FINAL
ENVIRONMENTAL ASSESSMENT

PROPOSED RUNWAY 7L/25R RUNWAY SAFETY AREA (RSA) AND ASSOCIATED IMPROVEMENTS PROJECT

(RUNWAY SAFETY AREA IMPROVEMENTS AND PAVEMENT RECONSTRUCTION OF PORTIONS OF RUNWAY 7L/25R AND TAXIWAY B)

Los Angeles International Airport
Los Angeles, Los Angeles County, California

Prepared for:

LOS ANGELES WORLD AIRPORTS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
As lead Federal Agency pursuant to the National Environmental Policy Act of 1969

Prepared by:

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Los Angeles, CA

August 2013

This environmental assessment becomes a Federal document when evaluated, signed and dated by the Responsible FAA Official.

Responsible FAA Official

August 30, 2013
Date

GENERAL INFORMATION ABOUT THIS DOCUMENT

WHAT'S IN THIS DOCUMENT? This document contains a Final Environmental Assessment (EA) for the Los Angeles World Airports (LAWA) proposed Runway 7L/25R Runway Safety Areas (RSA) Project and Associated Improvements (Proposed Action), which includes improvements to the RSA of Runway 7L/25R and pavement reconstruction of the eastern portions of Runway 7L/25R and Taxiway B, and portions of the apron pavement west of Air Freight Building No. 8 at Los Angeles International Airport (LAX). This document discloses the analysis and findings of the potential impacts associated with the City of Los Angeles proposal, the No-Action Alternative, and other reasonable alternatives.

BACKGROUND. *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), requires completion of Runway Safety Area improvements by airports in the United States that hold a certificate issued by the FAA, under Title 49 of the *United States Code*, Section 44706, to meet FAA airport design standards for RSA required by Title 14, Code of Federal Regulations, Part 139 by December 31, 2015. The City of Los Angeles, as owner and operator of Los Angeles International Airport, has developed its Proposed Action to meet the requirements of P.L. 109-115 for Runway 7L/25R.

The Draft EA was released on September 28, 2012. The notice of availability of the Draft EA, public information workshop, and public hearing were advertised in three local newspapers to inform the general public and other interested parties. A public information workshop and public hearing was conducted on November 1, 2012 at the Flight Path Learning Center at LAX.

During and following the public review period of the Draft EA, the Proposed Action was refined and the findings of this refined Proposed Action (also known as RSA Refined Alternative #3) are presented in this Final EA. The Proposed Action identified in the Draft EA and its analysis remains in this Final EA, but this alternative is now referred to as RSA Refined Alternative #2.

The document presented herein represents the Final EA for the federal decision-making process, in fulfillment of FAA's policies and procedures relative to NEPA and other related federal requirements. Copies of the document are available for inspection at libraries in the cities of Los Angeles and El Segundo, LAWA Administrative Offices, and the FAA Western-Pacific Region Office in Hawthorne. The addresses for these locations are provided in Chapter 5.0 of this Final EA.

WHAT SHOULD YOU DO? Read this Final EA to understand the actions that LAWA and FAA intend to take relative to the Proposed Action at LAX.

WHAT HAPPENS AFTER THIS? Following review of this Final EA, the FAA will either issue a Finding of No Significant Impact/Record of Decision (FONSI/ROD) or decide to prepare an Environmental Impact Statement (EIS).

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1.0 PURPOSE AND NEED

1.1 Introduction

The City of Los Angeles, through its aviation department, Los Angeles World Airports (LAWA), is proposing the Runway 7L/25R Runway Safety Area and Associated Improvements Project at the Los Angeles International Airport (LAX). LAWA proposes to construct improvements to the Runway Safety Area (RSA) for Runway 7L/25R, and to reconstruct pavement on the eastern segments of Runway 7L/25R and Taxiway B, as well as an apron area between Taxiway C1 and Air Freight Building No.8 (collectively, the Proposed Action). The RSA improvements are being undertaken by LAWA in response to 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 meet Federal Aviation Administration (FAA) design standards by December 31, 2015.

This Environmental Assessment (EA) was prepared pursuant to the requirements of Section (§) 102(2)(c) of the *National Environmental Policy Act of 1969* (NEPA) 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 EA was prepared in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1,* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.*

A Draft EA for the Runway 7L/25R Safety Area Project and Associated Improvements was released on September 28, 2012. The Draft EA identified and considered potential environmental impacts related to the Proposed Action and its alternatives. In LAWA's Draft EA, the Proposed Action included, in addition to the RSA improvements for Runway 7L/25R and reconstruction of the pavement at the eastern end of Runway 25R and parallel Taxiway B, an extension of Taxiway C to the east, demolition of Air Freight Building No. 8, and construction of a replacement GSE Maintenance Facility at LAX. The Draft EA included an analysis of the No-Action Alternative, as well as of the Shift Runway Alternative, which contained all of the non-RSA improvement elements. Based on comments received from the public during the public review period of the Draft EA, the Proposed Action was refined. These refinements are discussed and identified in this Chapter of the EA. This Chapter includes a brief description of LAX; a description of the Proposed Action; a discussion of the need for and purpose of the Proposed Action; a description of the requested federal actions; a summary of applicable federal EA processes and procedures; and a description of the format of this EA.

1.2 Background Information

1.2.1 Project Location

LAWA owns and operates four airports in Southern California – LAX, Ontario International Airport, Van Nuys Airport (general aviation), and Palmdale Regional Airport (no current commercial service). The regional location of LAX is shown in **Figure 1-1**.

LAX is located on the western side of the Los Angeles Basin and is generally bounded on the north by the communities of Westchester and Playa del Rey, on the east by La Cienega Boulevard and Aviation Boulevard, on the south by Imperial Highway, 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. Homes in this area were acquired and demolished in the late 1960's. This area currently serves as a habitat preserve for the federally-listed El Segundo Blue butterfly. The location and layout of LAX is depicted in **Figure 1-2**.

LAX is the largest commercial service airport in Southern California, the third-busiest airport in terms of number of annual passengers in the United States, and the sixth-busiest airport in the world. The FAA's 2012 Terminal Area Forecast (TAF)[1] shows that LAX handled approximately 608,846 aircraft operations in 2012[2] (where an aircraft operation is defined as a landing or a takeoff). Passenger enplanements at LAX in 2011 were approximately 30,625,869. In addition to passenger service, LAX is also a major center for international air cargo. In 2011, approximately 1,833,929 metric tons of air cargo were handled at LAX.[3]

1.2.2 Existing Runways and RSAs

As illustrated in **Figure 1-2**, LAX has four parallel runways oriented in an east-west direction. Runways 6L/24R and 6R/24L are located north of the Central Terminal Area (CTA) in an area generally referred to as the North Airfield. Runways 7L/25R and 7R/25L are located south of the CTA in an area generally referred to as the South Airfield. All runways are equipped with an Instrument Landing System (ILS) with an Approach Lighting System (ALS) and other visual approach aids. **Table 1-1** includes characteristics of the existing LAX runways.

Table 1-1
Existing Characteristics of LAX Runways

Runway	Length x Width (feet)	Airfield	Primary Use
6L/24R	8,925 x 150	North	Arrivals
6R/24L	10,285 x 150	North	Departures
7L/25R	12,091 x 150	South	Departures
7R/25L	11,095 x 200	South	Arrivals

Source: Federal Aviation Administration, *LAX Airport Diagram, SW-3*, Effective from 15 December 2011 to 12 January 2012, available at *www.faa.gov*.

FAA Advisory Circular (A/C) 150/5300-13A, *Airport Design*, defines the RSA as "a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of undershoot, overshoot, or excursion from the runway." An additional safety-related function is to provide greater accessibility for firefighting and emergency rescue vehicles during such incidents.

14 CFR Part 139 certification is required for airports that serve any scheduled or unscheduled passenger operation of an air carrier that is conducted with an aircraft having a seating capacity of more than 30 passengers. LAX currently holds a 14 CFR Part 139 certificate and must comply with the requirements of the certification program. 14 CFR §139.309 requires that each certificate holder provide and maintain safety areas for runways and taxiways. Runway 7L/25R RSA does not currently meet the FAA's airport design standards. 14 CFR Part 139 references FAA A/C 150/5300-13A, *Airport Design*, for the configuration, dimensions, and maintenance of safety areas. 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 A/C 150/5300-13A, *Airport Design*, to the extent practicable.

[1] 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.
[2] Federal Aviation Administration, *APO Terminal Area Forecast Detail Report – Los Angeles International Airport*, January 2013.
[3] Federal Aviation Administration, Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports website, *http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger*, accessed May 2013.

Source: LAWA 2012; ESRI Maps and Data - January 2012; Prepared by: URS Corporation

FIGURE 1-1	**Regional Map**	**Environmental Assessment Runway 7L/25R RSA and Associated Improvements Project**

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Los Angeles International Airport

Legend

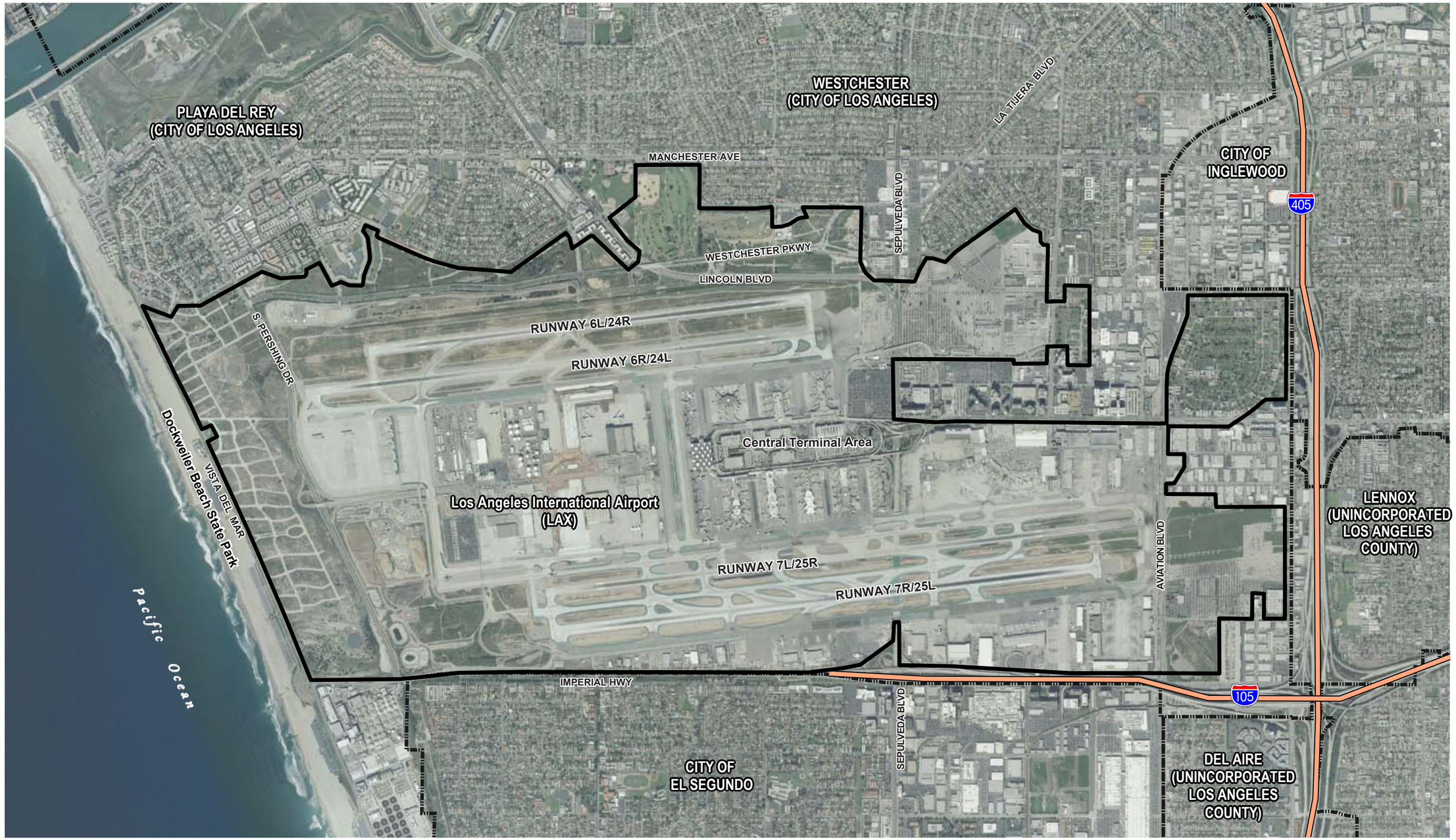
Airport Property Boundary

Municipal Boundary

0 2000 ft.

1"= 2000 feet

north



Source: LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Airport Location and Existing Layout

FIGURE
1-2

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The dimensional requirements for a runway's RSAs are based on the runway's Airport Reference Code (ARC). The ARC for an airport is based on the approach speed and wingspan of the Critical Aircraft operating at the airport. Larger aircraft operating at higher speeds require increased safety allowances. As such, the RSA requirements increase as the ARC increases.

All runways at LAX, including Runway 7L/25R, have an ARC designation of D-V. The standard RSA for an ARC D-V runway is 500 feet wide (centered on the runway centerline) and extends 1,000 feet beyond the physical end of the runway. The RSA length prior to a landing threshold is 600 feet.[4]

In addition to dimensional requirements, FAA airport design standards require that RSAs are:[5]

- Cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations;
- Drained by grading or storm sewers to prevent water accumulation;
- Capable, under dry conditions, of supporting snow removal equipment, Aircraft Rescue and Firefighting (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 RSA because of their function.

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. On the North Airfield, RSAs associated with Runways 24R, 24L, and 6R do not meet applicable RSA design standards. In accordance with the 2006 *Stipulated Settlement Agreement for Litigation on the LAX Master Plan*, the evaluation of the North Airfield RSA improvements is being prepared separately from the RSA improvements associated with Runway 7L/25R, which are addressed in this Final EA.[6] The environmental analysis of the North Airfield RSA has independent utility from that of the RSA evaluation in the South Airfield Complex because the FAA makes a determination about each individual RSA at an airport, not on the North or South Complex or LAX as a whole. Implementation of RSA improvement work by LAWA is on a runway-by-runway basis and not a comprehensive program for the entire airport.

Runway 7R/25L, the southernmost runway at LAX, was relocated in 2007 to reduce runway incursions and was designed to meet FAA airport design standards.[7] LAWA prepared an *RSA Practicability Study for Runway 7L/25R* that included evaluations of RSA alternatives.[8] As part of 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.[9] The Study concluded that Runway 7L/25R RSA does not meet FAA standards and that improvements to the RSA were needed.[10]

[4] The standard RSA length required under FAA airport design standards may be reduced to a "standard RSA length prior to a landing threshold" if a standard Engineered Materials Arresting System (EMAS) is provided and either instrument or vertical guidance are provided for approaches in the opposite direction.
[5] Federal Aviation Administration, *Advisory Circular 150/5300-13A, Airport Design*, 2012.
[6] The 2006 *Stipulated Settlement Agreement for Litigation on the LAX Master Plan* includes language that yellow light projects are included in the Specific Plan Amendment Study which includes "reconfiguration of the north airfield as contemplated in the LAX Master Plan, including center taxiways" (Page 4). Los Angeles World Airports, *Stipulated Settlement Agreement for Litigation on the LAX Master Plan*, 2006.
[7] *Ibid*.
[8] Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009.
[9] *Ibid*.
[10] *Ibid*.

As shown in **Table 1-2**, the existing Runway 7L RSA is 289 feet short of the FAA RSA standard length of 1,000 feet beyond the runway end and the existing Runway 25R RSA is 832 feet short of the same 1,000-foot RSA standard length. The Runway 7L/25R RSA is 500 feet wide along its entire length, consistent with FAA RSA design standards (**Figure 1-3**).

Table 1-2

Existing LAX Runway 7L/25R RSA Compared to FAA RSA Standards

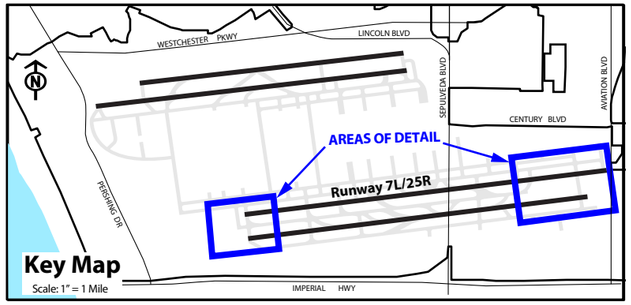
Runway End	FAA RSA Standards for ARC D-V Runways (feet)		Existing Runway RSAs (feet)			
	Width	Length Beyond Runway End	Width	Length Beyond Runway End	Deficient Width	Deficient Length
7L	500	1,000	500	711	N/A	-289
25R	500	1,000	500	168	N/A	-832

Source: Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009.

1.2.3 Existing Pavement at Eastern Portions of Runway 7L/25R and Taxiway B, and the Air Freight Building No. 8 Apron

Most aircraft that utilize the South Airfield for departure begin that process on Runway 25R and its connecting taxiways (**Figure 1-4**). As such, this portion of runway and its associated taxiways handle a large amount of traffic. The Runway 25R pavement and the pavement on the east end of Taxiway B were constructed in 1986. The current Pavement Condition Index (PCI) rating for these pavements varies from 0 to 70, indicating that portions of the runway and taxiway pavements are in a poor (0) to fair (70) condition.[11] Through implementation of the Proposed Action, LAWA intends to reconstruct portions of the concrete surfaces on the eastern side of Runway 7L/25R and reconstruct portions of the existing pavement on the eastern side of Taxiway B. Approximately 1,225 feet of the eastern portion of Runway 25R and 2,128 feet of the eastern portion of Taxiway B would have their entire existing pavement (full width, three-foot depth) demolished and reconstructed. Additionally, another 600 feet of Runway 25R's keel (or center) portion would be demolished and reconstructed, and another 6,447 feet of Runway 25R's keel portion would have its surface reconstructed. In addition, the existing apron located north of Taxiway C between Taxiway C1 and Air Freight Building No. 8 is also in poor condition and would be replaced under the Proposed Action. The area that would be reconstructed as part of the Proposed Action is approximately 1.63 acres. Details regarding the pavement reconstruction elements are provided in Section 1.3.2 of this Final EA.

[11] HNTB, *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011.



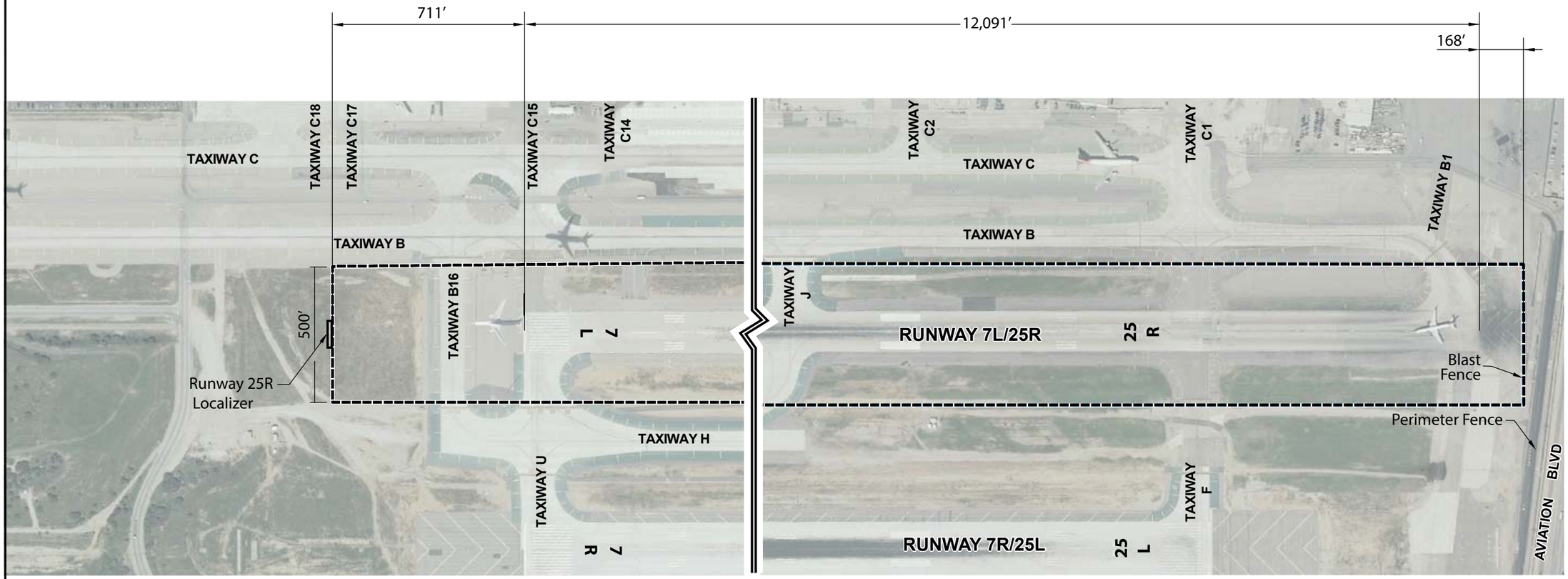
Legend

Existing Runway Safety Area

0 400 ft.

1" = 400 feet

north



Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); ESRI Maps & Data January 2012 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Existing Runway 7L/25R RSA

FIGURE
1-3

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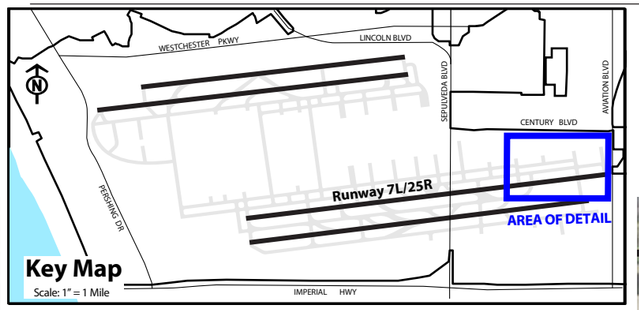
Los Angeles International Airport



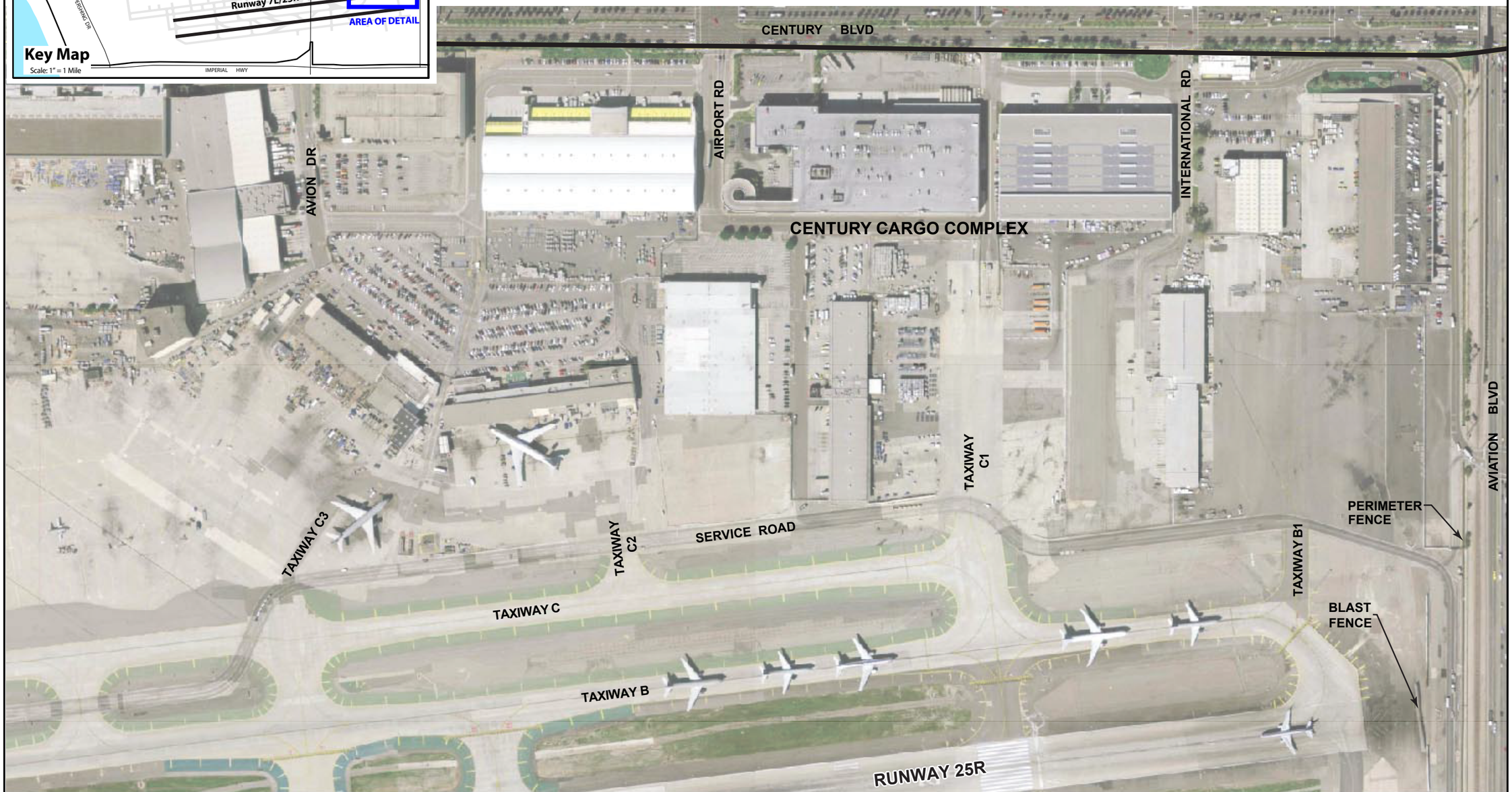
Legend

Airport Property Boundary

0 300 ft.

1" = 300 feet

north



Sources: Los Angeles International Airport Layout Plan, December 2009; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Existing Eastern Portion of
South Airfield Complex

FIGURE
1-4

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1.3 Description of Proposed Action

The Proposed Action evaluated in the Draft EA included four components: RSA improvements, pavement reconstruction of portions of the eastern sides of Runway 7L/25R and Taxiway B, eastern extension of Taxiway C (which included reconfiguration of a service road and demolition of Air Freight Building No.8), and construction of a new GSE Maintenance Facility. Based on comments received from the public during the public review period of the Draft EA the Proposed Action was refined. Specifically, several public comments were received expressing preference for the Shift Runway Alternative over the Draft EA Proposed Action, which extended Runway 7L/25R to the west and implemented a displaced threshold. Because of concerns over potential effects to aircraft operations associated with the Shift Runway Alternative, LAWA is proposing to implement a refined Proposed Action. The refined Proposed Action includes an additional 957-foot graded area west of the proposed runway extension that would preserve the option to implement the Shift Runway Alternative if it is determined in the future that impacts to existing and future aircraft operations at LAX would be acceptable. Due to public concerns related to traffic and noise, the construction of a new GSE Maintenance Facility on the southern border of the Airport has been eliminated from consideration. Consequently, the following elements are no longer considered part of the refined Proposed Action (refer to Figures 1-5 and 1-8):

- Eastern extension of Taxiway C;
- Reconfiguration of a service road to the east of Runway 7L/25R;
- Demolition of Air Freight Building No.8; and
- Construction of a new GSE Maintenance Facility.

In addition, refinements to the two remaining components of the Proposed Action, the RSA improvements and pavement reconstruction of portions of the eastern ends of Runway 7L/25R and Taxiway B, and a portion of the Air Freight Building No. 8 apron are discussed in detail below. The Proposed Action evaluated in the Draft EA is still evaluated in this EA, under the original alternative name it had in the 2009 Practicability Study, RSA Alternative Refinement #2.[12]

1.3.1 Runway 7L/25R RSA Improvements

1.3.1.1 Project Objectives

The primary objective of the Runway 7L/25R RSA improvements is to satisfy Public Law 109-115, which requires all 14 CFR Part 139 certificated airports to bring their RSAs into compliance with FAA airport design standards no later than December 31, 2015. Compliance with FAA airport design standards and maintaining the option to shift the runway would be accomplished by extending Runway 7L to the west, along with the use of declared distances.

1.3.1.2 Elements of the Runway 7L/25R RSA Improvements

The proposed Runway 7L/25R RSA improvements primarily involve the west end of Runway 7L (**Figure 1-5**). The elements of the proposed Runway 7L/25R RSA improvements include:

- Extend the Runway 7L/25R pavement, 832 feet to the west. The Runway 7L threshold will remain at its current location for landings, resulting in an 832-foot displaced threshold;
- Implement declared distances to maintain existing take-off run available and take-off distance available;

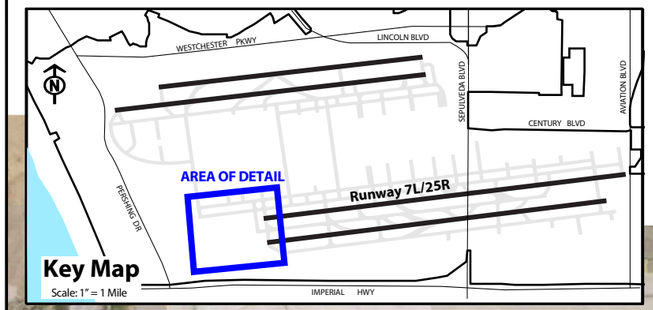
[12] Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009.

- Extend the RSA 168 feet to the west beyond the new Runway 7L runway end and grade and compact approximately 1,125 feet beyond the newRunway 7L runway end to meet FAA Airport Design Standards for an RSA;
- Construct a blast pad west of the Runway 7L extension;
- Extend parallel Taxiway H 832 feet to the west;
- Construct a new taxiway connector (B17) from Taxiway H to Taxiway C;
- Decommission Taxiway B16 from Taxiway H to Taxiway B;
- Reconstruct a portion of Taxiway B at the intersection with new Taxiway B17;
- Reconstruct a portion of Taxiway U from Taxiway B to Runway 7L/25R;
- Relocate the existing Runway 25R Localizer Antenna and shelter to the west of the graded, unpaved area;
- Relocate other FAA equipment shelters west of Taxiway B17;
- Relocate existing service road west, beyond the proposed 957- foot grading extension and provide access roads to navaids and equipment shelters;
- Replace existing Approach Lighting System (ALS) towers where the new runway pavement will be constructed with in-pavement lights; and
- Modify the existing Runway and Taxiway lighting and markings in the newly constructed pavements.

The Runway 7L extension would increase the physical length of Runway 7L/25R from 12,091 feet to 12,923 feet. The new 832 feet of pavement on Runway 7L would be used by pilots to begin their takeoff roll towards the east, and would compensate for the unusable 832 feet of existing runway pavement at the east end of Runway 7L/25R that would result from the implementation of declared distances to make up the RSA. Therefore, the runway length available to a pilot will remain at 12,091 feet and will not increase as a result of the construction of the 832-foot long Displaced Threshold. Approximately 400,000 cubic yards of material will be excavated and exported from the project site during construction.

As discussed, LAWA will implement the use of declared distances on Runway 7L/25R in conjunction with the additional runway pavement to allocate pavement at each end of the runway (along with the graded RSA areas) to provide an equivalent RSA. Declared distances are the distances airport operators declare available on a runway for an airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance (Refer to Appendix A). Where it is impracticable to provide a standard RSA, declared distances can be used to limit the length of runway available to departing and arriving aircraft, thus making available enough runway length to provide an equivalent standard RSA. These distances are:

- Take Off Run Available (TORA) – The length of runway declared available and suitable for satisfying takeoff run requirements.
- Take Off Distance Available (TODA) – The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA.
- Accelerate-Stop Distance Available (ASDA) – The length of runway plus stopway declared available and suitable for satisfying accelerate-stop distance requirements.
- Landing Distance Available (LDA) – The length of runway declared available and suitable for satisfying landing distance requirements.



Legend

- Proposed RSA Extension
- Area to be Graded to RSA Quality
- Existing Runway Safety Area
- Proposed Jet Blast Pad
- Runway 7L Extension
- Taxiway Improvements
- Proposed Service Road Realignment

Los Angeles International Airport

0 250 ft. north

1" = 250 feet

TAXIWAY C

TAXIWAY B17

TAXIWAY U

TAXIWAY B

RELOCATED LOCALIZER ANTENNA

PROPOSED JET BLAST PAD

7L

Existing Runway Threshold/ Proposed Displaced Threshold Location

Decommissioning of Taxiway B16

TAXIWAY H

TAXIWAY U

7R

TO BE RELOCATED

RELOCATED LOCALIZER SHELTER

AREA TO BE GRADED TO RSA QUALITY = 957'

RUNWAY 7L/25R EXTENSION = 832'

PROPOSED RUNWAY SAFETY AREA EXTENSION = 168'

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); ESRI Maps & Data September 2013 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and Associated Improvements Project

Runway 7L/25R RSA Improvements

FIGURE 1-5

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For west-flow operations (the most common direction for departures at LAX), declared distances would provide an ASDA, TORA, and TODA of 12,091 feet, and an LDA of 11,134 feet. For east-flow operations (the least common direction for departures at LAX), the proposed declared distances would provide an ASDA, TORA, and TODA of 12,091 feet and an LDA of 11,259 feet. These distances are shown in **Figure 1-6**. This strategy allows LAWA to satisfy RSA requirements without substantially affecting the amount of runway currently available for take-off and landing operations.

The existing Runway 7L/25R localizer antenna array, a component of the Instrument Landing System (ILS) that provides runway centerline guidance to landing aircraft, would be relocated approximately 1,125 feet from the Runway 7L departure threshold. The existing localizer equipment shelter and other FAA equipment shelters would need to be relocated because they would be located within the Object Free Area (OFA) of the extended Taxiway H. The localizer shelter would be relocated to the southwest of the new end of Runway 7L and abeam the localizer antenna as shown in **Figure 1-5**.

When Runway 7L/25R is extended 832 feet to the west, the Runway 7L landing threshold location would remain unchanged and would be designated as a displaced threshold. Through the use of associated pavement markings and of in-pavement approach lighting systems, aircraft can begin their Runway 7L departure roll at the western-most portion of the extended runway pavement.

Currently, the existing Medium Intensity Approach Light Systems with Runway Alignment Indicator Lights (MALSR) serving Runway 7L comprises a number of light fixtures on towers that must remain fixed at their current location and configuration (**Figure 1-7a**). Accordingly, portions of the existing tower-mounted light fixtures must be replaced with in-pavement lights when the runway pavement is extended westward (**Figure 1-7b**). The use of in-pavement lighting would allow Runway 7L departures west of the displaced threshold.

1.3.2 Pavement Reconstruction of Eastern Portions of Runway 7L/25R and Taxiway B, and Air Freight Building No. 8 Apron

1.3.2.1 Pavement Reconstruction Objectives

The primary objective of this element of the Proposed Action is to reconstruct old and deteriorating pavement at the eastern ends of Runway 7L/25R and Taxiway B, and a portion of the aircraft parking apron west of Air Freight Building No. 8. The Proposed Action would replace areas of pavement that are in poor condition. The existing pavement is considered to be in poor condition with a PCI rating from 20 to 70 (out of 100). 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.

1.3.2.2 Pavement Reconstruction Elements

Pavement reconstruction activities would be undertaken at the locations listed below; the Revised Proposed Action elements are shown in **Figure 1-8**.[13]

- Full-depth reconstruction of existing pavement from the Runway 25R threshold to Taxiway F (1,225 feet long by 150 feet wide by approximately 3 feet deep);
- Full-depth reconstruction of the keel portion of Runway 7L/25R from Taxiway F westward to Taxiway J (600 feet long by 50 feet wide by approximately 3 feet deep);
- Replace existing pavement surface of the keel portion of Runway 7L/25R keel from Taxiway J west to the Taxiway N (6,447 feet long by 50 feet wide);

[13] HNTB, *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011.

- Full-depth reconstruction of Taxiway B, from its terminus near the Runway 25R threshold approximately 2,128 feet west to a point between Taxiway F and Taxiway C3, including connecting Taxiway C1 (2,128 feet long by 176 feet wide by approximately 3 feet deep);
- Replace existing apron pavement north of Taxiway C, between Taxiway C1 and Air Freight Building No. 8;
- Replace the existing jet blast fence east of Runway 25R; and,
- Installation of in-pavement approach lights, as described in Section 1.3.1.2 above.

1.4 Sponsor's Purpose and Need

1.4.1 Purpose of Proposed Actions

1.4.1.1 RSA Improvements

LAX is a critical component of the transportation network in southern California, the national airspace system, and international travel. It is the objective of both the City of Los Angeles and the FAA to provide safe and efficient airport facilities for the traveling public and users of the Airport.

The primary purpose of the Proposed Action is for LAWA to comply with the requirements of 14 CFR Part 139 and Public Law 109-115 regarding RSAs. The RSA is an integral part of the runway environment. Numerous instances of airports involving runway excursions, including incidents with fatalities, underscore the importance of having adequate RSAs. The existing Runway 7L/25R RSA does not currently meet FAA airport design standards. Based on the objective to provide safe and efficient airport facilities, the purpose of the Proposed Action is to provide an RSA that meets FAA airport design standards to improve safety for arriving and departing passengers and aircraft at LAX. The proposed LAX RSA project is not a capacity-enhancing project and would not result in increased or decreased aviation activity at the Airport.

1.4.1.2 Pavement Reconstruction of Eastern Portions of Runway 7L/25R and Taxiway B, and Air Freight Building No. 8 Apron

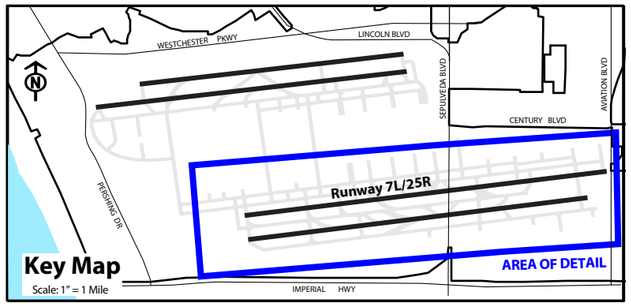
The purpose for reconstructing Runway 7L/25R and Taxiway B pavements is to address poor pavement conditions[14] and to provide a suitable pavement for aircraft landing and departing on Runway 7L/25R and aircraft taxiing on Taxiway B. The purpose for reconstructing the aircraft parking apron pavement west of Air Freight Building No. 8 is to replace deteriorating pavement and provide suitable pavement for aircraft parking.

1.4.2 Need for the Proposed Actions

1.4.2.1 RSA Improvements

The proposed RSA improvements are needed by LAWA to meet FAA airport design standards by December 31, 2015 as required by Public Law 109-115. The existing RSA dimensions for Runway 7L/25R do not meet current FAA airport design standards. The Proposed Action has independent utility and will not affect demand, induce activity, or alter the operational characteristics of the Airport.

[14]HNTB, *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011.



Legend

- Proposed RSA Extension
- Area to be Graded to RSA Quality
- Existing Runway Safety Area
- Proposed Jet Blast Pad
- Runway 7L Extension
- Taxiway Improvements
- Proposed Service Road Realignment

ACRONYMS

TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

NOTE: LANDING THRESHOLDS REMAIN IN EXISTING LOCATIONS

Los Angeles International Airport

0 1000 ft. north
1" = 1000 feet

957′ Area to be Graded to RSA Quality

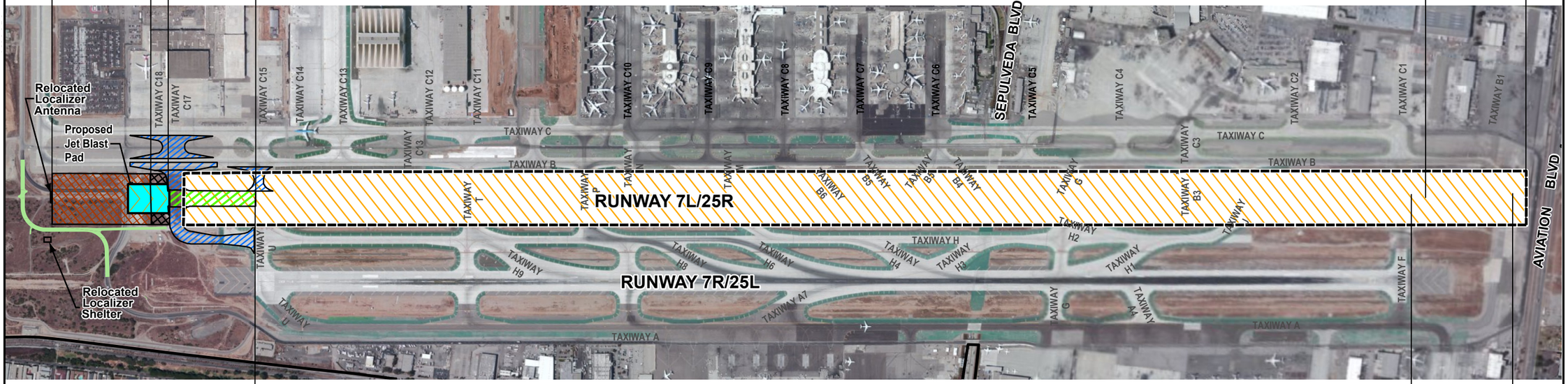
168′ Proposed Runway Safety Area Extension

Runway 7L ASDA/TORA/TODA = 12,091′

1,000′ Runway Safety Area

832′ Displaced Threshold

Runway 7L LDA = 11,259′



957′ Displaced Threshold

Runway 25R LDA = 11,134′

Runway 25R ASDA/TORA/TODA = 12,091′

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); ESRI Maps & Data September 2013 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Proposed Runway 7L/25R
Declared Distances

FIGURE
1-6

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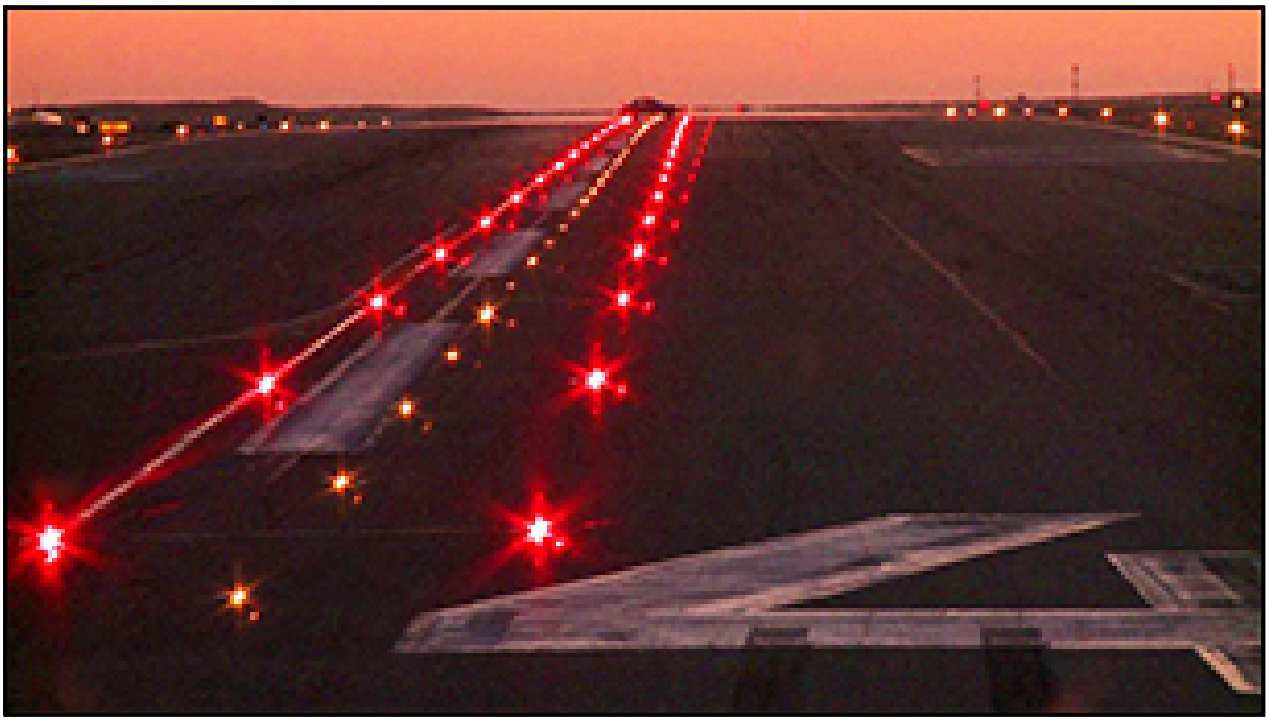
a. Existing Approach Light System (Towers) at South Airfield Runway 7L (Looking West).



b. Existing North Airfield Runway 24L (Looking West) In-Pavement Approach Light System, Similar to Proposed Runway 7L In-Pavement Approach Light System.

