1. Purpose and Need

1.1 Introduction

The City of Los Angeles, through its aviation department, Los Angeles World Airports (LAWA), proposes to construct improvements to the Runway Safety Area (RSA) for Runway 6L-24R and RSA improvements to Runway 6R-24L on the north airfield of Los Angeles International Airport (LAX) in order to comply with the requirements of the *Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006* (Public Law [P.L.] 109-115), November 30, 2005. This Act requires completion of RSA improvements by airport sponsors that hold a certificate under Title 14, Code of Federal Regulations (CFR), Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers, to comply with Federal Aviation Administration (FAA) design standards by December 31, 2015.[1] LAWA is also evaluating additional RSA improvements to Runway 6R-24L that would be implemented after December 31, 2015, which would be the subject of a separate environmental evaluation.

This Draft Environmental Assessment (EA) has been prepared by LAWA pursuant to the requirements of Section (§) 102(2)(c) of the *National Environmental Policy Act of 1969* (NEPA, 42 United States Code [U.S.C.] 4321-4370h), and § 509(b)(5) of the *Airport and Airway Improvement Act of 1982*, as amended. The FAA is the lead federal agency to ensure compliance with NEPA for airport development actions. This Draft EA has also been prepared in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*[2] and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.[3]

NEPA requires federal agencies to prepare environmental documentation that discloses to decision-makers and the interested public a clear, accurate description of potential environmental effects resulting from proposed federal actions and reasonable alternatives to those actions. Through NEPA, the U.S. Congress directed federal agencies to integrate environmental factors in their planning and decision-making processes and to encourage and facilitate public involvement in decisions that affect the quality of the human

1 U.S. National Archives and Records Administration. *Code of Federal Regulations*, Title 14, Part 139, Certification and Operations: Land Airports Serving Certain Air Carriers, January 1, 2002.

2 U.S. Department of Transportation, Federal Aviation Administration, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, June 8, 2004, Change 1, effective March 20, 2006.

3 U.S. Department of Transportation, Federal Aviation Administration, Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, effective April 28, 2006.

environment. Federal agencies are required to consider the environmental effects of a proposed action, alternatives to the proposed action, and a no action alternative (assessing the potential environmental effects of not undertaking the proposed action). This section includes a brief description of LAX; a description of the Proposed Action; the purpose of and need for the Proposed Action; a description of the requested federal actions; and a description and format of this Draft EA.

1.2 Background Information

1.2.1 DESCRIPTION OF EXISTING AIRPORT

LAWA owns and operates three airports in Southern California: LAX, Ontario International Airport (ONT), and Van Nuys Regional Airport (VNY); the latter is a general aviation airport. LAX is the largest commercial service airport in southern California, and the third busiest airport in the United States. The FAA's 2014 Terminal Area Forecast (TAF)[4] shows that LAX handled 606,348 aircraft operations in 2013 (where an aircraft operation is defined as a landing or a takeoff).[5] Passenger enplanements at LAX in 2013 were 31,947,840. In addition to passenger service, LAX is also a major center for international air cargo. In 2012, 1,780,998 metric tons of air cargo were handled at LAX.[6] Located within the City of Los Angeles, LAX is classified as a large-hub commercial service airport in the National Plan of Integrated Airport Systems (NPIAS). Hub classifications are based on the number of passengers enplaned at the Airport, and a "large hub" classification means that the Airport accommodates at least one percent of total U.S. passenger enplanements.[7] The Airport is owned and operated by LAWA, and serves as a hub for Alaska Airlines, American Airlines, Great Lakes Airlines, Horizon Air, and United Airlines.

LAX is located on the western side of the Los Angeles Basin and is generally bounded on the north by Lincoln Boulevard, Westchester Parkway, and the communities of Westchester and Playa del Rey; on the east by La Cienega Boulevard, Aviation Boulevard, and the City of Inglewood; on the south by Imperial Highway and the City of El Segundo; and on the west by the Pacific Ocean. The land area west of Pershing Drive is the former Surfridge neighborhood in the LAX/El Segundo Dunes. This area currently serves as a habitat preserve for the federally-listed El Segundo Blue butterfly. **Exhibit 1-1** depicts the general site location of the Airport.

[4] The FAA Terminal Area Forecast (TAF) is the official forecast of aviation activity at FAA facilities. These forecasts are prepared to meet the budget and planning needs of FAA and provide information for use by state and local authorities, the aviation industry, and the public.

[5] U.S. Department of Transportation, Federal Aviation Administration, *APO Terminal Area Forecast Detail Report – Los Angeles International Airport*, February 2014.

[6] Airports Council International-North America, "2012 North American Airport Traffic Summary (Top 50 Airports – Cargo)", http://www.aci-na.org/content/airport-traffic-reports, accessed March 21, 2014.

[7] U.S. Department of Transportation, Federal Aviation Administration, *Report to Congress: National Plan of Integrated Airport Systems (NPIAS), 2013-2017*, September 27, 2012.

SOURCES: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010 (runways, taxiways, terminal area, ariport property boundary).
National Geographic World Map, ESRI Database, 2011.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-1

NORTH 0 3,000 ft.

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General Location and Vicinity Map

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1.2.2 EXISTING RUNWAYS AND RUNWAY SAFETY AREAS

As illustrated in **Exhibit 1-2**, LAX has four parallel runways oriented in an east-west direction. Two runways, 6L-24R and 6R-24L, are north of the central terminal area and are generally referred to as the north airfield. The other runways, 7L-25R and 7R-25L, are south of the passenger terminal area, and are generally referred to as the south airfield.

All runways are equipped with an approach lighting system (ALS), High Intensity Runway Lights (HIRL), and a non-visual Instrument Landing System (ILS). Runway 6L-24R is 8,925 feet long by 150 feet wide and is primarily used for arrivals (aircraft landing at LAX on the north side). Runway 6R-24L is 10,285 feet long by 150 feet wide and is primarily used for departures (aircraft taking off from LAX on the north side).

As detailed in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, an RSA is "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway."[8] The RSA has dimensional requirements as well as clearing, grading, and drainage requirements. An additional safety-related function is to provide greater accessibility for firefighting and emergency rescue vehicles during such incidents.

Certification under 14 CFR Part 139 is required for all airports that serve any scheduled or unscheduled passenger operation of an air carrier conducted with aircraft having seating capacities of more than 30 passengers. LAX currently holds a 14 CFR Part 139 Certificate and must comply with the requirements of the 14 CFR Part 139 regulations. Under these regulations, each certificate holder is required to provide and maintain safety areas for runways and taxiways. FAA Order 5200.8, *Runway Safety Area Program*, establishes procedures to ensure that all RSAs at federally obligated airports and Part 139 certificated airports conform to the standards in FAA AC 150/5300-13, *Airport Design*, to the extent practicable.[9] In addition, Public Law 109-115 requires airport sponsors that hold a certificate under 14 CFR Part 139 to comply with FAA design standards for RSAs by December 31, 2015.[10]

The dimensional requirements for an RSA are based on the aircraft the runway is designed to accommodate. The Airport Reference Code (ARC) is a coding system used to relate airport design criteria to the operational and physical characteristics of the aircraft intended to operate on a particular runway. **Table 1-1** lists the FAA ARC and corresponding restrictions. The first part of a runway's ARC is a letter that represents the Aircraft Approach Category (AAC) and relates to the aircraft approach speed (operational characteristics). The second component of the ARC, depicted by a Roman numeral, is the Airplane Design Group (ADG) and relates to either the aircraft wingspan or tail height (physical characteristics), whichever is most restrictive to an aircraft's safe movement on the airport. The ADG and the AAC together are the basis for establishing RSA dimensions.

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8 U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012.

9 U.S. Department of Transportation, Federal Aviation Administration, Order 5200.8, *Runway Safety Area Program*, effective date: October 1, 1999.

10 *Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006*, Pub. L. No. 109-115, 109th Cong., 1st Sess. (November 30, 2005).

