



Burke Lakefront Airport (BKL) Master Plan Update

Stakeholder Meeting

October 16, 2007

*City of Cleveland
Department of Port Control (DPC)*



Project Team

§ Landrum & Brown (*Prime Consultant*)

Ø Dave Rickerson – Officer in Charge

Ø Monica Geygan – Project Manager

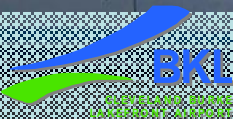
§ Sub-Consultants

Ø R.W. Armstrong (*Airport Plans*)

Ø ADCI (*Airfield Alternatives/Phasing*)

Ø McGuiness (*Cost Estimates*)

Ø DLZ (*Ground Access*)



City of Cleveland

Department of Port Control

§ Studies Currently in Progress

Ø Market Assessment & Feasibility Study

(Being Prepared by Others) – Under Review

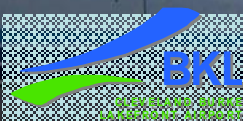
Ø BKL Assessment Study

Role of BKL in Northeastern Ohio Aviation System

(Phase One of the MPU) – Complete

Ø Airport Master Plan Update

(Phase Two of the MPU) – Initiated & Proceeding



Master Plan Update Process

Phase One

BKL Role & Function

Phase Two

**Inventory of Existing Conditions
Aviation Activity Forecast**

**Airport Facility Requirements Assessment
Development Alternatives**

**Airport Layout Plan/Implementation Plan
Airport Capital Improvement Program**

**Final Product
20-Year Development Plan**

Phase One - BKL Role & Function

§ Identify need for, capabilities, & role of BKL in Northeastern (NE) Ohio

- Ø What potential impacts would the closure of BKL present to the NE Ohio regional aviation system?
- Ø What potential impacts would the closure of BKL present to operations/capacity at Cleveland Hopkins International Airport (CLE)?
- Ø What would be the economic impact to the City of Cleveland associated with the closure of BKL?
- Ø Phase One is complete, the master plan process has commenced

Study Related Information Assessed

§ Current activities and operations at BKL

- Ø Extensive Air Taxi and Corporate Aviation activity
- Ø Role in Emergency Medical Transport and Organ Transport

§ Economic impact related information

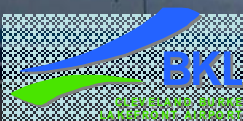
- Ø Air Show
- Ø Grand Prix
- Ø Role of BKL in serving business community and tourism in Cleveland

§ Needs and concerns of tenants/users

- Ø Airfield improvements
- Ø Support facilities and services
- Ø Part 139 services; ARFF and control tower

§ Local destinations of GA itinerant users

§ 23 alternative airports in northeast Ohio were evaluated



BKL Role & Function Conclusions

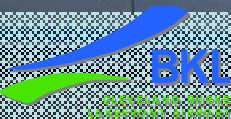
§ BKL serves a unique role in the Cleveland Airport System and will remain OPEN

Ø BKL provides unparalleled access to downtown Cleveland

Ø BKL serves as a portal to businesses, sporting venues, tourist attractions, and medical facilities

Ø No other reliever airport in the region provides the capability to meet the needs of the business jet aircraft fleet mix currently using BKL

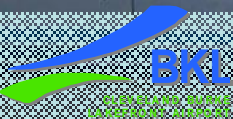
Ø Nearest viable facilities are over an hour from Cleveland



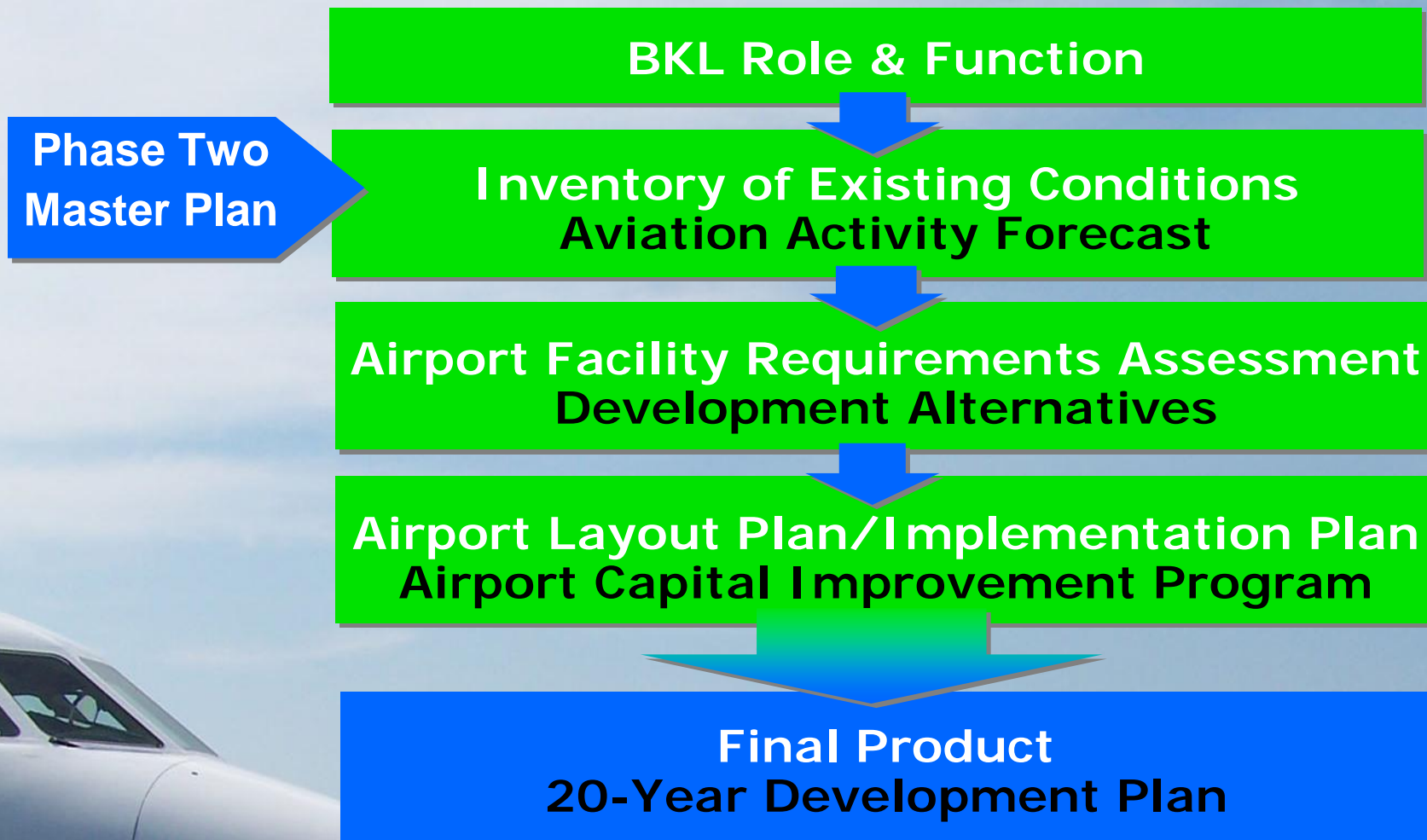
BKL Role & Function Conclusions

§ BKL serves a unique role in the Cleveland Airport System and will remain OPEN

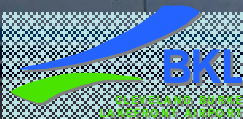
- Ø Surveys indicate that most air taxi/business jet operators would shift to CLE if BKL closed
- Ø Closure of BKL would have a significant and adverse impact to capacity at CLE
- Ø Closure of BKL, would accelerate the need for a new \$1 billion runway, planning would need to begin immediately
- Ø BKL generates an annual \$80.8 million economic impact to the regional economy (2006 dollars)