Source: LAWA 2012; URS Corporation - January 2012; Prepared by: URS Corporation

FIGURE 1-7	**Existing and Proposed Airfield Lighting**	**Environmental Assessment Runway 7L/25R RSA and Associated Improvements Project**

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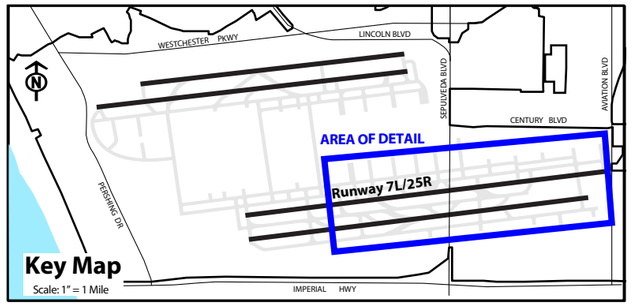
Los Angeles International Airport

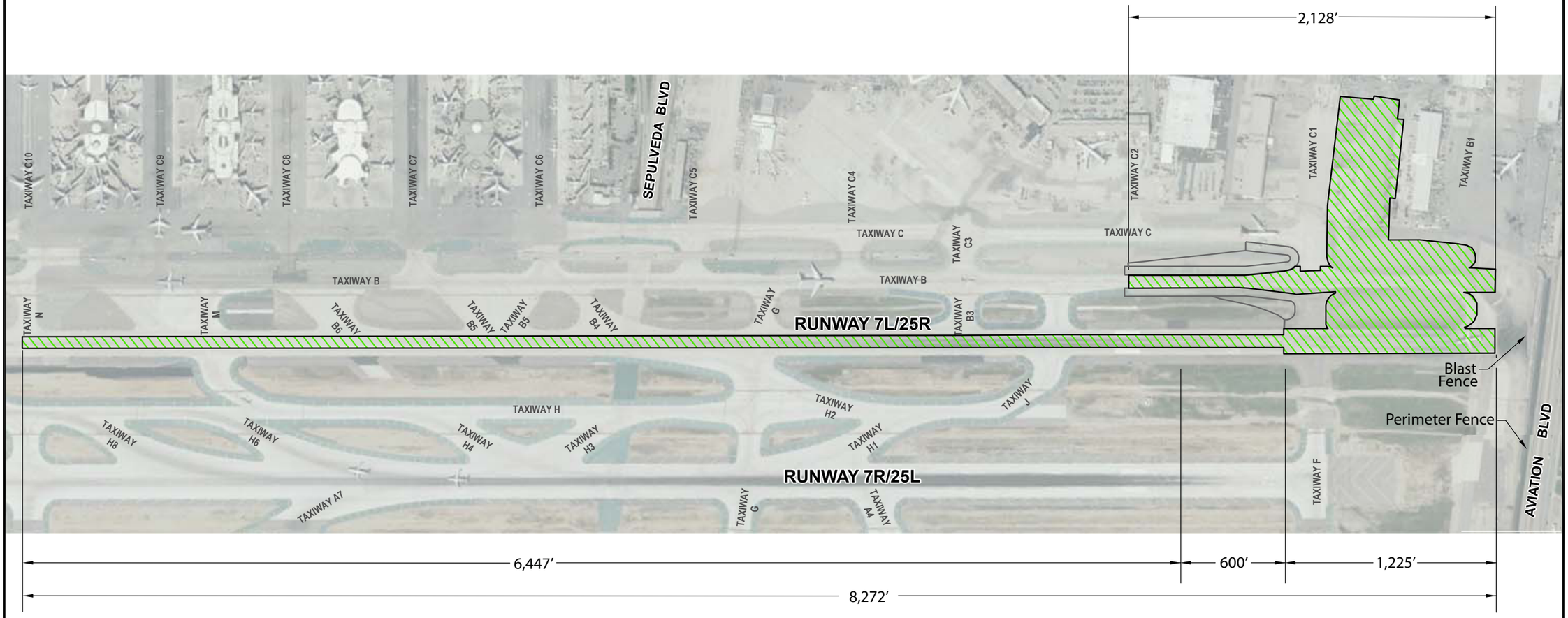


Legend

Pavement Reconstruction

0 1000 ft. north

1" = 1000 feet



Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report* (HNTB, 2011); ESRI Maps & Data June 2013 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Proposed Pavement Reconstruction

FIGURE
1-8

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1.4.2.2 Pavement Reconstruction of Eastern Portions of Runway 7L/25R and Taxiway B, and Air Freight Building No. 8 Apron

Pavement segments on Runway 7L/25R and Taxiway B, and the apron north of Taxiway C between Taxiway C1 and Air Freight Building No.8 are classified as being in poor condition. Based on the objective to provide suitable infrastructure and maintain safe facilities at LAX, there is a need to reconstruct pavements that are deteriorated. The replacement or repair of deteriorated pavements is needed at LAX to safely support aircraft that are landing or departing on runways and taxiing between runways and other facilities on the airfield.

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, per 49 USC §47101(a)(1). Under FAA Order 5200.8, *RSA 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 Action at LAX would result in compliance with the design standards set forth in FAA A/C 150/5300-13A, *Airport Design*, to the extent practicable.

1.5 Requested Federal Actions

The requested FAA actions include the following:

- Unconditional approval of the portions of the Airport Layout Plan that depict the proposed Runway 7L/25R RSA improvements and pavement reconstruction of the eastern portions of Runway 7L/25R and Taxiway B, and a portion of the aircraft parking apron west of Air Freight Building No. 8, for which this Final EA provides environmental analysis;
- Implementation of revised air traffic control procedures below 3,000 feet above ground level;
- Implementation of declared distances;
- Establishment of new Standard Instrument Departure and Standard Terminal Arrival Route procedures;
- Determinations under 49 United States Code (USC) §47106 and §47107 relating to the eligibility of the Proposed Action for federal funding under the Airport Improvement Program;
- Establishment of flight procedure modifications pursuant to 14 CFR Part 95, *IFR Altitudes*;
- Installation, relocation, operation, and maintenance of navigational aids required to support the Proposed Action by FAA Air Traffic Organization;
- Processing of airspace changes, installation, and/or relocation of FAA equipment (e.g., Localizer Array);
- 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)];
- 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 change in runway end; and
- FAA determination of the Proposed Action's effects on the safe and efficient use of airspace.

1.6 Preliminary Project Phasing Schedule

Based on the Revised Proposed Action construction phasing plans, it is estimated that construction of the proposed Runway 7L RSA improvements would last approximately 13 months. Construction activities associated with the eastern elements of the Proposed Action are anticipated to last approximately 3 months. The general construction sequence is listed below, although some of these elements would occur simultaneously.

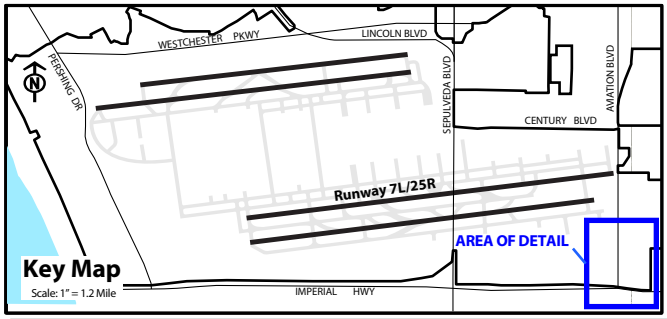
- Construction of proposed RSA improvements that do not require runway closure;
- Pavement reconstruction of Taxiway B and apron between Taxiway C1 and Air Freight Building No. 8; and
- Pavement reconstruction/installation of east/west ends of Runway 7L/25R, grading of portions of the RSA, and installation of in-pavement Approach Lighting System which would require a period of runway closure.

The proposed construction staging area, as shown in **Figure 1-9**, is located on the northeastern corner of Aviation Boulevard and Imperial Highway, the site of the formerly-proposed Continental City development. Construction workers will park in an area within Parking Lot B and will be shuttled to the South Airfield via an access road located at the intersection of 111th Street and Aviation Boulevard. Access to the South Airfield during construction would be through a controlled-access gate (as it is currently). Access to the eastern action site will be via the service road east and north of Taxiway C and for the western action site via the service road south of Taxiway A that rings the South Airfield. Work would occur 6 days a week, with two 10 hour shifts per day. Although there would be nighttime construction activities, per the LAX Master Plan Final EIS/EIR commitments, work-related trips and truck deliveries shall be encouraged to use nighttime hours and shall avoid the peak periods of 7:00 a.m. to 9:00 a.m. and 4:30 p.m. to 6:30 p.m. Deliveries would be limited to the construction staging area whenever possible.[15] Deliveries would be directed to access the construction staging area via I-105 or I-405 and Imperial Highway.

1.6.1 Taxiway B and Apron Pavement Reconstruction

The construction activities associated with pavement reconstruction of the eastern end of Taxiway B and of the apron include demolishing either the full depth or partial depth of the existing Portland Cement Concrete that is in poor condition; re-grading and preparing the areas of pavement removal; installing new Portland Cement Concrete; and re-marking and re-installing lighting. Construction activities related to the pavement reconstruction of the eastern portions of Taxiway B and of the apron between Taxiway C1 and Air Freight Building No. 8 are anticipated to last approximately 3 months. This apron area was included in the Proposed Action considered in the Draft EA, but included a larger area associated with the proposed demolition of Air Freight Building No. 8. The revised Proposed Action would only reconstruct the apron pavement west of Air Freight Building No. 8 which is in poor condition.

[15] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.



0 500 ft.
1" = 500 feet
north

Legend
- Airport Property Boundary
- Proposed Staging Area

Source: LAWA 2013; URS Corporation, 2013; ESRI Maps and Data - May 2013; Prepared by: URS Corporation

FIGURE 1-9	**Proposed Construction Staging Area**	**Environmental Assessment Runway 7L/25R RSA and Associated Improvements Project**

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1.6.2 Runway 7L/25R Pavement Construction/Reconstruction

As both west and east ends of Runway 7L/25R require pavement construction activities, this work would be synchronized so as to only require one closure of the entire runway. Because Runway 25R is the primary departure runway at LAX, the proposed closure would require shifting departing aircraft traffic to other runways. The actual number and frequency of flights shifted to other runways is expected to be determined by LAX Operations and FAA Air Traffic Control. Departure flights would be diverted to the outboard runway on the South Airfield, Runway 7R/25L, or to the primary departure runway on the North Airfield, Runway 6R/24L. The loss of runway capacity during the closure of Runway 7L/25R would impact airfield operational efficiency, increasing aircraft taxi times and possibly affecting airlines flight schedules. Additionally, nighttime operations during the runway closure would potentially have to be reconfigured with a possible shift of some operations to one of the outboard runways.

Runway 7L/25R would be closed for a period of 110 days (approximately 3.5 months). During this closure, Runway 25R pavement reconstruction would occur concurrently with RSA improvements. Reconstruction of Taxiway B east of Taxiway F would occur prior to the runway closure. In order for aircraft to access Runway 25R for departures during the closure of Taxiway B, the usable runway have to be temporarily shortened for 90 days. During this time, the existing displaced threshold for Runway 25R would also be used as the start of takeoff roll for 25R departures.

1.7 Document Organization

The content of each chapter of this Final EA is summarized below.

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

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

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2.0 ALTERNATIVES

2.1 Introduction

2.1.1 Scope of the Alternative Analysis

This chapter summarizes the screening process that was used to identify, compare, and evaluate a wide range of alternatives to the Proposed Action. This chapter presents the following:

- An overview of the structure of the alternatives screening process and analysis used in this EA;
- A description of reasonable alternatives to the Proposed Action, including the No-Action Alternative;
- A concise statement explaining why some alternatives were eliminated from further evaluation in this EA;
- Identification of reasonable alternatives retained for further evaluation in this EA;
- An overview of the refinement process of the Proposed Action based on public comments on the Draft EA; and
- A listing of applicable laws, regulations, executive orders, and associated permits, licenses, and/or reviews.

2.1.2 Requirements of the National Environmental Policy Act

The Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Section [§] 1502.14) for implementing the *National Environmental Policy Act of 1969* requires that federal agencies perform the following tasks:

- Rigorously explore and objectively evaluate all reasonable alternatives and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their elimination;
- Devote substantial treatment to each alternative considered in detail, including the Proposed Action, so that reviewers may evaluate the alternatives' comparative merits;
- Include reasonable alternatives not within the jurisdiction of the lead agency; and,
- Include the alternative of no-action.

The purpose and need for the Proposed Action, as described in Section 1.4 of this EA, includes the following:

- Provide a Runway Safety Area (RSA) for Runway 7L/25R that meets FAA airport design standards to enhance safety for arriving and departing passengers and aircraft at LAX, as required under 14 CFR Part 139 and Public Law (P.L.) 109-115; and
- Replace or repair pavement on Runway 7L/25R and associated taxiways to safely support aircraft that are landing or taking off on runways and taxiing between runways and other facilities on the airfield.

Reasonable alternatives that accomplish the purpose and need for the Proposed Action have been identified and evaluated in this EA to satisfy NEPA requirements.

2.2 RSA Alternatives Screening and Evaluation

2.2.1 Alternatives Screening Process Overview

The identification and evaluation of RSA alternatives in this EA incorporated information presented in the *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo and

Associates 2009). The evaluation of RSA alternatives in this EA was performed using the three-step evaluation process illustrated in **Figure 2-1**.

As shown, each alternative was first evaluated to determine whether it would meet the purpose of and need for the Proposed Action by providing an RSA for Runway 7L/25R that meets FAA airport design standards and improves safety for arriving and departing passengers and aircraft. Each alternative found to meet the Step 1 criterion was then evaluated in Step 2 to determine whether or not it would be practicable, considering existing technology and logistics in light of the overall project purpose, including implementation and completion of RSA improvements by December 31, 2015. In Step 3, alternatives that were found to meet both the Step 1 and Step 2 criteria were further evaluated to determine whether each would result in a safe and efficient use of navigable airspace, and would minimize impacts on existing airfield operations. Alternatives that were found to satisfy the screening criteria were carried forward for evaluation of potential environmental effects, as described in Chapter 4.0 of this EA. In accordance with the requirements of the CEQ Regulations, the implementing regulations for NEPA, the No-Action Alternative was retained and carried forward for detailed analysis in Chapter 4.0.

2.2.2 RSA Alternatives Screening Evaluation Criteria

2.2.2.1 Step 1 Criterion – Purpose and Need

The criterion for the Step 1 screening evaluation was whether an alternative would sufficiently improve the Airport's RSAs to comply with the FAA airport design standards required by 14 CFR Part 139, and articulated in FAA A/C 150/5300-13A, *Airport Design*. The following are the RSA dimensions for an airport such as LAX that serves large commercial aircraft in Approach Categories C and D[1], per Table 3-8 of FAA A/C 150/5300-13A, *Airport Design*.

RSA Dimensions	Approach Category C and D (feet)
RSA Width	500
RSA Length Prior to Landing Threshold	600
RSA Length Beyond Departure End	1,000

As discussed in Section 1.2.2 of this EA, an RSA must be capable, under dry conditions, of supporting Aircraft Rescue and Fire Fighting (ARFF) equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

2.2.2.2 Step 2 Criteria – Practicality and Implementation Schedule

The criteria used in the Step 2 screening evaluation addressed several key considerations:

- Could the alternative realistically be developed and implemented by December 31, 2015, as specified in P.L. 109-115?
- Would the alternative be practical and prudent, considering existing technology, as well as design and construction challenges and potential costs when compared to other alternatives?
- Does the alternative provide the maximum practicable benefit to aviation safety in accordance with the guidance in FAA Order 5200.8, *Runway Safety Area Program*?

[1] Chapter 1 of FAA A/C 150/5300-13A, *Airport Design*, defines aircraft Approach Categories A to E, which represent groupings of aircraft based on 1.3 times their stall speed in their landing configuration at the certificated maximum flap setting and maximum landing weight, under standard atmospheric conditions.

Implementation Schedule

The ability to successfully plan, design, obtain the necessary permits for, and construct by the December 31, 2015 deadline established by P.L. 109-115, were key criteria for each of the RSA Project alternatives considered in this step of the evaluation process.

Construction and Cost Practicability

Other criteria addressed the relative engineering design and construction complexity of each RSA alternative, along with the projected construction cost (including any environmental mitigation requirements). For example, the requirement to relocate major surface transportation facilities (i.e., Aviation Boulevard and a section of the railroad that parallels it) would pose substantial design and construction challenges and have a substantially higher cost than an alternative that did not affect such facilities. As such, alternatives that had fewer complexities in terms of staging, phasing, and construction activities were considered more feasible and practical than those with highly complex construction issues.

Provision of Maximum Practical Benefit to Aviation Safety

An explicit goal of FAA Order 5200.8, *Runway Safety Area Program*, is to encourage airports to provide the maximum practical benefit to aviation safety in developing their RSA program, when provision of standard RSAs specified in FAA A/C 150/5300-13A, *Airport Design*, is not practical. The order recommends consideration of a sequence of possible improvements, and recommends that for each alternative improvement, the greatest practical conformance with the FAA airport design standards for RSA dimensions and/or performance be implemented.

2.2.2.3 Step 3 Criteria – Safe and Efficient Use of Navigable Airspace and Impact on Airfield Operations

The final step of the screening evaluation considered these two criteria:

- Is the alternative consistent with the FAA's statutory mission to ensure the safe and efficient use of navigable airspace?
- Would the alternative minimize the impact of the RSA improvements on the operation of the Airport, including the ability to effectively serve the aircraft fleet currently using and expected to use the Airport?

Safe and Efficient Use of Navigable Airspace

This criterion considered whether or not an alternative would require significant changes to either local or regional airspace procedures, as well as the potential to cause airspace conflicts.

Airport Operations

This criterion evaluated to what extent an alternative may affect the efficient use of the airfield, reduce the utility of Runway 7L/25R, or otherwise substantially impact airfield operations. Examples of such impacts would be increased taxi distances and times; increased delay resulting from increased runway crossings; or reductions in runway length that would impose new operational restrictions on aircraft. Operational restrictions would include any increased weight limitations for departing aircraft that reduce the number of passengers, amount of cargo or amount of fuel that can be carried by the departing aircraft.

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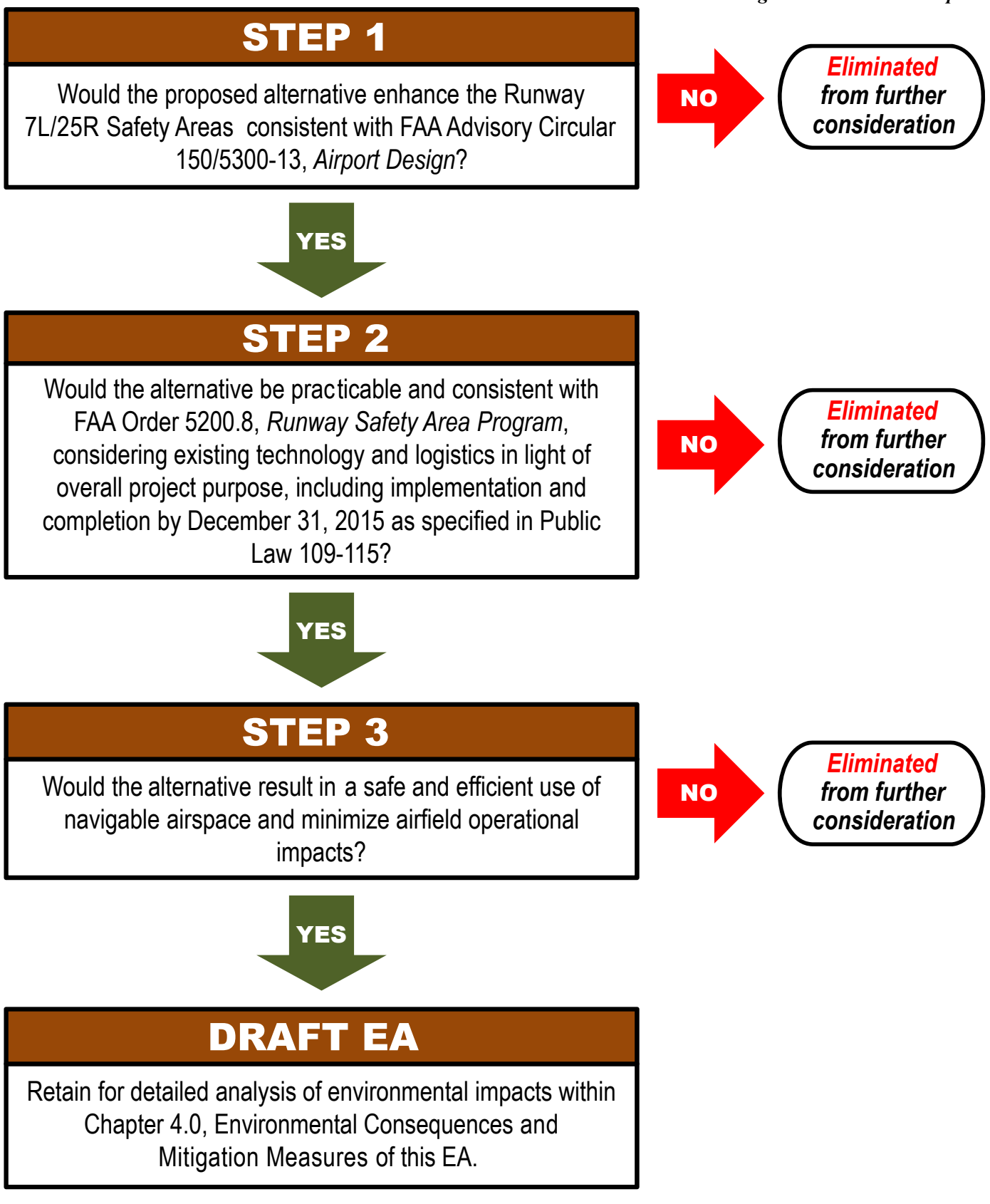

Source: URS Corporation, May 2013.

FIGURE 2-1	**RSA Alternative Screening Process**	**Environmental Assessment Runway 7L/25R RSA and Associated Improvements Project**

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2.2.3 Evaluation of Off-Site and Operational Alternatives Considered

2.2.3.1 Use of Alternative Modes of Transportation Alternative

The primary purpose of the Proposed Action Alternative is to provide an RSA for Runway 7L/25R that meets FAA airport design standards consistent with FAA A/C 150/5300-13A, *Airport Design*, as required by P.L. 109-115. An alternative to use alternative modes of transportation to replace some or all of the air transportation activity at LAX does not meet this purpose because the Runway 7L/25R RSA would still fail to meet FAA airport design standards, and safety would not be enhanced as required by P.L. 109-115. In addition, FAA and LAWA do not have the authority to compel LAX airport users to use other modes of transportation. The Use of Alternative Modes of Transportation Alternative was, therefore, eliminated from further consideration in this EA.

2.2.3.2 Use of Other Public Airports Alternative

The primary purpose of the Proposed Action Alternative is to provide an RSA for Runway 7L/25R that meets FAA airport design standards consistent with FAA A/C 150/5300-13A, *Airport Design*, as required by P.L. 109-115. An alternative to use other area public airports to replace some or all of the air transportation activity at LAX does not meet this purpose because the RSA for Runway 7L/25R at LAX would still fail to meet applicable FAA airport design standards, and safety would not be enhanced as required by P.L. 109-115. In addition, FAA and LAWA do not have the authority to divert air transportation activity from LAX to other area airports. The Use of Other Public Airports Alternative was, therefore, eliminated from further consideration this EA.

2.2.3.3 Use of Alternative Aircraft Alternative

The primary purpose of the Proposed Action Alternative is to enhance aviation safety by providing an RSA at LAX that meets FAA airport design standards consistent with FAA A/C 150/5300-13A, *Airport Design*, as required by P.L. 109-115. An alternative that uses alternative aircraft to replace some or all of the transportation activity at LAX does not meet the purpose and need of the Proposed Action Alternative because the RSA for Runway 7L/25R would still fail to meet the applicable FAA airport design standards, and safety would not be enhanced, as required by P.L. 109-115. In addition, FAA and LAWA do not have the authority to compel airlines to use alternative aircraft. The Use of Alternative Aircraft Alternative was, therefore, eliminated from further consideration in this EA.

2.2.4 Description of On-Site RSA Development Alternatives

Potential on-site alternatives identified for this analysis generally included "build" alternatives that either satisfy FAA airport design standards or employ other options to improve safety to the greatest extent practicable.

2.2.4.1 Construct Standard Runway Safety Areas Alternative

Per instructions in FAA Order 5200.8, *Runway Safety Area Program*, the first option that must be considered in meeting RSA airport design standards is establishing a traditional, graded RSA that fully meets the dimensional and gradient requirements. At a minimum, land acquisition, fill, soil improvement, and grading requirements must be identified and evaluated. This alternative often involves the greatest unavoidable impacts on natural resources and surrounding communities, and therefore, the greatest potential costs for environmental mitigation.

2.2.4.2 Relocate, Shift, or Realign the Runways Alternative(s)

When a traditional, standard RSA is determined not to be practicable, an option to meet RSA standards can involve relocating, shifting, realigning, or otherwise changing a runway. In some cases the environmental impacts and construction/implementation costs of these types of RSA improvements may not be practicable.

2.2.4.3 Reduce Runway Lengths Alternative

Under this alternative, RSA dimensions compliant with FAA airport design standards may be obtained by shortening the length of a runway to achieve the required RSA length. This option is viable only if aircraft serving LAX do not require the entire length that is presently available, or if departures of smaller aircraft could be reallocated from other runways onto the reduced runway.

2.2.4.4 Implement Declared Distances Alternative

Where it is impractical to provide the clearances and dimensions for RSAs to meet FAA airport design standards, another acceptable means of creating an equivalent RSA is by using declared distances. Declared distances are defined in Chapter 1, of FAA A/C 150/5300-13A, *Airport Design*, as "*…the distances the Airport owner declares available for a turbine-powered aircraft's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements*." Typically, this concept involves declaring that some portion of the existing runway pavement is unavailable for specific operations, and is instead used to provide an RSA meeting applicable FAA airport design standards. Declared distances are also used where different runway lengths are defined for each direction of operation (i.e., when displaced thresholds are present). Pilots use these declared distances, along with weather data and aircraft performance characteristics, to make determinations such as the maximum allowable takeoff or landing weight of the aircraft or the maximum payload and range for a flight. Declared distances at airports are considered in the Operations Specifications of commercial aircraft operations that are part of the air carrier certificates and operations certificates issued by FAA under 14 CFR Part 119, as well as in the internal operations manuals of those operators. Pilots of commercial aircraft are required to comply with such specifications and manuals (Refer to Appendix A for further explanation).

In this situation, the specified distance available for a particular operation such as landing may be different in each direction on the same runway pavement. As discussed in Chapter 1 Purpose and Need, distances proposed as part of the Proposed Action include Takeoff Run Available (TORA), Takeoff Distance Available (TODA), Accelerate-Stop Distance Available (ASDA), and Landing Distance Available (LDA). Implementation of declared distances requires coordination with airport users and FAA approval.

2.2.4.5 Install Standard Engineered Materials Arresting Systems Alternative

When it is not practicable to provide a standard RSA that meets FAA standards, consideration may be given to enhancing runway safety through the use of an Engineered Materials Arresting System (EMAS). An EMAS is an aircraft arresting system comprised of a specialized concrete material that is designed to crush under the weight of an aircraft. An EMAS can decelerate and stop an aircraft over a short distance. When an aircraft overruns the runway, these materials are crushed, absorbing the forward momentum of the aircraft and decelerating and arresting the aircraft's movement. The FAA requires that EMAS be engineered to decelerate the runway's design aircraft at exit speeds of 70 knots, without causing significant damage to the aircraft or injuries to the passengers. Section 4 of FAA A/C 150/5220-22B, *Engineered Materials Arresting Systems for Aircraft Overruns*, indicates that a standard EMAS provides a level of safety that is generally equivalent to a full RSA built to the dimensional standards in the latest version of FAA A/C 150/5300-13A, *Airport Design*. For purposes of installing an EMAS, the FAA defines the design aircraft as an aircraft having at least 500 annual operations (takeoffs and landings) on the runway, and having the most demand on EMAS. This is usually, but not always, the heaviest aircraft that regularly uses the runway. A photograph of an EMAS installation is provided in **Figure 2-2**.

(a) Jiuzhai Huanglong Airport, China, 2011

(b) EMAS at JFK International Airport, NY, 2003

Source: (a) Gizmodo Australia, http://www.gizmodo.com.au/2011/12/why-did-this-airplane-landing-gear-destroy-this-concrete-runway, 2011;
Port Authority of New York and New Jersey, 2004; Prepared by: URS Corporation

FIGURE 2-2	**Sample Engineered Materials Arresting System (EMAS) Installations**	**Environmental Assessment Runway 7L/25R RSA and Associated Improvements Project**

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2.2.5 Evaluation of On-Site Development Alternatives

LAWA completed a study in June 2006 that evaluated the existing Runway 7L/25R RSA and options to address deficiencies in the RSA. In the study, entitled *Runway Safety Area Evaluation and Analysis for Runway 7L -25R at LAX*, LAWA determined that reasonable alternatives were available to address Runway 7L/25R RSA deficiencies and that it was practicable to improve the Runway 7L/25R RSA. Alternatives identified by FAA include:

Runway 7L: **Declared Distances -** For takeoffs and landings, use of declared distances would require a reduction of the present ASDA and LDA by 1,000 feet, from 12,091 feet to 11,091 feet, or

Shift Runway – Shifting the Runway 7L threshold approximately 832 feet to the west and applying declared distances. This alternative would not substantially impact airline load factors for takeoffs to the east.

Runway 25R: **Shift Runway** - Shift the Runway 25R threshold approximately 43 feet to the west for landings to the west.

Upon completion of the 2006 *Runway Safety Area Evaluation and Analysis for Runway 7L -25R at LAX*, LAWA developed conceptual alternatives to address the Runway 7L/25R RSA deficiencies and produced the *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, which identified five RSA conceptual alternatives, including the use of EMAS. However, in accordance with FAA Order 5200.8, *Runway Safety Area Program*, the range of alternatives developed for consideration in this EA does not include EMAS because LAWA can achieve an RSA that complies with FAA airport design standards through the use of adding a displaced threshold on the west end of Runway 7L/25R, combined with the use of declared distances. Furthermore, EMAS has higher costs associated with installation and long-term maintenance, compared to the other alternatives considered, the majority of which traditionally include a filled and graded RSA.

The primary discussion in this chapter focuses on alternatives to the RSA improvements. More specifically, the required No-Action Alternative and the alternatives for the Pavement Reconstruction components considered in this EA are the alternatives that would build the required RSA improvements. The rationale for this approach is provided below:

- **Pavement Reconstruction Alternative Analysis.** The Proposed Action includes the full reconstruction of the eastern portions of the pavement on Runway 25R and Taxiway B, and a portion of the aircraft parking apron between Taxiway C1 and Air Freight Building No. 8 (see Section 1.3). Pavement reconstruction activities would necessitate closure of the runway and part of the taxiway, and given that LAX's runways operate on a 24-hour basis, the closure of a runway and/or taxiway could adversely affect operations. As implementation of the proposed RSA improvements would require closure of Runway 7L/25R, LAWA determined that concurrent reconstruction of pavement on the eastern side of the runway was the only feasible build alternative that would meet the objectives of the Pavement Reconstruction component. Therefore, the Pavement Reconstruction alternatives considered for further analysis in this EA are the reconstruction of pavement as proposed, and the required No-Action Alternative.

2.2.5.1 Construct a Standard RSA on East End of Runway 7L/25R Alternative

As depicted in **Figure 2-3**, this alternative would develop a traditional, graded RSA that meets FAA airport design standards. This alternative would remove and/or relocate all objects with the standard RSA footprint (500-feet wide and 1,000 feet beyond each runway end), including existing navigational aids and sections of a road and railroad. The development of a standard RSA would maintain the existing landing and take-off distances available to arriving and departing aircraft (**Table 2-1**).

Evaluation

Because this alternative would provide a standard RSA, it met the Step 1 Purpose and Need criteria. In addition, the Runway 7L and Runway 25R Accelerate-Stop Distances Available (which are declared distances) would be the same as existing conditions (12,091 feet), which was one of the criteria that LAWA used to evaluate RSA alternatives. However, this alternative did not satisfy the Step 2 practicality and implementation schedule criteria. At the east end of the runway, this alternative would require a portion of an existing airfield service road to have controlled access, as it would cross the extended Runway 25R. Aviation Boulevard and the Burlington Northern Santa Fe (BNSF) Harbor Subdivision railroad right-of-way (ROW), located to the east of Runway 25R ,would need to be grade-separated due to the extension of Runway 25R.[2] Because of the complexities of grade-separating Aviation Boulevard and the BNSF Harbor Subdivision ROW (both requiring off-airport right-of-way acquisition and construction), it is highly unlikely that this alternative could be constructed by the required completion date. Because of the substantial complexities associated with this alternative, it was not retained for detailed study in this EA.

2.2.5.2 Shift Runway Alternative

As depicted in **Figure 2-4**, this alternative would physically shift Runway 7L/25R to the west to provide a standard RSA on the east end of the runway. Originally, the Shift Runway Alternative proposed to demolish the eastern 832 feet of Runway 25R. Subsequent to the initial development of RSA alternatives, LAWA determined that demolition of the eastern 832 feet of Runway 25R as proposed in the Shift Runway Alternative would be an extra unnecessary expense (given that this area is already paved and graded to meet FAA airport design standards), and this additional work could delay implementation of the RSA project by the federally mandated timeline. Therefore, the Shift Runway Alternative was modified and no longer includes demolition of the eastern 832 feet of Runway 25R.[3] Instead, the eastern 832 feet of Runway 25R pavement (located beyond the new 25R threshold) would become part of the RSA but would not be available for aircraft operations (this would involve changing pavement markings that can include chevron markings, which would ultimately be coordinated between LAWA and FAA). To provide a standard RSA on the west end of the runway, an area of 1,000 feet in length beyond the new 7L threshold would be graded and all existing objects in the new RSA footprint would be relocated. Approach Lighting Systems (ALS) in towers would be removed and replaced with in-pavement lighting. New connector taxiways would be constructed to provide access to the new thresholds. The runway length would be maintained (12,091 feet).

Evaluation

Shifting the runway would meet all of the criteria established in the three-step alternatives screening evaluation process. The loss of the eastern 832 feet of Runway 25R would not affect takeoff or landing operations on Runway 7L/25R, as the length of the Runway would still be the same as existing conditions. Implementation of this alternative would require fill and grading operations west of the runway to develop the RSA. However, this earthwork could be accomplished within the proposed implementation schedule for the project. Therefore, the Shift Runway Alternative has been carried forward for further evaluation in this EA.

2.2.5.3 Reduce Runway Length Alternative

As depicted in **Figure 2-5**, this alternative would meet the Step 1 Purpose and Need criterion by providing 1,000 feet of RSA beyond each runway end. The alternative would physically reduce Runway 7L/25R from its present length of 12,091 feet to 10,970 feet (refer to **Table 2-1**). The 7L threshold would be relocated east approximately 289 feet and the 25R threshold would be relocated westward approximately 832 feet.

[2] The Harbor Subdivision railroad ROW is a freight corridor owned and operated by the Burlington North-Santa Fe Company. The ROW is located adjacent to the Airport property line along Aviation Boulevard from Imperial Highway to Century Boulevard, which it crosses on a bridge.

[3] Glasgow, Herb, Airport Environmental Planner, Los Angeles World Airports, electronic mail communication, dated March 20, 2012.

Evaluation

This alternative would satisfy the Step 1 Purpose and Need criteria. This alternative would also satisfy the Step 2 criteria regarding practicality and implementation schedule. However, this alternative did not satisfy the Step 3 screening criteria regarding the minimization of impacts on airfield and aircraft operations. The alternative had the largest impact on usable runway length among all alternatives considered. Because the existing runway pavement beyond the relocated thresholds would not be available for any aircraft operations, this alternative would impose operational restrictions on certain large aircraft that use the runway. The available takeoff length of the runway, for both 7L and 25R departures, would be reduced by 1,121 feet. The amount of runway available for landing would be reduced by approximately 1,121 feet on the Runway 7L end and 289 feet on Runway 25R end of the runway.

According to the LAX Master Plan, the most demanding runway length requirements at LAX are generated by the Boeing 747-200/300 and the 747-400, which require 11,500 and 11,100 feet of runway for departures, respectively, at 100 percent of maximum takeoff weight.[4] Other aircraft, such as the MD-11, Boeing 737-300, and Boeing 737-400 require runway lengths between 10,000 feet and 11,000 feet for departures when at maximum takeoff weight. LAX generates a substantial amount of long-haul and international air carrier departures, including passenger and all-cargo flights. A reduction in runway length would impose operational restrictions on these aircraft, which would include, but not be limited to, reduced fuel loads, reduced number of passengers, and/or reduced cargo to meet weight restrictions and performance requirements of a reduced runway. Because the reduced runway length resulting from this alternative would reduce the utility of Runway 7L/25R and have a negative impact on aircraft operations at LAX, this alternative was removed from further consideration in this EA.

2.2.5.4 Declared Distances Alternative

Figure 2-6 depicts the use of declared distances to meet Runway 7L/25R RSA requirements. Through the application of declared distances, this provides an equivalent RSA of 1,000 feet beyond each runway end. This alternative would reduce the Runway 25R Accelerate-Stop Distance Available (ASDA) by 289 feet (from 12,091 feet to 11,802 feet) and would reduce the Runway 25R Landing Distance Available (LDA) by 289 feet (from 11,134 feet to 10,845 feet). As shown in **Table 2-1**, Runway 7L's LDA would be reduced 832 feet, from 12,091 feet to 11,259 feet.

Evaluation

This alternative satisfied the Step 1 Purpose and Need criterion. Because no substantial construction, practicality, or schedule issues are associated with this alternative, it also satisfied Step 2 criteria. However, this alternative did not fully satisfy Step 3 criteria regarding impacts to airfield operations. This alternative would reduce the takeoff and landing length on Runway 7L by 832 feet and would reduce the takeoff and landing length on Runway 25R by 289 feet. Because the reduced runway take-off and landing lengths resulting from this alternative would reduce the utility of Runway 7L/25R and have a negative impact on aircraft operations at LAX, this alternative was removed from further consideration in this EA.

[4] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

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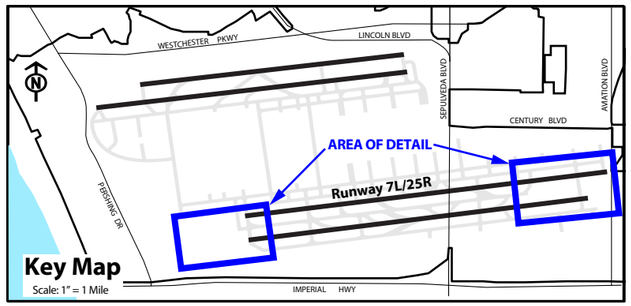
Los Angeles International Airport



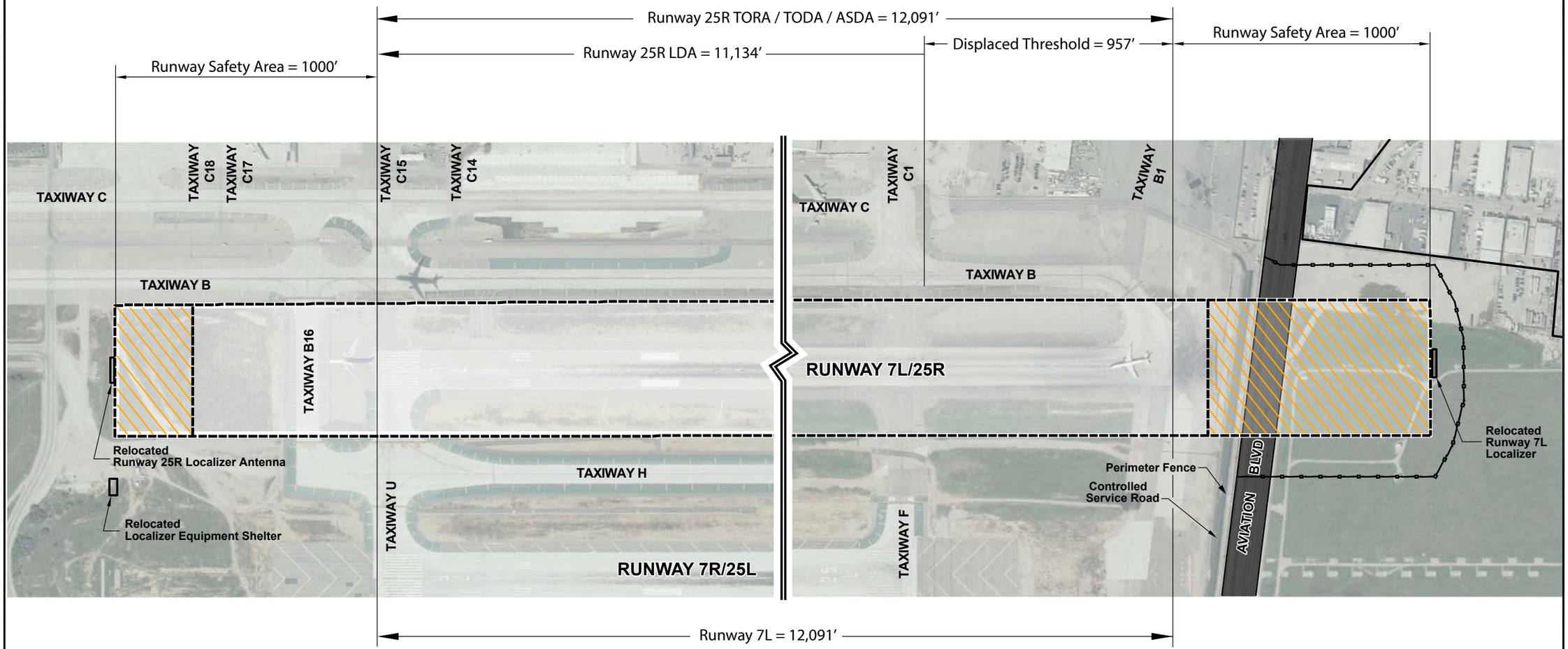
LEGEND

- Airport Property Boundary
- Existing Runway Safety Area
- Proposed Standard Runway Safety Area
- Tunneled Aviation Blvd & Railroad
- Relocated Aircraft Operations Area Fence

ACRONYMS

TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

0 400 ft. north
1" = 400 feet



Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport (*Ricondo & Associates, December 2009); LAWA 2012; ESRI Maps & Data, December 2011 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Runway 7L/25R
Standard Runway Safety Areas Alternative

FIGURE
2-3

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Table 2-1
RSA Alternatives Comparison Matrix

Condition/ Alternative	Runway End	Runway Shift/ Extension (feet)	Displaced Threshold (feet)	Use of Declared Distances	Standard RSAs	Available Distances (Feet)			
						Take Off Run Available (TORA)	Take Off Distance Available (TODA)	Accelerate-Stop Distance Available (ASDA)	Landing Distance Available (LDA)
Existing[1]	7L					12,091	12,091	12,091	12,091
	25R		957	✓		12,091	12,091	12,091	11,134
Standard RSAs	7L				✓	12,091	12,091	12,091	12,091
	25R		957	✓	✓	12,091	12,091	12,091	11,134
Shift Runway	7L	832 (Westward)			✓	12,091	12,091	12,091	12,091
	25R	832 (Westward)	125	✓	✓	12,091	12,091	12,091	11,134
Reduced Runway	7L	289 (Eastward)			✓	10,970	10,970	10,970	10,970
	25R	832 (Westward)	125	✓	✓	10,970	10,970	10,970	10,845
Declared Distances	7L			✓	✓	12,091	12,091	11,259	11,259
	25R		957	✓	✓	12,091	12,091	11,802	10,845
Refinement #1	7L	832 (Westward)	832	✓	✓	12,923	12,923	12,091	11,259
	25R		957	✓	✓	12,923	12,923	12,923	11,966
RSA Alternative Refinement #2[2]	7L	832 (Westward)	832	✓	✓	12,923	12,923	12,091	11,259
	25R		957	✓	✓	12,923	12,923	12,091	11,134
RSA Alternative Refinement #3 (Proposed Action in the Final EA)	7L	832 (Westward)	832	✓	✓	12,091	12,091	12,091	11,259
	25R		957	✓	✓	12,091	12,091	12,091	11,134

Source: Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009

Notes: Numbers in RED indicate different numbers than existing conditions.

