Airfield Capacity Factors

AIRFIELD LAYOUT

Runway Configuration

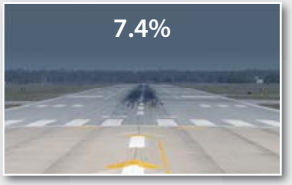
Runway Use

Number of Exits

WEATHER CONDITIONS

VMC (VFR)
Visual Meteorological Conditions

IMC (IFR)
Instrument Meteorological Conditions



PVC
Poor Visibility Conditions

AIRCRAFT MIX

Category A & B Aircraft

Category C Aircraft

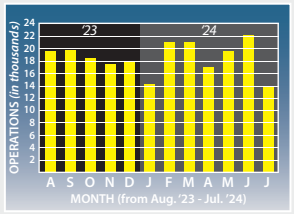
Category D Aircraft

OPERATIONS

Arrivals

Departures

Total Annual Operations



Touch-and-Go Operations

Airfield Demand vs. Capacity

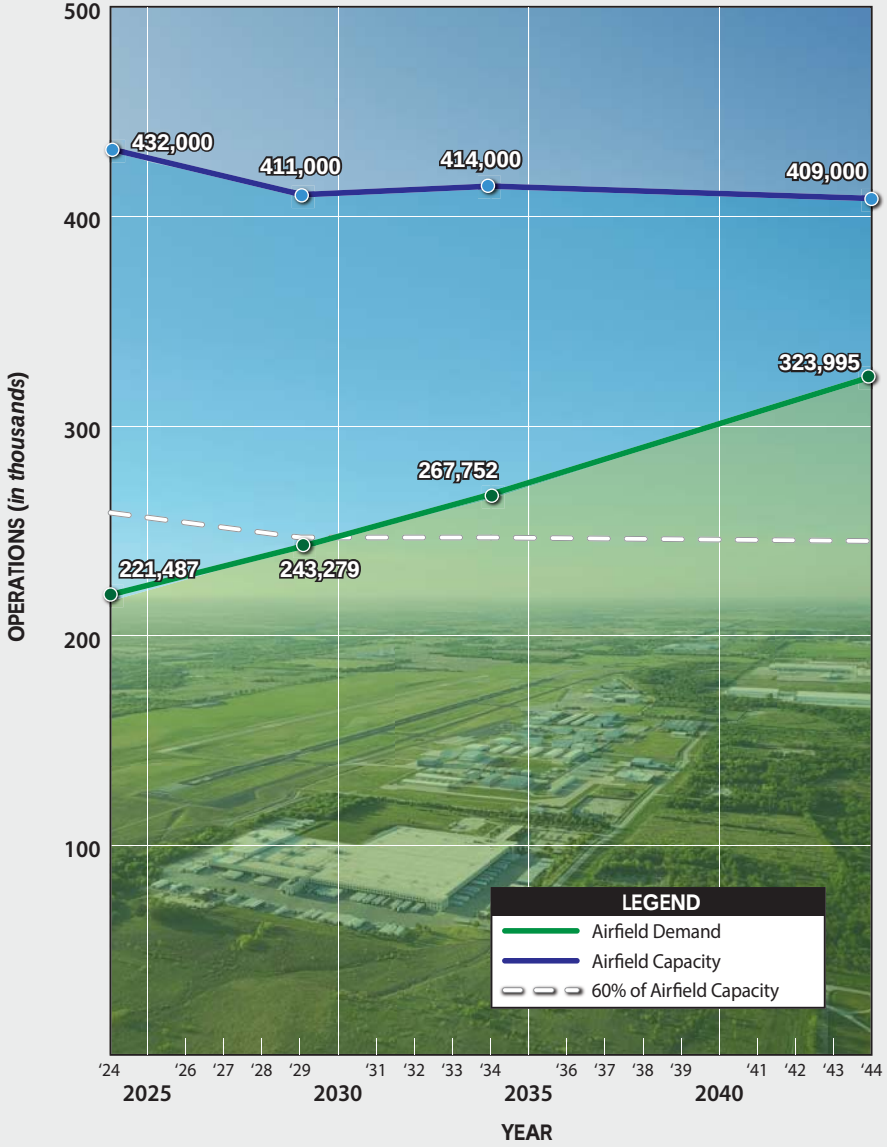


TABLE 3J | Runway Length Requirements – Aircraft Between 12,500 and 60,000 Pounds

Airport Elevation	642.7' feet above mean sea level
Average High Monthly Temp.	95.7°F (July)
Runway Gradient	0.18% Runway 18R-36L (12.3')

Fleet Mix Category	Raw Runway Length from FAA AC	Runway Length with Gradient Adjustment	Wet Surface Landing Length for Jets (+15%)[1]	Final Runway Length[2]
75% of fleet at 60% useful load	4,842'	4,965'	5,500'	5,500'
100% of fleet at 60% useful load	5,880'	6,003'	5,500'	6,000'
75% of fleet at 90% useful load	7,146'	7,269'	7,000'	7,300'
100% of fleet at 90% useful load	9,375'	9,498'	7,000'	9,500'

[1]Max 5,500' for 60% useful load and max 7,000' for 90% useful load in wet conditions
[2]Longest runway need rounded up to nearest hundred

Source: FAA AC 150/5325-4B, Runway Length Requirements for Airport Design

TABLE 3K | Supplemental Business Aircraft Takeoff Length Requirements

		TAKEOFF LENGTH REQUIREMENTS (feet)				
		Useful Load				
Aircraft	MTOW	60%	70%	80%	90%	100%
Challenger 300	38,850	4,554	4,988	5,437	5,909	6,400
Challenger 601	**45,100**	**5,130**	**5,710**	**6,360**	**7,090**	**7,900**
Citation III	21,500	4,596	5,060	5,562	C/L	C/L
Citation X	35,700	4,728	5,151	5,651	6,194	6,768
Falcon 2000	35,800	4,890	5,349	5,836	6,349	7,228
Falcon 50EX	41,000	4,507	4,984	5,488	6,020	6,510
Falcon 900EX	49,200	4,330	4,880	5,540	6,210	6,820
Global Express	98,000	4,831	5,409	6,017	6,653	7,323
Gulfstream G280	39,600	4,325	4,775	5,283	5,829	6,434
Gulfstream G450	74,600	4,587	5,048	5,568	6,119	6,711
Gulfstream G550	**91,000**	**4,717**	**5,400**	**6,092**	**6,844**	**7,630**
Gulfstream G650	**99,600**	**4,991**	**5,491**	**6,064**	**6,720**	**7,479**
Hawker 1000	31,000	5,460	6,100	6,740	C/L	C/L
Hawker 4000	39,500	4,371	4,746	5,147	5,586	6,151
Lear 60	23,500	5,275	5,819	6,379	6,931	7,628

Red figures are greater than 7,002 feet (length of the primary runway at DTO).
Critical aircraft is in **bold**.
Runway length calculation assumptions: 642.7' MSL field elevation; 95.7°F ambient temperature; 0.18% runway grade
C/L = climb limited: aircraft cannot maintain required climb gradient
MTOW = maximum takeoff weight

