been established, the next step is to determine the cost of development and a realistic schedule for implementing the plan. This section will examine the overall cost of each item in the development plan and present a development schedule.

The recommended improvements are grouped by planning horizon: short term, intermediate term, and long term. **Table 6A** summarizes the key milestones for each of the three planning horizons.

TABLE 6A
Planning Horizon Summary
Winslow-Lindbergh Regional Airport

	Base Demand	Short Term	Intermediate Term	Long Term
Based Aircraft	14	15	17	21
Annual Operations				
General Aviation				
Itinerant	7,400	8,040	8,900	10,750
Local	950	1,000	1,080	1,250
Military	480	480	480	480
Total Operations	8,830	9,520	10,460	12,480

A key aspect of this planning document is the use of demand-based planning milestones. The short term planning horizon contains items of highest priority. These items should be considered for development based on actual demand levels within the next five years. As short term horizon activity levels are reached, it will then be time to program for the intermediate term based upon the next activity milestones. Similarly, when the intermediate term milestones are reached, it will be time to program for the long term activity milestones.

Many development items included in the recommended concept will need to follow demand indicators. For example, the plan includes construction of hangar facilities. Based aircraft will be the indicator for additional hangar needs. If based aircraft growth occurs as projected, additional hangars will need to be constructed to meet the demand. If growth slows or does not occur as projected, hangar development projects can be delayed. As a result, capital expenditures will be undertaken as needed, which leads to a responsible use of capital assets. Some development items do not depend on demand, such as pavement maintenance. These types of projects typically are associated with day-to-day operations and should be monitored and identified by airport management.

As a master plan is a conceptual document, implementation of these capital projects should only be undertaken

after further refinement of their design and costs through architectural and engineering analyses. Moreover, some projects, such as the extension of Runway 4-22, will require further study at the time of implementation.

The cost estimates presented in this chapter have been increased to allow for contingencies that may arise on the project. Capital costs presented here should be viewed only as estimates subject to further refinement during design. Nevertheless, these estimates are considered sufficiently accurate for planning purposes. Cost estimates for each of the development projects listed in the capital improvement plan are listed in current (2009) dollars. **Exhibit 6A** presents the proposed capital improvement program for Winslow-Lindbergh Regional Airport.

SHORT TERM IMPROVEMENTS

As indicated above, the short term planning horizon is the only development stage that is correlated to time. This is because development within this initial period is concentrated first on the most immediate needs of the airfield and landside areas. Therefore, the program is presented year-by-year for the first five years (2010-2014) to assist in capital improvement. The short term improvement projects are depicted on **Exhibit 6B** with red shading.

The primary focus of the short term planning horizon is to fully comply with FAA design standards to ensure that safety area standards are met and provide the airport with essential facilities and the property that will be needed to preserve its long term viability. The first step is to acquire lands immediately adjacent to the airport that are planned for ultimate airfield development projects and for runway protection. The airport development plan proposes the fee simple acquisition of approximately 149 acres of land to the southwest and to the east of existing airport property. This land is needed for the extension to Runway 4-22, the construction of an airport perimeter service road and for the protection of the Runway 29 approach. An avigation easement is needed for a three-acre parcel of land along the north side of the airport for the protection of the building restriction line and approach surface at the Runway 11 end.

The southwesterly extension of Runway 4-22 will require the demolition and relocation of a portion of the Ruby Wash Diversion levee. In addition to the demolition and construction work, a Conditional Letter of Map Revision (CLOMR) will need to be processed with the Federal Emergency Management Agency (FEMA) to conditionally revise the floodplain. Subsequent to approval of the CLOMR and construction of the levee realignment, a final Letter of Map Revision (LOMR) may be pursued. This process is eligible for AIP funding since it is a result of the runway extension project. The cost of the floodplain revision process, estimated at $100,000, has been included in the levee realignment project (Project #1 in 2016) on **Exhibit 6A**.

Once adequate land has been acquired to the southwest of the airport and the

levee has been realigned, the shifting of Runway 4-22 1,800 feet to the southwest can be undertaken. This shift will remove the Runway 22 runway protection zone (RPZ), runway safety area (RSA), and object free area (OFA) from encompassing residential dwellings off the end of the runway. This runway shift will also eliminate the runway visibility zone (RVZ) that currently exists since Runways 4-22 and 11-29 will no longer intersect. This is important since the RVZ currently encompasses many of the landside facilities including the terminal building and the TAT conventional hangar.

Additional airfield capital improvement projects include the replacement of visual slope approach indicator (VASI) lighting systems with the more accurate precision approach path indicator (PAPI) lighting systems on each runway end, the construction of taxiway holding aprons at each end of Taxiway A, and the installation of distance remaining signage on Runway 4-22.

Short term landside capital improvement projects include the construction of an aircraft wash rack at the southwest corner of the existing south general aviation (GA) apron and the installation of designated helicopter parking spaces at the northeast end of the south GA apron.

Additional projects have been included from the airport's existing Arizona Capital Improvement Program (ACIP) list. These include an airport drainage study, pavement rehabilitation, a perimeter fencing project, and expansion of utilities for future airport development. The ACIP will be discussed in more detail in the Capital Improvements Funding section.

The total investment necessary for the short term CIP is approximately $30.2 million. Of this total, $26.9 million is eligible for FAA grant funding, $2.4 million is eligible for state funds, with the airport sponsor responsible for $897,027.

INTERMEDIATE PLANNING HORIZON

The intermediate term planning horizon focuses on the airport's development needs during the six- to ten-year time frame. Due to the fluid nature of general aviation growth and the uncertainty of infrastructure and development needs more than five years into the future, the projects in the intermediate term were combined into a single project listing and not prioritized by year. However, the project listing is intended to depict a prioritization of projects as now anticipated to meet future demand. Intermediate projects are depicted on **Exhibit 6B** with yellow shading.

The implementation of many of the items in the intermediate term should be based upon actual demand. Those projects, such as the construction of additional apron and taxiways, should not be undertaken unless there is an existing demand for such facilities.

The intermediate term projects focus on the expansion of landside facilities to accommodate growth in operational

08MP06-6A-10/19/10

	TOTAL PROJECT COST	FAA ELIGIBLE	ADOT ELIGIBLE	LOCAL SHARE
SHORT TERM				
2012				
1 Phase II - Runway 4-22 Reconstruction	$4,200,000	3,990,000	$105,000	$105,000
2 South Apron Construction Phase II (16,000 SY)	1,700,000	1,615,000	42,500	42,500
3 Environmental Assessment for Land Acquisitions	200,000	190,000	5,000	5,000
4 Phase I - Design Reconstruction for Runway 11-29 (60,000 SY)	300,000	--	270,000	30,000
5 Desing 38,200 LF Perimeter Fencing for Airport Perimeter - Phase I	100,000	--	90,000	10,000
2012 Subtotal	**$6,500,000**	**$5,795,000**	**$512,500**	**$192,500**
2013				
1 Phase II - Runway Reconstruction for Runway 11-29 Construction (30,000 SY)	$3,800,000	$3,610,000	$95,000	$95,000
2 Phase I - Design Airfield Taxiway A Pavement Preservation (50,000 SY)	70,000	--	63,000	7,000
3 Install PAPI's for Runways 4, 22, and 29	150,000	--	135,000	15,000
4 Install 6,300 LF perimeter fencing on approach end of Runway 11 - Phase II	250,000	--	225,000	25,000
5 Acquire 149 Acres	1,046,000	993,700	26,150	26,150
2013 Subtotal	**$5,316,000**	**$4,603,700**	**$544,150**	**$168,150**
2014				
1 Phase III - Runway Reconstruction for Runway 11-29 (30,000 SY)	$3,800,000	$3,610,000	$95,000	$95,000
2 Phase II - Construct Airfield Taxiway A Pavement Preservation (50,000 SY)	735,000	698,250	18,375	18,375
3 Install 28,400 LF Perimeter Fencing on Approach End of Runway 4 - Phase II	650,000	617,500	16,250	16,250
4 Acquire Avigation Easement - 3 Acres	73,000	--	65,700	7,300
5 Design Taxiway A Holding Aprons - Phase I (8,700 SY)	120,000	--	108,000	12,000
6 Phase I - Design Airfield Taxiway B Pavement Preservation (45,000 SY)	25,000	--	22,500	2,500
7 Design Distance Remaining Signage on Runway 4-22	18,000	--	16,200	1,800
8 Environmental Assessment for Runway 4-22 Pavement Shift	200,000	190,000	5,000	5,000
9 Design Taxiway A Holding Aprons - Phase II (8,700 SY)	120,000	--	108,000	12,000
2014 Subtotal	**$5,741,000**	**$5,115,750**	**$455,025**	**$170,225**
2015				
1 Design Shift 1,800 LF of Runway 4-22 Pavement to the Southwest	$400,000	$--	$360,000	$40,000
2 Construct Taxiway A Holding Aprons - Phase II (8,700 SY)	1,281,161	1,217,103	32,029	32,029
3 Install Distance Remaining Signage on Runway 4-22	174,000	165,300	4,350	4,350
4 Phase II - Construct Airfield Taxiway B Pavement Preservation (45,000 SY)	250,000	--	225,000	25,000
5 Construct 3,500 LF Perimeter Fencing on Approach End of Runway 29 - Phase II	400,000	380,000	10,000	10,000
6 Design Aircraft Wash Rack - Phase I (Southwest of the South Apron)	21,000	--	18,900	2,100
2015 Subtotal	**$2,526,161**	**$1,762,403**	**$650,279**	**$113,479**
2016				
1 Demolish and Relocate Ruby Wash Diversion Levee to Accommodate Runway 4-22 Extension	$4,230,000	$4,018,500	$105,750	$105,750
2 Construct Shift 1,800 LF of Runway 4-22 Pavement to the Southwest	5,393,900	5,124,205	134,848	134,848
3 Conduct Airport Master Plan Update	250,000	237,500	6,250	6,250
4 Construct Aircraft Wash Rack - Phase II	206,000	195,700	5,150	5,150
5 Install Helicopter Parking Spaces (Northeast side of South Apron)	27,000	25,650	675	675
2016 Subtotal	**$10,106,900**	**$9,601,555**	**$252,673**	**$252,673**
Short Term Totals	**$30,190,061**	**$26,876,408**	**$2,414,627**	**$897,027**