[1]The existing declared distances are not published declared distances.

[2] RSA Alternative Refinement #2 was identified as the Proposed Action in the Draft EA; however, after receipt of agency and public comments, and refinement of project objectives, LAWA developed RSA Alternative Refinement #3, which is the Proposed Action assessed in this EA.

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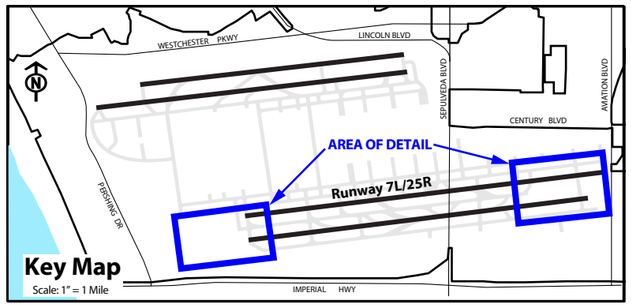
Los Angeles International Airport



Legend

- Proposed Runway Safety Area
- Relocated Access Road
- Runway 7L Extension
- Taxiway Improvements
- Graded and Unpaved
- Area for RSA Use Only (No Operations)

ACRONYMS
TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

0 400 ft. north
1" = 400 feet

Runway 7L = 12,091'

TAXIWAY AA
TAXIWAY C
TAXIWAY C18
TAXIWAY C17
TAXIWAY B17
TAXIWAY B16
TAXIWAY C15
TAXIWAY U
TAXIWAY C14
TAXIWAY B
Relocated Runway 25R Localizer
Relocated Runway 25R Localizer Shelter
Decommissioning of Taxiway B16
TAXIWAY H
TAXIWAY U
TAXIWAY H
TAXYWAY C2
TAXIWAY C
TAXIWAY C1
TAXIWAY B1
TAXIWAY B
Perimeter Fence
RUNWAY 7L/25R
25 R
Blast Fence
AVIATION BLVD
TAXIWAY F
RUNWAY 7R/25L

832'
Runway Shift

125'
Displaced Threshold

832'
Runway Shift

Runway 25R LDA = 11,966'

1,000'
Runway Safety Area

168'
Available
Runway Safety Area

Runway 25R TORA/TODA/ASDA = 12,091'

1,000'
Runway Safety Area

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport (*Ricondo & Associates, December 2009); LAWA 2012; ESRI Maps & Data, December 2011 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and Associated Improvements Project

Runway 7L/25R RSA
Shift Runway Alternative

FIGURE
2-4

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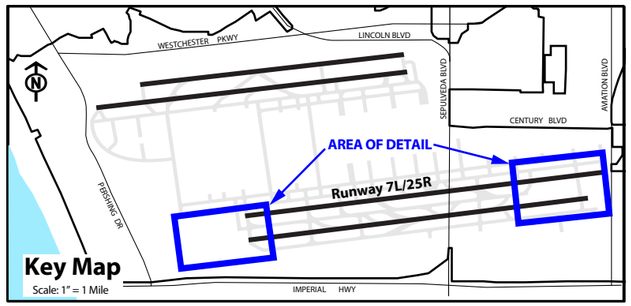

LEGEND

- Airport Property Boundary
- Proposed Runway Safety Area
- Taxiway Improvements
- Displaced Thresholds

ACRONYMS

TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

Los Angeles International Airport

0 400 ft.
1" = 400 feet
north

Runway 7L = 10,970′

289′ Displaced Threshold

832′ Displaced Threshold

TAXIWAY C18
TAXIWAY C17
TAXIWAY C15
TAXIWAY C14
TAXIWAY C2
TAXIWAY C1
TAXIWAY C
TAXIWAY B
TAXIWAY B16
TAXIWAY B1
TAXIWAY H
TAXIWAY U
TAXIWAY F
RUNWAY 7L/25R
RUNWAY 7R/25L
7 L
25 R
Runway 25R Localizer
Blast Fence
Perimeter Fence
AVIATION BLVD

1,000′ Runway Safety Area

Runway 25R LDA = 10,845′

Runway 25R TORA / TODA / ASDA = 10,970′

125′ Displaced Threshold

1,000′ Runway Safety Area

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); LAWA 2012; ESRI Maps & Data, December 2011 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Runway 7L/25R RSA
Reduce Runway Length Alternative

FIGURE
2-5

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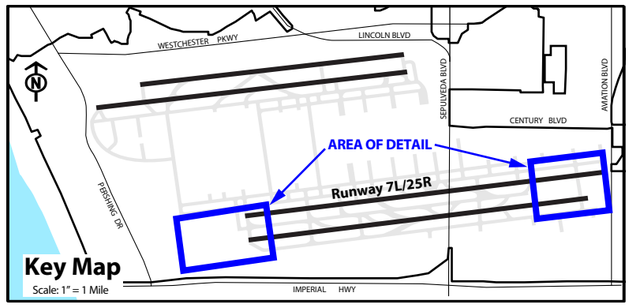

LEGEND

- Airport Property Boundary
- Proposed Runway Safety Area
- Unusable Part of Runway

ACRONYMS

TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

0 400 ft. north
1" = 400 feet

Runway 7L TORA / TODA = 12,091'
Runway 7L ASDA / LDA = 11,259'
168' Available Runway Safety Area
1,000' Runway Safety Area

TAXIWAY C18
TAXIWAY C17
TAXIWAY C
TAXIWAY C15
TAXIWAY C14
TAXIWAY C2
TAXIWAY C1
TAXIWAY B1
TAXIWAY B
TAXIWAY B16
500'
Runway 25R Localizer
Existing Displaced Threshold
RUNWAY 7L/25R
AVIATION BLVD
Blast Fence
Perimeter Fence
TAXIWAY H
TAXIWAY U
TAXIWAY F
RUNWAY 7R/25L

711' Existing Runway Safety Area
1,000' Runway Safety Area
Runway 25R LDA = 10,845'
957' Existing Displaced Threshold
Runway 25R ASDA = 11,802'
Runway 25R TORA / TODA = 12,091'

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport (*Ricondo & Associates, December 2009); LAWA 2012; ESRI Maps & Data, December 2011 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and Associated Improvements Project

Runway 7L/25R RSA
Declared Distances Alternative

FIGURE 2-6

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2.2.6 Preliminary Review and Refinement of RSA Alternatives

LAWA seeks to correct Runway 7L/25R RSA deficiencies while at the same time maintaining existing runway length and not adversely affecting airlines' operational capabilities.[5] Of the alternatives considered, only the Standard RSA and Shift Runway alternatives do not reduce takeoff length. Because of the cost to relocate roads and rail, and to potentially displace commercial uses, the Standard RSA Alternative was not considered a viable RSA improvement option. As discussed in Section 2.2.5, the Shift Runway Alternative was the only RSA alternative considered to be viable. An alternative refinement process was also conducted that included combining the Shift Runway and Declared Distances alternatives.

2.2.6.1 RSA Alternative Refinement #1

RSA Alternative Refinement #1 was developed to include most of the elements of the originally-proposed Shift Runway Alternative, including the 832-foot western extension of Runway 7L, the 1,000-foot RSA grading work west of the end of the extended Runway 7L, the relocation of the runway localizer antenna, and the realignment of a service road on the west. However, these two alternatives differed in that RSA Alternative Refinement #1 did not include demolishing the eastern 832 feet of Runway 25R and it would implement declared distances to create an RSA that is compliant with FAA airport design standards.[6] Subsequent to the initial development of RSA alternatives, LAWA determined that demolition of the eastern 832 feet of Runway 25R as proposed in the Shift Runway Alternative would be an extra unnecessary expense (given that this area is already paved and graded to meet FAA airport design standards), and this additional work could delay implementation of the RSA project by the federally mandated timeline. Therefore, the Shift Runway Alternative was modified and no longer includes demolition of the eastern 832 feet of Runway 25R.[7] Consequently, aside from the implementation of declared distances under the RSA Alternative Refinement #1, both alternatives are now essentially the same.

Evaluation

As the elements under RSA Alternative Refinement #1 are similar to the same as the Shift Runway Alternative, the RSA Alternative Refinement #1 was not be evaluated further in this EA.

2.2.6.2 RSA Alternative Refinement #2

RSA Alternative Refinement #2 (LAWA's Proposed Action Alternative in the Draft EA) is essentially the same as RSA Alternative Refinement #1, but has less grading requirements on the western end of the Runway. As shown in **Figure 2-7**, under RSA Alternative Refinement #2, Runway 7L/25R is extended by 832 feet to the west. Through the application of declared distances, aircraft departing Runway 7L would have 12,091 feet of takeoff distance available (**Table 2-1**) while maintaining a minimum of 1,000 feet of clearance to the nearest obstacle in the case of an aborted takeoff.[8] In the west direction, however, the 832-foot runway extension is used as an RSA through the use of declared distances. The Runway 25R effective departure length (the ASDA required for aircraft aborting takeoff) is maintained at 12,091 feet and in essence reduces the RSA dimensional grading requirements at the west end of the runway to an area defined by 500 feet in width by 168 feet in length. The Runway 25R localizer antenna could be relocated as close as 300 feet from the end of the Runway 7L, outside of the RSA.

Evaluation

The RSA Alternative Refinement #2 met all three of the evaluation criteria (Section 2.3.2). This Alternative was carried forward for review as the Proposed Action in the Draft EA. Based on public comments received

[5] Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009.
[6] *Ibid.*
[7] Glasgow, Herb, Airport Environmental Planner, Los Angeles World Airports, electronic mail communication, dated March 20, 2012.
[8] Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009.

during the Draft EA public review period, RSA Alternative Refinement #2 was further refined (RSA Alternative Refinement #3 below). The RSA Alternative Refinement #2 is still considered a feasible alternative and is carried forward for analysis in this EA.

2.2.7 Refinement of RSA Alternatives After Publication of Draft EA

2.2.7.1 RSA Alternative Refinement #3

Based on public comments received during the Draft EA public review period, RSA Alternative Refinement #2 was further refined. In general, public comments indicated a preference for the Shift Runway Alternative over the RSA Alternative Refinement #2. This new refinement, RSA Alternative Refinement #3 (LAWA's Proposed Action Alternative in this EA), is generally a combination of all of the RSA improvement elements of RSA Alternative Refinement #2, the increased grading area of the Shift Runway Alternative, and some elements that are required due to the larger graded area on the west side of the Runway. As shown in **Figure 2-8**, under RSA Alternative Refinement #3, Runway 7L/25R is extended by 832 feet to the west. In addition, an area of 168 feet long by 500 feet wide to the west of the extended end of Runway 7L would be graded to provide the FAA required RSA. An additional area 957 feet long by 500 feet wide would be graded to RSA standards to preserve the option of shifting the runway in the future, if LAWA determines that aircraft operations would not be negatively impacted.

For eastward operations, through the application of declared distances, aircraft departing Runway 7L would have 12,091 feet of ASDA, TODA, and TORA (**Table 2-1**) while maintaining a minimum of 1,000 feet of clearance to the nearest obstacle in the case of an aborted takeoff. For westward operations, the runway extension and the 168 feet long by 500 feet wide graded areas will provide adequate RSA. The runway extension, while physically extending the Runway, would not operationally extend the Runway. Similar to RSA Alternative Refinement #2, there will be a displaced threshold of 832 feet to the east of the new end of Runway 7L.The Runway 25R effective departure length (the ASDA, TODA, and TORA) would be maintained at 12,091 feet. The Runway 25R localizer antenna would be relocated beyond the 957-foot graded area west of the Runway extension.

The addition of the larger graded area on the west side of the Runway under RSA Alternative Refinement #3 allows for the potential to shift the runway in the future, while maintaining the FAA RSA requirements for the Runway.

Evaluation

The RSA Alternative Refinement #3 met all three of the evaluation criteria (Section 2.3.2). LAWA needs to conduct further analysis and coordinate with all aircraft operators at LAX as well as the FAA and other stakeholders to determine the effect shifting the runway would have on their operations before it can decide whether or not shifting the runway is acceptable. However, in order to meet the requirements of Public Law 109-115, LAWA has identified RSA Alternative Refinement #3 as the best alternative to bring the Runway 7L/25R safety areas in compliance with FAA design standards by December 31, 2015, while also preserving the option of shifting the runway in the future if it is determined feasible by LAWA and aircraft operators. This Alternative is being carried forward for review as the Proposed Action Alternative in this EA.

2.2.8 No-Action Alternative

In addition to RSA Alternative Refinements #2 and #3, and the Shift Runway Alternative, the No-Action Alternative has been included in the evaluation of potential environmental consequences in this EA, as required by 40 CFR §1502.14(d). Under the No-Action Alternative, none of the proposed improvements under the Proposed Action would be implemented, and the Airport would not be in compliance with the requirements of P.L. 109-115 by December 31, 2015. This alternative has been included to provide a basis for comparing the environmental consequences of the Proposed Action. The No-Action Alternative (existing condition) for the Runway is provided in Figure 1-3.

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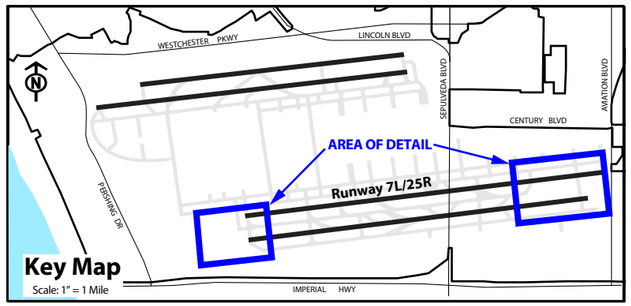

0 400 ft. north
1" = 400 feet

Legend

Proposed Runway Safety Area | Runway 7L Extension | Taxiway Improvements | RSA Extension

ACRONYMS
TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

Runway 7L TORA/TODA = 12,923′
Runway 7L ASDA = 12,091′
Runway 7L LDA = 11,259′
832′ Displaced Threshold
1,000′ Runway Safety Area
168′ Available Runway Safety Area

TAXIWAY C18
TAXIWAY C17
TAXIWAY C15
TAXIWAY C
TAXIWAY B17
TAXIWAY B16
TAXIWAY U
TAXIWAY B
Relocated Runway 25R Localizer
Area to Install Blast Fences
Decommissioning of Taxiway B16
Existing Runway Threshold/ Proposed Displaced Threshold Location
TAXIWAY H
Relocated Runway 25R Localizer Shelter
TAXYWAY C2
TAXIWAY C1
TAXIWAY B1
Perimeter Fence
RUNWAY 7L/25R
TAXIWAY J
Blast Fence
AVIATION BLVD
RUNWAY 7R/25L
TAXIWAY F

Runway 25R LDA = 11,134′
957′ Displaced Threshold
1,000′ Runway Safety Area
168′ Available Runway Safety Area
Runway 25R ASDA = 12,091′
Runway 25R TORA/TODA = 12,923′

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); LAWA 2012; ESRI Maps & Data, December 2011 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and Associated Improvements Project

Runway 7L/25R RSA
Alternative Refinement #2

FIGURE 2-7

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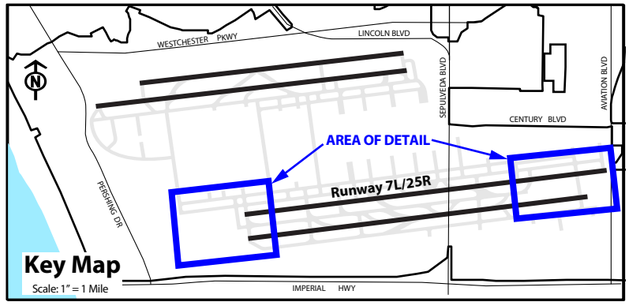
Los Angeles International Airport



Legend

- Proposed RSA Extension
- Area to be Graded to RSA Quality
- Existing Runway Safety Area
- Proposed Jet Blast Pad
- Runway 7L Extension
- Taxiway Improvements
- Proposed Service Road Realignment

ACRONYMS
TORA = Take-Off Run Available
TODA = Take-Off Distance Available
ASDA = Accelerate - Stop Distance Available
LDA = Landing Distance Available

NOTE: LANDING THRESHOLDS REMAIN IN EXISTING LOCATIONS

0 500 ft.
1"= 500 feet
north

957'
Area to be Graded to RSA Quality

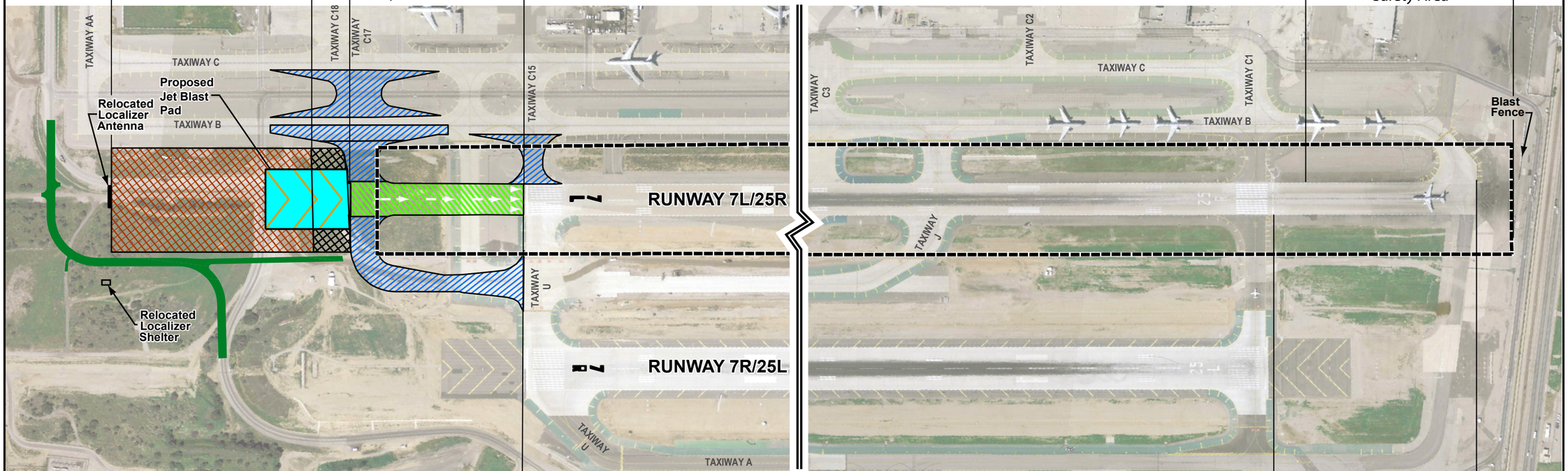
168' Proposed Runway Safety Area Extension

Runway 7L ASDA/TORA/TODA = 12,091'

832'
Displaced Threshold

Runway 7L LDA = 11,259'

1,000'
Runway Safety Area



Runway 25R LDA = 11,134'

957'
Displaced Threshold

Runway 25R ASDA/TORA/TODA = 12,091'

Sources: *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport* (Ricondo & Associates, December 2009); ESRI Maps & Data, May 2013 ; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and Associated Improvements Project

Runway 7L/25R RSA
Alternative Refinement #3 (Proposed Action)

FIGURE 2-8

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2.3 RSA Alternatives Carried Forward for Evaluation

Table 2-2 summarizes the results of the alternatives screening evaluation. Based on the review of alternatives, three RSA "action" alternatives (Shift Runway, RSA Alternative Refinement #2, and RSA Alternative Refinement #3) were carried forward for further analysis in this EA. To comply with the requirements of CEQ regulations and NEPA, the No-Action Alternative was also retained for further evaluation in the Draft EA.

Table 2-2
Summary of RSA Alternatives Screening Evaluation

Location	Alternative	Alternative Pass to the Next Step			Retained For Further Analysis in the Draft EA?
		Step 1	Step 2	Step 3	
Off-Site Alternatives	Use of Other Modes of Transportation	**No**			**No**
	Use of Other Public Airports	**No**			**No**
On-Site Alternatives	Use of Smaller Aircraft	**No**			**No**
	Construct Standard RSAs	**Yes**	**No**		**No**
	Shift Runway	**Yes**	**Yes**	**Yes**	**Yes**
	Reduce Runway Length	**Yes**	**Yes**	**No**	**No**
	Declared Distances	**Yes**	**Yes**	**No**	**No**
	Implement EMAS	**Yes**	**No**		**No**
	RSA Alternative Refinement #2	**Yes**	**Yes**	**Yes**	**Yes**
	RSA Alternative Refinement #3	**Yes**	**Yes**	**Yes**	**Yes**
	No-Action Alternative	**No**			**Yes**

Source: URS Corporation, 2012

Note: The No-Action Alternative retained for detailed analysis in the Draft EA to comply with CEQ regulations and NEPA

The RSA Alternatives carried forward for evaluation in this EA are:

- Proposed Action - RSA Refinement Alternative #3
- RSA Refinement Alternative #2
- Shift Runway Alternative
- No-Action Alternative

2.4 Permits Required

As required under paragraph 405d (4) of FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, a preliminary list of permits required for implementation of the Proposed Action is provided in **Table 2-3**.

Table 2-3
Preliminary List of Permits Required for the Proposed Action

Issuing Agency	Permit Name/Type
California State Water Quality Control Board	General Construction Storm Water Permit; and Standard Urban Stormwater Mitigation Plan (SUSMP)
Los Angeles Regional Water Quality Control Board	General National Pollutant Discharge Elimination System (NPDES) Stormwater permit under Section 402 of the Clean Water Act (CWA) for construction activities.
Los Angeles Regional Water Quality Control Board	General NPDES Stormwater permit under Section 402 of the CWA for industrial activities.
California Department of Transportation	Amended/Corrected Airport Permit, in accordance with California Code of Regulations (CCR), Title 21 §3530

Source: URS Corporation, 2012.

2.5 Listing of Federal Laws and Regulations Considered

Table 2-4 includes a list of federal statutes, executive orders, regulations, FAA and United States Department of Transportation (USDOT) orders, and FAA A/Cs considered in the development of the alternatives evaluation and the preparation of this EA.

Table 2-4
List of Federal Laws and Regulations Considered

LAWS AND STATUTES
Airport and Airway Revenue Act of 1987 (P.L. 100-223, Title IV)
Aviation Safety and Capacity Expansion Act of 1990 (P.L. 101-508, as amended)
Community Environmental Resource Facilitation Act (42 USC §9601, et seq.)
Comprehensive Environmental Response, Compensation, and Liability Act (42 USC §9601; P.L. 96-510)
Policy on Lands, Wildlife and Waterfowl Refuges, and Historic Sites (49 USC §303 [formerly known as Section 4(f) of the Department of Transportation Act of 1966])
Resource Conservation and Recovery Act of 1976 (42 USC §6901, et seq.; P.L. 94-580, as amended by the Solid Waste Disposal Act of 1980 [P.L. 96-482]; and the 1984 Hazardous and Solid Waste Amendments [P.L. 98-616])
Section 106, National Historic Preservation Act of 1966 (16 USC §470[f]; P.L. 89-665)
Section 201(a), Federal Land Policy and Management Act of 1976 (43 USC §1701, et seq.; P.L. 94-579)
Section 404, Federal Water Pollution Control Act Amendments for 1972 (33 USC §1344; P.L. 92-500;), as amended by the Clean Water Act of 1977 (33 USC §1251; P.L. 95-217)
Subtitle VII, Title 49, USC – "Aviation Programs" (§40101, et seq.) recodified from, and formerly known as, the "Federal Aviation Act of 1958" as amended (P.L. 85-726)
The Airport and Airway Improvement Act of 1982 (P.L. 97-248)
The Archaeological and Historic Data Preservation Act of 1974 (P.L. 86-253, as amended by P.L. 93-291, 16 USC §469)
The Aviation Safety and Noise Abatement Act of 1979 (P.L. 96-193; 49 USC App. 2101)
The Clean Air Act of 1977 (as amended) (42 USC §7409, et seq.)
The Endangered Species Act of 1973 (P.L. 85-624; 16 USC §§661, 664 note, 1008 note)
The National Environmental Policy Act of 1969 (NEPA, P.L. 91-190; 42 USC §4321, et seq.)
The Noise Control Act of 1972 (P.L. 92-574; 42 USC §4901)

Table 2-4
List of Federal Laws and Regulations Considered

The Transportation, Treasury, Housing and Urban Development, the Judiciary, The District of Columbia, and Independent Agencies Appropriations Act of 2006 (P.L. 109-115)
Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC §4601; P.L. 91-528)
EXECUTIVE ORDERS
Executive Order 11296, *Flood Hazard Evaluation Guidelines*
Executive Order 11514, *Protection and Enhancement of Environmental Quality* (dated March 4, 1970)
Executive Order 11593, *Protection and Enhancement of the Cultural Environment* (dated May 13, 1971)
Executive Order 12898, *Federal Actions Address Environmental Justice in Minority Populations and Low- Income Populations*
Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency*
FEDERAL REGULATIONS
7 CFR Part 657 (43 FR 4030, January 31, 1978), *Prime and Unique Farmlands*
14 CFR Part 139, *Airport Operations Specifications*
14 CFR Part 150, *Airport Noise Compatibility Planning*
14 CFR Part 151, *Federal Aid to Airports*
14 CFR Part 152, *Airport Aid Program*
14 CFR Part 153, *Acquisition of U.S. Land for Public Airports*
14 CFR Part 154, *Acquisition of U.S. Land for Public Airports under the Airport and Airway Development Act of 1970*
14 CFR Part 155, *Release of Airport Property from Surplus Property Disposal Restrictions*
14 CFR Part 157, *Notice of Construction, Alteration, Activation, and Deactivation of Airports*
14 CFR Part 169, *Expenditures of Federal Funds for Non-Military Airports or Air Navigational Facilities Thereon*
14 CFR Part 36, *Noise Standards Type and Airworthiness Certificates*
14 CFR Part 75, *Establishment of Jet Routes and Area High Routes*
14 CFR Part 77, *Objects Affecting Navigable Airspace*
14 CFR Part 91, *General Operations and Flight Rules*
14 CFR Part 95, *Instrument Flight Rules Altitudes*
14 CFR Part 97, *Standard Instrument Approach Procedures*
36 CFR Part 800 (39 Federal Register [FR] 3365, January 25, 1974, and 51 FR 31115, September 2, 1986), *Protection of Historic Properties*
40 CFR Parts 1500-1508, *CEQ implementation of NEPA procedural provisions, establishes uniform procedures, terminology, and standards for implementing the procedural requirements of NEPA's section 102(2)*
49 CFR Part 24 (March 2, 1989), *Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs*
FAA/U.S. DEPARTMENT OF TRANSPORTATION ORDERS
DOT Order 5610.1C, *Procedures for Considering Environmental Impacts* (44 FR 56420, October 1, 1979) and Order DOT 5610.1C, *Change 1* (July 13, 1982)
FAA Joint Order 7110.65T, *Air Traffic Control*
FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1* (March 20, 2006)
FAA Order 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions*

Table 2-4
List of Federal Laws and Regulations Considered

FAA Order 5200.5A, *FAA Guidance Concerning Sanitary Landfills On or Near Airports*
FAA Order 5200.8, *Runway Safety Area Program*
FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Materials Arresting Systems*
FAA ADVISORY CIRCULARS
A/C 91-53A, *Noise Abatement Departure Profile*
A/C 150/5020-1, *Noise Control and Compatibility Planning for Airports*
A/C 150/5070-6B, *Airport Master Plans*
A/C 150/5070-7, *Airport System Planning Process*
A/C 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*
A/C 150/5300-13A, *Airport Design*
A/C 150/5320-6E, *Airport Pavement Design and Evaluation*
A/C 150/5370-10F, *Standards for Specifying Construction of Airports*

Source: FAA, LAWA, and URS Corporation, 2013.

Notes:

A/C = Advisory Circular

CEQ = Council on Environmental Quality

CFR = Code of Federal Regulations

DOT = U.S. Department of Transportation

FAA = Federal Aviation Administration

FR = Federal Register

NEPA = National Environmental Policy Act

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

This chapter provides a description of the existing conditions within the Generalized Study Area (GSA). The environmental resource categories are organized as identified in FAA Order *1050.1E, Environmental Impacts: Policies and Procedures* and FAA Order *5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.* The potential environmental impacts of the No-Action Alternative, Proposed Action, RSA Alternative Refinement #2, and Shift Runway Alternative retained for analysis of environmental consequences are presented in Chapter 4.0 Environmental Consequences, of this Final EA.

The following environmental resource categories are not present in the study areas (as defined below) and, therefore, would not be affected by the Proposed Action or its alternatives:

- **Farmlands**. There are no prime or unique farmlands within the GSA.
- **Wild and Scenic Rivers**. There are no Wild and Scenic Rivers within the GSA.
- **Coastal Barriers**. There are no coastal barrier islands in the vicinity of Santa Monica Bay.

Therefore, in accordance with guidance provided in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedure*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, no further analysis of these resources is provided within this EA.

3.1.1 Study Areas

For purposes of describing the existing conditions in the vicinity of the Airport, four study areas were developed for this EA. These four areas include the GSA, which is defined by the existing Airport property boundary; a Detailed Study Area (DSA), which is a noncontiguous area where direct ground disturbance would occur; the Area of Potential Effect (APE) used for Section 106 analysis for cultural resources; and the Biological Resources Study Area (BRSA), used for evaluation of biological resources. These study areas are shown in **Figure 3.1-1**. The specific assessment areas for these topics are defined in applicable sections of this Final EA.

3.1.1.1 Generalized Study Area (GSA)

The GSA presented on **Figure 3.1-1** includes a geographic area that was established to quantify impacts that may occur from various resource categories including air quality, surface transportation, and land use. In light of the limited physical area of direct disturbance, and the fact that the Proposed Action feasible Alternatives would not substantially change aircraft operations at LAX, the GSA was defined to include the current boundary of the Airport property.

3.1.1.2 Detailed Study Area (DSA)

A DSA was established for environmental considerations that deal with specific and direct construction-related issues such as wetlands, floodplains, protected species, and hazardous materials. Specifically, the DSA includes areas of potential physical disturbance for the proposed runway safety area improvements, pavement reconstruction, and related construction impact areas. The DSA is shown in **Figure 3.1-1**.

3.1.1.3 Area of Potential Effect (APE)

The APE is defined as the geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties (36 Code of Federal Regulations [CFR] Part 800, Protection of Historic Properties, Section [§] 800.16(d)). These alterations may include physical destruction, damage, or alteration of a property; change in the character of the property's use or of physical features within its setting that contributes to its historic significance; and introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features (36 CFR §800.5(a)(2)). The locations of various known historic properties within the GSA vicinity were carefully considered. Because the Proposed Action or its alternatives would occur at specific locations at both ends of Runway 7L/25R, at the aircraft parking apron west of Air Freight Building No. 8, and along Imperial Highway, a noncontiguous APE was delineated by FAA, and has been approved by the State Historic Preservation Officer (SHPO).[1] In response to public comments received during the public review of the Draft EA, the Proposed Action alternative was refined, which resulted in an expanded APE. The FAA delineated an expansion to the APE to the west to account for the additional 957 feet of graded area beyond the required RSA and to evaluate the remnant portion of the former Coast Boulevard that was identified during the Public Hearing. FAA consulted with the California SHPO on the expanded APE. The California SHPO concurred with the expanded APE by letter dated August 2, 2013 (**Figure 3.1-1**). A detailed discussion of the APE is included in Section 3.12.

3.1.1.4 Biological Resources Study Area

The Biological Resource Study Area (BRSA) is based on the DSA and, consequently, is also noncontiguous. The BRSA includes the DSA and also the area in a buffer extending approximately 250 feet from the DSA boundaries in all directions.[2] The BRSA is discussed in more detail in Section 3.8. The BRSA was also revised with the refinement of the Proposed Action after publication of the Draft EA.

3.1.2 Study Years

The year used to identify existing conditions within the GSA and other study areas is 2011, the last full year of available data at the time the Draft EA was prepared. Two future years, 2015 and 2020, were selected for analysis of potential impacts of the Proposed Action or its alternatives. According to P.L. 109-115, completion of RSA improvements is required by December 31, 2015, by airport sponsors that hold a certificate under Title 14 CFR Part 139, Certification of Airports. The year 2020 would be the 5-year future horizon normally used in FAA environmental documents.

[1] State Historic Preservation Office, letter dated March 5, 2012. Refer to Appendix C.

[2] According to 50 CFR §§402.02 and 402.14(h)(2), the "action area" (in this case the Biological Resources Study Area) should be determined based on consideration of all direct and indirect effects of the proposed agency action. The buffer distance depends on the project activities, as well as the resources that may be impacted by the action. For example, if listed bird species may be impacted, then the buffer should be large enough to account for the particular species (i.e., larger for a bald eagle than for a song bird). For this analysis, a 250-ft buffer was chosen because of the disturbed area around the action site and the resources, or lack thereof, that are/are not present in the action site. United States Fish and Wildlife Service and National Marine Fisheries Service, *Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, Chapter 4, March 1998.

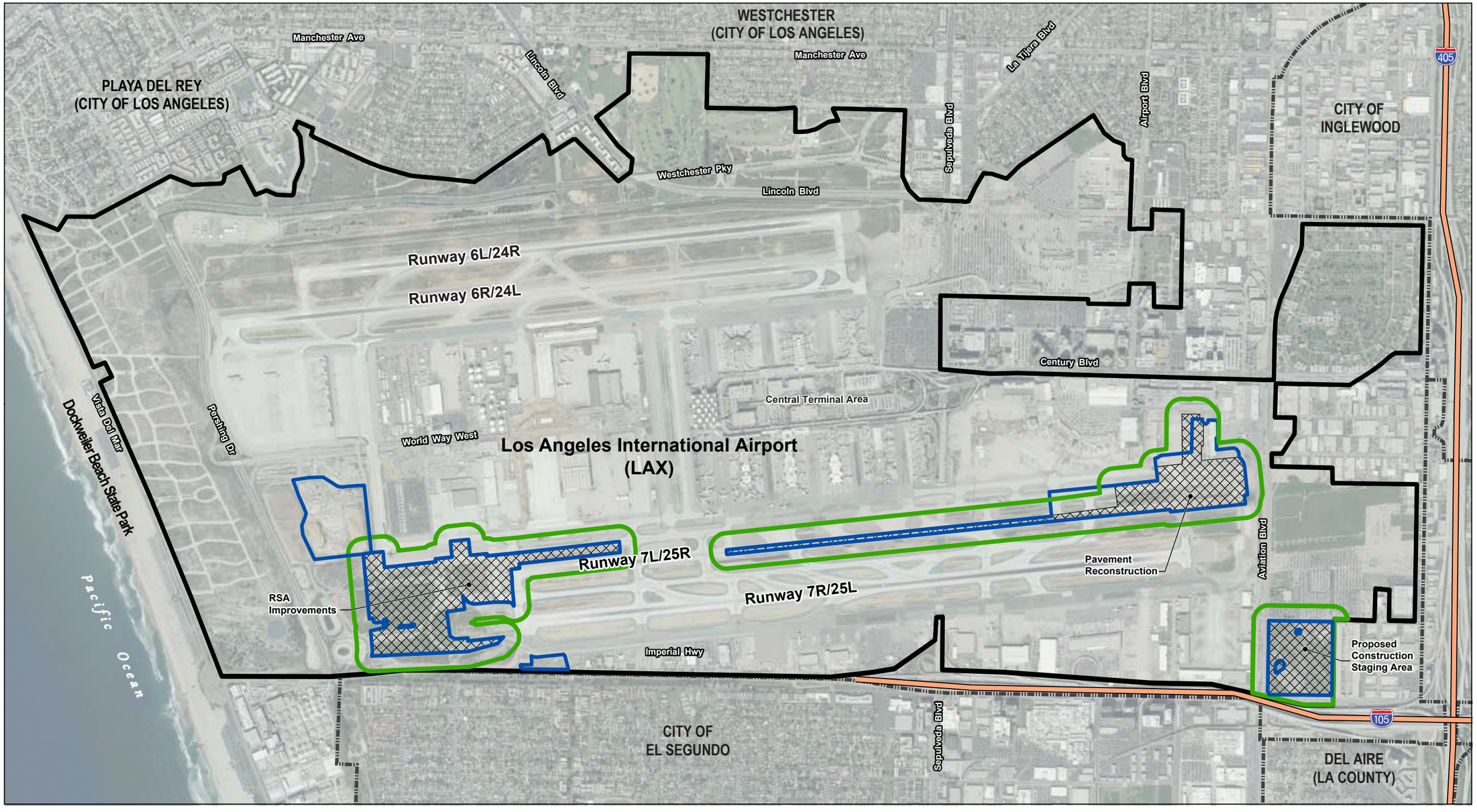
Los Angeles International Airport

0 1600 ft. north

1" = 1600 feet

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- Area of Potential Effect
- Biological Resources Study Area
- Detailed Study Area



Sources: LAWA, 2013; URS, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Study Areas and Area of Potential Effect

FIGURE
3.1-1

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3.2 Noise

This section describes the existing (2011) noise environment in the areas surrounding LAX, the methodology that LAWA uses to determine existing aircraft noise exposure, levels of existing airport noise exposure at noise-sensitive locations in the vicinity of LAX, and information related to existing land use and noise compatibility for the municipal jurisdictions around LAX.

3.2.1 Noise Descriptors

Unless otherwise stated, all sound levels (decibels [dB]) reported in this EA are in A-weighted decibels (dBA). The A-weighting de-emphasizes lower frequency sounds below 1,000 Hertz (1 kilo Hertz [kHz]) and higher frequency sounds above 4 kHz. It emphasizes sounds between 1 kHz and 4 kHz. Most community noise standards utilize A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

California law mandates use of the Community Noise Equivalent Level (CNEL) for assessing airport noise exposure.[3] For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly day/night average sound level as the FAA's primary metric. The FAA recognizes CNEL as an alternative metric to yearly day/night average sound level for airport improvement projects in California.[4]

CNEL is a 24-hour, time-weighted average noise metric, expressed in terms of dBA, which accounts for the noise levels of individual aircraft events, the number of times those events occur, and the time of day they occur. CNEL is calculated based on noise levels and operational activity occurring during three time periods: daytime (7:00 a.m. to 6:59 p.m.), evening (7:00 p.m. to 9:59 p.m.), and nighttime (10:00 p.m. to 6:59 a.m.). To represent the added intrusiveness of sounds during evening and nighttime hours, CNEL adds weights of 4.77 dBA and 10 dBA to events occurring during the evening and nighttime periods, respectively.[5]

CNEL is used in this EA for the discussion of noise conditions related to operations at LAX. CNEL contours are graphical representation of the distribution of noise over the surrounding area from LAX's average annual daily aircraft operations.

3.2.2 Noise Regulatory Environment

The FAA and the State of California define 65 dB CNEL as the threshold of exterior noise compatibility for residential and other noise-sensitive land uses, such as schools, libraries, and religious facilities. FAA requires an analysis of noise exposure when development actions may change the cumulative noise exposure of individuals to aircraft noise in areas surrounding the airport. Common development actions that may change the cumulative noise environment include: runway reconfiguration, aircraft operations and/or movements, aircraft types using the airport, or aircraft tracks and profiles.

Potential noise impacts associated with the Proposed Action or its alternatives are analyzed using the methodologies developed by the FAA and published in Appendix A of FAA Order 1050.1E, *Change 1, Environmental Impacts, Policies and Procedures*. In accordance with Appendix A of FAA Order 1050.1E, *Change 1, Environmental Impacts, Policies and Procedures,* a Proposed Action or its alternatives would be considered to have an impact with regard to aviation noise, when compared to the No-Action Alternative for the same time frame, if it would:

- Cause noise-sensitive areas located at or above 65 dB CNEL to experience a noise increase of at least 1.5 dB CNEL; and/or

[3] California Code of Regulations, Title 21, Division 2.5, Chapter 6
[4] Federal Aviation Administration, *Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures*, March 2006.
[5] State of California, Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook*, 2002.

- Cause an increase of CNEL that introduces new noise-sensitive areas to exposure levels of 65 dB CNEL or more.

The City of Los Angeles regulates noise exposure within the City. These regulations are contained in Chapter XI of the Los Angeles Municipal Code (LAMC). LAMC Chapter XI, Section 41.40 regulates noise exposure from construction activities. Subsection (a) prohibits any construction activities between the hours of 9:00 p.m. and 7:00 a.m. of the following day that may make "…loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence."

3.2.3 Methodology

In accordance with guidance contained in FAA Order 1050.1E, *Change 1, Environmental Impacts, Policies and Procedures*, detailed noise analyses must be performed through noise modeling using the FAA's Integrated Noise Model (INM). The INM has been the FAA's standard noise modeling tool for predicting noise levels in the vicinity of airports since 1978. INM version 7.0c, released January 2012, was used in the preparation of the noise analysis of this EA.

The INM incorporates the number of annual average daily daytime, evening, and nighttime aircraft operations, flight paths, and flight profiles of aircraft, along with its extensive internal database of aircraft noise and performance information, to calculate the CNEL at many points on the ground around an airport. From a grid of points, the INM contouring program draws contours of equal CNEL that can be superimposed onto land use maps. For this EA, three standard ranges of CNEL noise contours are presented: 65 to 70 dB CNEL, 70 to 75 dB CNEL, and 75 dB CNEL and higher.

LAWA currently uses INM version 7.0c to develop CNEL contours for LAX. Every quarter, LAWA evaluates noise exposure due to aircraft operations at LAX and generates airport noise contours based on annualized operational information gathered for the 12-month period ending in the given quarter. Sources of information for generating the aircraft noise contours include data from FAA's Automated Radar Terminal System (ARTS) and the FAA Airport Traffic Control Tower (ATCT).

3.2.4 Existing (2011) Noise Environment

The existing noise environment at and around the DSA is dominated by noise from airport-related uses including aircraft departing, landing, and taxiing on runways and connecting taxiways. Noise levels from aircraft departure operations commonly exceed 110 dBA at locations near the runway. [6]

The dominant noise sources affecting noise-sensitive uses in the vicinity of LAX are aircraft arrival and departure noise, several major highways including I-405 and I-105, and major arterial roadways, including Imperial Highway, Sepulveda Boulevard, Century Boulevard, and Lincoln Boulevard (**Figure 3.2-1**).

The nearest noise-sensitive area to the DSA consists of residential uses in the City of El Segundo, south of the Airport, multi-family homes along Century Boulevard just east of Aviation Boulevard, and a small area east of the Airport containing hotels and single-family homes at the northeast corner of South La Cienega Boulevard and West 104th Street.

