



Airport Master Plan

KANSAS CITY WHEELER DOWNTOWN AIRPORT



AGENDA

MKC Master Plan – Alternatives – PAC #3

February 21, 2024 – 1:30-3:30 p.m.

Brigadier General Charles E. McGee

General Aviation Terminal Building Conference Room

1. Welcome/Introductions
2. Airspace/Instrument Approach to Rwy 1 Update
3. Forecast/Facility Requirements Summary
4. Alternatives Analysis/Discussion

MASTER PLAN PROCESS



AREA AIRSPACE/APPROACH TO RUNWAY 1

1. Runway 1 Instrument Approach Feasibility
2. Area Airspace Update

Achieving Lowest Minimums on Rwy 1

Current minimums for a future RNAV (GPS) Rwy 1 (LPV) are limited by two sets of existing obstacles

- A. Weld Building
- B. Street Lights on the On-Ramp from I-35N to I-70W

Combinations of additional threshold displacement and/or obstacle mitigation can overcome these challenges to achieve LPV minimums of 250ft – 3/4mi

FAA RAM Tool will be needed to deconflict several outdated building, stack and tree obstacles in River Bottoms

LPV minimums *below* 250ft – 3/4 mi are not possible due to

- 1. Offset final approach course
- 2. Lack of ALS



848ft MSL (98ft AGL) Light Pole
2,985ft From Rwy 1 Threshold
Previously Unknown to FAA

Runway 1 Instrument Approach Options

Rwy 1 LPV Minimum Reduction Options

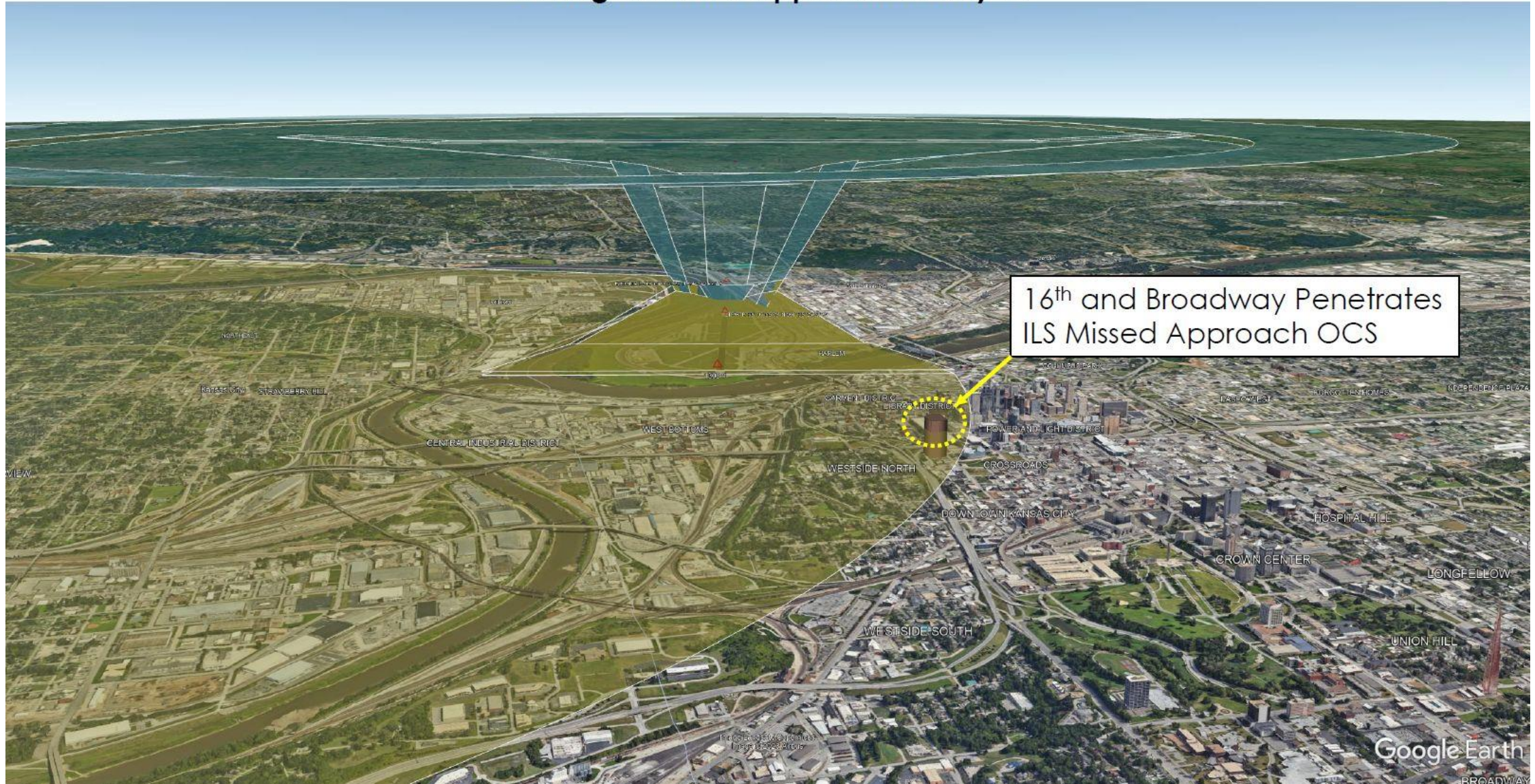
	Retain Current Displaced Landing Threshold of 300ft (1.0° Offset FAC)	Displace Landing Threshold to 550ft (+250) (1.5° Offset FAC)	Displace Landing Threshold to 650ft (+350) (1.5° Offset FAC)
A. No changes to Obstacle	448ft – 1 3/8mi	368ft – 1 mi	250ft – 3/4mi
B. Weld Building replaced by 78ft AGL Condos	337ft – 1 mi	250ft – 3/4mi	250ft – 3/4mi
C. Eliminate/Reduce Height for On-Ramp Light Poles	448ft – 1 3/8mi	455ft – 1 3/8mi	250ft – 3/4mi
D. Both Replace Weld Building and Reduce Light Poles	250ft – 3/4mi	250ft – 3/4mi	250ft – 3/4mi

