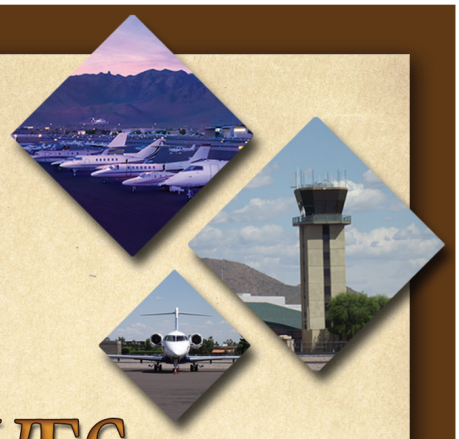
SCOTTSDALE AIRPORT
SDL



Chapter Four

AIRPORT ALTERNATIVES

The previous chapter outlined airside and landside facilities required to satisfy aviation demand through the long range planning period of the Master Plan. The next step in the planning process is to evaluate reasonable ways these facilities can be provided. The purpose of this chapter is to formulate and examine rational airport development alternatives that can address the short, intermediate, and long term planning horizon levels. Because there are a multitude of possibilities and combinations, it is necessary to focus on those opportunities which have the greatest potential for success.

The master planning process attempts to develop a viable concept for meeting the needs resulting from the projected demands for the next 20 years. The plan of action should be developed in a manner that is consistent with the future goals and objectives of the City of Scottsdale, airport users, and citizens of Scottsdale, who have a vested interest in the development and operation of the airport. Any development proposed in the Master Plan evolves from an analysis of projected needs during a set period of time. Although the needs were determined by utilizing industry accepted statistical methodologies, unforeseen future events could impact the timing of these needs.

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

Each functional area interrelates and affects the development potential of the others. Therefore, all areas are examined individually and then coordinated as a whole to ensure the final plan is functional, efficient, and cost-effective. The total impact of all these factors on the airport must be evaluated to determine if the investment will meet the needs of the community, both during and beyond the 20-year planning period.

The alternatives are compared using environmental, economic, and aviation factors to determine which alternatives best fulfill local aviation needs. With this information, as well as input from airport stakeholders, a final airport concept evolves into a realistic development plan.

NON-DEVELOPMENT ALTERNATIVES

Prior to presenting development alternatives for Scottsdale Airport, non-development alternatives were considered. Non-development alternatives include the "no-build" or "do-nothing" alternative, or the transfer of services to another existing airport.

Scottsdale Airport plays a critical role in the economic development of the City of Scottsdale and the surrounding region as well as an important role in the continuity of the national aviation network. There is significant public and private investment at the airport. The pursuit of a non-development alternative would slowly devalue these investments and lead to infrastructure deterioration and potentially the loss of significant levels of federal and state funding for airport improvements. Ultimately, the safety of aircraft, pilots, and persons on the ground could be jeopardized. Therefore, the "no-build" or "do-nothing" alternative will not be considered.

The alternative of shifting aviation services to another existing airport was found to be an undesirable alternative, due to the existing capacity constraints at other airports and the importance that the existing airport has on the economic well-being of the City of Scottsdale. Furthermore, the City of Scottsdale, Federal Aviation Administration (FAA) and Arizona Department of Transportation – Multi-Modal Planning Division – Aeronautics Group (ADOT-MPD – Aeronautics Group) have all contributed to significant improvements at the airport in recent years. The continuing growth expected in the area demonstrates the need for a highly functional and convenient airport. As a result, the transfer of aviation services is not a viable option for Scottsdale Airport.

AIRPORT DEVELOPMENT OBJECTIVES

It is the overall objective of this Master Plan to produce a balanced airside and landside facility to serve forecasted aviation demands. The primary goal for the Master Plan is to define a development concept and objectives which allow for the airport to be marketed, developed, and safely operated for the betterment of the surrounding region and its users. With this in mind, the following development objectives have been defined for this planning effort.

- To preserve and protect public and private investments in existing airport facilities.

- To develop a safe, attractive, and efficient aviation facility in accordance

with applicable federal, state, and local regulations.

- To develop a balanced facility that is responsive to the current and long term needs of all general aviation users.

- To be reflective and supportive of the long term planning efforts currently applicable to the region.

- To develop a facility with a focus on self-sufficiency in both operational and development cost recovery.

- To identify any future land acquisition needs.

- To ensure that future development is environmentally compatible.

REVIEW OF PREVIOUS AIRPORT PLANS

The previous Master Plan for Scottsdale Airport was completed in 1997. More recently, the Airport Layout Plan (ALP) has been revised and approved by the FAA in November 2013.

The Airport Layout Drawing and its associated Airport Data Sheet are shown on **Exhibit 4A**. The Airport Data Sheet, detailed on the front of the exhibit, provides information on existing and ultimate conditions at Scottsdale Airport including:

- Airport data related to service level, Airport Reference Code (ARC), elevation, wind conditions, temperature, and navigational aids located at Scottsdale Airport.
- Runway data related to the critical design aircraft, safety areas, markings, lighting, and visual and navigational aids associated with Runway 3-21.
- Recently updated and approved declared distances.
- Deviations from FAA design standards that identify deficiencies on the airfield related to various safety areas and separation standards and the proposed methods for ultimately mitigating the deficiencies.

On the back of the exhibit, the Airport Layout Drawing graphically depicts information contained on the Airport Data Sheet and further outlines airside and landside recommendations based upon previous airport planning that include:

- Meeting ARC D-II design standards for Runway 3-21.
- Enhanced visual approach aids in the form of four-box precision approach path indicators (PAPI-4s) serving each runway end.
- Additional landside development in the form of hangars, aircraft parking, and a proposed airport operations center.
- Ultimate land acquisition in various areas adjacent to existing airport property.

An analysis later in this chapter will revisit the recommendations presented on the 2013 ALP. Some elements may be carried over to this Master Plan and others may be modified or removed from future consideration. It is important to note that new design standards criteria have been approved by the FAA since the approval of the previous ALP. As a result, this Master Plan and the associated ALP will further evaluate the new standards as they relate to Scottsdale Airport during this alternatives analysis and throughout the remainder of the Master Plan process.

AIRPORT ALTERNATIVE CONSIDERATIONS

Exhibit 4B presents both the airside and landside planning considerations that will be specifically addressed. These issues are the result of the aviation demand forecasts and airport facility requirements evaluations, and they include input from the FAA, Planning Advisory Committee (PAC) and City of Scottsdale Aviation Department.

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

AIRSIDE DEVELOPMENT CONSIDERATIONS

This section identifies and evaluates various airside development factors at Scottsdale Airport. Airside facilities are, by nature, the focal point of an airport. 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 options.

Airside considerations relate to runways, taxiways, navigational aids, etc. and require the greatest commitment of land area to meet the physical layout of the airport as well as required airfield safety areas. The design of the airfield also defines minimum set-back distances from the runway and object clearance standards. These criteria are defined first to ensure that the fundamental needs of the airport are met.

FAA AIRPORT DESIGN CRITERIA

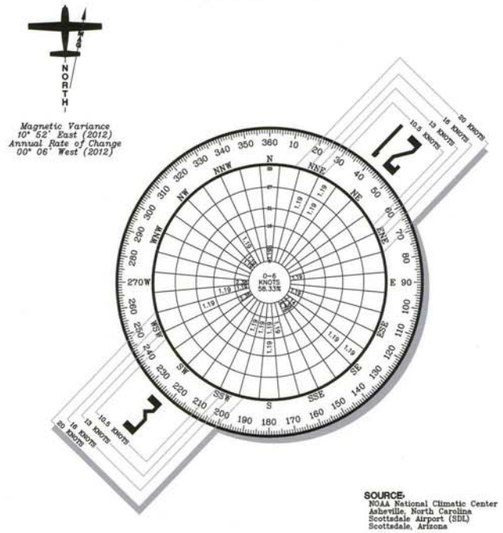
As previously detailed in Chapters Two and Three, the selection of appropriate FAA design standards for the development and location of airport facilities is based primarily upon the characteristics of the aircraft which are currently using or expected to use the airport. In September 2012, the FAA published FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, which replaced the previous AC 150/5300-13, *Airport Design*, and its subsequent changes. Significant changes were contained in the new AC that included the introduction of the Runway Design Code (RDC), Taxiway Design Group (TDG), in addition to changes to standards for taxiway design and runway protection zones (RPZs). These notable changes were highlighted in Chapters Two and Three.

More recently, in February 2014, the FAA published AC 150/5300-13A, Change 1, *Airport Design*, which revised the AC published in September 2012 and provided additional changes and clarifications to various airport design standards. The following section provides details on the content in AC 150/5300-13A, Change 1, *Airport Design*.

Aircraft/Airport/ Runway Classification

The FAA has established several aircraft classification systems that group aircraft types based on their performance (approach speed in landing configuration) and on design characteristics (wingspan and landing gear configuration). These classification systems are used to determine the appropriate airport design standards for specific airport elements,

IFR CAT-I WIND COVERAGE				
Runway	10.5 Knots 12 MPH	13 Knots 15 MPH	16 Knots 18 MPH	20 Knots 23 mph
Runway 3–21	93.78%	96.17%	97.61%	97.62%



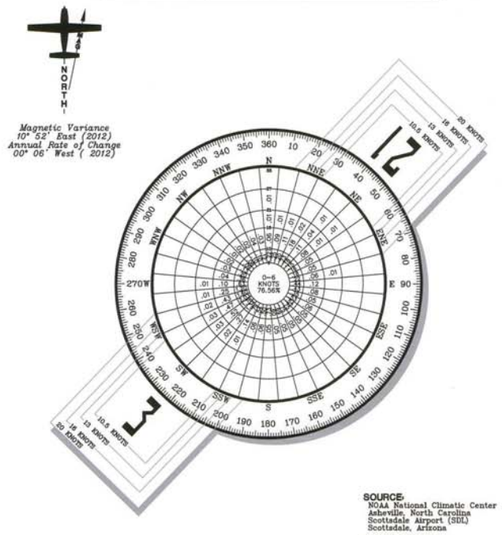
SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Scottsdale Airport (SDL)
Scottsdale, Arizona

OBSERVATIONS:
64 IFR CAT-I Observations
1997–2006

RUNWAY DATA	RUNWAY 3-21	
	EXISTING	ULTIMATE
RUNWAY CATEGORY/AIRCRAFT DESIGN GROUP	D–II	SAME
CRITICAL DESIGN AIRCRAFT	GULFSTREAM IV	SAME
UNDER CARRIAGE WIDTH (FEET)	13.66'	SAME
WINGSPAN OF DESIGN AIRCRAFT	77.83'	SAME
TAIL HEIGHT OF DESIGN AIRCRAFT (FEET)	24.42'	SAME
APPROACH SPEED OF DESIGN AIRCRAFT (KNOTS)	145	SAME
MAXIMUM TAKE OFF WEIGHT (lbs)	74,600lbs	SAME
RUNWAY AZIMUTH	43°59'10"	SAME
RUNWAY BEARING (TRUE)	N43°59'10.164"E	SAME
RUNWAY DIMENSIONS	8,249' X 100'	SAME
ELEVATION OF RWY. TOUCH DOWN ZONE (MSL)	1456.0'/1498.7'	SAME
ELEVATION OF RUNWAY HIGH POINT (above MSL)	1510.4'	SAME
ELEVATION OF RUNWAY LOW POINT (above MSL)	1444.3'	SAME
WIND COVERAGE IN MPH/KNOTS	12/10.5- 98.7% 15/13 -99.85% 18/15-99.93% 23/20-99.98%	
APPROACH VISIBILITY MINIMUMS	+1 MILE/+1 MILE	SAME
14 CFR PART 77 CATEGORY	NONPREC/NONPREC	SAME
RUNWAY INSTRUMENTATION	NONPREC/NONPREC	SAME
RUNWAY APPROACH SURFACES	34:1/34:1	SAME
RUNWAY THRESHOLD DISPLACEMENT	739'/400'	SAME
RUNWAY SAFETY AREA WIDTH (RSA)	400'	SAME
RSA DISTANCE BEYOND EACH RUNWAY END[1]	1000'/1000'	SAME
RUNWAY OBJECT FREE AREA WIDTH (OFA)[2]	800'	SAME
OFA DISTANCE BEYOND EACH RUNWAY END[2]	1000'/1000'	SAME
RUNWAY OBSTACLE FREE ZONE WIDTH (OFZ)	400'	SAME
OFZ DISTANCE BEYOND EACH RUNWAY END	200'/200'	SAME
LINE OF SITE REQUIREMENT MET	YES	SAME
RUNWAY PAVEMENT MATERIAL	ASPHALT	SAME
RUNWAY PAVEMENT SURFACE TREATMENT	NONE	SAME
PAVEMENT STRENGTH (in thousand lbs.)[3]	45(S), 75(D)	SAME
RUNWAY EFFECTIVE GRADIENT (in %)	0.81%	SAME
MAXIMUM GRADIENT (in %)	0.98%	SAME
RUNWAY LIGHTING	MIRL	SAME
RUNWAY MARKINGS	NONPREC/NONPREC	SAME
RUNWAY APPROACH LIGHTING	NONE	SAME
RUNWAY TAXIWAY SEPARATION	250'	SAME
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME
TAXIWAY LIGHTING	MITL	MITL
TAXIWAY MARKING	CENTERLINE, HOLD LINES	SAME
TAXIWAY OBJECT FREE AREA	129.0'	SAME
TAXIWAY SAFETY AREA WIDTH	77.8'	SAME
TAXIWAY WINGTIP CLEARANCE	10.0'	SAME
TAXIWAY CL TO FIXED OR MOVEABLE OBJECT	87.5'	SAME
DISTANCE FROM RWY. CL TO HOLD BARS	152'	SAME
VISUAL AIDS	PAPI–2(L) REILs	PAPI–4(L) REILs
NAVIGATIONAL AIDS	VORTAC GPS	SAME SAME

[1] Based on the Declared Distances.
[2] Runway Object Free Area does not reflect existing conditions. Actual width is 670'. Actual distance beyond each runway end is 470' for Runway 3 and is 30' for Runway 21.
[3] Pavement strengths are expressed in Single(S), Dual(D) wheel loading capacities.

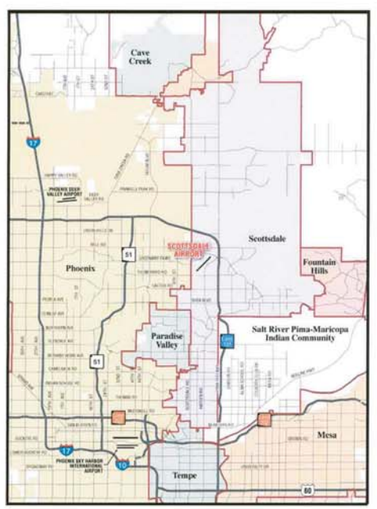
ALL WEATHER WIND COVERAGE				
Runway	10.5 Knots 12 MPH	13 Knots 15 MPH	16 Knots 18 MPH	20 Knots 23 mph
Runway 3–21	99.22%	99.65%	99.93%	99.98%



SOURCE:
NOAA National Climatic Center
Asheville, North Carolina
Scottsdale Airport (SDL)
Scottsdale, Arizona

OBSERVATIONS:
60,264 All Weather Observations
1997–2006

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS				
DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	STANDARD	EXISTING	PROPOSED DISPOSITION
Runway Safety Area Width	AC 150/5300–13	500'	400'	REQUEST RUNWAY SAFETY AREA DETERMINATION
Runway 3 Object Free Area Length Beyond Runway End	AC 150/5300–13	1000'	470'	REQUEST MODIFICATION TO STANDARDS
Runway 21 Object Free Area Length Beyond Runway End	AC 150/5300–13	1000'	30'	REQUEST MODIFICATION TO STANDARDS
Rwy. Object Free Area Width	AC 150/5300–13	800'	670'	REQUEST MODIFICATION TO STANDARDS
Rwy. Centerline to Hold line	AC 150/5300–13	266'	152'	REQUEST MODIFICATION TO STANDARDS
Rwy. Centerline to Parallel Taxiway	AC 150/5300–13	300'	250'	REQUEST MODIFICATION TO STANDARDS
Rwy. Centerline to Aircraft Parking	AC 150/5300–13	400'	325'	REQUEST MODIFICATION TO STANDARDS
Taxiway Shoulder Width (Taxiway "A")	AC 150/5300–13	10'	0'	REQUEST MODIFICATION TO STANDARDS

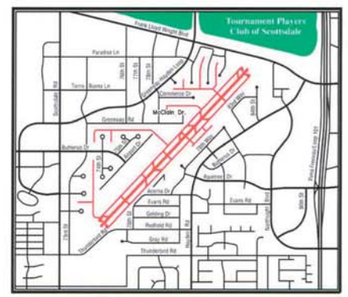


VICINITY MAP

AIRPORT DATA		
SCOTTSDALE AIRPORT (SDL)		
CITY: SCOTTSDALE	COUNTY: MARICOPA	
RANGE: 4 East TOWNSHIP: 3 North	CIVIL TOWNSHIP: ---	
	EXISTING	ULTIMATE
AIRPORT SERVICE LEVEL	RELIEVER	SAME
AIRPORT REFERENCE CODE	D–II	SAME
DESIGN AIRCRAFT	GULFSTREAM IV	SAME
AIRPORT ELEVATION (above MSL)	1510.3'	SAME
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH	104.8°F (July)	SAME
AIRPORT REFERENCE POINT Latitude	33°37'22.4000"N	SAME
(ARP) COORDINATES (NAD 83) Longitude	111°54'37.9000"W	SAME
AIRPORT and TERMINAL NAVIGATIONAL AIDS	ROTATING BEACON ATCT ASOS ---	SAME SAME SAME ---
GPS APPROACH TO AIRPORT	YES	SAME
RUNWAY END COORDINATES (NAD 83)	EXISTING	ULTIMATE
RUNWAY 3 Latitude	33°36'53.0202"N	SAME
Longitude	111°55'11.7770"W	SAME
RUNWAY 21 Latitude	33°37'51.7223"N	SAME
Longitude	111°54'04.0366"W	SAME
RUNWAY 3 DISPLACED THRESHOLD Latitude	33°36'58.2827"N	SAME
Longitude	111°55'05.7057"W	SAME
RUNWAY 21 DISPLACED THRESHOLD Latitude	33°37'48.8771"N	SAME
Longitude	111°54'07.3208"W	SAME

NOTE: Existing runway and ARP coordinates provided by the FAA's Aviation System Standards (AVN) (May 2013).