[6] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

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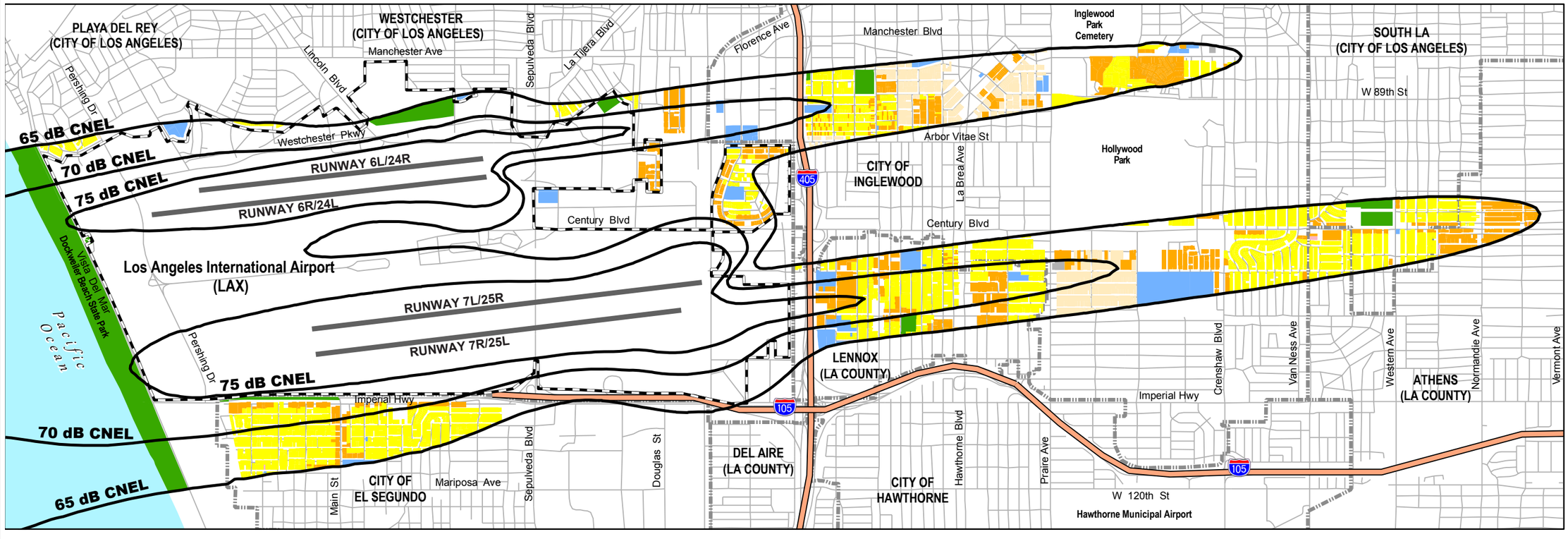
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- CNEL Noise Exposure Contours
- Existing Runway

Existing Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation



Source: URS Corporation, LAX 2011 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Existing (2011)
Aircraft Noise Exposure CNEL Contours

FIGURE
3.2-1

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3.2.5 Existing Noise Management Program

LAX maintains state-of-the-art noise monitoring systems to manage existing noise in the surrounding communities. One system includes developing existing CNEL contours resulting from aircraft operations at LAX. LAWA develops these contours using the INM for noise levels in the vicinity of LAX that include 65, 70, and 75 dBA CNEL contours, superimposed over a land use map (**Figure 3.2-1**). The contours developed from the INM are adjusted at 38 monitoring locations based on their annual noise levels to create LAWA's quarterly noise contour maps, which are prepared by LAWA pursuant to California Airport Noise Standards (California Code of Regulations [CCR], Title 21, §5000 *et seq*.).[7] Noise data from noise monitors combined with the most recent LAX CNEL contours (**Figure 3.2-1**) indicate that the existing cumulative noise exposure at the nearest noise-sensitive areas in the City of El Segundo south of Imperial Highway approaches 75 dBA CNEL. The closest noise-sensitive land uses to Runway 25R, near the pavement reconstruction components of the Proposed Action or its alternatives, include multi-family homes along Century Boulevard just east of Aviation Boulevard and pockets of single- and multi-family homes west of I-405. The homes along Century Boulevard are currently exposed to aircraft noise levels of approximately 65 to 72 dB CNEL. Airport noise exposure at the homes west of I-405 is in the range of 65 to 68 dBA CNEL.

Table 3.2-1
Existing Conditions Aircraft Noise Exposure (2011) - All Jurisdictions

Land Use	Group 1 65 dB CNEL and Above[1]		Group 2 70 dB CNEL and Above[2]		Group 3 75 dB CNEL and Above[3]	
	Dwelling Units[4]	Population[4]	Dwelling Units[4]	Population[4]	Dwelling Units[4]	Population[4]
Single- Family	2,788	9,222	487	2,154	14	70
Multi- Family	9,305	29,292	1,870	7,193	55	275
Schools	0	0	0	0	0	0
Churches	0	0	0	0	0	0
Hospitals	0	0	0	0	0	0
Total	**12,093**	**38,514**	**2,357**	**9,347**	**69**	**345**

Notes: This table is not intended to be viewed as cumulative. Each group with a higher starting dB CNEL is a subset of the group with the lower starting dB CNEL. For example the 2,788 single-family units exposed to 65 dB CNEL and above include the 487 units exposed to 70 dB CNEL and above and the 14 units exposed to 75 dB CNEL and above.

[1] The numbers presented in this group include sensitive uses that are exposed to 65 dB CNEL and above including the numbers on the two other groups in this table.

[2] These numbers are subsets of the 65 dB CNEL and Above group.

[3] These numbers are subsets of the 65 dB CNEL group and of the 70 dB CNEL and Above group.

[4] Population contains 2010 census data. Dwelling unit and population numbers were updated based on an updated parcel-level database developed and maintained by LAWA.

Source: Ricondo and Associates, 2013; PCR Services Corporation, 2013.

3.2.6 Land Use Compatibility

According to Title 14 CFR Part 150, Airport Noise Compatibility Planning, land use compatibility guidelines do not represent a federal determination that a specific land use is acceptable or unacceptable under federal, state, or local laws. The responsibility for determining acceptable land uses rests with local authorities through zoning laws and ordinances.

The Federal Government defines 65 dB CNEL as the threshold of noise compatibility for residential land uses. Land use noise exposure is quantified as numbers of noise-sensitive sites, and numbers of people and

[7] California Department of Transportation, Division of Aeronautics website, *http://www.dot.ca.gov/hq/planning/aeronaut/avnoise.html*, accessed June 2012.

housing units exposed to various levels of aircraft noise. The number of sensitive sites, housing units, and population around LAX exposed to 65 dBA CNEL or above for existing conditions, are presented in **Table 3.2-1**.

Under existing conditions, approximately 12,093 single- and multi-family housing units (representing 38,514 people), are located within the 65 dBA CNEL or higher contours. Of these, 2,357 housing units (representing 9,347people) are located within the 70 dBA CNEL or higher contours.

3.3 Compatible Land Use

This section describes existing and planned land use in areas surrounding the Airport. The land use information included in this section is derived from the LAX Master Plan[8] and the LAX Specific Plan[9] as well as the general plans and zoning ordinances of the jurisdictions surrounding the GSA. Land use compatibility with airport noise levels is defined in 14 CFR Part 150 and is presented in **Table 3.3-1**.

Table 3.3-1
Land Use Compatibility* With Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	**65–70**	**70–75**	**75–80**	**80–85**	**Over 85**
RESIDENTIAL						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N

[8] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[9] City of Los Angeles, *LAX Specific Plan*, September 2004.

Table 3.3-1
Land Use Compatibility* With Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	**65–70**	**70–75**	**75–80**	**80–85**	**Over 85**
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y

Table 3.3-1
Land Use Compatibility* With Yearly Day-Night Average Sound Levels

Land Use	Yearly Day-Night Average Sound Level (L_{dn}) in Decibels					
	Below 65	**65–70**	**70–75**	**75–80**	**80–85**	**Over 85**
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Notes:

Numbers in parentheses refer to notes.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

(Key to Table

Y (Yes) = Land Use and related structures compatible without restrictions.

N (No) = Land Use and related structures are not compatible and should be prohibited.

NLR = Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35 = Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, or noise-sensitive areas or where the normal noise level is low.

3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, or noise-sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, or noise-sensitive areas or where the normal noise level is low.

(5) Land use is compatible, provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Source: 14 CFR Part 150 § A150.101.

3.3.1 Existing Land Use

Figure 3.3-1 shows existing land use for the GSA as well as the areas surrounding the Airport. The Airport is located on the western end of the Los Angeles Basin and is bounded on the north by the City of Los Angeles communities of Westchester and Playa Del Rey (which form the Westchester-Playa Del Rey Community Plan Area), on the east by the City of Inglewood and the community of Lennox (unincorporated Los Angeles County), on the south by the City of El Segundo and the community of Del Aire (unincorporated Los Angeles County), and on the west by Dockweiler Beach State Park and the Pacific Ocean.

To the north and south of the Airport, within the cities of Los Angeles and El Segundo, land use is dominated by single-family residential use with commercial uses concentrated along major corridors, including Lincoln Boulevard and Sepulveda Boulevard to the north, and Imperial Highway to the south. To the east, land uses are primarily commercial and industrial, with many airport-related uses (hotels, car rental businesses, parking lots) concentrated on Sepulveda Boulevard, Aviation Boulevard, and Arbor Vitae Avenue/98th Street in the cities of Los Angeles and Inglewood.

The GSA intersects the City of Los Angeles communities of Westchester and Playa Del Rey. The GSA is adjacent to the cities of El Segundo and Inglewood and the unincorporated Los Angeles County communities of Lennox and Del Aire. All of these jurisdictions have adopted zoning ordinances that provide for a variety of permissible uses within areas around LAX. The existing zoning in these areas are shown in **Figure 3.3-2**

The GSA contains several noise-sensitive resources as indicated in Section 3.2 above. However, as the GSA primarily contains airport-related uses and given the urbanized nature of the areas around the Airport, all sensitive resources (residences, parks, public services, including schools) within a quarter-mile of the GSA were inventoried for the environmental analysis in Chapter 4. These are shown in **Table 3.3-2.** These sensitive resources include 8 parks/areas of open space, 27 schools, 4 fire stations, 1 health care facility, and 10 religious facilities (**Figure 3.3-3**).

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Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary

Existing Land Use

- Residential
- Commercial and Services
- Industrial
- Public Facilities
- Open Space and Recreation
- Transportation, Communications, and Utilities
- Vacant

LAX Plan/LAX Specific Plan

- Airport Airside
- Airport Landside
- LAX Northside
- Medium Residential
- Open Space
- Regional Center Commercial

0 2000 ft.
1" = 2000 feet
north

Source: LAWA, 2012; ESRI Maps and Data, January 2012; Southern California Association of Governments 2008; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R
RSA Projectd and Associated Improvements

Existing Land Use in Vicinity of LAX

FIGURE
3.3-1

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Legend

Generalized Study Area/ Airport Property Boundary

Municipal Boundary

EXISTING ZONING

City of El Segundo

RESIDENTIAL

- Single-Family Residential (R-1)
- Two-Family Residential (R-2)
- Multi-Family Residential (R-3)
- Planned Residential Dev. (PRD)
- Medium Density Residential (MDR)

COMMERCIAL

- Neighborhood Commercial (C-2)
- General Commercial (C-3)
- Commercial Center (C-4)
- Corporate Office (CO)
- Urban Mixed Use North (MU-N)

INDUSTRIAL

- Light Manufacturing (M-1)

OPEN SPACE

- Open Space (O-S)
- Public Facilities (P-F)

City of Inglewood

- Limited Multiple-Family (R-2)
- Multiple-Family (R-3)
- Multiple-Family (R-4)
- General Commercial (C-2)
- Heavy Commercial (C-3)
- Light Manufacturing (M-1)
- Open Space (O-S)

City of Los Angeles

- Single Family Residential (RE,RS,R1,RU,RZ,RW1)
- Commercial (CR,C1,C1.5,C2,C4,C5,CW,ADP, LASED,WC)
- Multiple Family Residential (R2,RD,RMP,RW2,R3,RAS3, R4,RAS4,R5)
- Manufacturing (CM,MR,CCS,M1,M2,LAX,M3,SL)
- Parking (P,PB)
- Open Space (OS)
- Public Facilities (PF)

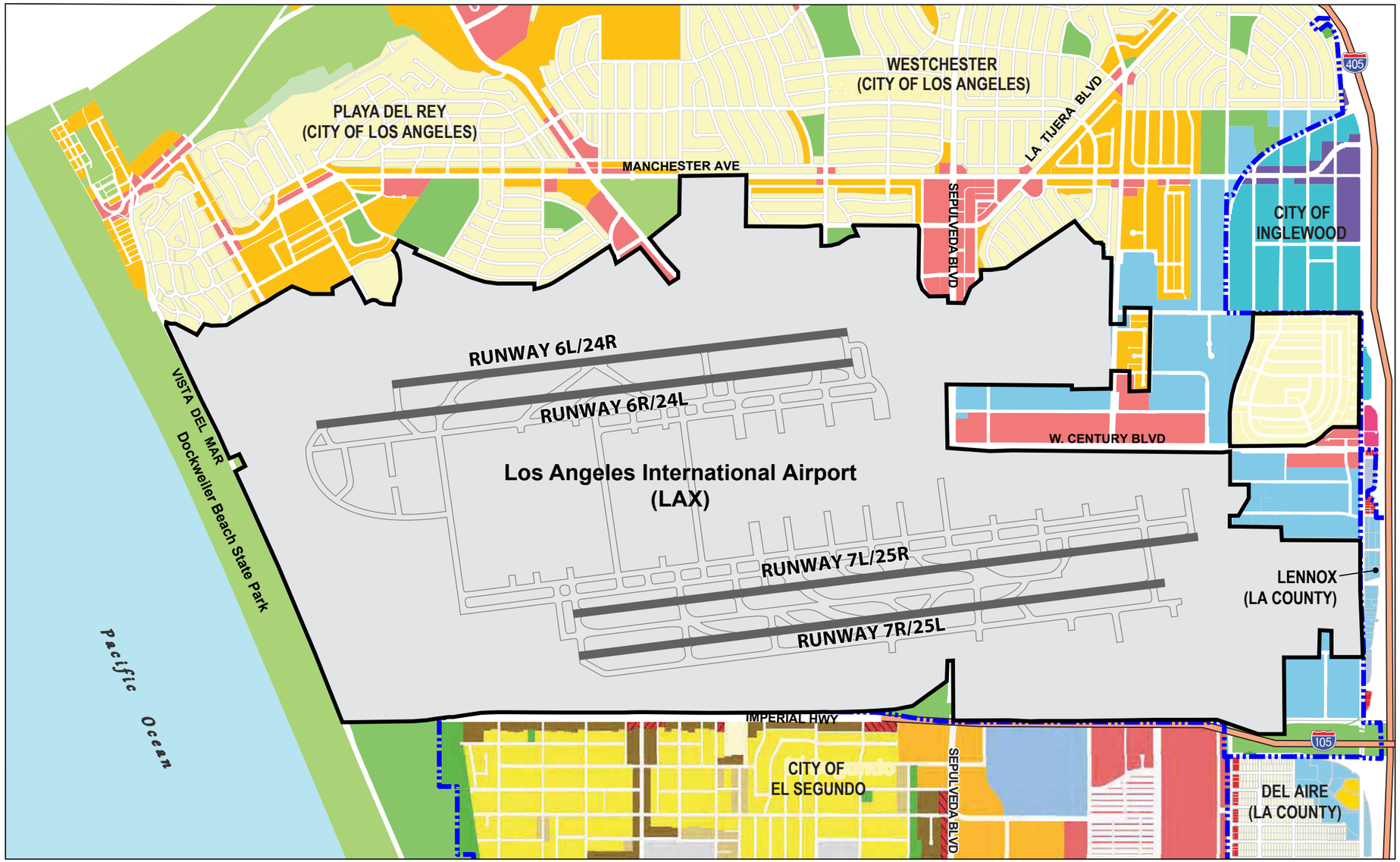
County of Los Angeles (Del Aire & Lennox)

- R-1 - Single-family residence
- RPD - Residential planned development
- C-1 - Restricted business
- C-2 - Neighborhood commercial
- MPD - Manufacturing industrial planned development

0 2200 ft.

1" = 2200 feet

north



Source: LAWA, 2012; County of Los Angeles, 2012; City of Los Angeles, 2012; City of Inglewood; City of El Segundo, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Existing Zoning in Vicinity of LAX

FIGURE
3.3-2

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Table 3.3-2
Sensitive Land Uses within 1/4-Mile from GSA

Figure 3.3-3 No.	Facility Name	Type	Jurisdiction
1	Holy Nativity Church	Religious Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
2	Kentwood Elementary School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
3	First Baptist Church	Religious Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
4	LAFD Fire Station 5	Fire Station	City of Los Angeles (Westchester-Playa Del Rey CPA)
5	Westchester High School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
6	St. Anastasia Church	Religious Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
7	Grace Assembly Church	Religious Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
8	St. Anastasia School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
9	Westchester Recreation Center	Open Space	City of Los Angeles (Westchester-Playa Del Rey CPA)
10	Visitation Elementary School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
11	Del Rey Continuation School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
12	Loyola Village Elementary	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
13	Visitation Catholic Church	Religious Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
14	Westchester Golf Course	Open Space	City of Los Angeles (LAX Plan Area- GSA)
15	Westside Innovative School House Charter Elementary School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
16	Paseo Del Rey Natural Science Magnet	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
17	Otis College of Art and Design	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
18	Carl E. Nielsen Youth Park	Open Space	City of Los Angeles (LAX Plan Area- GSA)
19	First Flight Child Development Center	School	Los Angeles-Within GSA
20	Emerson Manor School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
21	Crimson Technical College	School	Inglewood
22	Airport Junior High School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
23	Oak Street Elementary School	School	Inglewood
24	St. Bernard High School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
25	Inglewood Friends Church/ Iglesia Evangélica Amigos	Religious Facility	Inglewood

Table 3.3-2
Sensitive Land Uses within 1/4-Mile from GSA

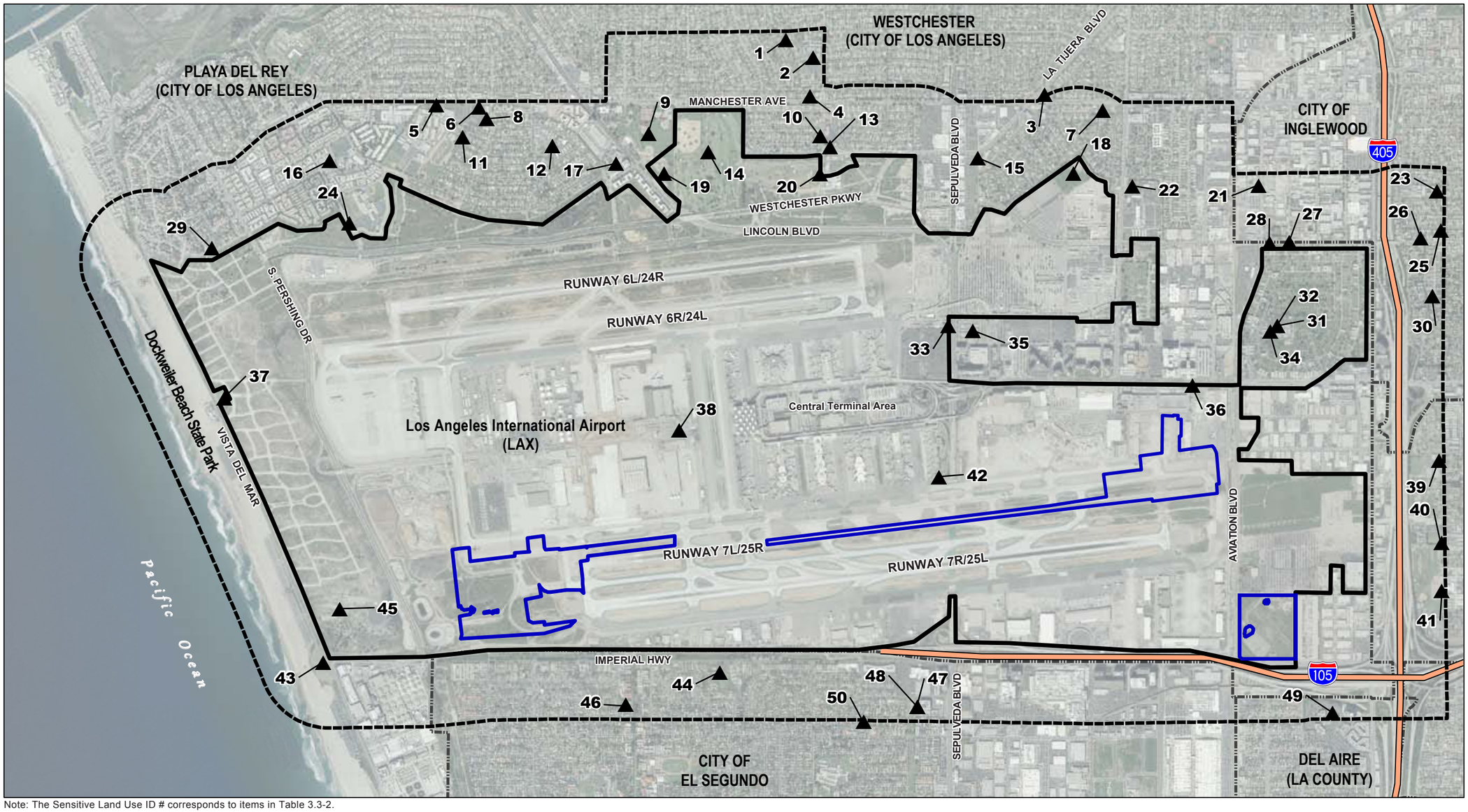
Figure 3.3-3 No.	Facility Name	Type	Jurisdiction
26	Family Christian Cathedral	Religious Facility	Inglewood
27	Morning Sky	School	Inglewood
28	Animo Leadership Charter High School	School	Inglewood
29	Trask Triangle Park	Open Space	City of Los Angeles (Westchester-Playa Del Rey CPA)
30	Primera Iglesia Bautista	Religious Facility	Inglewood
31	Bright Star Secondary Academy	School	City of Los Angeles (LAX Plan Area- GSA)
32	Rise Ko Hyang Middle School	School	City of Los Angeles (LAX Plan Area- GSA)
33	Reliant Immediate Care-Urgent Care	Health Facility	City of Los Angeles (Westchester-Playa Del Rey CPA)
34	98th Street Elementary School	School	City of Los Angeles (LAX Plan Area- GSA)
35	Los Angeles College Aircraft School	School	City of Los Angeles (Westchester-Playa Del Rey CPA)
36	LAFD Fire Station 95	Fire Station	City of Los Angeles (Westchester-Playa Del Rey CPA)
37	Vista Del Mar Park	Open Space	City of Los Angeles (Westchester-Playa Del Rey CPA)
38	LAFD Fire Station 80	Fire Station	City of Los Angeles (LAX Plan Area- GSA)
39	Felton Elementary School	School	Los Angeles County – Lennox
40	Buford Elementary School	School	Los Angeles County – Lennox
41	Lennox Middle School	School	Los Angeles County – Lennox
42	LAFD Fire Station 51	Fire Station	City of Los Angeles (LAX Plan Area- GSA)
43	Dockweiler Beach State Beach	Open Space	City of Los Angeles (Westchester-Playa Del Rey CPA)
44	Imperial School	School	El Segundo
45	El Segundo Dunes	Open Space	City of Los Angeles (LAX Plan Area- GSA)
46	Pacific Baptist Church	Religious Facility	El Segundo
47	St. John's Lutheran Church	Religious Facility	El Segundo
48	St. John's Lutheran Pre-School	School	El Segundo
49	National University Los Angeles	School	Los Angeles County – Del Aire
50	Sycamore Park	Open Space	El Segundo

Notes:
CPA=Community Plan Area
GSA=General Study Area
LAFD=City of Los Angeles Fire Department
Source: Google Earth and ESRI, 2012.

Legend

- Generalized Study Area/Airport Property Boundary
- Quarter Mile Buffer from Generalized Study Area
- Detailed Study Area
- Municipal Boundary
- # Sensitive Land Use ID
- Sensitive Land Uses

0 2000 ft.
1" = 2000 feet
north



Note: The Sensitive Land Use ID # corresponds to items in Table 3.3-2.

Sources: LAWA, 2013; URS Corporation, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Sensitive Land Uses Within and In Vicinity of Generalized Study Area

FIGURE
3.3-3

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3.3.2 Local Plans and Land Use Regulations

The community and general plans for each of the jurisdictions intersected by and/or adjacent to the GSA boundary provide land use guidance for future development in areas around the Airport. The following sections describe planned land uses for the cities of El Segundo, Inglewood, and Los Angeles, and for unincorporated communities of Del Aire and Lennox. The LAX Master Plan and LAX Specific Plan, which set forth compatible land use policies for development around the Airport, are also discussed below.

3.3.2.1 City of Los Angeles

City of Los Angeles General Plan – Land Use Element

The City of Los Angeles General Plan is a comprehensive, long-term declaration of purposes, policies, and programs for the development of the City of Los Angeles. It sets forth goals, objectives, and programs to provide a guideline for land use policies and to meet the existing and future needs and desires of the community. The City of Los Angeles General Plan integrates a range of State-mandated elements including Land Use, Transportation, Noise, Safety, Housing, and Conservation. The Land Use Element consists of 35 Community Plans and the LAX and Harbor Plans.

LAX Plan. The LAX Plan is one of 35 Community Plans that are part of the Land Use Element of the City of Los Angeles General Plan. The LAX Plan is intended to promote an arrangement of airport uses that encourages and contributes to the modernization of the Airport in an orderly and flexible manner within the context of the City and region. It provides goals, objectives, policies, and programs that establish a framework for the development of facilities that promote the movement and processing of passengers and cargo within a safe and secure environment. The LAX Plan is intended to allow the Airport to respond to emerging new technologies, economic trends and functional needs. This plan also includes the area known as Manchester Square and the Airport Northside Area, which are all part of the GSA.[10] Land uses in the LAX property are divided into Airport Airside, Airport Landside, and LAX Northside sub-areas (**Figure 3.3-1**). The currently adopted LAX Plan land use designations for the DSA are Airport Airside and Airport Landside. The Airport Airside land use designation provides for passenger and cargo movement that are associated with aircraft operating under power and related airfield support services. Allowable uses within the Airport Airside designated area include four runways, taxiways, aircraft gates, maintenance areas, airfield operation areas, air cargo areas, passenger handling facilities, fire protection facilities, and other ancillary airport facilities. The primary functions of the Airport Landside land use designation are to provide access to the airport and to process passengers. Permitted uses within the Airport Landside designated area include, but are not limited to, passenger handling services, airport administration offices, parking areas, cargo facilities, and other ancillary airport facilities.[11] The LAX Plan provides the general land use policy framework for LAX, while the LAX Specific Plan implements zoning and regulations for the Airport.

Westchester-Playa Del Rey Community Plan. The Westchester-Playa del Rey Community Plan is one of 35 Community Plans that make up the Land Use Element of the City of Los Angeles General Plan. It sets forth goals, objectives and programs to provide a guideline for land use policies and to meet the existing and future needs of the communities of Westchester and Playa del Rey, and includes the Playa Vista development, as well as the Ballona Wetlands. The Westchester-Playa del Rey Community Plan Area (CPA) is situated in the western portion of the Los Angeles Basin, north and east of LAX. The Westchester-Playa del Rey CPA is generally bounded by Centinela Avenue, La Brea Avenue, unincorporated communities of Los Angeles County, the City of Inglewood, the City of El Segundo, Dockweiler State Beach, Ballona Creek, Bay Street, and Jefferson Boulevard.[12]

[10] City of Los Angeles, *LAX Plan,* September 2004.
[11] *Ibid.*
[12] City of Los Angeles, *Westchester-Playa Del Rey Community Plan,* April 2004.

The Westchester-Playa del Rey CPA contains approximately 5,766 net acres. The existing land use consists primarily of low to low-medium density residential uses, with commercial uses concentrated near the transit corridors of Lincoln Boulevard, Sepulveda Boulevard, and Century Boulevard. Most of the housing stock is more than 40 years of age. Concentrations of multi-family residential uses can be found near La Tijera Boulevard and Manchester Avenue. Land uses adjacent to the Airport include single- and multi-family housing north of West Westchester Parkway and commercial uses east of Sepulveda Boulevard (**Figure 3.3-1**).

Applicable City of Los Angeles Specific Plans

LAX Specific Plan. The LAX Specific Plan achieves the goals and objectives of the LAX Plan through zoning and development standards, and contains specific provisions for the DSA. The LAX Specific Plan also establishes the procedures for processing future specific projects and activities anticipated under the LAX Master Plan. The currently adopted LAX Specific Plan zoning for the DSA are LAX-A Zone Airport Airside and LAX-L Zone Airport Landside. The purpose of the LAX-A Zone is to allow for the safe and efficient operation of airport airfield activities. The LAX-L Zone is in place to allow for the safe and efficient operation of airport facilities, with the primary function of providing access to the airport and processing passengers. For both LAX-A and LAX-L Zones, permitted uses include those allowed in the C2 and M2 Zones (Sections 12.14 and 12.19 of the Los Angeles Municipal Code), as well as additional uses listed in the LAX Specific Plan.[13] Although the action site is covered by the LAX Specific Plan, it is not being re-evaluated as part of the *2006 Stipulated Settlement Agreement* between the City of Los Angeles and the petitioners concerning the LAX Master Plan. The Specific Plan Amendment Study (SPAS) was the subject of a separate environmental analysis pursuant to the California Environmental Quality Act (CEQA) and was approved by the City of Los Angeles City Council on April 30, 2013.

Los Angeles Airport/El Segundo Dunes Specific Plan. This Specific Plan applies to the portion of the LAX Plan area that is bounded by Napoleon and Waterview Streets on the north, by Imperial Highway on the south, by Pershing Drive on the east, and by Vista del Mar on the west. This area includes the former residential development known as Surfridge. This Specific Plan was created to restore and preserve the natural ecology of the El Segundo Dunes and native dune-dependent species, such as the endangered El Segundo Blue Butterfly. The Specific Plan also provides for active recreation in the form of a public golf course and related facilities, consistent with the preservation of the El Segundo Dunes ecology. In addition, passive recreation is allowed under this Specific Plan in the form of paths, a visitor center, and viewing areas that would give visitors an opportunity to learn about sand dune ecology and to observe both airfield activities and the scenic resources of the ocean and the Dunes.[14] To date, these recreational uses have not been developed.

Coastal Bluffs Specific Plan. This Specific Plan applies to the portion of the Westchester-Playa del Rey Community Plan area that is bounded by Lincoln Boulevard on the east, the Ballona Wetlands and Culver Boulevard on the north, Vista Del Mar on the west, and Rees, 83rd, 79th, and 80th Streets to the south. The purpose of this Specific Plan is to implement the policies and objectives of the Scenic Highways Plan, the Seismic Safety Plan, the Open Space Plan, the Conservation Element and the Westchester-Playa del Rey Community Plan, which are components of the City of Los Angeles General Plan.[15]

Coastal Transportation Corridors Specific Plan (Adopted 1993). This Specific Plan applies to an area, which includes all or parts of the Westchester-Playa Del Rey CPA, the Palms-Mar Vista-Del Rey CPA, the Venice CPA, and the LAX Plan Area, generally bounded by the City of Santa Monica on the north, Imperial Highway on the south, the San Diego Freeway on the east, and the Pacific Ocean on the west. The purpose of this Specific Plan includes: providing a mechanism to fund specific transportation improvements due to transportation impacts generated by the projected new commercial and industrial development within the Specific Plan area; establishing the Coastal Transportation Corridor Impact Assessment Fee process for new development in the Commercial, Manufacturing, and Public Use Zones, and for development on property

[13] City of Los Angeles, *LAX Specific Plan*, September 2004.
[14] City of Los Angeles, *Los Angeles Airport/El Segundo Dunes Specific Plan*, 1992.
[15] City of Los Angeles, *Coastal Bluffs Specific Plan*, 1994.

owned by LAWA; and regulating the phased development of land uses, insofar as the transportation infrastructure can accommodate such uses.[16]

LAX Master Plan

The LAX Master Plan is the comprehensive development program for LAX properties that seeks to improve Airport safety, add new security measures, improve ground transportation, and provide job opportunities. The LAX Master Plan outlines improvement programs to modernize the Airport, including runway and taxiway system modernization, redevelopment of terminal areas, airport access improvements, and passenger safety, security, and convenience enhancements.

City of Los Angeles Municipal Code

The City of Los Angeles Municipal Code (LAMC) implements the City of Los Angeles General Plan's land use policy by establishing zones and specifying uses permitted by right or with permits, development standards, and procedures. The areas adjacent to the north side of the Airport are zoned Single-Family (R1), Multi-Family (R3), Neighborhood Commercial (C-2), and Open Space (OS). On the eastern side of the Airport, City of Los Angeles land uses are zoned primarily General Commercial (C-2) and Manufacturing (M1 and M2) (**Figure 3.3-2**).

3.3.2.2 City of El Segundo

City of El Segundo General Plan

The City of El Segundo is located to the south of the Airport. The City of El Segundo last updated its General Plan in 1992.[17] In general, areas within the City of El Segundo are fully developed and planned land use is consistent with existing land use. Land use patterns are primarily focused on low-density residential use, which is a mixture of single- and multi-family residences. Commercial uses are located along major corridors such as Main Street, El Segundo Boulevard, Imperial Highway, and Sepulveda Boulevard. The GSA does not intersect the City of El Segundo. In the area adjacent to the southeast portion of the Airport, land uses are a mix of commercial and light manufacturing from Aviation Boulevard west to Sepulveda Boulevard that contains buildings with high profiles. West of the western terminus of I-105, the existing land uses are a mix of open space, multi-family residences, and commercial uses, typified by low building heights (**Figure 3.3-1**).[18]

City of El Segundo Municipal Code

The City of El Segundo Zoning Code contains information regarding the types of allowable uses within land use designations. The areas adjacent to the south portion of the Airport are zoned O-S (Open Space), R-3 (Multi-Family Residential), and C-2 (General Commercial) west of the western terminus of I-105. From Aviation Boulevard west to Sepulveda Boulevard, the areas are zoned MU-N (Urban Mixed Use-North), CO (Corporate Office), and M-1(Light Manufacturing) (**Figure 3.3-2**).

3.3.2.3 City of Inglewood

City of Inglewood General Plan

The City of Inglewood is located east of the Airport. The City of Inglewood is in the process of updating its General Plan, which was last adopted in 1991.[19] The Technical Background Report was updated in August

[16] City of Los Angeles, *Coastal Transportation Plan Specific Plan*, 1993.
[17] City of El Segundo General Plan website, *http://www.elsegundo.org/depts/planningsafety/planning/general_plan/gptoc.asp*, accessed January 2013.
[18] *Ibid*.
[19] City of Inglewood website, *http://www.cityofinglewood.org/depts/planning_and_building/planning/default.asp*, accessed June 2013.

2006, which included the Land Use section of the Community Development chapter.[20] In general, areas within the City of Inglewood are fully developed and planned land use is consistent with existing land use. The predominant land use in the City of Inglewood is low-density residential use, with multi-family residences located primarily west of Crenshaw Boulevard and single-family residences located primarily east of Crenshaw Boulevard. Commercials uses are located along the city's major corridors, such as the north-south arterials of La Cienega Boulevard, La Brea Avenue, Prairie Avenue, and Crenshaw Boulevard; and the east-west arterials of Centinela Avenue, Manchester Boulevard, Arbor-Vitae Street, Century Boulevard, and Imperial Highway. Industrial uses are located primarily along Century Boulevard and Florence Avenue, as well as in the area west of the San Diego (I-405) Freeway. The GSA does not intersect the City of Inglewood. In the area nearest the Airport, allowable land uses include a mix of industrial and commercial uses (**Figure 3.3-1**).

City of Inglewood Municipal Code

The City of Inglewood Zoning Code contains information regarding the types of allowable uses within land uses designations. The areas near the eastern portion of the Airport are zoned M-1 (Light Manufacturing) and C-3 (Heavy Commercial) east of Aviation Boulevard and west of I-405 (**Figure 3.3-2**).

3.3.2.4 Los Angeles County

Los Angeles County General Plan

Del Aire and Lennox are unincorporated communities in Los Angeles County located south and east, respectively, of the Airport. Neither Del Aire nor Lennox has an adopted community plan[21] and, therefore, the existing Land Use Element of the Los Angeles County General Plan applies to these communities. Los Angeles County is in the process of updating its General Plan, which was last adopted in 1980.[22] A Draft of the General Plan 2035 was released in 2012. In general, areas within the communities of Del Aire and Lennox are fully developed and land use patterns are primarily focused on low-density residential use. Commercial uses are concentrated along the major corridors of each community (North Aviation Boulevard, West El Segundo Boulevard, and Inglewood Avenue for Del Aire, and South Hawthorne Boulevard, South Inglewood Avenue, and Lennox Boulevard for Lennox). The GSA does not intersect either Del Aire or Lennox, but is adjacent to Lennox. In the area of Del Aire nearest the Airport (south of Imperial Highway and east of Aviation Boulevard), land uses include a mix of residential, commercial, and industrial uses. In the area of Lennox adjacent to the Airport (east of La Cienega Boulevard), allowable land uses are industrial and commercial (**Figure 3.3-1**).

Los Angeles County Municipal Code

The Los Angeles County Municipal Code contains information regarding the types of allowable uses within land uses designations (Title 22). The areas of Del Aire near the southeastern portion of the Airport are zoned R-1 (Single-Family Residence), RPD (Residential Planned Development), C-1 (Restricted Business), and MPD (Manufacturing Industrial Planned Development) east of Aviation Boulevard and south of I-105. The areas of Lennox adjacent to the eastern portion of the Airport property are zoned C-2 (Neighborhood Commercial), C-3-DP (Unlimited Commercial-Development Program), C-M (commercial manufacturing), M-1 (Light Manufacturing), M-1-DP (Light Manufacturing-Development Program), M-1.5 (Restricted Heavy Manufacturing), and M-2 (Heavy Manufacturing), east of La Cienega Boulevard and west of I-405 (**Figure 3.3-2**).

[20] City of Inglewood website, *http://www.cityofinglewood.org/generalplan/reports_and_docs.html*, accessed June 2013.
[21] Los Angeles County Department of Regional Planning website, *http://planning.lacounty.gov/plans/adopted*, accessed June 2013.
[22] Los Angeles County Department of Regional Planning website, http://planning.lacounty.gov/generalplan/*existing*, accessed June 2013.

3.4 Department of Transportation Act, Section 4(F) and Land and Water Conservation Fund Act, Section 6(F) Resources

Section 4(f) of the *U.S. Department of Transportation Act of 1966*, (recodified as 49 United States Code [U.S.C.] 303, and 23 U.S.C. 138) requires a Section 4(f) analysis of any federally-funded transportation project if the project proposes to use property from a publicly owned park, recreation area, wildlife or waterfowl refuge area, or any significant historic site. The Secretary of Transportation may approve a transportation project requiring the use of Section 4(f) land only if:

- There is no prudent and feasible alternative to using that land; and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuges, or historic sites resulting from the use.

For Section 4(f) purposes, the term "use" not only includes actual physical takings of Section 4(f) lands but also adverse indirect impacts, or constructive use. Constructive use only occurs if Section 4(f) lands are substantially impaired by a Proposed Action or its alternatives, which includes substantially diminishing the activities, features, or attributes of the Section 4(f) resource that contribute to its significance or enjoyment.

Section 6(f) of the *National Park Service (NPS) Land and Water Conservation Fund* (*LWCF) Act* contains provisions for the protection of federal investments in land and water resources. The LWCF Act discourages the conversion of parks or recreational facilities to other uses.

3.4.1 Section 4(f) Resources Located Within the GSA

The GSA includes two City of Los Angeles public parks (Carl E. Nielsen Youth Park and Westchester Golf Course) that were determined to not qualify as Section 4(f) resources because they are owned by a transportation agency and the properties are used as parks on an interim basis.[23] Three City of Los Angeles parks and parklands that do qualify as Section 4(f) properties are located adjacent to the GSA: Dockweiler Beach State Park, Vista Del Mar Park, and the Westchester Recreation Center (**Figure 3.4-1**).[24] The DSA does not contain any land that is considered a park or is used for recreational purposes. In addition, the DSA has restricted public access due to safety and security reasons, since the DSA is an active airfield in constant use by aircraft and other vehicles.

According to the South Central Coastal Information Center (SCCIC) report obtained for the GSA and DSA, no known historical properties are present within the DSA, although several are located within the GSA, including the Theme Building located in the LAX Central Terminal Area (CTA) and Hangar One.

3.4.2 Section 6(f) Resources Located Within the GSA

No parks or recreation facilities in the GSA have received grants from the LWCF Act.[25] Three parks and facilities have received funding from the LWCF Act in the vicinity of the GSA: Dockweiler Beach State Park and the South Bay Bicycle Trail (both located adjacent and to the west of the GSA), and Jesse Owens County Park (located 3.25 miles east of the GSA).[26] However, none of these parks and facilities would be converted for Airport use under the Proposed Action or its alternatives and, therefore, Section 6(f) would not apply.

[23] Federal Aviation Administration, *Record of Decision on the LAX Master Plan EIS*, 2005.
[24] Refer to Section 3.3 Compatible Land Use.
[25] National Park Service website, *http://www.nps.gov/lwcf/*, accessed January 2012.
[26] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

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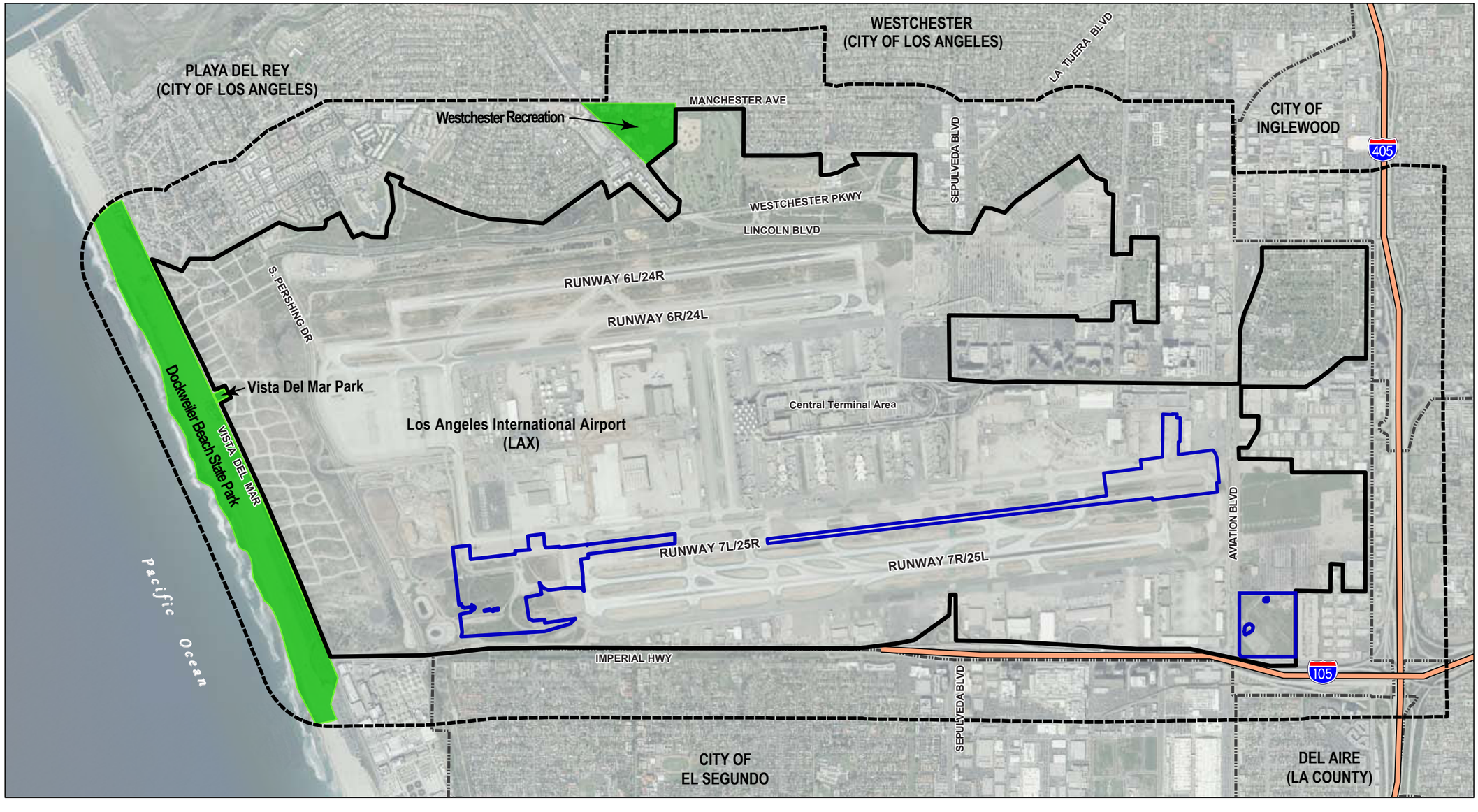
Legend

- Generalized Study Area/Airport Property Boundary
- Quarter Mile Buffer from Generalized Study Area
- Detailed Study Area
- Municipal Boundary
- Section 4(f) Property

0 2000 ft.
1" = 2000 feet
north



Sources: LAWA, 2013; URS Corporation, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
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Section 4(f) Properties Within and Adjacent to the Generalized Study Area

FIGURE
3.4-1

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3.5 Demographic, Socioeconomic, and Transportation Characteristics

This section describes existing economic and demographic conditions and transportation characteristics of the GSA. Socioeconomic issues relevant to the evaluation of environmental impacts include population, ethnicity of population and poverty status, employment, income and housing distribution, surface transportation and traffic, children's environmental health and safety, and public services.