16th and Broadway Proposed Building



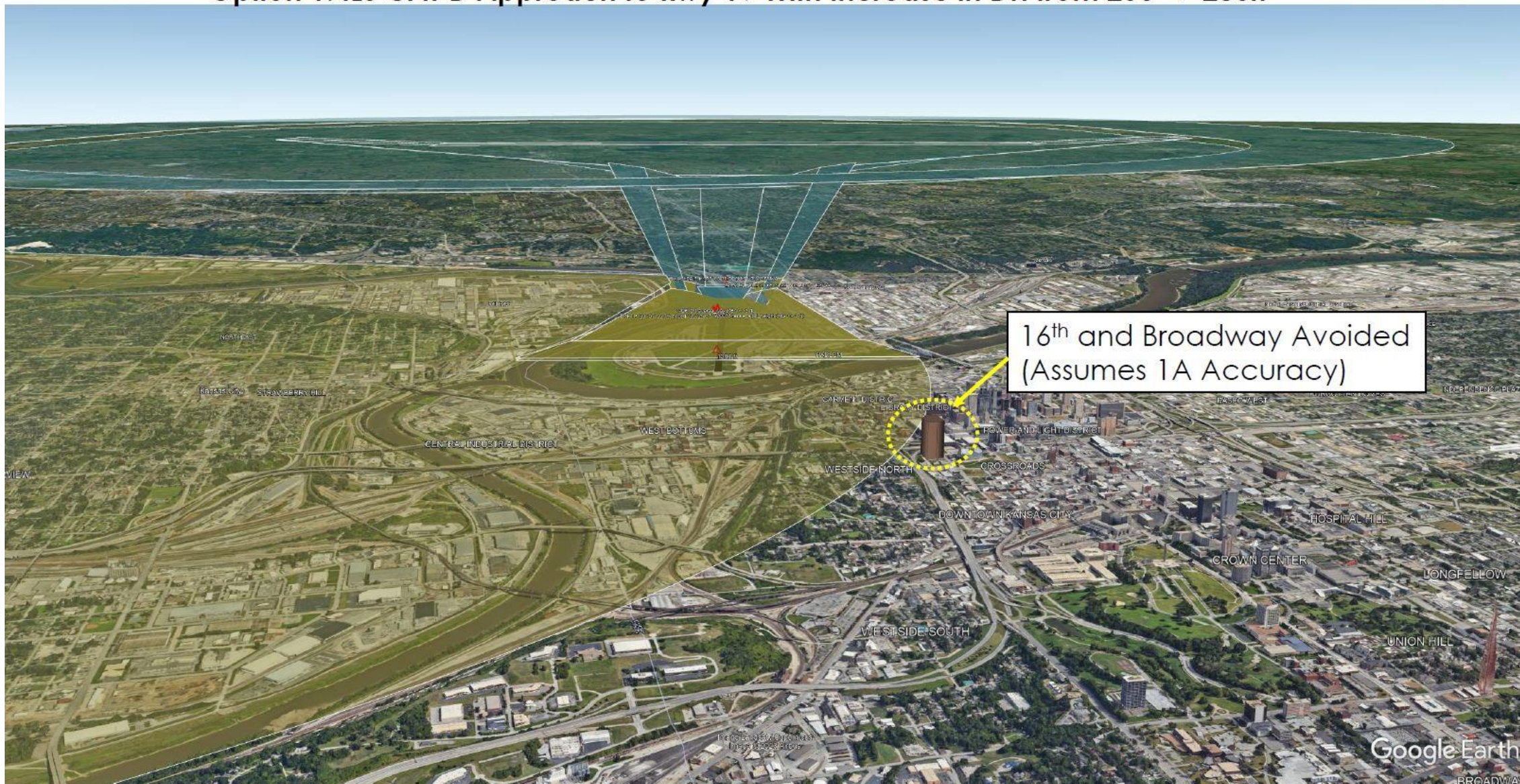


Existing ILS CAT D Approach to Rwy 19



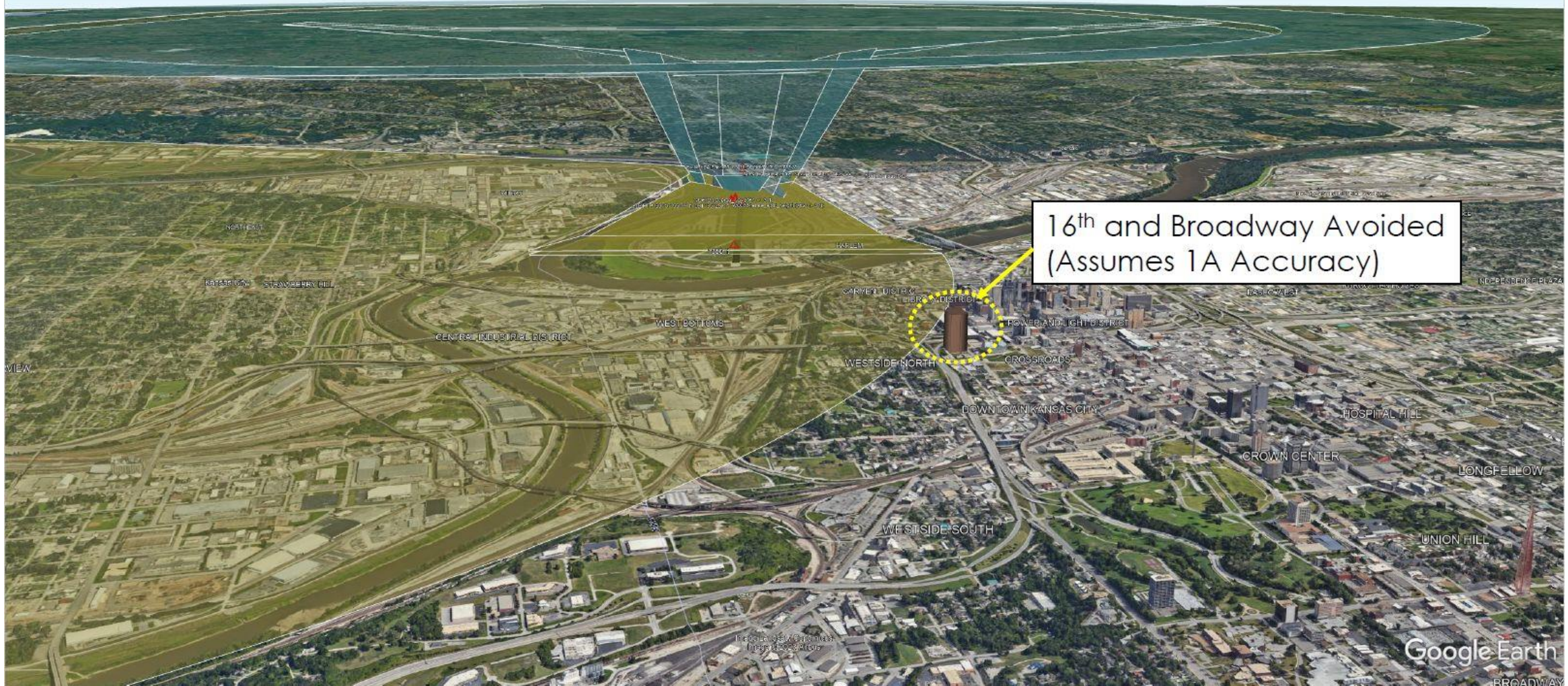


Option 1: ILS CAT D Approach to Rwy 19 With Increase in DH from 250 → 280ft



16th and Broadway Avoided
(Assumes 1A Accuracy)

Option 2: ILS CAT D Approach to Rwy 19 With DH 250ft and Non-Std Missed Approach Climb Gradient of 315ft/Nmi to 1,600ft



16th and Broadway Avoided
(Assumes 1A Accuracy)



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KANSAS CITY WHEELER DOWNTOWN AIRPORT

The background of the slide is a photograph of the Kansas City skyline at dusk or dawn, with the Spirit of Missourian statue on a stone pedestal in the foreground. A large, semi-transparent blue triangle is overlaid on the left side of the image, containing the text and logo.

Chapter 1
EXISTING CONDITIONS



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Chapter 2 FORECASTS



FORECAST SUMMARY

	Base Year	Forecast			CAGR
	2022	2027	2032	2042	
ENPLANEMENTS AND AIR CARGO					
Annual Enplanements	5,055	5,422	5,815	6,689	1.41%
ANNUAL OPERATIONS					
<i>Commercial Operations (Itinerant)</i>					
Air Carrier (>59 seats)	321	360	400	480	2.03%
Air Taxi	21,592	28,508	29,069	30,222	1.70%
Total Commercial Operations	21,913	28,868	29,469	30,702	1.70%
<i>General Aviation Operations</i>					
Itinerant	50,661	52,721	57,630	66,540	1.37%
Local	40,549	50,705	53,294	58,735	1.87%
Total General Aviation Operations	91,210	103,426	110,923	125,275	1.60%
<i>Military Operations</i>					
Itinerant	930	984	984	984	0.28%
Local	41	47	47	47	0.69%
Total Military Operations	971	1,031	1,031	1,031	0.30%
Total Itinerant Operations	73,504	82,574	88,082	98,226	1.46%
Total Local Operations	40,590	50,752	53,341	58,782	1.87%
TOTAL ANNUAL OPERATIONS	114,094	133,326	141,423	157,008	1.61%











FORECAST SUMMARY

	Base Year	Forecast			CAGR
	2022	2027	2032	2042	
BASED AIRCRAFT					
Single Engine Piston	82	83	85	88	0.35%
Multi-Engine Piston	12	12	11	10	-0.91%
Turboprop	9	11	13	15	2.59%
Jet	82	87	90	96	0.79%
Helicopter	11	13	14	17	2.20%
TOTAL BASED AIRCRAFT	196	206	213	226	0.71%

CAGR: Compound Annual Growth Rate

	Base Year	Forecast		
	2022	2027	2032	2042
PEAKING ACTIVITY PROJECTIONS				
Annual Operations	114,094	133,326	141,423	157,008
Peak Month	12,149	14,199	15,062	16,721
Design Day	405	473	502	557
Design Hour	55	64	68	76

Ex 2J: Aircraft Reference Codes

A-I	Aircraft	TDG	B-II <i>over 12,500 lbs.</i>	Aircraft	TDG	C/D-II	Aircraft	TDG	
	<ul style="list-style-type: none"> Beech Baron 55 Beech Bonanza Cessna 150, 172 Eclipse 500 Piper Archer, Seneca 	1A 1A 1A 1A 1A		<ul style="list-style-type: none"> Beech Super King Air 350 Cessna Citation CJ3(525B), V (560) Cessna Citation Bravo (550) Cessna Citation CJ4 (525C) Cessna Citation Latitude/Longitude Embraer Phenom 300 Falcon 10, 20, 50 Falcon 900, 2000 Hawker 800, 800XP, 850XP, 4000 Pilatus PC-24 	2A 2A 1A 1B 1B 1B 2A 1B 1B		<ul style="list-style-type: none"> Challenger 600/604/800/850 Cessna Citation VII, X+ Embraer Legacy 450/500 Gulfstream IV, 350, 450 (D-II) Gulfstream G200/G280 Lear 70, 75 	1B 1B 1B 2A 1B 1B	
	<ul style="list-style-type: none"> Beech Baron 58 Beech King Air 90 Cessna 421 Cessna Citation CJ1 (525) Cessna Citation 1(500) Embraer Phenom 100 	1A 1A 1A 1A 2A 1B			<ul style="list-style-type: none"> Bombardier Dash 8 Bombardier Global 5000, 6000, 7000, 8000 Falcon 6X, 7X, 8X 		3 2B 2B		<ul style="list-style-type: none"> Gulfstream V Gulfstream G500, 550, 600, 650 (D-III) Airbus A319-100, 200 Boeing 737 -800, 900, BBJ2 (D-III) MD-83, 88 (D-III)
	<ul style="list-style-type: none"> Beech Super King Air 200 Cessna 441 Conquest Cessna Citation CJ2 (525A) Pilatus PC-12 	2A 1A 2A 1A				<ul style="list-style-type: none"> Lear 25, 31, 45, 55, 60 Learjet 35, 36 (D-I) 	1B 1B		<ul style="list-style-type: none"> Airbus A300-100, 200, 600 Boeing 757-200 Boeing 767-300, 400 MD-11
A/B-II 12,500 lbs. or less			A/B-III					<ul style="list-style-type: none"> Airbus A330-200, 300 Airbus A340-500, 600 Boeing 747-100 - 400 Boeing 777-300 Boeing 787-8, 9 	5 6 5 6 5

Note: Aircraft pictured is identified in bold type.