Master Plan Update Process

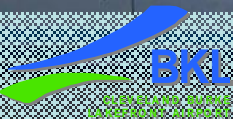


Inventory of Existing Conditions

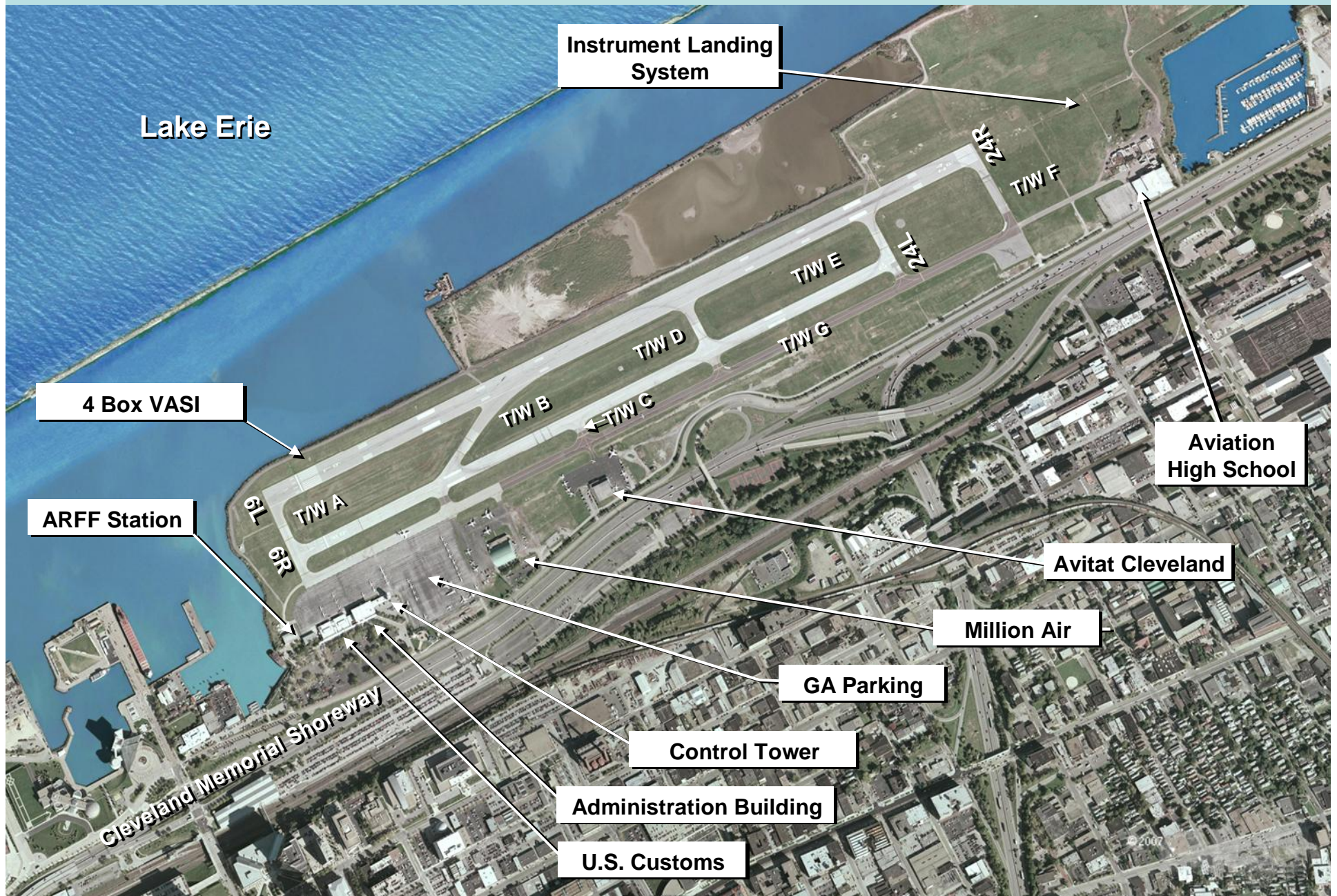


BKL Existing Facilities

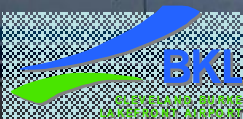
- § 450 Acres
- § Runway 6L-24R: 6,198 feet long
- § Runway 6R-24L: 5,197 feet long
- § Runway End 24R has an Instrument Landing System (ILS)
- § Air Traffic Control Tower (ATCT)
- § Terminal/Administration Building; accommodates General Aviation (GA) operations, commercial/office uses, a museum, and airport admin.
- § 2 Full-Service Fixed Based Operators (FBOs)
- § 4 Flight Schools
- § "On-Call" Customs and Immigration



Burke Lakefront Airport – Existing Facilities



Forecast of Aviation Demand



Aviation Forecasting

- § Forecasts consider socio-economic, business and tourism related characteristics
- § Review historic aircraft activity data including:
 - Ø Aircraft operations trends (Local and Itinerant)
 - Ø Based Aircraft and Fleet Mix
 - Ø Peak Operations Levels
- § Forecasts consider potential competing airports and projections developed by the FAA
- § Forecasts assess industry related factors that could influence future activity levels
- § Forecasts employ statistical methodologies for projections of future activity

General Aviation Forecast Outputs

§ Projections of future aircraft operations:

- Ø Typically developed for a 20-year time frame; BKL's projections extend to 2030
- Ø Projects both Local and Itinerant general aviation operations
- Ø Projects level of Air Taxi/Charter activity

§ Projections of future based aircraft levels and fleet mix

§ Presents activity peaking projections for use in facility planning

FAA National Forecasts

§ National Trends in the GA Industry – according to *FAA Aerospace Forecasts Fiscal Years 2006-2017*

- Ø Active GA aircraft are forecast to increase by 1.4% annually
- Ø GA hours flown are forecast to increase by 3.2% annually
- Ø Student pilots are expected to increase by 1.7% annually
- Ø GA operations are forecast to increase by 1.9% annually
- Ø Business use of GA aircraft will continue to grow more rapidly than recreational use

Factors Influencing Demand

§ Aircraft Ownership

- Ø Fractional aircraft ownership is a large part of the FAA's projected growth in GA operations through 2017

§ Diversification of GA Fleet

- Ø FAA predicts 10,000 Very Light Jet (VLJ) aircraft over a six-year period beginning in 2005
- Ø VLJ's will have a moderate impact at BKL; tending to limit growth in twin engine and turbo-prop aircraft
- Ø Single engine piston aircraft growth will be limited
- Ø Other aircraft expected at BKL include the Boeing Business Jet (BBJ), the Airbus ACJ, and A318 Elite

§ Resolution of the Future status of BKL

- Ø Past uncertainty has had a negative affect on facility investment and interest in the airport

Factors Influencing Demand *(continued)*

§ FAA Funding Changes

- ∅ The forecast assumes no major changes in FAA funding mechanisms

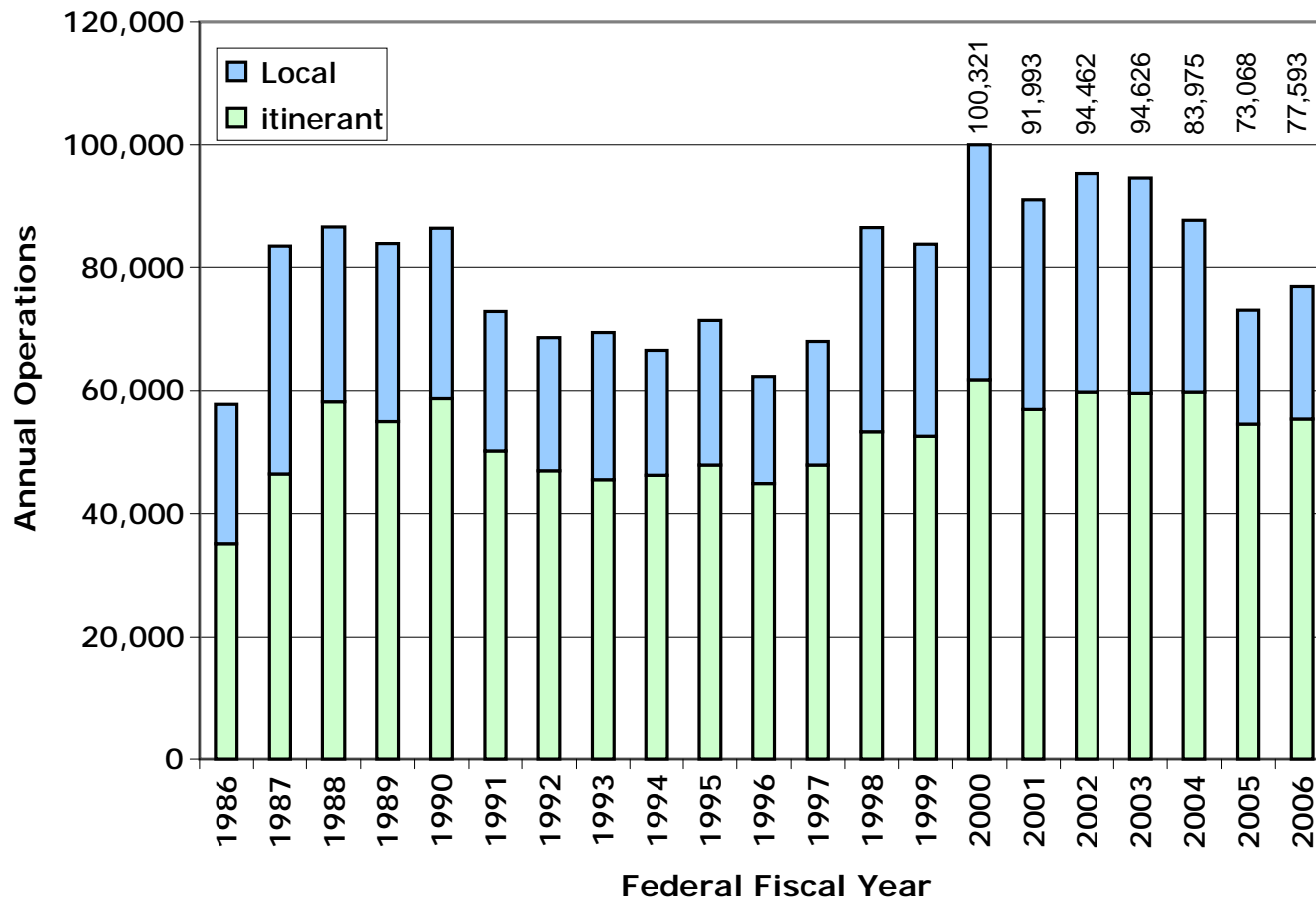
§ Changes in Security Procedures & Increased flight delays

- ∅ Increased passenger processing times and flight delays at major U.S. airports make fractional, corporate, and on-demand charter flights practical alternatives to travel on commercial flights