3.5.1 Population

The DSA is contained wholly within the LAX property and would not extend into the surrounding communities. However, the GSA contains parts of Census tracts that include housing units. These units are owned by LAWA but are still occupied by a small number of tenants. The Census tracts analyzed in this EA are shown in **Figure 3.5-1**. As the GSA would not extend into other Census tracts, population data was collected for the communities around LAX at a higher geographical scale (cities and communities versus Census tracts). 2010 U.S. Census information was used for population counts from 1990 through 2010. Southern California Association of Governments (SCAG) *2008 Regional Transportation Plan* projections for 2015 and 2020 were also used in this EA.

Table 3.5-1 shows the population trends for the different geographic areas in the vicinity of the DSA, which include the Census tracts that are in the GSA (2010 U.S. Census tracts 2772, 2774, 2780.01, and 9800.28), the cities of El Segundo, Inglewood, and Los Angeles, and the unincorporated Los Angeles County communities of Lennox and Del Aire (**Figure 3.5-1**). The population change seen in the GSA Census tracts has been primarily a loss of population, ranging from 27 percent to 57 percent less persons. However, in the cities and communities surrounding LAX, between 1990 and 2010, population generally grew, with the exception of Lennox.

Los Angeles County's population is expected to grow from approximately 9.8 million persons to 11.3 million persons between 2010 and 2020, which represents an increase in population of 15 percent. Between 2010 and 2020, population growth in the Census tracts within the GSA would range from 19 to 43 percent.

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Los Angeles International Airport

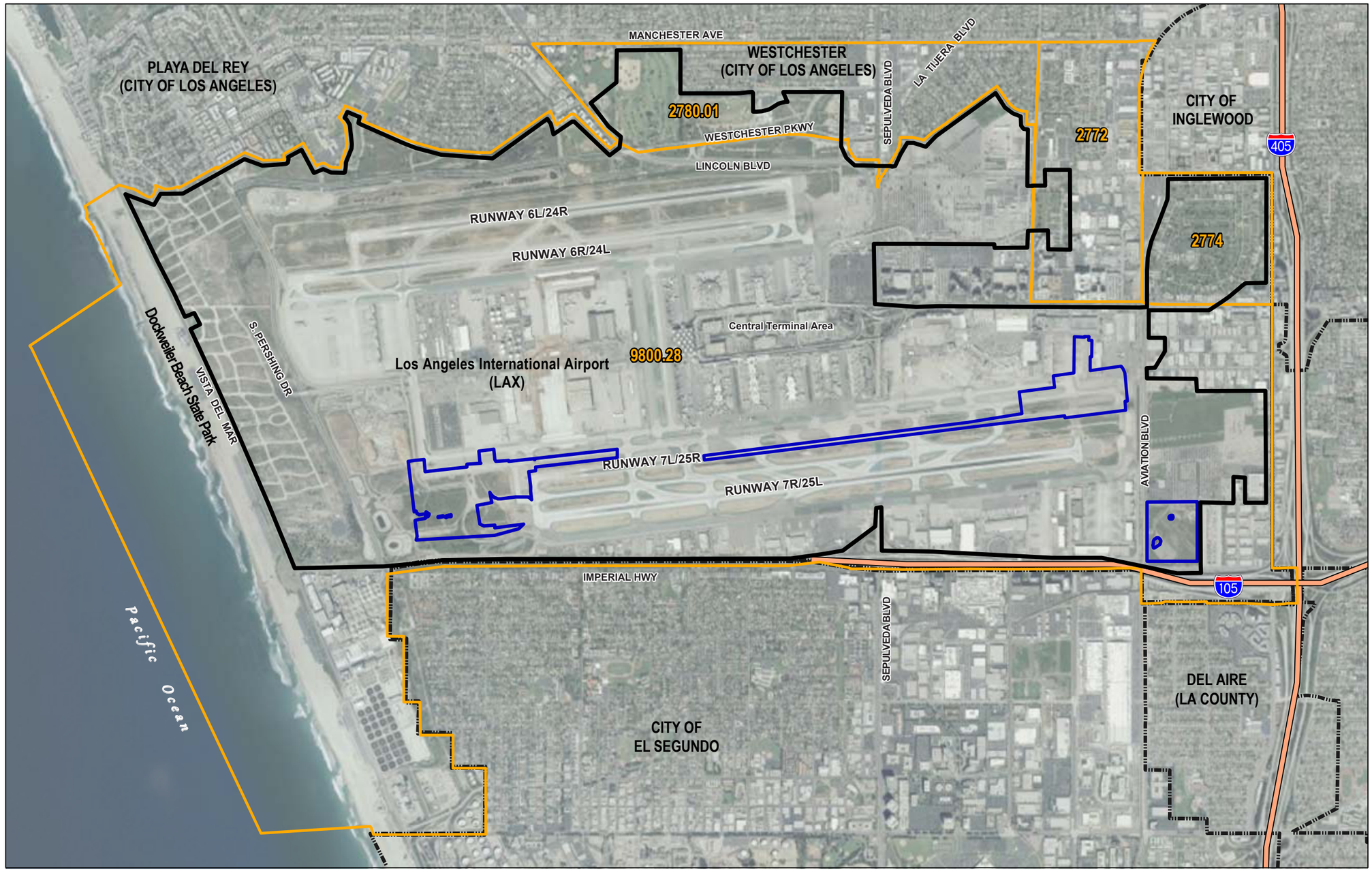
Legend

- Generalized Study Area/Airport Property Boundary
- Detailed Study Area
- 2780.01 2010 Census Tract Boundary
- Municipal Boundary

0 2500 ft.

1" = 2500 feet

north



Source: LAWA, 2013; U.S. Census Bureau, 2010; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Generalized Study Area Census Tracts

FIGURE
3.5-1

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Table 3.5-1
Population Trends

Area	Population (Persons)					Change 1990-2010	
	1990[1]	2000[2]	2010[3]	2015[4]	2020[4]	Population	%
GSA CTs Total	9,419	10,958	6,481	12,503	12,861	-2,938	-31
CT 2772	3,400	3,743	2,490	4,167	4,247	-910	-27
CT 2774	3,591	4,798	1,533	5,305	5,457	-2,058	-57
CT 2780.01[5]	2,428	2,417	2,458	3,031	3,157	30	1
CT 9800.28[5]	0	0	0	0	0	0	0
City of Los Angeles	3,485,398	3,612,223	3,792,621	4,128,125	4,204,329	307,223	9
Westchester- Playa del Rey CPA[6]	48,003	51,255	57,658	58,511[7]	59,988[7]	9,655	20
City of El Segundo	15,223	16,033	16,654	17,495	17,500	1,431	9
City of Inglewood	109,602	112,580	109,673	120,185	120,678	71	0.1
Los Angeles County	8,863,164	9,519,338	9,818,605	10,971,602	11,329,829	955,441	11
Lennox Community	22,757	22,950	22,753	26,307	26,842	-4	-0.02
Del Aire Community	8,040	9,012	10,001	10,379	10,457	1,961	24

Notes:
GSA=General Study Area; CPA=Community Plan Area; CT= Census tract
[1]Data is from the 1990 Decennial U.S. Census.
[2]Data is from the 2000 Decennial U.S. Census.
[3]Data is from the 2010 Decennial U.S. Census.
[4]Data is from the SCAG 2008 RTP Growth Forecast.
[5]Prior to the 2010 Census, Census tract 2780 included populated areas north of LAX property and the LAX airport itself. In the 2010 Census, the LAX Airport was separated to Census tract 9800.28 and the remaining area was re-designated as Census tract 2780.01.
[6]The GSA includes the Westchester-Playa Del Rey Community Plan Area and, consequently, GSA Census tracts for this area are included.
[7]The numbers are based on the sum of the population of the different Census tracts that make up the Westchester-Playa Del Rey Community Plan Area. These Census tracts include 2760, 2761, 2764, 2765, 2766.01, 2766.02, 2770, 2771, 2772, 2774, 2780 (now 9800.28 and 2780.01), and 2781.
Sources: United States Census Bureau, 1990, 2000, and 2010 Census data website, http://www.census.gov/, accessed January 2010; Southern California Association of Governments, 2008 Integrated Growth Forecast website, *http://www.scag.ca.gov/forecast/index.htm*, accessed January 2012; and City of Los Angeles Department of City Planning website, *http://cityplanning.lacity.org/*, accessed January 2012.

3.5.2 Ethnicity of Population and Poverty Status

The race and poverty data in 2010 for the GSA are shown in **Table 3.5-2**. Census tracts within the GSA as well as the overall City of Los Angeles, City of Inglewood, County of Los Angeles, Lennox community, and Del Aire community had minority populations greater than 50 percent. The City of El Segundo and the City of Los Angeles Westchester – Playa del Rey had the lowest percentages of minority populations of the cities and communities in the vicinity of the GSA (31 and 46 percent, respectively). The percentages of the Census tract populations living below the poverty level in 2010 ranged from 12 to 14 percent. Approximately 30 percent of the population in Lennox lived below the poverty level in 2010, which was the highest in any of the Airport's surrounding communities. By contrast, approximately 3 percent of the City of El Segundo's population was living below the poverty level in 2010.[27]

[27] United States Census Bureau website, *http://www.census.gov*, accessed January 2012.

Table 3.5-2
Race and Poverty

Area	Population (2010)	Minority Population (Persons)	Percent Minority	Population Living Below Poverty Level	Percentage Living Below Poverty Level
GSA	6,481	4,633	71%	843	13%
CT 2772	2,490	1,979	79%	349	14%
CT 2774	1,533	1,408	92%	199	13%
CT 2780.01	2,458	1,246	51%	295	12%
CT 9800.28	0	0	N/A	0	N/A
City of Los Angeles	3,792,621	2,705,713	71%	721,169	19%
Westchester- Playa del Rey CPA[2]	57,658	26,298	46%	5,249	10%
City of El Segundo	16,654	5,139	31%	541	3%
City of Inglewood	109,673	106,588	97%	21,602	20%
Los Angeles County	9,818,605	7,090,284	72%	1,508,618	16%
Lennox	22,753	22,318	98%	6,485	30%
Del Aire	10,001	6,543	65%	445	5%

Notes:

GSA= General Study Area; CPA=Community Plan Area; CT= Census tract

[2]The GSA includes the Westchester-Playa Del Rey Community Plan Area and, consequently, the Census tracts in this GSA area. The numbers are based on the sum of the population of the different Census tracts that make up the Westchester-Playa Del Rey Community Plan Area. These Census tracts include 2756.02, 2760, 2761, 2764, 2765, 2766.01, 2766.03, 2766.04, 2770, 2771, 2772, 2774, 2780 (now 9800.28 and 2780.01), and 2781.02.

Source: United States Census Bureau, 2010 Census data website, *http://www.census.gov/*, accessed January 2012.

3.5.3 Employment

Employment characteristics by category are shown in **Table 3.5-3**. As shown, the Educational/Health/Social Services category is the industry category with the highest percentage of workers in California, Los Angeles County, Del Aire, City of Los Angeles, City of El Segundo, and the City of Inglewood (16.4 to 21.9 percent). For the Lennox community, the Arts/Entertainment/Recreation/Hospitality/Food Services industry category employs the largest percentage of residents (21.5 percent).

Table 3.5-3
2010 Employment Characteristics

Industry	Percentage Employed in Each Area by Industry						
	State	Los Angeles County			City of Los Angeles	City of El Segundo	City of Inglewood
		Overall	Del Aire	Lennox			
Total Employed Population (16 years and over)	16,632,466	4,522,917	4,947	9,110	1,798,135	9,518	49,000
Agriculture/ Forestry/ Fishing & Hunting/Mining	2.1%	0.5%	0%	0.9%	0.4%	0.6%	0.5%
Construction	7%	6.3%	5.9%	10.2%	6.7%	2.3%	4.9%
Manufacturing	10.3%	11.4%	12.1%	9.5%	9.8%	15.0%	8.5%
Wholesale trade	3.4%	3.9%	3.2%	1.8%	3.2%	2.1%	2.8%
Retail trade	11%	10.6%	11%	14.1%	10.3%	8.1%	9.9%
Transportation/ Warehousing/ Utilities	4.7%	5.2%	12.1%	5.9%	4.1%	8.8%	8.9%
Information	3%	4.4%	3.6%	0.8%	5.8%	6.4%	2.5%
Finance/ Insurance/ Real Estate	7%	7%	5.6%	3.4%	7.0%	6.9%	5.9%
Professional/ Scientific/ Management/ Administrative/Waste Management Services	12.2%	12.0%	11.7%	12.1%	13.3%	17.1%	11.8%
Educational/ Health/ Social Services	20.1%	19.9%	18.3%	13.6%	19.0%	16.4%	21.9%
Arts/ Entertainment/ Recreation/Hospitality/ Food Services	9.2%	9.7%	5.1%	21.5%	11.2%	8.2%	11.2%
Other Services	5.2%	5.9%	4.4%	5.4%	7.0%	3.7%	6.3%
Public Administration	4.6%	3.3%	7%	0.8%	2.4%	4.4%	4.8%

Source: United States Census Bureau, 2010 Census data website, http://www.census.gov/, accessed January 2012.

Unemployment trends for the state of California, Los Angeles County, and jurisdictions adjacent to LAX are shown in **Table 3.5-4**. As shown, unemployment in the communities surrounding the Airport was generally higher than the state unemployment rate in 2000, except for Del Aire and the City of El Segundo. In 2008, the U.S. economy went into recession, and unemployment rates increased by 2 to 3 percentage points. In 2010, unemployment rates had increased by 5 to 7 percentage points from 2000 unemployment rates. Of the jurisdictions surrounding the airport, Lennox currently has the highest percentage of unemployed people (16.7 percent) and the City of El Segundo has the lowest (6.3 percent) compared to the county or state (12.6 percent and 12.4 percent, respectively).[28]

[28] United States Bureau of Labor Statistics, *2012 and California Employment Development Department*, 2012.

Table 3.5-4
Unemployment Trends

Year	State	Los Angeles County			City of Los Angeles	City of El Segundo	City of Inglewood
		Overall	Del Aire	Lennox			
2000	4.9%	5.4%	2.8%	7%	6.0%	2.4%	6.9%
2005	5.4%	5.4%	2.9%	7.3%	5.9%	2.6%	6.8%
2008	7.2%	7.5%	4%	10.1%	8.3%	3.6%	9.5%
2010	12.4%	12.6%	7%	16.7%	13.9%	6.3%	15.7%

Source: U.S. Bureau of Labor Statistics, 2012 and California Employment Development Department, 2012.

3.5.4 2010 Income and Housing Distribution

Table 3.5-5 shows the median household incomes in the GSA, and in surrounding jurisdictions for comparison purposes. In 2010, GSA Census tract 2774 had the lowest median household income ($48,513), and GSA Census tract 2780.01 had the highest median household income ($101,147).[29] In 2010, GSA Census tract 2772 had the most housing units (1,134) and Census tract 2774 had the least housing units (728), the latter of which was largely due to the removal of structures beneath the flight path by LAWA. Census tract 2774 has the highest vacancy rate (20 percent), while Census tract 2780.01 had the smallest vacancy rate (5 percent).[30]

Table 3.5-5
2010 Income and Housing Information

Area	Media Average Household Income[1]	Total Housing Units	Vacancy Rate (%)
GSA	$ 71,279	2,874	11%
CT 2772	$ 64,176	1,134	7%
CT 2774	$ 48,513	728	20%
CT 2780.01	$ 101,147	1,012	5%
CT 9800.28	N/A	0	N/A
City of Los Angeles	$ 76,097	1,413,995	7%
Westchester-Playa del Rey CPA[2]	$ 115,103	26,580	6%
City of El Segundo	$ 105,583	7,410	4%
City of Inglewood	$ 55,479	38,429	5%
Los Angeles County	$ 79,658	3,445,076	6%
Lennox	$ 43,136	5,487	4%
Del Aire	$ 90,062	3,428	4%

Notes:

[1]In 2009 dollars.

[2]The GSA includes the Westchester-Playa Del Rey Community Plan Area and, consequently, the Census tracts in this GSA area. The numbers are based on the sum of the population of the different Census tracts that make up the Westchester-Playa Del Rey Community Plan Area. These Census tracts include 2756.02, 2760, 2761, 2764, 2765, 2766.01, 2766.03, 2766.04, 2770, 2771, 2772, 2774, 2780 (now 9800.28 and 2780.01), and 2781.02.

Source: United States Census Bureau, 2010 Census data website, *http://www.census.gov/*, accessed January 2012.

[29] United States Census Bureau website, *http://www.census.gov*, accessed January 2012.
[30] United States Census Bureau website, http://www.census.gov, accessed January 2012.

3.5.5 Children's Environment Health and Safety

Three school districts are adjacent to LAX: the Los Angeles Unified School District (LAUSD), the El Segundo Unified School District, and the Inglewood Unified School District.

Within a quarter-mile radius, there are 4 high schools, 3 middle schools, and 15 elementary schools. Seven schools are located within or immediately adjacent to the GSA: 98th Street Elementary School, Bright Star Secondary Academy, Rise Ko Hyang Middle School, Emerson Manor School, Imperial School, Animo Leadership Charter High School, and Morning Sky School (**Figure 3.3-3**).

3.5.6 Surface Transportation and Traffic

3.5.6.1 Existing Roadway Network

The principal freeways and roadways serving as access routes within and around the GSA are described below. These roads are identified in most of the figures in this report and are illustrated in **Figure 3.5-2**:

I-405 (San Diego Freeway) - This north-south freeway extending from Sylmar in the San Fernando Valley to Orange County generally forms the eastern boundary of the GSA and provides regional access to the Airport and the surrounding areas. Access to the GSA is provided via ramps at Howard Hughes Parkway, Century Boulevard, I-105, Imperial Highway, and three locations along La Cienega Boulevard.

I-105 (Glenn M. Anderson/Century Freeway) - Along with Imperial Highway (described below), this east-west freeway forms the southern boundary of the GSA, and extends approximately from the San Gabriel Freeway (I-605) on the east to just west of Sepulveda Boulevard. Access to the GSA from the I-105 is provided via ramps at Sepulveda Boulevard and along Imperial Highway. The westbound off-ramp from the I-105 Freeway to northbound Sepulveda Boulevard was widened to three lanes in March 2010.

Aviation Boulevard - This north-south, four-lane roadway bisects the GSA.

Century Boulevard - This eight-lane divided east-west roadway serves as the primary entry to the LAX Central Terminal Area. This roadway also provides access to off-airport businesses and hotels and on-airport aviation-related facilities (e.g., air cargo facilities) located between the LAX Central Terminal Area and I-405.

Imperial Highway - This east-west roadway is located at-grade and beneath much of the elevated I-105 freeway. The number of lanes on this roadway varies from six lanes east of the merge with I-105 to four-lanes west of the merge with I-105.

La Cienega Boulevard - This north-south roadway parallels I-405 at the east boundary of the GSA. The roadway is four to six lanes.

Pershing Drive - This north-south, four-lane divided roadway forms the western boundary of the operational portion of the Airport.

Westchester Parkway - This east-west four-lane divided arterial roadway forms a portion of the northern boundary of the operational portion of the Airport.

Sepulveda Boulevard (State Route 1 south of Lincoln Boulevard) - This major north-south six-lane arterial roadway provides direct access to the Airport via I-405 and Westchester Parkway on the north and via I-105 on the south. Sepulveda Boulevard between I-105 and Century Boulevard is located in a tunnel section beneath the South Airfield runways.

111th Street - This east-west roadway has one lane in each direction separated by a continuous two-way left turn lane. This roadway provides access to the Airport's Public Parking Lot B, Airport Employee Parking Lot E, and other businesses in the GSA.

3.5.6.2 Study Intersections

The anticipated routes utilized by construction-related vehicles were reviewed to identify the intersections likely to be used by vehicles accessing the areas of direct disturbance or one of the construction employee parking/staging areas associated with this and other concurrent construction projects in the vicinity of LAX. Based on this review, the key intersections to be analyzed are listed in **Table 3.5-6** and depicted in **Figure 3.5-2**.

Table 3.5-6
Study Intersections

No.[31]	Name/Description	Jurisdiction
14	Aviation Boulevard/Century Boulevard	City of Los Angeles
16	Imperial Highway/Aviation Boulevard	City of Los Angeles/City of El Segundo
19	Aviation Boulevard/111th Street	City of Los Angeles
38	Sepulveda Boulevard/Century Boulevard	City of Los Angeles
47	Imperial Highway/Douglas Street	City of Los Angeles/City of El Segundo
68	Imperial Highway/Main Street	City of Los Angeles/City of El Segundo
69	Imperial Highway/Pershing Drive	City of Los Angeles
71	Imperial Highway/Sepulveda Boulevard	City of Los Angeles/City of El Segundo
73	Imperial Highway/Nash Street	City of Los Angeles/City of El Segundo
74	Imperial Highway/I-105 Ramp	City of Los Angeles/City of El Segundo
108	Sepulveda Boulevard/Lincoln Boulevard	City of Los Angeles
123	Westchester Parkway/Pershing Drive	City of Los Angeles

Source: Ricondo & Associates, *Construction Surface Transportation Existing Conditions Report*, January 2012.

Intersection Controls

All of the study area intersections listed in **Table 3.5-6** are signalized. In addition, all of the study intersections are included in LADOT's Automated Traffic Surveillance and Control (ATSAC) system, which monitors intersection traffic conditions and adjusts traffic signal timing in response to current conditions.

[31]The intersection numbers correspond with the intersection number designations associated with the July/August 2010 intersection traffic count database that has been collected to support analyses associated with the LAX Specific Plan Amendment Study.

Los Angeles International Airport

Legend

- Generalized Study Area/Airport Boundary
- Detailed Study Area
- Municipal Boundary
- Key Study Area Intersections

14. Century Blvd and Aviation Blvd
16. Aviation Blvd and Imperial Hwy
19. Aviation Blvd and W 111th St
38. Century Blvd and Sepulveda Blvd
47. Douglas St and Imperial Hwy
68. Main St and Imperial Hwy
69. Pershing Dr and Imperial Hwy
71. Sepulveda Blvd and Imperial Hwy
73. Nash St and Imperial Hwy
74. Hindy Ave and Imperial Hwy
108. Sepulveda and Lincoln Blvd
123. Westchester Pkwy and Pershing Dr

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1" = 2000 feet
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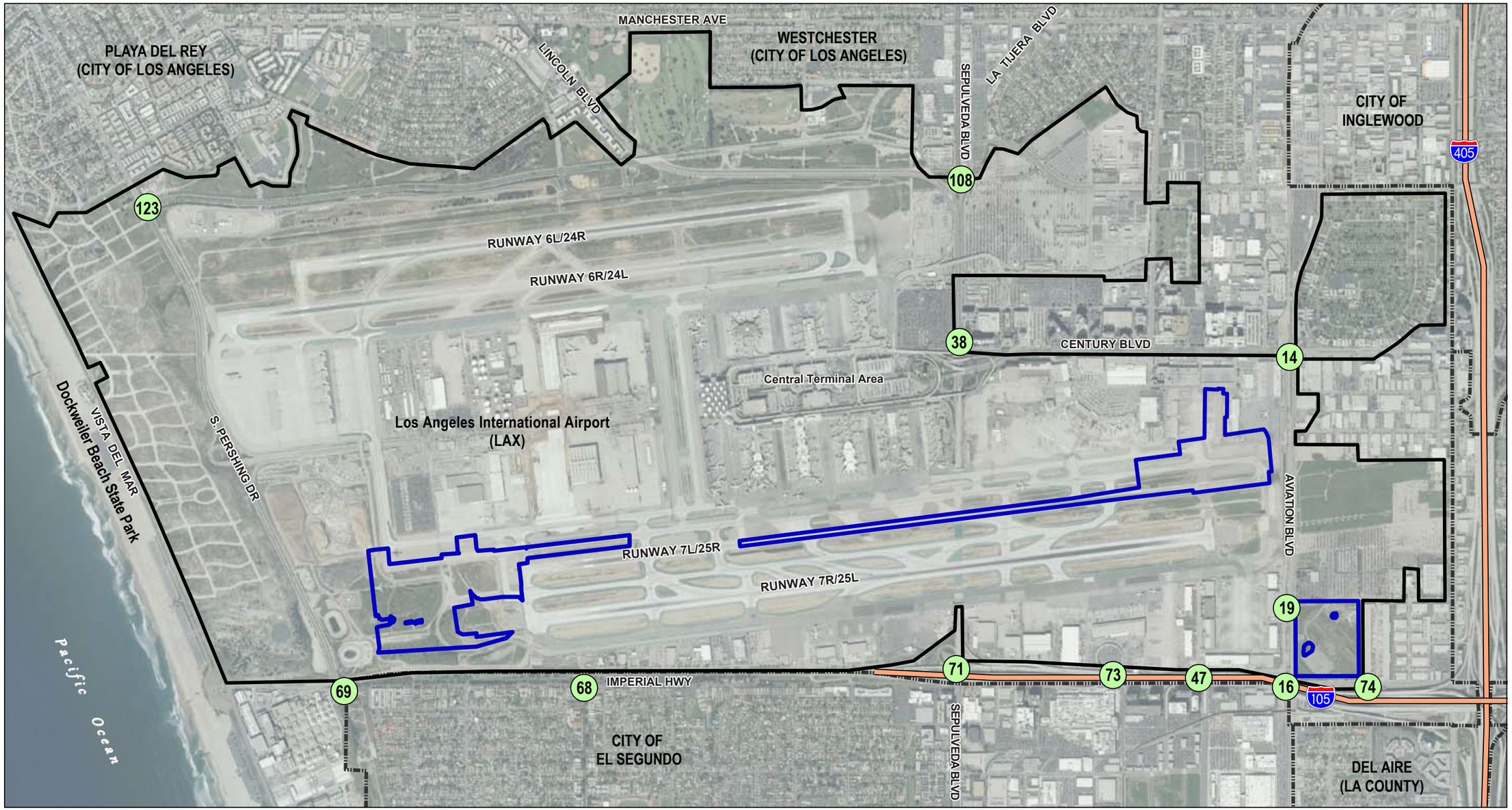

Sources: LAWA, 2013; URS Corporation, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

**Environmental Assessment
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Associated Improvements Project**

Construction Traffic Study Area Intersections

FIGURE
3.5-2

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3.5.6.3 Existing Study Intersection Operations

Methodology

Intersection Level of Service (LOS) was analyzed using the Transportation Research Board Critical Movement Analysis (CMA) Circular 212 Planning Method,[32] to assess the estimated operating conditions during existing conditions for the AM and PM construction peak hours.[33] LOS is a qualitative measure that describes traffic operating conditions (e.g., delay, queue lengths, congestion). Intersection level of service ranges from A (i.e., excellent conditions with little or no vehicle delay) to F (i.e., excessive vehicle delays and queue lengths). LOS definitions for the CMA methodology are presented in **Table 3.5-7**. In accordance with the City of Los Angeles Department of Transportation (LADOT) analysis procedures, the volume/capacity (v/c) ratio calculated using the CMA methodology is further reduced by 0.07 for those intersections included within the ATSAC system to account for the improved operation and increased efficiency from the ATSAC system that is not captured as part of the CMA methodology.

Table 3.5-7
Level of Service Thresholds and Definitions for Signalized Intersections

Level of Service (LOS)	Volume/Capacity Ratio Threshold	Definition
A	0 - 0.6	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 - 0.7	VERY GOOD. An occasional approach phase is fully used; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.8	GOOD. Occasionally, drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.9	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.0	POOR. Represents the most vehicles that intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	Greater than - 1.0	FAILURE. Backups from nearby intersections or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity*, January 1980.

Existing Levels of Service

The LOS for existing intersections is provided in **Table 3.5-8**. Most of the study intersections operated at LOS C or better in 2010 during the construction AM and PM peak periods. The three exceptions occurred at the following study intersections:

- Aviation Boulevard/Century Boulevard (Intersection #14), which was estimated to operate at LOS D during the construction PM peak period
- Imperial Highway/Sepulveda Boulevard (Intersection #71), which was estimated to operate at LOS F during the construction PM peak period

[32] Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity*, January 1980.

[33] The project construction AM peak hour represents the peak period for construction employees arriving and/or leaving the construction employee parking lots during the morning. Employees are anticipated to enter the site between 5:00 a.m. and 6:00 a.m. The project construction PM peak hour represents the peak period for construction employees arriving and/or leaving the construction employee parking lots during the evening. Employees are anticipated to exit the site between 3:00 and 4:00 p.m.

- Sepulveda Boulevard /Lincoln Boulevard (Intersection #108), which was estimated to operate at LOS D during the construction PM peak period

Table 3.5-8
2010 Existing Intersection Operations

Study Intersection		Construction Peak Period	V/C	LOS
No.	Name/Description			
14	Aviation Boulevard /Century Boulevard	AM	0.431	A
		PM	0.847	D
16	Imperial Highway /Aviation Boulevard	AM	0.463	A
		PM	0.594	A
19	Aviation Boulevard /111th Street	AM	0.341	A
		PM	0.507	A
38	Sepulveda Boulevard /Century Boulevard	AM	0.379	A
		PM	0.655	B
47	Imperial Highway /Douglas Street	AM	0.130	A
		PM	0.404	A
68	Imperial Highway /Main Street	AM	0.085	A
		PM	0.520	A
69	Imperial Highway/ Pershing Drive	AM	0.161	A
		PM	0.358	A
71	Imperial Highway /Sepulveda Boulevard	AM	0.532	A
		PM	1.193	F
73	Imperial Highway /Nash Street	AM	0.353	A
		PM	0.304	A
74	Imperial Highway/ I-105 Ramp	AM	0.379	A
		PM	0.628	B
108	Sepulveda Boulevard /Lincoln Boulevard	AM	0.429	A
		PM	0.860	D
123	Westchester Parkway/ Pershing Drive	AM	0.109	A
		PM	0.217	A

Source: Ricondo & Associates, *Construction Surface Transportation Existing Conditions Report*, January 2012.

3.5.6.4 Existing Public Transit Service

Public transit service to the LAX area is provided by several transit providers, including the Los Angeles County Metropolitan Transportation Authority (Metro), Beach Cities Transit, LADOT, Torrance Transit, Culver City Transit, and the Santa Monica Big Blue Bus. All of these transit providers have stops around the perimeter of the Airport, including at the LAX City Bus Center located on 96th Street between Airport Boulevard and Sepulveda Boulevard. Passengers can also access the terminals by using the free shuttles in Parking Lot C, which is connected to the LAX City Bus Center.

Direct shuttle service to LAX terminals is provided via the FlyAway service from downtown Los Angeles, Irvine, Van Nuys, and Westwood. In addition, shuttle connection to/from the Metro Green Line Light Rail Transit (LRT) Aviation/LAX Station is available. Other municipalities that also stop at the Aviation/LAX Station include the Santa Monica Big Blue Bus, Beach Cities Transit, Culver City Transit, and the Municipal Area Express (MAX) service, which links the South Bay communities with work centers in the City of El Segundo.

3.6 Air Quality

The *Clean Air Act (CAA)* requires the United States Environmental Protection Agency (EPA) to establish and periodically review National Ambient Air Quality Standards (national standards or NAAQS) to protect public health and welfare. National standards have been established for the following seven criteria air pollutants, many of which have been enhanced by California-specific standards: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 micrometers (coarse particulates or PM_{10}) and particulate matter equal to or less than 2.5 micrometers (fine particulates or $PM_{2.5}$), and lead. The NAAQS and their attainment status are listed in **Table 3.6-1**.

Table 3.6-1

National and California Ambient Air Quality Standards and
South Coast Air Basin Attainment Status for Criteria Pollutants

Pollutant	Averaging Time	Federal Standards (NAAQS)		California Standards (CAAQS)	
		Primary	Attainment Status	Concentration	Attainment Status
Ozone	1 Hour 8 Hour	– 0.075 ppm	Nonattainment	0.09 ppm 0.07 ppm	Nonattainment
Carbon Monoxide	1 Hour 8 Hour	35 ppm 9 ppm	Attainment	20 ppm 9 ppm	Attainment
Nitrogen Dioxide	1 Hour AAM	0.100 ppm 0.053 ppm	Unclassified/ Attainment	0.18 ppm 0.030 ppm	Attainment
Sulfur Dioxide	1 Hour 3 Hour 24 Hour	0.75 ppm 0.5 ppm 0.14ppm	Attainment	0.25 ppm – 0.04 ppm	Attainment
Respirable Particulate Matter (PM_{10})	24 Hour AAM	150 µg/m^3 –	Nonattainment	50 µg/m^3 20 µg/m^3	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	24 Hour AAM	35 µg/m^3 15 µg/m^3	Nonattainment	– 12 µg/m^3	Nonattainment
Lead	30 Day Average Quarter	– 1.5 µg/m^3	Nonattainment	– 1.5 µg/m^3	Nonattainment

Notes:
AAM = Annual Arithmetic Mean
CAAQS = California Ambient Air Quality Standards
µg/m3 = micrograms per cubic meter
NAAQS = National Ambient Air Quality Standards
PM_{10} = particulate matter equal to less than 10 microns in diameter
$PM_{2.5}$ = particulate matter equal to less than 2.5 microns in diameter
ppm = parts per million
Source: CARB, 2012.

The California Air Resources Board (CARB) manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional air districts within California. CARB also regulates local air quality indirectly by establishing California Ambient Air Quality Standards (state standards or CAAQS) and vehicle emissions standards, and by conducting research, planning, and coordination activities. As mentioned, California has adopted ambient standards that are generally more stringent than the federal standards for the criteria air pollutants. The CAAQS are also shown in **Table 3.6-1**.

LAX is located within the South Coast Air Basin. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over the South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin. This area encompasses the non-desert areas of Los Angeles, Orange, Riverside and San Bernardino counties. The SCAQMD is responsible for ensuring that federal and state air quality standards are met by monitoring ambient air pollutant levels throughout the region and implementing strategies to attain the standards. SCAG and CARB are also involved in managing air quality in the region.

For the NAAQS, the DSA is in attainment or unclassified/attainment for CO, NO_2, and SO_2 and nonattainment for O_3, PM_{10}, $PM_{2.5}$, and lead. Under the *California Clean Air Act*, which is patterned after the federal CAA, areas have also been designated as attainment or nonattainment with respect to the CAAQS. With respect to these standards, the Basin is presently designated as attainment/unclassified for CO, NO_2, and SO_2 and nonattainment for NO_2, O_3, PM_{10}, $PM_{2.5}$, and lead.

3.6.1 Sources of Air Emissions

The sources of air emissions associated with LAX are typical of sources associated with most large commercial service airports. Typical sources include aircraft during the landing/takeoff cycles, ground support equipment (GSE), auxiliary power units, airport-related motor vehicles (from passengers, employees, shuttle vans, fleet vehicles, buses, etc.) within the airport roadway network, construction-related emissions, and stationary sources (e.g., boilers and generators).

3.6.2 Greenhouse Gas Emissions and Climate Change

Research has shown there is a direct correlation between fuel combustion and greenhouse gas (GHG) emissions. In terms of U.S. contributions, the U.S. General Accounting Office (GAO) reports that "domestic aviation contributes about 3 percent of total carbon dioxide emissions, according to USEPA data, "…compared with other industrial sources, including the remainder of the transportation sector (20 percent) and power generation (41 percent).[34] The International Civil Aviation Organization estimates that GHG emissions from aircraft account for roughly 3 percent of all anthropogenic GHG emissions globally.[35] Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate.[36]

The scientific community is continuing efforts to better understand the impact of aviation emissions on the global atmosphere. The FAA is leading and participating in a number of initiatives intended to clarify the role that commercial aviation plays in GHG emissions and climate change. The FAA, with support from the U.S. Global Climate Change Research Program and its participating federal agencies (e.g., National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, USEPA, and U.S. Department of Energy), has developed the Aviation Climate Change Research Initiative in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions. The FAA also funds the Partnership for Air Transportation Noise & Emissions Reduction Center of Excellence research

[34] United States General Accounting Office, *Aviation and the Environment – Aviation's Effects on the Global Atmosphere Are Potentially Significant and Expected to Grow*. GAO/RCED-00-57, 2000.
[35] Alan Melrose, "European ATM and Climate Adaptation: A Scoping Study," in *ICAO Environmental Report*, 2010.
[36] As explained by the USEPA, "…greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." Climate Change Division, Office of Atmospheric Programs, U.S. Environmental Protection Agency, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3* (2009), available at http://epa.gov/climatechange/ endangerment.html.

initiative to quantify the effects of aircraft exhaust and contrails on global and U.S. climate and atmospheric composition. Similar research topics are being examined at the international level by the International Civil Aviation Organization.[37]

3.6.3 2011 Existing Conditions

The SCAQMD monitors air quality at more than 36 locations throughout the Basin. The monitoring station nearest to LAX is the North Long Beach Station, located at 7201 W. Westchester Parkway, in the City of Los Angeles, immediately to the north of the Airport. Criteria pollutants monitored at this location include O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. A summary of the monitored pollutants from 2009 through 2011 is provided in **Table 3.6-2**. As shown, the data show a trend of generally improving (i.e., lower) concentrations of criteria pollutants at LAX and, consequently, in the DSA.

Existing sources of air pollution associated with airport facilities and vehicles in the DSA include mainly aircraft currently using the runway and taxiways. Existing emissions associated with aircraft using Taxiways B and C and 25R include aircraft idling and taxiing as well as landings and take-offs.

Table 3.6-2

Air Quality Data Summary (2009–2011) for the Westchester Parkway Monitoring Station

Pollutant	Monitoring Data by Calendar Year		
	2009	2010	2011
OZONE			
Highest 1-Hour Average (ppm)	0.077	0.089	0.078
Days over State Standard (0.09 ppm)	0	0	0
Highest 8 Hour Average (ppm)	0.070	0.070	0.067
Days over State Standard (0.07 ppm)	0	0	0
Days over Federal Standard (0.075 ppm)	0	0	0
NITROGEN DIOXIDE			
Highest 1 Hour Average (ppm)	0.077	0.076	0.098
Days over State Standard (0.18 ppm)	0	0	0
Annual Average (ppm)	*	0.012	0.013
Exceed State Standard? (0.030 ppm)	No	No	No
CARBON MONOXIDE			
Highest 1 Hour Average (ppm)	2.6	2.6	2.3
Days over State Standard (20.0 ppm)	0	0	0
Highest 8 Hour Average (ppm)	1.99	2.19	1.79
Days over State Standard (9.0 ppm)	0	0	0

[37] Lourdes, Q. Maurice and David S. Lee, "Chapter 5: Aviation Impacts on Climate," *Final report of the International Civil Aviation Organization (ICAO) Committee on Aviation and Environmental Protection (CAEP) Workshop October 29th – November 2nd 2007, Montreal*, 2007.

Table 3.6-2

Air Quality Data Summary (2009–2011) for the Westchester Parkway Monitoring Station

Pollutant	Monitoring Data by Calendar Year		
	2009	**2010**	**2011**
PARTICULATE MATTER (PM_{10})			
Highest 24 Hour Average ($\mu g/m^3$)	52	37	41
Days over State Standard (50 $\mu g/m^3$)	6	*	0
Days over Federal Standard (150 $\mu g/m^3$)	0	0	0
Annual Average ($\mu g/m^3$)	25.5	*	21.4
Exceed State Standard? (20 $\mu g/m^3$)	Yes	*	Yes
PARTICULATE MATTER ($PM_{2.5}$)[1]			
Highest 24 Hour Average ($\mu g/m^3$)	63.0	35.0	39.7
Days over Federal Standard (35 $\mu g/m^3$)	6	0	2
Annual Average ($\mu g/m^3$)	12.8	10.3	11.3
Exceed State Standard? (12 $\mu g/m^3$)	Yes	No	No

Notes:

$\mu g/m^3$ = micrograms per cubic meter

PM_{10} = particulate matter equal to less than 10 microns in diameter

$PM_{2.5}$ = particulate matter equal to less than 2.5 microns in diameter

ppm = parts per million

* Insufficient data to determine the value

[1] $PM_{2.5}$ data not recorded at the Westchester Parkway Monitoring Station. For informational purposes, data from North Long Beach monitoring station located 12 miles to the southeast of the airport is provided.

Source: California Air Resource Board, iADAM: Air Quality Data Statistics, Available: http://www.arb.ca.gov/adam/, accessed April 4, 2013; California Air Resource Board, AQMIS2, Available: http://www.arb.ca.gov/aqmis2/aqmis2.php, accessed May 14, 2013.

3.7 Water Resources

3.7.1 Surface and Stormwater

Santa Monica Bay and the Pacific Ocean are the major surface water features in the vicinity of LAX. The El Segundo Dunes are a natural barrier between LAX and Dockweiler Beach State Park and the Pacific Ocean (Refer to Figure 1-1 in Chapter 1, Purpose and Need).

Stormwater drainage, sanitary wastewater, and industrial wastewater collection are separate systems in the City of Los Angeles. Stormwater discharges associated with LAX are regulated by individual National Pollution Discharge Elimination System (NPDES) wastewater permits currently issued to the Airport for wastewater associated with the Hyperion Treatment Plant (HTP). The Airport is within the region covered by NPDES Permit No. CA S004001 issued by the Los Angeles Regional Water Quality Control Board (LARWQCB).[38] This permit prohibits non-stormwater discharges in order to reduce pollutants in urban stormwater discharges. LAX has implemented a Stormwater Pollution Prevention Plan (SWPPP) for stormwater discharges associated with industrial activities.[39] The major surface drainage features within the boundaries of LAX consists of five stormwater Sub-Basins: The Argo, Culver, Dominguez, Imperial, and Vista del Mar Sub-Basins (**Figure 3.7-1**). The DSA drains into three of these five stormwater Sub-Basins:

- Dominguez Channel Sub-Basin: The Dominguez Channel Sub-Basin drains into the Dominguez Channel and ultimately into the San Pedro Harbor. This water Sub-Basin is bounded by Sepulveda Boulevard to the west, I-405 to the east, Manchester Boulevard to the north, and I-105/Imperial Highway to the south (**Figure 3.7-1**). Approximately 1,600 acres of LAX drain into the Dominguez Channel Sub-Basin.
- Argo and Imperial Sub-Basins: The Argo and Imperial Sub-Basins drain west of Sepulveda Boulevard and both Sub-Basins discharge directly into Santa Monica Bay. These Sub-Basins are generally bounded by Sepulveda Boulevard to the east, the El Segundo Blue Butterfly Habitat Area to the west, Manchester Avenue to the north, and Imperial Highway to the south (**Figure 3.7-1**). Approximately 2,450 and 1,300 acres of LAX drain into the Argo and Imperial Sub-Basins, respectively.

Santa Monica Bay is the primary receiving water body for runoff from LAX. Santa Monica Bay includes 19 pollutants of concern.[40] Ten of these pollutants were identified as potential stormwater runoff from LAX. These pollutants include total suspended solids, phosphorous, copper, lead, zinc, biochemical oxygen demand, chemical oxygen demand, oil and grease, Kjeldahl[41] nitrogen, and pathogenic bacteria (fecal coliform, fecal enterococcus, and coliform bacteria).

[38] City of Los Angeles, and Los Angeles World Airports, LAX Specific Plan Amendment Study, Draft EIR, July 2012.
[39] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[40] City of Los Angeles, Los Angeles World Airports, LAX Specific Plan Amendment Study, Draft EIR, July 2012.
[41] The measure of both the ammonia and the organic forms of nitrogen.