	TOTAL PROJECT COST	FAA ELIGIBLE	ADOT ELIGIBLE	LOCAL SHARE
INTERMEDIATE TERM				
Expand USFS Apron (9,700 SY)	$1,553,845	$1,476,153	$38,846	$38,846
Construct Airport Perimeter Service Road	3,737,900	3,551,005	93,448	93,448
Realign Airport Road	746,325	709,009	18,658	18,658
Expand Terminal Parking Lot (920 SY)	597,340	567,473	14,934	14,934
Expand South General Aviation Apron (7,333 SY)	1,296,900	1,232,055	32,423	32,423
Expand Barrigan Road and Construct Parking Lot (6,250 SY)	922,075	--	--	922,075
Grade and Coat Aircraft Storage Area	1,773,425	--	--	1,773,425
Pavement Maintenance	3,000,000	2,850,000	$75,000	$75,000
Intermediate Term Totals	***$13,627,810***	***$10,385,695***	***$273,308***	***$2,968,808***
LONG TERM				
Relocate Taxiway B to 400 LF Separation Distance	$4,940,100	$4,693,095	$123,503	$123,503
Extend Runway 4-22 and Taxiway B 1,501 LF	6,325,150	6,008,893	158,129	158,129
Expand South General Aviation Apron (15,700 SY)	2,423,170	2,302,012	60,579	60,579
Construct Three T-Hangar Taxilanes	1,186,925	1,127,579	29,673	29,673
Extend Barrigan Road and Construct T-Hangar Parking Lot	596,075	--	--	596,075
Pavement Maintenance	6,000,000	5,700,000	150,000	150,000
Long Term Totals	***$21,471,420***	***$19,831,578***	***$521,884***	***$1,117,959***
TOTAL DEVELOPMENT COSTS	**$65,289,291**	**$57,095,680**	**$3,209,818**	**$4,983,793**

Exhibit 6A
CAPITAL IMPROVEMENT PROGRAM

08MP06-6B-10/18/10

SHORT TERM PROJECTS

1. Acquire 149 Acres
2. Acquire Avigation Easement 3 Acres
3. Remove 1,800' of Pavement
4. Relocate Ruby Wash Diversion Levee
5. Extend Runway 4-22; Taxiway B 1,800'
6. Construct Taxiway A Holding Aprons
7. Construct Aircraft Wash Rack
8. Install Helicopter Parking Spaces

INTERMEDIATE TERM PROJECTS

1. Expand USFS Apron (9,700 yd²)
2. Construct Airport Perimeter Service Road
3. Construct Airport Road Realignment
4. Expand Terminal Parking Lot (920 yd²)
5. Expand South General Aviation Apron (7,333 yd²)
6. Expand Barrigan Road and Construct Parking Lot (6,250 yd²)
7. Grade Aircraft Storage Area

LONG TERM PROJECTS

1. Relocate Taxiway B to 400' Separation Distance
2. Extend Runway 4-22 and Taxiway B 1,501'
3. Expand South General Aviation Apron (15,700 yd²)
4. Construct Three T-Hangar Taxilanes
5. Extend Barrigan Road and Construct T-Hangar Parking Lot

Runway 11-29 (7,099' x 150')

Runway 4-22 (7,499' x 150')

Ultimate (9,000' x 150')

Coppertown Rd.

Coppertown Bypass

Central St.

Barrigan Rd.

Airport Rd.

Highway 87/99

LEGEND

- Airport Property Line
- Ultimate Property Line
- Pavement to be Removed
- Runway Protection Zone (RPZ)
- Runway Safety Area (RSA)
- Object Free Area (OFA)
- Building Restriction Line (BRL)
- Short Term Projects
- Intermediate Term Projects
- Long Term Projects

NORTH

0 1000 2000

SCALE IN FEET

DATE OF PHOTO: 10/20/08

CITY OF WINSLOW

Exhibit 6B
AIRPORT DEVELOPMENT STAGING

activities. This includes a 9,700 square yard expansion of the U.S. Forest Service (USFS) apron, and a 7,333 square yard expansion of the south GA apron. The USFS apron expansion will provide adequate parking space for an additional three firefighting aircraft. The expansion of the south GA apron will enlarge itinerant and local aircraft parking capacity, as well as provide a location for hangar development. Barrigan Road is planned to be extended to the southwest to provide roadway access to a parking lot that would serve future hangar developments adjacent to the south GA apron. The terminal parking lot is planned to be expanded by 920 square yards to increase parking capacity.

Airport Road is planned to be realigned in the intermediate term. This realignment would shift the road to the south removing it from passing through the Runway 29 RPZ. An airport perimeter service road is also planned to be constructed to encompass all airfield facilities. This road will allow airport maintenance personnel and emergency service personnel to access the airfield without having to utilize active runways and taxiways.

A project to grade and coat land adjacent to the abandoned runway for future use as an aircraft storage area is planned in the intermediate term. This project should not be undertaken unless an entity has committed to operate an aircraft storage business at the airport.

A total of $3.0 million is included in this planning period for on-going pavement maintenance needs such as crack sealing, rejuvenating seal coats, and slab replacements as necessary.

The total investment necessary for the intermediate term CIP is approximately $13.6 million. Of this total, $10.4 million is eligible for FAA grant funding, and $273,308 is eligible for state funds, with the airport sponsor responsible for $3.0 million.

LONG TERM PLANNING HORIZON

Long term improvements, as presented on **Exhibit 6B** with blue shading, continue the expansion of airside facilities to improve the safety for increased operations by firefighting aircraft and aircraft aprons to improve parking capacity.

Airfield improvements are focused on meeting ARC C-III design standards, which will need to be instituted once aerial firefighting operations exceed 500 annually. These airfield improvements include the relocation of Taxiway B to a runway/taxiway centerline separation distance of 400 feet. Runway 4-22 is planned to be extended an additional 1,501 feet to the southwest to meet the recommended full runway length of 9,000 feet. Improvements to Taxiway B include the construction of taxiway holding aprons.

Long term landside projects include the continued expansion of the south GA apron by 15,700 square yards. To accommodate potential T-hangar de-

velopment, taxilanes are planned to be constructed from the south GA apron expansion. These taxilanes would allow for three T-hangars to be constructed. Parking for these hangar facilities is planned to be extended from Barrigan Road.

A total of $6.0 million is included in this planning period for on-going pavement maintenance needs such as crack sealing, rejuvenating seal coats, and slab replacements as necessary.

The total investment necessary for the long term CIP is approximately $21.5 million. Of this total, $19.8 million is eligible for FAA grant funding, $521,884 is eligible for state funds, with the airport sponsor responsible for $1.1 million.

CAPITAL IMPROVEMENTS FUNDING

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

FEDERAL GRANTS

The United States Congress has long recognized the need to develop and maintain a system of aviation facilities across the nation for the purpose of national defense and promotion of interstate commerce. Various grants-in-aid programs to public airports have been established over the years for this purpose. The most recent legislation is the *Airport Improvement Program* (AIP) of 1982. The AIP has been reauthorized several times, with the most recent legislation enacted in 2003 and entitled the *Vision 100 – Century of Aviation Reauthorization Act.*

Fiscal year 2007 was the last year of the four-year program. That bill presented similar funding levels to the previous reauthorization – *AIR-21*. Funding was authorized at $3.7 billion in 2007. *Vision 100* expired in September 2007 and since that time, Congress has not passed reauthorization legislation. However, Congress passed the FAA *Extension Act of 2008, Part II*, which is a continuation of funds through March 6, 2009. Funds available from October 1, 2008 to March 6, 2009 totaled $1.5 billion. On March 30, 2009, the President signed another bill extending the AIP program through the end of September 2009. Funds made available by this bill total $3.5 billion.