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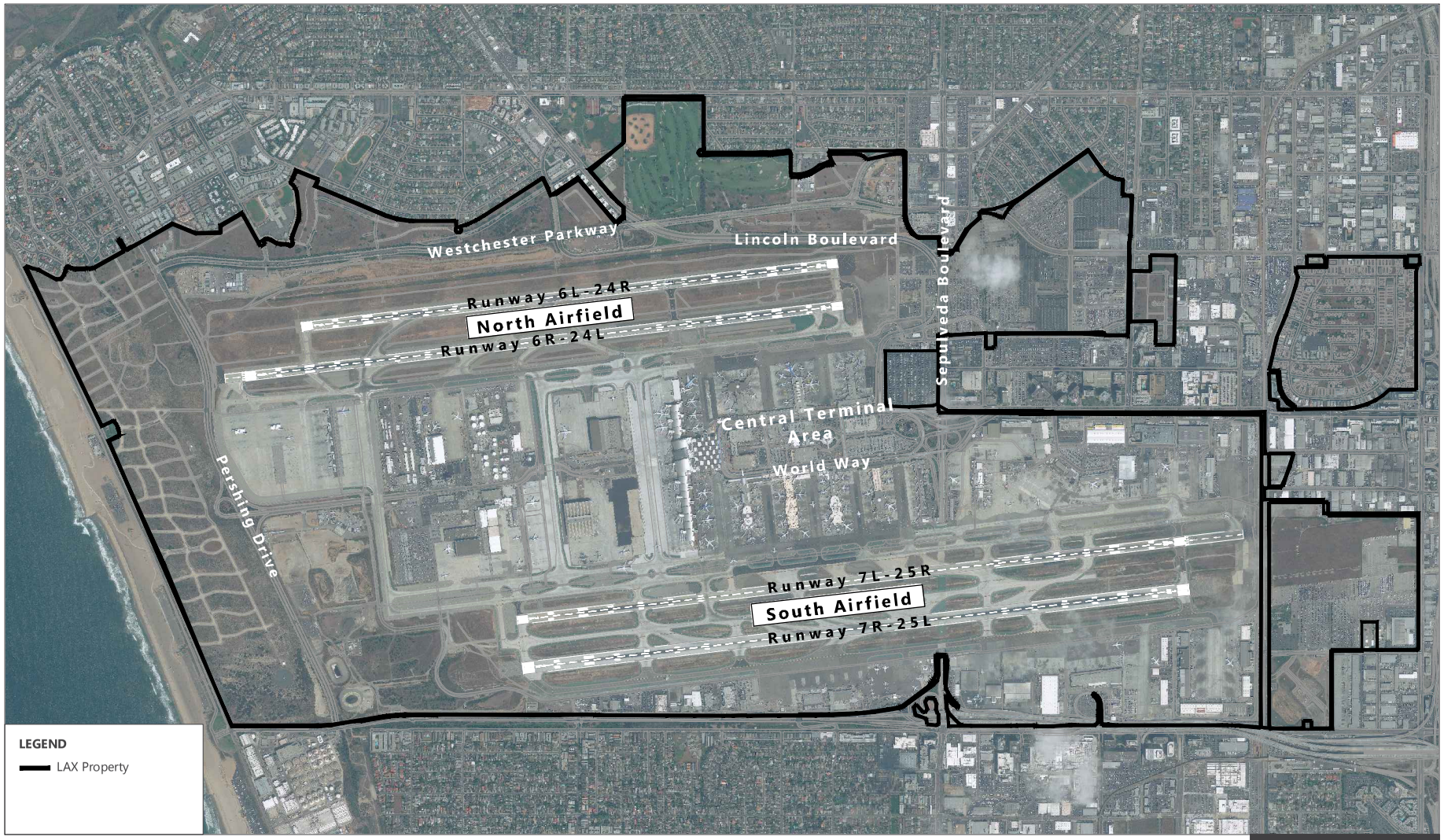

SOURCE: Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography).
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-2

NORTH 0 2,500 ft.

Existing Airfield Configuration

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Table 1-1: FAA Airport Reference Code Classifications

AIRCRAFT APPROACH CATEGORY	AIRCRAFT APPROACH SPEED	AIRPLANE DESIGN GROUP	AIRCRAFT WINGSPAN
A	Up to 91 knots	I	Up to 49 feet
B	Greater than or equal to 91 knots but less than 121 knots	II	Greater than or equal to 49 feet but less than 79 feet
C	Greater than or equal to 121 knots but less than 141 knots	III	Greater than or equal to 79 feet but less than 118 feet
D	Greater than or equal to 141 knots but less than 166 knots	IV	Greater than or equal to 118 feet but less than 171 feet
E	Greater than or equal to 166 knots	V	Greater than or equal to 171 feet but less than 214 feet
		VI	Greater than or equal to 214 feet but less than 262 feet

SOURCE: U.S. Department of Transportation, Federal Aviation Administration, AC 150/5300-13A, *Airport Design*, September 28, 2012.
PREPARED BY: Ricondo & Associates, Inc., July 2013.

Both Runway 6L-24R and Runway 6R-24L have an ARC designation of D-V. ARC D-V aircraft generally consist of wide-body aircraft, such as the Boeing 747, Airbus A340, and A350. The appropriate RSA dimensions for D-V aircraft are outlined in **Table 1-2**.

Table 1-2: RSA Dimensional Requirements for Runway Design Code D-V Aircraft

RUNWAY SAFETY AREA (RSA) DIMENSIONS AND GRADE LIMITATIONS	REQUIREMENT
RSA Width	500 feet
RSA Length Prior to Landing	600 feet
RSA Length Beyond the Runway	1,000 feet
DISTANCE BEYOND RUNWAY END	**TRANSVERSE GRADING**
Initial 200 feet	1.5% to 5% grade, no positive
Beyond 200 feet [1/]	Maximum ± 5%

NOTE:
1/ No penetration of approach surface permitted.

SOURCE: U.S. Department of Transportation, Federal Aviation Administration, AC 150/5300-13A, *Airport Design*, September 28, 2012.
PREPARED BY: Ricondo & Associates, Inc., March 2013.

In addition to dimensional requirements, the FAA has established specific design standards for RSAs[11] which include:

- Areas shall be cleared and graded with no potentially hazardous ruts, humps, depressions, or other surface variations;
- RSA grading must allow adequate drainage to prevent the accumulation of water. The installation of storm sewers is permissible within the RSA, but the elevation of the storm water inlets may not vary more than three inches from the surrounding surface elevation. The RSA limits for longitudinal and transverse grading are also outlined in Table 1-2.
- Capable, under dry conditions, of supporting snow removal equipment, Aircraft Rescue and Fire Fighting (ARFF) equipment, and the occasional passage of aircraft without causing damage to the aircraft; and
- Free of objects, except for objects that need to be located in the runway safety area because of their function.

The function of the RSA is to create a buffer between the runway pavement and non-movement areas. Takeoffs and landings are generally regarded as the most critical phases of flight: during these segments, aircraft are subject to a variety of controls and operational factors including a runway's usable operating dimensions. A growing list of RSA-related accidents has contributed to the concern that airports do not provide adequate safety areas to reduce injury to persons and property. As a result, state and federal legislation was enacted in an effort to standardize safety area requirements. The FAA coordinated a study in 1990 which identified airports currently not in compliance with RSA design requirements. Recognizing the significant safety enhancement afforded by RSA improvements, the FAA issued Order 5200.8, *Runway Safety Area Program*, in an effort to guide the improvement process by identifying potential alternatives to the traditional cleared and graded safety areas.