Source: UltraNav software

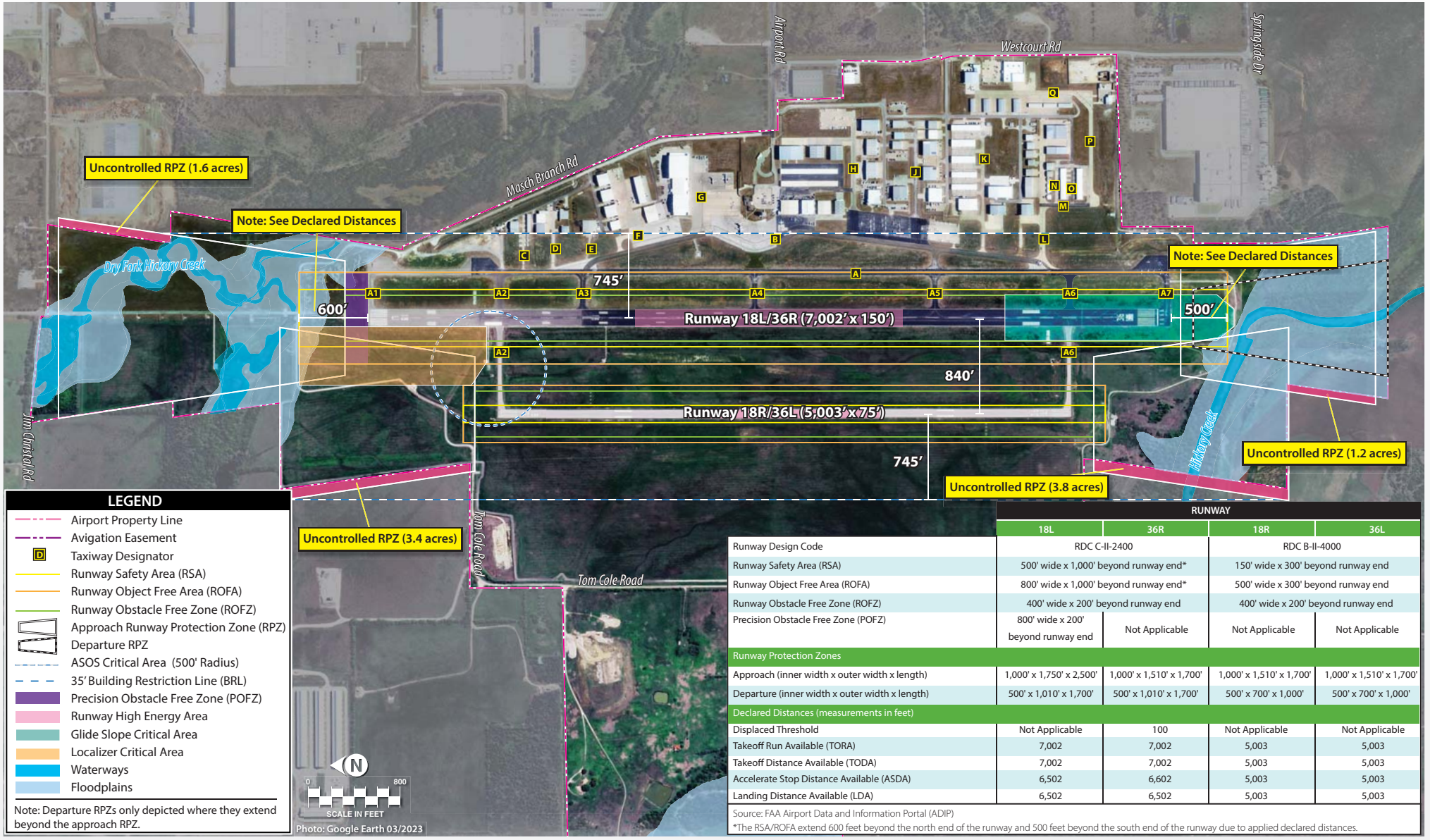
TABLE 3L | Supplemental Business Aircraft Landing Length Requirements

		LANDING LENGTH REQUIREMENTS (feet)					
		Dry Runway Condition			Wet Runway Condition		
Aircraft	MLW	Part 91	80% Rule	60% Rule	Part 91	80% Rule	60% Rule
Challenger 300	33,750	2,638	3,298	4,397	5,057	6,321	8,428
Challenger 601	**36,000**	**3,370**	**4,213**	**5,617**	**4,044**	**5,055**	**6,740**
Citation III	19,000	3,794	4,743	6,323	5,443	6,804	9,072
Citation X	31,800	3,901	4,876	6,502	5,568	6,960	9,280
Falcon 2000	33,000	3,165	3,956	5,275	3,640	4,550	6,067
Falcon 50EX	35,715	2,965	3,706	4,942	3,410	4,263	5,683
Falcon 900EX	44,500	3,716	4,645	6,193	4,274	5,343	7,123
Global Express	78,600	2,702	3,378	4,503	3,107	3,884	5,178
Gulfstream G280	32,700	3,019	3,774	5,032	3,472	4,340	5,787
Gulfstream G450	66,000	3,302	4,128	5,503	5,671	7,089	9,452
Gulfstream G550	**75,300**	**2,809**	**3,511**	**4,682**	**5,101**	**6,376**	**8,502**
Gulfstream G650	**83,500**	**3,782**	**4,728**	**6,303**	**4,996**	**6,245**	**8,327**
Hawker 1000	25,000	2,915	3,644	4,858	3,982	4,978	6,637
Hawker 4000	33,500	3,272	4,090	5,453	3,763	4,704	6,272
Lear 60	19,500	3,659	4,574	6,098	4,930	6,163	8,217

Red figures are greater than 7,002 feet (length of the primary runway at DTO).
Critical aircraft is in **bold**.
Runway length calculation assumptions: 642.7' MSL field elevation; 95.7°F ambient temperature; 0.18% runway grade
MLW = maximum landing weight

Source: UltraNav software

Existing Safety Areas



LEGEND

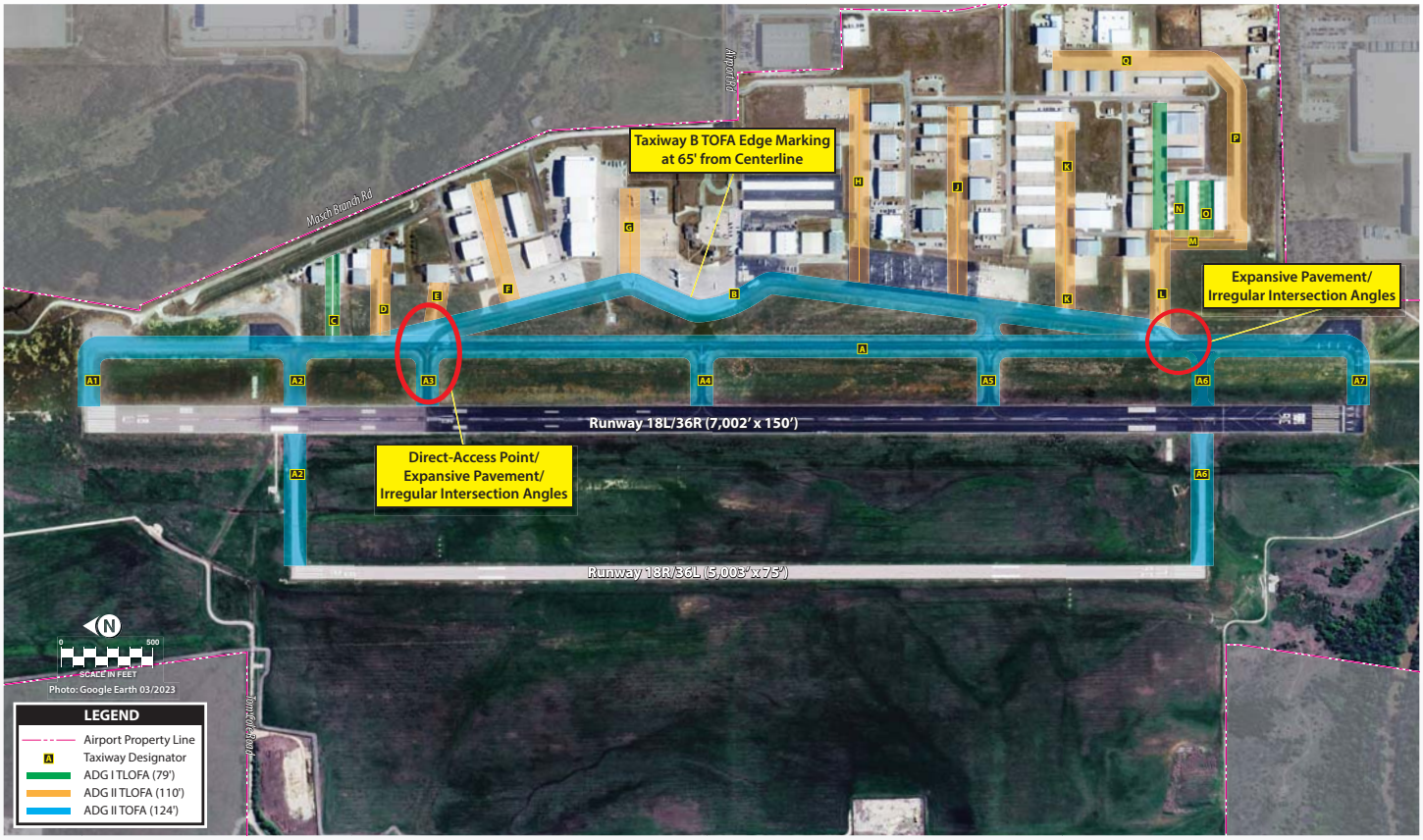
- Airport Property Line
- Avigation Easement
- Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- ASOS Critical Area (500' Radius)
- 35′ Building Restriction Line (BRL)
- Precision Obstacle Free Zone (POFZ)
- Runway High Energy Area
- Glide Slope Critical Area
- Localizer Critical Area
- Waterways
- Floodplains

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.