DECLARED DISTANCES	RUNWAY	
	3	21
TAKEOFF RUN AVAILABLE (TORA)	8249'	8249'
TAKEOFF DISTANCE AVAILABLE (TODA)	8249'	8249'
ACCELERATE–STOP DISTANCE AVAILABLE (ASDA)	7849'	8069'
LANDING DISTANCE AVAILABLE (LDA)	7110'	7669'



LOCATION MAP

No.	REVISIONS	DATE	BY	APP'D.
8	ADDED RUNWAY 3 RSA IMPROVEMENTS, REVISED DECLARED DISTANCES, AND REVISED DISPLACED THRESHOLD (RUNWAY 3)	5/22/13	GM	--
7	TAXIWAY CONNECTORS, MARKINGS, LIGHTING AND OTHER MISCELLANEOUS REVISIONS	1/25/12	GM	FAA
6	ADD RUNWAY SAFETY ACTION PLAN IMPROVEMENTS AND AND OTHER MISCELLANEOUS	08/27/08	STG	FAA
5	TAXIWAY B COMPLETE, MISCELLANEOUS REVISIONS SUBMIT FOR REVALIDATION	5/01/02	STG	FAA
4	TAXIWAY B REVISIONS, REVISED DECLARED DISTANCES, NEW ASOS LOCATION– SUBMIT FOR REVALIDATION	4/06/01	STG	FAA
3	MISC. REVISIONS – SUBMIT FOR REVALIDATION	8/30/00	STG	FAA
2	ALP APPROVAL	2/20/97	JSK	FAA
1	ALP APPROVAL	11/3/95	JSK	FAA
0	ALP APPROVAL	3/25/93	JSK	FAA

SCOTTSDALE AIRPORT

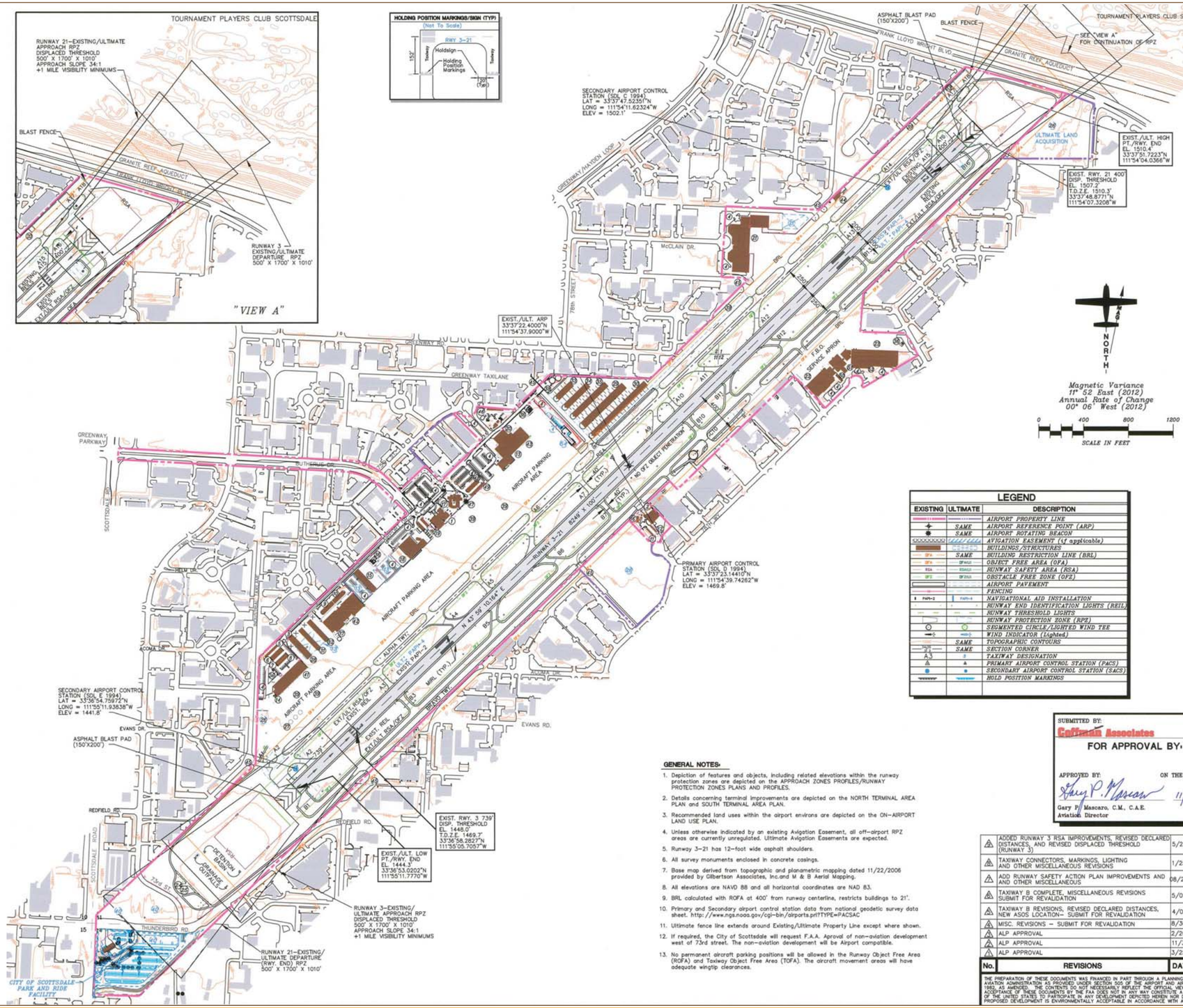
AIRPORT DATA SHEET

SCOTTSDALE, ARIZONA

PLANNED BY: James M. Harris P.E.
DETAILED BY: Maggie Brewer
APPROVED BY: James M. Harris P.E.

May 22, 2013 SHEET 1 OF 8

Coffman Associates
Airport Consultants
www.coffmanassociates.com



BUILDINGS/FACILITIES

EXISTING	ULTIMATE	DESCRIPTION	ELEVATION [1]
(1)	---	ADMINISTRATION/TERMINAL BUILDING	1496.4'
(2)	---	AIRCRAFT RESCUE and FIREFIGHTING (ARFF)	1500.0'
(3)	---	AIRPORT MAINTENANCE	1468.7'
(4)	---	AUTOMOBILE PARKING LOTS	NA
(5)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1458.9'
(6)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1459.9'
(7)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1459.2'
(8)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1458.9'
(9)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1462.9'
(10)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1463.4'
(11)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1474.2'
(12)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1474.3'
(13)	(13)	CONVENTIONAL HANGAR	1494.5'
(14)	---	CORPORATE HANGAR	1494.5'
(15)	---	CORPORATE HANGAR	1479.4'
(16)	---	AIR TRAFFIC CONTROL TOWER (ATCT)	1567.2'
(17)	---	COMMERCIAL OFFICE BUILDING	1481.6'
(18)	---	FIXED BASE OPERATION (FBO) FACILITY	1479.4'
(19)	---	FIXED BASE OPERATION (FBO) FACILITY	1489.5'
(20)	---	FIXED BASE OPERATION (FBO) FACILITY	1497.2'
(21)	(21)	FIXED BASE OPERATION (FBO) FACILITY	1538.0'
(22)	---	FIXED BASE OPERATION (FBO) FACILITY	1528.3'
(23)	---	FIXED BASE OPERATION (FBO) FACILITY	1525.0'
(24)	---	WEATHER INSTRUMENTS	1465.0'
(25)	---	AUTOMATED SURFACE OBSERVATION SYSTEM (ASOS)	1460.0'
---	(26)	AVIATION RELATED DEVELOPMENT	NA
(27)	---	HELICOPTER PARKING	NA
(28)	---	T-HANGARS	1468.7'
(29)	---	T-HANGARS	1495.0'
(30)	---	T-HANGARS	1493.5'
(31)	---	SHADE HANGARS	1467.7'
(32)	---	SHADE HANGARS	1468.9'
(33)	---	SHADE HANGARS	1491.1'
(34)	---	SHADE HANGARS	1491.7'
(35)	---	SHADE HANGARS	1492.4'
(36)	---	UNDERGROUND FUEL STORAGE FACILITY	NA
(37)	---	UNDERGROUND FUEL STORAGE FACILITY	NA
(38)	---	WATER/WELL – SCOTTSDALE	1512.0'
(39)	(39)	AIRCRAFT PARKING (TIEDOWNS)	NA
---	(40)	NON-AVIATION RELATED DEVELOPMENT	NA
(41)	---	COMMERCIAL OFFICE BLDG./CONV. HANGAR	1494.5'
(42)	---	FIXED BASE OPERATION (FBO) FACILITY	1489.2'
(43)	---	COMMERCIAL OFFICE BLDG./CONV. HANGAR	1493.1'
(44)	---	AIRCRAFT WASH RACK/PILOT'S LOUNGE	1522.1'
(45)	---	AIRPARK AIRCRAFT ACCESS GATE	NA
(46)	---	WATER TREATMENT FACILITY	1489.9'
(47)	---	AIRPORT ROTATING BEACON	1519.7'
(48)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1475.0'
(49)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1475.0'
(50)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1495.0'
(51)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1495.0'
(52)	---	AUTOMOBILE PARKING SHADE STRUCTURE	1495.0'
(53)	---	AIRCRAFT WASH PAD	NA
---	(54)	AIRPORT OPERATIONS CENTER	1503.0'
---	(55)	COVERED AUTO PARKING WITH PV SOLAR PANELS ON TOP	±1483.0'

1. The elevation represents the maximum elevation of each building or structure.

NA – Not Applicable

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
	SAME	AIRPORT REFERENCE POINT (ARP)
	SAME	AIRPORT ROTATING BEACON
		AVIGATION EASEMENT (if applicable)
		BUILDINGS/STRUCTURES
BRL	SAME	BUILDING RESTRICTION LINE (BRL)
OFA		OBJECT FREE AREA (OFA)
RSA		RUNWAY SAFETY AREA (RSA)
OFZ		OBSTACLE FREE ZONE (OFZ)
		AIRPORT PAVEMENT
		FENCING
PAPI-2	PAPI-4	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY PROTECTION ZONE (RPZ)
		SEGMENTED CIRCLE/LIGHTED WIND TEE
		WIND INDICATOR (Lighted)
	SAME	TOPOGRAPHIC CONTOURS
	SAME	SECTION CORNER
A3		TAXIWAY DESIGNATION
		PRIMARY AIRPORT CONTROL STATION (PACS)
		SECONDARY AIRPORT CONTROL STATION (SACS)
		HOLD POSITION MARKINGS

GENERAL NOTES:

1. Depiction of features and objects, including related elevations within the runway protection zones are depicted on the APPROACH ZONES PROFILES/RUNWAY PROTECTION ZONES PLANS AND PROFILES.
2. Details concerning terminal improvements are depicted on the NORTH TERMINAL AREA PLAN and SOUTH TERMINAL AREA PLAN.
3. Recommended land uses within the airport environs are depicted on the ON-AIRPORT LAND USE PLAN.
4. Unless otherwise indicated by an existing Avigation Easement, all off-airport RPZ areas are currently unregulated. Ultimate Avigation Easements are expected.
5. Runway 3–21 has 12-foot wide asphalt shoulders.
6. All survey monuments enclosed in concrete casings.
7. Base map derived from topographic and planametric mapping dated 11/22/2006 provided by Gilbertson Associates, Inc.and M & B Aerial Mapping.
8. All elevations are NAVD 88 and all horizontal coordinates are NAD 83.
9. BRL calculated with ROFA at 400' from runway centerline, restricts buildings to 21'.
10. Primary and Secondary airport control station data from national geodetic survey data sheet - http://www.ngs.noaa.gov/cgi-bin/airports.prl?TYPE=PACSAC
11. Ultimate fence line extends around Existing/Ultimate Property Line except where shown.
12. If required, the City of Scottsdale will request F.A.A. Aproval of non-aviation development west of 73rd street. The non-aviation development will be Airport compatible.
13. No permanent aircraft parking positions will be allowed in the Runway Object Free Area (ROFA) and Taxiway Object Free Area (TOFA). The aircraft movement areas will have adequate wingtip clearances.

SUBMITTED BY:
Coffman Associates
FOR APPROVAL BY:
APPROVED BY: ON THE DATE OF:
Gary P. Mascaro, C.M., C.A.E. 11/5/13
Aviation Director

FAA APPROVAL STAMP

Approved conditionally Nov 7, 2013
Subject to comments contained in our letter dated 11-7-2013
FEDERAL AVIATION ADMINISTRATION
Western-Pacific Region
By _____
Manager - LAX/ADO
PHX - APO

No.	REVISIONS	DATE	BY	APP'D.
6	ADDED RUNWAY 3 RSA IMPROVEMENTS, REVISED DECLARED DISTANCES, AND REVISED DISPLACED THRESHOLD (RUNWAY 3)	5/22/13	GM	--
5	TAXIWAY CONNECTORS, MARKINGS, LIGHTING AND OTHER MISCELLANEOUS REVISIONS	1/25/12	GM	FAA
4	ADD RUNWAY SAFETY ACTION PLAN IMPROVEMENTS AND AND OTHER MISCELLANEOUS	08/27/08	STG	FAA
3	TAXIWAY B COMPLETE, MISCELLANEOUS REVISIONS SUBMIT FOR REVALIDATION	5/01/02	STG	FAA
2	TAXIWAY B REVISIONS, REVISED DECLARED DISTANCES, NEW ASOS LOCATION– SUBMIT FOR REVALIDATION	4/06/01	STG	FAA
1	MISC. REVISIONS – SUBMIT FOR REVALIDATION	8/30/00	STG	FAA
0	ALP APPROVAL	2/20/97	JSK	FAA
0	ALP APPROVAL	11/3/95	JSK	FAA
0	ALP APPROVAL	3/25/93	JSK	FAA

SCOTTSDALE AIRPORT

AIRPORT LAYOUT DRAWING

SCOTTSDALE, ARIZONA

PLANNED BY: James M. Harris P.E.
DETAILED BY: Maggie Beaver
APPROVED BY: James M. Harris P.E.
May 22, 2013 SHEET 2 OF 8

Coffman Associates
Airport Consultants
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AIRSIDE CONSIDERATIONS

Runway 3-21

- Evaluate improvements necessary for the runway to meet the appropriate Runway Design Code (RDC) design standards.
- Examine options to minimize the use of declared distances.
- Analyze the feasibility and practicability of meeting separation standards between the runway and parallel taxiways.
- Determine the ability to conform to proper hold line separation standards associated with the runway.

Taxiways

- Evaluate the existing and ultimate taxiway system in meeting the appropriate ADG and Taxiway Design Group (TDG) standards.
- Consider additional taxiway exits to improve airfield capacity.
- Improve circulation, efficiency, and safety to the extent practicable per Advisory Circular 150/5300-13A, Airport Design.
- Analyze remote taxiways and taxilanes in meeting appropriate standards for smaller aircraft.

Navigational and Approach Aids

- Evaluate improvements necessary for enhanced instrument approaches to the runway system.
- Upgrade to four-box precision approach path indicators (PAPI-4s) serving each runway end.

Lighting, Marking, and Signage

- Implement medium intensity taxiway lighting (MITL) on all future taxiways serving the runway system.
- Consider implementing light emitting diode (LED) lighting on the runway and taxiway system.

LANDSIDE CONSIDERATIONS

Aircraft Hangars

- Identify locations for future hangar development.

Aircraft Parking Aprons

- Research areas for additional aircraft parking apron space to meet the demands of peak period activity on the airfield.

Redevelopment Potential

- Analyze redevelopment options to maximize airport property to meet projected demand and for revenue enhancement opportunities.
- Identify potential revenue support parcels to include both airfield access and non-airfield access areas.

such as runways, taxiways, taxilanes, and aprons.

Aircraft Classification

The FAA design standards for the development and location of airport facilities are based primarily on the characteristics of the aircraft which are currently using or are expected to use an airport. The critical design aircraft defines the design parameters for an airport. The design aircraft may be a single aircraft type or, more commonly, is a composite aircraft representing a collection of aircraft classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and TDG. FAA AC 150/5300-13A, Change 1, *Airport Design*, describes the following airplane classification systems, the parameters of which are presented on **Exhibit 4C**.

Aircraft Approach Category (AAC): The AAC is a grouping of aircraft based on a reference landing speed (V_{REF}), if specified, or if V_{REF} is not specified, 1.3 times stall speed (V_{SO}) at the maximum certificated landing weight. V_{REF}, V_{SO}, and the maximum certificated landing weight are those values as established for the aircraft by the certification authority of the country of registry.

The AAC generally refers to the approach speed of an aircraft in landing configuration. The higher the approach speed, the more restrictive the applicable design standards. The AAC, depicted by a letter A through E, is the aircraft approach category as it relates to aircraft approach speed (operational characteristic). Aircraft in AAC A and B include pistons, turboprops, and small general aviation jets. Aircraft in AAC C, D, and E include medium-sized general aviation jets up to larger commercial jets. The AAC generally applies to runways and runway-related facilities, such as runway width, runway safety area (RSA), runway object free area (ROFA), RPZ, and separation standards.

Airplane Design Group (ADG): The ADG, depicted by a Roman numeral I through VI, is a classification of aircraft which relates to aircraft wingspan or tail height (physical characteristic). When the aircraft wingspan and tail height fall in different groups, the higher group is used. The ADG influences design standards for taxiway safety area (TSA), taxiway object free area (TOFA), apron wingtip clearance, and various separation distances.