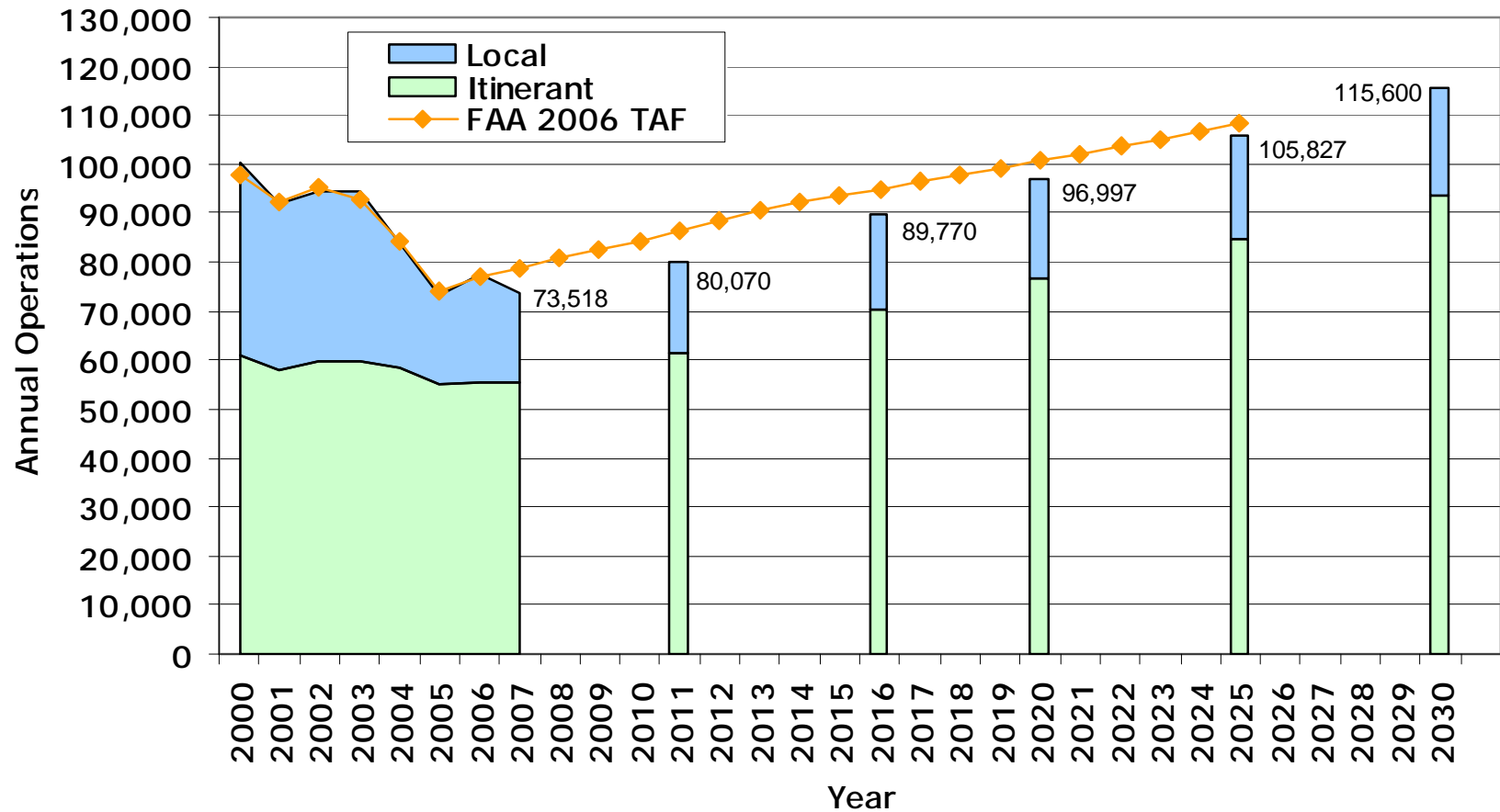
§ Changes in Role of Airports in NE Ohio

- ∅ Changes in the role or use of other airports in NE Ohio are not anticipated and will not adversely impact BKL

Historic Aircraft Operations 1986-2006



Aircraft Operations Forecast 2011-2030



Aircraft Operations Forecast Summary

- § Total Operations are forecast to increase from 77,593 in 2006 to 115,600 in 2030
- § Projections represent an average annual growth rate of 1.7 percent from 2006 to 2030
- § FAA forecasts are more aggressive than the Master Plan projections
- § The Master Plan is 7.3% below the FAA Terminal Area Forecast (TAF) in 2011 and 5.5% below the TAF in 2016

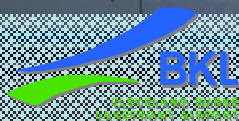
Fleet Mix Assumptions

- § BKL will remain a general aviation reliever airport
- § Air taxi operations will experience the strongest growth at BKL through 2030
- § Based on growth seen in 2002, 2003, and 2006 local GA operations are forecast to grow at an average annual rate of 1% from 2008 to 2030
- § Military activity is assumed to remain constant at 700 annual operations through 2030

Operational Fleet Mix

	Year	Itinerant Operations				Local Operations				Total Operations	
		Jet	Non-jet	Overflights	Total	Jet	Turboprop	Piston	Helicopter		Total
Actual	2006	9,587	16,560	29,371	55,518	908	-	9,529	11,639	22,075	77,593
Estimate	2007	8,615	16,058	30,988	55,661	835	-	5,822	11,200	17,857	73,518
Forecast	2011	10,880	17,088	33,558	61,526	908	-	5,710	11,926	18,544	80,070
	2016	14,560	18,694	37,073	70,328	1,010	-	5,570	12,862	19,442	89,770
	2020	16,860	19,796	40,149	76,804	1,120	-	5,460	13,613	20,193	96,997
	2025	19,550	20,751	44,354	84,655	1,300	-	5,320	14,552	21,172	105,827
	2030	22,660	21,740	49,000	93,400	1,510	-	5,190	15,500	22,200	115,600
Average Annual Growth Rates:											
	2006-2011	2.6%	0.6%	2.7%	2.1%	0.0%	n.a.	-9.7%	0.5%	-3.4%	0.6%
	2011-2016	6.0%	1.8%	2.0%	2.7%	2.2%	n.a.	-0.5%	1.5%	1.0%	2.3%
	2016-2030	3.2%	1.1%	2.0%	2.0%	2.9%	n.a.	-0.5%	1.3%	1.0%	1.8%
	2006-2030	3.6%	1.1%	2.2%	2.2%	2.1%	n.a.	-2.5%	1.2%	0.0%	1.7%

Sources: Airport Records; FAA ATADS; FAA ETMSC



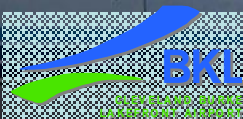
Based Aircraft & Fleet Mix Forecast

- § FAA projects BKL based aircraft to increase at an average rate of 2.4% annually from 2006-2025
- § The FAA projection is optimistic
- § Master Plan forecasts BKL based aircraft to increase at a rate of 1.6 annually through 2030
- § Based aircraft fleet mix is a reflection of an airport's operational role
- § BKL is an air taxi/corporate aviation airport due to its location in downtown Cleveland
- § BKL will see growth in based business jets of various sizes and in the level of based helicopters

Based Aircraft & Fleet Mix Forecast

	<u>Calendar Year</u>	<u>Jet</u>	<u>Multi Engine</u>	<u>Single Engine</u>	<u>Helicopter</u>	<u>Total</u>
<u>Actual</u>	2002	4	13	52	11	80
	2007	10	13	38	13	74
<u>Forecast</u>	2011	12	13	39	14	77
	2016	14	14	40	15	83
	2020	17	15	41	16	88
	2025	20	16	44	17	96
	2030	24	17	45	18	104

Airport Facility Requirements



Airport Facility Requirements Analysis

- § Quantifies capacity, capability and characteristics of all existing airport facilities, including:
 - Ø Airfield efficiency, capacity and capabilities
 - Ø Terminal area space and service requirements
 - Ø Aircraft hangars by type, tiedowns and ramp requirements
 - Ø Access and support facility needs.
- § Assesses existing facilities against forecast demand using industry accepted planning standards to identify adequacy or inadequacies
- § Quantifies facility improvements needed to fully meet activity/demand based triggers

2030 Facility Requirements Summary

§ Runway Requirements within Planning Horizon

- Ø Existing runway capacity (2 parallel runway system) is adequate to meet demand
- Ø Maintain 2 runway capability; consider increased separation between runways; relocate the inboard runway to accommodate landside development opportunities
- Ø Determine viability of addressing wind coverage issues
- Ø Maximize runway length to the extent possible to provide up to 7,000 - 7,600 feet

§ NAVAID Requirements within the Planning Horizon

- Ø Category I Instrument Landing System for Runway 6L
- Ø Upgrade Runway 6L and 24R VASI to PAPI
- Ø Provide centerline lights for Existing Runway 6L/24R
- Ø Provide Runway End Identifier Lights for Runway 6R

2030 Facility Requirements Summary

§ Airfield Safety Area Requirements within Planning Horizon

- Ø Acquire land in Runway Protection Zones to extent possible
- Ø Provide standard Runway Safety Areas for both runways
- Ø Provide standard Object Free Areas for both runways

§ General Aviation Requirements within the Planning Horizon

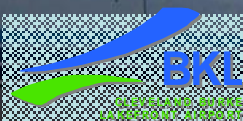
- Ø Provide executive terminal in close proximity to Fixed Base Operators (FBO's)
- Ø Provide 30,300-square foot maintenance hangar
- Ø Address deficit of 213,000 square feet of hangar space
- Ø Address deficit of 24,500 square yards of ramp space
- Ø Address deficit of 45,200 square feet of auto parking

2030 Facility Requirements Summary

§ Support Facility Requirements within Planning Horizon

- Ø Provide 4.6-acre consolidated maintenance facility
- Ø Provide consolidated deicing area with deicing fluid re-capture capability
- Ø Fueling Facilities, ARFF, and ATCT sufficient through 2030
- Ø Possible cargo facility development
- Ø Possible “business incubator” that has an aviation focus
- Ø Infrastructure Improvements