The source for AIP funds is the Aviation Trust Fund. The Aviation Trust Fund was established in 1970 to provide funding for aviation capital investment programs (aviation development, facilities and equipment, and research and development). The Trust Fund also finances the operation of the FAA. It is funded by user fees, taxes on airline tickets, aviation fuel, and various aircraft parts. Funds are distributed each year by the FAA from appropriations by Congress. A portion of the annual distribution is to prima-

ry commercial service airports based upon enplanement levels. General aviation airports, such as Winslow-Lindbergh Regional Airport, also received entitlements under the last reauthorization in the amount of $150,000 annually. After all specific funding mechanisms are distributed, the remaining AIP funds are disbursed by the FAA, based upon the priority of the project for which they have requested federal assistance through discretionary apportionments. A national priority system is used to evaluate and rank each airport project. Those projects with the highest priority are given preference in funding.

Under the AIP program, examples of eligible development projects include the airfield, aprons, and access roads. Passenger terminal building improvements (such as bag claim and public waiting lobbies) may also be eligible for FAA funding. Under the newest version of AIP, *Vision 100*, automobile parking at small hub airports can also be eligible. Improvements such as fueling facilities, utilities (with the exception of water supply for fire prevention), hangar buildings, airline ticketing, and airline operations areas are not typically eligible for AIP funds.

Under *Vision 100*, Winslow-Lindbergh Regional Airport has been eligible for 95 percent funding assistance from AIP grants, as opposed to the previous *AIR-21* level of 90 percent. While similar programs have been in place for over 50 years, it will be up to Congress to either extend or draft new legislation authorizing and appropriating future federal funding.

STATE AID TO AIRPORTS

In support of the state airport system, the State of Arizona also participates in airport improvement projects. The source for state airport improvement funds is the Arizona Aviation Fund. Taxes levied by the state on aviation fuel, flight property, aircraft registration tax, and registration fees (as well as interest on these funds), are deposited in the Arizona Aviation Fund. The state transportation board (STB) establishes the policies for distribution of these state funds. To ensure proper project planning and eligibility of state funded projects, the STB requires airports to submit a five-year airport capital improvement program (ACIP). The ACIP is reviewed and approved annually by the STB so that funds are allocated appropriately to maintain safe and orderly development of the Arizona airport system.

Under the State of Arizona grant program, an airport can receive funding for one-half (2.5 percent) of the local share of projects receiving federal AIP funding. The state also provides 90 percent funding for projects which are typically not eligible for federal AIP funding or have not received federal funding. Due to current economic conditions and Arizona state budget issues, the availability of airport capital improvement funds is limited and will likely remain limited over the next few years.

State Airport Loan Program

The Arizona Department of Transportation - Aeronautics Division (ADOT) Airport Loan Program was established

to enhance the utilization of state funds and provide a flexible funding mechanism to assist airports in funding improvement projects. Eligible projects include runway, taxiway, and apron improvements; land acquisition; planning studies; and the preparation of plans and specifications for airport construction projects; as well as revenue-generating improvements such as hangars and fuel storage facilities. Projects which are not currently eligible for the State Airport Loan Program are considered if the project would enhance the airport's ability to be financially self-sufficient.

There are two ways in which the loan funds can be used: Matching Funds or Revenue Generating Projects. The Matching Funds are provided to meet the local matching fund requirement for securing federal airport improvement grants or other federal or state grants. The Revenue Generating Projects' funds are provided for airport-related construction projects that are not eligible for funding under another program.

Pavement Maintenance Program

The airport system in Arizona is a multi-million dollar investment of public and private funds that must be protected and preserved. State aviation fund dollars are limited and the State Transportation Board recognizes the need to protect and extend to the maximum amount the useful life of the airport system's pavement. This program, the Arizona Pavement Preservation Program (APPP), is established to assist in the preservation of the Arizona airport system infrastructure. Winslow-Lindbergh Regional Airport participates in this program.

Public Law 103-305 requires that airports requesting federal AIP funding for pavement rehabilitation or reconstruction have an effective pavement maintenance management system. To this end, ADOT-Aeronautics has completed and is maintaining an Airport Pavement Management System (APMS) which, coupled with monthly pavement evaluations by the airport sponsors, fulfills this requirement.

The Arizona Airport Pavement Management System uses the Army Corps of Engineers' "Micropaver" program as a basis for generating a Five-Year Airport Pavement Preservation Program (APPP). The APMS consists of visual inspections of all airport pavements. Evaluations are made of the types and severities observed and entered into a computer program database. Pavement Condition Index (PCI) values are determined through the visual assessment of pavement condition in accordance with the most recent FAA Advisory Circular 150/5380-6, and range from 0 (failed) to 100 (excellent). Every three years, a complete database update with new visual observations is conducted. Individual airport reports from the update are shared with all participating system airports. The Aeronautics Division ensures that the APMS database is kept current, in compliance with FAA requirements.

Every year, the Aeronautics Division, utilizing the APMS, will identify airport pavement maintenance projects eligible for funding for the upcoming five years. These projects will appear

in the State's Five-Year Airport Development Program. Once a project has been identified and approved for funding by the STB, the airport sponsor may elect to accept a state grant for the project and not participate in the Airport Pavement Preservation Program (APPP), or the airport sponsor may sign an Inter-Government Agreement (IGA) with the Aeronautics Division to participate in the APPP.

LOCAL FUNDING

The balance of project costs, after consideration has been given to grants, must be funded through airport resources. Assuming federal funding, this essentially equates to 2.5 percent of the project costs if all eligible FAA and state funds are available. If only ADOT grants are available, the airport share would be 10 percent of the project.

According to **Exhibit 6A**, airport funding will be needed in each planning horizon. This includes $897,027 in the short term, $3.0 million in the intermediate term, and $1.1 million in the long range. Airport funding is usually accomplished through the use of airport earnings and reserves, to the extent possible, with the remaining costs financed through revenue bonding.

The following subsections provide a review of the sources of operating revenue that are available at Winslow-Lindbergh Regional Airport to assist in meeting operating expenses and capital improvement program costs for the airport. These include land leases, fuel revenues, and other income sources.

Land Leases

The City of Winslow currently leases land to several entities at the airport for aviation-related uses. Leasable land is still available on existing airport property that can be developed for aviation-related uses. The available land not only offers flexibility in the development of the airport, but also a source for operating revenue.

The option exists for the City to fund the construction of hangar facilities or to allow private entities to lease land from the City to construct hangars. Separate cost estimates for T-hangar and conventional hangar construction has been prepared and is presented in **Table 6B**. These costs estimate $50,000 per T-hangar unit and $75 a square foot for conventional hangar construction.

TABLE 6B
Hangar Development Cost Estimates
Winslow-Lindbergh Regional Airport

T-Hangar Units	30
Estimated Cost	$1,500,000
Conventional Hangar (s.f.)	39,375
Estimated Cost	$2,953,125

Current land leases on the airport are in line with comparable lease rates at other general aviation airports. Lease clauses should be included to permit periodical adjustments for inflation.

Tie-down fees are another source of revenue to the airport that is similar

to a land lease. Local tie-downs are leased to individual aircraft owners on a monthly basis, while fees are charged for transient tie-downs on an overnight basis.

Fuel Revenues

Fuel sales at Winslow-Lindbergh Regional Airport are provided by Wiseman Aviation. Fueling services include self-service or full-service AvGas and Jet A fuel sold at going market rates. The city collects a flowage fee for every gallon of fuel sold by Wiseman Aviation. These fuel revenues can be expected to increase due to the higher amounts of fuel used by turbine-powered aircraft.

Other Income

There are other smaller and less reliable sources of income that can be considered at the airport. Other income typically includes landing fees, automobile parking, concession income, and special events.

Landing fees and automobile parking are not typically charged on general aviation airports due to the low return for the cost of collection. Landing fees on larger aircraft that use the airport may be considered, but could also be a deterrent to use of the airport. The trade-off could be more significant losses in potential fuel revenues than could be gained from landing fees.

Fees from advertising and concessions in an airport-owned terminal building would be a means of helping to support the operating and construction costs of the facility. General aviation airports are often good locations for hosting special events such as air shows and fly-ins. While part of the interest in hosting special events is to draw attention to the airport's facilities, temporary use of available areas can also provide additional revenue.

PLAN IMPLEMENTATION

The best means to begin implementation of the recommendations in this master plan is to first recognize that planning is a continuous process that does not end with completion and approval of this document. Rather, the ability to continuously monitor the existing and forecast status of airport activity must be provided and maintained. The issues upon which this master plan is based will remain valid for a number of years. The primary goal is for the airport to best serve the air transportation needs of the region, while continuing to be economically self-sufficient.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. For example, projections have been made as to when additional hangars may be needed at the airport. In reality, however, the timeframe in which the development is needed may be substantially different. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate development. Although every effort has been made in this master planning process to conserva-

tively estimate when facility development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The real value of a usable master plan is in keeping the issues and objectives in the minds of the managers and decision-makers so that they are better able to recognize change and its effect. In addition to adjustments in aviation demand, decisions made as to when to undertake the improvements recommended in this master plan will impact the period that the plan remains valid. The format used in this plan is intended to reduce the need for formal and costly updates by simply adjusting the timing. Updating can be done by the manager, thereby improving the plan's effectiveness.