Taxiway Design Group (TDG): The TDG is a classification of airplanes that is based on outer-to-outer Main Gear Width (MGW) and Cockpit to Main Gear (CMG) distances. The TDG relates to the undercarriage dimensions of the design aircraft, and the TDG standards are based on the MGW and CMG distances. The taxiway design elements determined by the application of the TDG include the taxiway width, taxiway edge safety margin, taxiway shoulder width, taxiway fillet dimensions, and, in some cases, the separation distance between parallel taxiways/taxilanes. Other taxiway elements, such as the TSA, TOFA, taxiway/taxilane separation to parallel taxiway/taxilanes or fixed or movable objects, and taxiway/taxilane wingtip clearances are determined solely based on the wingspan of the design aircraft utilizing those surfaces. It is appropriate for taxiways to be planned and built to different TDG standards based on expected use.

Airport and Runway Classification

These classifications, along with the aircraft classifications defined previously, are used to determine the appropriate FAA design standards to which the airfield facilities are to be designed and built.

***Airport Reference Code (ARC)*:** The ARC is an airport designation that signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely on the airport. The current ALP, which will be updated as part of this planning effort, identifies an ARC of D-II for Scottsdale Airport. The ultimate ARC on the ALP is also called out as D-II.

Runway Design Code (RDC): The RDC is a code signifying the design standards to which the runway is to be built. The RDC is based upon planned development and has no operational component.

The AAC, ADG, and Runway Visual Range (RVR) are combined to form the RDC of a particular runway. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed (operational characteristics). The second component, depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive. The third component relates to the visibility minimums expressed by RVR values in feet of 1,200 (⅛-mile), 1,600 (¼-mile), 2,400 (½-mile), 4,000 (¾-mile), and 5,000 (1-mile). The RVR values approximate standard visibility minimums for instrument approaches to the runways. The third component should read "VIS" for runways designed for visual approach use only. Further evaluation in this chapter determines that the airport's RDC is D-II-5000.

Approach Reference Code (APRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to landing operations. Like the RDC, the APRC is composed of the same three components: the AAC, ADG, and RVR. The APRC describes the current operational capabilities of a runway under particular meteorological conditions where no special operating procedures are necessary, as opposed to the RDC which is based upon planned development with no operational component. The APRC for a runway is established based upon the minimum runway-to-taxiway centerline separation. At Scottsdale Airport, parallel Taxiways A and B serve each side of Runway 3-21 and are located 250 feet from the runway (centerline to centerline). As a result, the APRC for Scottsdale Airport is B/II/5000, which indicates a runway/taxiway separation of 250 feet for not lower than one-mile visibility minimums.

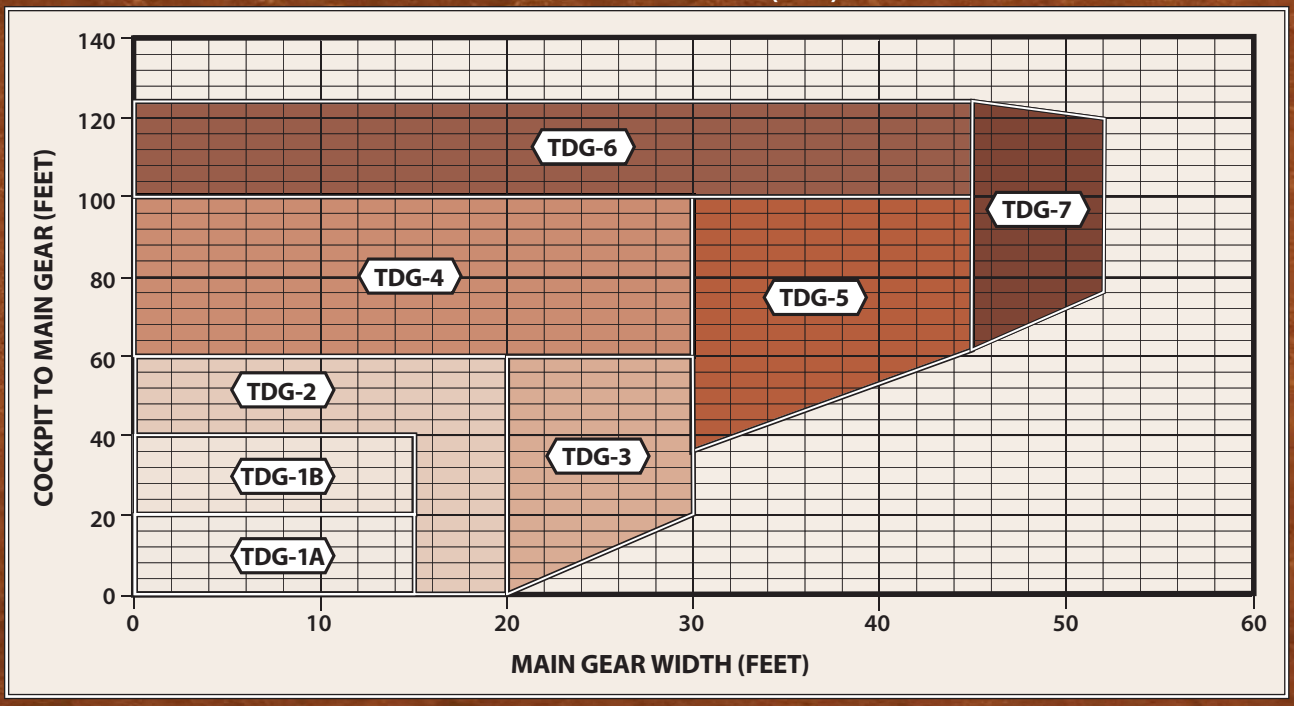
Departure Reference Code (DPRC): A code signifying the current operational capabilities of a runway and associated parallel taxiway with regard to takeoff operations. The DPRC represents those aircraft that can takeoff from a runway while any aircraft are present on adjacent taxiways, under particular meteorological conditions with no special operating conditions. The DPRC is similar to the APRC, but is composed of two components: ACC and ADG. A runway may have more than one DPRC depending on the parallel taxiway separation distance. The DPRC for Scottsdale Airport is B/II, which accounts for a runway to parallel taxiway separation of greater than 240 feet.

AIRCRAFT APPROACH CATEGORY (AAC)	
Category	**Approach Speed**
A	less than 91 knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

AIRPLANE DESIGN GROUP (ADG)		
Group #	**Tail Height (ft)**	**Wingspan (ft)**
I	<20	<49
II	20-<30	49-<79
III	30-<45	70-<118
IV	45-<60	118-<171
V	60-<66	171-<214
VI	66-<80	214-<262

VISIBILITY MINIMUMS	
RVR (ft)	**Flight Visibility Category (statute miles)**
VIS	3-mile or greater visibility minimums
5,000	Lower than 3 miles but not lower than 1-mile
4,000	Lower than 1-mile but not lower than ¾-mile (APV ≥ ¾ but < 1-mile)
2,400	Lower than ¾-mile but not lower than ½-mile (CAT-I PA)
1,600	Lower than ½-mile but not lower than ¼-mile (CAT-II PA)
1,200	Lower than ¼-mile (CAT-III PA)

TAXIWAY DESIGN GROUP (TDG)



KEY

APV: Approach Procedure with Vertical Guidance
PA: Precision Approach
RVR: Runway Visual Range
TDG: Taxiway Design Group

Source: FAA AC 150/5300-13A, Change 1, Airport Design

CRITICAL DESIGN AIRCRAFT

The critical design aircraft is defined as the most demanding category of aircraft, or family of aircraft, which conducts at least 500 annual itinerant operations at the airport. Planning for future aircraft use is of particular importance since the 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 reasonable long range potential needs of the airport.

Selection of the current and future critical design aircraft must be realistic in nature and supported by current data and realistic projections. A detailed analysis was conducted in Chapter Two that identified the types and number of jet operations at Scottsdale Airport based upon the FAA's *Traffic Flow Management System Counts* (TFMSC). As presented in **Table 4A**, over the past several years approach category D has served as the most demanding AAC to exceed 500 annual operations, and prior to 2012, design group II constituted the most demanding ADG to experience over 500 annual operations. In 2012, however, ADG III combined for over 500 annual operations. As a result, the current critical design aircraft for Scottsdale Airport is D-III with a maximum certified takeoff weight of 100,000 pounds or less.

TABLE 4A
Total Business Jet Operations by Aircraft Approach Category and Airplane Design Group
Scottsdale Airport

	Annual Operations				
	2008	**2009**	**2010**	**2011**	**2012**
AAC					
A	288	286	271	387	534
B	16,740	12,487	12,672	14,369	14,002
C	12,289	9,114	10,100	9,801	9,568
D	3,539	2,523	2,966	3,255	3,092
ADG					
I	10,337	7,287	8,241	8,961	8,491
II	22,199	16,845	17,367	18,400	18,190
III	320	278	401	451	515

AAC - Aircraft Approach Category
ADG - Airplane Design Group

Source: *Traffic Flow Management System Counts* (City Pair) from FAA Database

RUNWAY DIMENSIONAL CRITERIA FOR RDC D-III STANDARDS

The level of D-III operations currently occurring at Scottsdale Airport would make the airport eligible for federal funding to upgrade the airfield to RDC D-III standards if practicable; however, there are several imaginary surfaces surrounding and associated with the runway that must be considered for safety reasons in conjunction with any runway improvements. These include the RSA, ROFA, runway obstacle free zone (ROFZ), and RPZ. Each of these elements must meet the appropriate design standard. Note: Under certain circumstances, the FAA may approve a Modification to Standard for non-standard conditions on the airfield related to certain safety areas (ROFA) and

separation standards. **Exhibit 4D** presents the FAA design standards as they apply to RDC D-III for Runway 3-21 at Scottsdale Airport. The airport design standards that are currently not being met for RDC D-III are highlighted in red. As shown, the RSA, ROFA, and separation standards to include the distance from Runway 3-21 to parallel Taxiways A and B are not met for RDC D-III design. The following section further details these non-standard conditions and the ramifications for attempting to meet the FAA standards.

Runway Safety Area

The RSA is defined as a surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The FAA requires the RSA to be cleared and graded, drained by grading or storm sewers, capable of accommodating the design aircraft and rescue and firefighting equipment, and free of obstacles not fixed by navigational purpose.

For RDC D-III aircraft, the FAA calls for the RSA to be 500 feet wide and extend 1,000 feet beyond the runway ends. It should be noted that only 600 feet of RSA is needed prior to the landing threshold on each runway end under RDC D-III standards. With the implementation of declared distances that are currently in effect at Scottsdale Airport, as detailed previously in Chapter Three, the RSA extends 1,000 feet beyond the end of the accelerate-stop distance available (ASDA) and landing distance available (LDA). Only a small portion of the perimeter access road located north of Runway 3-21 is located within the RSA beyond the runway ends. On each side of the runway, portions of parallel Taxiways A and B both penetrate the RSA. Note: A Modification to Standard cannot be approved for RSA deficiencies on an airport.

Runway Object Free Area

The FAA defines the ROFA as an area centered on the runway extending laterally and beyond each runway end, in accordance with the critical aircraft design category utilizing the runway. The ROFA must provide clearance of all ground-based objects protruding above the RSA edge elevation, unless the object is fixed by function (i.e., airfield lighting) serving air or ground navigation.

For RDC D-III aircraft, the FAA calls for the ROFA to be 800 feet wide, extending 1,000 feet beyond each runway end. Similar to the RSA, only 600 feet is needed prior to the landing threshold. The ROFA associated with Runway 3-21 also extends 1,000 feet beyond the end of the ASDA and LDA on each runway end. The ROFA is obstructed in various areas on the airfield, including a blast fence and extending over Frank Lloyd Wright Boulevard on the north side of the airport and encompassing roads, fencing, and building infrastructure outside of airport property on the east side of the airport.

Runway Separation

Separation distances between a runway and various areas on the airfield are primarily a function of the approaches provided for the airport and the runway's designated RDC. For RDC D-III, with not lower than one-mile visibility minimums, the separation standard between a runway and parallel taxiway is 400 feet. Currently, parallel Taxiways A and B are lo-

RUNWAY DESIGN CODE	EXISTING	D-II - 5000	D-III - 5000
VISIBILITY MINIMUMS	≥1-mile	≥1-mile	≥1-mile
RUNWAY DESIGN			
Runway Length (feet)	8,249	8,249	8,249
Runway Width (feet)	100	100	100[1]
Shoulder Width (feet)	12	10	20[1]
Blast Pad Width (feet)	140	120	140[1]
Blast Pad Length (feet)	200	150	200
RUNWAY PROTECTION			
Runway Safety Area (RSA)			
Width (feet)	400	400[4]	500
Length Beyond Departure End (feet)	1,000[2]	1,000	1,000
Length Prior to Threshold (feet)	600	600	600
Runway Object Free Area (ROFA)			
Width (feet)	670	800[5]	800
Length Beyond Departure End (feet)	Rwy 3-470/Rwy 21-30	1,000[5]	1,000
Length Prior to Threshold (feet)	600	600	600
Runway Obstacle Free Zone (ROFZ)			
Width (feet)	400	400	400
Length Beyond Runway End (feet)	200	200	200
Approach Runway Protection Zone (RPZ)			
Inner Width (feet)	500	500	500
Outer Width (feet)	1,010	1,010	1,010
Length (feet)	1,700	1,700	1,700
Departure Runway Protection Zone (RPZ)			
Inner Width (feet)	500	500	500
Outer Width (feet)	1,010	1,010	1,010
Length (feet)	1,700	1,700	1,700
RUNWAY SEPARATION			
Runway Centerline to:			
Holding Position (feet)	152	250[5]	266[3]
Parallel Taxiway Centerline (feet)	250	300[5]	400
Aircraft Parking Apron (feet)	325	400[5]	500

[1] For Airplane Design Group (ADG) III aircraft with maximum certificated takeoff weight of 150,000 pounds or less and approach visibility minimums not lower than 3/4 mile, the standard runway width is 100 feet, the shoulder width is 20 feet, and the runway blast pad width is 140 feet.

[2] Based on declared distances presented on Airport Layout Plan Revalidation (May 2013) and approved by the FAA in November 2013.

[3] Design Standard calls for 250 feet at sea level. For Aircraft Approach Category (AAC) and ADG C/D/E-III, the distance is increased 1 foot for each 100 feet above sea level. Scottsdale Airport is situated at 1,510 feet MSL.

[4] Runway Safety Area Determination requested in 2001. Advisory Circular 150/5300-13A, Change 1, states that an RSA width of 400 feet is permissable for Runway Design Code (RDC) D-II.

[5] Modification to Standards requested in 2001.

NOTE: Red indicates airport design standards that are currently not being met for RDC D-II and D-III.

cated 250 feet from the runway (centerline to centerline). The FAA standard for hold lines associated with RDC D-III is 250 feet, plus one foot for each additional 100 feet above sea level, resulting in a hold line separation of 266 feet from the runway at Scottsdale Airport. The current hold line markings on all taxiways associated with Runway 3-21 are marked 152 feet from the runway centerline. Finally, the FAA standard for runway-to-aircraft parking apron separation for RDC D-III is 500 feet. The existing aircraft parking areas on the airport begin between 370 feet and 410 feet from the runway centerline.

IMPLEMENTING RDC D-III STANDARDS

For Scottsdale Airport, the most significant improvement needed to meet RSA standards for RDC D-III involves relocating parallel Taxiways A and B to a distance of 400 feet from Runway 3-21 (centerline to centerline). As previously detailed, Scottsdale Airport is a highly functional facility and contains an array of landside development, both aviation and non-aviation related, adjacent to the parallel taxiway systems on either side of Runway 3-21. Relocating the proposed taxiways would result in major impacts to landside development on the east and west sides of the airport, all of which currently supports the operation and activity of the airport and surrounding region.

A detailed analysis of the impacts of such landside facilities has been conducted during the alternatives phase of this Master Plan. **Table 4B** lists the existing landside infrastructure that would be affected as a result of relocating parallel Taxiway A to meet the 400-foot separation requirement on the west side of the airport.

TABLE 4B
Runway/Parallel Taxiway A – 400-Foot Separation
Scottsdale Airport

Affected Landside Infrastructure
• 88,160 sq. yds. of Apron
• 83 Marked Tiedowns
• 2 T-Hangar Complexes (53 individual units)
• Aircraft Wash Rack
• Bypass Taxilanes associated with Main Aircraft Parking Apron and Kilo Ramp
• 758,559 sq. ft. (17.42 acres) of Off-Airport Property (11 Private Parcels and 8 Buildings)

Source: Coffman Associates analysis

Table 4C provides a detailed breakdown of the landside infrastructure that would be affected when relocating parallel Taxiway B on the east side of Runway 3-21.

TABLE 4C
Runway/Parallel Taxiway B – 400-Foot Separation
Scottsdale Airport

Affected Landside Infrastructure
• 14,240 sq. yds. of Apron
• Airport Traffic Control Tower
• Fire Station
• 2,697,132 sq. ft. (61.92 acres) of Off-Airport Property (25 Private Parcels and 19 Buildings)

Source: Coffman Associates analysis

As presented in the tables, the relocation of parallel Taxiways A and B to 400 feet from Runway 3-21 in order to meet RDC D-III standards would affect substantial infrastructure both on and adjacent to existing airport property. Over 100,000 square yards of aircraft parking apron space and 83 marked tiedowns would have to be removed. Other airport infrastructure, including two T-hangar complexes, an aircraft wash rack, the airport traffic control tower (ATCT), City of Scottsdale Fire Station #609, and the bypass taxilanes adjacent to the main aircraft parking apron and the Kilo Ramp that both help alleviate aircraft movements on Taxiway A would have to be removed in order to accommodate the relocation of the parallel taxiways. Furthermore, these facilities would have to be relocated in order to provide the same levels of safety and services currently being offered at the airport.

In addition to the on-airport infrastructure, over 3.4 million square feet (79.34 acres) of off-airport property would be impacted as a result of accommodating the relocated parallel taxiways and their associated safety areas. These areas include 36 private parcels and 27 existing buildings, and are made up of a mix of commercial/industrial developments, as well as facilities located within the Scottsdale Airpark.