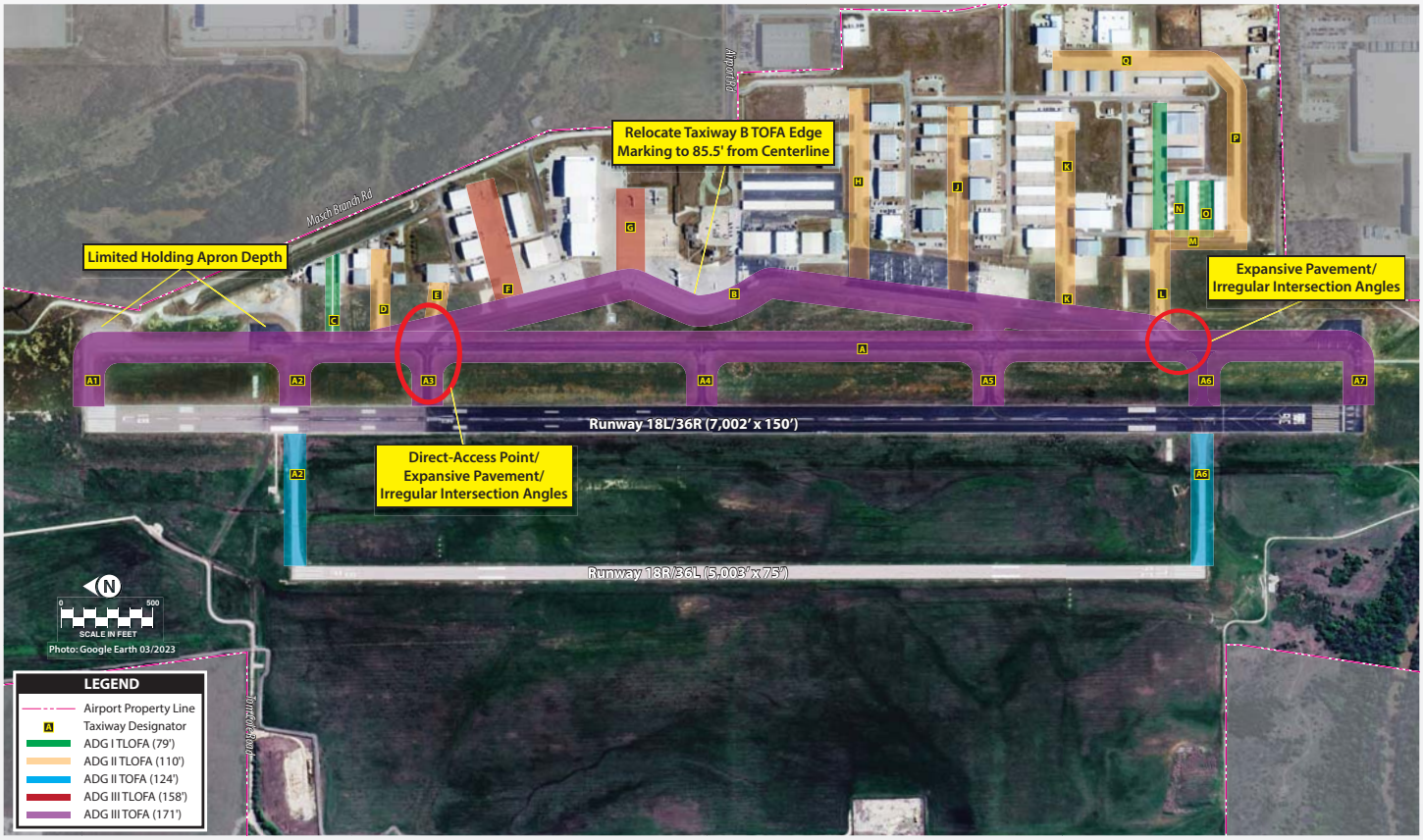
	RUNWAY			
	18L	36R	18R	36L
Runway Design Code	RDC C-II-2400		RDC B-II-4000	
Runway Safety Area (RSA)	500' wide x 1,000' beyond runway end*		150' wide x 300' beyond runway end	
Runway Object Free Area (ROFA)	800' wide x 1,000' beyond runway end*		500' wide x 300' beyond runway end	
Runway Obstacle Free Zone (ROFZ)	400' wide x 200' beyond runway end		400' wide x 200' beyond runway end	
Precision Obstacle Free Zone (POFZ)	800' wide x 200' beyond runway end	Not Applicable	Not Applicable	Not Applicable
Runway Protection Zones				
Approach (inner width x outer width x length)	1,000' x 1,750' x 2,500'	1,000' x 1,510' x 1,700'	1,000' x 1,510' x 1,700'	1,000' x 1,510' x 1,700'
Departure (inner width x outer width x length)	500' x 1,010' x 1,700'	500' x 1,010' x 1,700'	500' x 700' x 1,000'	500' x 700' x 1,000'
Declared Distances (measurements in feet)				
Displaced Threshold	Not Applicable	100	Not Applicable	Not Applicable
Takeoff Run Available (TORA)	7,002	7,002	5,003	5,003
Takeoff Distance Available (TODA)	7,002	7,002	5,003	5,003
Accelerate Stop Distance Available (ASDA)	6,502	6,602	5,003	5,003
Landing Distance Available (LDA)	6,502	6,502	5,003	5,003

Source: FAA Airport Data and Information Portal (ADIP)
*The RSA/ROFA extend 600 feet beyond the north end of the runway and 500 feet beyond the south end of the runway due to applied declared distances.

Existing Taxiway/Taxilane Object Free Area



Ultimate Taxiway/Taxilane Object Free Area



Airfield Summary

CATEGORY	EXISTING	ULTIMATE
Runway	**18L-36R**	
Runway Design Code (RDC)	C-II-2400	C/D-III-2400
Dimensions	7,002' x 150'	Maintain Length; Consider Width Reduction to 100'
Pavement Strength	70,000 SWL; 100,000 DWL	Maintain
Blast Pads	None	Add Blast Pads (140' x 200')
RSA	RSA with Declared Distances	Consider Improvements to Eliminate Declared Distances
ROFA	ROFA with Declared Distances	Consider Improvements to Eliminate Declared Distances
ROFZ	Standard ROFZ	Maintain
POFZ	Standard POFZ (18L)	Maintain
RPZ	Approximately 2.8 Acres of Uncontrolled RPZ Property	Establish Full Control Over All RPZs
Runway	**18R-36L**	
Runway Design Code (RDC)	B-II-4000	B-II-4000
Dimensions	5,003' x 75'	Consider Extension to Minimum Length of 5,500'
Pavement Strength	30,000 SWL; 50,000 DWL	Maintain
Blast Pads	None	None
RSA	Standard RSA	Maintain
ROFA	Standard ROFA	Maintain
ROFZ	Standard ROFZ	Maintain
RPZ	Approximately 7.2 Acres of Uncontrolled RPZ Property	Establish Full Control Over All RPZs
Taxiways		
Design Group	TDG 3 (East of 18L-36R); TDG 2A (West of 18L-36R)	Maintain
Parallel Taxiway	Taxiway A (18L-36R)	Consider Full-Length Parallel Taxiway For 18R-36L
Parallel Taxiway Separation from Runway	400' (Taxiway A)	Minimum 240' Separation for Ultimate Parallel Serving 18R-36L
Widths	50' (East of 18L-36R); 35' (West of 18L-36R)	Maintain
Holding Position Separation	250' (18L-36R); 260' (18R-36L)	Increase Separation for 18L-36R Markings to 256'; Consider Relocating 18R-36L Markings to 200'
Notable Conditions	No Hot Spots; 2 Areas of Non-Standard Geometry	Consider Corrective Measures
Navigational and Weather Aids		
Instrument Approaches	ILS (18L); LPV GPS (All Runways)	Maintain
Weather Aids	ASOS, Wind Cone, Rotating Beacon, Segmented Circle	Maintain
Approach Aids	PAPI-4s (All Runways); MALSR (18L)	Add REILs to 36R, 18R, and 36L
Lighting and Marking		
Runway Lighting	MIRL (Both Runways)	Upgrade 18L-36R to LED MIRLs
Runway Marking	Precision (18L); Non-Precision (36R, 18R, 36L)	Maintain
Taxiway Lighting	MITL	Maintain
Airfield Signage	Standard Runway/Taxiway Identification, Holding Position, and Routing Signage	Maintain