In summary, the planning process requires that airport management consistently monitor the progress of the airport in terms of aircraft operations and based aircraft. Analysis of aircraft demand is critical to the timing and need for new airport facilities. The information obtained from continually monitoring airport activity will provide the data necessary to determine if the development schedule should be accelerated or decelerated.

Appendix A

GLOSSARY OF TERMS

Glossary of Terms

A

ABOVE GROUND LEVEL: The elevation of a point or surface above the ground.

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

ADVISORY CIRCULAR: External publications issued by the FAA consisting of nonregulatory material providing for the recommendations relative to a policy, guidance and information relative to a specific aviation subject.

AIR CARRIER: An operator which: (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a current contract with the U.S. Postal Service. Certified in accordance with Federal Aviation Regulation (FAR) Parts 121 and 127.

AIRCRAFT: A transportation vehicle that is used or intended for use for flight.

AIRCRAFT APPROACH CATEGORY: A grouping of aircraft based on 1.3 times the stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

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

AIRCRAFT OPERATION: The landing, takeoff, or touch-and-go procedure by an aircraft on a runway at an airport.

AIRCRAFT OPERATIONS AREA (AOA): A restricted and secure area on the airport property designed to protect all aspects related to aircraft operations.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION: A private organization serving the interests and needs of general aviation pilots and aircraft owners.

AIRCRAFT RESCUE AND FIRE FIGHTING: A facility located at an airport that provides emergency vehicles, extinguishing agents, and personnel responsible for minimizing the impacts of an aircraft accident or incident.

AIRFIELD: The portion of an airport which contains the facilities necessary for the operation of aircraft.

AIRLINE HUB: An airport at which an airline concentrates a significant portion of its activity and which often has a significant amount of connecting traffic.

AIRPLANE DESIGN GROUP (ADG): A grouping of aircraft based upon wingspan. The groups are as follows:

- Group I: Up to but not including 49 feet.
- Group II: 49 feet up to but not including 79 feet.
- Group III: 79 feet up to but not including 118 feet.
- Group IV: 118 feet up to but not including 171 feet.
- Group V: 171 feet up to but not including 214 feet.
- Group VI: 214 feet or greater.

AIRPORT AUTHORITY: A quasi-governmental public organization responsible for setting the policies governing the management and operation of an airport or system of airports under its jurisdiction.

AIRPORT BEACON: A navigational aid located at an airport which displays a rotating light beam to identify whether an airport is lighted.

AIRPORT CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

AIRPORT ELEVATION: The highest point on the runway system at an airport expressed in feet above mean sea level (MSL).

AIRPORT IMPROVEMENT PROGRAM: A program authorized by the Airport and Airway

Improvement Act of 1982 that provides funding for airport planning and development.

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

AIRPORT LAYOUT PLAN (ALP): A scaled drawing of the existing and planned land and facilities necessary for the operation and development of the airport.

AIRPORT LAYOUT PLAN DRAWING SET: A set of technical drawings depicting the current and future airport conditions. The individual sheets comprising the set can vary with the complexities of the airport, but the FAA-required drawings include the Airport Layout Plan (sometimes referred to as the Airport Layout Drawing (ALD), the Airport Airspace Drawing, and the Inner Portion of the Approach Surface Drawing, On-Airport Land Use Drawing, and Property Map.

AIRPORT MASTER PLAN: The planner's concept of the long-term development of an airport.

AIRPORT MOVEMENT AREA SAFETY SYSTEM: A system that provides automated alerts and warnings of potential runway incursions or other hazardous aircraft movement events.

AIRPORT OBSTRUCTION CHART: A scaled drawing depicting the Federal Aviation Regulation (FAR) Part 77 surfaces, a representation of objects that penetrate these surfaces, runway, taxiway, and ramp areas, navigational aids, buildings, roads and other detail in the vicinity of an airport.

AIRPORT REFERENCE CODE (ARC): A coding system used to relate airport design criteria to the operational (Aircraft Approach Category) to the physical characteristics (Airplane Design Group) of the airplanes intended to operate at the airport.

AIRPORT REFERENCE POINT (ARP): The latitude and longitude of the approximate center of the airport.

AIRPORT SPONSOR: The entity that is legally responsible for the management and operation of an airport, including the fulfillment of the requirements of laws and regulations related thereto.

AIRPORT SURFACE DETECTION EQUIPMENT: A radar system that provides air traffic controllers with a visual representation of the movement of aircraft and other vehicles on the ground on the airfield at an airport.

AIRPORT SURVEILLANCE RADAR: The primary radar located at an airport or in an air traffic control terminal area that receives a signal at an antenna and transmits the signal to air traffic control display equipment defining the location of aircraft in the air. The signal provides only the azimuth and range of aircraft from the location of the antenna.

AIRPORT TRAFFIC CONTROL TOWER (ATCT): A central operations facility in the terminal air traffic control system, consisting of a tower, including an associated instrument flight rule (IFR) room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER: A facility which provides en route air traffic control service to aircraft operating on an IFR flight plan within controlled airspace over a large, multi-state region.

AIRSIDE: The portion of an airport that contains the facilities necessary for the operation of aircraft.

AIRSPACE: The volume of space above the surface of the ground that is provided for the operation of aircraft.

AIR TAXI: An air carrier certificated in accordance with FAR Part 121 and FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operates small aircraft "for hire" for specific trips.

AIR TRAFFIC CONTROL: A service operated by an appropriate organization for the purpose of providing for the safe, orderly, and expeditious flow of air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC): A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER: A facility operated by the FAA which is responsible for the central flow control, the central altitude reservation system, the airport reservation position system, and the air traffic service contingency command for the air traffic control system.

AIR TRAFFIC HUB: A categorization of commercial service airports or group of commercial service airports in a metropolitan or urban area based upon the proportion of annual national enplanements existing at the airport or airports. The categories are large hub, medium hub, small hub, or non-hub. It forms the basis for the apportionment of entitlement funds.

AIR TRANSPORT ASSOCIATION OF AMERICA: An organization consisting of the principal U.S. airlines that represents the interests of the airline industry on major aviation issues before federal, state, and local government bodies. It promotes air transportation safety by coordinating industry and governmental safety programs and it serves as a focal point for industry efforts to standardize practices and enhance the efficiency of the air transportation system.

ALERT AREA: See special-use airspace.

ALTITUDE: The vertical distance measured in feet above mean sea level.

ANNUAL INSTRUMENT APPROACH (AIA): An approach to an airport with the intent to land by an aircraft in accordance with an IFR flight plan when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

APPROACH LIGHTING SYSTEM (ALS): An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams by which the pilot aligns the aircraft with the extended centerline of the runway on his final approach and landing.

APPROACH MINIMUMS: The altitude below which an aircraft may not descend while on an IFR approach unless the pilot has the runway in sight.

APPROACH SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 which is longitudinally centered on an extended runway centerline and extends outward and upward from the primary surface at each end of a runway at a designated slope and distance based upon the type of available or planned approach by aircraft to a runway.

APRON: A specified portion of the airfield used for passenger, cargo or freight loading and unloading, aircraft parking, and the refueling, maintenance and servicing of aircraft.

AREA NAVIGATION: The air navigation procedure that provides the capability to establish and maintain a flight path on an arbitrary course that remains within the coverage area of navigational sources being used.

AUTOMATED TERMINAL INFORMATION SERVICE (ATIS): The continuous broadcast of recorded non-control information at towered airports. Information typically includes wind speed, direction, and runway in use.

AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS): A reporting system that provides frequent airport ground surface weather observation data through digitized voice broadcasts and printed reports.

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

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

AVIGATION EASEMENT: A contractual right or a property interest in land over which a right of unobstructed flight in the airspace is established.

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

B

BASE LEG: A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. See "traffic pattern."

BASED AIRCRAFT: The general aviation aircraft that use a specific airport as a home base.

BEARING: The horizontal direction to or from any point, usually measured clockwise from true north or magnetic north.

BLAST FENCE: A barrier used to divert or dissipate jet blast or propeller wash.

BLAST PAD: A prepared surface adjacent to the end of a runway for the purpose of eliminating the erosion of the ground surface by the wind forces produced by airplanes at the initiation of takeoff operations.

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

C

CAPITAL IMPROVEMENT PLAN: The planning program used by the Federal Aviation Administration to identify, prioritize, and distribute Airport Improvement Program funds for airport development and the needs of the National Airspace System to meet specified national goals and objectives.

CARGO SERVICE AIRPORT: An airport served by aircraft providing air transportation of property only, including mail, with an annual aggregate landed weight of at least 100,000,000 pounds.