RDC D-III STANDARDS SUMMARY

It is evident from this design standards evaluation that Scottsdale Airport cannot effectively meet RDC D-III standards for planning and design without substantial improvements. Most notably is the separation distance between Runway 3-21 and parallel Taxiways A and B needed to meet proper RSA. Given the existing constraints and investment that would be necessary, the Master Plan considers it not practicable for Scottsdale Airport to meet RDC D-III standards.

While it is desirable to plan and design to the standards for the critical aircraft as set forth by the FAA, it is not practicable to do so. As a result, the remainder of the airside alternatives analysis examines Scottsdale Airport's ability in meeting RDC D-II standards. It should be noted that the previously approved ALP (November 2013) calls for an existing and ultimate ARC D-II planning standard for the airport.

An airport that does not meet the FAA design standards guidelines for a particular classification of aircraft is not necessarily unsafe for operations by those aircraft. Under federal law, the FAA has the exclusive authority to regulate the field of aviation safety. Unless an airfield is determined as inherently unsafe by the FAA in accordance with the current Code of Federal Regulations (CFR), the final decision to land and/or depart from an airfield is up to the aircraft operator, who must also abide by the CFRs regarding the aircraft and its operation. Such is the case at Scottsdale Airport, where aircraft in a classification (RDC D-III) that exceeds the current airport design (ARC D-II according to the currently approved ALP) commonly operate.

Airport owners may exercise authority in regulation of aviation safety, but that authority does not extend to a ban on classes of aircraft. With the acceptance of federal airport improvement program (AIP) grants for Scottsdale Airport, the City of Scottsdale is bound under grant assurances to make the airport available as an airport for public use under fair and reasonable terms and without unjust dis-

crimination to all types, kinds, and classes of aeronautical uses.

RUNWAY DIMENSIONAL CRITERIA FOR RDC D-II STANDARDS

Exhibit 4D also presents the FAA design standards as they apply to RDC D-II for Runway 3-21 at Scottsdale Airport. The design standards that are currently not being met for RDC D-II are highlighted in red. Similar to D-III standards, the ROFA, as well as runway separation standards previously detailed, are not met for RDC D-II. The following section further details these non-standard conditions and the steps needed in order to fully meet RDC D-II standards.

Runway Safety Area

While the standard for RSA width is 500 feet for RDCs D-II and D-III, AC 150/5300-13A, Change 1, *Airport Design*, allows for the application of a narrower RSA width of 400 feet for RDC D-II. The 400-foot width significantly benefits the airfield system at Scottsdale Airport. Under this scenario, parallel Taxiways A and B no longer penetrate the RSA on either side of Runway 3-21. Furthermore, the perimeter access road beyond the north end of Runway 3-21 no longer constitutes an RSA impact. As a result, the RSA length and width associated with Runway 3-21 meets RDC D-II standards.

Runway Object Free Area

The ROFA shortage previously outlined for RDC D-III standards also applies to RDC D-II standards. At Scottsdale Airport, this shortage includes a blast fence and portions of Frank Lloyd Wright Boulevard on the north side of the airport and roads, fencing, and building infrastructure outside of airport property on the east side of the airport. As noted earlier on, a Modification to Standard can be approved for non-standard ROFA conditions on an airport if an acceptable level of safety can be proven. Further information related to the Modification to Standards process will be provided later in this chapter.

Runway Separation

While separation standards between Runway 3-21 and various areas on the airfield do not conform to RDC D-II standards, the magnitude of the insufficiency is not as great when compared to the standards for RDC D-III. The FAA standard for runway-to-parallel taxiway separation with not lower than one-mile visibility minimums is 300 feet for RDC D-II. For hold lines, the separation standard is 250 feet and does not include the elevation change that D-III standards require. The FAA separation standard for RDC D-II between a runway and aircraft parking apron is 400 feet.

IMPLEMENTING RDC D-II STANDARDS

The major improvement needed to meet separation standards for RDC D-II design at Scottsdale Airport would involve relocating parallel Taxiways A and B 50 feet farther away from Runway 3-21 (centerline to centerline), providing for a full 300 feet of separation on either side of the runway. Shifting each parallel taxiway 50 feet would require significant improvements in order to accommodate the taxiways and their associated safety areas.

Similar to previous analysis associated with the implementation of RDC D-III

standards, a detailed examination of the impacts on landside facilities has been evaluated to meet RDC D-II standards for runway-to-parallel taxiway separation. **Table 4D** calls out the existing landside infrastructure that would be affected as a result of relocating parallel Taxiway A to meet the 300-foot separation requirement on the west side of the airport.

TABLE 4D
Runway/Parallel Taxiway A – 300-Foot Separation
Scottsdale Airport

Affected Landside Infrastructure
• 22,474 sq. yds. of Apron
• 42 Marked Tiedowns
• 1 T-Hangar Complex (32 individual units)
• Aircraft Wash Rack
• Bypass Taxilanes associated with Main Aircraft Parking Apron and Kilo Ramp

Source: Coffman Associates analysis

Table 4E provides a detailed breakdown of the landside infrastructure that would be affected when relocating parallel Taxiway B to 300 feet east of Runway 3-21.

TABLE 4E
Runway/Parallel Taxiway B – 300-Foot Separation
Scottsdale Airport

Affected Landside Infrastructure
• 1,143 sq. yds. of Apron
• 107,476 sq. ft. (2.47 acres) of Off-Airport Property (14 Private Parcels and 5 Buildings)

Source: Coffman Associates analysis

The relocation of parallel Taxiways A and B to 300 feet from Runway 3-21 would create significant impacts to existing landside development on both the east and west sides of Scottsdale Airport. In addition, landside development currently not located on airport property would be affected as well.

On the west side of the airport, the relocation of Taxiway A would displace approximately 22,474 square yards of aircraft parking apron space and 42 marked tiedowns. Furthermore, one T-hangar complex, an aircraft wash rack, and the bypass taxiways adjacent to the west side of existing Taxiway A would be impacted. It should be noted that, while significant on-airport infrastructure would be affected, the relocation of Taxiway A to 300 feet would not encompass any landside development located beyond the airport property line.

On the east side of the airport, the relocation of Taxiway B would impact infrastructure currently located on airport property that includes over 1,140 square yards of aircraft parking apron space. The greatest impact, however, includes approximately 107,500 square feet (2.47 acres) of property currently located outside the existing airport boundary. Within this area, 14 private parcels of land and

five buildings would be impacted by the taxiway relocation.

RDC D-II STANDARDS SUMMARY

As evidenced previously, Scottsdale Airport meets the existing and ultimate RSA requirements for RDC D-II. In doing so, parallel Taxiways A and B, as well as the perimeter access road, do not penetrate the RSA and no further determination is needed on potential improvements that would be required to mitigate the RSA deficiencies.

The remaining conditions fall short of being able to accommodate ROFA standards, as well as runway separation standards related to parallel taxiways, hold lines, and aircraft parking aprons. The distance between the hold lines and various aircraft parking aprons is dictated by the separation distance between the runway and parallel taxiways, in addition to the safety areas associated with the taxiways. Scottsdale Airport may be eligible for funding from the FAA to implement projects to improve the design standard deficiencies; however, for an eligible project to be funded, it must be proven to be economically practicable and feasible as well.

In order to provide 300 feet of separation between Runway 3-21 and parallel Taxiways A and B, significant improvements are necessary that would substantially impact landside development both on and off current airport property. Furthermore, the airport would need to acquire positive control via fee simple property acquisition on the east side of the airport in order to satisfy the standards for relocated Taxiway B. When certain standards and separations such as those previously discussed do not meet FAA criteria and there is a belief that implementing these standards may not be economically practicable and feasible, a request for a Modification to Standard should be looked at as an option.

MODIFICATION TO DESIGN STANDARDS

According to AC 150/5300-13A, Change 1, *Airport Design*, a Modification to Standard is "any approved nonconformance to FAA standards, other than the dimensional standards for Runway Safety Areas (RSAs), applicable to an airport design, construction, or equipment procurement project that is necessary to accommodate an unusual local condition for a specific project on a case-by-case basis while maintaining an acceptable level of safety."

FAA Order 5300.1F, *Modifications to Agency Airport Design, Construction, and Equipment Standards*, further defines a Modification to Standard as "any change to FAA standards, other than dimensional standards for runway safety areas, applicable to an airport design, construction, or equipment procurement project that results in lower costs, greater efficiency, or is necessary to accommodate an unusual local condition on a specific project, when adopted on a case-by-case basis."

An airport sponsor's request for a Modification to Standard is submitted to the appropriate FAA Airports Regional or District Office and contains the following information:

1. A list of standards affected and the basis for the request.
2. A description of the proposed modifications.
3. A discussion of viable alternatives for accommodating the unusual conditions.

4. Assurance that modifications to materials, construction, or equipment standards will provide a product that will meet FAA standards for acceptance and that the finished product will perform for its intended design life, based on historical data, or modifications to airport design standards will provide an acceptable level of safety, and modification is necessary to conform to local laws and regulations (if applicable).

Coordination with affected FAA Lines of Business must be accomplished before a Modification to Standard is approved. At a minimum, this typically includes coordination with the Flight Standards, Air Traffic, and Airway Facilities and requires concurrence by the division managers or their designated representatives. An approved Modification to Standard is typically required for any non-standard item that is reflected on a new or revised ALP at the time of the plan's approval. Normally, the Modification to Standard should be coordinated with the "draft" ALP drawing set that reflects and lists the status of all Modifications to Standards at the airport.

The following conditions related to insufficient ROFA and airfield separation as currently outlined on the airport's approved ALP are detailed in **Table 4F**. Previous analysis has indicated that these design and separation standards are not practicable to meet and, as a result, the airport should pursue a Modification to Standard.

The FAA has indicated that a Modification to Standard could be approved for each particular airfield condition at Scottsdale Airport outlined above. As a part of this Master Plan and updated ALP process, the City of Scottsdale Aviation Department has coordinated with the FAA to seek the approval of the Modification to Standards. It is suggested to submit the request and seek approval prior to the submittal of the revised ALP as a result of this Master Plan. Upon approval, the FAA Airports District Office will maintain a file of approved Modification to Standards associated with the airport.

TABLE 4F
RDC D-II Airport Design Standard Deficiencies
Scottsdale Airport

Deficiency Description	Design Standard	Existing	Proposed Disposition
Runway 3 Object Free Area Length Beyond Runway End	1,000 feet	470 feet	Request Modification to Standard
Runway 21 Object Free Area Length Beyond Runway End	1,000 feet	30 feet	Request Modification to Standard
Runway Object Free Area Width	800 feet	670 feet	Request Modification to Standard
Runway Centerline to Hold Line	250 feet	152 feet	Request Modification to Standard
Runway Centerline to Parallel Taxiways	300 feet	250 feet	Request Modification to Standard
Runway Centerline to Aircraft Parking Apron	400 feet	325 feet	Request Modification to Standard

Source: Airport Layout Plan (approved November 2013); FAA AC 150/5300-13A, Change 1, *Airport Design*

RUNWAY HOLD LINE SEPARATION

Chapter Three detailed the coordination that has been done previously between the City of Scottsdale Aviation Department and FAA Lines of Business on a Safety Risk Management Document (SRMD) that examined the safety and operational impacts of relocating the hold lines farther away from the Runway 3-21 centerline at Scottsdale Airport. The final version of the SRMD was published in August 2013 and stated that, "Based on the safety analysis conducted by the Safety Risk Management Panel (SRMP), combined with the recorded results from the Tower Simulation System (TSS), some of the air traffic control (ATC) procedures that would be required in support of the hold line relocation change cannot currently be introduced into the National Airspace System (NAS) with an acceptable level of risk, as defined in the FAA Safety Management System (SMS) manual."

The findings of the SRMD report, as well as the determination that it is most practicable to maintain parallel Taxiways A and B in their current location, can be utilized to help coordinate a Modification to Standard for runway centerline to hold line deficiency as previously detailed.

RUNWAY PAVEMENT STRENGTH

The pavement strength rating for Runway 3-21 at Scottsdale Airport is currently published at 45,000 pounds single wheel loading (SWL) and 75,000 pounds dual wheel loading (DWL). Aircraft can operate with maximum gross weights in excess of 75,000 pounds and up to 100,000 pounds at the airport under these conditions:

1. They can operate up to 100,000 pounds on a prior permission required (PPR) basis; or
2. They can operate with a placard certifying they are operating at or below a weight of 75,000 pounds.

In October 2009, the Scottsdale City Council adopted Resolution No. 8086 and directed the Aviation Department to work with the FAA to pursue the possibility of increasing the aircraft weight limit at Scottsdale Airport from 75,000 to 100,000 pounds DWL. As detailed earlier in the Master Plan, an environmental assessment has been conducted for the proposed strengthening of Runway 3-21, parallel Taxiways A and B, and associated connector taxiways up to 100,000 pounds DWL.

However, through the Master Plan process, the Aviation Department and the FAA determined that increasing the pavement strength up to 100,000 pounds DWL would require the airport to meet D-III standards. As detailed earlier in this chapter, it has been determined that it is not practicable for the airport to meet D-III standards due to the significant amount of landside infrastructure that would be affected. Additionally, there have been only 40 PPR requests since the inception of this program in 2010. This is a minimal number compared to the overall operations of the airport. During discussions between the Aviation Department and the FAA, along with evaluating all pertinent information, the FAA concluded it will continue to support the PPR program and accommodate aircraft up to 100,000 pounds. As a result, the pavement strength on the runway and associated taxiways will remain at 75,000 pounds DWL and the airport will maintain its D-II designation with the under-

standing that the PPR will remain in place.

The airport and the FAA understand the importance of keeping the PPR program and will continue to do so until further notice. This program, as well as the pavement strength issue, will be re-evaluated whenever a future Master Plan update is conducted for Scottsdale Airport.

TAXIWAYS

FAA AC 150/5300-13A, Change 1, *Airport Design*, provides updated guidance on recommended taxiway and taxilane layouts to enhance safety. Most of the standards were enacted to mitigate the potential for runway incursion events. Changes were also aimed at improving pilot situational awareness. The FAA has indicated that all airfields should be planned to meet these standards. Actual changes will be made over time as grant funding is made available.

The following are the taxiway geometry concerns on the airfield:

1. Several taxiways provide direct access to Runway 3-21 from an aircraft parking apron; and
2. Taxiways A7/B7 and A10/B10 provide runway crossing opportunities in the high energy area for Runway 3-21, now discouraged under new FAA guidelines.

A new taxiway design standard put into place under AC 150/5300-13A, Change 1, is the prohibition of direct access between an aircraft apron and a runway. At Scottsdale Airport, the extension of Taxiways A3, A4, A5, A7, A10, A12, A13, A15 on the west side of Runway 3-21 and Taxiway B12 on the east side of Runway 3-21 offer direct pavement connections between respective aircraft parking aprons and Runway 3-21. Taxiway routing markings are not considered sufficient per FAA guidance. As such, the FAA recommends constructing "No Taxi Islands" or removing the taxiways and replacing them in a location that does not provide direct access.

No Taxi Islands can be developed using markings around the island, green paint to identify the island, and lighting around the island; or, the islands can be developed by removing the pavement altogether. Either option will present an obstruction which will require a pilot to navigate a turn prior to entering a runway environment.

While No Taxi Islands would be the most feasible to implement on the airfield in order to mitigate this taxiway geometry concern, it was determined that they would negatively affect the circulation of aircraft on the parking aprons and bypass taxiways at Scottsdale Airport. As a result, **Exhibit 4E** calls for the removal of the taxiways previously mentioned and replacing them with taxiways placed in such a manner requiring a pilot to turn the aircraft prior to entering a runway so as to minimize the likelihood of a runway incursion event.

FAA design standards also present a new concept of a runway's "high energy area." The high energy area is defined as the middle third of a runway and is typically the location where aircraft are moving rapidly for takeoff or landing. It is this area that aircraft are more vulnerable to accidents with aircraft crossing through as they cannot readily slow or stop to avoid impacts. FAA guidance highly discourages the location of taxiways which

LEGEND

- Airport Property Line
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Departure Runway Protection Zone
- Approach Runway Protection Zone
- Uncontrolled RPZ
- To Be Removed
- High Energy Area
- Ultimate Airfield Pavement

DECLARED DISTANCES

Category	Runway 3	Runway 21
TORA	8,249′	8,249′
TODA	8,249′	8,249′
ASDA	7,849′	8,069′
LDA	7,110′	7,669′
Total Pavement Length: 8,249′		

KEY
ASDA - Accelarate-Stop Distance Available
LDA - Landing Distance Available
TODA - Takeoff Distance Available
TORA - Take Off Run Available

0 800 1600
SCALE IN FEET

NORTH

Runway 3 LDA 7,110′
Runway 3 ASDA 7,849′
Runway 3 TORA/TODA 8,249′
Runway 21 LDA 7,669′
Runway 21 ASDA 8,069′
Runway 21 TORA/TODA 8,249′

RUNWAY 3-21 (8,249′ X 100′)

Displaced Threshold (739′)
Upgrade to PAPI-4
Displaced Threshold (400′)
Upgrade to PAPI-4
0.44 acres
0.5 acres
3.00 acres
24.42 acres

Frank Lloyd Wright Blvd.
Scottsdale Rd.
Acoma Dr.
73rd St.
Evans Rd.
Butherus Rd.
74th St.
75th St.
Greenway Rd.
McClain Dr.
80th St.
81st St.
82nd St.
Thunderbird Rd.
73rd St.
Redfield Rd.
76th Pl.
Redfield Rd.
Gelding Dr.
Evans Dr.
Acoma Dr.
82nd St.
Hayden Rd.
83rd Way
84th St.
83rd Pl.
Central Arizona Project

A A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A18
B B1 B2 B3 B5 B6 B7 B9 B10 B11 B12 B13 B15 B16
C C10

Aerial Source: Woolpert, 5-18-2013

route aircraft across a runway in the high energy area.