KEY

ASOS - Automated Surface Observation System
DWL - Dual Wheel Loading
GPS - Global Positioning System
LPV - Localizer Performance with Vertical Guidance
MALSR - Medium Intensity Approach Lighting System
MIRL/HIRL - Medium/High Intensity Runway Lighting
MITL - Medium Intensity Taxiway Lighting
POFZ - Precision Obstacle Free Zone
PAPI - Precision Approach Path Indicator
RDC - Runway Design Code
REIL - Runway End Identification Lights
RSA - Runway Safety Area
RPZ - Runway Protection Zone
ROFA - Runway Object Free Area
SWL - Single Wheel Loading
TDG - Taxiway Design Group



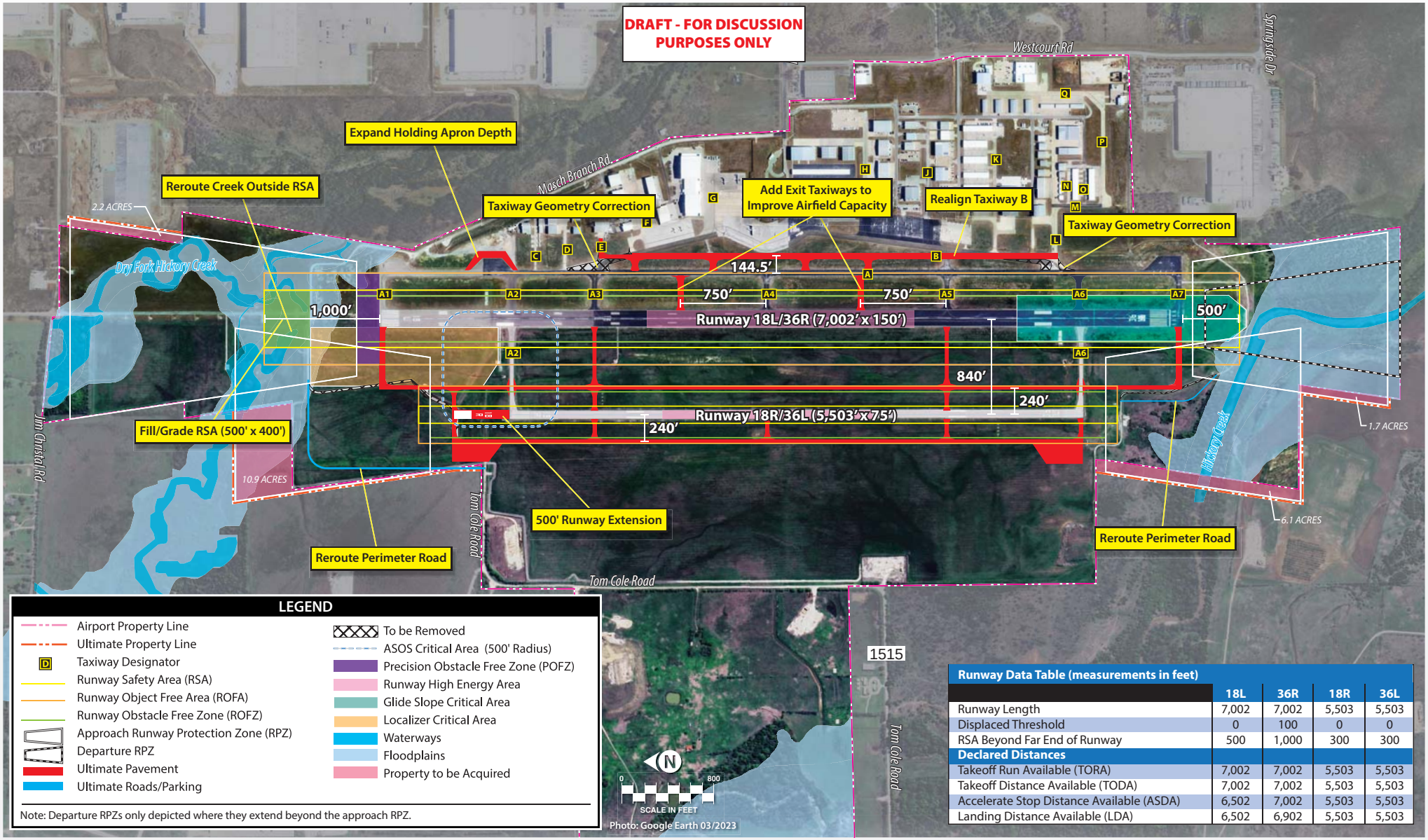
TABLE 3U | General Aviation Landside Facility Requirements

	Current Capacity	Projected Needs		
		Short-Term	Intermediate-Term	Long-Term
General Aviation Terminal Facilities and Parking				
Terminal/FBO Service Space (sf)	22,800	9,375	12,375	18,000
Total Terminal/FBO Public Vehicle Parking	231	194	236	323
Aircraft Storage Hangar Requirements				
T-Hangar (sf)	160,709	214,700	275,900	419,900
Conventional/Box Hangar (sf)	576,011	639,000	706,500	888,500
Total Hangar Storage Area (sf)	736,720	853,700	982,400	1,308,400
Aircraft Parking Apron				
Based/Local Aircraft Parking (sy)	20,400	17,100	19,700	25,800
Transient Parking (sy)	39,775	57,200	63,400	79,100
Total Apron Area (sy)	60,175	74,300	83,100	104,900
Fuel Storage				
100LL (14-Day Fuel Storage)	37,340	20,068	22,020	26,431
Jet A (14-Day Fuel Storage)	36,340	56,633	69,022	106,189

Red indicates a projected need that exceeds current capacity.

Source: Coffman Associates analysis

Airfield Alternative 1



LEGEND

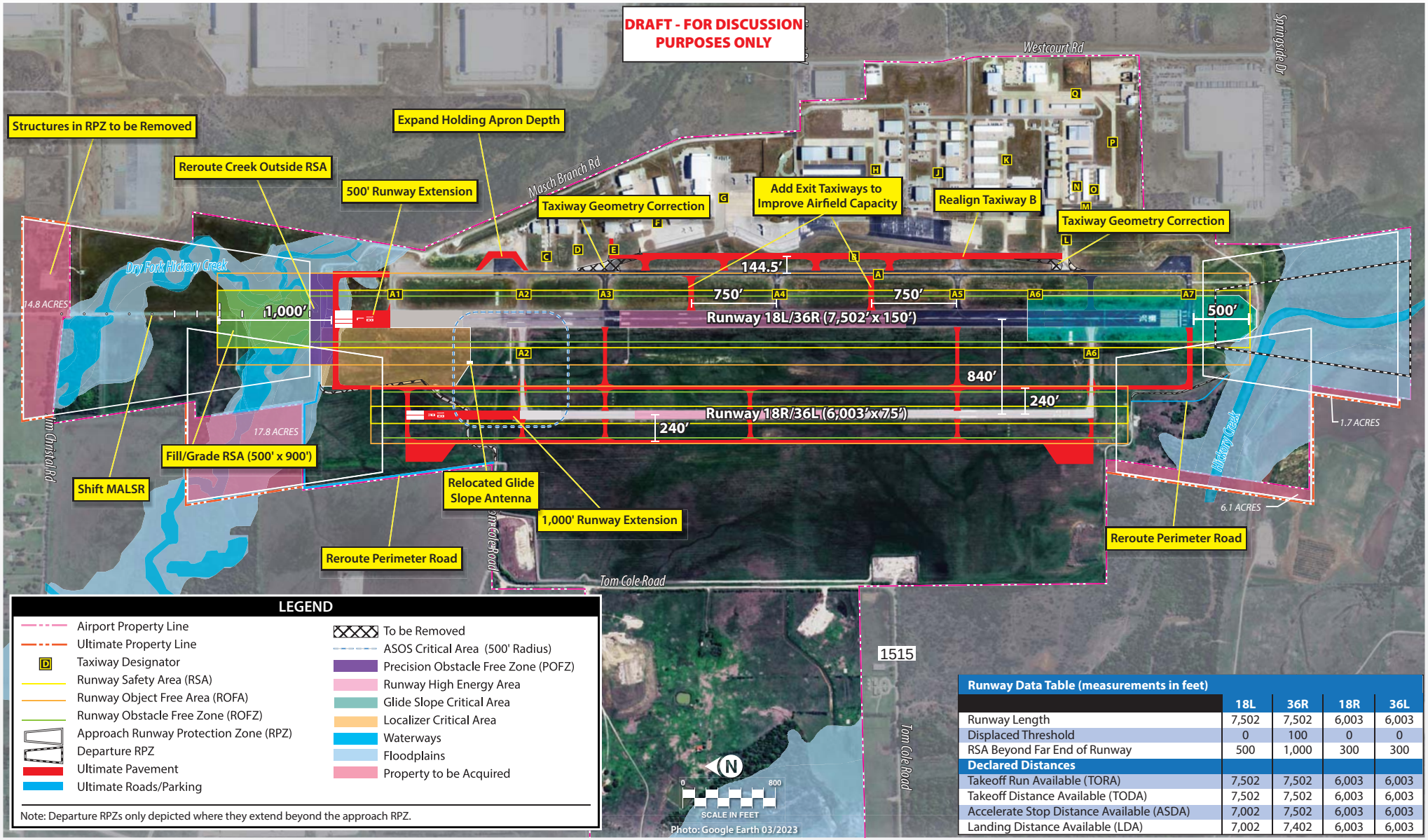
- Airport Property Line
- Ultimate Property Line
- Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- Ultimate Pavement
- Ultimate Roads/Parking
- To be Removed
- ASOS Critical Area (500' Radius)
- Precision Obstacle Free Zone (POFZ)
- Runway High Energy Area
- Glide Slope Critical Area
- Localizer Critical Area
- Waterways
- Floodplains
- Property to be Acquired