Development Alternatives



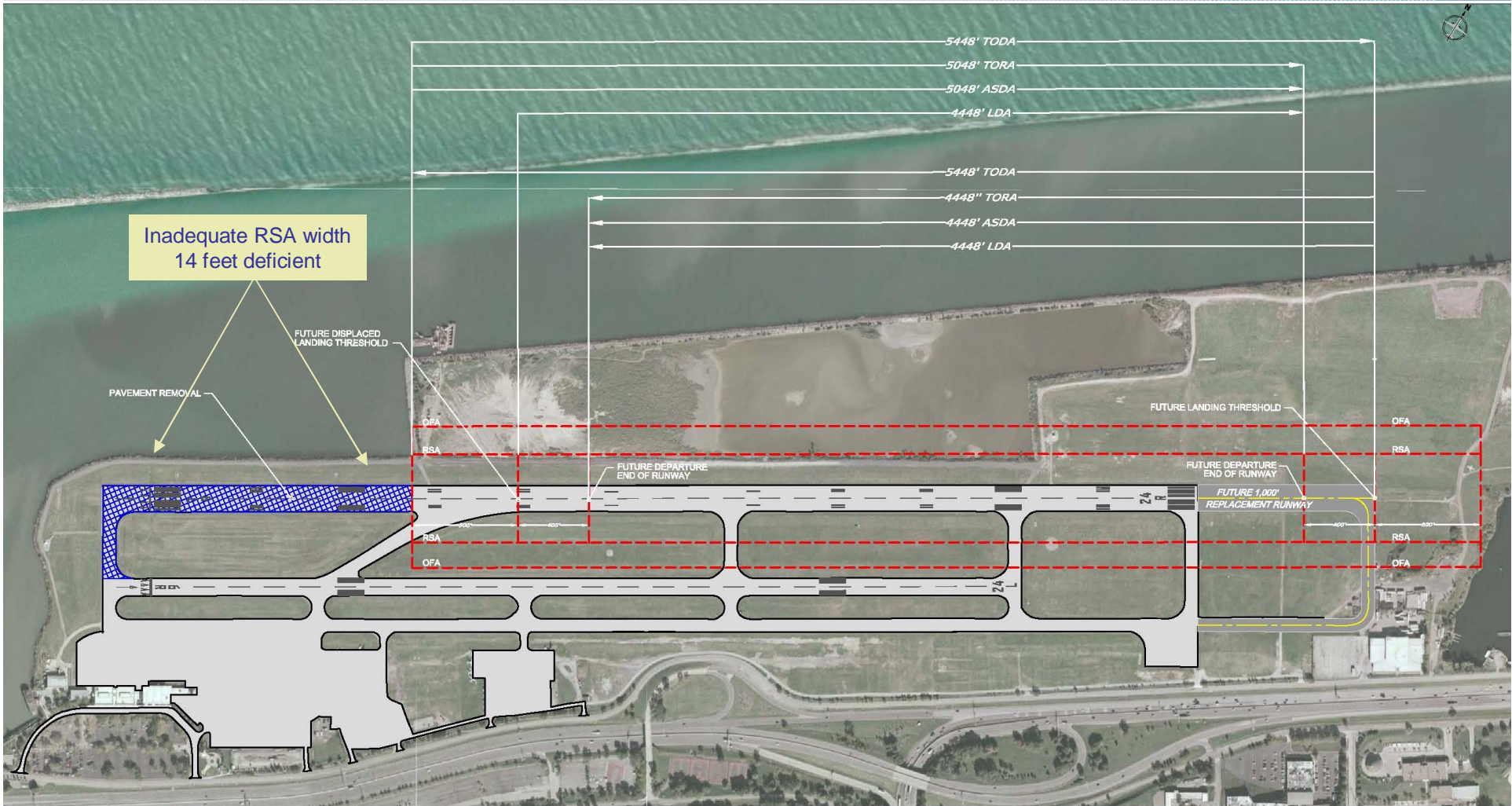
Master Plan Alternatives Process

§ **Identification of Alternatives** – Identify a series of reasonable options to meet the identified facility requirements

§ **Evaluate Alternatives** – Evaluate alternatives, individually and collectively, to gain a thorough understanding of the strengths, weaknesses, and implications of each option

§ **Selection of Recommended Alternative** – Select the option or combination of individual facility options that best meets needs in the most economical, efficient and environmentally sensitive fashion

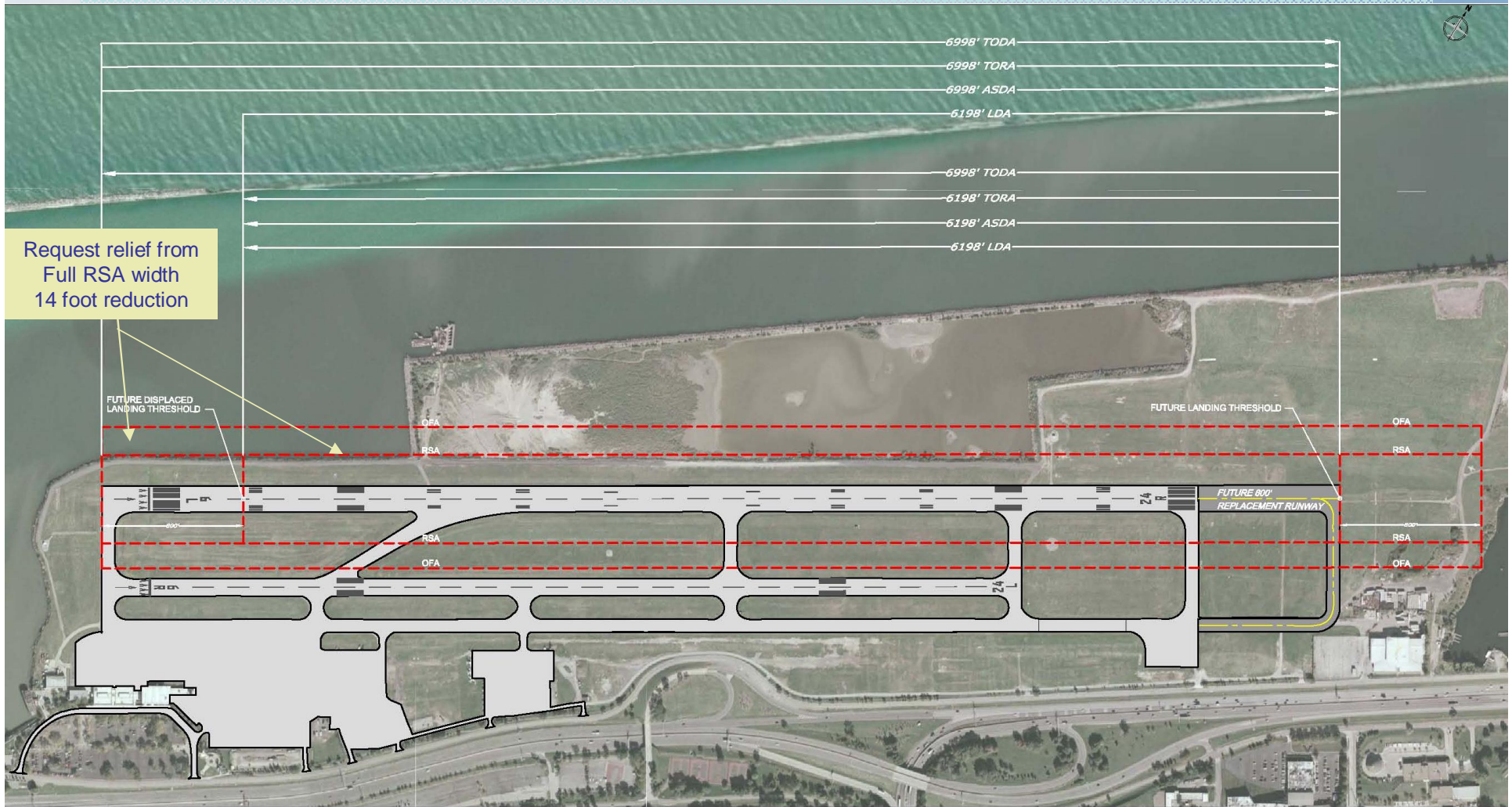
Airside Alternative 1



RSA ALTERNATIVE 1 - NO LAND RECLAMATION

Checked: [unclear] 1/10/2025
Last Saved: 1/10/2025 2:08 PM Printed On: 1/10/2025 2:18 PM
File: 112524.dwg Administrator: A:\112524\112524.dwg User: [unclear]
LWD:\[unclear]