In accordance with Order 5200.8, the FAA made a determination in 2006 for Runway 6L-24R and Runway 6R-24L that "the existing RSA does not meet standards but is practicable to improve." Based on the requirements of Public Law 109-115, the FAA requested that LAWA evaluate and determine whether the runways at LAX meet current FAA RSA design standards. LAWA prepared an RSA Practicability Study for Runways 6L-24R and 6R-24L that included evaluation of RSA alternatives.[12] For this effort, LAWA established an RSA Study Working Group to provide input and evaluate the various RSA alternatives and to ensure that the needs of the various airport users were considered. The RSA Study Working Group was comprised of representatives from various divisions within LAX, FAA, and airlines operating at LAX. The study concluded that Runways 6R, 24L, and 24R do not meet applicable FAA RSA design standards.[13]

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11 U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012.

12 Ricondo and Associates, *Runways 6L-24R & 6R-24L Safety Area (RSA) Practicability Study for Los Angeles International Airport*, January 2010.

13 Evaluation of the RSAs associated with Runways 7L-25R and 7R-25L (the south runway complex) were performed as a separate study. RSA improvements associated with Runway 7L-25R underwent separate environmental evaluation; Runway 7R-25L was brought into compliance with RSA standards as part of the South Airfield Improvement Project.

Runway 6L-24R

As illustrated in **Exhibit 1-3**, the RSA for Runway 6L-24R is 500 feet wide for the full length of the runway; it extends 1,000 feet from the west end of the runway and 841 feet from the east end. The RSA at the west end meets all FAA requirements for arriving and departing aircraft operations. The RSA at the east end meets the 600-foot length requirement prior to the Runway 24R arrival threshold for landings, but it is 159 feet short of meeting the 1,000-foot requirement beyond the runway end for Runway 6L arrivals and departures.

In addition to the dimensional deficiencies listed above, other areas of non-compliance include:

- Portions of a service road and drainage channel north of the runway are located within the RSA dimensions; and
- Portions of a service road south of the runway are located within the RSA dimensions.

Runway 6L-24R is the primary arrivals runway on the north airfield. As such, portions of this runway handle a large amount of traffic. Due to heavy usage over the years, sections of the pavement have deteriorated and are in need of rehabilitation. The current Pavement Condition Index (PCI) rating for these pavements varies from 0 to 70, indicating that portions of the runway pavements are in a poor (0) to fair (70) condition.

Runway 6R-24L

The existing RSA for Runway 6R-24L is 500 feet wide for the full length of the runway; it extends 165 feet from the west end of the runway and 885 feet from the east end as shown in **Exhibit 1-4**. The existing RSA at the west end is 835 feet short of meeting the RSA standard beyond the runway end for Runway 24L arrivals and departures. Runway 6R also has a displaced threshold of 331 feet. A displaced threshold is a threshold that is located at a point on the runway beyond the beginning of the runway. It is in place due to obstructions off the end of Runway 6R (namely dunes) that penetrate the 14 CFR Part 77 approach surface[14] that begins at the end of Runway 6R. With the existing 331-foot displaced threshold, the 14 CFR Part 77 approach surface clears these obstructions. With this displaced threshold, the RSA 600-foot length requirement prior to the Runway 6R arrival threshold is 104 feet short of meeting the FAA standard. The existing RSA meets the 600-foot RSA length prior to the Runway 24L arrival threshold for landings, but it is 115 feet short of the 1,000-foot length requirement beyond the runway end for Runway 6R arrivals and departures.

[14] 14 CFR Part 77 (Federal Aviation Regulation [FAR] Part 77) establishes the standards for determining obstructions to navigable airspace through the establishment of imaginary surfaces that need to be protected for the safe and efficient operation of aircraft.

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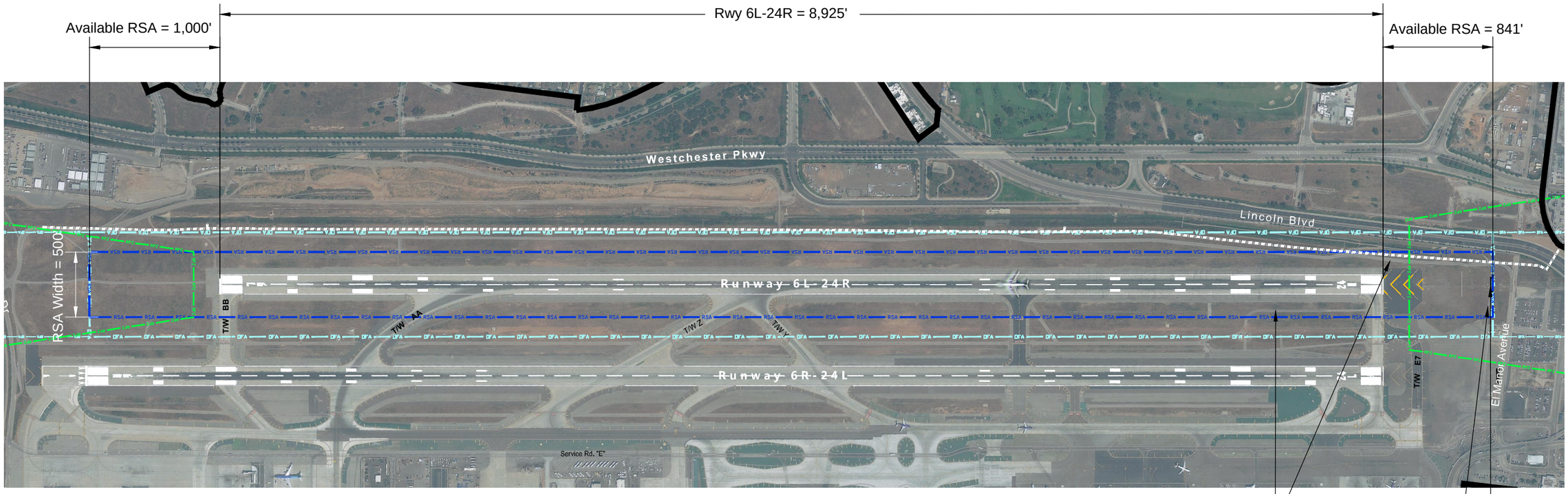

LEGEND

- LAX Property Boundary
- Runway Safety Area
- Runway Object Free Area
- Runway Protection Zone
- LA Dept. of Water and Power Water Main

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design,* September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., July 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

NORTH 0 800 ft.

EXHIBIT 1-3

Runway 6L-24R
Existing Conditions

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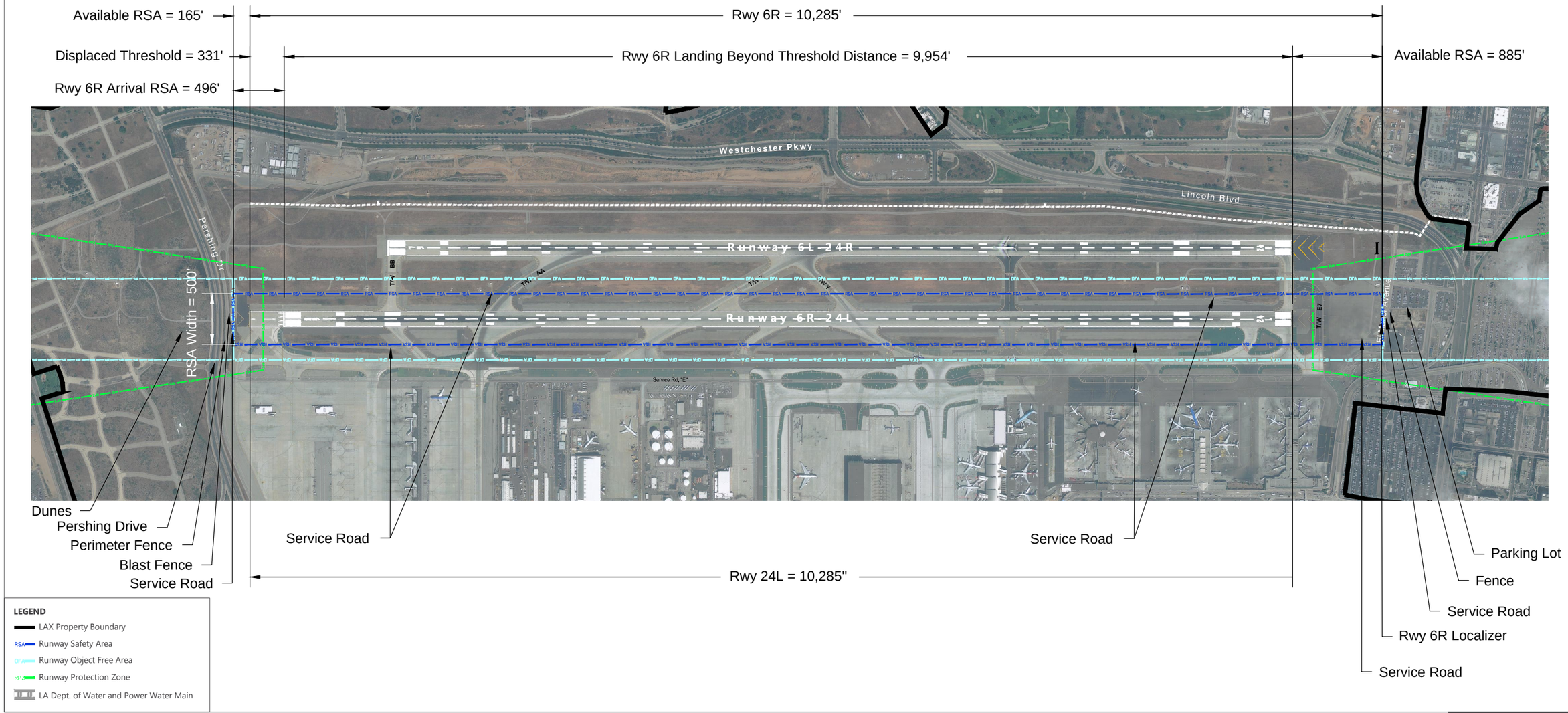