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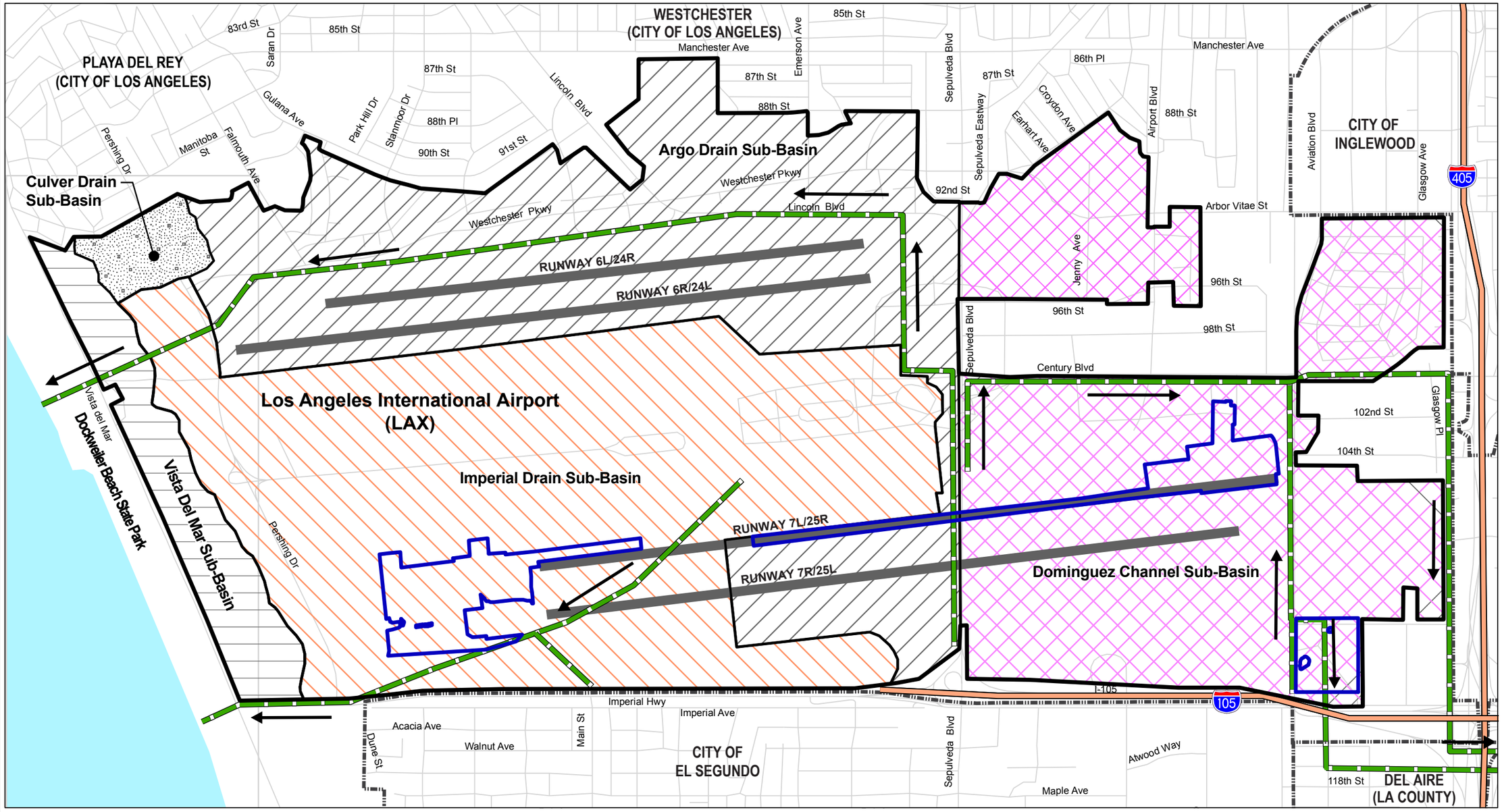
Los Angeles International Airport

Legend

- Generalized Study Area/Airport Property Boundary
- Municipal Boundary
- Detailed Study Area
- Dominguez Channel Sub-Basin
- Argo Drain Sub-Basin
- Culver Drain Sub-Basin
- Vista Del Mar Sub-Basin
- Imperial Drain Sub-Basin
- Storm Drain
- Flow Direction

0 1600 ft.
1" = 1600 feet
north



Sources: LAWA, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Stormwater Detention Sub-Basins
Within the Generalized Study Area

FIGURE
3.7-1

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3.7.2 Groundwater

LAX is located within the West Coast Groundwater Basin, which is generally bordered by I-10 to the north, Harbor Boulevard to the east, the Pacific Ocean to the west, and San Pedro Harbor to the south. The average depth to groundwater under LAX is over 90 feet; however, perched groundwater conditions have been noted in the upper 60 feet at various locations at LAX.[42]

Groundwater in the DSA is not located within the perched groundwater locations. The closest perched groundwater location was identified at the LAX Fuel Facilities, north of the existing Bradley Terminal in the CTA.[43]

3.7.3 Water Supply

Drinking water at LAX is provided by the City of Los Angeles Department of Water and Power (LADWP) and is distributed through the LAX transmission system. The LAX transmission system consists of a combination of several 10-, 12-, and 16-inch transmission lines that lead to a major 36- inch trunk line beneath Sepulveda Boulevard. This system connects to the overall City of Los Angeles water supply infrastructure from three connectors beneath West Westchester Parkway, South Pershing Drive, and Sepulveda Boulevard just south of Century Boulevard. The DSA is served by a 10-inch connection from a 12-inch transmission line in Pershing Drive near World Way West.

3.7.4 Sanitary Wastewater and Treatment

Wastewater treatment for most of the City of Los Angeles is performed at the Hyperion Treatment Plant (HTP) which is located near the southwest portion of the LAX property, south of Imperial Highway. Wastewater generated at LAX is collected in the Airport sanitary sewer system through a 21-inch main pipeline.[44] The DSA is served by the North Outfall Relief Sewer (NORS) and Central Outfall Sewer (COS) sewer lines that run underneath LAX at depths of between 5 to 25 feet.[45] Wastewater generated at LAX is conveyed via these sewer lines to the HTP. Current daily intake at the HTP is approximately 299 million gallons per day (gpd).[46]

LAX-related uses generate approximately 797,672 gpd.[47] However, the Proposed Action or its alternatives would include only the construction or rehabilitation of existing taxiways, runways, or service roads, which do not generate wastewater.

[42] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[43] *Ibid.*
[44] *Ibid.*
[45] *Ibid.*
[46] City of Los Angeles, Los Angeles World Airports, LAX Specific Plan Amendment Study, Draft EIR, July 2012.
[47] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

3.8 Fish, Wildlife and Plants

Vegetation communities within the surveyed DSA include mule fat scrub, non-native grassland, and ornamental (vegetation intentionally planted as part of landscaping). The cover type found in the DSA is disturbed/developed vegetation. Each of these communities and cover types is briefly discussed below. The DSA and BRSA are shown in **Figure 3.8-1**. The existing conditions are based on literature research and a site visit conducted in January 11, 2012. As part of the response to comments, the Proposed Action was refined and the area of direct impact was modified. Therefore, an additional site visit was conducted on May 16, 2013. Additional details of the initial and the additional site visits, as well as database lists of species and habitats, are provided in the Biological Assessment and Supplemental Biological Assessment (Appendix D).

3.8.1 Vegetation Communities and Cover Types

3.8.1.1 Vegetation Communities

The airport and associated facilities are largely developed, and the majority of the undeveloped areas support ruderal and ornamental vegetation. The biological resources study area consists of three vegetation communities and land uses types, as illustrated in **Figure 3.8-1**.

Mule Fat Scrub. Mule Fat Scrub is generally considered to be a riparian community that typically occurs in intermittent streambeds and seeps (Holland 1986). This community is an early successional stage that forms in damp soils and is maintained by frequent flooding. Within the DSA, mule fat scrub was found along the margins of the large basin within the proposed eastern staging area, which was artificially created when the previous owner excavated the site for the proposed "Continental City" development. The habitat was heavily disturbed and dominated by mule fat (*Baccharis salicifolia* spp. salicifolia) and scattered narrow-leaved willow saplings (*Salix exigua*). The understory was dominated by non-native grasses. In the DSA, this type of vegetation represents 0.3 percent of the total acreage (0.4 acres out of 149 total acres), and is found only on the proposed eastern staging area (**Figure 3.8-1**).

Non-native Grasslands. Non-native grassland areas are characterized by a dense to sparse cover of annual grasses, often with interspersed native and nonnative annual forbs (Holland, 1986). This habitat is a disturbance-related community most often found in old fields or openings in native scrub habitats. Non-native grasslands favor fine-textured, usually moist clay soils that can become waterlogged during the winter rainy season and very dry during summer and fall. Typical grasses within the study area include ripgut grass (*Bromus diandrus*), wild oat (*Avena fatua*), and Bermuda grass (*Cynodon dactylon*). Characteristic forbs include Australian saltbush (*Atriplex semibaccata*), Namaqualand daisy (*Dimorphotheca sinuata*), and broad-lobed filaree (*Erodium botrys*). In the DSA, this type of vegetation represents 19 percent of the total acreage (28 acres out of 149 total acres), and is found throughout the BRSA (**Figure 3.8-1**).

Ornamental. Ornamental areas are characterized by moderate to dense cover of non-native tree species. Within the BRSA, this type of vegetation community was found only at the park south of Imperial Highway, and along the southwestern corner of the proposed eastern staging area. The areas were dominated by turf grasses and non-native trees including eucalyptus (*Eucalyptus* sp.) and Mexican fan palm (*Washingtonia robusta*).

3.8.1.2 Cover Type

Disturbed/Developed. Disturbed/Developed lands within the BRSA include the runway areas, roadways, parking facilities, maintenance and airport operation buildings, residences and other private/public infrastructure with ornamental plantings. Species composition in developed communities within the study area varied. The majority of the BRSA is of this type (81 percent or 121 acres of 149 total acres; **Figure 3.8-1**).

Los Angeles International Airport

Legend

- Generalized Study Area/Airport Property Boundary
- Biological Resource Study Area
- Detailed Study Area
- Municipal Boundary

Vegetation Communities

- Mule Fat Scrub
- Non-Native Grassland
- Developed/Disturbed
- Ornamental

0 1300 ft. north
1" = 1300 feet

Sources:LAWA, 2013; URS, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Vegetation Communities Within the Biological Resource Study Areas

FIGURE
3.8-1

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3.8.2 Wildlife

3.8.2.1 Amphibians and Reptiles

Amphibian and reptile activity within the DSA is not likely to be high due to the developed nature of the site and the general lack of suitable habitat. No reptile activity was observed during a January 2012 site visit; however, low temperatures at the time of the survey may have also contributed to the lack of activity. Reptile and amphibian activity would be expected to be higher around the proposed western construction staging area, due to the presence of suitable habitat for common reptile species, including western fence lizard (*Sceloporus occidentalis*). No suitable habitat exists within the DSA for Special Status amphibian or reptile species.

3.8.2.2 Birds

The primary type of wildlife observed within the BRSA included bird species adapted to developed, industrialized areas, including the American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), rock pigeon (*Columba livia*), and house sparrow (*Passer domesticus*). The non-native grasslands surrounding the BRSA provide habitat for bird species that forage in open grasslands including the western meadowlark (*Sturnella neglecta*), which was observed during the field visit. These areas also provide foraging for raptors including red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*), both also observed during the field visit.

3.8.2.3 Mammals

The most common mammal species expected to occur within the BRSA are those that are adapted to urban environments, including the domestic dog (*Canis familiaris*) and coyote (*Canis latrans*). Signs of the presence of these species were observed at the BRSA (Refer to Appendix D). The non-native grasslands surrounding the BRSA provide habitat for burrowing mammals including Botta's pocket gopher (*Thomomys bottae*), signs of which were noted during the site survey. The proposed eastern staging area is also known to support a population of grey fox (*Urocyon cinerreoargenteus*) and one individual was observed on the day of the survey visit.

3.8.3 Protected Species

This section considers species protected under the federal *Endangered Species Act* (ESA), and the California ESA, as evaluated in the LAX Master Plan. A comprehensive understanding of the potential for occurrence of protected species was obtained through consultation with resource specialists and available information from resource management plans, and other technical documents containing information on locations and types of biological resources that have the potential to exist within the study area. Some of these resources included the United States Fish and Wildlife Service (USFWS) Critical Habitat Mapper and File[48] data and the Carlsbad Field Office Species List for Los Angeles County. The California Department of Fish and Game's (CDFG) Natural Diversity Database[49] and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants[50] file data were also queried for records of occurrence of special-status species and habitats within the Venice and Inglewood United States Geological Survey (USGS) 7.5-minute Topographic Quadrangle Map.[51] The pertinent documents, scientific studies, technical publications, and resource specialists consulted include, but are not limited to, the following:

- LAX Master Plan Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR)
- LAX Master Plan Final EIS/EIR, Appendix J1. Biological Assessment Technical Report

[48] United States Fish and Wildlife Service. Critical Habitat Portal website, *http://criticalhabitat.fws.gov/crithab/*, accessed March 2012.
[49] California Department of Fish and Game, *California Natural Diversity Database*, 2012.
[50] California Native Plant Society, *CNPS Electronic Inventory of Rare and Endangered Plants*, 2012.
[51] United States Geological Service, 7.*5 Minute Venice and Inglewood Quadrangle Maps*, 1981.

- LAX Master Plan Final EIR/EIS Appendix F-E. Biological Opinion from the United States Fish and Wildlife Service
- LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP) Annual Progress Report

From these sources, a list of 11 federal- and/or state-listed species that have the potential to occur in the BRSA was compiled (**Tables 3.8-1** and **3.8-2**). Based on a review of the distribution and habitat requirements for these species and the site conditions, seven of these species are not likely to occur. The remaining four species are described in Section 3.8.3.1.

3.8.3.1 Federal-Listed Species

California Orcutt Grass

California Orcutt grass (*Orcuttia californica*) was federally-listed as Endangered on August 3, 1993 (58 Federal Register [FR] 41384). This herbaceous plant species is found in vernal pools and is known from less than 20 occurrences. There is limited habitat potential for this species within the non-native grasslands that occur throughout the BRSA, where water does tend to pond after significant rain events. No record of observation for this species has been found within the BRSA.

El Segundo Blue Butterfly

The El Segundo blue butterfly (*Euphilotes battoides allyni*) is a federally-listed endangered species that inhabits coastal sand dunes that support populations of its food plant, coastal buckwheat. Historically, the species ranged over the entire Los Angeles/El Segundo Dunes and the northwestern Palos Verdes peninsula in Los Angeles County. Critical habitat was proposed for this species on February 8, 1977 (42 FR 7972), but was never designated. The largest population of this species is known to occur in the El Segundo Blue Butterfly Habitat Restoration Area, approximately 800 feet west of the westernmost point of the expanded BRSA. There is no suitable habitat within the areas of proposed disturbance associated with the Proposed Action to support this species. This species was not observed within the expanded BRSA. There is no habitat for the host plant, coastal buckwheat, within the expanded BRSA as a majority of the expanded BRSA is paved. The few remaining open areas do not support this plant species. There is limited habitat within the proposed construction staging areas of the BRSA to support this species; however, these areas are regularly disturbed and would not provide consistent habitat value. There is no designated critical habitat for Riverside Fairy Shrimp within the BRSA.

Riverside Fairy Shrimp

The Riverside Fairy Shrimp (*Streptocephalus woottoni*) was federally-listed as Endangered on August 3, 1993 (58 FR 41384). The distribution of this species is among the most restricted ranges of any Fairy Shrimp on the west coast. They are known from populations in Ventura, Los Angeles, Orange, western San Diego and Riverside Counties, and immediately south of the international border in Baja California, Mexico.[52] This species is typically confined to pools that are generally deep (greater than 30 centimeters).[53] Development and maturation are much slower in this species than other Fairy Shrimp, with an average of 7 to 8 weeks to fully mature.[54] Due to this slow development, the minimum duration for inundation of a vernal pool that can support Riverside Fairy Shrimp is 9 to 10 weeks.[55,56]

[52] United States Fish and Wildlife Service, "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Riverside Fairy Shrimp (*Streptocephalus woottoni*); Final Rule," *Federal Register* 70(69): 19153–19204, 2005.
[53] Hathaway, S.A. and M.A. Simovich, "Factors affecting the Distribution and Co-Occurrence of Two Southern Californian Anostracans (Brachiopoda), *Branchinecta sandiegonensis* and *Streptocephalus woottoni*," *Journal of Crustacean Biology* 16:669-677. Lawrence, KS, The Crustacean Society, 1996.
[54] *Ibid*.
[55] *Ibid*.
[56] Gonzalez, R.J., J. Drazen, S. Hathaway, B. Bauer, and M. Simovich, "Physiological Correlates of Water Chemistry Requirements in Fairy Shrimps (Anostraca) from Southern California," *Journal of Crustacean Biology* 16:286-293. Lawrence, KS, The Crustacean Society, 1996.

Critical habitat was designated for the Riverside Fairy Shrimp on April 12, 2005 (70 FR 19154), and includes 306 acres in Ventura, Orange and San Diego Counties. The BRSA is not within the critical habitat for this species.

Viable cysts of the Riverside Fairy Shrimp were observed in imported fill soil on the western portion of the LAX property during focused surveys conducted in 1997; however presence of adults could not be confirmed during similar surveys conducted in 1997 and 1998.[57] Soils from ephemerally wetted areas were removed for relocation to an off-site location more suited for Riverside fairy shrimp to complete its entire life cycle as required by the Biological Opinion.[58] There is no suitable habitat for this species, and therefore this species would not be present, within the BRSA.

[57] Sapphos Environmental, Inc., *LAX Master Plan EIS/EIR: Appendix J1. Biological Assessment Technical Report*, 2001.
[58] United States Fish and Wildlife Service. 2004 (April 20). Biological Opinion for Los Angeles International Airport Master Plan, City of Los Angeles, Los Angeles County, California. Carlsbad, CA.

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Table 3.8-1
Listed Plant Species Potential for Occurrence within the BRSA

Species Common Name / Scientific Name	Habitat and distribution	Flowering Season	Designation	Potential for Occurrence/ Local Status in Biological Resources Study Area (BRSA)
Coastal Dunes Milk-Vetch (*Astragalus tener* var. *titi*)	Moist sandy depressions near the coast, typically coastal bluffs and dunes below 15 meters above mean sea level. Historically, range was known to include Monterey, Los Angeles, and San Diego Counties. It is presumed extant at three locations, one in Monterey County and two in San Diego County.	Mar-May	FE SE	*Absent* Determined as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in1995, 1996, 1997, 1998, 1999, and directed surveys in 1998 and 2000.
Ventura Marsh Milk-Vetch (*Astragalus pycnostachyus* var. *lanosissimus*)	Coastal marshes or seeps below 30 meters above mean sea level. Within reach of high tide or protected barrier beaches in coastal salt marsh or sandy bluffs. Believed extinct until its rediscovery in 1997. Only known extant population on McGrath State Beach in Ventura County. Historically known from the Ballona marshes and a meadow near the seashore in Santa Monica; presumed extirpated at both sites. Potentially suitable habitat to the species is limited to the fore dune, west of the Los Angeles/El Segundo Dunes immediately adjacent to Vista del Mar Boulevard.	June-Oct	FE SE	*Absent* Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes in 1995, 1996, 1997, 1998, 1999, and directed surveys in 1998 and 2000.
San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*)	Sandy soil on flats and foothills in mixed grassland and chaparral communities. 90-425 m elevation.	Apr-Jun	FC SE	*Absent* Study area is below normal elevation range for this species
Beach Spectacle-Pod (*Dithyrea maritime*)	Coastal strand, coastal dunes and scrub, and sandy soils below 50 meters above mean sea level. Historically, this species ranged from the central coast of California south into Baja California. Known in California from less than twenty occurrences; extirpated from half of its historical range. Historically known from the Los Angeles/El Segundo Dunes. Historic topographic maps and aerial photographs indicate that potentially suitable habitat for this species within the Los Angeles/El Segundo Dunes was largely converted due to residential development between 1940 and 1974. This species has not been successfully reintroduced as a result of revegetation efforts undertaken between 1990 and 1994. Nearest known location is in the vicinity of the Ballona Marshes near Marina del Rey.	March-May	SE	*Absent* Determined absent as a result of qualitative surveys conducted at the Los Angeles/El Segundo Dunes for 1995, 1996, 1997, 1998, 1999 and directed surveys in 1998 and 2000.

Table 3.8-1
Listed Plant Species Potential for Occurrence within the BRSA

Species Common Name / Scientific Name	Habitat and distribution	Flowering Season	Designation	Potential for Occurrence/ Local Status in Biological Resources Study Area (BRSA)
California Orcutt grass (*Orcuttia californica*)	Vernal pools below 625 meters above mean sea level. Drying mud flats and valley grassland. Once occurred in vernal pools from San Quentin, Baja California, Mexico northward to Riverside, Los Angeles, and San Diego Counties in Southern California. Currently known from the Santa Rosa Plateau and a site near Hemet, Skunk Hollow pool in Riverside County; two pools at Marine Corps Air Station Miramar (Carlsbad) and four pool complexes at the Cruzan Mesa near Santa Clarita; Carlsberg vernal pool in the City of Moorpark, Ventura County; Otay Mesa in San Diego County; and Woodland Hills in Los Angeles County. In Baja California, Mexico, the species is found on Mesa de Colonel and in pools in San Quentin. The nearest record for this species is 6 miles southeast of LAX in the City of Gardena near the junction of Rosecrans and Western Avenues. Last seen in 1946. Known from less than twenty occurrences. Populations face high degree of threat and have low potential for recovery.	April-Aug	FE SE	*Absent* Only marginal habitat exits for this species within the BRSA. Species has not been historically documented within the BRSA.

Notes:
U.S. Fish and Wildlife Service Designations:
FE = Federal Endangered
FT = Federal Threatened
PE = Proposed Endangered
PT = Proposed Threatened
FC = Federal Candidate
FSC = Species of Concern

California Department of Fish and Game Designations:
SE = State Endangered
ST = State Threatened
SSC = State Species of Special Concern

Source: California Department of Fish and Game, California Natural Diversity Database, 2012.

Table 3.8-2
Listed Wildlife Species and their Potential for Occurrence within the BRSA

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status in Biological Resources Study Area (BRSA)
		USFWS	CDFG	
INVERTEBRATES				
El Segundo Blue Butterfly *(Euphilotes battoides allyni)*	Coastal sand dunes that support populations of its food plant: coastal buckwheat. Historically ranged over the entire Los Angeles/El Segundo Dunes and the northwestern Palos Verdes Peninsula in southwestern Los Angeles County. Currently distributed on three remnant habitats within its former range; Los Angeles/El Segundo Dunes, the 1.5 acre site at the oil refinery located south of the airport, and a half-acre site at Malaga Cove, all in Los Angeles County. There are currently 150.2 acres of occupied habitat for the El Segundo Blue Butterfly within the Los Angeles/El Segundo Dunes. Directed surveys of the El Segundo Blue Butterfly at the Los Angeles/El Segundo Dunes indicated continued decline in numbers between 1977 and 1979 with an estimated total of less than 2,000 adults. The City of Los Angeles initiated active habitat management measures for the El Segundo Blue Butterfly in 1987, and continues those work efforts as part of its annual operations and maintenance activities. Population estimates for 1999 range from 110,000 to 116,000 butterflies.[a]	FE	N/A	*Absent* Only marginal habitat exists for this species within the BRSA. Species has not been historically documented within the BRSA. This species was determined present within the Los Angeles/El Segundo Dunes as a result of directed surveys performed in 1995, 1996, 1997, 1998, 1999, and 2000.
Riverside Fairy Shrimp (*Steptocephalus woottoni*	Temporary ponds that persist for a minimum 9-10 weeks, usually deep (greater than 30 centimeters). Historical range includes Ventura, Los Angeles, Orange, western San Diego, and Riverside Counties and immediately south of the International Border, in Baja California, Mexico.	FE	N/A	*Absent* Potential habitat exists for this species within the GSA, but not within the BRSA. However, known cysts were removed from GSA and are stored.
BIRDS				
Coastal California Gnatcatcher *(Polioptila californica californica)*	Occurs in coastal sage scrub vegetation on mesas, arid hillsides, and in washes and nests almost exclusively in California sagebrush.	FT	SSC	*Absent* Although, marginal winter foraging habitat is present in the BRSA, suitable habitat for nesting and foraging is absent from the BRSA. Presence of the Gnatcatcher was recently observed in the area west of the BRSA, but within the GSA.

Table 3.8-2
Listed Wildlife Species and their Potential for Occurrence within the BRSA

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status in Biological Resources Study Area (BRSA)
		USFWS	CDFG	
California Least Tern *(Sterna antillarum browni)*	Open ocean and a colonial breeder on bare or sparsely vegetated flat substrate located along marine shores, estuarine shores, alkali flats, landfills, or paved areas throughout the year. This federally-listed endangered species comes to shore only to breed. Historically nested along the central and Southern California coast to the coast of Mexico. Currently nests sporadically along coast from San Francisco to Baja California. Nearest known breeding colony is located three miles north of the GSA. Observed as a seasonal visitor to waters offshore of Dockweiler State Beach. This species is not known to breed within the GSA or Los Angeles/El Segundo Dunes.	FE	FE	*Absent* This species was determined absent within the GSA and the Los Angeles/El Segundo Dunes as a result of directed surveys performed in summer 1998 and 2000.
California Black Rail *(Laterallus jamaicensis conturniculus)*	Tidal salt marshes associated with heavy growth of pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations.	FT	N/A	*Absent*
Southwestern Willow Flycatcher *(Empidonax extimus traillii)*	Riparian acres with thick willow forests. Historically nested throughout California, wherever willow thickets or other riparian habitat was found. Regular nesting is currently known only from a few mountain meadows in the Sierra Nevada and several rivers in Trinity, Inyo, Kern, Santa Barbara, Los Angeles, and San Diego Counties. Species becomes more widely distributed in the spring and fall migration period. This species is not known to occur within the GSA or Los Angeles/El Segundo Dunes.	FE	SE	*Absent* This species was determined absent within the GSA and the Los Angeles/El Segundo Dunes as a result of directed surveys performed in summer 1998 and 2000.
Western Snowy Plover *(Charadrius alexandrinus nivosus)*	Sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries are the main coastal habitats for nesting. Can occur in man-made salt ponds and on estuarine sand and mud flats.	FT	N/A	*Absent*
Beldings Savannah Sparrow *(Passercykys sandwuchensis beldingi)*	Resides year-round in the salt marsh; it depends entirely on this ecosystem for nesting and foraging. It shows a particular affinity for the upper littoral region of the marsh, and nests preferentially in pickleweed *Salicornia virginica*. Nesting season extends from January to August. Nests must be above the highest tide line in spring as the eggs are not resistant to inundation, foraging on mudflats, sandflats, and rock jetties.	FE	N/A	*Absent*

Table 3.8-2
Listed Wildlife Species and their Potential for Occurrence within the BRSA

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status in Biological Resources Study Area (BRSA)
		USFWS	CDFG	
MAMMALS				
Pacific Pocket Mouse *(Perognathus longimenbris pacificus)*	Occurs on fine-grained, sand substrates in open coastal sage scrub, coastal dunes, coastal strand, and river alluvium habitats. Species occurred historically along Southern California coast from Los Angeles County south to Baja, California. Now restricted to less than five populations, one in Orange County and others in San Diego County. This species was last seen in 1938 at Marina del Rey in the El Segundo Area.	FE	N/A	*Absent* No suitable habitat exists within the BRSA. This species was determined present within the Los Angeles/El Segundo Dunes as a result of directed surveys performed in 1995, 1996, 1997, 1998, 1999, and 2000.

Notes:
[a] Entomological Consulting Services Ltd., *Report of El Segundo Blue Monitoring Activities in 2010 at the Los Angeles International Airport*, February 2011.

U.S. Fish and Wildlife Service Designations:
FE = Federal Endangered
FT = Federal Threatened
PE = Proposed Endangered
PT = Proposed Threatened
FC = Federal Candidate
FSC = Species of Concern
N/A=Not Applicable/No Designation

California Department of Fish and Game Designations:
SE = State Endangered
ST = State Threatened
SSC = State Species of Special Concern
N/A=Not Applicable/No Designation

Sources: California Department of Fish and Game, California Natural Diversity Database, 2012, and Entomological Consulting Services Ltd., *Report of El Segundo Blue Monitoring Activities in 2010 at the Los Angeles International Airport*, February 2011.

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3.9 Wetlands

Jurisdictional waters under the *Clean Water Act* (federal waters) fall into two categories: wetlands and other waters of the U.S. Wetlands include marshes, meadows, seep areas, floodplains, basins, and other areas experiencing inundation or saturation for a duration long enough to support vegetation adapted to saturated soil conditions. Seasonally or intermittently inundated features, such as seasonal pools, are considered wetlands if they demonstrate hydric soils and support wetland vegetation. According to 40 CFR Part 230, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material, §230.3(s), waters of the U.S. include:

1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2) All interstate waters including interstate wetlands;
3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds of which their use, degradation, or destruction could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purposes by industries in interstate commerce;
4) All impoundments of waters otherwise defined as waters of the U.S. under this definition;
5) Tributaries of waters identified in paragraphs (1) through (4) of this section;
6) The territorial sea; and,
7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6) of this section.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the *Clean Water Act* (other than cooling ponds as defined in 40 CFR Part 423, Steam Electric Power Generating Point Source Category, §423.11(m) which also meet the criteria of this definition) are not waters of the U.S. In addition, waters of the U.S. do not include prior converted cropland.

3.9.1 Wetlands and Other Waters

Waters of the U.S., including wetlands, are not found within the DSA. Seasonal ponds form within the proposed staging areas after rain events. However, these ponds result from excavation activities and are modified from time to time. These seasonal ponds are not considered waters of the U.S. per the definition above.

3.10 Floodplains

Most of the LAX property is located in the Federal Emergency Management Agency (FEMA)-designated Flood Zone C, which is defined as an area of "minimal flooding." This area is outside of a Special Flood Hazard Area, or the 100-year flood zone.[59] Consequently, the DSA is not considered to be located in an area with potential for flooding.

3.11 Coastal Resources

The *Coastal Zone Management Act (CZMA) of 1972* requires states to develop and implement a federally-approved coastal zone management plan. The *California Coastal Act (CCA)* grants authority to the California Coastal Commission to regulate development and related resource depleting activities within the defined coastal zone boundary. The California Coastal Commission retains jurisdiction over the coastal zone near LAX. Although Local Coastal Plans (LCPs) have been proposed in 1985 and 1992, neither were approved and there are no LCPs currently in place for the coastal zone near LAX.

California's coastal zone generally extends 0.6-mile inland from the mean high tide line. In developed urban areas, the boundary is generally less than 0.6 miles.[60] The California Coastal Zone in the vicinity of LAX extends inland 1,000 feet from the mean high tide line. In this area, the eastern border of the California Coastal Zone is the eastern right-of-way for South Pershing Drive and includes Dockweiler Beach State Park, the LAX/El Segundo Dunes, and the former Surfridge neighborhood. The California Coastal Zone in the vicinity of LAX extends north to the City of Los Angeles community of Playa del Rey and south to the City of Manhattan Beach (Refer to Figure 1-1 Regional Location).[61] The Detailed Study Area is located east of the coastal zone and is not located in the California Coastal Zone.

[59] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[60] California Coastal Commission website, State Coastal Zone Boundaries, July 2011 website, *http://coastalmanagement.noaa.gov/mystate/docs/StateCZBoundaries.pdf*, accessed January 2012.
[61] California Coastal Commission website, Local Coastal Program (LCP) Status Maps, July 2009 website, *http://www.coastal.ca.gov/lcp/lcpstatus-map-sc.pdf*, accessed January 2012.

3.12 Historic, Architectural, Archaeological, and Cultural Resources

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance.[62]

3.12.1 Compliance with Section 106 of the National Historic Preservation Act

In 1966, the United States Congress passed the *National Historic Preservation Act* which requires all federal agencies to assess the effects of any agency-sponsored undertaking on cultural resources. Under NEPA (42 USC §§4321 through 4327), federal agencies are required to consider potential environmental impacts and appropriate mitigation measures for projects with federal involvement. The FAA process for consultation is established by regulations outlined in 36 CFR Part 800, as identified in 36 CFR Part 60, National Register of Historic Places, §60.4.

There are four evaluation criteria to determine a resource's eligibility to the National Register of Historic Places (NRHP). These evaluation criteria are used to assist in determining what properties, if any, should be considered for protection from destruction or impairment resulting from action-related activities (36 CFR §60.2).

3.12.2 Area of Potential Effect (APE)

The APE for the Proposed Action or its alternatives was delineated by the FAA in consultation with LAWA on the extent of the areas to be disturbed by proposed construction to fulfill its obligations under 36 CFR Part 800, the implementing regulations of the National Historic Preservation Act of 1966, as amended (**Figure 3.12-1**). The APE includes the various demolition, construction, and navigational aid work, such as runway shifts, repaving, relocating and constructing service roads and taxiways, modifications to existing navigation aids, and the construction staging area. A noncontiguous APE was identified by FAA because there is no construction work for the RSA program in the center area of the runway or between the runway area and the construction staging area. FAA delineated the APE boundaries through consultation with LAWA on the areas proposed to be disturbed by construction. A broader APE for historic properties was not required because the Proposed Action improvements would occur solely within the LAX property boundaries. As the Proposed Action or its alternatives would not increase the operational capacity of LAX, delineation of an indirect APE was not required. The State Historic Preservation Officer (SHPO) concurred with the delineation of the direct effects APE which was presented in the Draft EA for the Section 106 consultation process in letters dated March 5, 2012 and September 20, 2012. These letters are included in Appendix C. In response to comments provided at the Public Hearing on the Draft EA regarding a remnant of the former Coast Boulevard as a possible historic resource and LAWA's proposed additional 957 feet of graded area beyond the required RSA, FAA delineated an expansion to the APE. FAA consulted with the California SHPO on the expanded APE. The California SHPO concurred with the expanded APE by letter dated August 2, 2013. Figure 3.12-1 shows the revised APE.

[62] U.S. Department of the Interior, National Park Service, *National Register Bulletin 15: How to Apply the Criteria for Evaluation*, Washington, D.C.: Government Printing Office, 1999.

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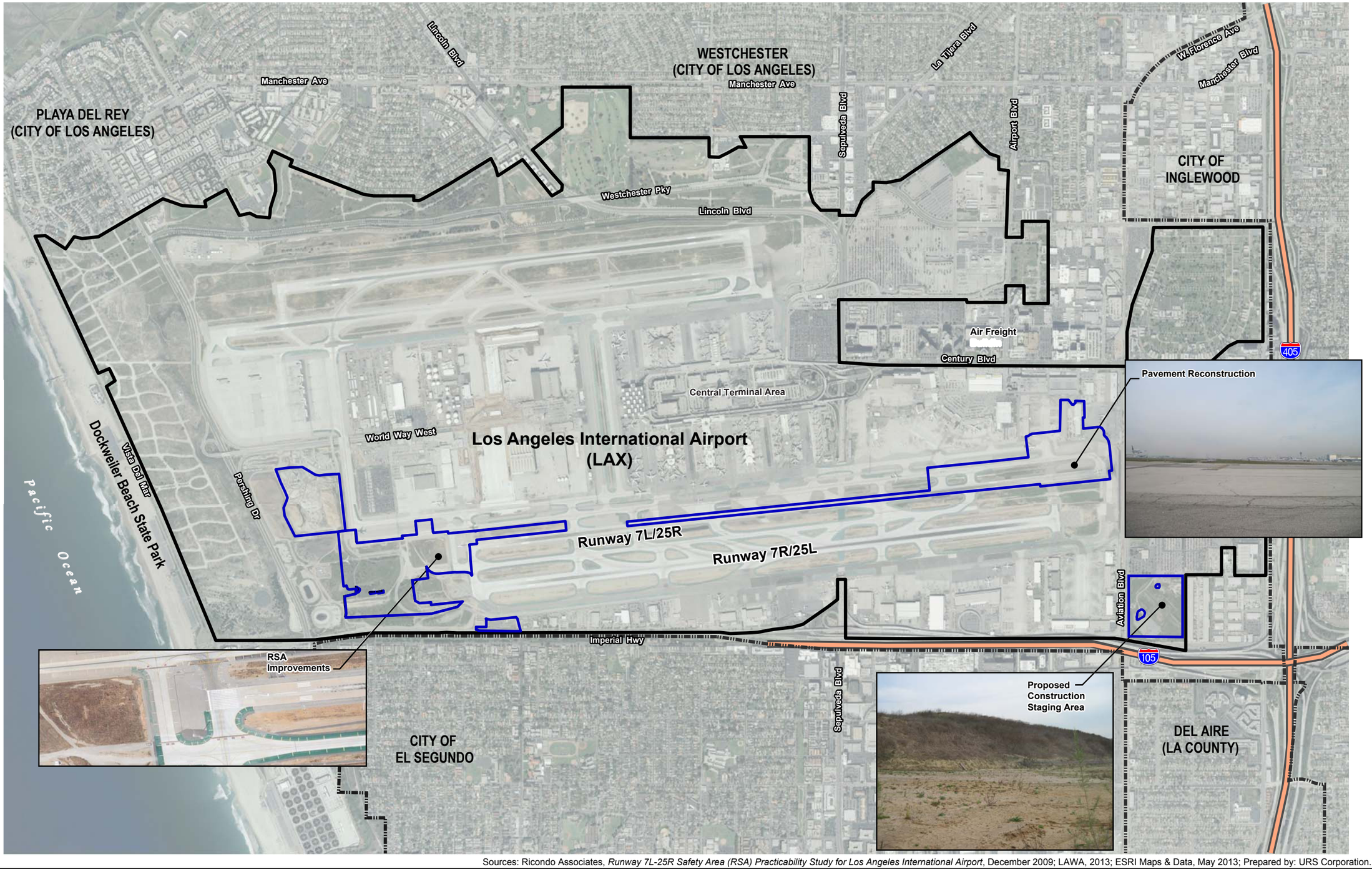
Legend
Generalized Study Area / Airport Property Boundary
Municipal Boundary
Area of Potential Effect

Los Angeles International Airport

0 2200 ft.
1" = 2200 feet
north



Sources: Ricondo Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport*, December 2009; LAWA, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Area of Potential Effect

FIGURE
3.12-1

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3.12.3 Archaeological Resources

3.12.3.1 Record Search and Literature Review

On January 20, 2012, a record search and literature review from the South Central Coastal Information Center (SCCIC) of the California Historic Resource Information System (CHRIS) at California State University, Fullerton was received for the Proposed Action (SCCIC File No. 12067.8789). The SCCIC serves as a regional clearinghouse of the SHPO. The purpose of the record search was to ascertain whether any cultural resources had been previously identified within or adjacent to the Airport property, and to identify any previous cultural resource investigations that may have included the current APE. The requested research included a review of ethnographic and historic literature and maps; federal, state, and local inventories of historic properties; archaeological base maps and site records; and survey reports on file at the SCCIC.

The SCCIC record search revealed 11 previously recorded archaeological resources within the search area, which comprised the entire Airport property and a quarter-mile search radius buffer. Of those 11 previously recorded archaeological resources, one archaeological resource was identified as being located within the APE: 19-000691. In addition, four isolates[63] were identified within the search area but outside the APE. No archaeological resources were listed on the Archaeological Determination of Eligibility (DOE) list. Therefore, no archaeological resources reported by the SCCIC in the APE were identified as NRHP-eligible or -listed, as a result of the SCCIC records search.

The LAX Master Plan Final EIR/EIS reports six archaeological sites (four of which were also reported by the SCCIC) and two isolates (also reported by the SCCIC) within the search area, of which one is within the APE: 19-000691. The EIR/EIS describes the site as a prehistoric shell scatter that has been determined ineligible for listing in the NRHP, California Register of Historical Resources (CRHR), and the City of Los Angeles Historic-Cultural Monuments (LAHCM) due to lack of evidence found at the site and extensive disturbance of the area. The precise locations of these sites and the supplemental site record forms are not disclosed pursuant to Title III Section 304 of the *National Historic Preservation Act* of 1966 (NHPA), as amended, in order to prevent harm and unauthorized disturbance of the sites.

In summary, the SCCIC record search and LAX Master Plan Final EIR/EIS, combined, reported eight previously recorded archaeological sites and four isolates in the search area, of which one archaeological site was identified as being located within the current APE: 19-000691. This archaeological resource has been determined ineligible for listing in the NRHP, CRHR, and LAHCM.

The SCCIC also provided a list of 54 previous investigations within the search area. Of the 54 previous investigations, 12 were identified as overlapping with the APE: LA78 (1975), LA96 (date not listed), LA 309 (1987), LA2659 (1992), LA3673 (1987), LA4910 (1995), LA6239 (2000), LA6240 (2000), LA7851 (2006), LA8255 (2006), LA9925 (2009), and LA10857 (2005). Therefore, over the past 35 years, the APE has been investigated as part of 12 other cultural resources investigations.

3.12.3.2 Native American Consultation

Consultation with the California Native American Heritage Commission (NAHC) to identify Native American Tribes that may have input or concerns that uniquely or significantly affect those Tribes related to planned and proposed airport improvements, or may have information about, or be interested in, the proposed undertaking, was coordinated by the FAA. The California NAHC responded by letter dated January 5, 2012, providing contact information for various Native American Tribes and individuals, which were subsequently contacted. The California NAHC's letter also indicated that review of their Sacred Lands File failed to indicate the presence of Native American cultural resources in the immediate project area.

[63] *Isolate* is the common term used to describe an isolated archaeological artifact, which is defined by SHPO in *Instructions for Recording Historical Resources (OHP 1995)* as a minor resource that lacks individual distinction and does not meet the definition for a building, structure, object, site, or district.

3.12.3.3 Field Reconnaissance

On January 11, 2012, a windshield reconnaissance and limited pedestrian survey of the APE was conducted (Refer to Appendix C for details). No archaeological resources were identified. Due both to security and safety issues associated with an active runway at the time of the survey, an intensive survey of the APE was not possible. This approach was considered adequate for identifying archaeological resources because much of the ground surface is obstructed by large expanses of pavement, and the remaining unpaved portions of the APE are subject to routine maintenance, including mowing and occasional grading. In addition, these areas have been previously disturbed by construction.

On May 16, 2013, an additional field survey was conducted on the expanded APE. During this survey, the remnants of Coast Boulevard were documented for the memorandum that was submitted to SHPO for review (included in Appendix C2).

3.12.4 Historic Architectural Resources

3.12.4.1 Record Search and Literature Review

Research relating to the historic context for the vicinity of the DSA and site-specific research included the SCCIC search results discussed in Section 3.12.3.1, the LAX Master Plan Final EIR/EIS, and consultation with LAWA, the Flight Path Learning Center, the Los Angeles Public Library, and other various online sources.

The SCCIC reviewed the NRHP, the CRHR, the California Historic Resources Inventory (HRI), the California State Historic Landmarks, the California Points of Historical Interest, the Office of Historic Preservation Historic Property Data File, and the LAHCM for the records search area, which comprised the entire Airport property and a quarter-mile search radius buffer. The SCCIC reported that 33 previously recorded historic architectural resources are within the record search area. No resources were identified as being within the APE. In addition, the SCCIC reported that the HRI listed 81 additional previously recorded historic architectural resources that have been evaluated for historical significance within the search area; however, locational maps and site forms for these resources were not provided by the SCCIC, and it is unknown if these properties are located within the APE.

The LAX Master Plan Final EIR/EIS identifies six previously recorded historic architectural resources within the search area, only three of which had been reported in the SCCIC results. The EIR/EIS did not report any resources as being within the APE.

In summary, the SCCIC record search and the EIR/EIS, combined, reported 117 previously recorded historic architectural resources in the search area. No previously recorded historic architectural resources were identified as being within the APE.

In addition to a review of the SCCIC record search results and LAX Master Plan Final EIR/EIS, archival research was undertaken at the Flight Path Learning Center, the Los Angeles Public Library, and other various online sources for historic context information, and selected historic records related to the historic land use of the APE and, specifically, the history of Runway 7L/25R, Air Freight Building No. 8, and temporary structures within the APE. The results of the archival research are discussed in the Cultural Resources Evaluation Report (Appendix C).

3.12.4.2 Field Reconnaissance

On January 11, 2012, a historic architecture reconnaissance field survey of the APE was performed to account for buildings and structures that are known to be or appeared to be more than 45 years of age (i.e., constructed in 1967 or earlier) and which require additional study. Prior to fieldwork, primary and secondary sources concerning the APE were reviewed as described in Section 3.12.4.1. State of California Department of Parks and Recreation 523 forms were prepared for two historic-period resources that were identified in the APE (Runway 7L/25R and Air Freight Building No. 8), both of which were constructed over 45 years ago. According to the LAX Master Plan EIS/EIR, Air Freight Building No. 8 was not considered eligible for listing on the NRHP primarily because it was determined that Air Freight Building No. 8 does not retain its

integrity of design, setting, materials, workmanship, feeling, or association (Appendix C). Similarly, Runway 7L/25R was not considered eligible for listing in the NRHP because it does not retain its historical integrity or context, given the extensive modifications that have occurred over the years. The SHPO concurred with the assessments of NRHP eligibility of Air Freight Building No. 8 and Runway 7L/25R in a letter dated September 20, 2012 (Appendix C1).