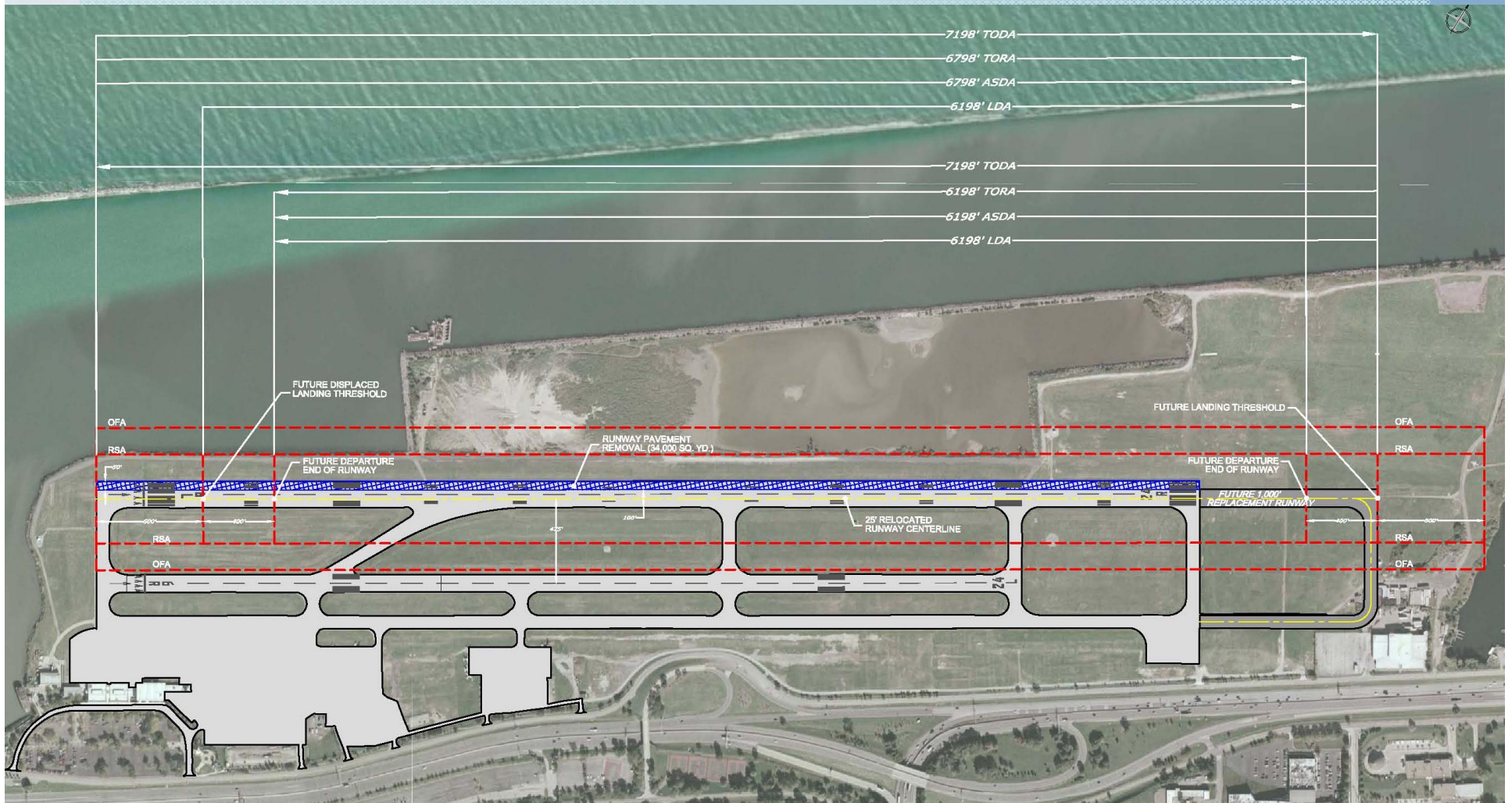
Airside Alternative 2



RSA ALTERNATIVE 2 - SUB-STANDARD RSA IMPROVEMENTS

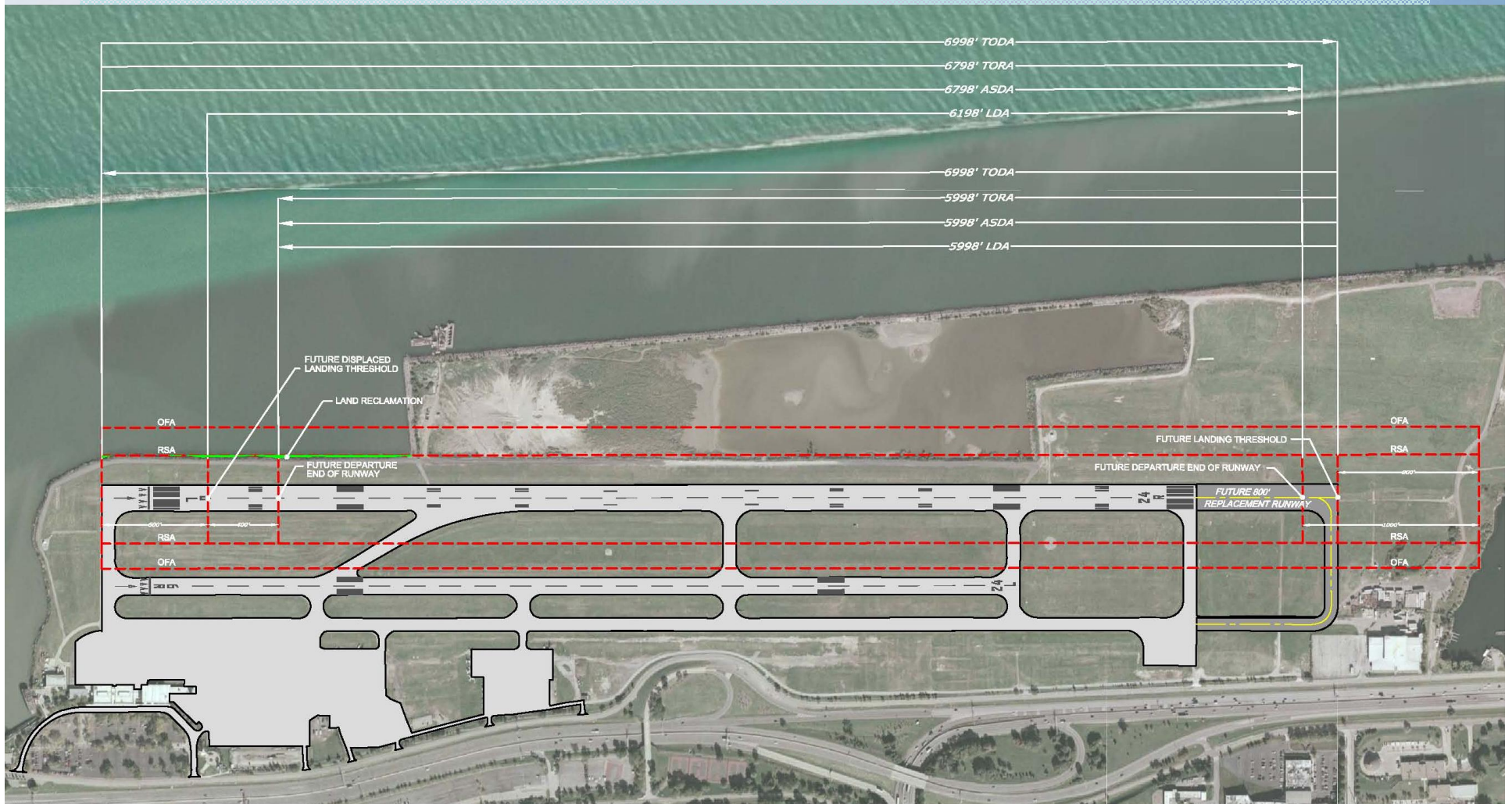
Date: 1/15/2025
 File: RSA_ALTERNATIVE_2 - SUB-STANDARD RSA IMPROVEMENTS.dwg
 Plot: RSA_ALTERNATIVE_2 - SUB-STANDARD RSA IMPROVEMENTS.dwg
 Plot Date: 1/15/2025 1:00 PM
 Plot Path: C:\Users\jgarcia\OneDrive\Desktop\RSA_ALTERNATIVE_2 - SUB-STANDARD RSA IMPROVEMENTS.dwg
 Plot Scale: 1:1
 Plot Device: HP DesignJet 5000 Series Plotter