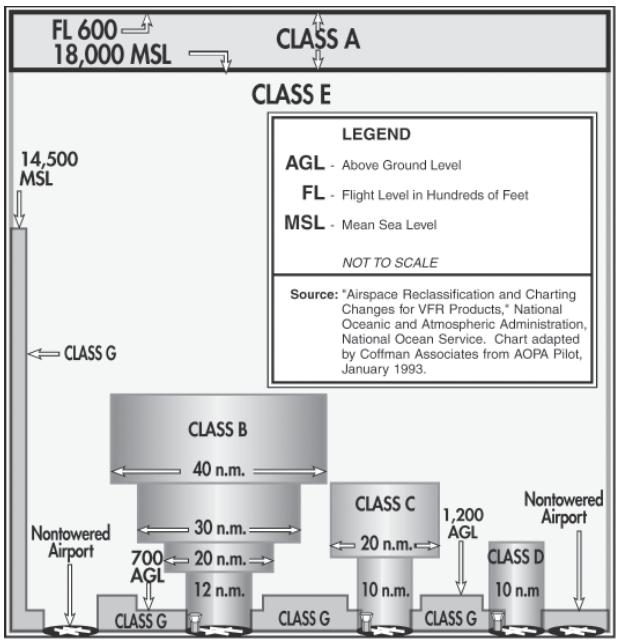
CATEGORY I: An Instrument Landing System (ILS) that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 100 feet above the horizontal plane containing the runway threshold.

CATEGORY II: An ILS that provides acceptable guidance information to an aircraft from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a decision height of 50 feet above the horizontal plane containing the runway threshold.

CATEGORY III: An ILS that provides acceptable guidance information to a pilot from the coverage limits of the ILS with no decision height specified above the horizontal plane containing the runway threshold.

CEILING: The height above the ground surface to the location of the lowest layer of clouds which is reported as either broken or overcast.

CIRCLING APPROACH: A maneuver initiated by the pilot to align the aircraft with the runway for landing when flying a predetermined circling instrument approach under IFR.



CLASS A AIRSPACE: See Controlled Airspace.

CLASS B AIRSPACE: See Controlled Airspace.

CLASS C AIRSPACE: See Controlled Airspace.

CLASS D AIRSPACE: See Controlled Airspace.

CLASS E AIRSPACE: See Controlled Airspace.

CLASS G AIRSPACE: See Controlled Airspace.

CLEAR ZONE: See Runway Protection Zone.

COMMERCIAL SERVICE AIRPORT: A public airport providing scheduled passenger service that enplanes at least 2,500 annual passengers.

COMMON TRAFFIC ADVISORY FREQUENCY: A radio frequency identified in the appropriate aeronautical chart which is designated for the purpose of transmitting airport advisory information and procedures while operating to or from an uncontrolled airport.

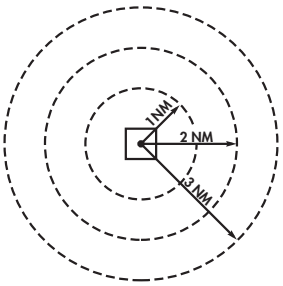
COMPASS LOCATOR (LOM): A low power, low/medium frequency radio-beacon installed in conjunction with the instrument landing system at one or two of the marker sites.

CONICAL SURFACE: An imaginary obstruction-limiting surface defined in FAR Part 77 that extends from the edge of the horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

CONTROLLED AIRPORT: An airport that has an operating airport traffic control tower.

CONTROLLED AIRSPACE: Airspace of defined dimensions within which air traffic control services are provided to instrument flight rules (IFR) and visual flight rules (VFR) flights in accordance with the airspace classification. Controlled airspace in the United States is designated as follows:

- **CLASS A**: Generally, the airspace from 18,000 feet mean sea level (MSL) up to but not including flight level FL600. All persons must operate their aircraft under IFR.

- **CLASS B**:
  

  Generally, the airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports. The configuration of Class B airspace is unique to each airport, but typically consists of two or more layers of air space and is designed to contain all published instrument approach procedures to the airport. An air traffic control clearance is required for all aircraft to operate in the area.

- **CLASS C**: Generally, the airspace from the surface to 4,000 feet above the airport elevation (charted as MSL) surrounding those airports that have an operational control tower and radar approach control and are served by a qualifying number of IFR operations or passenger enplanements. Although individually tailored for each airport, Class C airspace typically consists of a surface area with a five nautical mile (nm) radius and an outer area with a 10 nautical mile radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Two-way radio communication is required for all aircraft.

- **CLASS D**: Generally, that airspace from the surface to 2,500 feet above the air port elevation (charted as MSL) surrounding those airports that have an operational control tower. Class D airspace is individually tailored and configured to encompass published instrument approach procedure . Unless otherwise authorized, all persons must establish two-way radio communication.

- **CLASS E**: Generally, controlled airspace that is not classified as Class A, B, C, or D. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Class E airspace encompasses all Victor Airways. Only aircraft following instrument flight rules are required to establish two-way radio communication with air traffic control.

- **CLASS G**: Generally, that airspace not classified as Class A, B, C, D, or E. Class G airspace is uncontrolled for all aircraft. Class G airspace extends from the surface to the overlying Class E airspace.

CONTROLLED FIRING AREA: See special-use airspace.

CROSSWIND: A wind that is not parallel to a runway centerline or to the intended flight path of an aircraft.

CROSSWIND COMPONENT: The component of wind that is at a right angle to the runway centerline or the intended flight path of an aircraft.

CROSSWIND LEG: A flight path at right angles to the landing runway off its upwind end. See "traffic pattern."

D

DECIBEL: A unit of noise representing a level relative to a reference of a sound pressure 20 micro newtons per square meter.

DECISION HEIGHT: The height above the end of the runway surface at which a decision must be made by a pilot during the ILS or Precision Approach Radar approach to either continue the approach or to execute a missed approach.

DECLARED DISTANCES: The distances declared available for the airplane's takeoff runway, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- **TAKEOFF RUNWAY AVAILABLE (TORA)**: The runway length declared available and suitable for the ground run of an airplane taking off.
- **TAKEOFF DISTANCE AVAILABLE (TODA)**: The TORA plus the length of any remaining runway and/or clear way beyond the far end of the TORA.
- **ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)**: The runway plus stopway length declared available for the acceleration and deceleration of an aircraft aborting a takeoff.
- **LANDING DISTANCE AVAILABLE (LDA)**: The runway length declared available and suitable for landing.

DEPARTMENT OF TRANSPORTATION: The cabinet level federal government organization consisting of modal operating agencies, such as the Federal Aviation Administration, which was established to promote the coordination of federal transportation programs and to act as a focal point for research and development efforts in transportation.

DISCRETIONARY FUNDS: Federal grant funds that may be appropriated to an airport based upon designation by the Secretary of Transportation or Congress to meet a specified national priority such as enhancing capacity, safety, and security, or mitigating noise.

DISPLACED THRESHOLD: A threshold that is located at a point on the runway other than the designated beginning of the runway.

DISTANCE MEASURING EQUIPMENT (DME): Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DNL: The 24-hour average sound level, in Aweighted decibels, obtained after the addition of ten decibels to sound levels for the periods between 10 p.m. and 7 a.m. as averaged over a span of one year. It is the FAA standard metric for determining the cumulative exposure of individuals to noise.

DOWNWIND LEG: A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg. Also see "traffic pattern."

E

EASEMENT: The legal right of one party to use a portion of the total rights in real estate owned by another party. This may include the right of passage over, on, or below the property; certain air rights above the property, including view rights; and the rights to any specified form of development or activity, as well as any other legal rights in the property that may be specified in the easement document.

ELEVATION: The vertical distance measured in feet above mean sea level.

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

ENPLANEMENT: The boarding of a passenger, cargo, freight, or mail on an aircraft at an airport.

ENTITLEMENT: Federal funds for which a commercial service airport may be eligible based upon its annual passenger enplanements.

ENVIRONMENTAL ASSESSMENT (EA): An environmental analysis performed pursuant to the National Environmental Policy Act to determine whether an action would significantly affect the environment and thus require a more detailed environmental impact statement.

ENVIRONMENTAL AUDIT: An assessment of the current status of a party's compliance with applicable

environmental requirements of a party's environmental compliance policies, practices, and controls.

ENVIRONMENTAL IMPACT STATEMENT (EIS): A document required of federal agencies by the National Environmental Policy Act for major projects are legislative proposals affecting the environment. It is a tool for decision-making describing the positive and negative effects of a proposed action and citing alternative actions.

ESSENTIAL AIR SERVICE: A federal program which guarantees air carrier service to selected small cities by providing subsidies as needed to prevent these cities from such service.

F

FEDERAL AVIATION REGULATIONS: The general and permanent rules established by the executive departments and agencies of the Federal Government for aviation, which are published in the Federal Register. These are the aviation subset of the Code of Federal Regulations.

FEDERAL INSPECTION SERVICES: The provision of customs and immigration services including passport inspection, inspection of baggage, the collection of duties on certain imported items, and the inspections for agricultural products, illegal drugs, or other restricted items.

FINAL APPROACH: A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. See "traffic pattern."

FINAL APPROACH AND TAKEOFF AREA (FATO). A defined area over which the final phase of the helicopter approach to a hover, or a landing is completed and from which the takeoff is initiated.

FINAL APPROACH FIX: The designated point at which the final approach segment for an aircraft landing on a runway begins for a non-precision approach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI): A public document prepared by a Federal agency that presents the rationale why a proposed action will not have a significant effect on the environment and for which an environmental impact statement will not be prepared.

FIXED BASE OPERATOR (FBO): A provider of services to users of an airport. Such services include, but are not limited to, hangaring, fueling, flight training, repair, and maintenance.