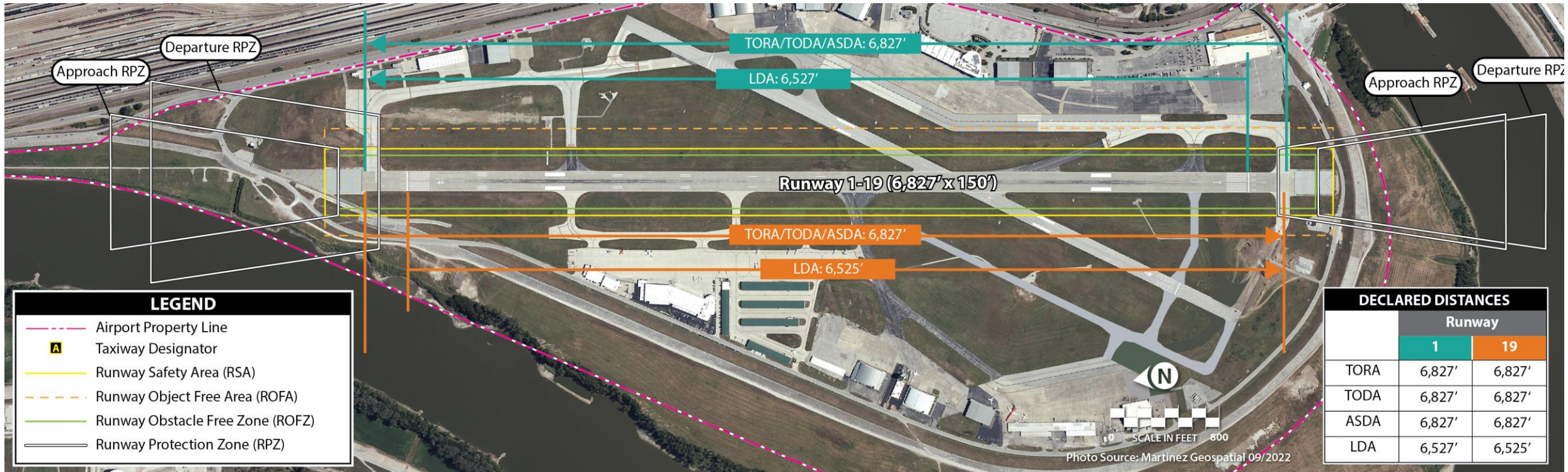
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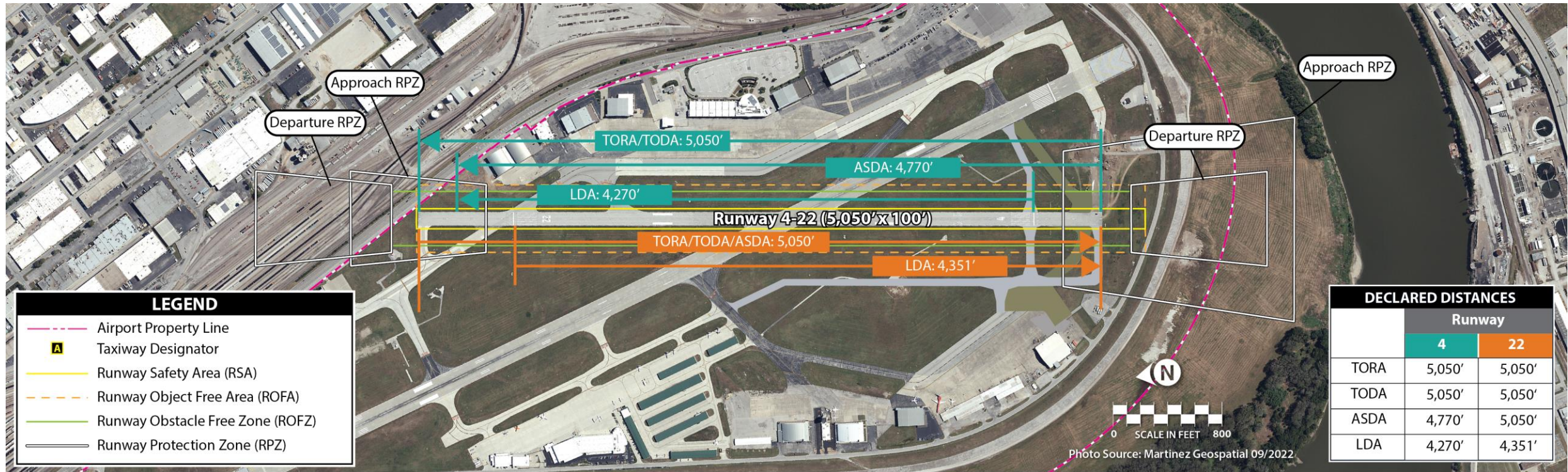
A photograph of the Spirit of the Plains statue, a bronze figure of a Native American on a horse, standing atop a stone pillar. The background shows the Kansas City skyline under a clear sky. The image is partially overlaid by a large, semi-transparent blue triangle on the left side.

Chapter 3 FACILITY REQUIREMENTS

Ex 3C: Existing Declared Distances



Ex 3C: Existing Declared Distances





Airport Master Plan

**KANSAS CITY
WHEELER
DOWNTOWN
AIRPORT**

**Chapter 4
ALTERNATIVES**

Runway Safety Area Determination - Runway 1-19

FAA AC 150-5300.13B, *Airport Design*, has a different definition of the RSA when EMAS is present. It now says:

“The presence of EMAS does not diminish the standard RSA width.”

The RSAs beyond both ends of Runway 1-19 do not provide the full 500' width.

However, FAA AC 150/5220-22B, *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*, states: “The FAA does not require an airport operator to reduce the length of a runway or declare its length to be less than the actual pavement length to meet RSA standards if there is an adverse operational impact to the airport.”

The optimal runway length for MKC is 8,700'. Shortening Runway 1-19 would have an adverse impact on the airport and the critical aircraft.

Runway Safety Area Determination - Runway 1-19

Primary Guidance: FAA Order 5200.8, *Runway Safety Area Program*

Analysis Process

1. Relocation, shifting, or realignment of the runway.
2. Reduction of runway length only if the runway length exceeds what is required – 8,700' is ideal length.
3. A combination of relocation, shifting, grading, realignment, or reduction.
4. Implementation of declared distances.
5. Installation of Engineered Materials Arresting System (EMAS)

Determination (FAA)

1. The existing RSA meets the current standards defined in FAA AC 150/5300-13B, Airport Design.
2. The existing RSA does not meet current standards, but it is practical to improve the RSA so that it will meet standards.
3. The existing RSA can be improved to enhance safety, but the RSA will still not meet current standards.
4. The existing RSA does not meet current RSA standards, and it is not practical to improve the RSA.

Current Status:

In 2010 both runways were given a determination of #1 – the RSA meet the current standard (due to the EMAS for Runway 1-19)

Exhibit 4B: Non-standard Safety Areas (Runway 1-19)