Airside Alternative 3



RSA ALTERNATIVE 3 - R/W CENTERLINE SHIFT

Airside Alternative 4A



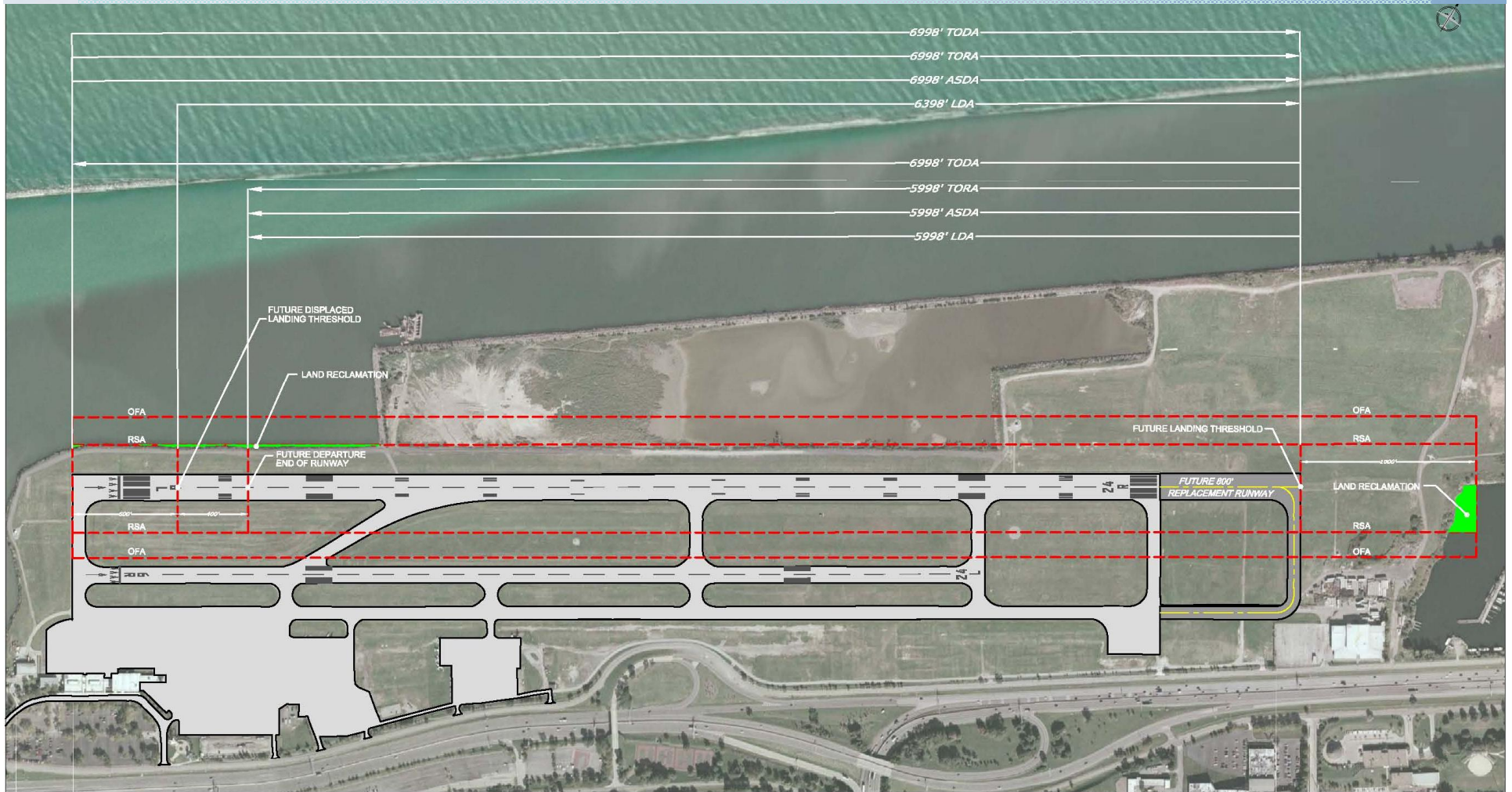
RSA ALTERNATIVE 4A - RUNWAY SHIFT EAST / 800' EXTENSION

Created: 11/18/2025
 Last Revised: 11/18/2025 5:48 PM Project No: 101800007 0-01 P&I
 File: 101800007.dwg 11/18/2025 5:48 PM User: jlp
 L&B\AutoCAD

RSA STUDY OPTION 8A



Airside Alternative 4B



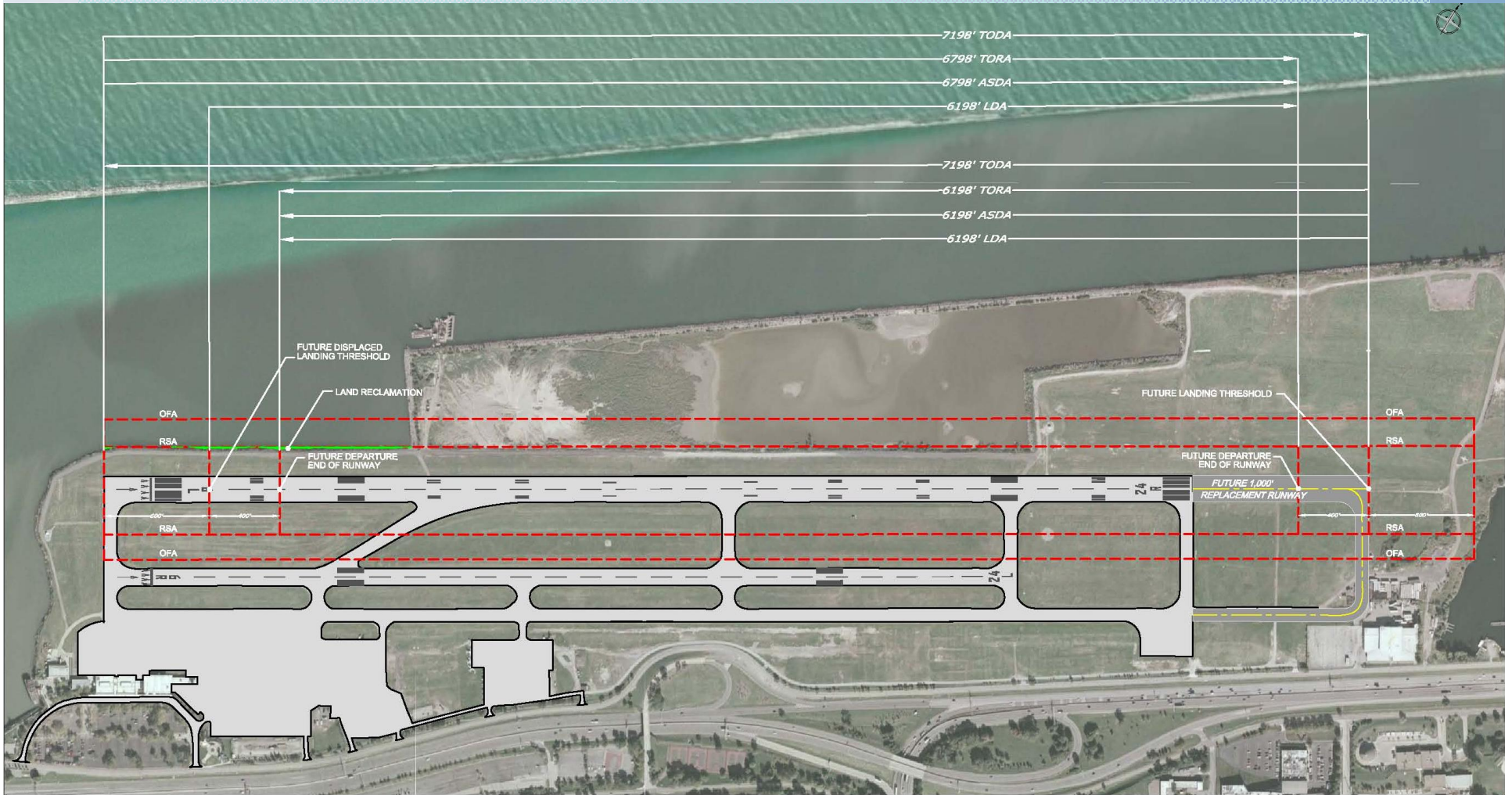
RSA ALTERNATIVE 4B - RUNWAY SHIFT EAST / 800' EXTENSION

Created: 1/17/2017
 Last Modified: 1/17/2017 1:41 PM Project No.: 101100021 07 PM
 File: 101100021\101100021_07\101100021_07_001.mxd Layer List
 L:\01100021 07

RSA STUDY OPTION 8B



Airside Alternative 5A

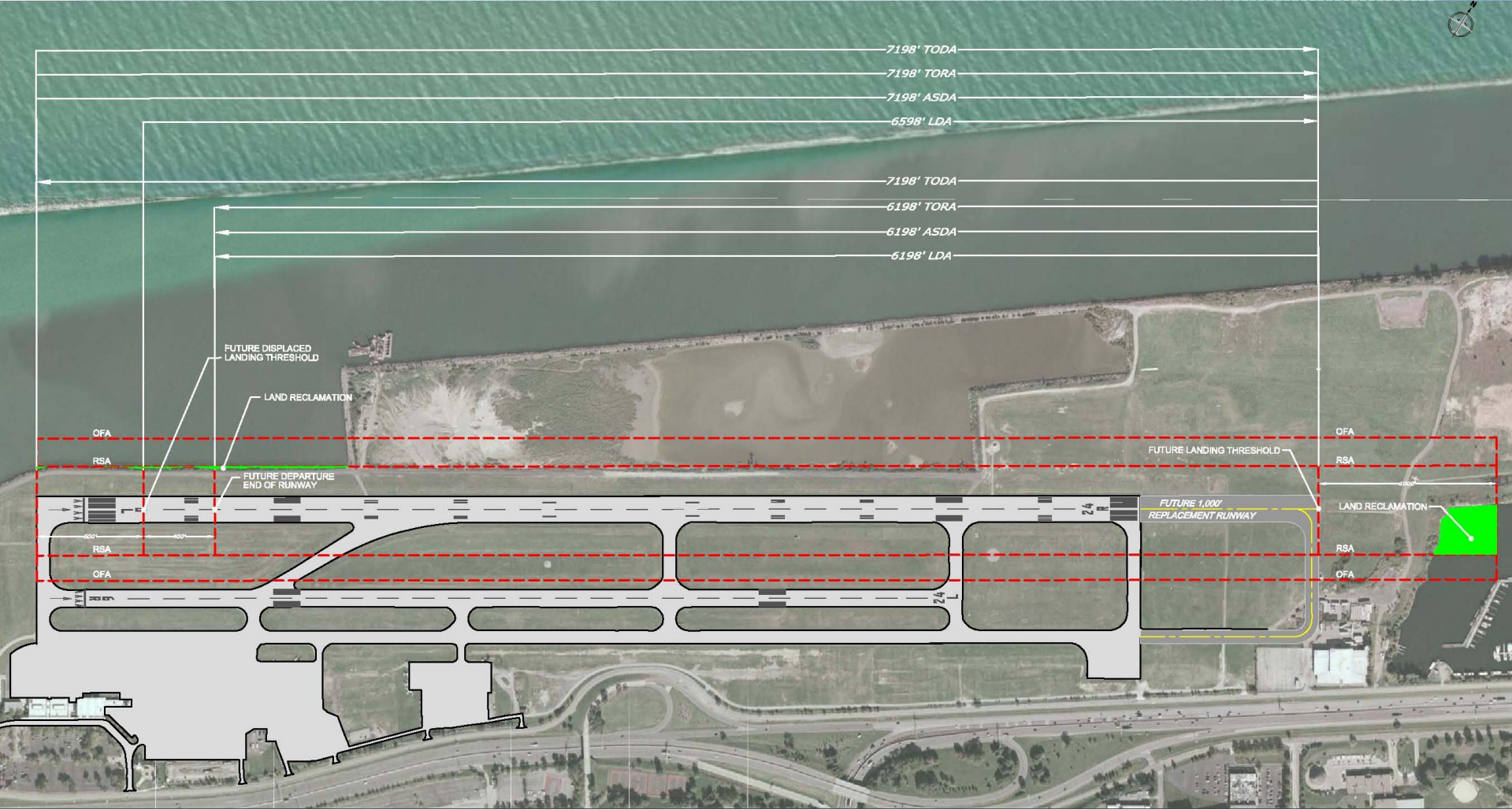


RSA ALTERNATIVE 5A - 1,000' EXTENSION

RSA STUDY OPTION 9A

Copyright © 2011
All Rights Reserved
The information herein is the property of L&B
and is not to be distributed or used in any way
without the express written consent of L&B