In response to comments received during the Draft EA review period, the area of direct effect was expanded requiring an expanded APE. Furthermore, one of the comment letters received indicated the potential for a historic resource within the expanded APE (Appendix C2). A survey was conducted on May 16, 2013 within the expanded APE. During this survey, the only historic resource that was found that needed further evaluation was the remnants of Coast Boulevard. Based on the information in the supplemental cultural resources evaluation report, FAA determined Coast Boulevard did not retain its integrity of design, setting, materials, workmanship, feeling or association. FAA determined the remnant portion of Coast Boulevard was not eligible for inclusion into the National Register of Historic Places. The California SHPO concurred with FAA's determination of eligibility by letter dated August 2, 2013, (See Appendix C2)..

Known historic resources within the larger GSA include the Theme Building in the Central Terminal Area and the first permanent building at the airfield constructed in 1929 by the Curtiss-Wright Flying School that is known as "Hangar One," designed by Los Angeles architects Gable and Wyant in a distinctive Spanish Colonial Revival style. Hangar One was listed in the NRHP in 1992; the Theme Building is an NRHP-eligible property.

3.13 Light Emissions and Visual Character

Lighting is used throughout the GSA and on the Airport to support existing operations during nighttime periods, and other periods of low visibility. Lighting consists of in-pavement lights along taxiways and runways, and lights mounted on towers used for the ALS system (Refer to Figure 1-7). Light shielding in the Airport is currently implemented per the LAX Master Plan Final EIS/EIR mitigation commitments.[64]

The visual character in the vicinity of the Airport is highly urbanized and primarily characterized by residential and commercial development on the north, hotel, airport-support, and commercial development on the east, residential, commercial, and industrial development on the south, and open space on the west (**Figure 3.13-1**), High-rise development (more than three stories) is limited to east of the GSA (hotels and commercial buildings between the approach paths of the North and South Airfields) and south of the GSA, east of the I-105 terminus (aerospace industries). Otherwise, the surrounding area is primarily low-rise, with structures of 1 to 2 stories. There are hills located north, west, and south of the Airport, along Westchester Parkway, Pershing Drive, and Imperial Avenue, respectively. Residences located on hilltops have views of the Airport.

The Airport and most of the DSA is generally flat, although it follows the general southeastern sloping of the Los Angeles Basin in this area. The proposed staging areas contain portions where the land has been excavated. The DSA has been extensively disturbed by development activities and its visual character is dominated by Airport facilities, level, graded surfaces, and paved runways.

[64] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

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A. View of LAX South Airfield and Central Terminal Area along with industrial uses on Imperial Highway. Looking north from Imperial Avenue and Sheldon Street in El Segundo.

B. View of industrial land uses along Imperial Highway . Looking northwest from Imperial Avenue and Sheldon Street in El Segundo.

C. Night view of LAX South Airfield and Central Terminal Area showing lighting levels

Source: URS Corporation; Prepared by: URS Corporation.

FIGURE 3.13-1

LAX Visual Character and Lighting

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

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3.14 Natural Resources and Energy Supply

3.14.1 Natural Resources

Within the GSA, mining activities for oil, coal, natural gas, sand, gravel, and crushed stone do not occur. The DSA is located within the MRA-3 zone, which represents areas with mineral deposits whose significance cannot be evaluated from available data.[65] However, oil extraction operations have historically occurred in the GSA and continue to occur in nearby areas, such as the Baldwin Hills.

The City of Los Angeles Department of Water and Power (LADWP) provides potable water to LAX from the following three sources: the Owens Valley and Mono Basin via the Los Angeles Aqueduct; northern California and Colorado River water purchased from the Metropolitan Water District of Southern California (MWD); and from local groundwater basins. Some wastewater within the LADWP service area is reclaimed for reuse as irrigation or industrial water, or for use in seawater intrusion barriers used to protect groundwater supplies.[66] Reclaimed water in the LAX area is provided by the West Basin Municipal Water District (WBMWD) West Basin Water Reclamation Plant (WBWRP). LADWP is responsible for supplying, treating, and distributing water within the city, serving residential, commercial, and industrial uses. The DSA as well as the entire LAX area utilizes reclaimed water for landscape irrigation.

3.14.2 Energy Supply

Electrical power within the City of Los Angeles, including LAX, is supplied by LADWP, which serves approximately 4.1 million people. Electricity provided by LADWP is generated by LADWP and other utilities with power generating facilities located both within the Los Angeles region and in other areas, including the co-generation systems at LAX's Central Utility Plant (CUP), located in the Central Terminal Area. The Southern California Gas Company (SoCal Gas) supplies natural gas to nearly all of Southern and Central California, including the City of Los Angeles and LAX. Natural gas is transported from suppliers to The Gas Company's transmission facilities for distribution to their Southern California service areas by a network of high pressure transmission lines.[67]

3.15 Hazardous Materials, Pollution Prevention, and Solid Waste

An assessment was conducted in order to identify sites and facilities that are known, suspected, or likely to contain or store hazardous substances and to identify areas of known subsurface soil and/or groundwater contamination. For the purposes of this assessment, the term hazardous materials also includes the regulatory-defined terms of hazardous wastes, hazardous substances, and dangerous goods; contamination to soil, surface waters and groundwater; as well as the assortment of similarly regulated substances such as fuel and other petroleum-based products. Because the description and assessment of hazardous materials, pollution prevention, and solid wastes at LAX is largely based on the compilation and evaluation of information previously developed or disclosed by others, the approach to completing this assessment consisted of the following:

- Collection and review of reports, maps, and other relevant documents relating to subsurface environmental conditions at LAX. These include maps, figures, and exhibits depicting sites and facilities of potential relevance; and
- An independent electronic database survey of federal, state, and local agency files pertaining to hazardous waste sites and environmental contamination in the vicinity of LAX.

[65] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[66] *Ibid*.
[67] City of Los Angeles, Los Angeles World Airports, *LAX Specific Plan Amendment Study, Draft EIR*, July 2012.

3.15.1 Hazardous Materials Regulations

Regulatory agencies involved in the management of hazardous materials, pollution prevention, and solid wastes for the Airport are listed in **Table 3.15-1**.

Table 3.15-1
Regulatory Agencies Involved in Hazardous Materials, Pollution, and Solid Waste in Los Angeles County

Agency	Roles and Responsibilities
U.S. Environmental Protection Agency (USEPA) Region 9	*Federal Agency* – Sets national policies for solid and hazardous wastes, hazardous materials and environmental contamination under the federal RCRA, CERCLA and other federal regulations.
California Environmental Protection Agency (CalEPA)	*State Agency* – Establishes statewide policies and rules governing solid wastes, hazardous materials and environmental contamination through the DTSC, RWQCB, and OEHHA.
Los Angeles County Environmental Health Services Department	*Local Agency* – Serves as the CUPA and the LEA and enforces federal and state regulations countywide pertaining to hazardous materials, solid wastes and USTs/ASTs.

Notes:
AST: Aboveground Storage Tank
CERCLA: Comprehensive Environmental Response Compensation and Liability Act
CUPA: Certified Unified Program Agency
DTSC: Department of Toxic Substances Control
LEA: Local Enforcement Agency
OEHHA: Office of Environmental Health Hazard
RCRA: Resource Conservation and Recovery Act
RWQCB: Regional Water Quality Control Board
UST: Underground Storage Tank
Source: Los Angeles County website, *http://lacounty.gov*, accessed January 2012.

3.15.2 Known/Potential Sites

The types, characteristics, and occurrences of hazardous materials and other regulated substances at LAX are typical of large metropolitan airports that offer commercial and cargo services. These services include the fueling, servicing, and repair of aircraft, GSE, and motor vehicles; the operation and maintenance of the airfield, main terminal complex and parking facilities; and a range of other special-purpose facilities and operations connected with aviation (i.e., air cargo facilities, navigation and air traffic control functions). Off-airport activities within the GSA include a mixture of industrial, commercial, and warehousing activities.

The substances that are used in large quantities at LAX that are classifiable as hazardous include aircraft and motor vehicle fuels. Other, smaller amounts of petroleum-products (e.g., lubricants and solvents), waste materials (e.g., used oils, filters, cleaning residues, and spent batteries) and manufactured chemicals (e.g., herbicides, fertilizers, paints, fire-fighting foam, de-icing fluids) are stored in various locations throughout the Airport. These materials and substances are characteristically used on a routine basis in support of aircraft, GSE, and motor vehicle maintenance activities and for a range of other similar functions to operate the Airport and to meet aviation safety requirements.

Several sites and facilities at LAX and off-airport are known, or have the potential to contain hazardous materials and/or other regulated substances (**Figure 3.15-1**). Other sites and facilities have been identified as confirmed hazardous waste release sites, and have been included in several federal and state databases. These databases form the basis for the identification of hazardous waste sites in the GSA.[68] The databases include known hazardous materials release sites, generators of hazardous waste(s), and underground storage tank (UST) sites. These databases identified a total of 71 sites listed within the GSA that would potentially

[68] GeoTracker website, *http://geotracker.waterboards.ca.gov/default.asp*, accessed January 2012.

be disturbed during construction of the Proposed Action or its alternatives. Of these, 12 are located in areas adjacent to the DSA (**Table 3.15-2**). However, there are no hazardous waste sites located within the DSA.

Table 3.15-2
Relevant Potential Hazardous Waste Release Sites Adjacent to DSA

Site Name	Hazard Category	Cleanup Status	Address	Jurisdiction
Continental Airlines	Cleanup Program Site	Open/Site Assessment	7300 W World Way	City of Los Angeles
Continental Airlines Maintenance Facility	Cleanup Program Site	Open/Site Assessment	7300 W World Way	City of Los Angeles
Continental Airlines Maintenance (Former)	Cleanup Program Site	Open/Site Assessment & Interim Remedial Action	7300 W World Way	City of Los Angeles
FAA	UST	Not Applicable	6661 W Imperial Hwy	City of Los Angeles
Federal Express	UST	Not Applicable	7401 W World Way	City of Los Angeles
Korean Airlines Freight	Cleanup Program Site	Open – Site Assessment	6101 W Imperial Hwy	City of Los Angeles
LAFD Training Center Facility	UST (2 locations)	Not Applicable	7411 W World Way	City of Los Angeles
LAWA	UST	Not Applicable	7350 W World Way	City of Los Angeles
LAWA	UST	Not Applicable	7450 W World Way	City of Los Angeles
LAX Jet Manifold	UST	Not Applicable	7300 W World Way	City of Los Angeles
Mercury Air Group, Inc.	UST	Not Applicable	6851 W Imperial Hwy	City of Los Angeles
Westchester Street Maintenance Yard	UST	Not Applicable	5323 W 111th St	City of Los Angeles

Notes:
UST = Underground Storage Tank
LAWA: Los Angeles World Airports
LAFD = Los Angeles Fire Department
FAA = Federal Aviation Administration
WDR = Waste Discharge Requirements
Source: GeoTracker website, *http://geotracker.waterboards.ca.gov/default.asp*, accessed January 2012.

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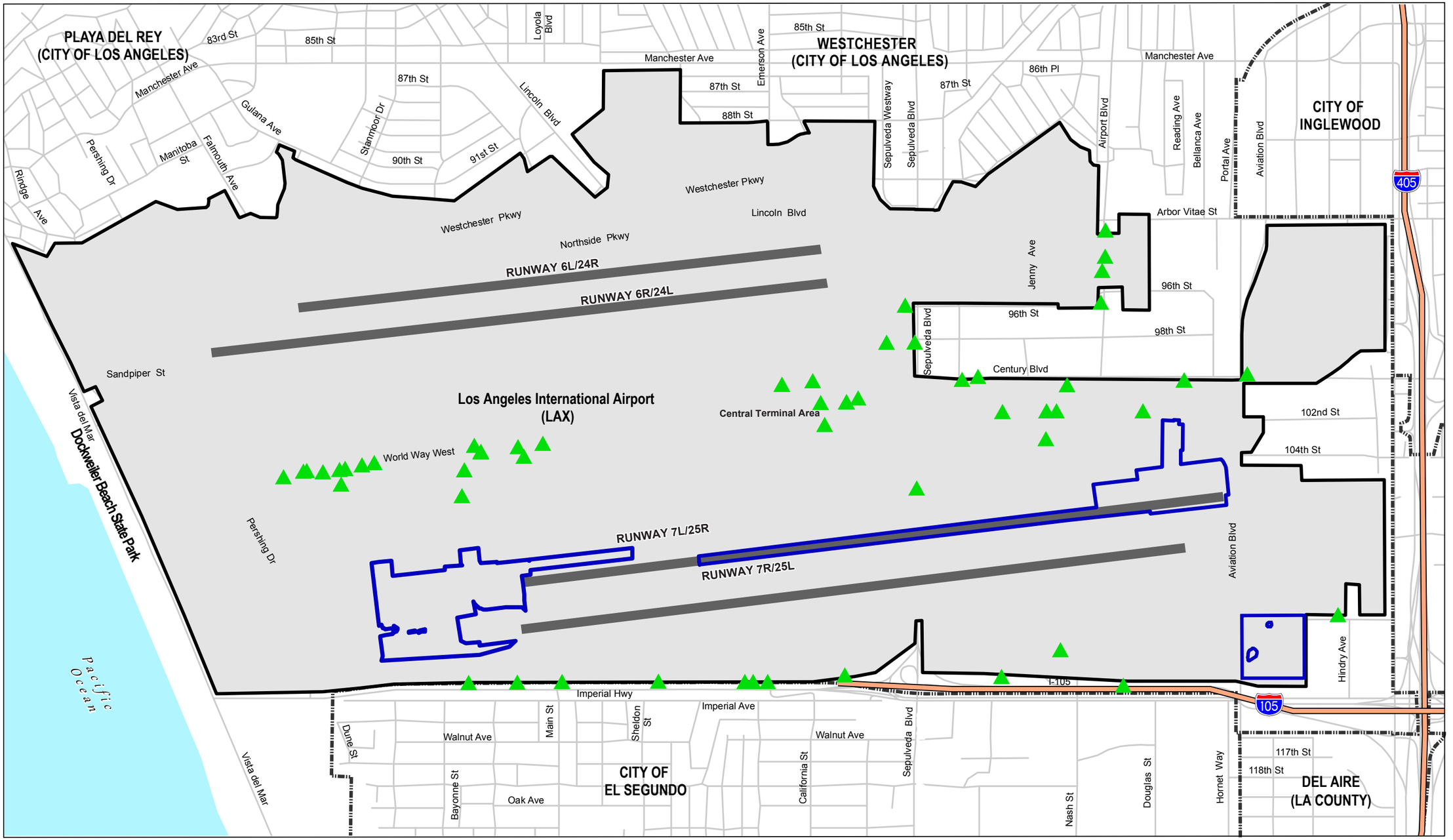
Los Angeles International Airport

Legend

- Generalized Study Area/Airport Property Boundary
- Detailed Study Area
- Hazardous Material/Clean-up Sites
- Municipal Boundary

0 2000 ft.
1" = 2000 feet
north



Sources: LAWA, 2012; Geo Tracker, 2012; ESRI Maps & Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Hazardous Material/Clean-Up Sites
Within the Generalized Study Area

FIGURE
3.15-1

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3.15.3 Solid Waste Collection and Disposal

Solid waste management is conducted by both LAWA and private companies. Solid waste in the City of Los Angeles is collected by municipal agencies and private refuse haulers. Private companies operating in the Los Angeles region provide collection services, and waste is transported to several regional landfills. There are eight major landfills currently accepting municipal solid waste in Los Angeles County. **Table 3.15-3** shows the locations and pertinent information for active Regional Solid Waste Disposal Facilities.

Solid waste generation associated with LAX airport activities is estimated to be 25,472 tons per year or 139,573 pounds per day.[69] However, the runway components do not generate solid waste and therefore the Proposed Action or its alternatives would not generate additional solid waste.

LAX is required to comply with the City of Los Angeles' landfill diversion rates set forth by the Bureau of Sanitation under AB939. AB939 mandated a 50 percent landfill diversion rate by 2000, which the City achieved and surpassed. The current solid waste diversion rate goal of the City of Los Angeles is 70 percent by 2020.[70] LAWA has implemented several waste recycling efforts at LAX, including recycling common items, such as cardboard, metals, and wood pallets. The City of Los Angeles also has a construction and demolition waste recycling program, that requires all mixed construction and demolition waste generated within City limits to be taken to City certified construction and demolition waste processors. In addition, there is a concrete and asphalt recycling program at LAX that aims to divert construction waste from landfills.

Table 3.15-3
Regional Municipal Solid Waste Landfills

Landfill	Owner/Operator	Permitted Daily Capacity (tpd)	Average Daily Tonnage (tpd)	Industrial Waste Accepted?	Distance from LAX (miles)
Antelope Valley	Waste Management of CA	3,600	492	2061	67
Calabasas[1]	LACSD[2]	3,500	812	2025	33
Chiquita Canyon[3]	Chiquita Canyon LLC	6,000	3,493	2016	40
Lancaster[4]	Waste Management of CA	1,700	825	2012	82
Puente Hills[5]	LACSD	13,200	5,901	2013	31
Scholl Canyon[6]	LACSD	3,400	786	2014	32
Sunshine Canyon	Browning-Ferris Industries	12,100	7,845	2031	82

Notes:

LACSD = Los Angeles County Sanitation Department

Tpd = Tons per Day

[1] Calabasas does not accept waste from portions of the City of Los Angeles, including the LAX area.
[2] LACSD = Sanitation Districts of Los Angeles County
[3] Chiquita Canyon Landfill has a pending expansion proposal.
[4] Waste Management proposes to increase the daily permitted disposal capacity from 1,700 tpd to 3,000 tpd and extend the 2012 closure date to when the landfill reaches permitted capacity.
[5] The County of Los Angeles received a 10-year permit extension for the Puente Hills landfill, extending its service life to 2013. This facility does not accept waste from LAX, as LAX is located outside of its wasteshed.
[6] Scholl Canyon does not accept waste from the City of Los Angeles.
Source: County of Los Angeles, Department of Public Works, 2010 Annual Report on the Countywide Summary Plan and Countywide Siting Element, October 2011.

[69] Based on 50,944,000 pounds per year, divided by 365 days per year. Los Angeles World Airports, *LAX Specific Plan Amendment Study Final EIR, January 2013.*
[70] City of Los Angeles Department of Public Works, Bureau of Sanitation website, *http://www.lacitysan.org/solid_resources/strategic_programs/diversion_strategy/index.htm*, accessed April 2012.

3.16 Past, Present, and Reasonably Foreseeable Future Actions

This section describes cumulative actions within and in the vicinity of the GSA for the purpose of considering potential cumulative impacts in Section 4.10, Cumulative Impacts, of this EA. **Table 3.16-1** lists and describes present and reasonably foreseeable future off-Airport projects that have been considered for potential cumulative impacts in the resource categories evaluated. **Table 3.16-2** lists the related on-Airport projects. Spatial and temporal boundaries were delineated to ascertain appropriate parameters for analysis of cumulative effects. Projects considered in this evaluation meet three criteria:

- The project has the potential for impacts to all or some of the resource categories evaluated in this EA;
- The spatial boundary includes a geographic area close enough to the Airport that there may be a potential for it and the Proposed Action or its alternatives to have additive impacts to any resource category; and,
- The temporal scope includes projects that have occurred or will occur in a time frame similar to that of the Proposed Action or its alternatives, such that there is the potential for additive impacts on any resource category.

For this EA, 32 actions meet the criteria described above. As shown in **Tables 3.16-1** and **3.16-2**, the timeframe for these actions ranges from 2005 through 2015. Off-airport actions include residential, commercial, and mixed-use development. General types of on-airport projects include, but are not limited to, runway reconstruction, terminal redevelopment, and roadway development. **Figure 3.16-1** shows where these projects are located relative to the DSA.

There are two major LAX projects which are omitted from the list in Table 3.16-2: LAX Northside Plan Update and LAX Specific Plan Amendment Study (SPAS). The rationale for not including these projects is that land use development on the area of the LAX Northside Plan Update or any SPAS projects would not begin during the development time of any of the Proposed Action alternatives. Both the LAX Northside Plan Update and the SPAS projects will require additional federal and local approvals, including environmental analysis under CEQA and NEPA. LAWA has not requested the initiation of NEPA analysis or project-level CEQA analysis for any of the SPAS projects.

Table 3.16-1

Off-Airport Related Projects[1]

Time	Figure 3.16-1 ID#	Project Name	Location	Description
PRESENT (2010 to 2015)	2	Car Wash	9204 Airport Blvd	15,380 sq. ft. of car rental facility to be removed. Proposed car wash. DOT case no. CTC08-013
	4	Retail Center	Southwest corner of Inglewood Avenue and Imperial Hwy	50,000 square foot retail
	1	Transitional Housing	733 Hindry Avenue	232,966 square feet
FUTURE (2012 to 2015)	7	Aviation Station Project (Transit Oriented Development in Del Aire)	Site bounded by Aviation Boulevard, 117th Street, Judah Avenue and Metro Green Line Station	278 condominiums and townhomes, 112 apartment units, 29,500 square feet of commercial/retail and office space. Includes 797 Parking spaces for residents, guests and commercial and office uses.
	14	Condominiums	347 Concord Street	3 units
	10	Condominiums	1700 Mariposa Avenue	11 units
	11	Condominiums	412 Richmond Street	4 units
	13	Data Center	445 North Douglas Street	109,137 square feet
	12	Data Center	444 North Nash Street	33,899 square feet
	8	El Segundo Corporate Campus	700-800 N. Nash Street	1,740,000 sq. ft. office; 75,000 sq. ft. retail; 7,000 sq. ft. child care; 7,000 sq. ft. medical office; 19,000 sq. ft. health club; 75,000 sq. ft. restaurant; 100-room hotel; 25,000 sq. ft. light industrial; 75,000 sq. ft. research and development; and 65,000 sq. ft. technology/telecommunications.
	5	Mixed Use	900, 950 and 960 Sepulveda Boulevard; 901-915 Shelby Street	Warehouse, 67,474 square feet of general office; and 11,471 square feet of manufacturing.
	9	Northrup-Grumman	SE corner of Mariposa Ave and Douglas Street	190,000 sq. ft. of industrial uses
	6	Office	888 N. Sepulveda Boulevard	120,000 square feet
	3	Radisson Hotel	6225 W. Century Boulevard	340 room hotel; 2,544-space parking structure w/1,733 spaces for airport parking. Proposed 340-room hotel & 1,726-stall airport parking facility with shuttle bus service. Existing 282-stall airport parking facility to be replaced. Trip generation = Daily 4,110, AM Peak 336, PM Peak 346. Built-out year 2012. DOT case no. CTC08-066.

Source: Data from Los Angeles World Airports Facilities Division, 2012.

[1] The list of past, present, and reasonably foreseeable projects contained in the Draft EA was reviewed in light of the changes to the Proposed Action and other cumulative impacts analysis being conducted by LAWA. Relatively minor projects that would not involve construction activities similar to the refined Proposed Action were eliminated from the cumulative impacts analysis.

Table 3.16-2

On-Airport Related Projects

Figure 3.16-1 ID#	Project Name	Estimated Completion/ Implementation Year
15	American Eagle Commuter Facility Improvements	2012
16	Improvements to North Terminals	2016
17	AOA Perimeter Fence Replacement – Phase 4	2014
18	Coastal Dunes Improvements	2015
19	CTA "New Front Door" Improvement/Enhancements	2013
20	Passenger Boarding Bridge Replacement/Improvements	2016
21	Central Utility Plant Replacement Project (CUP-RP)	2015
22	CTA Replacement of Elevators and Escalators	2012
23	Second Level Roadway Expansion Joint & Deck Repairs	2015
24	West Aircraft Maintenance Area Project	2016
25	LAX Bradley West Project	2015
26	TWA Demo and Taxiway T	2015
27	Midfield Satellite Concourse Phase 1 – North Concourse	2019
28	Public Safety Building	2019
29	Runway Status Lights System	2016
30	Improvements to South Terminals	2016
31	Interim North Airfield RSA Improvements	2015

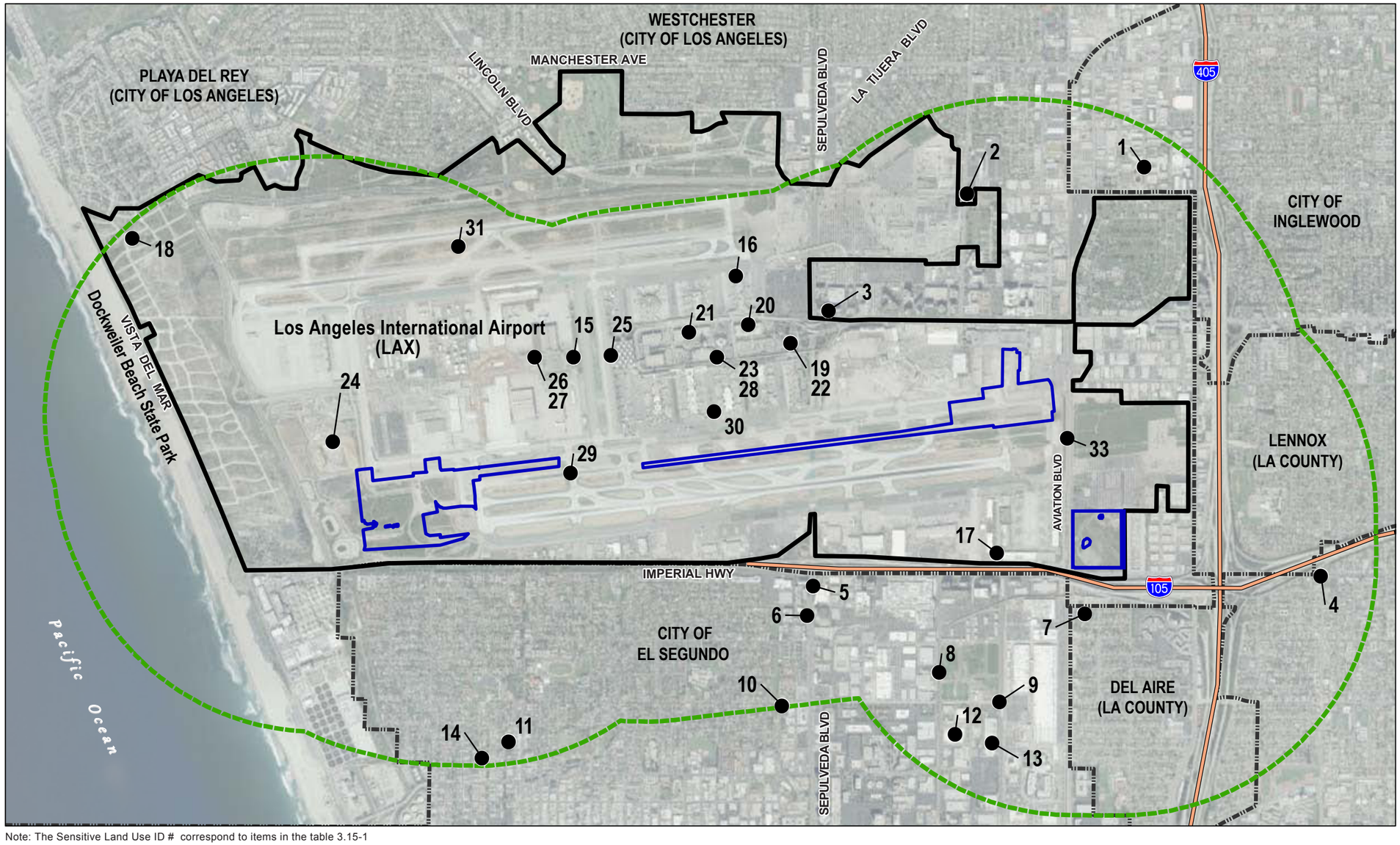
Source: Data from Los Angeles World Airports Facilities Division, 2012 and 2013.

Los Angeles International Airport

Legend

- Generalized Study Area//Airport Property Boundary
- Detailed Study Area
- Municipal Boundary
- One Mile Buffer from Detailed Study Area
- Related Projects

0 2300 ft.
1" = 2300 feet
north



Note: The Sensitive Land Use ID # correspond to items in the table 3.15-1

Source: LAWA, 2013; URS Corporation, 2013; ESRI Maps & Data, May 2013; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Location of Related Projects

FIGURE
3.16-1

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4.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

4.1 Introduction

The potential environmental effects resulting from implementation of alternatives are presented in this chapter. These alternatives are summarized below and discussed in detail in Chapter 2.0 of this EA:

- Proposed Action - RSA Alternative Refinement #3 – RSA improvements to Runway 7L/25R that include extending the western end of Runway 7L 832 feet to the west, adding an RSA of 168 feet to the west of the Runway extension, and using declared distances to meet FAA airport design standards. In addition, the Proposed Action - RSA Alternative Refinement #3 includes grading an additional 957-foot area to the west of the Runway 7L RSA, pavement reconstruction of the eastern portions of Runway 25R and Taxiway B, and a portion of the aircraft parking apron west of Air Freight Building No. 8, and realignment of a service road;
- RSA Alternative Refinement #2 – RSA improvements to Runway 7L/25R that include extending the western end of Runway 7L 832 feet to the west and using declared distances to meet FAA airport design standards. In addition, the RSA Refine Alternative #2 includes pavement reconstruction of the eastern portions of Runway 25R and Taxiway B, and a portion of the aircraft parking apron west of Air Freight Building No. 8;
- Shift Runway Alternative – RSA improvements to Runway 7L/25R that include shifting the entire Runway 832 feet to the west to meet FAA airport design standards. In addition, the Shift Runway Alternative includes pavement reconstruction of the eastern portions of Runway 25R, and Taxiway B and a portion of the aircraft parking apron west of Air Freight Building No. 8; and
- No-Action Alternative – No improvements to the RSAs, no pavement reconstruction, and no realignment of a service road.

The analysis of potential effects on environmental resources discussed in this chapter includes an overview of impacts, methodology, thresholds of significance, and potential construction and operational impacts. Potential impacts are discussed in relation to the study areas and study years (2015 and 2020) defined in Chapter 3.0. Potential cumulative impacts resulting from the incremental effects of the alternatives when added to the effects of past, present, and reasonably foreseeable future actions are also analyzed. Where necessary, mitigation measures are discussed that would reduce or eliminate anticipated environmental impacts for each of the alternatives.

In accordance with guidance provided in FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1,* and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, the following describes environmental resources which are not present within the project area and/or would not be affected by any of the alternatives:

- Farmlands – There are no prime or unique farmlands within the Generalized Study Area (GSA). The nearest prime farmlands are located more than 30 miles north of the Airport[1];
- Wild and Scenic Rivers – There are no Wild and Scenic Rivers within the GSA or in the vicinity of Los Angeles. The U.S. Department of the Interior, National Park Service, maintains a national inventory of river segments that qualify for inclusion in the National Wild and Scenic River System. According to the National Rivers Inventory, the two closest wild and scenic river segments to the proposed project, a 33-mile segment of the Sisquoc River and a 31.5-mile segment of the Sespe

[1] California Department of Conservation website, *http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx*, accessed April 2012.

Creek, are located more than 50 miles to the northwest in Santa Barbara County in the Los Padres National Forest.[2, 3]

- Coastal Zones and Barriers – There are no coastal barrier islands in the vicinity of Los Angeles. The Detailed Study Area (DSA) is located east of the boundary of the California Coastal Zone, which is at the eastern right-of-way of South Pershing Drive. (Refer to Chapter 3, Section 3.11)
- *Department of Transportation Act*, Section 4(f) and *Land and Water Conservation Fund Act*, Section 6(F) Resources – There are no Section 4(f) or Section 6(f) properties that would be directly, temporarily, or indirectly impacted by the activities in the DSA. (Refer to Section 3.4)
- Fish, Wildlife, and Plants – Presence of the Gnatcatcher was recently observed in the area west of the Biological Resources Study Area, but within the GSA. However, the DSA is primarily paved, and does not contain any designated critical habitat or federally listed threatened or endangered species or other species of concern. (Refer to Section 3.8)
- Wetlands – There are no wetlands located in the DSA or GSA. (Refer to Section 3.9)
- Floodplains – The DSA is not located on officially designated floodplains. (Refer to Section 3.10)
- Historic, Architectural, Archaeological and Cultural Resources – Runway 7L/25R and the remnants of Coast Boulevard were determined not to be eligible for inclusion in the NRHP. SHPO concurred with this determination in letters dated September 20, 2012 and August 2, 2013 (Appendix C). Therefore, the DSA does not contain any historic or architectural properties. Finding unidentified archaeological resources is not anticipated due to extensive soil disturbance and given that no previously identified sites are known in the DSA. (Refer to Section 3.12 and Appendix C)

4.2 Noise

This section addresses the future (years 2015 and 2020) aircraft noise environment and potential noise impacts related to the No-Action Alternative, Proposed Action Alternative, RSA Alternative Refinement #2, and Shift Runway Alternative in the area surrounding LAX, and the methodology used to determine future aircraft noise exposure. The terms and metrics associated with aircraft noise relative to this analysis are discussed in detail in Appendix B.

4.2.1 Overview of Impacts

The Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative (action alternatives) would not change the operational conditions at the Airport. All aircraft operational assumptions would be similar to those defined for the No-Action Alternative, except for the locations of the takeoff and landing points for Runway 7L/25R as described in the action alternatives sections below.

When compared to the No-Action Alternative, none of the action alternatives would cause new noise sensitive areas to be located at or above 65 decibels (dB) Community Noise Equivalent Level (CNEL), or existing sensitive and non-sensitive areas to experience a noise increase of at least 1.5 dB CNEL, which is the federal threshold for significant noise increase impacts. The use of CNEL as the measurement for significance of changes in noise levels is approved by the FAA for this report under the guidelines of FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions.* Therefore, no significant noise impacts are anticipated during operations.

[2] U.S. Department of the Interior, National Park Service, *National Wild and Scenic Rivers System*, December 1990.
[3] National Park Service, Wild & Scenic Rivers State-By-State List website, *http://www.nps.gov/rivers/wildriverslist.html*, accessed April 2012.

During the construction phase of any of the action alternatives, surface traffic increases on haul routes (due to construction trucks and employee vehicles) would temporarily increase traffic noise levels in the vicinity of area roadways. Construction equipment noise would not result in levels that exceed the significance thresholds. Under the Proposed Action - RSA Alternative Refinement #3, there would be a short-term effect on the aircraft noise contours due to operations being shifted to other runways during a portion of the construction period. These impacts are discussed later in this section.

4.2.2 Methodology

4.2.2.1 Operational Impacts (Years 2015 and 2020)

The physical alterations to Runway 7L/25R proposed under all action alternatives would be the primary sources of potential operational noise impacts.

The action alternatives would not enhance airport capacity nor alter existing or planned airport operations. It has been assumed for this analysis that the number of aircraft operations, time of day of operations, fleet mix, aircraft operational weights and aircraft flight tracks at the Airport would not change under the No-Action Alternative or any of the action alternatives. All assumptions used for the action alternatives are identical to the No-Action Alternative, except that the departure and arrival points on Runway 7L/25R would be relocated due to alteration of the runway. Aircraft noise descriptors and the methods for aircraft noise prediction were presented in Section 3.2.

In accordance with guidance contained in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, detailed noise analyses were performed using the latest version of the FAA's Integrated Noise Model available at the time of the Draft EA (INM, Version 7.0c, released on January 3, 2012). The INM is FAA's standard noise modeling tool for predicting noise levels in the vicinity of airports.

For determination of aircraft noise effects, CNEL contours were developed using the INM to reflect forecast conditions for the No-Action Alternative and the action alternatives. CNEL contours of equal noise for the 65, 70, and 75 dBA levels were calculated based on the FAA Terminal Area Forecast (TAF) for years 2015 and 2020. The data and methodologies used to develop the noise contours for existing and future aircraft operational conditions are provided in Appendix B.

The future noise environment for LAX was analyzed also based on FAA TAF forecasted operational conditions for years 2015 and 2020. These forecasted operational conditions are summarized in **Table 4.2-1** and detailed in Appendix B**.** Fleet mix, runway use, time of day, flight tracks and flight track use, and departure procedures remain the same as under existing (2011) conditions.

Table 4.2-1
Existing and Forecast LAX Aircraft Flight Operations

Aircraft Category	Annual Flight Operations		
	Existing 2011	**TAF 2015**	**TAF 2020**
Air Carrier (AC)	466,718	510,765	575,366
Air Taxi (AT)	106,007	104,488	106,727
General Aviation (GA)	18,468	20,279	20,867
Military (MIL)	2,400	2,371	2,321
Total Operations	593,593	637,903	705,281

Source: Existing (2011) data is based on data provided by Los Angeles World Airports (2012). Terminal Area Forecast (TAF) data is from FAA, *http://aspm.faa.gov/main/taf.asp*, accessed 3/9/12.

In 2015, total aircraft operations are expected to increase by approximately seven percent above existing (2011) levels. Future 2020 total operations are expected to increase by nineteen percent above existing (2011) levels. The largest operations increase is anticipated to be operations by air carrier aircraft.

The aircraft noise analysis includes maps depicting generalized flight tracks and sensitive land uses within the noise impact areas. Land use and population noise exposure was evaluated within the noise contours to include the following:

- The number of people living or residences within each noise contour at or above 65, 70 and 75 dB CNEL, including the net increase or decrease in the number of people or residences exposed to that level of noise; and
- The locations and numbers of noise-sensitive land uses (e.g., schools, churches, hospitals, parks, recreation areas) within each contour at or above 65, 70 and 75 dB CNEL.

4.2.2.2 Construction

Potential construction noise impacts under each action alternative were evaluated using three methodologies. The first methodology is an analysis of potential traffic noise increases due to increased truck traffic along designated haul routes. The second methodology entails evaluation of noise exposure due to construction activities and equipment that would be utilized in the construction activities associated with the various components of either action alternative. The third methodology is an analysis of the potential aircraft noise increases on neighboring communities due to operations shifted to other runways when Runway 7L/25R is closed during the construction period.

Potential construction traffic noise impacts were evaluated by estimating changes in traffic noise exposure due to addition of construction trucks and employee traffic under any action alternative to existing traffic volumes on area roadways in the vicinity of noise-sensitive areas surrounding the Airport.

Since some of the construction activities would occur proximate to noise-sensitive areas, noise associated with construction activities and use of construction equipment in these activities was evaluated. Construction noise was evaluated using reference construction equipment noise level data and applying a "point" source distance attenuation of 6 dB per doubling of distance from the sources to noise-sensitive receivers. Construction noise levels are quantified at predetermined distances from the site using the maximum noise level (L_{max}) metric (Refer to Appendix B for additional details).

To allow for the rehabilitation of Runway 7L/25R under any of the action alternatives, the runway must be closed for an extended period of time (estimated at 3.5 months). During this time, the operations from this runway must be accommodated through the use of other runways at LAX.

4.2.2.3 Significant Impact Thresholds

Operational Impacts (Years 2015 and 2020)

FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, establish the FAA's Threshold of Significance for aviation noise impacts. In accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, a proposed action would be considered to have a significant impact with regard to aviation noise, when compared to the No-Action Alternative for the same time frame, if it would:

- Cause noise-sensitive areas located at or above CNEL 65 dB to experience a noise increase of at least CNEL 1.5 dB; or
- Cause an increase of CNEL 1.5 dB that introduces new noise-sensitive areas to exposure levels of CNEL 65 dB or more.

For these thresholds, the noise analysis compared each action alternative with the No-Action Alternative for the same timeframe.

Construction

There are no federal standards that define significance thresholds for construction equipment noise impacts. However, the City of Los Angeles has established local noise criteria pertaining to stationary noise sources, including construction activities, through its Municipal Code (LAMC). LAMC Chapter XI, Section (§)41.40 regulates noise exposure from construction activities. Subsection (a) prohibits any construction activities between the hours of 9:00 p.m. and 7:00 a.m. of the following day, without a waiver, that may make "…loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence."

In accordance with the LAMC, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. This standard applies to: (1) radios, televisions, and similar devices as defined in LAMC §112.01; (2) air conditioning, refrigeration, heating, pumping, filtering equipment as defined in LAMC §112.02; (3) powered equipment intended for repetitive use in residential areas and other machinery, equipment, and devices as defined in LAMC §112.04; and (4) motor vehicles driven on site as defined in LAMC §114.02.

In this Final EA, for a conservative approach, the City's threshold of 5-dBA (A-weighted decibel) increase has been utilized for determination of significance of potential traffic noise impacts during construction.

4.2.3 Operations – Year 2015

4.2.3.1 No-Action Alternative

The detailed data and methodologies used to develop the noise contours for the 2015 No-Action Alternative are provided in Appendix B. Future (2015) No-Action Alternative CNEL contours and land uses within the 65 dB CNEL are presented in **Figure 4.2-1** and estimated noise exposure area, by noise sensitive land use category within the 65, 70, and 75 dB CNEL, is presented in **Table 4.2-2**.

4.2.3.2 Proposed Action - RSA Alternative Refinement #3

The detailed data and methodologies used to develop the aircraft noise contours for the 2015 Proposed Action - RSA Alternative Refinement #3 are provided in Appendix B**.** Future (2015) CNEL contours for the Proposed Action - RSA Alternative Refinement #3 are presented in **Figure 4.2-2** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4.2-2**.

4.2.3.3 RSA Alternative Refinement #2

The detailed data and methodologies used to develop the aircraft noise contours for the 2015 RSA Alternative Refinement #2 are provided in Appendix B. Because the departure and landing thresholds for RSA Alternative Refinement #2 are the same as the Proposed Action, the noise contours for this alternative would be the same as those developed for the Proposed Action (see **Figure 4.2-** and **Table 4.2-2**).

4.2.3.4 Shift Runway Alternative

The data and methodologies used to develop the 2015 CNEL contours for the Shift Runway Alternative are provided in Appendix B and a summary of associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4.2-2**. The Future (2015) CNEL contours for the Shift Runway Alternative are presented in **Figure 4.2-3.**

4.2.4 Operations – Year 2020

4.2.4.1 No-Action Alternative

The data and methodologies used to develop the noise contours for the Future (2020) No-Action Alternative condition are provided in Appendix B. Future (2020) No-Action Alternative CNEL contours are presented in **Figure 4.2-4** and estimated noise exposure levels over noise sensitive land uses are presented in **Table 4.2-3**.

4.2.4.2 Proposed Action - RSA Alternative Refinement #3

The detailed data and methodologies used to develop the aircraft noise contours for the 2020 Proposed Action - RSA Alternative Refinement #3 are provided in Appendix B. Future (2020) CNEL contours for the Proposed Action - RSA Alternative Refinement #3 are presented in **Figure 4.2-5** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4.2-3**.

4.2.4.3 RSA Alternative Refinement #2

The data and methodologies used to develop the noise contours for the future (2020) RSA Alternative Refinement #2 condition are provided in Appendix B. Because the departure and landing thresholds for RSA Alternative Refinement #2 are the same as the Proposed Action, the noise contours for this alternative would be the same as those developed for the Proposed Action (see **Figure 4.2-5** and **Table 4.2-3**).

4.2.4.4 Shift Runway Alternative

The data and methodologies used to develop the noise contours for the 2020 Shift Runway Alternative condition are provided in Appendix B. Future (2020) CNEL contours for the Shift Runway Alternative are presented in **Figure 4.2-6** and the associated estimated noise exposure levels over noise sensitive land uses are presented in **Table 4.2-3**.