At Scottsdale Airport, Taxiways A7/B7 and A10/B10 provide for a runway crossing in the high energy area on Runway 3-21, as depicted on **Exhibit 4E**. Discussions with airport management and ATCT personnel indicate that these taxiways serve an important role in maintaining airfield efficiency and capacity. Since positive ground control is provided by the ATCT for aircraft taxiing on the airfield, the high energy area crossings on these taxiways can be better monitored. As a result, the removal of these taxiways is not being proposed in this analysis, but specific attention should be given to taxiway crossings on the runway, in particular within the runway's high energy area.

Exhibit 4E also presents the construction of additional exit taxiways on the airfield, including proposed Taxiways B2, B9, and B15. The taxiways would provide additional opportunities for aircraft to exit the runway system onto parallel Taxiway B, further enhancing airfield capacity.

The actual construction of the proposed taxiways to enhance airfield safety and efficiency should only be undertaken if directed by the FAA. Future taxiway development should at least meet TDG 2 standards on Runway 3-21. TDG 2 standards call for a taxiway width of 35 feet and a taxiway shoulder width of 10 feet. During the course of the planning period, medium intensity taxiway lighting (MITL) should be applied to all active taxiways on the airport serving Runway 3-21. MITL provides for the safe and efficient ground movement of aircraft on the airfield.

In addition, taxiway pavement fillets should be upgraded to meet at least TDG 2 standards and accommodate proper cockpit over centerline steering methodology as defined in AC 150/5300-13A, Change 1. The design of taxiway fillets should consider constructability and maintenance, and it is often preferable to construct more pavement than the minimum required in order to maintain the taxiway edge safety margin. Designing taxiway fillets for a particular aircraft is subject to FAA review.

RUNWAY VISUAL APPROACH AIDS

Certain approach aids provide information to pilots to indicate if they are on the correct glide path to the runway for landing. Visual approach aids are typically provided for instrument-capable runway ends that do not already have an approach lighting system.

A precision approach path indicator (PAPI) system is commonly installed to enhance safety by providing pilots with visual guidance information during landings to the runway. Runway 3-21 is currently served by a two-box PAPI system. As depicted on **Exhibit 4E**, it is recommended that a four-box PAPI system ultimately be implemented on each end of the runway. PAPI-4s better serve business jets that regularly use the airport because they are more visible for these faster approaching aircraft.

RUNWAY THRESHOLDS

The landing thresholds for each end of Runway 3-21 are currently displaced. The Runway 3 landing threshold is displaced 739 feet and the Runway 21 threshold is displaced 400 feet. Both displacements were utilized in order to provide for FAA required safety areas surrounding the usable runway.

As previously discussed, current FAA design standards for RDC D-II require the RSA and ROFA to extend 1,000 feet beyond the runway ends; however, only 600 feet of RSA and ROFA is needed prior to the landing threshold on each runway end. At the time of implementation of the existing displaced thresholds, the FAA standards also required 1,000 feet of RSA prior to the approach end of a runway designated for D-II.

Exhibit 4F proposes removing the displaced thresholds and relocating the landing thresholds to the physical end of the pavement for both Runway 3 and Runway 21. In doing so, each runway end would provide the required 600 feet of RSA prior to the landing threshold; however, the ROFA would still be penetrated by various obstructions as previously mentioned.

As depicted, declared distances would still apply to the runway system; however, the airport would capture additional LDA in both directions. For Runway 3, an additional 739 feet of landing distance would be made available, increasing the LDA to 7,849 feet. On Runway 21, the LDA would increase by 400 feet, allowing for 8,069 feet of landing distance for aircraft. The takeoff run available (TORA), takeoff distance available (TODA), and ASDA would remain unchanged when compared to their existing lengths offered. Prior to the potential relocation of the runway thresholds, environmental documentation as required by the FAA would be needed to support such a project.

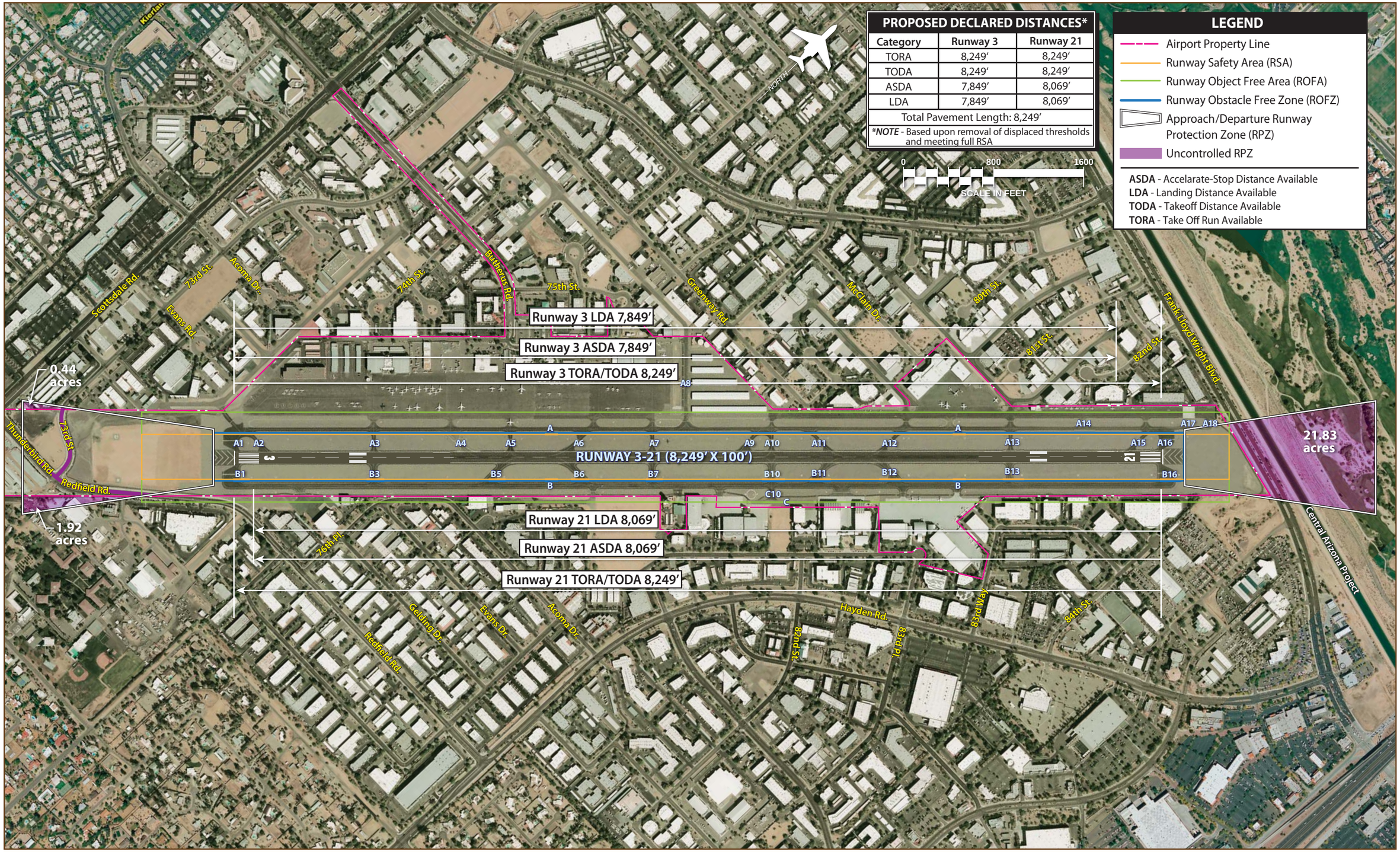
RUNWAY PROTECTION ZONES

FAA AC 150/5300-13A, Change 1, defines the RPZ as, "An area at ground level prior to the threshold or beyond the runway end to enhance the safety and protection of people and property on the ground." The goal of the RPZ standard is to increase safety for both pilots and people on the ground by maintaining the RPZ free of items that attract groupings of people or property on the ground.

The FAA does not necessarily require the fee simple property acquisition of the RPZ area, but highly recommends that the airport have positive control over development within the RPZ. Positive control techniques could include avigation easements and/or zoning measures which prohibit the placement of land uses which attract groupings of people. It should be noted that avigation easements can sometimes cost up to 80 percent of the real property value and do not offer the same level of control as would fee simple acquisition.

All runway ends have two RPZs: an approach RPZ and a departure RPZ. The size of each is dependent upon the type of aircraft or RDC for which the runway is being designed. The approach RPZ is also sized according to the lowest visibility minimums provided by the approved instrument approach procedure(s). For runways without a displaced threshold, it is common for the approach and departure RPZs to be in the same location. FAA's RPZ criterion applies to both the approach and departure RPZ.

In the past, FAA guidance did not clearly identify all objects which could be located inside the RPZ except to qualify that the object could not be an attractant to a congregation of people. In newer guidance, however, the FAA stipulates that certain land uses are permissible without further evaluation and other land uses will require further evaluation and ultimate FAA



Aerial Source: Woolpert, 5-18-2013

SCOTTSDALE AIRPORT SDL

REMOVE DISPLACED THRESHOLDS

Exhibit 4F

approval. Chapter Three outlined the updated guidance provided in AC 150/5300-13A and *Interim Guidance on Land Uses within a Runway Protection Zone* (9.27.2012)

If the airport cannot fully control the entirety of the RPZ, the RPZ land use standards have recommendation status for that portion of the RPZ not controlled by the airport owner. In essence, this means that the FAA can require a change to the runway environment so as to properly secure the entirety of the RPZ. The FAA has always held that residences, businesses, and similar uses are prohibited from the RPZ. Objects such as public roads, however, have been allowed. FAA's new draft guidance does not readily allow for public roads in the RPZ.

As shown on **Exhibit 4E**, portions of the RPZs associated with each end of Runway 3-21 extend beyond the airport property line. The approach and departure RPZs on the north side of Runway 3-21 extend over Frank Lloyd Wright Boulevard and portions of a golf course, encompassing 24.42 acres currently located outside of airport property. On the south side of the runway, the approach and departure RPZs are traversed by portions of Thunderbird Road, Redfield Road, and 73rd Street, as well as commercial development. A total of 3.94 acres of land not under the control of Scottsdale Airport is encompassed within the RPZs.

The location of the approach and departure RPZs in relationship to the removal of displaced thresholds is depicted on **Exhibit 4F**. Under this scenario, the approach and departure RPZs are co-located since they are dimensioned the same for runway approaches having not lower than one-mile visibility minimums. As a result, only 21.83 acres of uncontrolled RPZs are located north of Runway 3-21, while 2.36 acres of land are encompassed within the approach and departure RPZs south of the runway. This is an improvement over the existing amount of land contained within the RPZs under the current runway geometry.

As previously discussed in Chapter Three, since the new RPZ guidance addresses new or modified RPZs, existing incompatibilities such as those discussed above can be grandfathered under certain conditions. Any change to the RPZ could require full compliance. Instrument approach considerations discussed in the next section will evaluate the effects of the RPZs when considering potential improvements to instrument approach procedures associated with Runway 3-21.

INSTRUMENT APPROACH CONSIDERATIONS

Approach minimums should be as low as possible or practical considering safety and financial constraints. The best approach minimums possible will prevent aircraft from having to divert to another airport, which can create additional operating costs and time delays for aircraft operators, their passengers and cargo, as well as on-airport businesses.

As previously discussed, Scottsdale Airport has several published instrument approach procedures to Runway 3-21, three of which provide straight-in approach capability. The combination of straight-in and circling approaches provide for visibility minimums between one and three miles, depending upon the type of instrument approach and category of aircraft on the approach.

The following analysis considers the potential for improved visibility minimums on each end of Runway 3-21. The dimensions of the RPZ will change in size if there are improvements to the instrument approach capabilities. **Table 4G** presents the dimensions of the current and potential future RPZs.

TABLE 4G
Runway Protection Zones
Scottsdale Airport

	Current Condition	Potential Future Condition	
Visibility Minimum	1-Mile	3/4-Mile	1/2-Mile
Runway Design Code	D-II-5000	D-II-4000	D-II-2400
Approach Runway Protection Zone			
Inner Width	500	1,000	1,000
Outer Width	1,010	1,510	1,750
Length	1,700	1,700	2,500
Departure Runway Protection Zone			
Inner Width	500	500	500
Outer Width	1,010	1,010	1,010
Length	1,700	1,700	1,700
All dimension in feet			

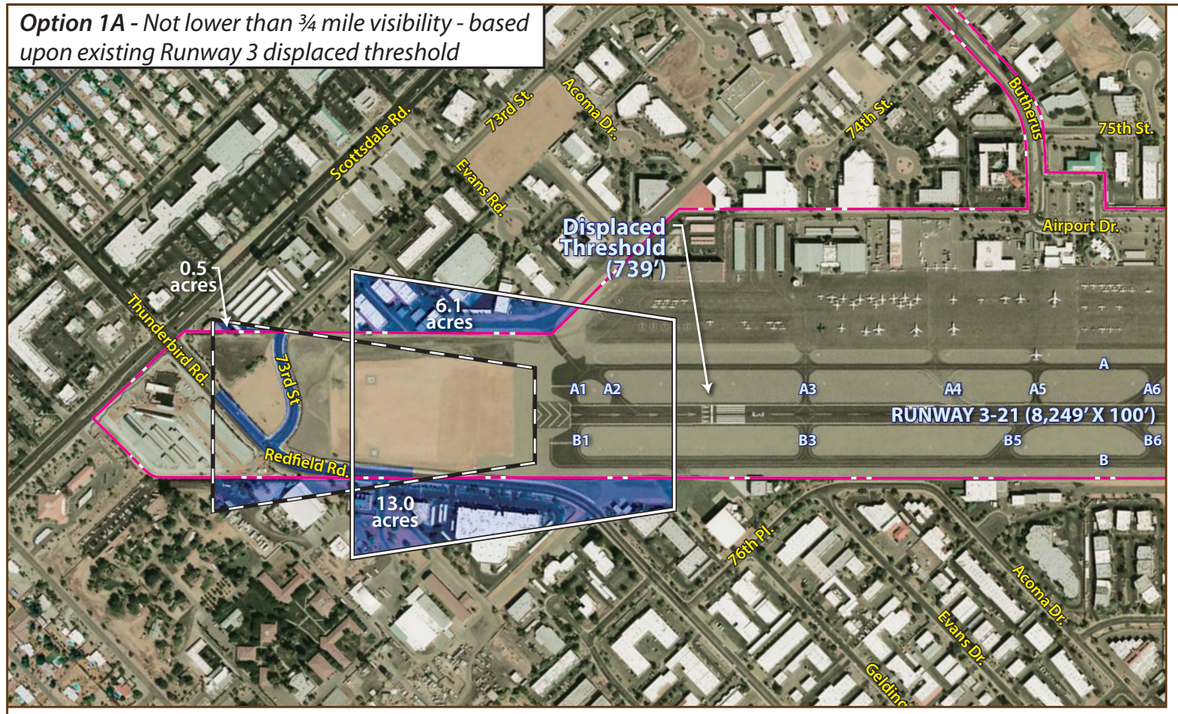
Source: FAA AC 150/5300-13A, Change 1, *Airport Design*

Exhibit 4G presents four options for improved instrument approach procedures to Runway 3 at Scottsdale Airport. Options 1A and 1B consider the existing 739-foot displaced threshold and Options 2A and 2B consider the landing threshold at the physical end of pavement.

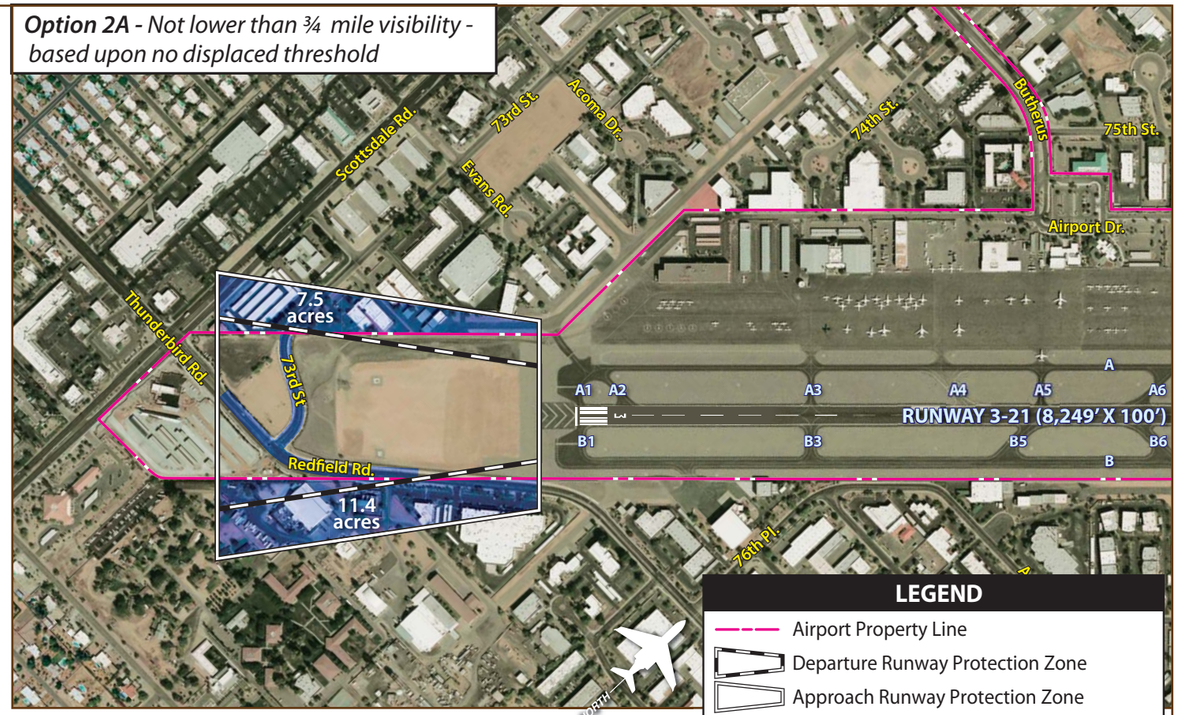
As depicted, the departure RPZ associated with each option remains in its existing location and is sized the same under each scenario. The location and size of the approach RPZ varies depending on the placement of the landing threshold and approach visibility minimums being proposed. In Option 1A, the approach and departure RPZs extend beyond airport property and encompass 19.6 acres of land currently not controlled by the airport. In Option 1B, the approach RPZ increases in size to accommodate the ½-mile visibility minimum that would be offered. As a result, the RPZs would further extend beyond airport property, encompassing 33.2 acres of land outside the existing property line. An approach lighting system is also needed in order to achieve an approach providing for less than ¾-mile visibility minimums. As a result, a medium intensity approach lighting system with runway alignment indicator lights (MALSR) is depicted off the end of Runway 3. This approach lighting system begins 200 feet from the landing threshold and extends approximately 2,400 feet into the approach area. Due to the displaced threshold, a portion of the MALSR would be set in-pavement so as to allow aircraft to use runway pavement prior to the displaced threshold for departures on Runway 3.