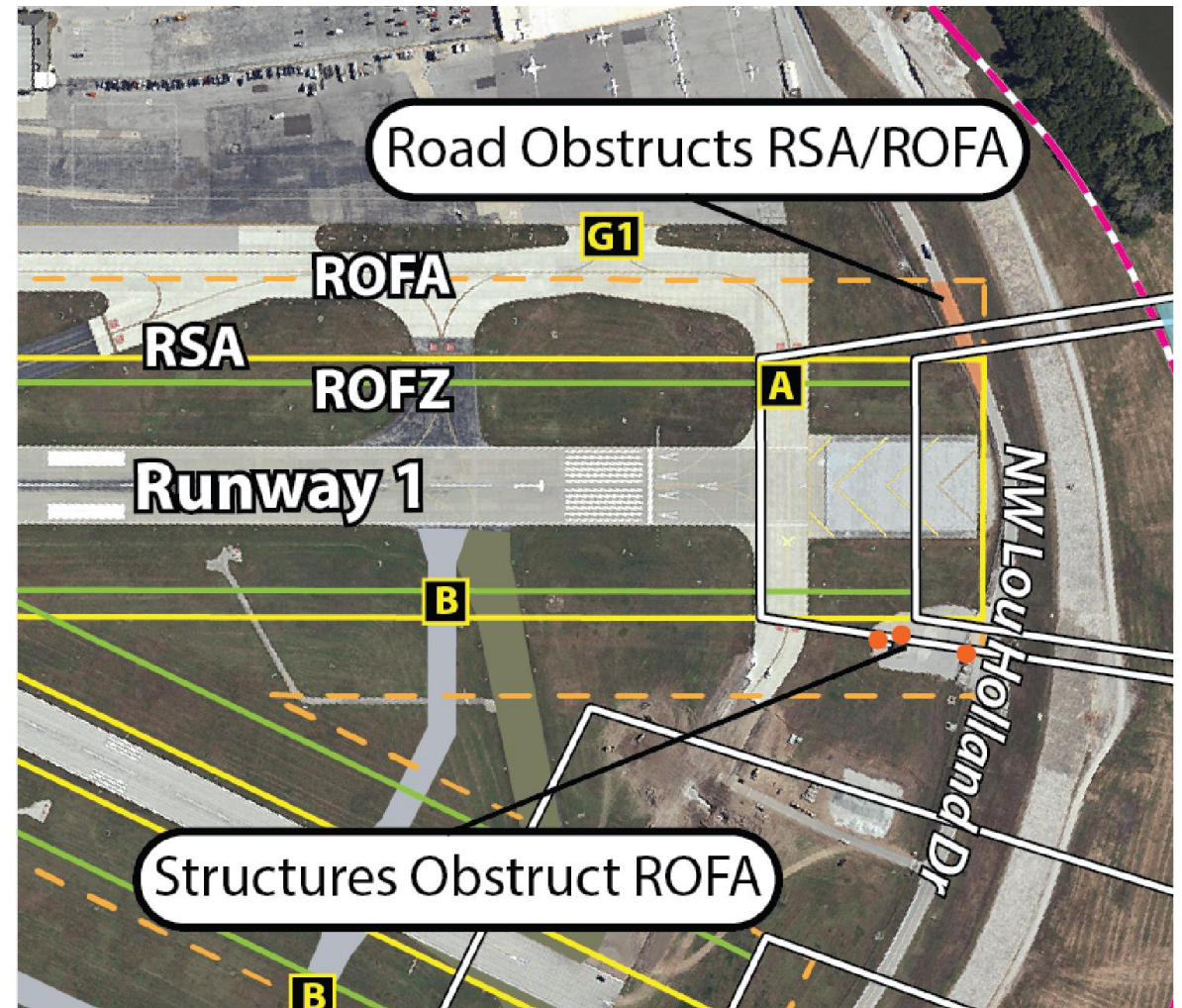
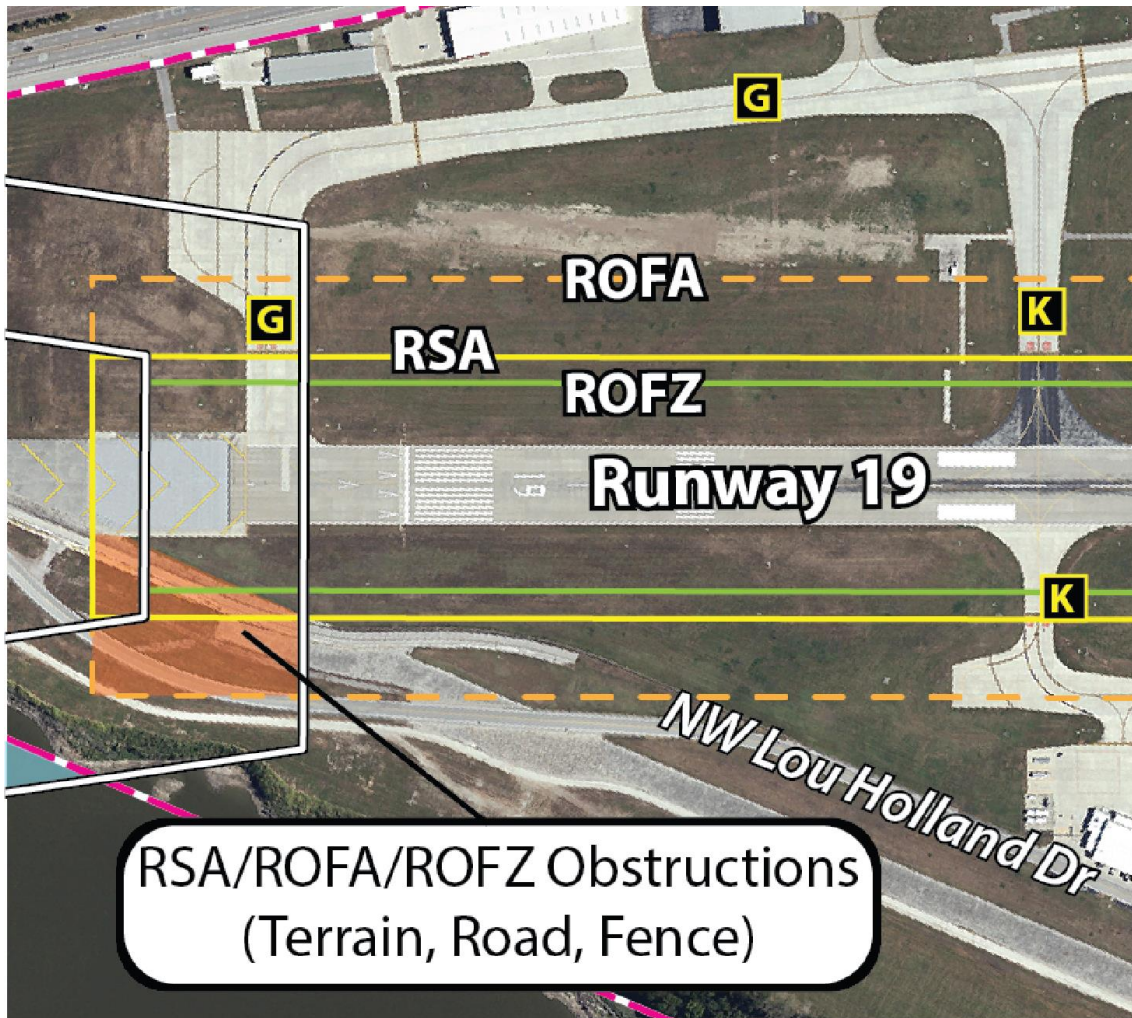


Exhibit 4E: RSA Analysis – Runway 1-19

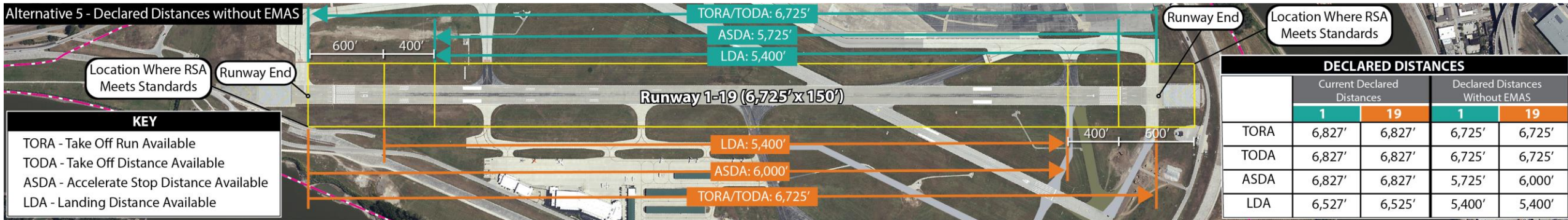
Alternative 1 - Provide Full RSA



Alternative 3 - Reduction in Runway Length



Exhibit 4E: RSA Analysis – Runway 1-19



EMAS: Engineered Materials Arresting System

Exhibit 4D: Non-standard Safety Areas & Potentially Incompatible Land Uses in RPZs (Runway 4-22)