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design,* September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., July 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-4

Runway 6R-24L
Existing Conditions

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Areas of Non-Compliance

Exhibit 1-5 depicts the areas of non-compliance for Runway 6L-24R and Runway 6R-24L.

Areas of non-compliance for Runway 6L-24R include:

- At the west end of the runway, objects that are located within the standard RSA dimensions (1,000 by 500 feet) include portions of two service roads;
- At the east end of the runway, objects that are located within the standard RSA dimensions (1,000 by 500 feet) include, but are not limited to, the Runway 6L localizer, a service road, a perimeter fence, a parking lot, and a portion of a public sidewalk along Lincoln Boulevard; and
- Portions of a service road south of the runway are located within the RSA dimensions.

Areas of non-compliance for Runway 6R-24L include:

- At the west end of the runway, objects that are located within the standard RSA dimensions (1,000 by 500 feet) include, but are not limited to, a jet blast fence, a service road, a perimeter fence, a public roadway (Pershing Drive), and dunes;
- At the east end of the runway, objects that are located with the standard RSA dimension (1,000 by 500 feet) include, but are not limited to, the Runway 6R localizer, portions of a service road and parking lot, and perimeter fencing;
- Portions of a service road north of the runway are located within the RSA dimensions; and
- Portions of a service road south of the runway are located within the RSA dimensions.

1.3 Description of the Proposed Action

The Los Angeles World Airports is proposing the following improvements to comply with Public Law 109-115 that requires all 14 CFR Part 139 certificated airports to meet FAA design standards for RSAs by December 31, 2015.[15] In order to meet the requirements of Public Law 109-115, LAWA is proposing to implement improvements to Runway 6L-24R and Runway 6R-24L by December 31, 2015. However, the proposed improvements to Runway 6R-24L will not address all non-compliance issues. LAWA is continuing to develop alternatives to address all of the RSA non-compliance issues for Runway 6R-24L and will undertake those improvements in the future. The improvements proposed by LAWA for Runway 6R-24L will improve the RSA for this runway and can be implemented prior to December 31, 2015.

[15] The figures presented in this document are intended to describe the overall nature and intent of the Proposed Action, other alternatives, and technical information of environmental impacts. Figures show project elements at a planning level of detail. Final design project refinement may result in requirements that vary slightly from those shown herein.

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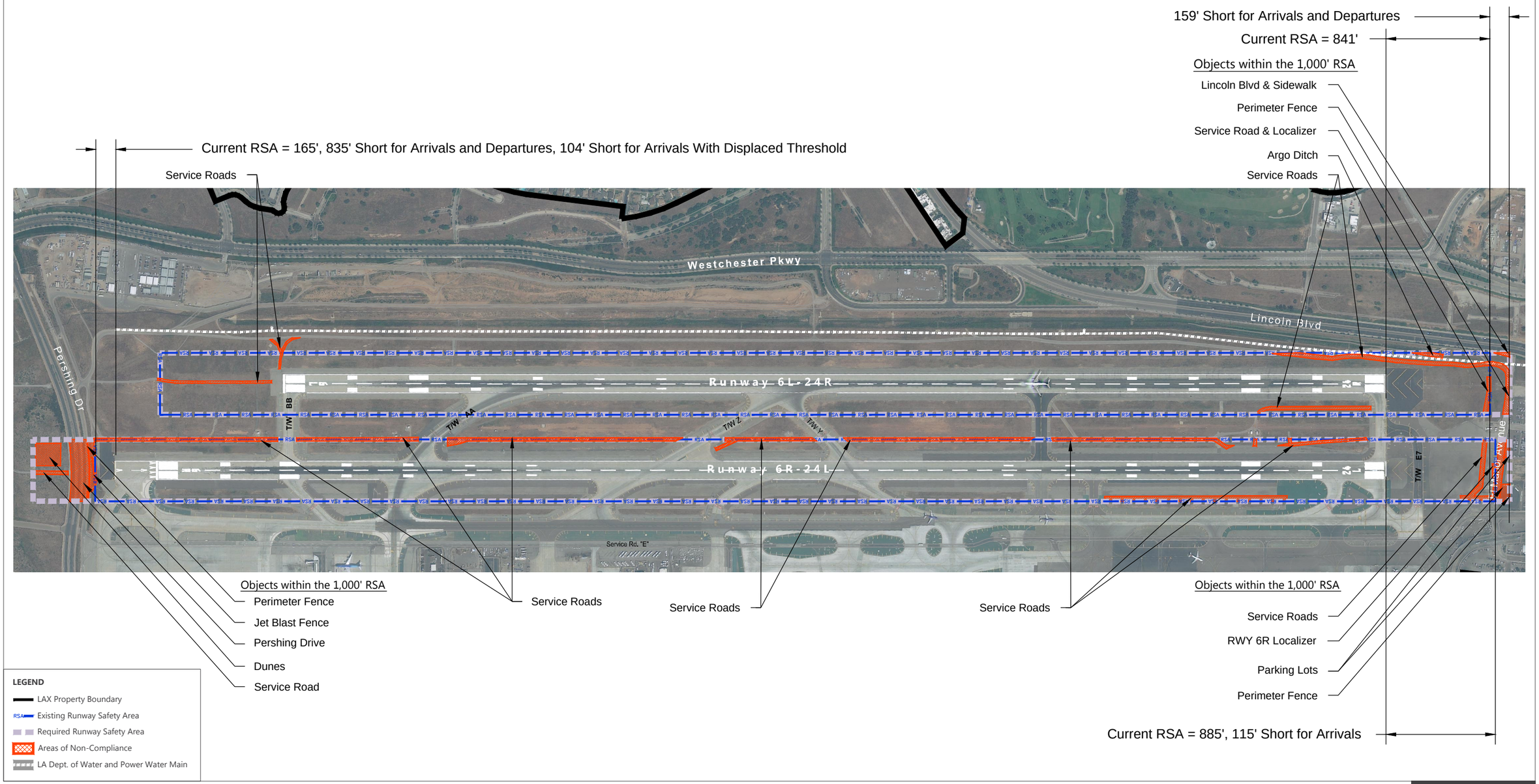

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design,* September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., July 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-5

Runway 6L-24R and Runway 6R-24L Areas of Non-Compliance

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The Proposed Action would involve the covering of portions of the Argo Ditch, the relocation of a portion of a service road along Lincoln Boulevard, closure of a portion of a service road located within the Runway 6L-24R RSA south of the runway, relocation of a portion of a service road located within the Runway 6R-24L RSA north of the runway, and closure of parking areas located within the Runway 6R-24L RSA. The relocated service road along Lincoln Boulevard would become the limiting object, providing for a 641-foot RSA beyond the Runway 24R end. In order to provide a 1,000-foot standard RSA on that end, declared distances (see below) would be implemented, reducing the Runway 6L Accelerate-Stop Distance Available and Landing Distance Available by 359 feet, from 8,925 feet to 8,566 feet. This alternative would also provide the required minimum 600 feet of RSA prior to the Runway 24R landing threshold. No improvements are required on the Runway 6L end.