The right side of the exhibit considers improved instrument approach procedures with the removal of the displaced thresholds. While additional runway length would be made available for landing, the RPZs would encompass more uncontrolled and incompatible land uses located adjacent to airport property. In Option

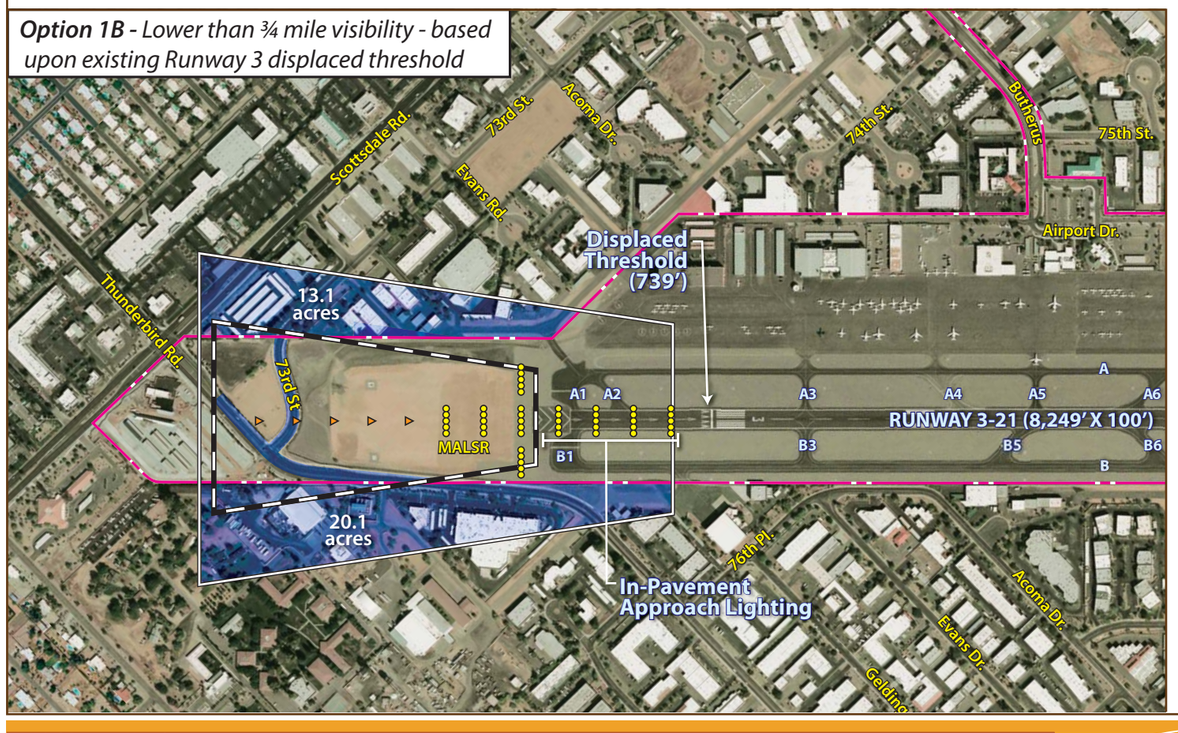
***Option 1A** - Not lower than ¾ mile visibility - based upon existing Runway 3 displaced threshold*



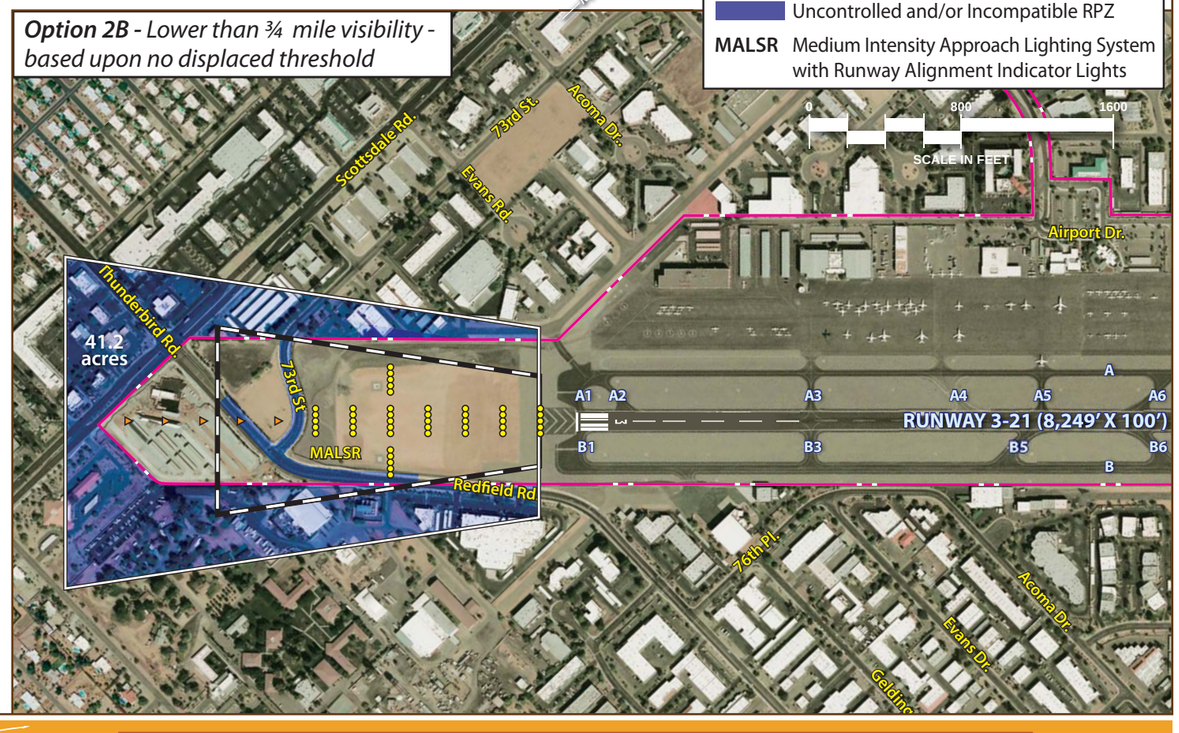
***Option 2A** - Not lower than ¾ mile visibility - based upon no displaced threshold*



***Option 1B** - Lower than ¾ mile visibility - based upon existing Runway 3 displaced threshold*



***Option 2B** - Lower than ¾ mile visibility - based upon no displaced threshold*



Aerial Source: Woolpert, 5-18-2013

2A, 18.9 acres of land within the RPZs are located beyond airport property. In Option 2B, this acreage amount grows significantly to account for the larger approach RPZ associated with ½-mile visibility minimums. As depicted, the RPZ extends beyond existing airport property to include 41.2 acres of land. A MALSR would be needed to support the ½-mile visibility minimums, and in this case, would begin 200 feet from the physical end of runway pavement.

Exhibit 4H also depicts four options for improved instrument approach capabilities on Runway 21 using similar scenarios as presented for Runway 3. Options 1A and 1B base enhanced approach capabilities from the existing 400-foot displaced threshold serving Runway 21. As a result, the RPZs extend beyond airport property for both the ¾-mile and ½-mile minimums, encompassing 40.7 and 61.7 acres of uncontrolled RPZ, respectively.

Options 2A and 2B propose improved instrument approaches without the existing displaced threshold serving Runway 21. In doing so, 39.2 acres of uncontrolled property would encompass the RPZs associated with a ¾-mile visibility minimum approach and 69.1 acres of uncontrolled property would encompass the RPZs associated with a ½-mile visibility minimum approach.

The potential to further reduce visibility minimums down to ¾-mile or ½-mile would enlarge the approach RPZs serving Runway 3-21, as depicted on the previous exhibits. In doing so, the approach RPZs would extend farther outside airport property and additional incompatibilities in the form of roadways and residential and commercial development. As a result, these potential incompatibilities could factor into whether or not the FAA would reduce approach minimums even if the opportunity is there to do so.

In addition to the RPZs, the determination of airspace obstructions that may be associated with these improved approach procedures would need to be further evaluated. The two primary resources for determining airspace obstructions are CFR Part 77, *Objects Affecting Navigable Airspace*, and *Terminal Instrument Procedures* (TERPS). Part 77 is a filter which identifies potential obstructions, whereas TERPS is the critical tool in determining actual flight obstructions, as its analysis is used to evaluate and develop instrument approach procedures, including visibility minimums and cloud heights associated with approved approaches.

Further determination by the FAA would be needed to determine the extent of removing or lowering potential obstructions that may exist in order to support an instrument approach procedure that could serve ultimate conditions proposed on Runway 3-21.

AIRSIDE DEVELOPMENT SUMMARY

The airside development considerations for Scottsdale Airport have focused on the airfield's ability to meet ultimate RDC D-II standards to the extent practicable, while also improving existing and future taxiway development and improved instrument approach capabilities to the runway system. After review with the Planning Advisory Committee (PAC), including the Aviation Department and the FAA, a final airside concept will be developed. The recommended development concept will be presented in the next chapter.

LANDSIDE DEVELOPMENT CONSIDERATIONS

Generally, landside issues are related to those airport facilities necessary, or desired, for the safe and efficient parking and storage of aircraft, movement of pilots and passengers to and from aircraft, airport support facilities, and overall revenue support functions. Landside planning considerations, summarized previously on **Exhibit 4B**, will focus on facility-locating strategies following a philosophy of separating activity levels. To maximize airport efficiency, it is important to locate facilities together that are intended to serve similar functions. The best approach to landside facility planning is to consider the airport development to be like that of a community where land use planning is the guide. For airports, the land use guide in the terminal area should generally be dictated by aviation activity levels. Due to the limited amount of developable land available at Scottsdale Airport, focus will be given to aviation-related uses that can meet future aviation demand, provide additional revenue support to the airport, and support economic development for the region.

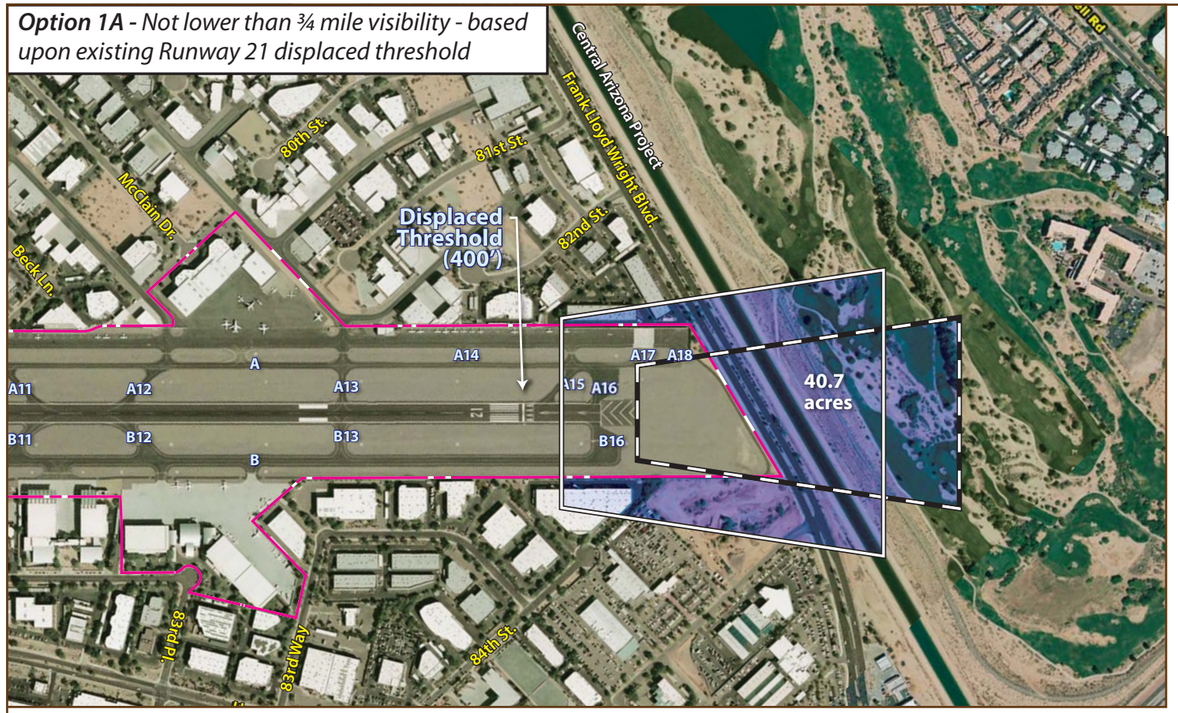
AVIATION ACTIVITY LEVELS

The aviation development areas should be divided into high, medium, and low activity levels at the airport. The high activity area should be planned and developed to provide aviation services on the airport. An example of the high activity areas is the airport terminal building and adjoining aircraft parking apron, which provide tiedown locations and circulation for aircraft. In addition, large conventional hangars used for fixed base operators (FBOs), corporate aviation departments, or storing a large number of aircraft would be considered a high activity use area. The best location for high activity areas is along the flight line near midfield, for ease of access to all areas on the airfield. All major utility infrastructures would need to be provided to these areas. The medium activity use category defines the next level of airport use and primarily includes smaller corporate/private aircraft that may desire their own executive hangar storage on the airport. The best location for medium activity use is off the immediate flight line, but still readily accessible to aircraft, including corporate jets. Due to an airport's layout and other existing conditions, if this area is to be located along the flight line, it is best to keep it out of the midfield area of the airport, so as to not cause congestion with transient aircraft utilizing the airport. Parking and utilities, such as water and sewer, should also be provided in this area.

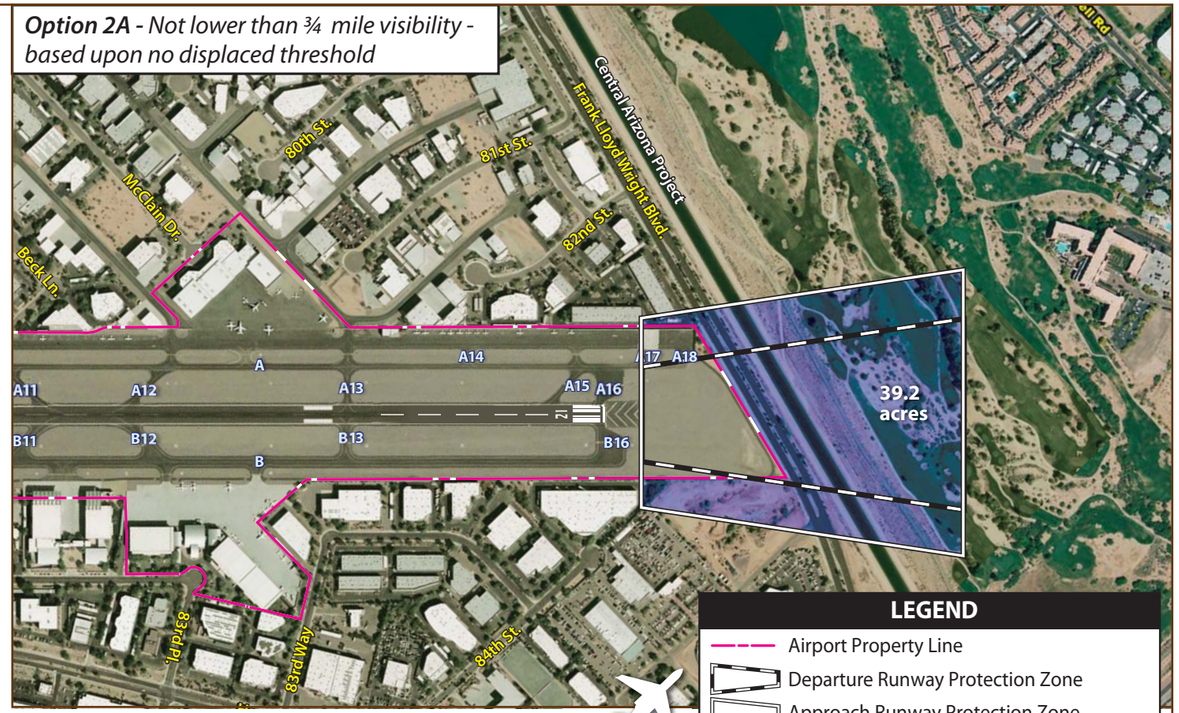
The low activity use category defines the area for storage of smaller single and multi-engine aircraft. Low activity users are personal or small business aircraft owners who typically prefer individual space in linear box hangars, T-hangars, and executive hangars. Low activity areas should be located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

In addition to the functional compatibility of the aviation development areas, the proposed development concept should provide a first-class appearance for Scottsdale Airport. As previously mentioned, the airport serves as a very important link to the entire region, for both business and leisure purposes. Consideration to aesthetics should be given high priority in all public areas, as the airport can serve as the first impression a visitor