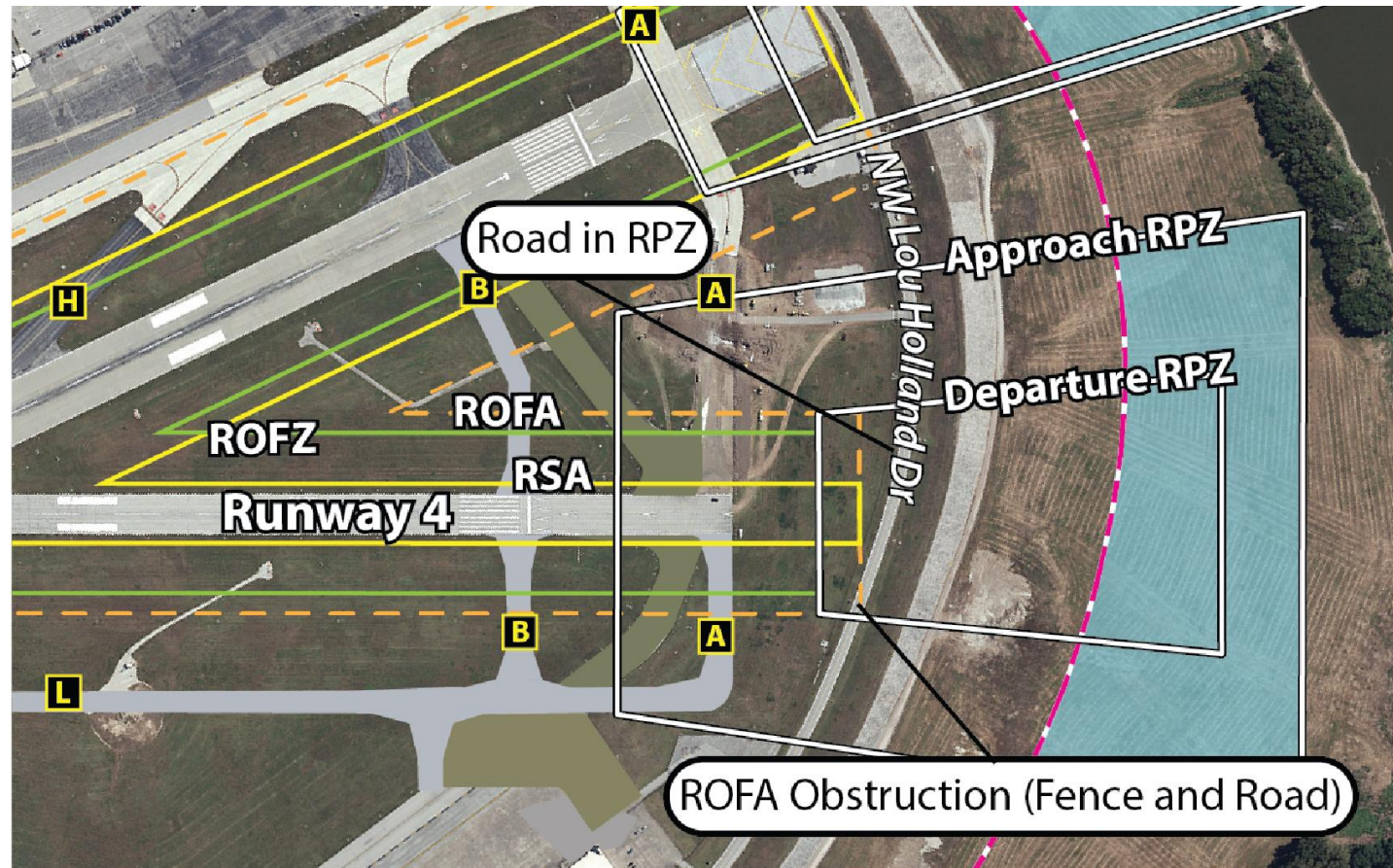
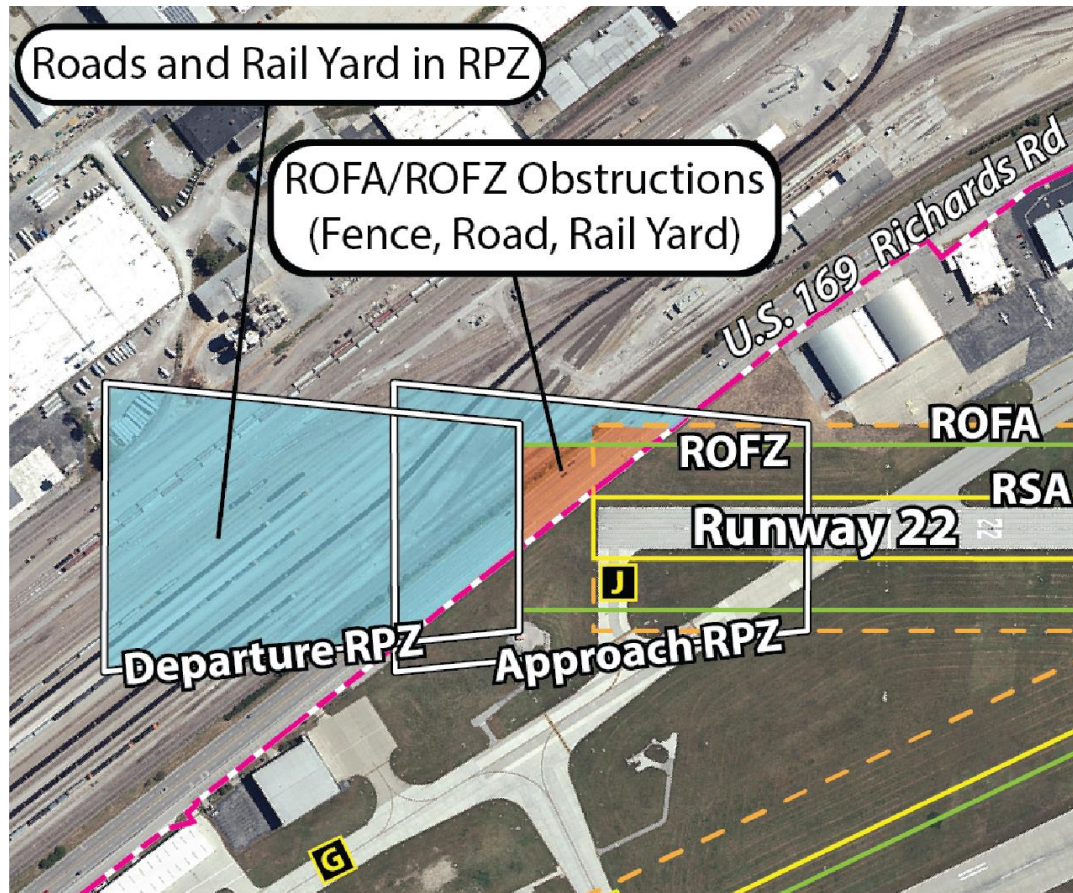
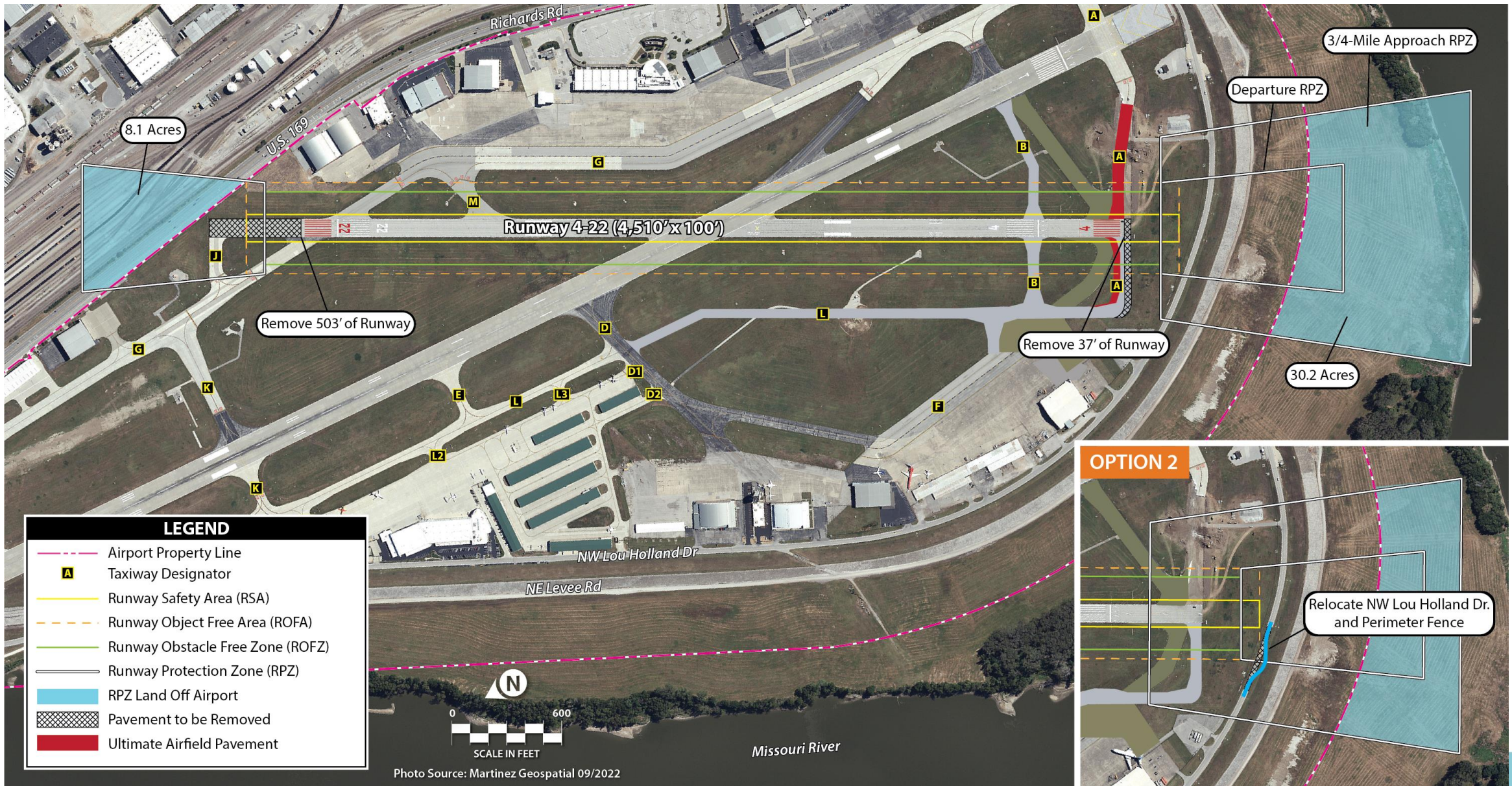


Exhibit 4F: Runway 4-22 ROFA and OFZ Alternative



Runway Safety Area Determination - Runway 1-19

Primary Guidance: FAA Order 5200.8, *Runway Safety Area Program*

Analysis Process

1. Relocation, shifting, or realignment of the runway.
2. Reduction of runway length only if the runway length exceeds what is required – 8,700' is ideal length.
3. A combination of relocation, shifting, grading, realignment, or reduction.
4. Implementation of declared distances.
5. Installation of Engineered Materials Arresting System (EMAS)

Determination (FAA)

1. The existing RSA meets the current standards defined in FAA AC 150/5300-13B, Airport Design.
2. The existing RSA does not meet current standards, but it is practical to improve the RSA so that it will meet standards.
3. The existing RSA can be improved to enhance safety, but the RSA will still not meet current standards.
4. The existing RSA does not meet current RSA standards, and it is not practical to improve the RSA.

Recommended Determination:

Runway 1-19: #4 (width cannot meet RSA standard without reducing runway length)

Runway 4-22: #1 (with declared distances)