Airside Alternative 5B



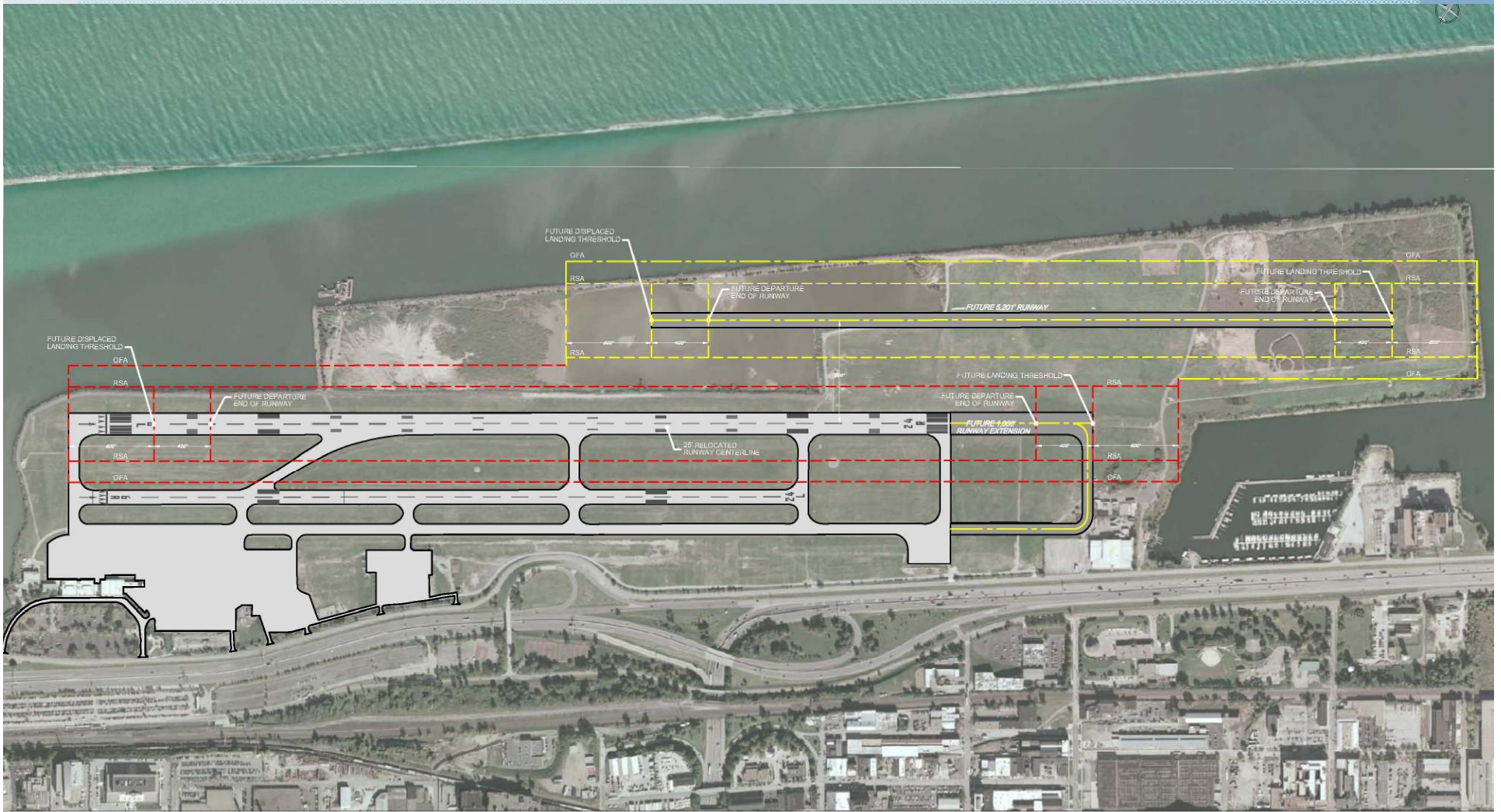
RSA ALTERNATIVE 5B - 1,000' EXTENSION

Date: 11/15/2017
 User: jg
 Path: C:\Users\jg\Documents\111517\111517_111517_111517.dwg
 Plot: 111517_111517_111517.dwg
 Plot Style: 111517.ctb
 Plot Device: HP DesignJet T1100e