Declared distances would also be implemented on Runway 6R-24L. The Runway 6R ASDA and LDA would be reduced by 115 feet to provide a 1,000-foot RSA from the Runway 6R localizer. The proposed improvements would not correct the 104-foot deficiency for the Runway 6R arrival RSA, the 835-foot deficiency for the Runway 24L RSA, and would not remove the portion of the service road located within the RSA south of the runway. As stated previously, LAWA is developing alternatives to address these RSA issues but due to complexities with interactions for aircraft operating on the two runways, additional analysis and coordination with FAA needs to occur before LAWA can identify an alternative that will address all RSA deficiencies for Runway 6R-24L. The alternatives to address the remaining deficiencies in the Runway 6R-24L RSA are currently in stages of development and are not ready for evaluation under NEPA. Once these alternatives have been adequately developed and analyzed, any additional improvements to the Runway 6R-24L RSA would undergo a separate NEPA evaluation. Future improvements that LAWA is considering to the Runway 6R-24L RSAs would be implemented after the December 31, 2015 deadline specified in P.L. 109-115.

The components of the Proposed Action related to Runway 6L-24R and Runway 6R-24L RSA improvements are depicted on **Exhibit 1-6** and **Exhibit 1-7**, respectively. The primary components of the RSA improvements include:

- Implementation of declared distances on Runway 6L and Runway 6R
- Demolition of service road segments on the west end of Runway 6L
- Service roads in the eastern portion of the Runway 6L-24R RSA would be relocated outside the RSA
- Two segments of service roads would be constructed for access to navigational aids (navaids) east of the runways
- Service road segments would be constructed between the Runway 6L-24R RSA and the Runway 6R-24L RSA
- Cover a segment of the Argo Ditch
- Pavement rehabilitation of Runway 6L-24R and Taxiway AA
    - Runway centerline and touchdown lighting replacement
    - Runway pavement markings

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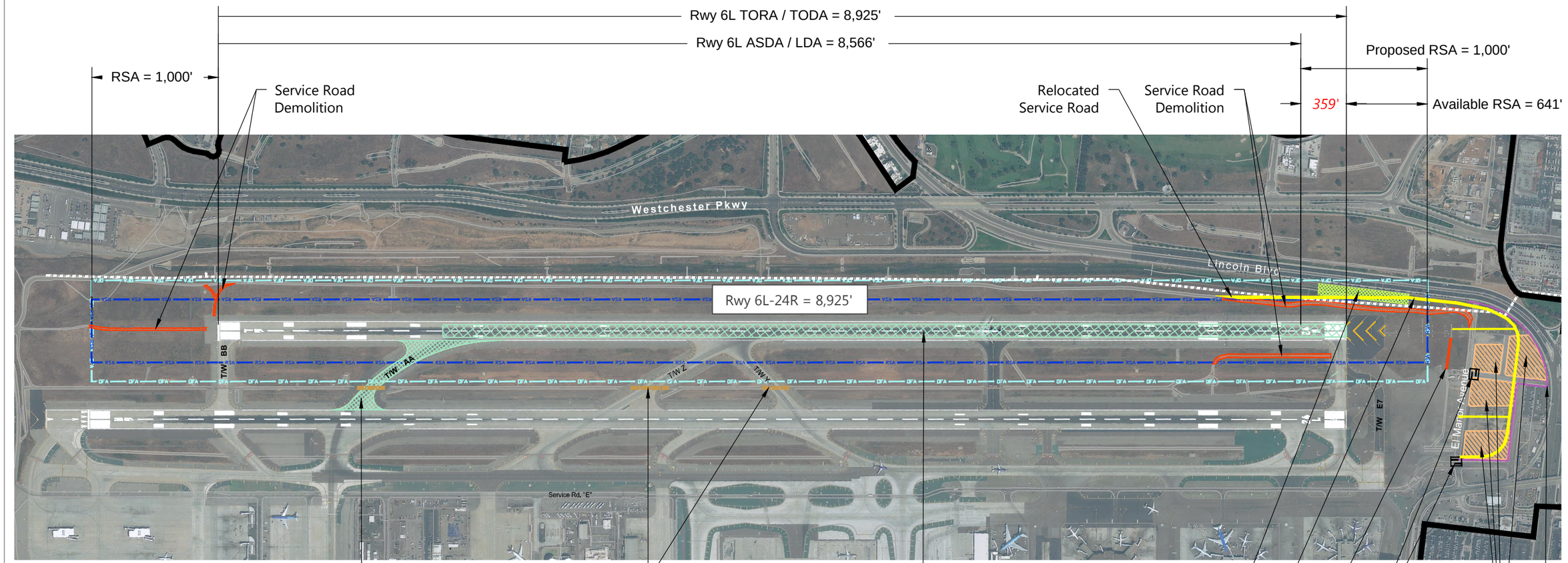

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design,* September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., October 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-6

Runway 6L-24R
Proposed Action

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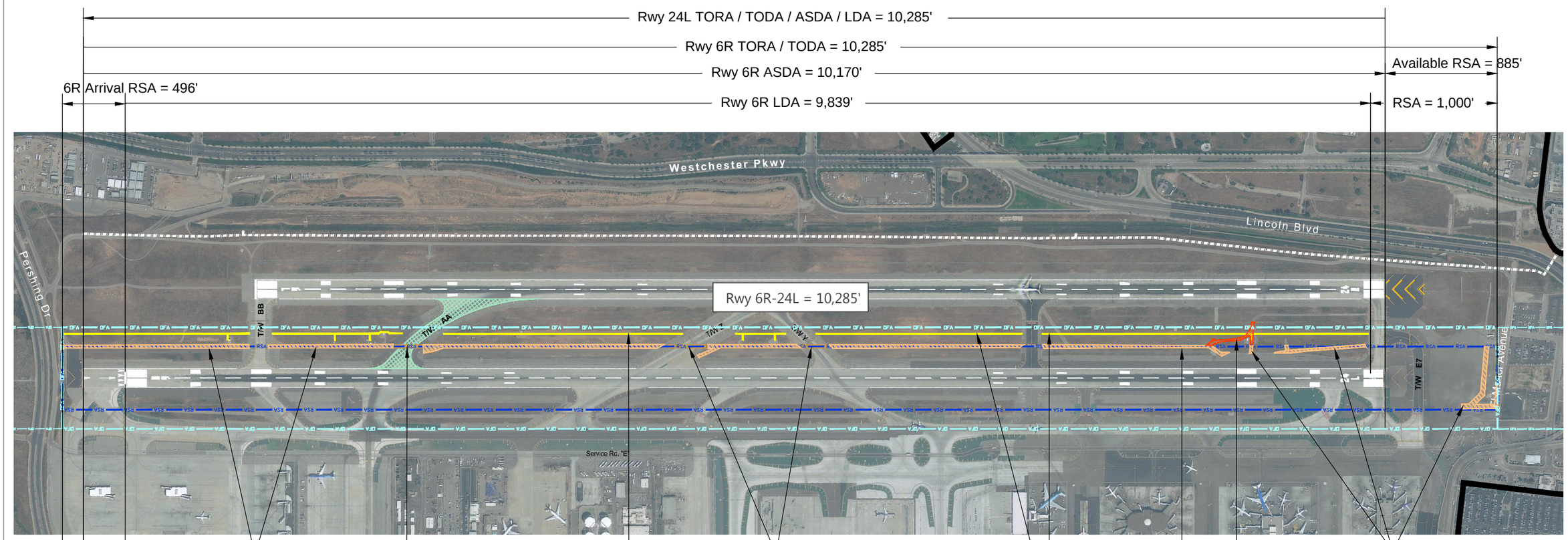