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.

Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	5,503	5,503
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	1,000	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	5,503	5,503
Takeoff Distance Available (TODA)	7,002	7,002	5,503	5,503
Accelerate Stop Distance Available (ASDA)	6,502	7,002	5,503	5,503
Landing Distance Available (LDA)	6,502	6,902	5,503	5,503

Airfield Alternative 2



LEGEND

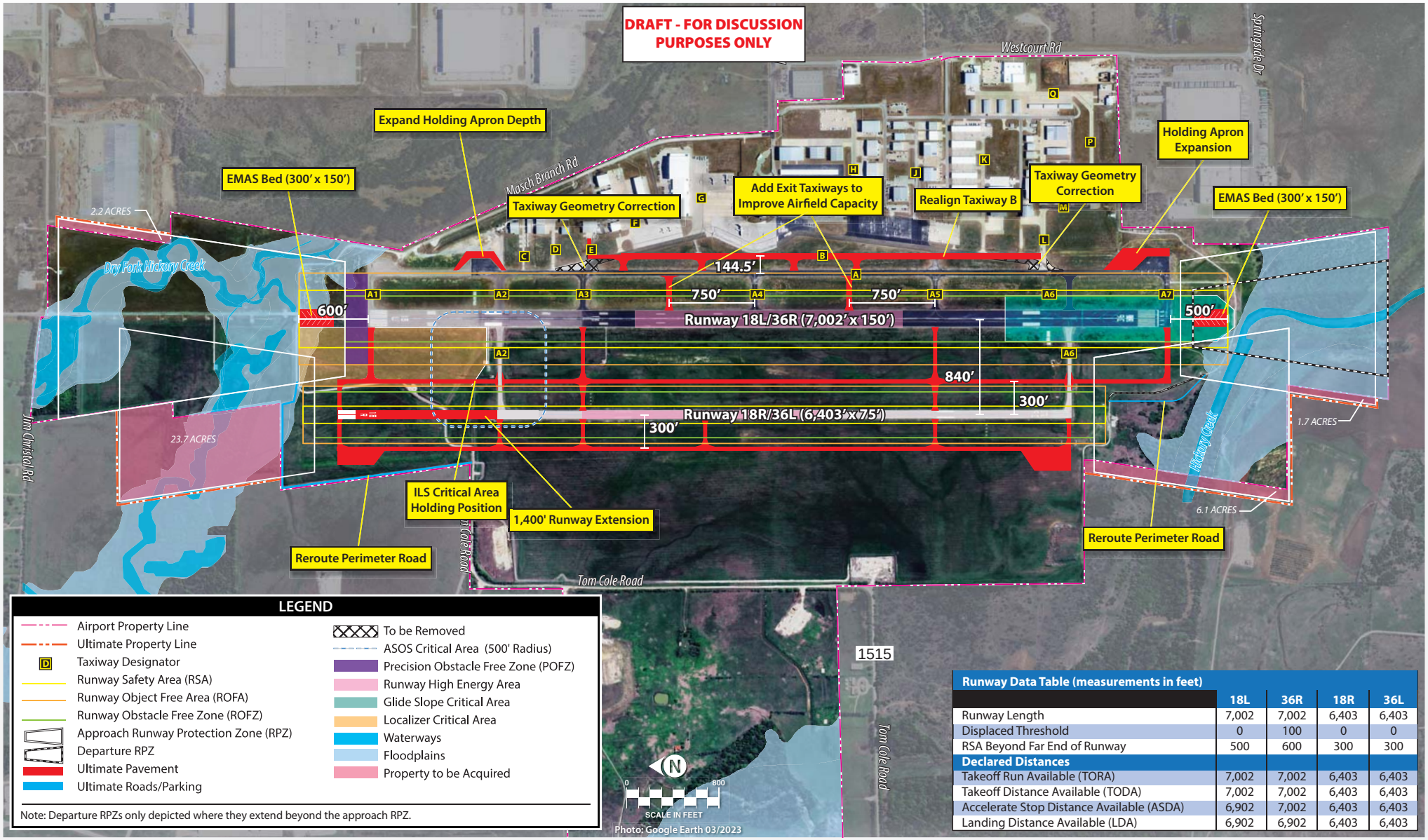
- Airport Property Line
- Ultimate Property Line
- Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- Ultimate Pavement
- Ultimate Roads/Parking
- To be Removed
- ASOS Critical Area (500' Radius)
- Precision Obstacle Free Zone (POFZ)
- Runway High Energy Area
- Glide Slope Critical Area
- Localizer Critical Area
- Waterways
- Floodplains
- Property to be Acquired

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.

Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,502	7,502	6,003	6,003
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	1,000	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,502	7,502	6,003	6,003
Takeoff Distance Available (TODA)	7,502	7,502	6,003	6,003
Accelerate Stop Distance Available (ASDA)	7,002	7,502	6,003	6,003
Landing Distance Available (LDA)	7,002	7,402	6,003	6,003