FLIGHT LEVEL: A designation for altitude within controlled airspace.

FLIGHT SERVICE STATION: An operations facility in the national flight advisory system which utilizes data interchange facilities for the collection and dissemination of Notices to Airmen, weather, and administrative data and which provides pre-flight and in-flight advisory services to pilots through air and ground based communication facilities.

FRANGIBLE NAVAID: A navigational aid which retains its structural integrity and stiffness up to a designated maximum load, but on impact from a greater load, breaks, distorts, or yields in such a manner as to present the minimum hazard to aircraft.

G

GENERAL AVIATION: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity, and large aircraft commercial operators.

GENERAL AVIATION AIRPORT: An airport that provides air service to only general aviation.

GLIDESLOPE (GS): Provides vertical guidance for aircraft during approach and landing. The glideslope consists of the following:

1. Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS; or

2. Visual ground aids, such as VASI, which provide vertical guidance for VFR approach or for the visual portion of an instrument approach and landing.

GLOBAL POSITIONING SYSTEM (GPS): A system of 24 satellites used as reference points to enable navigators equipped with GPS receivers to determine their latitude, longitude, and altitude.

GROUND ACCESS: The transportation system on and around the airport that provides access to and

from the airport by ground transportation vehicles for passengers, employees, cargo, freight, and airport services.

H

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

HIGH INTENSITY RUNWAY LIGHTS: The highest classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

HIGH-SPEED EXIT TAXIWAY: A long radius taxiway designed to expedite aircraft turning off the runway after landing (at speeds to 60 knots), thus reducing runway occupancy time.

HORIZONTAL SURFACE: An imaginary obstruction- limiting surface defined in FAR Part 77 that is specified as a portion of a horizontal plane surrounding a runway located 150 feet above the established airport elevation. The specific horizontal dimensions of this surface are a function of the types of approaches existing or planned for the runway.

I

INITIAL APPROACH FIX: The designated point at which the initial approach segment begins for an instrument approach to a runway.

INSTRUMENT APPROACH PROCEDURE: A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

INSTRUMENT FLIGHT RULES (IFR): Procedures for the conduct of flight in weather conditions below Visual Flight Rules weather minimums. The term IFR is often also used to define weather conditions and the type of flight plan under which an aircraft is operating.

INSTRUMENT LANDING SYSTEM (ILS): A precision instrument approach system which normally consists of the following electronic components and visual aids:

1. Localizer.
2. Glide Slope.
3. Outer Marker.
4. Middle Marker.
5. Approach Lights.

INSTRUMENT METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for visual meteorological conditions.

ITINERANT OPERATIONS: Operations by aircraft that are not based at a specified airport.

K

KNOTS: A unit of speed length used in navigation that is equivalent to the number of nautical miles traveled in one hour.

L

LANDSIDE: The portion of an airport that provides the facilities necessary for the processing of passengers, cargo, freight, and ground transportation vehicles.

LANDING DISTANCE AVAILABLE (LDA): See declared distances.

LARGE AIRPLANE: An airplane that has a maximum certified takeoff weight in excess of 12,500 pounds.

LOCAL AREA AUGMENTATION SYSTEM: A differential GPS system that provides localized measurement correction signals to the basic GPS signals to improve navigational accuracy integrity, continuity, and availability.

LOCAL OPERATIONS: Aircraft operations performed by aircraft that are based at the airport and that operate in the local traffic pattern or within sight of the airport, that are known to be departing for or arriving from flights in local practice areas within a prescribed distance from the airport, or that execute simulated instrument approaches at the airport.

LOCAL TRAFFIC: Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from the local practice areas, or aircraft executing practice instrument

approach procedures. Typically, this includes touch and-go training operations.

LOCALIZER: The component of an ILS which provides course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA): A facility of comparable utility and accuracy to a localizer, but is not part of a complete ILS and is not aligned with the runway.

LONG RANGE NAVIGATION SYSTEM (LORAN): Long range navigation is an electronic navigational aid which determines aircraft position and speed by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran is used for en route navigation.

LOW INTENSITY RUNWAY LIGHTS: The lowest clas- sification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

M

MEDIUM INTENSITY RUNWAY LIGHTS: The middle classification in terms of intensity or brightness for lights designated for use in delineating the sides of a runway.

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

MILITARY OPERATIONS: Aircraft operations that are performed in military aircraft.

MILITARY OPERATIONS AREA (MOA): See special-use airspace

MILITARY TRAINING ROUTE: An air route depicted on aeronautical charts for the conduct of military flight training at speeds above 250 knots.

MISSED APPROACH COURSE (MAC): The flight route to be followed if, after an instrument approach, a landing is not affected, and occurring normally:

1. When the aircraft has descended to the decision height and has not established visual contact; or

2. When directed by air traffic control to pull up or to go around again.

MOVEMENT AREA: The runways, taxiways, and other areas of an airport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports with a tower, air traffic control clearance is required for entry onto the movement area.

N

NATIONAL AIRSPACE SYSTEM: The network of air traffic control facilities, air traffic control areas, and navigational facilities through the U.S.

NATIONAL PLAN OF INTEGRATED AIRPORT SYSTEMS: The national airport system plan developed by the Secretary of Transportation on a biannual basis for the development of public use airports to meet national air transportation needs.

NATIONAL TRANSPORTATION SAFETY BOARD: A federal government organization established to investigate and determine the probable cause of transportation accidents, to recommend equipment and procedures to enhance transportation safety, and to review on appeal the suspension or revocation of any certificates or licenses issued by the Secretary of Transportation.

NAUTICAL MILE: A unit of length used in navigation which is equivalent to the distance spanned by one minute of arc in latitude, that is, 1,852 meters or 6,076 feet. It is equivalent to approximately 1.15 statute mile.

NAVAID: A term used to describe any electrical or visual air navigational aids, lights, signs, and associated supporting equipment (i.e. PAPI, VASI, ILS, etc.)

NAVIGATIONAL AID: A facility used as, available for use as, or designed for use as an aid to air navigation.

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

NON-DIRECTIONAL BEACON (NDB): A beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his or her bearing to and from the radio beacon and home on, or track to, the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

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

NOTICE TO AIRMEN: A notice containing information concerning the establishment, condition, or change in any component of or hazard in the National Airspace System, the
timely knowledge of which is considered essential to personnel concerned with flight operations.

O

OBJECT FREE AREA (OFA): An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

OBSTACLE FREE ZONE (OFZ): The airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be kept clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance for aircraft landing or taking off from the runway, and for missed approaches.

ONE-ENGINE INOPERABLE SURFACE: A surface emanating from the runway end at a slope ratio of 62.5:1. Air carrier airports are required to maintain a technical drawing of this surface depicting any object penetrations by January 1, 2010.

OPERATION: The take-off, landing, or touch-and-go procedure by an aircraft on a runway at an airport.

OUTER MARKER (OM): An ILS navigation facility in the terminal area navigation system located four to seven miles from the runway edge on the extended centerline, indicating to the pilot that he/she is passing over the facility and can begin final approach.

P

PILOT CONTROLLED LIGHTING: Runway lighting systems at an airport that are controlled by activating the microphone of a pilot on a specified radio frequency.

PRECISION APPROACH: A standard instrument approach procedure which provides runway alignment and glide slope (descent) information. It is categorized as follows:

- **CATEGORY I (CAT I)**: A precision approach which provides for approaches with a decision height of not less than 200 feet and visibility not less than 1/2 mile or Runway Visual Range (RVR) 2400 (RVR 1800) with operative touchdown zone and runway centerline lights.

- **CATEGORY II (CAT II)**: A precision approach which provides for approaches with a decision height of not less than 100 feet and visibility not less than 1200 feet RVR.

- **CATEGORY III (CAT III)**: A precision approach which provides for approaches with minima less than Category II.

PRECISION APPROACH PATH INDICATOR (PAPI): A lighting system providing visual approach slope guidance to aircraft during a landing approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

PRECISION APPROACH RADAR: A radar facility in the terminal air traffic control system used to detect and display with a high degree of accuracy the direction, range, and elevation of an aircraft on the final approach to a runway.

PRECISION OBJECT FREE AREA (POFA): An area centered on the extended runway centerline, beginning at the runway threshold and extending behind the runway threshold that is 200 feet long by 800 feet wide. The POFA is a clearing standard which requires the POFA to be kept clear of above ground objects protruding above the runway safety

area edge elevation (except for frangible NAVAIDS). The POFA applies to all new authorized instrument approach procedures with less than 3/4 mile visibility.

PRIMARY AIRPORT: A commercial service airport that enplanes at least 10,000 annual passengers.

PRIMARY SURFACE: An imaginary obstruction limiting surface defined in FAR Part 77 that is specified as a rectangular surface longitudinally centered about a runway. The specific dimensions of this surface are a function of the types of approaches existing or planned for the runway.

PROHIBITED AREA: See special-use airspace.

PVC: Poor visibility and ceiling. Used in determining Annual Service Volume. PVC conditions exist when the cloud ceiling is less than 500 feet and visibility is less than one mile.

R

RADIAL: A navigational signal generated by a Very High Frequency Omni-directional Range or VORTAC station that is measured as an azimuth from the station.