LEGEND

- LAX Property Boundary
- Runway Safety Area
- Runway Object Free Area
- Service Road to be Closed
- Relocated Service Road
- Service Road Pavement to be Demolished
- Taxiway Hold Bar Realignment
- Taxiway Pavement Rehabilitation
- LA Dept. of Water and Power Water Main

NOTES

Acronyms:

TORA	Take-Off Run Available
TODA	Take-Off Distance Available
ASDA	Accelerate-Stop Distance Available
LDA	Landing Distance Available
AOA	Air Operations Area

SOURCE: Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design,* September 28, 2012; Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., October 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-7

NORTH 0 800 ft.

Runway 6R-24L
Proposed Action

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- Closure of vehicle service roads located within the Runway 6R-24L RSA
- Relocate security gate(s)
- Relocate Air Operations Area (AOA) Fence
- LAWA equipment parking areas closures
- Realignment of taxiway hold bars
- Construction Staging Areas

Implementation of these improvements would bring Runway 6L-24R into compliance with FAA RSA design standards. The proposed improvements to Runway 6R-24L would improve the RSA, improving compliance with FAA RSA design standards, but would not address all remaining RSA standards. These improvements are proposed to be implemented by December 31, 2015.

1.3.1 DECLARED DISTANCES

Declared distances are "the distances the airport operator declares available and suitable for satisfying an aircraft's takeoff run, take-off distance, accelerate-stop distance, and landing distance requirements."[16] The FAA defines four types of declared distances: the Take-Off Run Available (TORA), the Take-Off Distance Available (TODA), the Accelerate-Stop Distance Available (ASDA), and the Landing Distance Available (LDA).[17] Aircraft operators use these declared distances, along with weather data, aircraft performance characteristics, and market segments for flight planning, including the determination of payload and range restrictions. Pilots and airplane operators' performance engineers need this information for calculating their allowable takeoff and landing weights and speeds.[18] Essentially, declared distances represent the maximum runway distances available to safely takeoff or reject a takeoff (TORA, TODA, and ASDA), or to land (LDA). Shortening the usable runway length would allow for the full RSA dimensions to be available in the event of an aircraft's excursion from the runway during an overrun, undershoot or veer-off.

The Proposed Action includes the implementation of declared distances for Runway 6L, presented in **Table 1-3**. The Proposed Action would also provide the required minimum 600 feet of RSA prior to the Runway 24R landing threshold for landing operations on Runway 24R.

Implementation of declared distances on Runway 6L would shorten the ASDA and LDA for aircraft landing on Runway 6L by 359 feet.

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16 U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13A, *Airport Design*, September 28, 2012. Paragraph 323.

17 *Ibid*.

18 U.S. Department of Transportation, Federal Aviation Administration, CERTALERT, *Reporting Declared Distances to Aeronautical Information Services*, March 6, 2009.

Table 1-3: Runway 6L-24R Declared Distances

DECLARED DISTANCES	RUNWAY 6L	RUNWAY 24R
Runway Length	8,925′	8,925′
Take-off Run Available (TORA)	8,925′	8,925′
Take-Off Distance Available (TODA)	8,925′	8,925′
Accelerate-Stop Distance Available (ASDA)	***8,566′***	8,925′
Landing Distance Available (LDA)	***8,566′***	8,925′

SOURCE: Ricondo & Associates, Inc., *Runway 6L-24R & 6R-24L Safety Area (RSA) Practicability Study*, Refinement #2, Figure 4-3, April 9, 2010.
PREPARED BY: Ricondo & Associates, Inc., March 2013.

The Proposed Action also includes the implementation of declared distances for Runway 6L-24R, presented in **Table 1-4**. A 1,000-foot RSA from the Runway 6R localizer on the east side reduces the Runway 6R ASDA and LDA by 115 feet. The Proposed Action for the improvements would be 104 feet short of providing the required minimum 600 feet of RSA prior to the Runway 6R landing threshold for arrival operations on Runway 6R. However, Runway 6R-24L is primarily used for departures on the north side of the airport (less than 2 percent of arrivals occur on Runway 6R). All other RSA dimensions would meet FAA RSA design requirements.

Table 1-4: Runway 6R-24L Declared Distances

DECLARED DISTANCES	RUNWAY 6R	RUNWAY 24L
Runway Length	10,285′	10,285′
TORA = Take-off Run Available	10,285′	10,285′
TODA = Take-Off Distance Available	10,285′	10,285′
ASDA = Accelerate-Stop Distance Available	10,170′	10,285′
LDA = Landing Distance Available	9,839′	10,285′

SOURCE: Ricondo & Associates, Inc., *Runway 6L-24R & 6R-24L Safety Area (RSA) Practicability Study*, Refinement #1, Figure 4-12, April 9, 2010.
PREPARED BY: Ricondo & Associates, Inc., June 2013.

1.3.2 SERVICE ROADS

Portions of service roads currently located within the Runway 6L-24R and Runway 6R-24L RSA would be relocated or realigned in order to meet RSA standards and to ensure that service vehicles operate outside of the RSA. These improvements would involve the relocation and reconstruction of service road pavement of two segments located within the Runway 6L-24R RSA and one segment located within the Runway 6R-24L RSA.

- The first service road segment is paved asphalt, located north of Runway 6L-24R and is approximately 3,500 linear feet in length. This service road segment would be relocated north, outside of the RSA, beginning north of the Runway 6L-24R RSA where the current service road intersects the RSA and

would continue eastward towards El Manor Avenue, then directly south through portions of existing parking lots (see below), before tying into an existing vehicle service road. The relocated service road would be paved asphalt.

- Two service roads would be constructed to provide access from the first service road segment described above to navaids located east of the north runways. The service road providing access to the navaids east of Runway 6L-24R would be approximately 504 linear feet in length. The service road providing access to the navaids east of Runway 6R-24L would be approximately 403 linear feet in length. Both segments would be paved asphalt.
- A segment of service road approximately 970 linear feet in length located south of Runway 6L-24R would be demolished.
- Approximately 9,300 linear feet of service road located along the northern boundary of the Runway 6R-24L RSA would be constructed of paved asphalt between the Runway 6L-24R RSA and Runway 6R-24L RSA. A portion of this new service road would replace the 970-foot section to be demolished.
- Additionally, the improvements include the demolition of service road segments located at the western end of Runway 6L and the closure of service road segments located within the Runway 6R-24L RSA.

1.3.3 PAVEMENT REHABILITATION

Pavement rehabilitation activities would be undertaken for Runway 6L-24R to replace areas of pavement that are in poor condition. Pavement reconstruction activities may include, but are not limited to, demolition and removal of existing pavement and base materials, placement of new sub-base and/or base materials, installation of new Portland Cement Concrete (PCC) pavement, and application of runway and taxiway markings on the new pavement segments. Up to 7,250 feet of the eastern portion of Runway 24R's keel (or center) portion (up to 100 feet wide) would be demolished and reconstructed. Runway pavement rehabilitation would include the replacement of runway centerline lighting and touchdown lighting as well as runway pavement markings. Pavement rehabilitation of Taxiway AA would also be undertaken. Approximately 116,000 square feet of taxiway pavement would be rehabilitated. Runway and taxiway pavement rehabilitation improvements would maintain existing airfield dimensions and would not change or increase runway length or capacity.