Exhibit 1J: FAA Hot Spots

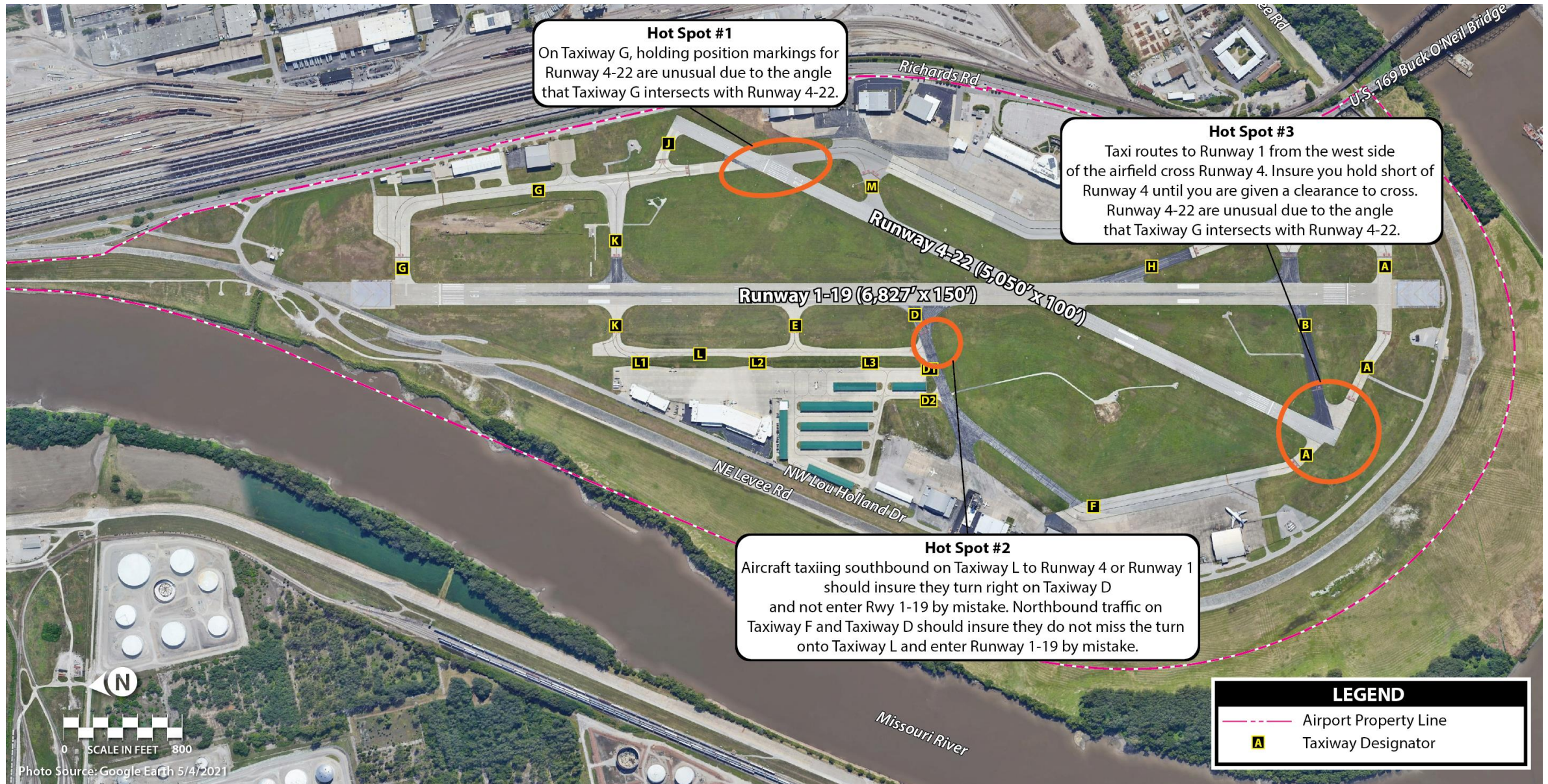


Exhibit 4G: Taxiway Alternatives

ALTERNATIVE 1

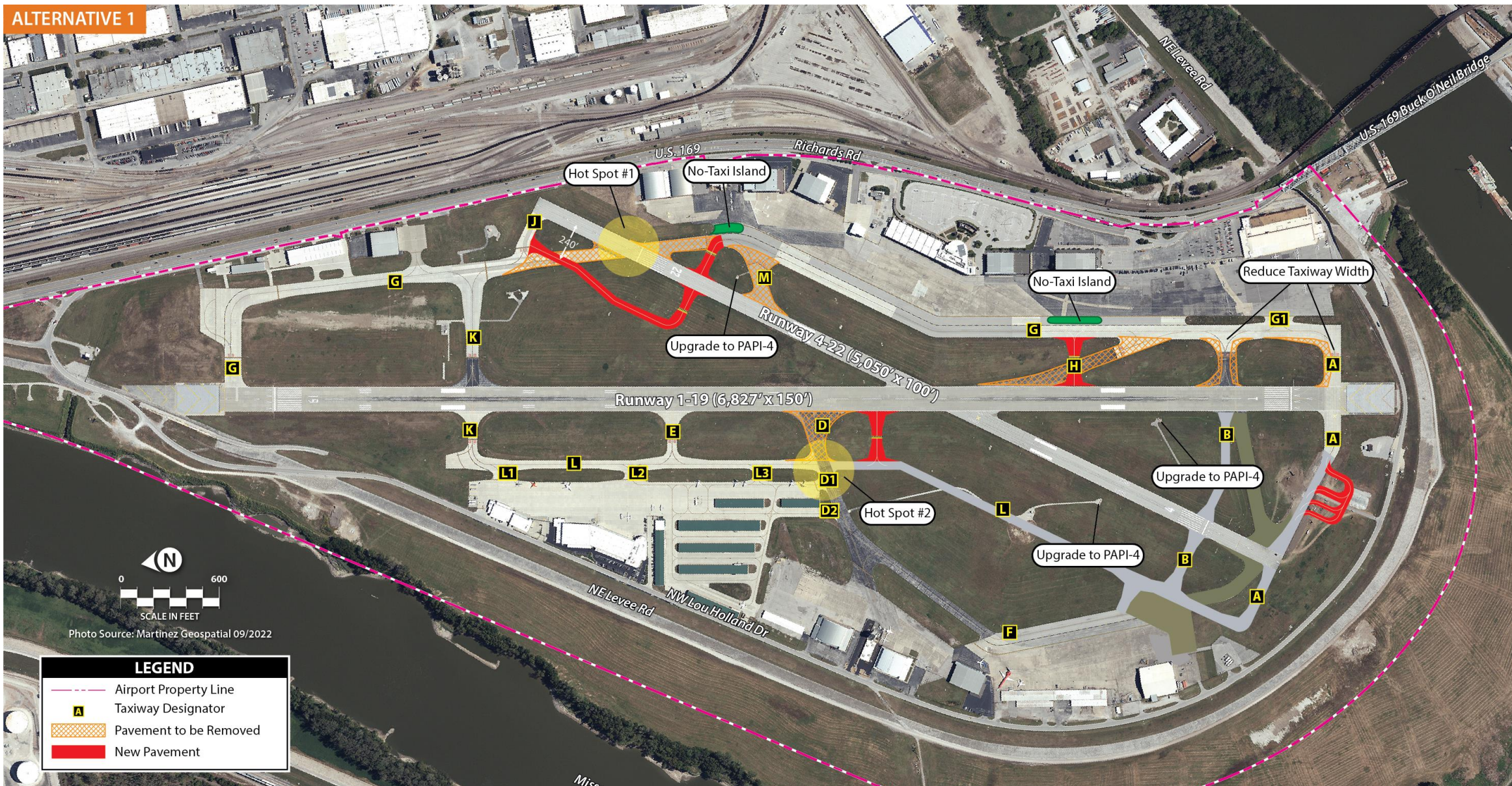


Photo Source: Martinez Geospatial 09/2022

LEGEND	
	Airport Property Line
	Taxiway Designator
	Pavement to be Removed
	New Pavement