Airfield Alternative 3



LEGEND

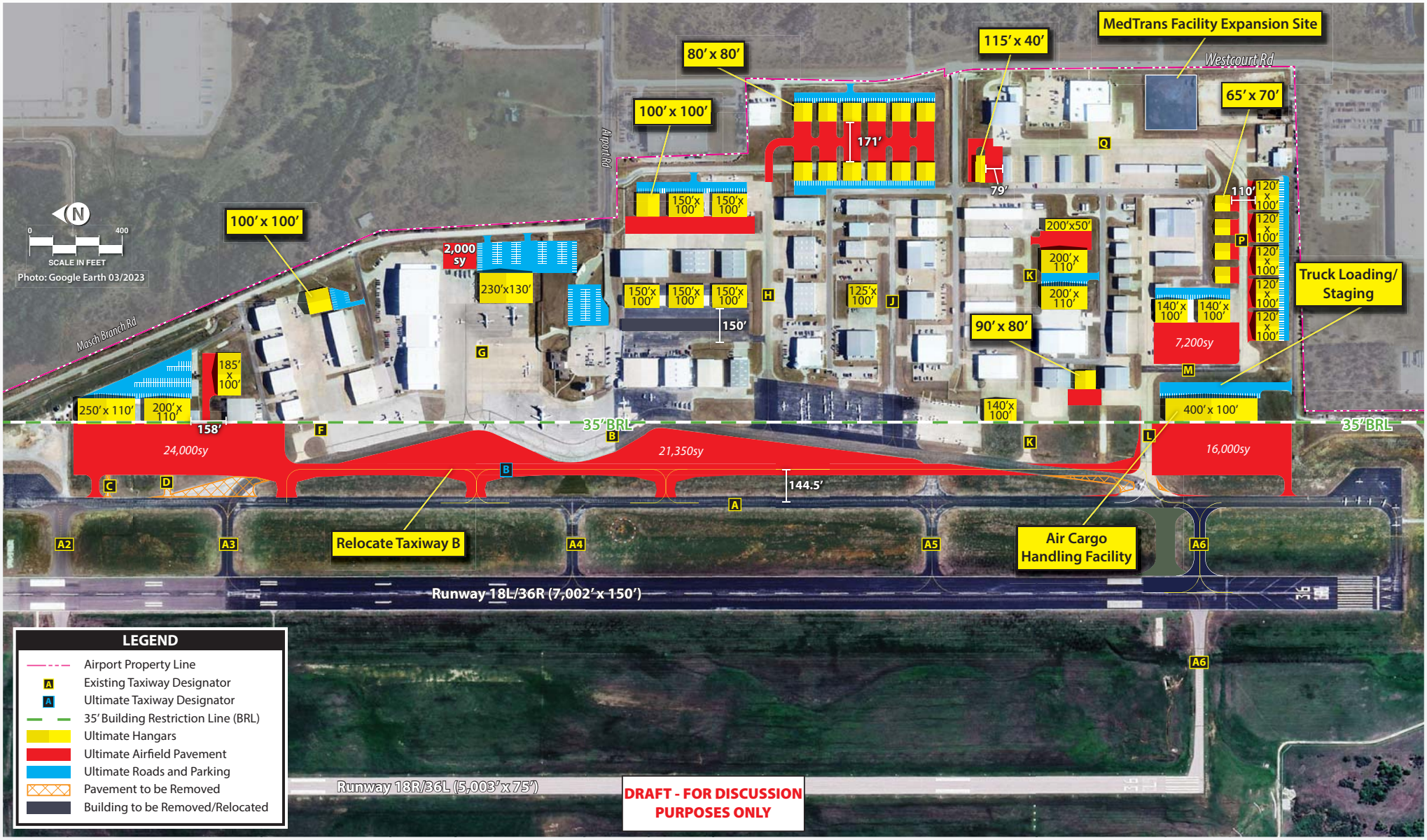
- Airport Property Line
- Ultimate Property Line
- Taxiway Designator
- Runway Safety Area (RSA)
- Runway Object Free Area (ROFA)
- Runway Obstacle Free Zone (ROFZ)
- Approach Runway Protection Zone (RPZ)
- Departure RPZ
- Ultimate Pavement
- Ultimate Roads/Parking
- To be Removed
- ASOS Critical Area (500' Radius)
- Precision Obstacle Free Zone (POFZ)
- Runway High Energy Area
- Glide Slope Critical Area
- Localizer Critical Area
- Waterways
- Floodplains
- Property to be Acquired

Note: Departure RPZs only depicted where they extend beyond the approach RPZ.

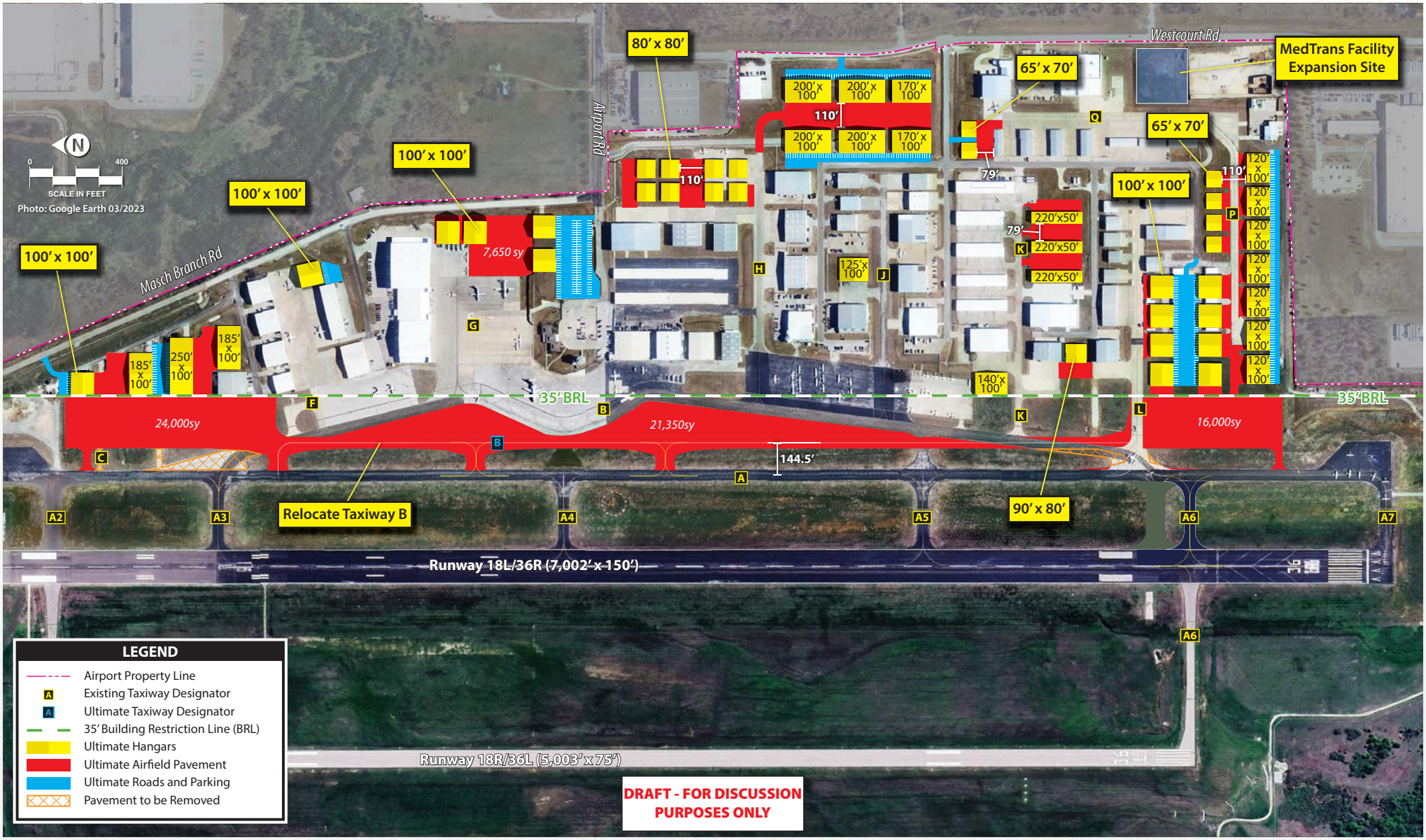
Runway Data Table (measurements in feet)

	18L	36R	18R	36L
Runway Length	7,002	7,002	6,403	6,403
Displaced Threshold	0	100	0	0
RSA Beyond Far End of Runway	500	600	300	300
Declared Distances				
Takeoff Run Available (TORA)	7,002	7,002	6,403	6,403
Takeoff Distance Available (TODA)	7,002	7,002	6,403	6,403
Accelerate Stop Distance Available (ASDA)	6,902	7,002	6,403	6,403
Landing Distance Available (LDA)	6,902	6,902	6,403	6,403