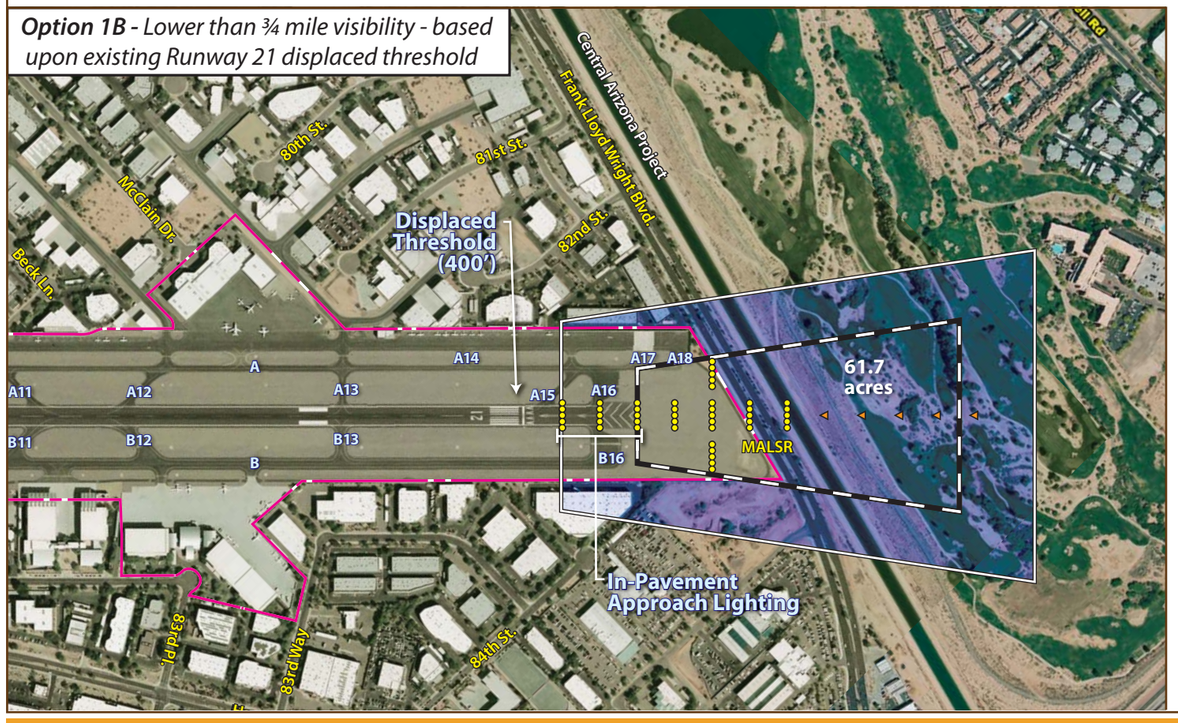
***Option 1A** - Not lower than ¾ mile visibility - based upon existing Runway 21 displaced threshold*



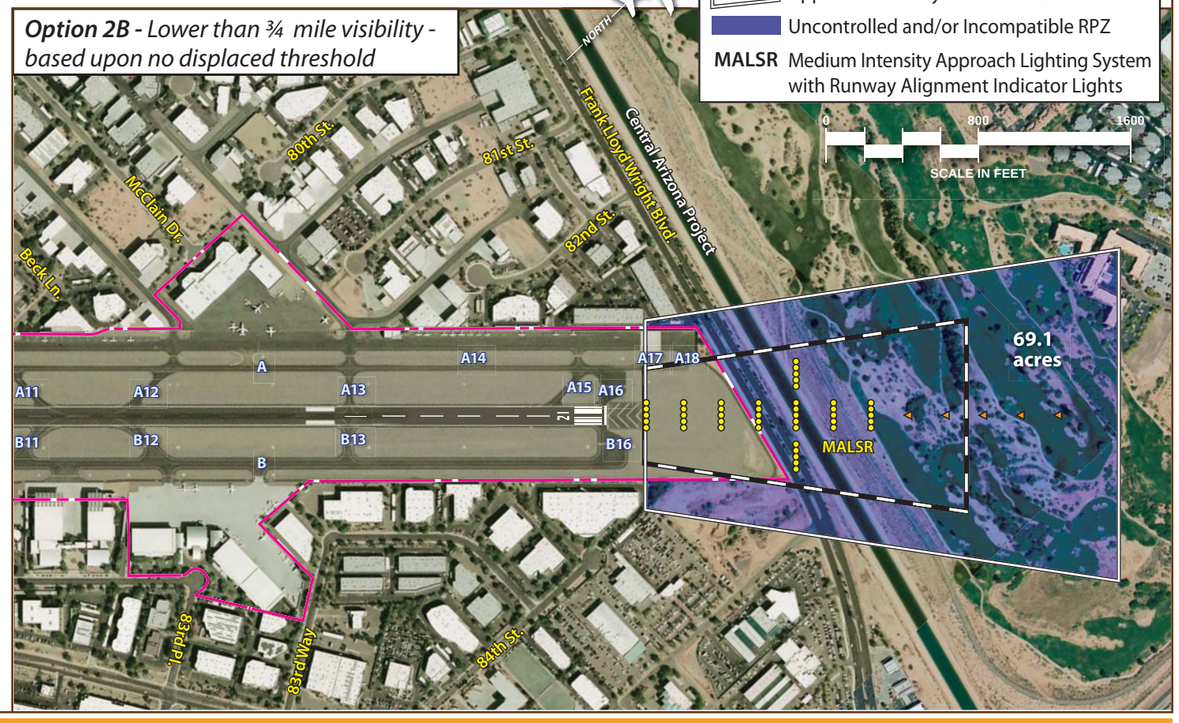
***Option 2A** - Not lower than ¾ mile visibility - based upon no displaced threshold*



***Option 1B** - Lower than ¾ mile visibility - based upon existing Runway 21 displaced threshold*



***Option 2B** - Lower than ¾ mile visibility - based upon no displaced threshold*



LEGEND

- Airport Property Line
- Departure Runway Protection Zone
- Approach Runway Protection Zone
- Uncontrolled and/or Incompatible RPZ
- **MALSR** Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights

NORTH

0 800 1600

SCALE IN FEET

Aerial Source: Woolpert, 5-18-2013

or potential business owner may have of the community.

Scottsdale Airport is located on approximately 335 acres. In order to allow for maximum development of the airport while keeping with mandated safety design standards, it is very important to devise a plan that allows for the orderly development of airport facilities. Typically, airports will reserve property adjacent to the runway system for aviation-related activity exclusively. This will allow for the location of taxiways, aprons, and hangars. Due to the limited amount of space on airport property for development opportunities, the landside alternatives analysis will focus on providing options for new and redeveloped aviation activity areas.

HANGAR DEVELOPMENT

The landside alternatives will consider the construction of additional aircraft hangars at Scottsdale Airport. Hangar development takes on a variety of sizes corresponding with several different uses.

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

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

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

Currently, there is approximately 437,600 square feet of hangar space (including maintenance area) provided on the airfield made up of a combination of the hangar types previously discussed. In addition, the Scottsdale Airpark consists of an array of hangar facilities that provide aircraft storage and other aviation services with access to the airport. Approximately 400,000 square feet of hangar area is provided within the Airpark.

INTERIOR VEHICLE ACCESS

A planning consideration for any Airport Master Plan is the segregation of vehicles and aircraft operational areas. This is both a safety and security consideration for the airport. Aircraft safety is reduced

and the potential for accidents increase when vehicles and aircraft share the same pavement surfaces. Vehicles contribute to the accumulation of debris on aircraft operational surfaces, which increases the potential for foreign object debris (FOD) damage, especially for turbine-powered aircraft. The potential for runway incursions is increased, as vehicles may inadvertently access active runway or taxiway areas if they become disoriented once on the aircraft operational area (AOA). Airfield security may be compromised as there is loss of control over the vehicles as they enter the AOA. The greatest concern is for public vehicles, such as delivery vehicles and visitors, which may not fully understand the operational characteristics of aircraft and the markings in place to control vehicle access. The best solution is to provide dedicated vehicle access roads to each landside facility that is separated from the aircraft operational areas with security fencing.

The segregation of vehicle and aircraft operational areas is supported by FAA guidance established in June 2002 and amended in March 2008. FAA AC 150/5210-20, *Ground Vehicle Operations on Airports*, states, "The control of vehicular activity on the airside of an airport is of the highest importance." The AC further states, "An airport operator should limit vehicle operations on the movement areas of the airport to only those vehicles necessary to support the operational activity of the airport."

The present landside facility layout of the airport requires automobile traffic to operate on active taxilanes and aircraft parking aprons in order to get access to certain hangars and other aviation operators. Where applicable, the landside alternatives will address these concerns and provide options for better segregating aircraft and vehicle operations, while also maximizing the use of potential landside development.

BUILDING RESTRICTION LINE

The building restriction line (BRL) is a line that identifies suitable building area locations on the airport and helps limit building proximity to aircraft movement areas. The BRL should be set beyond the RPZs, ROFAs, ROFZs, navigational aid critical areas, areas required for terminal instrument procedures, and other areas necessary for meeting airport line-of-sight criteria.

Two primary factors contribute to the determination of the BRL: type of runway (utility or other-than-utility) and the capability of the instrument approaches. Runway 3-21 is considered an "other-than-utility" runway since it accommodates an array of aircraft activity including large business jets.

The BRL is the product of Title 14 CFR Part 77 transitional surface clearance requirements. These requirements stipulate that no object be located in the primary surface, defined as being no closer than 250 feet from a non-precision instrument runway centerline (visibility minimums not lower than ¾-mile) and not closer than 500 feet to a runway served by a precision instrument approach (visibility minimums lower than ¾-mile). For Scottsdale Airport, the primary surface is 500 feet wide (250 feet either side of the runway centerline). From the primary surface, the transitional surface extends outward at a slope of one vertical foot to every seven horizontal feet.

The location of the BRL is dependent upon the selected allowable structure height. Traditionally, the BRL is set at a point where the transitional surface is 20 feet or 35 feet above runway elevation. The landside alternatives to follow consider a 20-foot BRL in relationship to the runway system and existing and proposed landside development. Typically, the 20-foot BRL would be located 395 feet from the runway centerline, but at that distance, it falls within the ROFA, which is located 400 feet from the runway centerline. As a result, the BRL is co-located with the ROFA, 400 feet from the runway centerline. This is also the current location of the BRL depicted on the airport's approved ALP. Due to the amount of space between the runway system and existing landside facilities on the east and west sides of the airport, the BRL will be a factor in future landside development within these areas.

SEPARATION STANDARDS

When planning for landside facilities, consideration must be given to the design standards for separating structures. The separation standards are a function of the critical design aircraft for the future condition. Separation standards are directly related to the wingspan of the critical design aircraft, which is from 49 feet to 79 feet for ADG II.

The taxiway object free area (TOFA) is the area required to be clear of object penetrations surrounding taxiways. For ADG II aircraft, the TOFA is 131 feet wide as centered on the taxiway. For ADG II taxilanes, the TOFA is 115 feet.

While these design standards should be implemented for all primary movement areas (e.g., parallel taxiways, aprons), facilities not intended to serve the critical design aircraft can be designed to different separation standards. For example, an area that is planned for nested T-hangars can apply different separation standards for smaller single engine aircraft.

LANDSIDE ALTERNATIVES

The options available for general aviation landside development are numerous. This applies even more for landside development where demand presents itself at different times and by widely ranging groups.

Aviation activity at Scottsdale Airport is well established on the east and west sides of Runway 3-21 and consists of a mix of conventional hangars, executive hangars, T-hangars, and linear box hangars serving a wide range of aviation activity. As presented in Chapter Three, additional aircraft hangar area is recommended to accommodate forecast growth in based aircraft as well as itinerant operations. The largest demand center for aircraft storage hangars through the long term planning horizon is projected to be in executive and conventional hangars. This can be expected given the significant amount of business aircraft activity at the airport associated with turboprops and jets. The demand for smaller T-hangars and linear box hangars has declined at the airport over the past 15 years. While the airport should continue to provide facilities to cater to smaller general aviation aircraft, some areas that currently do so will be examined for redevelopment in order to meet the projected aviation activity demand levels in the future.

The following section considers development and redevelopment alternatives on

the west side of Runway 3-21. A large majority of this area is currently occupied by facilities to include aircraft storage hangars, aircraft parking aprons, and terminal facilities. Many of these facilities are located on private leaseholds associated with the Air Commerce Center, Landmark Aviation, and Greenway. The alternatives to be presented are only options for development and redevelopment. Further coordination between the Aviation Department and tenants will be needed if and when future development and/or redevelopment should occur within certain leaseholds. In some cases, a portion of one alternative could be intermixed with another. Also, some development concepts could be replaced with others, depending on aviation demand and the desires of the tenant. The final plan will serve as a guide for the City of Scottsdale Aviation Department. The goal in analyzing landside development alternatives is to focus development so that the use of airport property can be maximized.

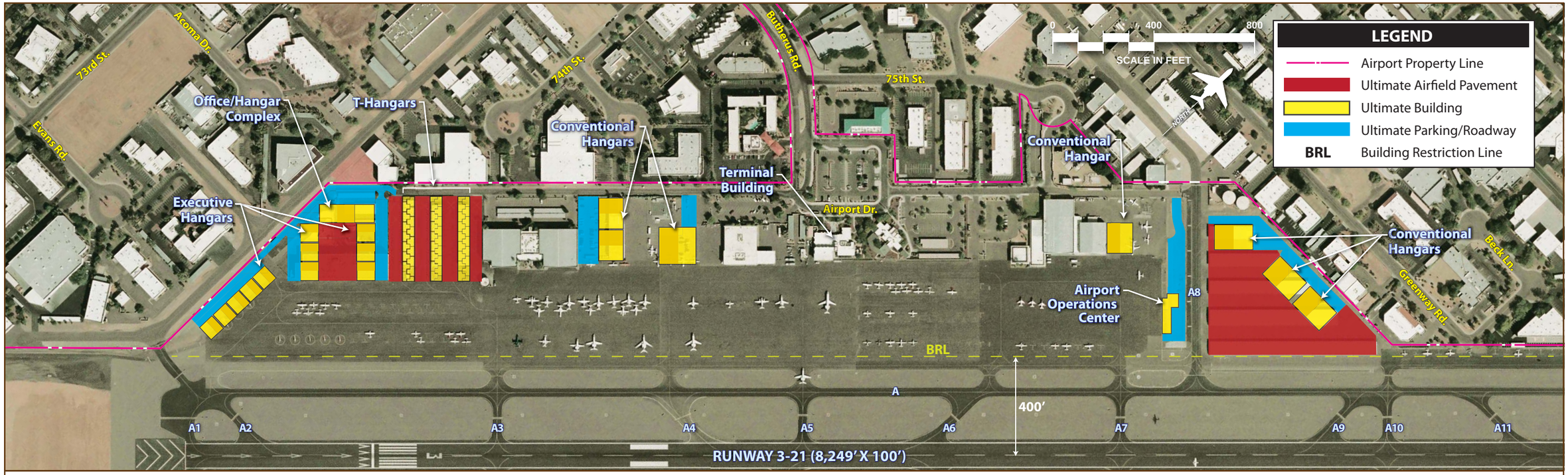
An evaluation of landside development opportunities was also made on the east side of Runway 3-21. There are two areas of property on the east side of the airport capable of accommodating landside development, and they are currently utilized for FBO activities and airport support facilities (ATCT and City of Scottsdale Fire Station #609). As such, the Master Plan does not present any redevelopment alternatives on the airport's east side.

West Landside Alternative 1

The first landside alternative is depicted on **Exhibit 4J**. As presented, the primary development items include:

- Redevelopment potential within the Air Commerce Center to include executive hangars and a larger office/hangar complex.
- Redevelopment of the City of Scottsdale's T-hangar/covered tiedown area.
- Additional hangar development options within the Landmark Aviation leasehold to include large conventional hangars.
- Redevelopment potential within the Greenway hangar complex to include conventional hangars.
- Linear box hangar development option adjacent to the north aircraft parking apron area (Kilo Ramp).
- Additional conventional hangar development option within Signature Flight Support's leasehold.
- Construction of a dedicated airport operations center adjacent to the north side of the main aircraft parking apron.

The top half of the exhibit focuses on development and redevelopment opportunities adjacent to the main aircraft parking apron on the west side of Runway 3-21. At the south end of the parking apron, the Air Commerce Center currently provides a mix of hangar and commercial office spaces for its tenants. This alternative would expand the footprint of the Air Commerce Center to include additional hangar development in the form of 11 executive hangars while still providing the opportunity to satisfy commercial office requirements. Immediately north of this complex, three T-hangar facilities are proposed that would replace one T-hangar and two covered tiedown complexes that the City of Scottsdale currently owns and maintains. The redevelopment of this area as proposed would introduce additional aircraft storage hangar



Aerial Source: Woolpert, 5-18-2013

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WEST LANDSIDE REDEVELOPMENT ALTERNATIVE 1

Exhibit 4J

options for larger aircraft while still meeting the storage needs for small aircraft.

Farther north, four separate conventional hangars are proposed on the Landmark Aviation leasehold. A linear box hangar would need to be removed in order to accommodate two of the conventional hangars in the southern portion of the leasehold.

At the north end of the main aircraft parking apron, the landside alternatives depict the proposed location of the airport's future operations center. This location is preferred for such a facility as it will provide airport operations and maintenance personnel with ideal access to the airfield system. The operations center is currently in the stages of final design.

The Greenway T-hangar and covered tiedown complex is currently located north of Taxiway A8 and provides multiple storage spaces for small single engine and multi-engine piston-powered aircraft. This alternative proposes the ultimate redevelopment of this area to include three large conventional hangars and additional aircraft parking apron space to support activities in the form of SASOs. These types of operations are considered high activity uses and would benefit from being centrally located on the airfield near the runway and parallel taxiway system.

Vehicle access to the Greenway hangar complex is currently provided by entering through a controlled-access gate at the north end of Airport Drive and crossing Taxiway A8. For low activity uses associated with small private aircraft storage, this is acceptable; however, if this area is redeveloped in the future to accommodate larger-scale aviation operations, it is better to segregate vehicle and aircraft activities. As such, the airport should consider obtaining access to this area from Greenway Road in order to discontinue vehicles from traversing Taxiway A8.