REGRESSION ANALYSIS: A statistical technique that seeks to identify and quantify the relationships between factors associated with a forecast.

REMOTE COMMUNICATIONS OUTLET (RCO): An unstaffed transmitter receiver/facility remotely controlled by air traffic personnel. RCOs serve flight service stations (FSSs). RCOs were established to provide ground-to-ground communications between air traffic control specialists and pilots at satellite airports for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times.

REMOTE TRANSMITTER/RECEIVER (RTR): See remote communications outlet. RTRs serve ARTCCs.

RELIEVER AIRPORT: An airport to serve general aviation aircraft which might otherwise use a congested air-carrier served airport.

RESTRICTED AREA: See special-use airspace.

RNAV: Area navigation - airborne equipment which permits flights over determined tracks within prescribed accuracy tolerances without the need to overfly ground-based navigation facilities. Used en route and for approaches to an airport.

RUNWAY: A defined rectangular area on an airport prepared for aircraft landing and takeoff. Runways are normally numbered in relation to their magnetic direction, rounded off to the nearest 10 degrees. For example, a runway with a magnetic heading of 180 would be designated Runway 18. The runway heading on the opposite end of the runway is 180 degrees from that runway end. For example, the opposite runway heading for Runway 18 would be Runway 36 (magnetic heading of 360). Aircraft can takeoff or land from either end of a runway, depending upon wind direction.

RUNWAY ALIGNMENT INDICATOR LIGHT: A series of high intensity sequentially flashing lights installed on the extended centerline of the runway usually in conjunction with an approach lighting system.

RUNWAY END IDENTIFIER LIGHTS (REIL): Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

RUNWAY GRADIENT: The average slope, measured in percent, between the two ends of a runway.

RUNWAY PROTECTION ZONE (RPZ): An area off the runway end to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape. Its dimensions are determined by the aircraft approach speed and runway approach type and minima.

RUNWAY SAFETY AREA (RSA): A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

RUNWAY VISIBILITY ZONE (RVZ): An area on the airport to be kept clear of permanent objects so that there is an unobstructed line of- site from any point five feet above the runway centerline to

any point five feet above an intersecting runway centerline.

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

S

SCOPE: The document that identifies and defines the tasks, emphasis, and level of effort associated with a project or study.

SEGMENTED CIRCLE: A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

SHOULDER: An area adjacent to the edge of paved runways, taxiways, or aprons providing a transition between the pavement and the adjacent surface; support for aircraft running off the pavement; enhanced drainage; and blast protection. The shoulder does not necessarily need to be paved.

SLANT-RANGE DISTANCE: The straight line distance between an aircraft and a point on the ground.

SMALL AIRPLANE: An airplane that has a maximum certified takeoff weight of up to 12,500 pounds.

SPECIAL-USE AIRSPACE: Airspace of defined dimensions identified by a surface area wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Special-use airspace classifications include:

- **ALERT AREA**: Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.

- **CONTROLLED FIRING AREA**: Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons or property on the ground.

- **MILITARY OPERATIONS AREA (MOA)**: Designated airspace with defined vertical and lateral dimensions established outside Class A airspace to separate/segregate certain military activities from instrument flight rule (IFR) traffic and to identify for visual flight rule (VFR) traffic where these activities are conducted.

- **PROHIBITED AREA**: Designated airspace within which the flight of aircraft is prohibited.

- **RESTRICTED AREA**: Airspace designated under Federal Aviation Regulation (FAR) 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use. When not in use by the using agency, IFR/VFR operations can be authorized by the controlling air traffic control facility.

- **WARNING AREA**: Airspace which may contain hazards to nonparticipating aircraft.

STANDARD INSTRUMENT DEPARTURE (SID): A preplanned coded air traffic control IFR departure routing, preprinted for pilot use in graphic and textual form only.

STANDARD INSTRUMENT DEPARTURE PROCEDURES: A published standard flight procedure to be utilized following takeoff to provide a transition between the airport and the terminal area or en route airspace.

STANDARD TERMINAL ARRIVAL ROUTE (STAR): A preplanned coded air traffic control IFR arrival routing, preprinted for pilot use in graphic and textual or textual form only.

STOP-AND-GO: A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point. A stop-and-go is recorded as two operations: one operation for the landing and one operation for the takeoff.

STOPWAY: An area beyond the end of a takeoff runway that is designed to support an aircraft during an aborted takeoff without causing structural damage to the aircraft. It is not to be used for takeoff, landing, or taxiing by aircraft.

STRAIGHT-IN LANDING/APPROACH: A landing made on a runway aligned within 30 degrees

of the final approach course following completion of an instrument approach.

T

TACTICAL AIR NAVIGATION (TACAN): An ultrahigh frequency electronic air navigation system which provides suitably-equipped aircraft a continuous indication of bearing and distance to the TACAN station.

TAKEOFF RUNWAY AVAILABLE (TORA): See declared distances.

TAKEOFF DISTANCE AVAILABLE (TODA): See declared distances.

TAXILANE: The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

TAXIWAY: A defined path established for the taxiing of aircraft from one part of an airport to another.

TAXIWAY SAFETY AREA (TSA): A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

TERMINAL INSTRUMENT PROCEDURES: Published flight procedures for conducting instrument approaches to runways under instrument meteorological conditions.

TERMINAL RADAR APPROACH CONTROL: An element of the air traffic control system responsible for monitoring the en-route and terminal segment of air traffic in the airspace surrounding airports with moderate to high levels of air traffic.

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

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

TOUCH-AND-GO: An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway. A touch-and go is recorded as two operations: one operation for the landing and one operation for the takeoff.

TOUCHDOWN: The point at which a landing aircraft makes contact with the runway surface.

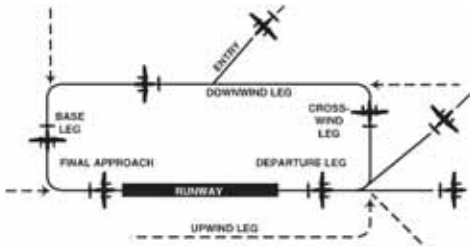
TOUCHDOWN AND LIFT-OFF AREA (TLOF): A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

TOUCHDOWN ZONE (TDZ): The first 3,000 feet of the runway beginning at the threshold.

TOUCHDOWN ZONE ELEVATION (TDZE): The highest elevation in the touchdown zone.

TOUCHDOWN ZONE (TDZ) LIGHTING: Two rows of transverse light bars located symmetrically about the runway centerline normally at 100- foot intervals. The basic system extends 3,000 feet along the runway.

TRAFFIC PATTERN: The traffic flow that is prescribed for aircraft landing at or taking off from an airport. The components of a typical traffic pattern are the upwind leg, crosswind leg, downwind leg, base leg, and final approach.



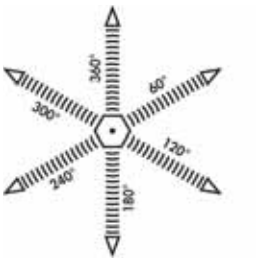
U

UNCONTROLLED AIRPORT: An airport without an air traffic control tower at which the control of Visual Flight Rules traffic is not exercised.

UNCONTROLLED AIRSPACE: Airspace within which aircraft are not subject to air traffic control.

UNIVERSAL COMMUNICATION (UNICOM): A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOM's are shown on aeronautical charts and publications.

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



V

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

VERY HIGH FREQUENCY/ OMNIDIRECTIONAL RANGE (VOR): A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the national airspace system. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature.

VERY HIGH FREQUENCY OMNI-DIRECTIONAL RANGE/ TACTICAL AIR NAVIGATION (VORTAC): A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance-measuring equipment (DME) at one site.

VICTOR AIRWAY: A control area or portion thereof established in the form of a corridor, the centerline of which is defined by radio navigational aids.

VISUAL APPROACH: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic control facility and having an air traffic control authorization, may proceed to the airport of destination in VFR conditions.

VISUAL APPROACH SLOPE INDICATOR (VASI): An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he is on path if he sees red/white, above path if white/white, and below path if red/red. Some airports serving large aircraft have three-bar VASI's which provide two visual guide paths to the same runway.

VISUAL FLIGHT RULES (VFR): Rules that govern the procedures for conducting flight under visual conditions. The term VFR is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

VISUAL METEOROLOGICAL CONDITIONS: Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for instrument meteorological conditions.

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

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

W

WARNING AREA: See special-use airspace.

WIDE AREA AUGMENTATION SYSTEM: An enhancement of the Global Positioning System that includes integrity broadcasts, differential corrections, and additional ranging signals for the purpose of providing the accuracy, integrity, availability, and continuity required to support all phases of flight.