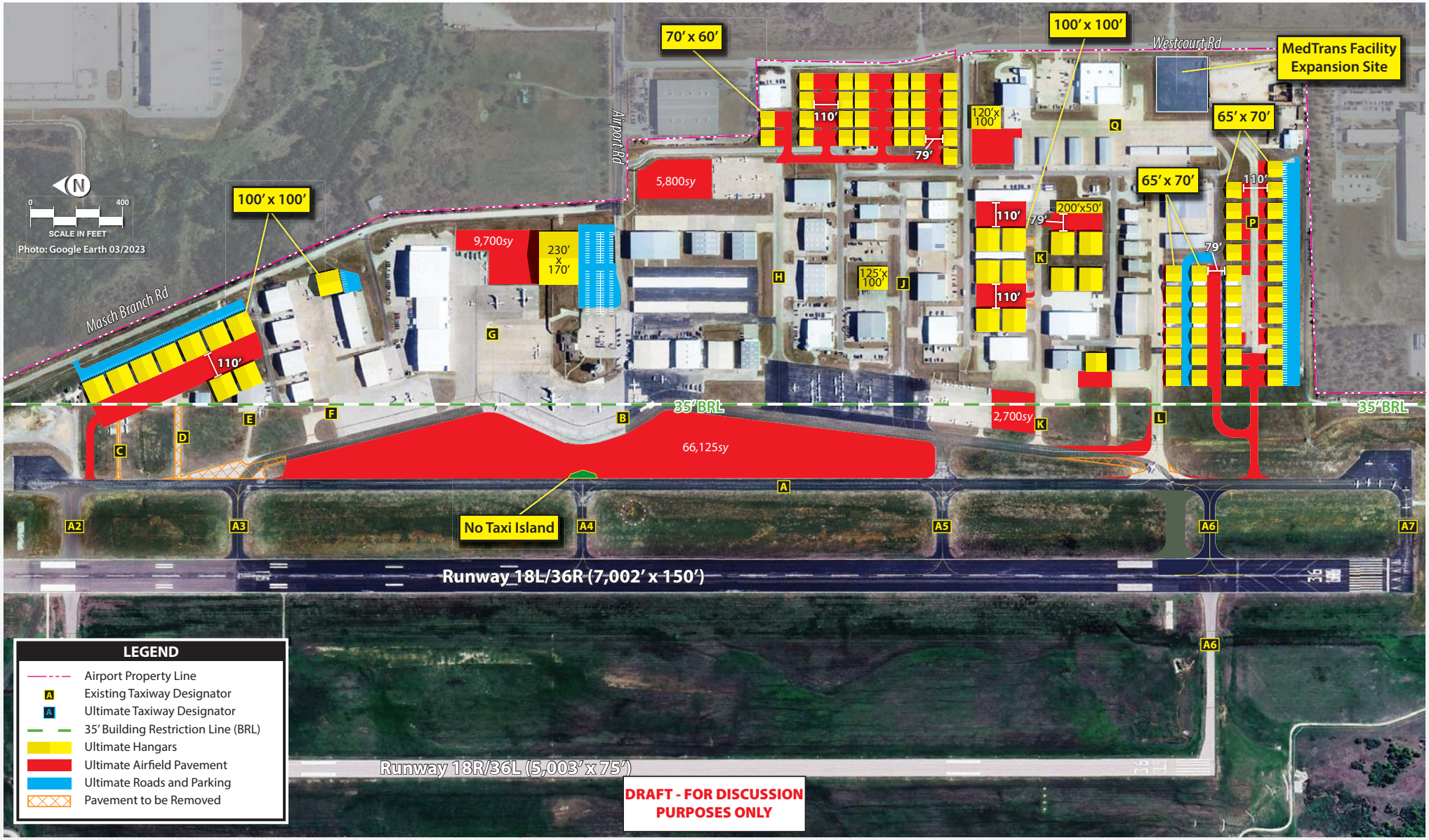
East Landside Alternative 1



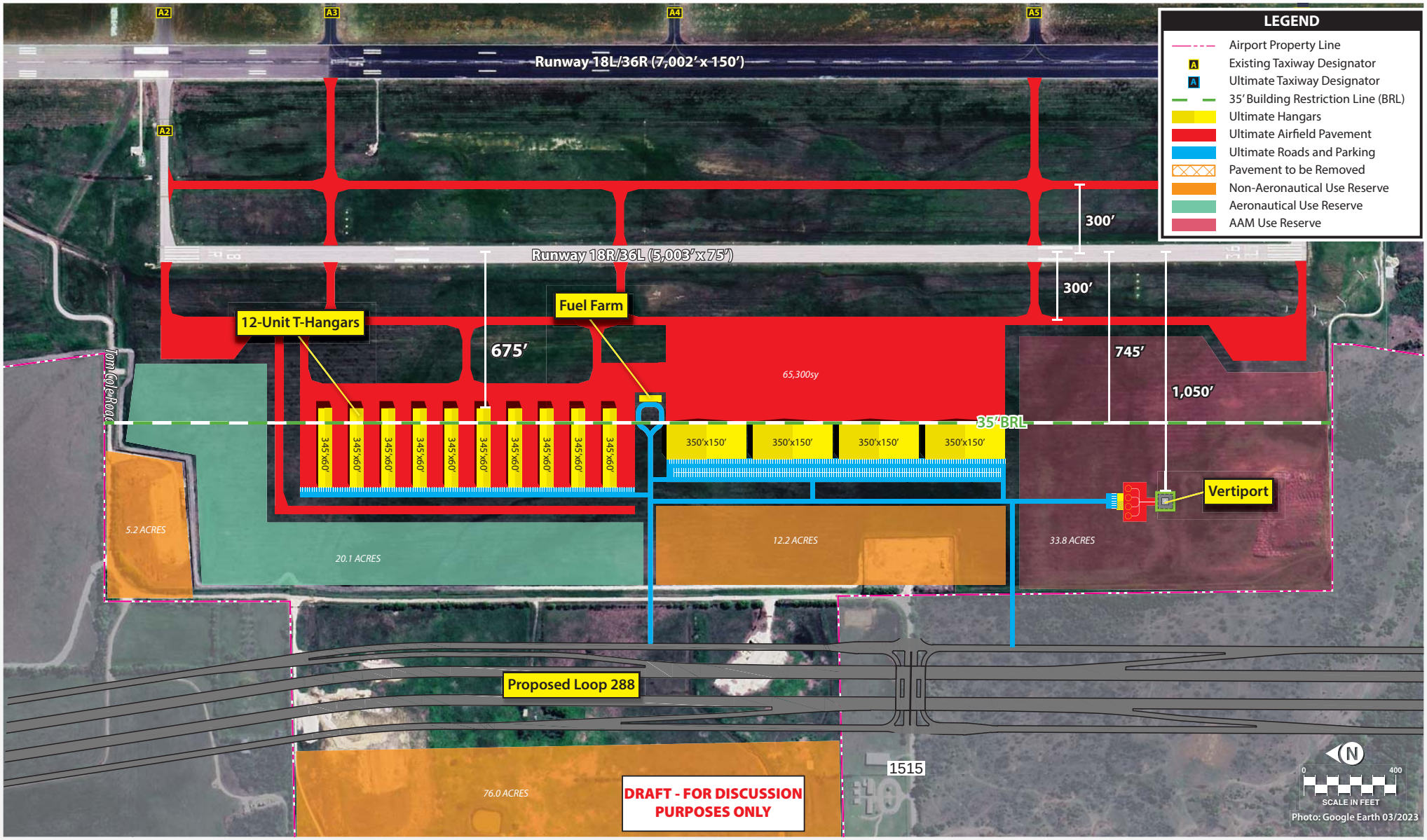
East Landside Alternative 2



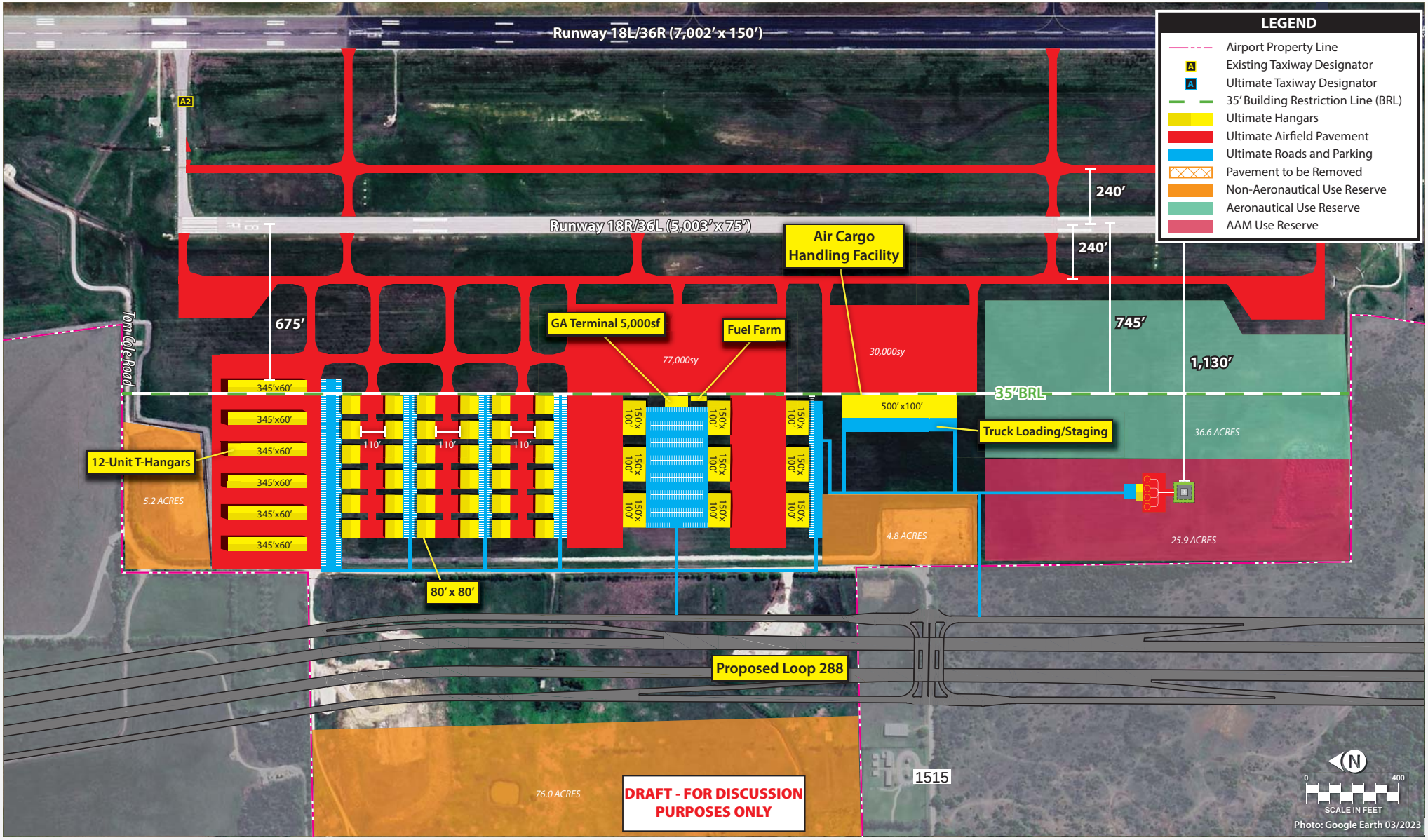
East Landside Alternative 3



West Landside Alternative 1



West Landside Alternative 2



West Landside Alternative 3

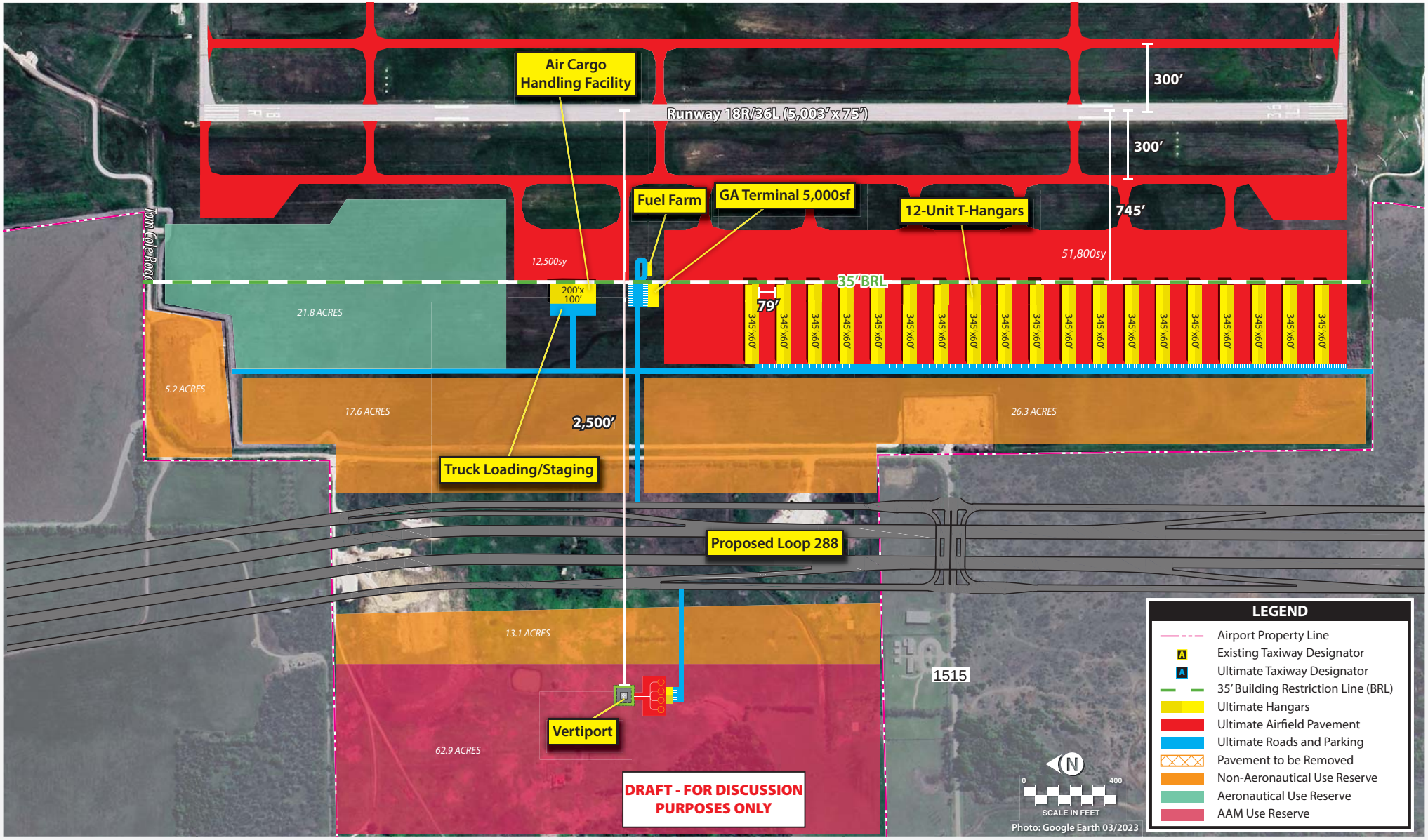


TABLE 4A | Airside Planning Considerations

#	Non-Standard/Deficient Condition	Applicable Design Standard	Proposed Action(s) to be Evaluated
1	Runway 18L-36R has only one exit taxiway within the designated 2,000' to 4,000' range from the landing threshold for airfield capacity calculation purposes.	FAA AC 150/5060-5, Change 2, *Airfield Capacity and Delay*	Consider adding additional exits within the target range to enhance airfield capacity.
2	Runway 18L-36R has applied declared distances to meet FAA RSA/ROFA design standards. A standard RSA/ROFA on a RDC C-II-2400 and C/D-III-2400 runway extend 1,000 feet from the end of the runway. There are currently only 500' of RSA/ROFA to the south of the runway and only 600' of RSA/ROFA to the north of the runway.	FAA AC 150/5300-13B, *Airport Design,* Appendix H, H.1.5.b	As part of the master plan process, the FAA expects a review of reasonable mitigation measures to reduce or eliminate the use of declared distances.
3	At 5,003 feet long, Runway 18R-36L is limited in its ability to serve small and mid-sized business jet aircraft at 60 percent useful loads.	FAA AC 150/5325-4B, *Runway Length Requirements for Airfield Design,* Paragraph 306	Consider extension options to a minimum length of 5,500 feet to satisfy the FAA recommended length to accommodate 75 percent of business jets operating at 60 percent useful loads.