Exhibit 4G: Taxiway Alternatives

ALTERNATIVE 2

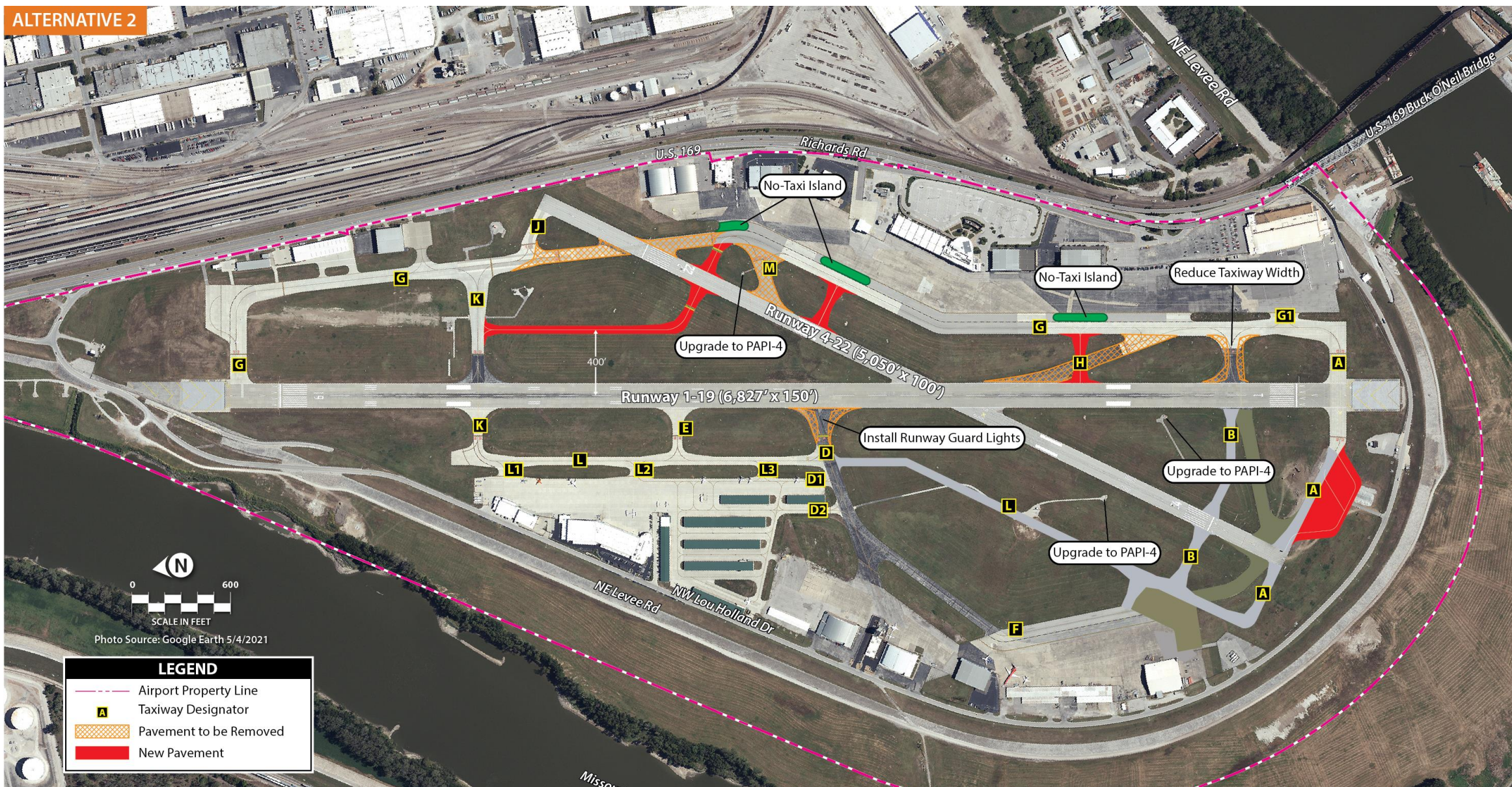


Exhibit 4G: Taxiway Alternatives

ALTERNATIVE 3

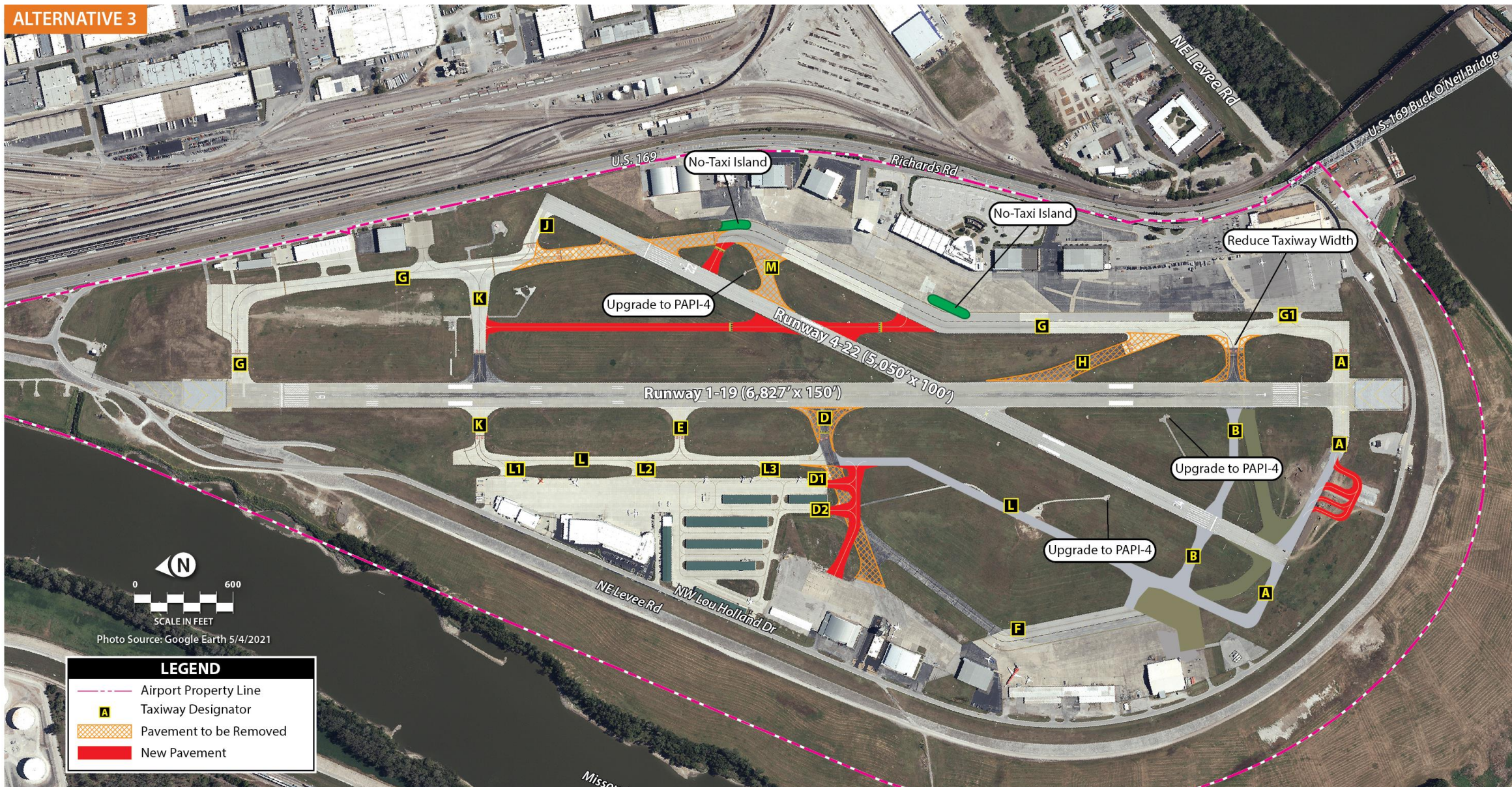


Exhibit 4H: Southwest Landside Alternative 1



Exhibit 4H: Southwest Landside Alternative 1



Exhibit 4J: Southwest Landside Alternative 2

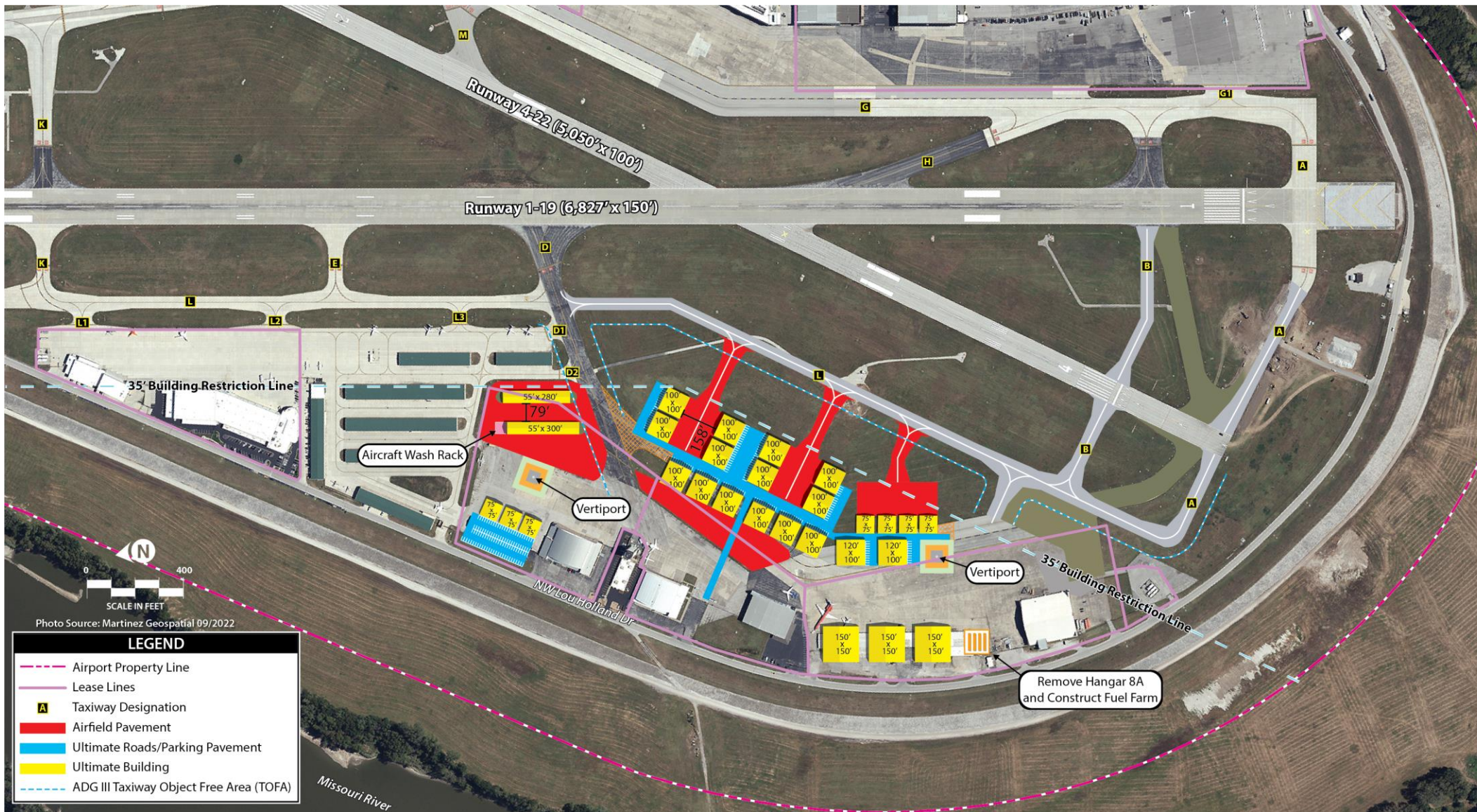


Exhibit 4J: Southwest Landside Alternative 2



Exhibit 4K: Southwest Landside Alternative 3

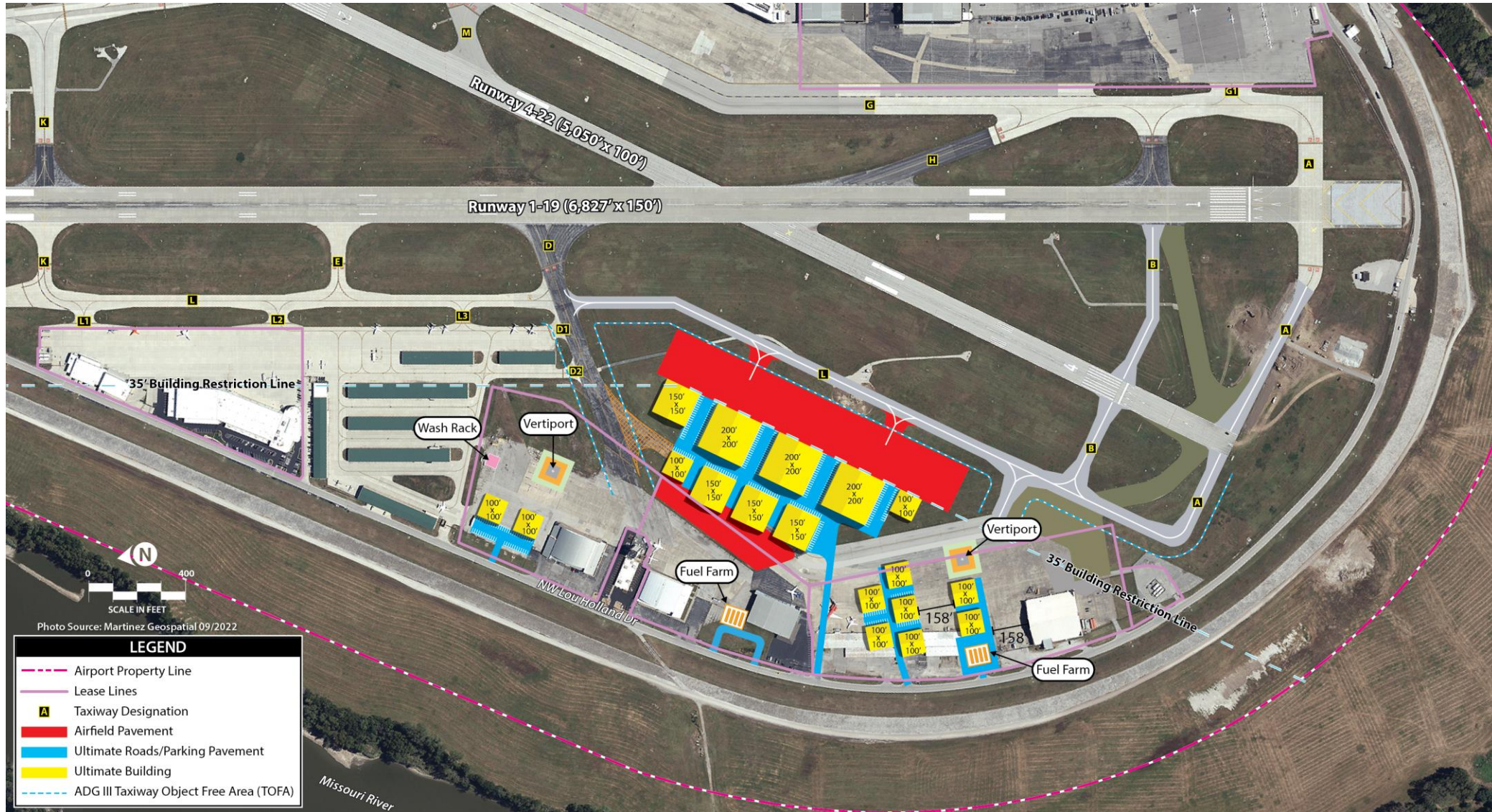