RSA STUDY OPTION 9B

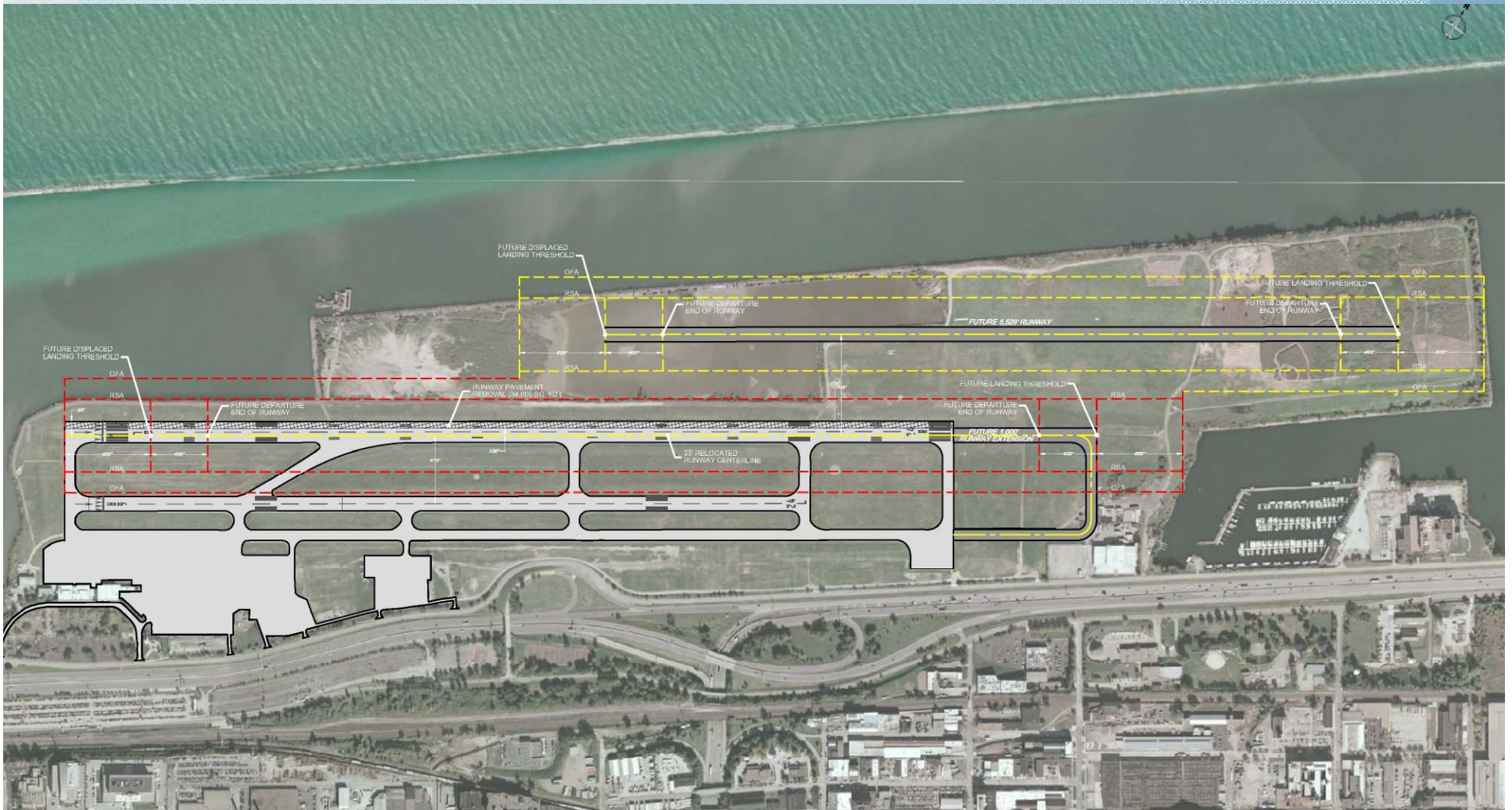


Airside Alternative 6A



PARALLEL RUNWAY ALTERNATIVE 6A - 700' OFFSET

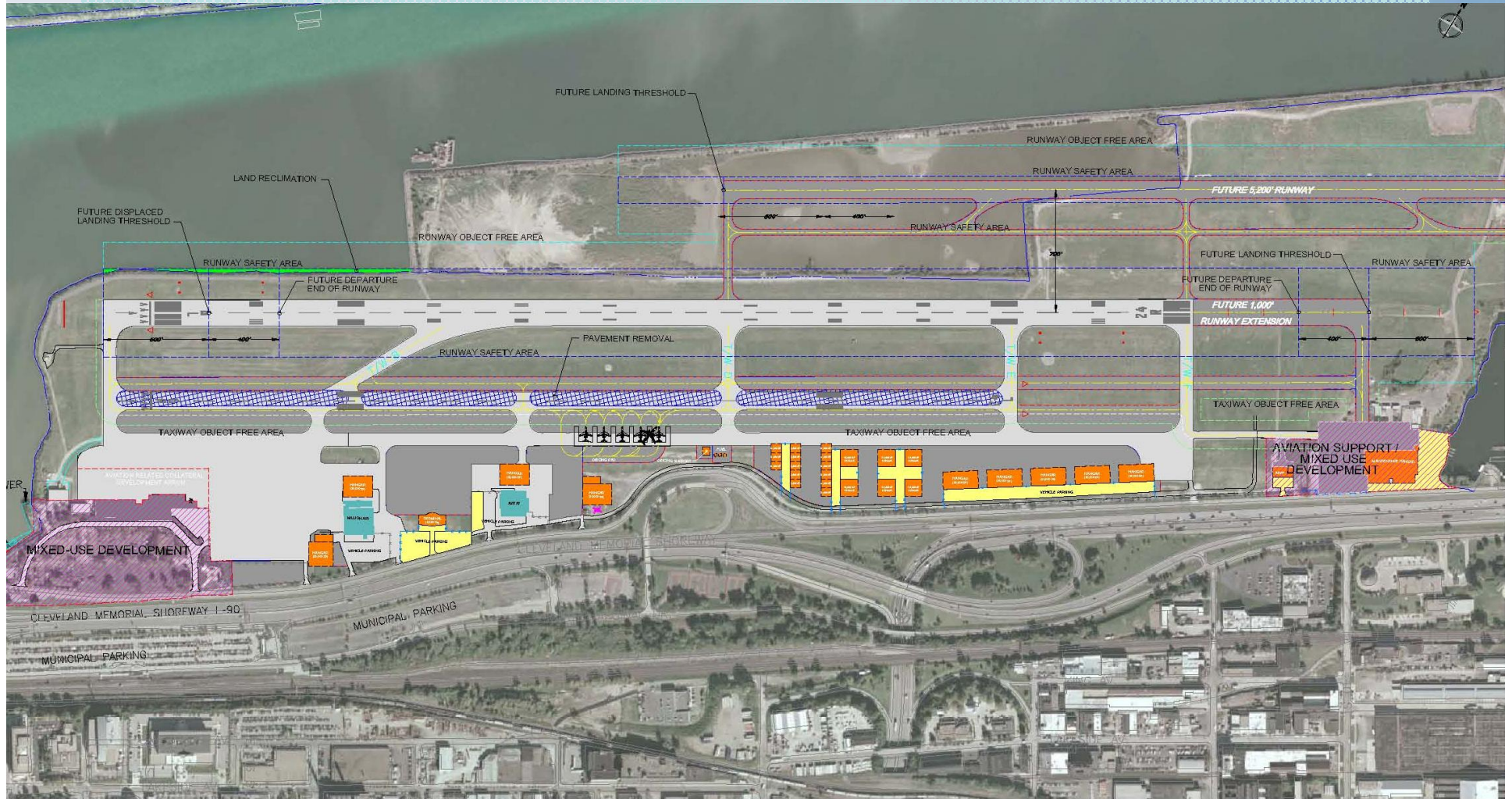
Airside Alternative 6B



PARALLEL RUNWAY ALTERNATIVE 6B - RUNWAY 6L/24R SHIFT

Copyright © 2024
100% Design 5/15/2024 10:52 AM Project No. 19112017 04.000
File: \\001\Users\mrb\6B ALTERNATIVE\6B\6B-Runway Layout.dwg
10/26/2024 10:52

Landside Alternative 1



LANDSIDE ALTERNATIVE 1 - NEW PARALLEL RUNWAY

October 11, 2014
 L&B
 10000
 10000
 10000
 10000

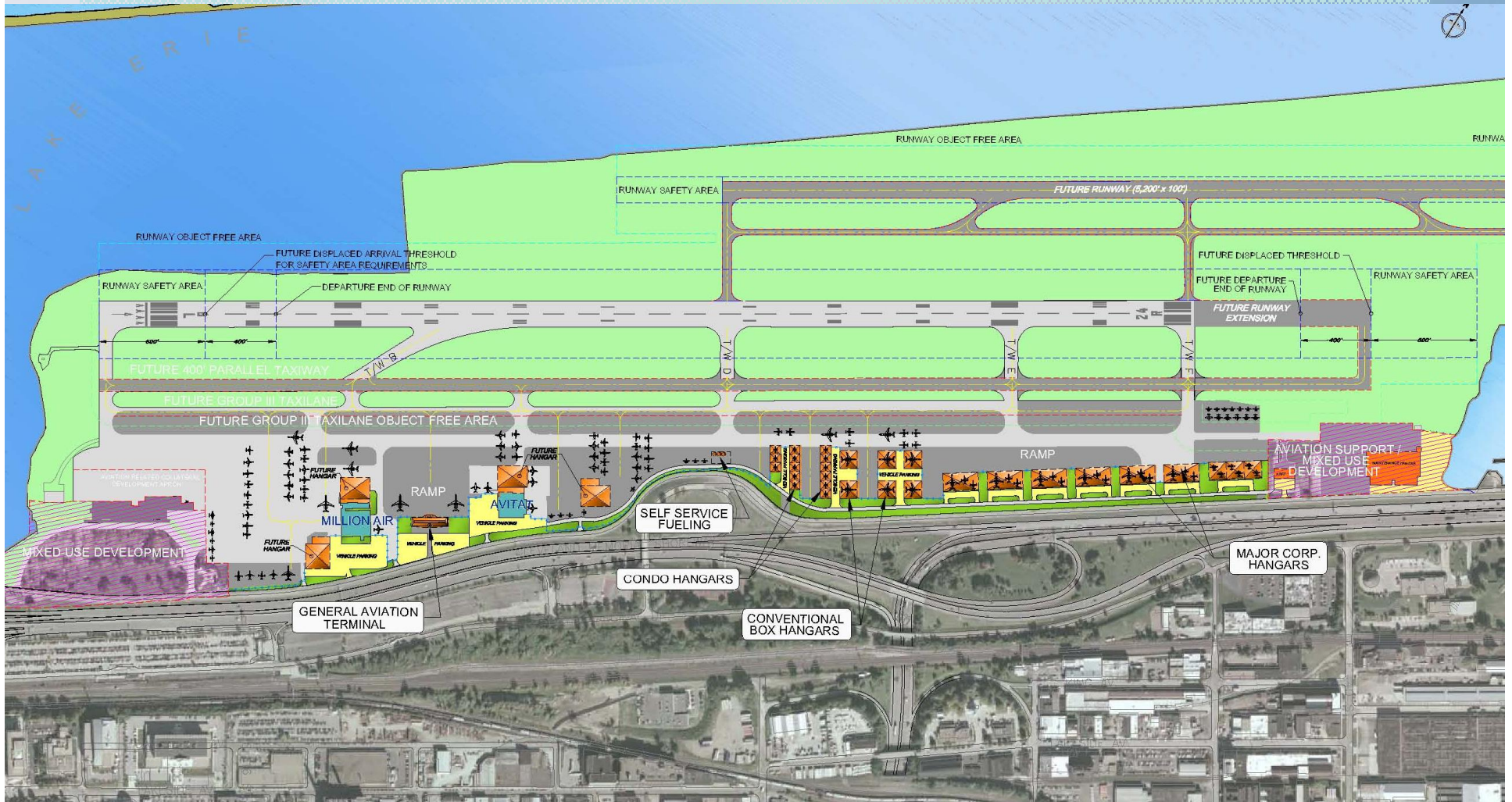
Landside Alternative 2





LANDSIDE ALTERNATIVE 2 - EXISTING AIRFIELD

C:\Users\j... \Documents\...
 File: WSP2\Information\Public\Drawings\AL2_1.dwg, Layer: Layout2
 12/28/2016 10:06

Landside Alternative – Full Build



DRAWING LEGEND

	FUTURE STRUCTURE		FUTURE PAVEMENT		FUTURE VEHICLE PARKING		FENCE LINE
	EXISTING STRUCTURE		EXISTING PAVEMENT		MIXED-USE DEVELOPMENT		TAXIWAY/TAXILANE CENTERLINE

Next Steps – Master Plan Final Products

§ Evaluate and Select Preferred Development Alternatives

§ Define the 20-Year Airport Development Plan

Ø Airport Layout Plan

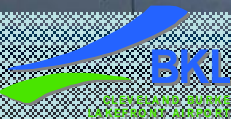
Ø Phased Implementation Plan

Ø Financial & Funding Plan

Ø Capital Improvement Plan

Ø Master Plan Document

Questions, Comments and Open Discussion





Burke Lakefront Airport (BKL) Master Plan Update

Stakeholder Meeting

October 16, 2007

*City of Cleveland
Department of Port Control (DPC)*