4	Portions of the RPZs on each runway are not controlled by the airport via fee ownership or avigation easement. Affected property totals approximately 10 acres.	FAA AC 150/5190-4B, *Airport Land Use Compatibility Planning*, §2.2.5	Establish control via new avigation easements or fee ownership of all properties within the RPZs.
5	Runway 18R-36L is not equipped with a full-length parallel taxiway, which is required for runways with instrument approaches with visibility minimums down to ¾-mile.	FAA AC 150/5300-13B, *Airport Design,* Appendix K, Table K-1	Consider adding a parallel taxiway to Runway 18R-36L.
6	The north and south intersections of Taxiway B and Taxiway A result in non-standard taxiway geometry conditions, including direct-access and irregular turning angles.	FAA AC 150/5300-13B, *Airport Design,* Paragraph 4.3	Consider taxiway design improvements to mitigate non-standard geometry.

REIL = runway end identifier lights
ROFA = runway object free area
RPZ = runway protection zone
RSA = runway safety area

Source: Coffman Associates analysis

TABLE 4B | Landside Planning Considerations

#	Landside Component	Existing Capacity	Consideration
1	Aircraft Storage Hangars	736,720 sf of existing capacity	Increase total capacity by 571,680 sf.
2	Aircraft Parking Apron	60,175 sy of apron/parking	Increase total capacity by 44,725 sy.
3	Fuel Storage Capacity	36,340 gallons (Jet A); 37,340 gallons (100LL)	Increase Jet A storage by 69,849 gallons. Add a dedicated unleaded aviation fuel (100UL) tank.
4	Advanced Air Mobility (AAM)	None	Reserve space for future vertiport and support facility development.
5	Air Cargo	None	Reserve space for the potential development of an air cargo handling facility and dedicated apron and truck loading and staging areas.

sf = square feet
sy = square yards

Source: Coffman Associates analysis