Exhibit 4K: Southwest Landside Alternative 3



Exhibit 4L: East Landside Alternatives

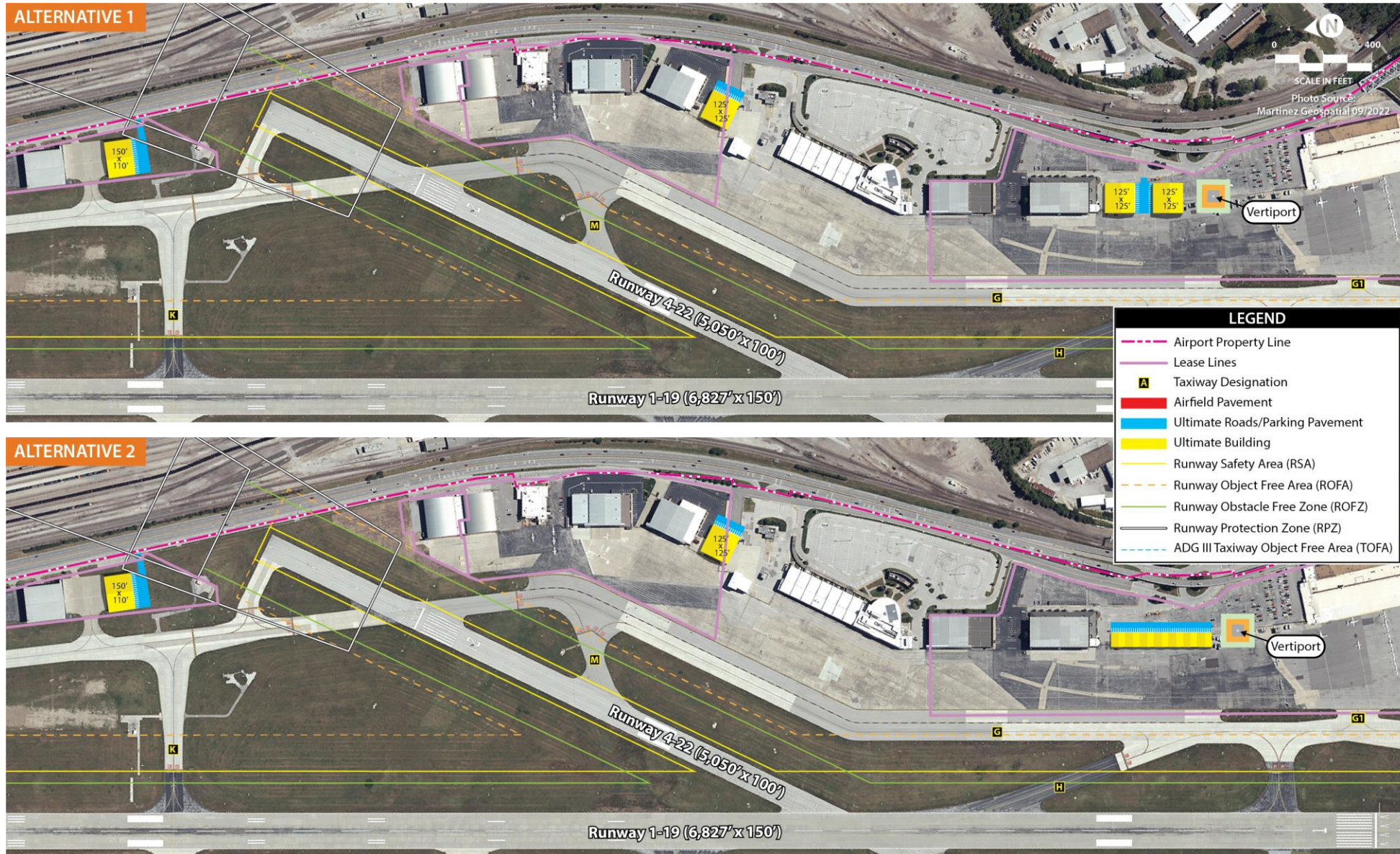
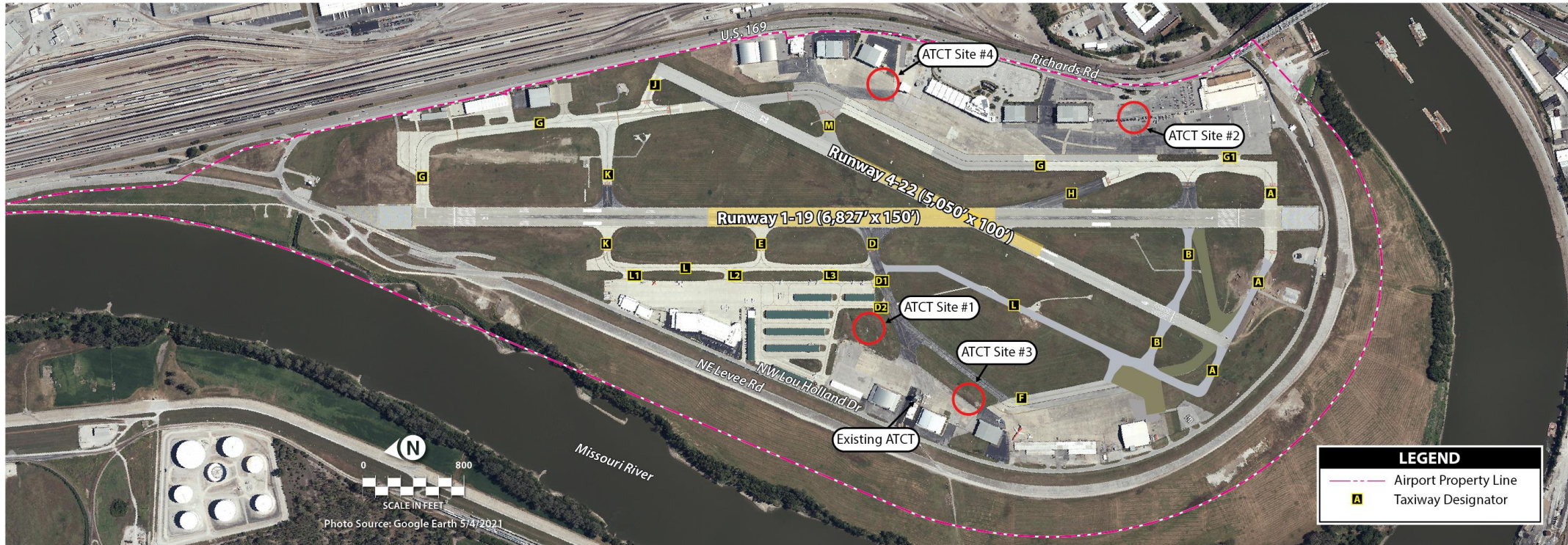


Exhibit 4M: ATCT Site Alternatives



Note: Cab heights presented are the minimum height necessary to achieve clear line-of-sight to each runway end, based on existing airport infrastructure.

NEXT STEPS



- **Receive Comments from Staff**
- **June/July PAC Meeting**
- **June/June Public Information Workshop**