The bottom half of the exhibit depicts potential development farther north and includes a row of linear box hangars providing for approximately 20 individual aircraft storage spaces on the north aircraft parking apron. These facilities would provide storage space for small general aviation aircraft. Finally, a large conventional hangar is proposed within the Signature Flight Support leasehold that would complement existing conventional hangar development in this area used to support their FBO and specialty aviation activities.

West Landside Alternative 2

Landside Alternative B, as shown on **Exhibit 4K**, presents a second development concept that differs slightly from the first. The proposed improvements considered in this alternative include:

- Redevelopment potential within the Air Commerce Center to include executive hangars and two larger hangar/office complexes.
- Convert the City of Scottsdale's T-hangar/covered tiedown area to larger conventional hangars.
- Additional hangar development options within the Landmark Aviation leasehold to include a mix of executive and conventional hangars.
- Redevelopment potential within the Greenway hangar complex to include a mix of conventional and executive hangars.
- Linear box hangar development option adjacent to the north aircraft parking apron area (Kilo Ramp).

- Additional conventional hangar development option within Signature Flight Support's leasehold.
- Construction of a dedicated airport operations center adjacent to the north side of the main aircraft parking apron.

This alternative proposes redevelopment within the Air Commerce Center leasehold that includes two hangar/office complexes, as well as five executive hangars farther southeast adjacent to the airport property line. A noticeable change in this alternative includes the removal of the existing City-owned T-hangar and covered tiedown facilities and replacing them with two large conventional hangars that could support an array of aviation activities. Currently, the apron pavement in this area is designed for smaller aircraft that utilize the T-hangars and covered tiedown facilities. Under this alternative, it is recommended that the pavement associated with adjacent apron space be reconstructed and strengthened to support larger aircraft operations. Providing for large hangars would help satisfy the projected demand for larger aircraft at the airport during the long term planning period while also being able to accommodate smaller aircraft storage needs.

To the north of this area, three executive hangars and two conventional hangars are proposed within the Landmark Aviation leasehold to support its FBO activities. Similar to the previous exhibit, the airport operations center is depicted at the north end of the main aircraft parking apron.

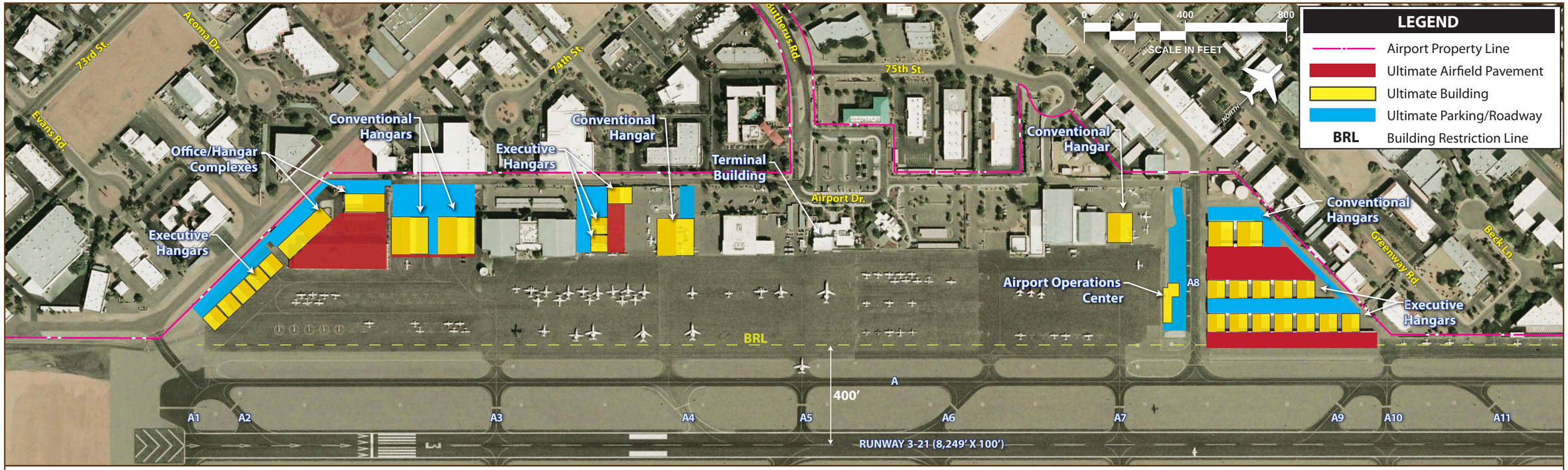
Landside Alternative 2 also depicts the redevelopment of the existing Greenway hangar storage area. In doing so, two conventional hangars and 12 executive hangars are proposed in this midfield location that could support an array of aviation activities including smaller private aircraft storage, aircraft maintenance, aircraft charter, and corporate flight departments. As previously discussed, it is preferable under this scenario to provide vehicle access from Greenway Road in order to increase segregation with vehicle and aircraft movements associated with the crossing at Taxiway A8.

The bottom half of the exhibit builds upon small private aircraft storage proposed in the previous alternative by depicting approximately 40 linear box hangar facilities in the north aircraft parking apron area to support future hangar needs for small aircraft. The construction of a conventional hangar within the Signature Flight Support leasehold is also carried over in this alternative.

West Landside Alternative 3

Exhibit 4L depicts the final alternative for west landside development/redevelopment. Similar development concepts, as outlined in Alternatives 1 and 2, are incorporated into this alternative with slight variations. The primary development items include:

- Redevelopment potential within the Air Commerce Center to a mix of executive hangar, conventional hangar, and office/hangar complexes.
- Convert the City of Scottsdale's T-hangar/covered tiedown area to executive hangars.
- Hangar development and redevelopment options within the Landmark Aviation leasehold to include a mix of conventional and linear box hangars.
- Redevelopment potential within the Greenway hangar complex to include



Aerial Source: Woolpert, 5-18-2013

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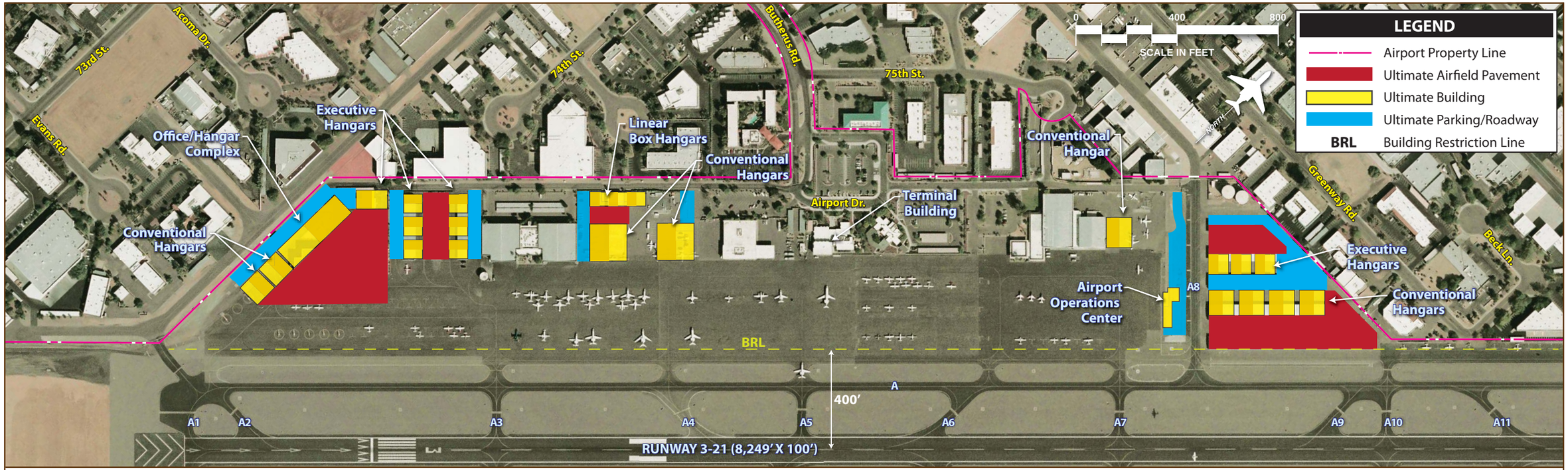
WEST LANDSIDE REDEVELOPMENT
ALTERNATIVE 2

Exhibit 4K



Aerial Source: Woolpert, 5-18-2013

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WEST LANDSIDE REDEVELOPMENT
ALTERNATIVE 3

Exhibit 4L

a mix of conventional and executive hangars.
- Linear box hangar development option adjacent to the north aircraft parking apron area (Kilo Ramp).
- Additional conventional hangar development option within Signature Flight Support's leasehold.
- Construction of a dedicated airport operations center adjacent to the north side of the main aircraft parking apron.

As proposed, two conventional hangars, one executive hangar, and a large office/hangar complex would constitute the Air Commerce Center leasehold on the south side of the main aircraft parking apron. Immediately to the north, six executive hangars are depicted that would replace the existing T-hangar and covered tiedown complexes owned and maintained by the City of Scottsdale. Similar to the previous alternative, the apron pavement in this area would need to be reconstructed and strengthened to support larger aircraft operations typically associated with the proposed hangar types.

Within the Landmark Aviation leasehold, the existing linear box hangar on the south side of its complex would be replaced with a large conventional hangar with immediate apron frontage. Set back farther away from the main aircraft parking apron, a row of linear box hangars conducive to lower activity uses is proposed. Two additional conventional hangar facilities are shown within the Landmark Aviation leasehold, as previously depicted in Landside Alternatives 1 and 2.

To the north of Taxiway A8, four conventional hangars and three executive hangars are called for. This layout accommodates the proposed aviation activities by hangar type, as the larger conventional hangars are offered apron frontage with immediate access to the parallel taxiway and runway system, satisfying the needs of high activity operations. Smaller executive hangars are farther west and would satisfy lower activity levels associated with small aircraft storage.

Additional landside development is proposed farther north along the west side of Runway 3-21 on the bottom half of the exhibit. Approximately 20 individual linear box hangar facilities are depicted in the northernmost area of the Kilo Ramp to support small aircraft storage needs and the same conventional hangar is depicted as planned within the Signature Flight Support leasehold.

LANDSIDE DEVELOPMENT SUMMARY

The landside facility layout should follow basic industry standards, such as locating high activity hangars on or near main apron areas with desirable access to the runway and taxiway system. Medium and lower activity executive hangars should then be set back from the flight line, and low activity T-hangars/linear box hangars should be farthest from the flight line when possible. Sustainability in planning should also be considered by such means as maximizing available land area and limiting the need to extend utilities.

Table 4H presents a summary of the total hangar area proposed for each alternative. Also included is the existing hangar area offered on the west side of the airport. Each alternative provides a significant amount of additional hangar storage space, a large majority which includes additional executive and conventional hangar development to help meet forecast aviation demand ranging from small aircraft

storage to FBO and SASO operations. Dedicated areas for T-hangars and linear box hangars are also identified to support smaller aircraft storage needs. Significant redevelopment of certain areas would be needed and should only be undertaken if specific aviation demand warrants its use. These alternatives will provide a good starting point for discussions which will lead to a recommended development plan to be outlined in the next chapter.

TABLE 4H
West Landside Hangar Alternative Summary
Scottsdale Airport

Hangar Type	Existing	Alternative 1	Alternative 2	Alternative 3
T-Hangar/Linear Box Hangar (s.f.)	188,100	53,500	66,500	47,750
Executive Hangar (s.f.)	25,900	88,900	148,400	72,000
Conventional Hangar (s.f.)	133,600	299,700	201,600	251,100
Total Hangar Space (s.f.)	**347,600**	**442,100**	**416,500**	**370,850**

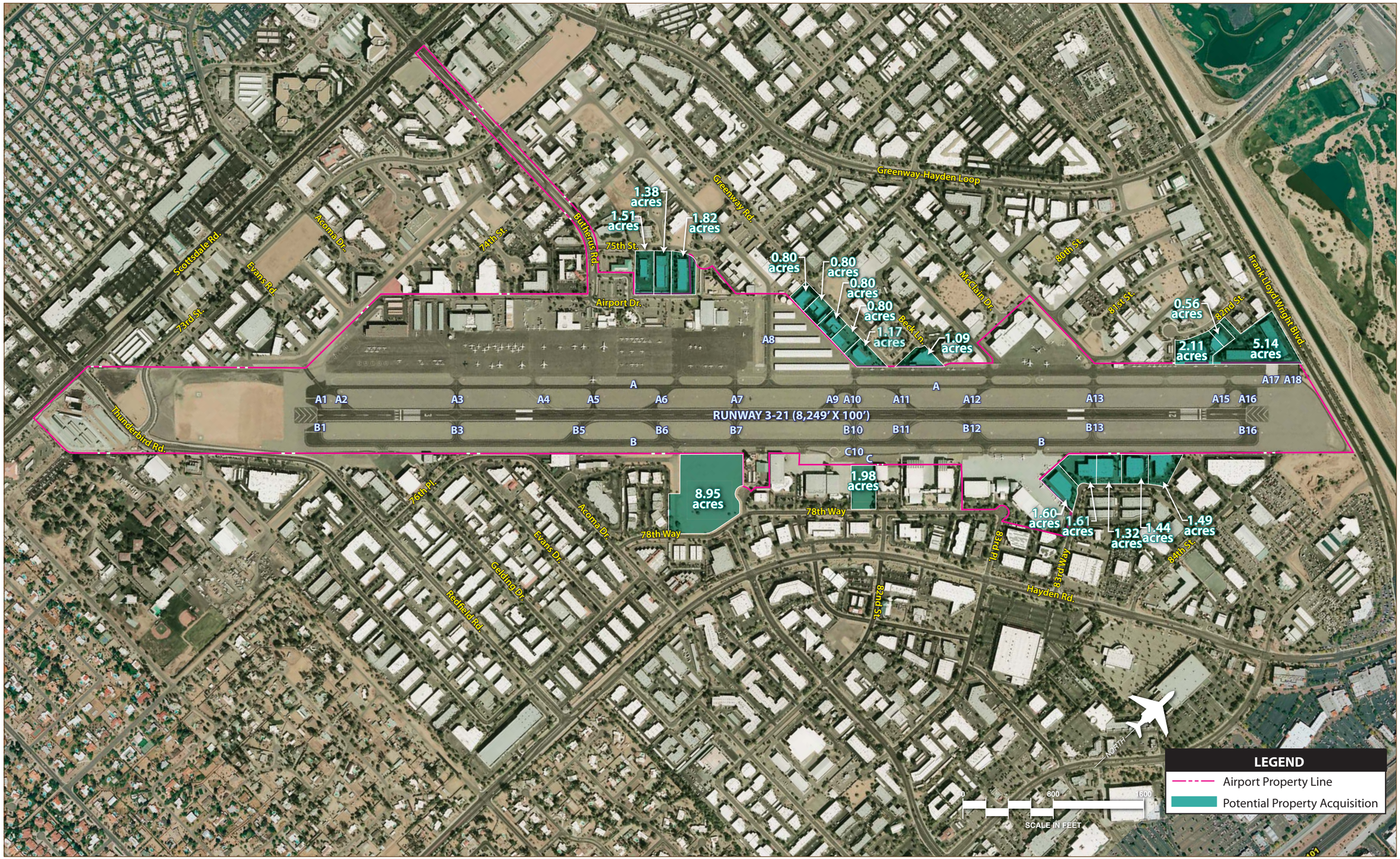
Source: Airport records; Coffman Associates analysis

LAND ACQUISITION

A review of parcels adjacent to Scottsdale Airport was conducted to determine certain areas of property that may be available for purchase or able to complement future airport activity. A large majority of the land adjacent to the airport is developed and supports an array of commercial and industrial activity, as well as some aviation activity within the Scottsdale Airpark.

It can be advantageous for an airport to pursue property acquisition for many reasons, including being able to support increased aviation demands, as well as to provide a buffer from non-aviation land uses that may be incompatible with airport operations. **Exhibit 4M** depicts 19 separate parcels adjacent to the east and west sides of the airport, ranging in size from 0.80 acres to 8.95 acres, which could be further evaluated/considered for acquisition in the future, should the City of Scottsdale want to pursue enlarging the footprint of the airport. The highlighted properties are currently non-aviation related, but they can support and promote future aviation-related businesses.

On the east side of the airport, a 8.95-acre parcel and 1.98-acre parcel are currently vacant and could satisfy future aviation demand without having to invest in significant redevelopment costs. In addition, the acquisition of a 1.60-acre parcel adjacent to Signature Flight Support's leasehold on the east side of the airport could provide additional capacity needs to support FBO activities in this area. All other parcels identified on the exhibit contain a mix of commercial/industrial uses. As previously discussed, in the event that the Greenway aircraft storage hangar complex were to be redeveloped to cater to larger-scale aviation operations, it may be beneficial for the airport to pursue the acquisition of the five parcels highlighted, adjacent to the north side of this area, in order to gain preferred vehicle access from Greenway Road. Other areas shown for potential acquisition farther north could help accommodate future aviation demand with immediate access to the north aircraft parking apron area. Finally, the three parcels to the south in the vicinity of the airport terminal building could provide additional parking and landside support facilities during special events or peak airport usage periods.



Aerial Source: Woolpert, 5-18-2013

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POTENTIAL PROPERTY ACQUISITION

Exhibit 4M

Prior to the airport acquiring land, environmental documentation as required by the FAA will be needed to support the acquisition. Continued coordination between the Aviation Department, the City of Scottsdale, and adjacent landowners can help position the airport for future improvements.

SUMMARY

The process utilized in assessing airside and landside development alternatives involved a detailed analysis of facility requirements through the long term planning horizon and, in some cases, beyond. Airport design standards were considered at every stage of the analysis. Safety, both in the air and on the ground, was given a high priority in the analysis of alternatives.

After review and input from the PAC and City of Scottsdale, a recommended development concept will be put forth by the consultant. The ultimate plan can mix/match different concepts in each alternative. The resultant plan will represent an airside facility that fulfills safety design standards and a landside complex that can be developed as demand dictates. The development plan for Scottsdale Airport must represent a means by which the airport can evolve in a balanced manner, both on the airside and landside, to accommodate the forecast demand. In addition, the plan must provide flexibility to meet activity growth beyond the long range planning horizon.