1.3.4 ARGO DITCH

A portion of the Argo Ditch located north of the Runway 24R threshold would need to be covered in order to relocate a segment of the service road on top of it. The relocation of the service road would ensure that service vehicles stay clear of the RSA. The proposed portion of the Argo Ditch to be covered is approximately 720 linear feet in length.

1.3.5 RELOCATE SECURITY GATES

Two security gates along the northeastern portion of the north runway complex would need to be relocated or closed in order to realign sections of the service road and comply with RSA standards. Should these security gates be relocated, the future gate locations would be outside the RSA.

1.3.6 RELOCATE AIR OPERATIONS AREA (AOA) FENCE

The AOA fence would need to be relocated along the northeastern portion of the north runway complex in order to accommodate the realigned service roads described above. A portion of the AOA fence approximately 2,650 linear feet long would be relocated along the outside of the relocated service road and parking lots east of Runway 6L-24R and Runway 6R-24L. The relocated fence would run from the northeastern Argo Ditch area along Lincoln Boulevard to the transition ramp along Sepulveda Boulevard. The relocated fence would then travel west around Alverstone Avenue and south to Davidson Drive, then west to reconnect with the existing AOA fence. The AOA fence realignment is depicted on Exhibit 1-6.

1.3.7 LAWA EQUIPMENT PARKING AREA CLOSURES

The realignment of service roads outside the RSA along the eastern side of the north runway complex along with the relocated AOA fence would make it necessary to close four parking areas located east of the north runway complex. These parking areas are located inside the LAX property boundary, east of El Manor Avenue and are used for LAX construction vehicle staging; they are not open to the public. The pavement will remain in place but the site will no longer be used for construction vehicle staging. These parking areas total approximately 300,000 square feet in area and contain paved surface parking. The parking area closures are depicted on Exhibit 1-6.

1.3.8 REALIGNMENT OF TAXIWAY HOLD BARS

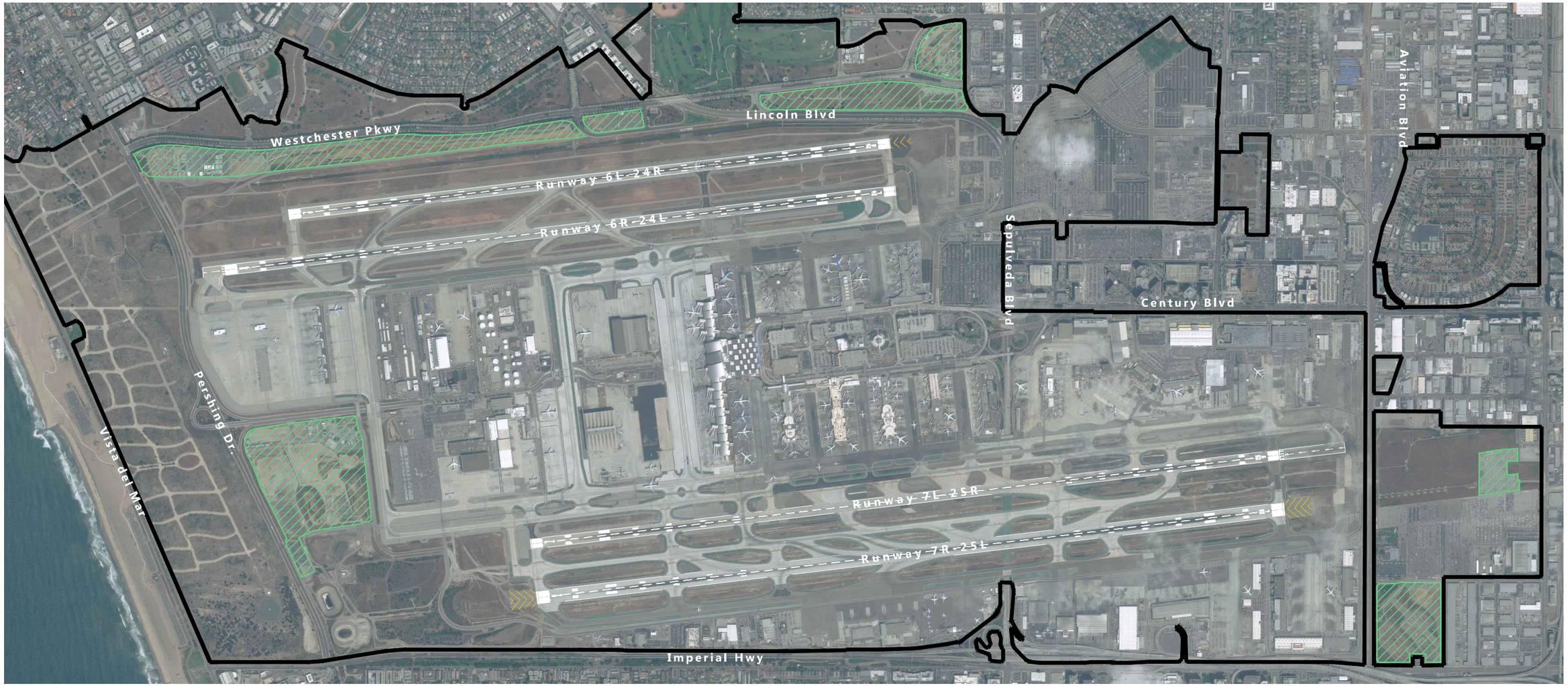
The taxiway hold bars on Taxiways Y, Z, and AA need to be realigned to meet FAA standards. The hold bars consist of pavement striping/markings, in-pavement hold position lights, elevated guard lights, runway status lights, and hold position airfield signage. The lights and signage, as well as in-pavement taxiway centerline lights, would need to be relocated along with the realigned taxiway hold bars.

1.3.9 CONSTRUCTION STAGING AREAS

Construction staging areas would be necessary due to the limited space available for storage of materials and equipment within the airfield area. Locations of the potential construction staging areas for this project have been illustrated in **Exhibit 1-8**. Only a portion of these construction staging areas would be used during construction of the Proposed Action. However, specific construction staging areas for this project have not been determined at the present time, therefore all potential staging areas are being considered in the analysis for this EA. Construction staging areas would be located in previously disturbed areas and would result in minimal ground disturbance.

1.4 Purpose and Need

Pursuant to NEPA and FAA Orders 1050.1E and 5050.4B, an EA must include a description of the purpose of a proposed action and why it is needed. Identification of the purpose and need for a proposed action provides the rationale and forms the foundation for identification of reasonable alternatives that can meet the purpose for the action and, therefore, address the need or problem. The purpose of and the need for the proposed action are discussed in this section.



LEGEND

- LAX Property Boundary
- Potential Construction Staging Area

SOURCE: Landrum & Brown, *Los Angeles International Airport, Airport Layout Plan,* 2005; Los Angeles World Airports, April 2013 (aerial photography); Ricondo & Associates, Inc., July 2013.
PREPARED BY: Ricondo & Associates, Inc., May 2014.

EXHIBIT 1-8

NORTH 0 1,500 ft.

Potential Construction Staging Areas

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1.4.1 PURPOSE OF THE PROPOSED ACTION

1.4.1.1 RSA Improvements

The purpose of the Proposed Action is to comply with the *Transportation, Treasury, Housing and Urban Development, the Judiciary, The District of Columbia, and Independent Agencies Appropriations Act* (Public Law 109-115)[19], which states that all RSAs at 14 CFR Part 139 airports must meet FAA design standards to the extent practicable by December 31, 2015. LAWA has identified improvements that can be implemented by December 31, 2015 to bring the Runway 6L-24R RSA into compliance with FAA design criteria and to make improvements to the Runway 6R-24L RSA.[20]

1.4.1.2 Pavement Rehabilitation

The purpose of the pavement rehabilitation is to address poor pavement conditions and extend the life of Runway 6L-24R and associated taxiways to maintain its usage as the primary arrivals runway for the north airfield.

1.4.1.3 Taxiway Holdbars

The purpose of realigning the existing holdbars on Taxiways Y, Z, and AA is to meet FAA standards concerning runway and taxiway object free areas.