Abbreviations

AC: advisory circular

ADF: automatic direction finder

ADG: airplane design group

AFSS: automated flight service station

AGL: above ground level

AIA: annual instrument approach

AIP: Airport Improvement Program

AIR-21: Wendell H. Ford Aviation Investment and Reform Act for the 21st Century

ALS: approach lighting system

ALSF-1: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT I configuration)

ALSF-2: standard 2,400-foot high intensity approach lighting system with sequenced flashers (CAT II configuration)

AOA: Aircraft Operation Area

APV: instrument approach procedure with vertical guidance

ARC: airport reference code

ARFF: aircraft rescue and fire fighting

ARP: airport reference point

ARTCC: air route traffic control center

ASDA: accelerate-stop distance available

ASR: airport surveillance radar

ASOS: automated surface observation station

ATCT: airport traffic control tower

ATIS: automated terminal information service

AVGAS: aviation gasoline - typically 100 low lead (100L)

AWOS: automated weather observation station

BRL: building restriction line

CFR: Code of Federal Regulation

CIP: capital improvement program

DME: distance measuring equipment

DNL: day-night noise level

DWL: runway weight bearing capacity of aircraft with dual-wheel type landing gear

DTWL: runway weight bearing capacity of aircraft with dual-tandem type landing gear

FAA: Federal Aviation Administration

FAR: Federal Aviation Regulation

FBO: fixed base operator

FY: fiscal year

GPS: global positioning system

GS: glide slope

HIRL: high intensity runway edge lighting

IFR: instrument flight rules (FAR Part 91)

ILS: instrument landing system

IM: inner marker

LDA: localizer type directional aid

LDA: landing distance available

LIRL: low intensity runway edge lighting

LMM: compass locator at ILS outer marker

LORAN: long range navigation

MALS: midium intensity approach lighting system with indicator lights

MIRL: medium intensity runway edge lighting

MITL: medium intensity taxiway edge lighting

MLS: microwave landing system

MM: middle marker

MOA: military operations area

MSL: mean sea level

NAVAID: navigational aid

NDB: nondirectional radio beacon

NM: nautical mile (6,076.1 feet)

NPES: National Pollutant Discharge Elimination System

NPIAS: National Plan of Integrated Airport Systems

NPRM: notice of proposed rule making

ODALS: omnidirectional approach lighting system

OFA: object free area

OFZ: obstacle free zone

OM: outer marker

PAC: planning advisory committee

PAPI: precision approach path indicator

PFC: porous friction course

PFC: passenger facility charge

PCL: pilot-controlled lighting

PIW public information workshop

PLASI: pulsating visual approach slope indicator

POFA: precision object free area

PVASI: pulsating/steady visual approach slope indicator

PVC: poor visibility and ceiling

RCO: remote communications outlet

REIL: runway end identifier lighting

RNAV: area navigation

RPZ: runway protection zone

RSA: runway safety area

RTR: remote transmitter/receiver

RVR: runway visibility range

RVZ: runway visibility zone

SALS: short approach lighting system

SASP: state aviation system plan

SEL: sound exposure level

SID: standard instrument departure

SM: statute mile (5,280 feet)

SRE: snow removal equipment

SSALF: simplified short approach lighting system with runway alignment indicator lights

STAR: standard terminal arrival route

SWL: runway weight bearing capacity for aircraft with single-wheel tandem type landing gear

TACAN: tactical air navigational aid

TAF: Federal Aviation Administration (FAA) Terminal Area Forecast

TLOF: Touchdown and lift-off

TDZ: touchdown zone

TDZE: touchdown zone elevation

TODA: takeoff distance available

TORA: takeoff runway available

TRACON: terminal radar approach control

VASI: visual approach slope indicator

VFR: visual flight rules (FAR Part 91)

VHF: very high frequency

VOR: very high frequency omni-directional range

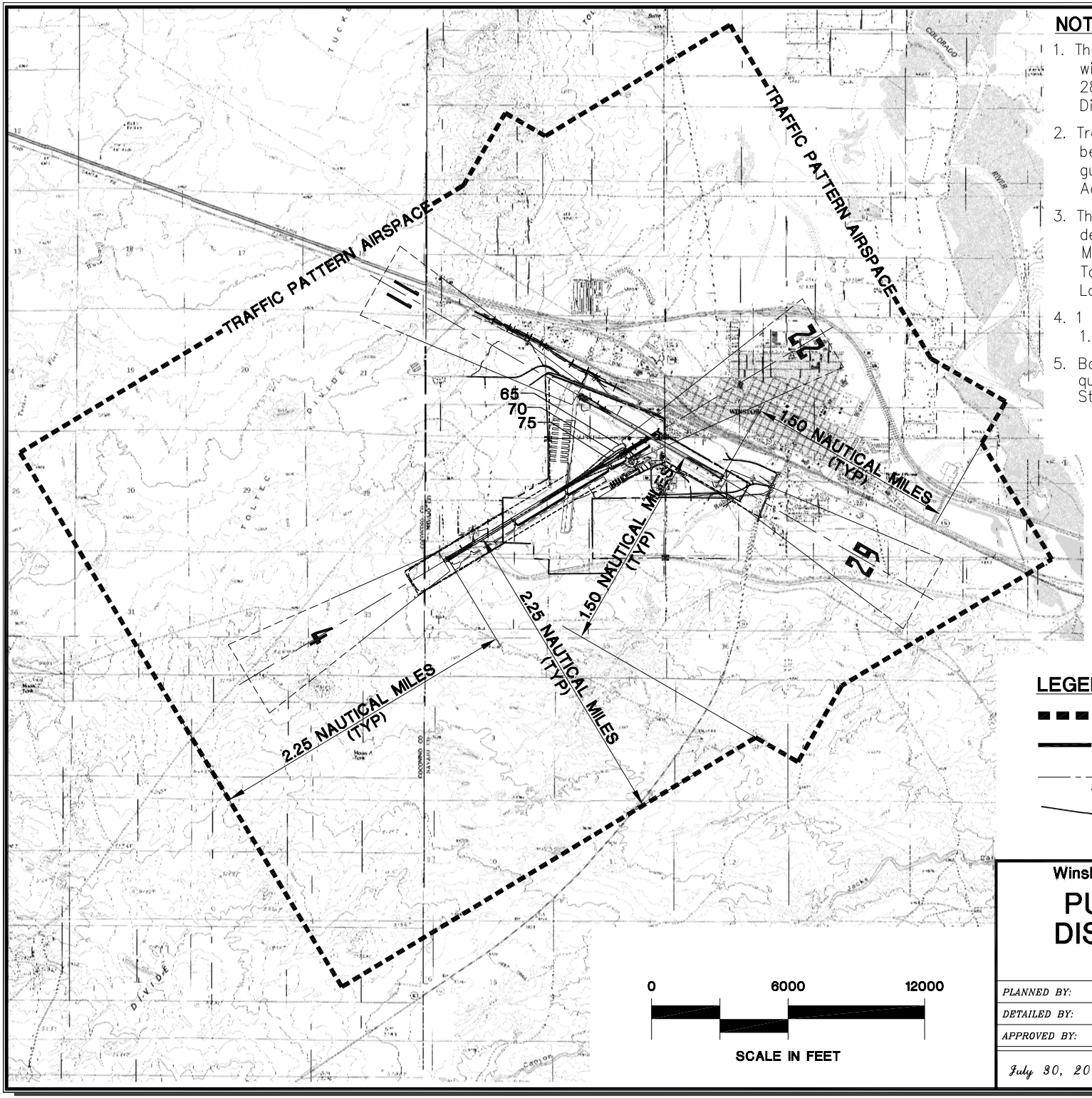
VORTAC: VOR and TACAN collocated

Appendix B

PUBLIC AIRPORT DISCLOSURE MAP

Appendix B
PUBLIC AIRPORT DISCLOSURE MAP

Arizona Revised Statute (ARS) 28-8486, *Public Airport Disclosure*, provides for a public airport owner to publish a map depicting the "territory in the vicinity of the airport." The territory in the vicinity of the airport is defined as the traffic pattern airspace and the property that experiences 60 day-night noise level (DNL) or higher in counties with a population of more than 500,000 and 65 DNL or higher in counties with less than 500,000 residents. The DNL is calculated for the 20-year forecast condition. ARS 28-8486 provides for the State Real Estate Office to prepare a disclosure map in conjunction with the airport owner. The disclosure map is recorded with the County Recorder. The Winslow-Lindbergh Regional Airport public airport disclosure map is included within this appendix.



NOTES:

1. This map has been prepared in accordance with the Arizona Revised Statutes, Section 28-8486, relating to Public Airport Disclosure.
2. Traffic Pattern Airspace Boundaries have been established in accordance with the guidelines provided in Federal Aviation Administration (FAA) order 7400.2G.
3. The Airport Noise Contours have been developed with the Integrated Noise Model (Version 6.0) and are based on Total Annual Operations (Take-offs and Landings) of 1,000.
4. 1 Nautical mile = 6,080 feet or 1.1516 statute miles.
5. Base map derived from electronic USGS quadrangles, Tucker Mesa, Winslow, Rock Station and Clear Creek Reservoir.

LEGEND:

- TRAFFIC PATTERN AIRSPACE
- EXISTING AIRPORT PROPERTY LINE
- EXTENDED RUNWAY CENTERLINE
- 65 NOISE CONTOURS DAY NIGHT LEVEL (DNL)

Winslow-Lindbergh Regional Airport

PUBLIC AIRPORT DISCLOSURE MAP

WINSLOW, ARIZONA

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July 30, 2010	SHEET 1 OF 1

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