1.4.2 NEED FOR THE PROPOSED ACTION

1.4.2.1 RSA Improvements

The Runway 6L-24R RSA at the east end meets the 600-foot length requirement prior to the Runway 24R arrival threshold for landings, but it is 159 feet short of meeting the 1,000-foot requirement beyond the runway end for Runway 6L arrivals and departures. The RSA at the west end of Runway 6R-24L is 835 feet short of meeting the RSA standard beyond the runway end for Runway 24L arrivals and departures. The RSA 600-foot length requirement prior to the Runway 6R arrival threshold is 104 feet short of meeting the FAA standard. The RSA for the Runway 24L arrival threshold is 115 feet short of the 1,000-foot length requirement beyond the runway end for Runway 6R arrivals and departures. The need for the project is to allow LAWA to meet FAA design standards for RSAs to the extent practicable by December 31, 2015 as required by P.L. 109-115. Due to complexities with interactions for aircraft operating on the two runways, additional analysis and coordination with FAA needs to occur before LAWA can identify an alternative that will address all RSA deficiencies for Runway 6R-24L. The alternatives to address the remaining deficiencies in the Runway 6R-24L RSA are currently in stages of development and are not ready for evaluation under NEPA. Once these alternatives have been adequately developed and analyzed, any additional improvements to the Runway 6R-

[19] *The Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act, 2006* (Public Law [P.L.] 109-115), November 30, 2005.

[20] Improvements to Runway 6L-24R and Runway 6R-24L are independent of any improvements proposed in the *Final Specific Plan Amendment Study Report*. The improvements to Runway 6L-24R examined in this document are proposed to bring the Runway 6L-24R RSA in compliance with FAA design criteria, as mandated by Public Law 109-115, and are independent of any future actions taken in regards to the Specific Plan Amendment Study (SPAS). Improvements contemplated in the SPAS Environmental Impact Report must still be assessed and approved by the Federal Aviation Administration (FAA), and they also need project-level approval under the California Environmental Quality Act.

24L RSA would undergo a separate NEPA evaluation. Thus, LAWA is proposing to implement the improvements to the Runway 6R-24L RSA, which will improve compliance with FAA design standards for RSAs.

1.4.2.2 Pavement Rehabilitation

Runway 6L-24R is the primary arrivals runway on the north airfield and Taxiway AA is the primary exit taxiway from this runway. Due to heavy usage over the years, sections of the pavement have deteriorated and need reconstruction. LAWA is responsible for providing suitable infrastructure and maintaining safe facilities at LAX for aircraft operations. Thus, the replacement or repair of deteriorated pavements is needed at LAX to safely support aircraft landing or departing on its runways.

1.4.2.3 Taxiway Holdbars

The holdbars for Taxiways Y, Z, and AA were installed several years ago, prior to FAA issuing updated guidance concerning runway and taxiway object free areas. The need for realignment of these holdbars is to bring them in compliance with current FAA standards.

1.4.3 FAA PURPOSE AND NEED

The FAA's statutory mission is to ensure the safe and efficient use of navigable airspace in the United States. Under FAA Order 5200.8, *Runway Safety Area Program*, the FAA is directed to implement the RSA Program, which is intended to provide enhanced safety through the establishment of RSAs at all public use airports. Implementation of the proposed improvements to the RSA for Runway 6L-24R would bring it in compliance with the design standards set forth in FAA A/C 150/5300-13A. Implementation of the proposed improvements to the RSA for Runway 6R-24L would improve the condition of the RSA by the deadline set in Public Law 109-115.

1.5 Requested Federal Action

The federal actions being requested of the FAA by the Sponsor include:

- Unconditional approval of the Airport Layout Plan (ALP) for the Airport depicting the proposed improvements pursuant to 49 U.S.C. 40103(b), 44718, and 47107(a)(16); 14 Code of Federal Regulations (CFR) Part 77, Objects Affecting Navigable Airspace; and 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports.
- Determination under 49 U.S.C. 44502(b) that the Proposed Action is reasonably necessary for use in air commerce or in the interest of national defense.
- Approval of a Construction Safety and Phasing Plan to maintain aviation and airfield safety during construction pursuant to FAA Advisory Circular 150/5370-2F, *Operational Safety on Airports During Construction*, [14 CFR Part 139 (49 USC § 44706)].
- Implementation of revised air traffic control procedures below 3,000 feet above ground level;
- Establishment of new Standard Instrument Departure and Standard Terminal Arrival Route procedures;

- Determinations under 49 U.S.C. § 47106 and § 47107 relating to the eligibility of the Proposed Action for federal funding under the Airport Improvement Program (AIP);
- Establishment of flight procedure modifications pursuant to 14 CFR Part 95, Instrument Flight Rules (IFR) Altitudes;
- Approval of the appropriate amendments to the Airport Certification Manual pursuant to 14 CFR Part 139;
- Appropriate amendment to air carrier operations specifications pursuant to 49 USC § 44705 to account for the imposition of declared distances; and
- FAA determination of the Proposed Action's effects on the safe and efficient use of airspace.

1.6 General Implementation Timeframe

Implementation of the Proposed Action would begin upon FAA approval of this EA, if the FAA issues a favorable environmental finding and required environmental permits are obtained. Construction activities associated with the improvements would be anticipated to begin in mid-2015 and be completed by the end of 2015.

Runway 6L-24R requires pavement rehabilitation for a maximum of 7,250 feet of the keel portion of the runway and construction in-place of a culvert for a portion of the Argo Ditch. These components would require the closure of Runway 6L-24R for approximately four (4) months and a temporary displaced threshold of 1,925 feet on the Runway 24R end for an additional two (2) months. The temporary displaced threshold would allow the finishing and curing of the Argo Ditch culvert, while also allowing aircraft operations on the runway by providing an LDA of 7,000 feet. Runway 6L-24R is the primary arrivals runway on the north airfield; the proposed closure would require shifting all arriving aircraft traffic to other runways at LAX during the 4-month runway closure period and shifting larger aircraft (ADG IV or higher) to other runways during the 2-month temporary displaced threshold. The actual number and frequency of flights shifted to other runways is expected to be determined by LAX Operations and FAA Air Traffic Control. It is likely that arrival flights would be diverted to Runway 6R-24L, or to the primary arrival runway on the South Airfield, Runway 7R-25L, or some combination of the two. The loss of runway capacity during the closure of Runway 6L-24R also has the potential to impact airfield operational efficiency during the construction period, possibly increasing delay times and affecting airlines and flight scheduling.

FAA coordination is required to minimize disruption to aircraft operations and changes in approach and departure procedures. The improvements as outlined in Section 1.3 are expected to comply with the December 31, 2015 deadline established by PL 109-115.

1.7 Document Requirements and Organization

The format and content of this EA conforms to the requirements of Section (§) 102(2)(c) of the *National Environmental Policy Act of 1969* (NEPA, 42 United States Code [U.S.C.] 4321-4370h), and § 509(b)(5) of the *Airport and Airway Improvement Act of 1982*, as amended. The content of each section of this Draft EA is summarized below.

- Section 1 – Purpose and Need, provides a brief description of LAX and the Proposed Action, its purpose, and why it is needed.
- Section 2 – Alternatives, provides an overview of the identification and screening of alternatives considered as part of the environmental evaluation process.
- Section 3 – Affected Environment, describes existing environmental conditions within the project site.
- Section 4 – Environmental Consequences and Mitigation Measures, discusses and compares the environmental impacts associated with the Proposed Action, the No Action Alternative, and mitigation options considered.
- Section 5 – Coordination and Public Involvement, discusses the coordination and public involvement associated with the EA process. This section also presents a list of federal, state, and local agencies and other interested parties that have been involved in EA coordination efforts.
- Section 6 – List of Preparers
- Section 7 – References
- Section 8 – List of Abbreviations and Acronyms

The Appendices contain various reference materials, including technical information, and records of coordination activities.