Los Angeles International Airport

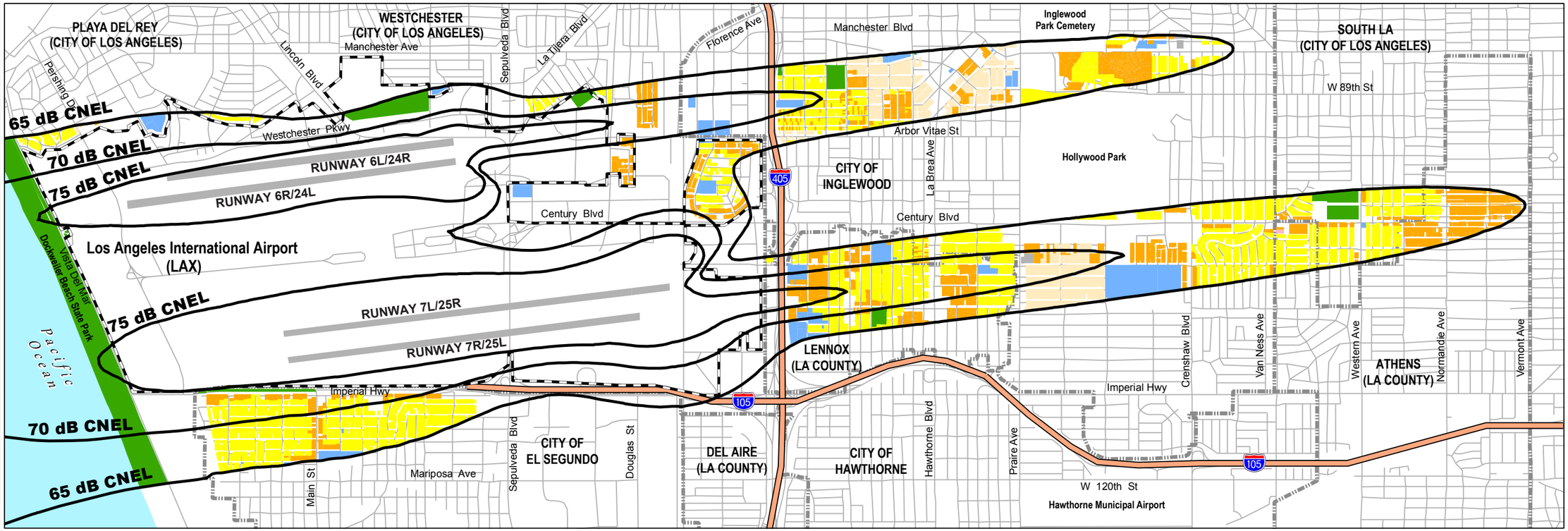
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- CNEL Noise Exposure Contours
- Existing Runway

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation



Source: URS Corporation, LAX 2015 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2015)
Aircraft Noise Exposure CNEL Contours -
No-Action Alternative

FIGURE
4.2-1

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Table 4.2-2
Estimated Noise Exposure Levels over Noise Sensitive Land Uses (Year 2015)

Land Use		65-70 dB CNEL			70-75 dB CNEL			75 dB CNEL and Above		
		No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative	No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative	No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative
Single-Family Residential	Dwelling Units	2,479	2,478	2,421	542	540	530	21	21	21
	Population[1]	7,560	7,557	7,411	2,330	2,321	2,295	105	105	105
Multi-Family Residential	Dwelling Units	7,241	7,233	7,174	2,175	2,173	2,133	74	74	74
	Population[1]	21,907	21,879	21,666	8,508	8,498	8,380	369	369	369
School	Parcels	60	60	61	17	17	16	--	--	--
Church	Parcels	3	3	3	3	3	3	--	--	--
Hospital	Parcels	5	5	5	--	--	--	--	--	--
Recreation	Parcels	14	14	14	9	9	9	3	3	3
Total	Dwelling Units	9,720	9,711	9,595	2,717	2,713	2,663	95	95	95
	Population[1]	29,467	29,436	29,077	10,838	10,819	10,675	474	474	474
	Non-Residential Parcels	82	82	83	29	29	28	3	3	3

Note: [1]Population contains 2010 census data.

Sources: URS Corporation, LAX Runway 7L/25R Safety Area (RSA) Project, Aircraft Noise Analysis, March 2012; Ricondo and Associates, 2013; PCR Services Corporation, 2013.

Table 4.2-3
Estimated Noise Exposure Levels over Noise Sensitive Land Uses (Year 2020)

Land Use		65-70 dB CNEL			70-75 dB CNEL			75 dB CNEL and Above		
		No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative	No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative	No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative
Single-Family Residential	Dwelling Units	2,802	2,796	2,727	641	641	626	30	30	30
	Population[1]	8,494	8,466	8,271	2,623	2,622	2,583	149	149	149
Multi-Family Residential	Dwelling Units	7,752	7,707	7,699	2,565	2,567	2,510	99	97	97
	Population[1]	23,242	23,073	23,040	9,869	9,879	9,726	494	484	484
School	Parcels	63	63	62	21	21	19	--	--	--
Church	Parcels	4	4	4	3	3	3	--	--	--
Hospital	Parcels	5	5	5	--	--	--	--	--	--
Recreation	Parcels	16	16	15	11	11	10	4	4	5
Total	Dwelling Units	10,554	10,503	10,426	3,206	3,208	3,136	129	127	127
	Population	31,736	31,539	31,311	12,492	12,501	12,309	643	633	633
	Non-Residential Parcels	88	88	86	35	35	32	4	4	5

Note: [1]Population contains 2010 census data.
Sources: URS Corporation, LAX Runway 7L/25R Safety Area (RSA) Project, Aircraft Noise Analysis, March 2012; Ricondo and Associates, 2013; PCR Services Corporation, 2013.

Los Angeles International Airport

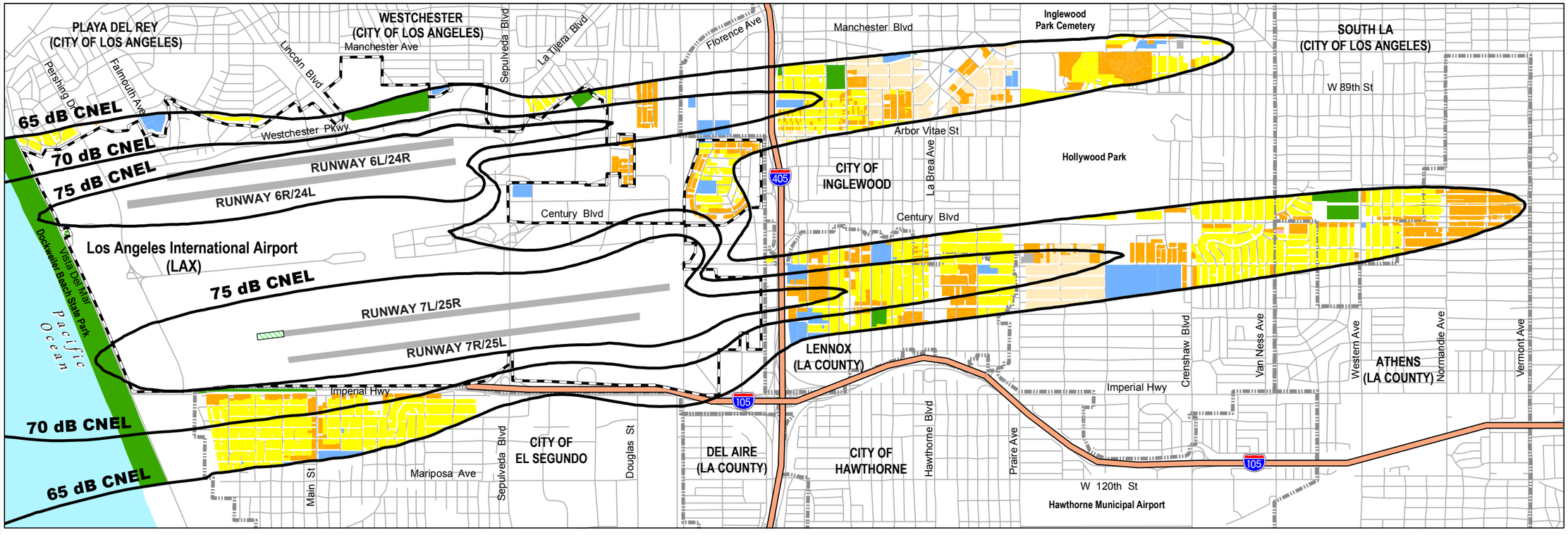
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- Runway 7L Extension
- Existing Runway

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation
- CNEL Noise Exposure Contours



Source: URS Corporation, LAX 2015 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2015)
Aircraft Noise Exposure CNEL Contours -
Proposed Action Alternative and
RSA Alternative Refinement #2

FIGURE
4.2-2

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Los Angeles International Airport

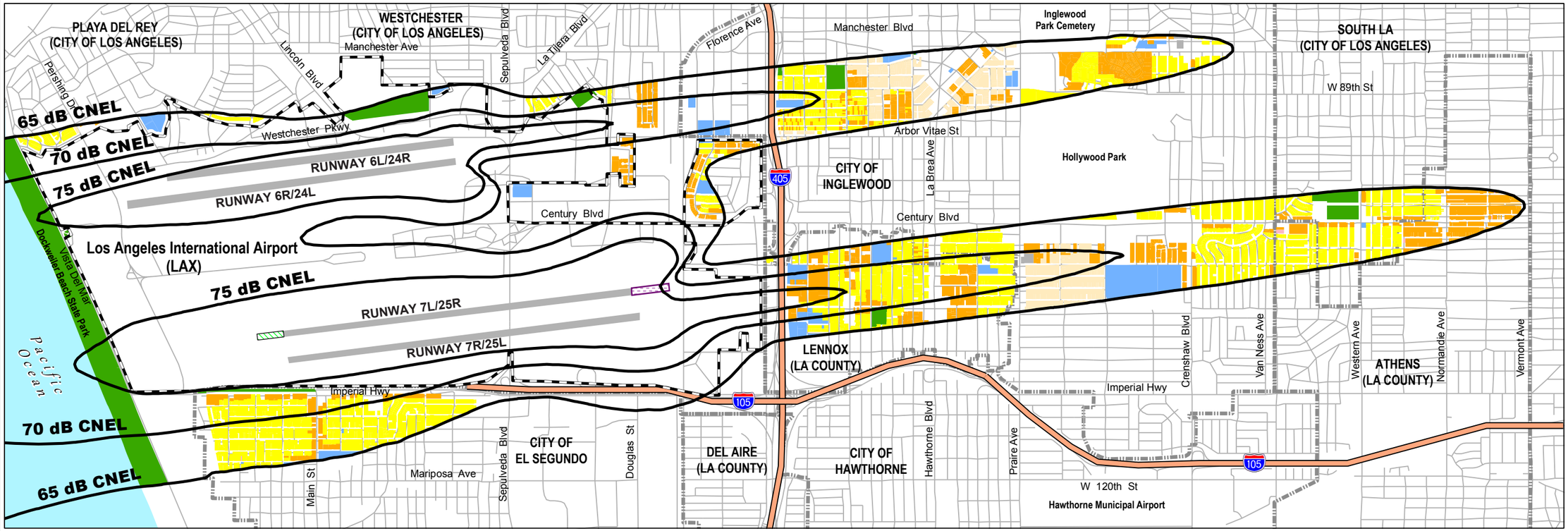
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- Existing Runway
- Runway 7L Shift
- Portion of Runway Not Used for Departures

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation
- CNEL Noise Exposure Contours



Source: URS Corporation, LAX 2015 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2015)
Aircraft Noise Exposure CNEL Contours -
Shift Runway Alternative

FIGURE
4.2-3

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Los Angeles International Airport

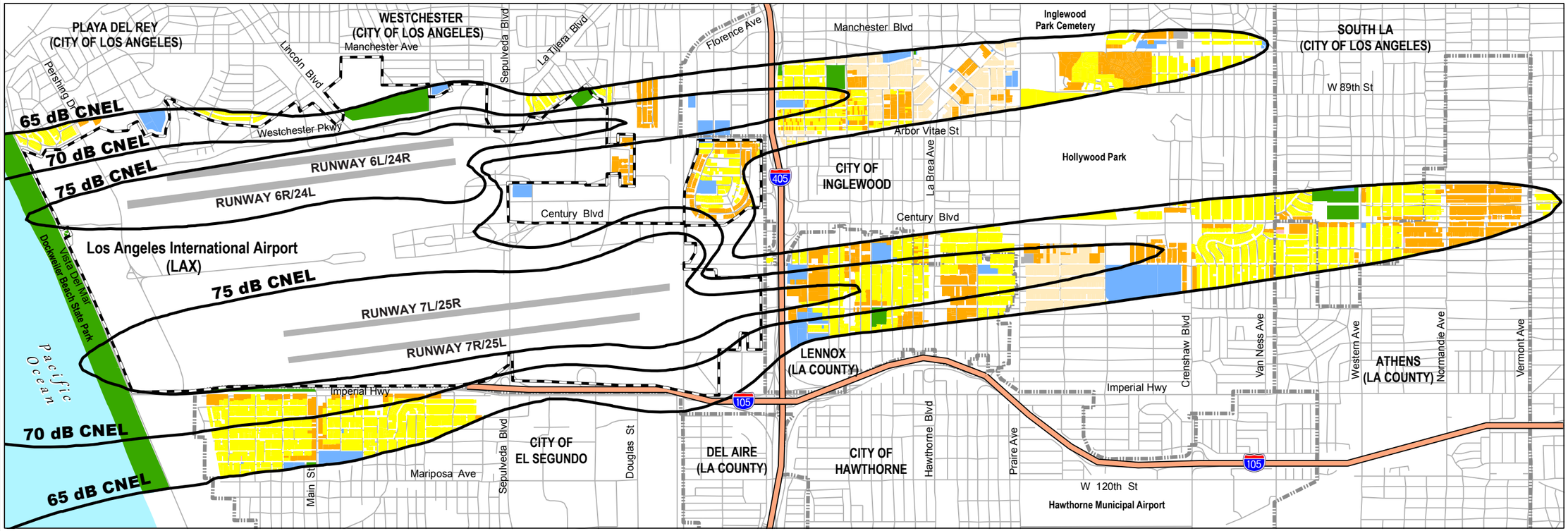
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- CNEL Noise Exposure Contours
- Existing Runway

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation



Source: URS Corporation, LAX 2020 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2020)
Aircraft Noise Exposure CNEL Contours -
No-Action Alternative

FIGURE
4.2-4

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Los Angeles International Airport

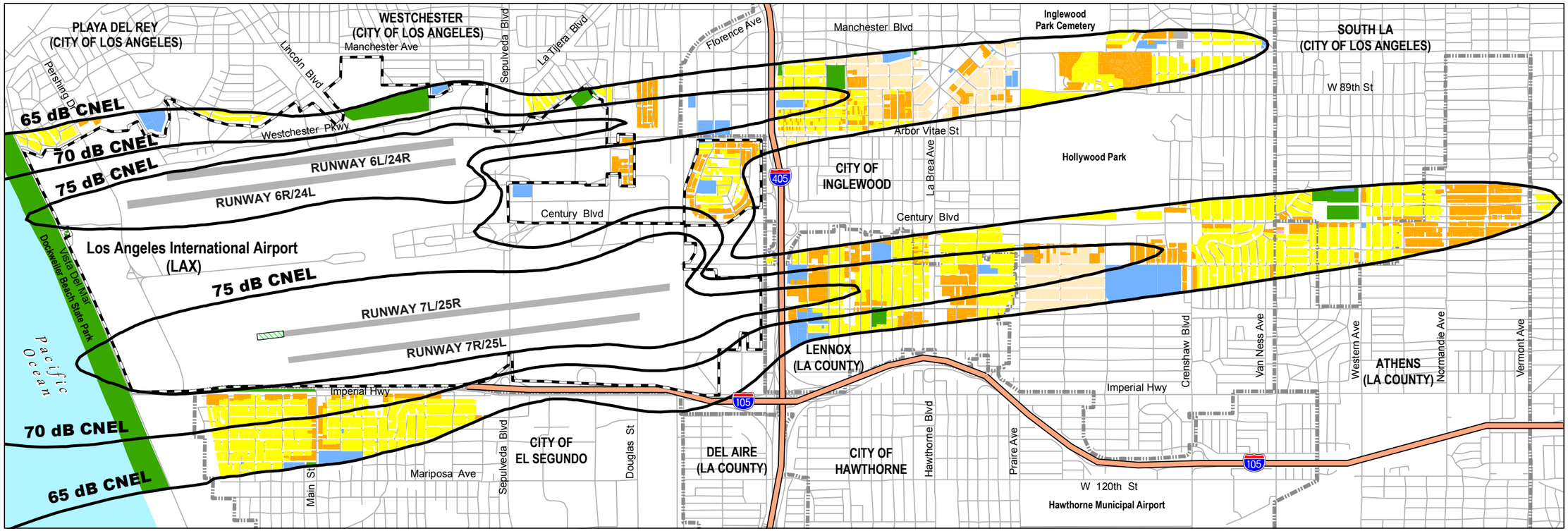
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- Runway 7L Extension
- Existing Runway

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation
- CNEL Noise Exposure Contours



Source: URS Corporation, LAX 2020 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2020)
Aircraft Noise Exposure CNEL Contours -
Proposed Action Alternative and
RSA Alternative Refinement #2

FIGURE
4.2-5

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Los Angeles International Airport

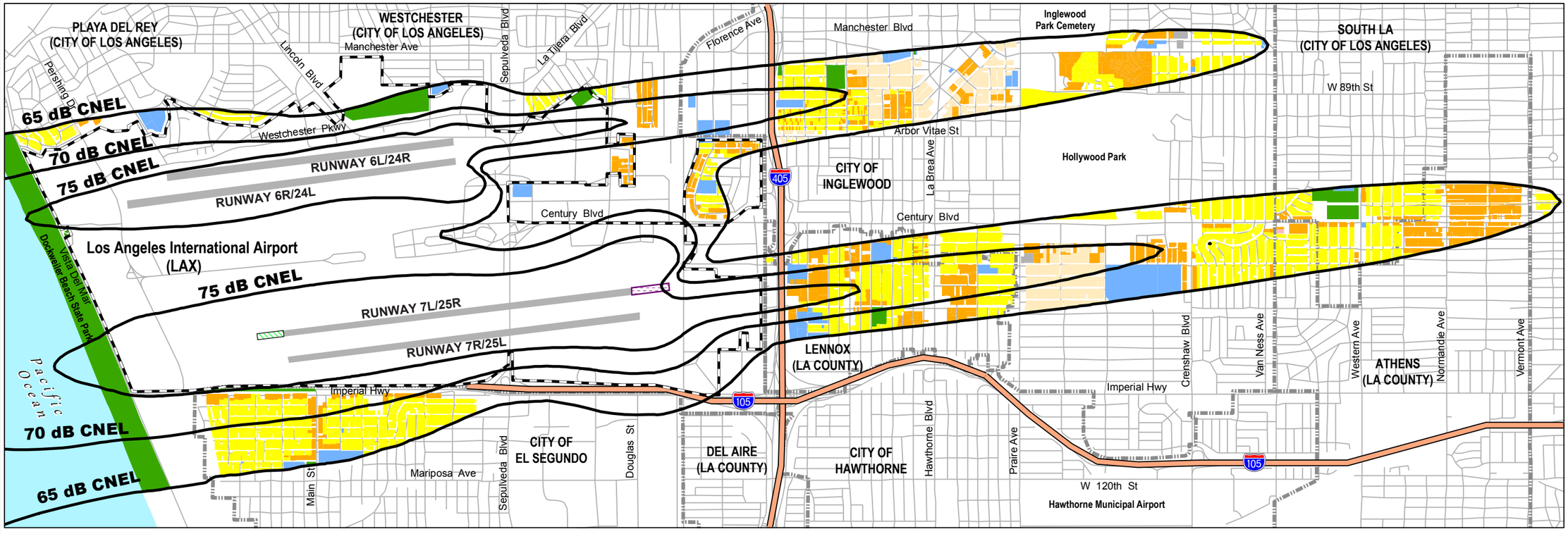
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- Existing Runway
- Runway 7L Shift
- Portion of Runway Not Used for Departures

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mixed Residential
- School
- Church
- Hospital
- Recreation
- CNEL Noise Exposure Contours



Source: URS Corporation, LAX 2020 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2012; ESRI Maps and Data, January 2012; Prepared by: URS Corporation.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2020)
Aircraft Noise Exposure CNEL Contours -
Shift Runway Alternative

FIGURE
4.2-6

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4.2.5 Comparison of Alternatives

4.2.5.1 Proposed Action and No-Action Alternatives

A small increase in noise exposure is anticipated to the west of the Airport near the tip of the 75 dB CNEL contour, which is located at Dockweiler State Beach. In both future year scenarios, the Proposed Action - RSA Alternative Refinement #3 aircraft noise exposure at all areas, including areas in El Segundo and beneath the arrival paths east of LAX would be similar to or, in a few areas, slightly less than those under the No-Action Alternative. A noise grid analysis of select locations adjoining the Airport indicates that noise level changes would be less than 0.5 dB CNEL. Therefore, the Proposed Action - RSA Alternative Refinement #3 would not result in any significant noise impact relative to the No-Action Alternative for the same timeframe.

In 2015, compared to the No-Action Alternative, the Proposed Action - RSA Alternative Refinement #3 would reduce the number of persons living in single-and multi-family dwelling units in the 65 dBA CNEL area by 50, and the number of single- and multi-family dwelling units by 13 (**Table 4.2-4**). In 2020, compared to the No-Action Alternative, the Proposed Action - RSA Alternative Refinement #3 would have no net reduction in the number of persons living in single-and multi-family dwelling units in the 65 dBA CNEL area, or of dwelling units located in the 65 dBA CNEL area (**Table 4.2-5**). However, the changes in noise levels would be less than the 1.5 dBA CNEL threshold and, therefore, would not be significant or perceptible.

4.2.5.2 ` RSA Alternative Refinement #2 and No-Action Alternative

Because the departure and landing thresholds for RSA Alternative Refinement #2 are the same as the Proposed Action, the noise contours for this alternative would be the same as those developed for the Proposed Action and the potential impacts related to this alternative would be the same as the Proposed Action - RSA Alternative Refinement #3, as shown in **Tables 4.2-4** and **4.2-5**.

4.2.5.3 Shift Runway and No-Action Alternatives

Noise-sensitive areas around the Airport, including residential uses in El Segundo and homes east of the Airport, would not experience an increase in aircraft noise exposure under the Shift Runway Alternative. The only off-airport areas where CNEL increases would occur include the commercial/industrial areas along Imperial Highway south of the Airport and Dockweiler Beach State Park west of the Airport. These areas are not considered sensitive or incompatible uses for the purposes of noise analysis. In addition, none of these increases would be above the 1.5 dBA CNEL threshold. Therefore, the Shift Runway Alternative would not result in any significant noise impact relative to the No-Action Alternative for the same timeframe.

The Shift Runway Alternative would result in noise benefits due to decreases in noise exposure at certain noise-sensitive areas proximate to the east end of Runway 25R. A major contributor to the noise contours in these areas is the departure backblast noise generated around the point of aircraft takeoff roll. Under the Shift Runway Alternative, westward relocation of 25R by 832 feet would essentially shift the noise exposure contours in these areas to the west. Noise-sensitive areas where airport noise levels would be reduced would include the residential uses northeast of Century Boulevard and Aviation Boulevard and some residential locations in El Segundo. In both future years, Shift Runway Alternative aircraft noise exposure at areas beneath the arrival paths farther east of LAX would remain the same as the No-Action Alternative because Runway 25L (the primary arrival runway in the South Airfield) would remain in the same location (changes to this runway are not part of any alternative) and arrivals constitute the dominant source of aircraft noise in these areas.

In 2015, compared to the No-Action Alternative, the Shift Runway Alternative would reduce the number of persons living in single-and multi-family dwelling units in the 65 dBA CNEL area by 1,291, and the number of single- and multi-family dwelling units by 513 (**Table 4.2-4**). In 2020, compared to the No-Action Alternative, the Shift Runway Alternative would reduce the number of persons living in single- and multi-family dwelling units in the 65 dBA CNEL area by 1,513, and the number of single- and multi-family dwelling units by 606 (**Table 4.2-5**). However, the changes in noise levels for either year would be less than the 1.5 dBA CNEL threshold and, therefore, would not be significant or perceptible.

Table 4.2-4
Land Use Noise Exposure Comparison by Noise Sensitive Land Use (Year 2015)

Land Use	Unit	65 dB CNEL and Above		
		No-Action Alternative	Increase/Decrease Relative to No-Action	
			Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative
Single-Family Residential	Dwelling Units	3,042	-3	-70
	Population	9,995	-12	-184
Multi-Family Residential	Dwelling Units	9,490	-10	-109
	Population	30,784	-38	-369
School	Parcels	77	--	--
Church	Parcels	6	--	--
Hospital	Parcels	5	--	--
Recreation	Parcels	26	--	--
Total	Dwelling Units	12,532	-13	-179
	Population	40,779	-50	-553
	Non-Residential Parcels	114	0	0

Note: (-) Indicates No Change

Sources: URS Corporation, LAX Runway 7L/25R Safety Area (RSA) Project, Aircraft Noise Analysis, March 2012.; Ricondo and Associates, 2013; PCR Services Corporation, 2013.

Table 4.2-5
Land Use Noise Exposure Comparison by Noise Sensitive Land Use (Year 2020)

Land Use	Unit	65 dB CNEL and Above		
			Increase/Decrease Relative to No-Action	
		No-Action Alternative	Proposed Action & RSA Alternative Refinement #2	Shift Runway Alternative
Single-Family Residential	Dwelling Units	3,473	-6	-90
	Population	11,266	-29	-263
Multi-Family Residential	Dwelling Units	10,416	-45	-110
	Population	33,605	-169	-355
School	Parcels	84	--	-3
Church	Parcels	7	--	--
Hospital	Parcels	5	--	--
Recreation	Parcels	31	--	-1
Total	Dwelling Units	13,889	-51	-200
	Population	44,871	-198	-618
	Non-Residential Parcels	127	0	-4

Note: (-) Indicates No Change

Sources: URS Corporation, LAX Runway 7L/25R Safety Area (RSA) Project, Aircraft Noise Analysis, March 2012; Ricondo and Associates, 2013; PCR Services Corporation, 2013.

4.2.6 Construction Impacts

4.2.6.1 Construction Traffic and Activities

Construction activities would temporarily increase ambient noise levels in the immediate vicinity of the construction and land clearing activities as well as potentially along the haul routes where construction trucks and employee vehicles would travel.

Construction trucks would only be able to use designated haul routes in accordance with LAX Master Plan commitments. These routes are selected to 1) ensure that trucks use the area freeway systems (I-405 and I-105) as much as possible, and 2) use only major arterial routes to travel as short a distance as possible from the freeways to the airport construction sites. All of the designated haul routes accommodate relatively high traffic volumes today.

Grading and scraping construction activities are typically the sources of most noise, with associated equipment generating noise levels as high as 70 dBA to 95 dBA within 50 feet of their operation. While existing noise levels from aircraft operations exceed construction equipment and traffic noise levels, aircraft noise events occur intermittently, and as such, allow for construction noise to potentially be audible to or impact the neighboring communities.

The nearest noise sensitive receiver locations to construction areas are residential land uses along the south side of Imperial Highway in El Segundo. The nearest homes to the Runway 7L/25R RSA improvements and Taxiway H construction area are approximately 1,350 feet away.

No-Action Alternative

Under the No-Action Alternative, there would be no construction activities. Therefore, there would be no change in the noise environment at noise-sensitive areas adjoining the Airport. No significant construction noise impacts are anticipated.

Proposed Action - RSA Alternative Refinement #3

Construction equipment noise levels under the Proposed Action - RSA Alternative Refinement #3 were estimated using the construction data, including number and type of equipment, to be utilized for each phase or component of construction and distances to the nearest noise-sensitive areas. The nearest noise-sensitive areas are residences located south of Imperial Highway. Noise exposure at these locations due to construction of the RSA and extension of associated taxiways near Runway 7L would be near 64 dBA L_{max} during the noisiest construction times. Such levels, while expected to be audible at times, would be below noise exposure from aircraft and traffic noise sources in the area and would not cause significant impacts.

Construction noise exposure at homes northeast of the intersection of Century Boulevard and Aviation Boulevard during the pavement reconstruction of the eastern portions of Taxiway B and Runway 25R, and a portion of the aircraft parking apron west of Air Freight Building No. 8 would be near 53 dBA L_{max} at its loudest. Such levels are well below the ambient noise exposure dominated by aircraft and traffic noise in these areas. Therefore, construction noise effects in this area would not be significant.

Comparing the traffic noise levels during construction of the Proposed Action - RSA Alternative Refinement #3 to estimated existing condition noise levels, the maximum increase in roadway noise during peak construction traffic hours would be 0.9 dBA Leq or less. Therefore, the traffic noise increase would not be perceptible and would be far below the 5 dBA Leq threshold. The Proposed Action - RSA Alternative Refinement #3 construction traffic noise impacts would be less than significant.

Overall, construction noise from construction traffic and activities would be short-term and temporary. Therefore, no significant impacts related to construction noise from construction traffic and activities are anticipated.

RSA Alternative Refinement #2

Construction equipment noise levels under RSA Alternative Refinement #2 were estimated using the construction data, including number and type of equipment, to be utilized for each phase or component of construction and distances to the nearest noise-sensitive areas. Noise exposure at these locations due to construction of the RSA and extension of associated taxiways near Runway 7L would be near 64 dBA L_{max} during the noisiest construction times. Such levels, while expected to be audible at times, would be below noise exposure from aircraft and traffic noise sources in the area and would not cause significant impacts.

Construction noise exposure at homes northeast of the intersection of Century Boulevard and Aviation Boulevard during the pavement reconstruction of the eastern portions of Taxiway B and Runway 25R, and a portion of the aircraft parking apron west of Air Freight Building No. 8 would be near 53 dBA L_{max} at its loudest. Such levels are well below the ambient noise exposure dominated by aircraft and traffic noise in these areas. Therefore, construction noise effects in this area would not be significant.

Comparing the traffic noise levels during construction of RSA Alternative Refinement #2 to estimated existing condition noise levels, the maximum increase in roadway noise during peak construction traffic hours would be 0.9 dBA Leq or less. Therefore, the traffic noise increase would not be perceptible and would be far below the 5 dBA Leq threshold. The RSA Alternative Refinement #2 construction traffic noise impacts would be less than significant.

Overall, construction noise from construction traffic and activities would be short-term and temporary. Therefore, no significant impacts related to construction noise from construction traffic and activities are anticipated.

Shift Runway Alternative

Both traffic and equipment noise exposure during the construction phase of the Shift Runway Alternative would be similar to those under the Proposed Action - RSA Alternative Refinement #3 and RSA Alternative Refinement #2. Therefore, no significant impacts related to construction noise from construction traffic and activities are anticipated.

4.2.6.2 Aircraft Operations During Construction

A shift in runway use during the construction period may also cause a temporary increase in noise impacts to neighboring communities. Construction of the Proposed Action or its alternatives would require closure of Runway 7L/25R for approximately 3.5 months, depending on how the project is phased. An analysis of the changes to the annual noise contours that would result from closure of the runway for this period was undertaken in response to comments received on the Draft EA. Assumptions concerning runway use were developed and are included in Appendix B. **Figure 4.2-7** depicts the annual CNEL contours that would result from normal operations on Runway 7L/25R for 8.5 months and closure of Runway 7L/25R for 3.5 months. **Table 4.2-6** summarizes the dwelling units and population contained within the 65, 70, and 75 dB CNEL contours.

Table 4.2-6
Land Use Noise Exposure by Sensitive Land Use (2015 Construction)

Unit	65-70 dB CNEL	70-75 dB CNEL	75 dB CNEL and Above	Totals (65+ dB CNEL and Above)
Dwelling Units	10,009	2,406	202	12,617
Population	30,522	9,343	634	40,499

Note: Population contains 2010 census data.

Source: Ricondo and Associates, 2013; PCR Services Corporation, 2013.

Due to the redistribution of aircraft during the construction period and temporary closure of the Runway 7L/25R, a 1.5 dB CNEL and higher increase would result on airport property when compared to (2015) No-Action conditions, as shown in Figure 4.2-7. This increase would not impact any noise sensitive facilities or residential dwellings. Therefore because the increase of 1.5 dB CNEL would not be experienced by noise-sensitive uses, no significant impacts would occur.

4.2.7 Mitigation Measures

None of the action alternatives would result in significant noise impacts. Therefore, noise mitigation measures are not required.

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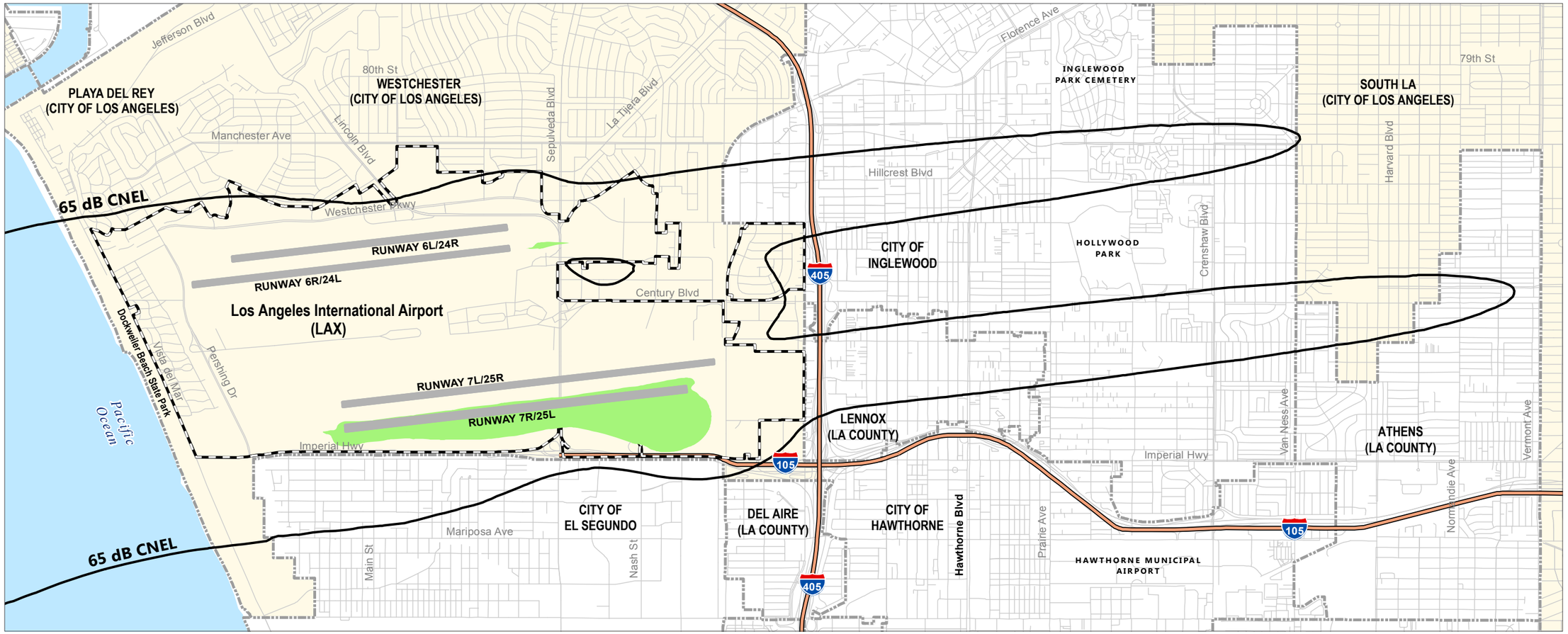
Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- 2015 Temp Closure Noise Contour
- Existing Runway
- 1.5 dB Change and Greater

0 — 4000 ft. — north

1" = 4000 feet



Source: URS Corporation, LAX 2015 CNEL Contours; Southern California Association of Governments 2008; LAWA, 2013; Ricondo & Associates, Inc., 2013; ESRI Maps and Data, January 2013; Prepared by: Ricondo & Associates, Inc., 2013.

Environmental Assessment
Runway 7L/25R RSA and
Associated Improvements Project

Future (2015)
Aircraft Noise Exposure CNEL Contours -
Temporary Closure of Runway 7L/25R
(1.5 dB Change and Greater)

FIGURE
4.2-7

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4.3 Compatible Land Use

4.3.1 Overview of Impacts

The action alternatives would not change operational conditions at the Airport. All assumptions remain the same as those identified for the No-Action Alternative except for the locations of the takeoff and landing points for Runway 7L/25R as described in the Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative.

When compared to the No-Action Alternative, none of the action alternatives causes sensitive areas located at or above 65 dBA CNEL to experience a noise increase of 1.5 dBA CNEL or greater. Therefore, as stated in Section 4.2, no significant noise impacts are anticipated during operations.

Therefore, none of the action alternatives will result in significant impacts on compatible land use.

4.3.2 Methodology

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, Appendix A, §4.1(a), the compatibility of existing and planned land uses in the vicinity of airports is usually associated with the extent of the airport's future noise impacts. If the noise analysis conducted in support of a proposed action concludes that there are no significant impacts, the same conclusion can generally be drawn regarding the compatibility of land use in the areas around the airport. Alternatively, where the noise analysis indicates that significant impacts would occur to noise-sensitive land uses within areas exposed to CNEL 65 dBA or higher, then impacts on compatible land use must be addressed.

LAWA has already implemented an Airport Residential Soundproofing Program (RSP) for residences impacted by aircraft noise. The RSP provides noise insulation for residential buildings that have a recorded CNEL of 65 dB. Currently, there are approximately 9,000 residences eligible for the program located in the City of Los Angeles communities of Playa del Rey, Westchester, and areas of South Los Angeles. LAWA has provided sound proofing to over 900 of these eligible residences within the last year. Additionally, Los Angeles County, the City of Inglewood, and the City of El Segundo have established residential sound insulation programs to mitigate exposure to aircraft noise.

4.3.2.1 Significant Impact Thresholds

In accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, the same thresholds of significance for noise are applicable to compatible land uses. Therefore, a proposed action would be considered to have a significant impact with regard to aviation noise, when compared to the No-Action Alternative for the same time frame, if it would:

- Cause noise-sensitive areas located at or above CNEL 65 dBA to experience a noise increase of at least CNEL 1.5 dBA; or
- Cause an increase of CNEL 1.5 dBA that introduces new noise-sensitive areas to exposure levels of CNEL 65 dBA or more.

4.3.3 Operational Impacts (Years 2015 and 2020)

4.3.3.1 No-Action Alternative

Under the No-Action Alternative, the improvements associated with the action alternatives would not be constructed and the noise environment at LAX and at the existing sensitive land uses would remain unchanged. Therefore, no significant operational impacts are anticipated.

4.3.3.2 Proposed Action - RSA Alternative Refinement #3

The Proposed Action - RSA Alternative Refinement #3 would not result in changes to existing land uses in the vicinity of the Airport. **Tables 4.2-4** and **4.2-5** above summarize the differences between the incompatible land uses that are exposed to noise levels at 65 dBA CNEL and above for both 2015 and 2020, respectively, between the Proposed Action - RSA Alternative Refinement #3 and the No-Action Alternative. When compared with the No-Action Alternative, the Proposed Action - RSA Alternative Refinement #3 results in fewer incompatible land uses being impacted for year 2015. The Proposed Action - RSA Alternative Refinement #3 would result in approximately 3 less single family dwelling units (approximately 12 persons), and 10 less multi-family dwelling units (approximately 38 persons) that would be impacted by exposure to noise levels of 65 dBA CNEL or higher compared to the No-Action Alternative. Other incompatible uses such as schools, churches, and recreational uses would experience the same noise exposure levels as the No-Action Alternative in year 2015. Therefore, no significant land use compatibility impacts are anticipated in year 2015. In fact, beneficial impacts are anticipated, as 13 less residences (approximately 50 persons) would experience noise levels of 65 dBA CNEL or higher in year 2015.

For forecast year 2020, the Proposed Action - RSA Alternative Refinement #3 would result in approximately 6 less single family dwelling units (approximately 29 persons), a decrease of 45 multi-family dwelling units (approximately 169 persons) that would be impacted by exposure to noise levels of 65 dBA CNEL or higher compared to the No-Action Alternative. Other incompatible uses such as schools, churches, and recreational uses would experience the same noise exposure levels as the No-Action Alternative in the year 2020. Therefore, no significant land use compatibility impacts are anticipated in year 2020.

4.3.3.3 RSA Alternative Refinement #2

Because the departure and landing thresholds for RSA Alternative Refinement #2 are the same as the Proposed Action, the noise contours for this alternative would be the same as those developed for the Proposed Action and the potential impacts related to this alternative would be the same as the Proposed Action - RSA Alternative Refinement #3, as shown in **Tables 4.2-4** and **4.2-5**.

4.3.3.4 Shift Runway Alternative

The Shift Runway Alternative would not result in changes to existing land uses in the vicinity of the Airport. **Tables 4.2-4** and **4.2-5** above summarize the differences between the incompatible land uses that are exposed to noise levels at 65 dBA CNEL and above for both year 2015 and 2020, respectively, between the Shift Runway Alternative and the No-Action Alternative. When compared with the No-Action Alternative, the Shift Runway Alternative results in fewer incompatible land uses being impacted for year 2015. The Shift Runway Alternative would result in approximately 70 less single family dwelling units (approximately 184 persons), and 109 less multi-family dwelling units (approximately 369 persons) that would be impacted by exposure to noise levels of 65 dBA CNEL or higher compared to the No-Action Alternative. Other incompatible uses such as schools, churches, and recreational uses would experience the same noise exposure levels as the No-Action Alternative in year 2015. Therefore, no significant land use compatibility impacts are anticipated in year 2015. In fact, beneficial impacts are anticipated, as 179 less dwelling units (approximately 553 persons) would experience noise levels of 65 dBA CNEL or higher in year 2015.

For forecast year 2020, the Shift Runway Alternative would result in approximately 90 less single family dwelling units (approximately 263 persons), and 110 less multi-family dwelling units (approximately 355 persons) that would be impacted by exposure to noise levels of 65 dBA CNEL or higher compared to the No-Action Alternative. In addition, 3 less schools and 1 less recreational parcel would be impacted by exposure to noise levels of 65 dBA CNEL or higher compared to the No-Action Alternative. Other incompatible uses such as churches and recreational uses would experience the same noise exposure

levels as the No-Action Alternative in year 2020. Therefore, no significant land use compatibility impacts are anticipated in year 2020. In fact, beneficial impacts are anticipated, as 200 less dwelling units (approximately 618 persons) would experience noise levels of 65 dBA CNEL or higher in year 2020.

4.3.4 Construction Impacts

4.3.4.1 No-Action Alternative

Under the No-Action Alternative, there would be no construction activities associated with Runway 7L/25R and, consequently, there would be no change in the noise environment at noise-sensitive areas in the vicinity of the Airport. Therefore, no significant construction impacts related to compatible land use would occur.

4.3.4.2 Proposed Action - RSA Alternative Refinement #3

As discussed in Section 4.2.6, both traffic and equipment noise exposure during the construction phase of the Proposed Action - RSA Alternative Refinement #3 would be short-term and temporary and increases would be imperceptible (less than 3dBA). Therefore, no significant construction impacts related to land use compatibility are anticipated.

4.3.4.3 RSA Alternative Refinement #2

As discussed in Section 4.2.6, both traffic and equipment noise exposure during the construction phase of RSA Alternative Refinement #2 would be short-term and temporary and increases would be imperceptible (less than 3dBA). Therefore, no significant construction impacts related to land use compatibility are anticipated.

4.3.4.4 Shift Runway Alternative

As discussed in Section 4.2.6, both traffic and equipment noise exposure during the construction phase of the Shift Runway Alternative would be similar to the exposure under RSA Alternative Refinement #2. Therefore, no significant construction impacts related to land use compatibility are anticipated.

4.3.5 Mitigation Measures

No significant construction or operational impacts related to land use compatibility are anticipated. Therefore, no mitigation measures are required.

4.4 Socioeconomic Impacts, Environmental Justice, Children's Environmental Health and Safety Risk, and Surface Transportation

4.4.1 Overview of Impacts

Under the No-Action Alternative, none of the improvements proposed under any of the action alternatives would be constructed. Therefore, no disproportionately high and adverse impacts related to socioeconomics, environmental justice, surface transportation or children's health and safety are anticipated under the No-Action Alternative.

None of the action alternatives would result in the displacement of people, housing or businesses; population growth; division or disruption of established communities; or disruption of orderly planned development. In addition, the three action alternatives would not be located adjacent to schools or substantial numbers of residences. Therefore, no disproportionately high and adverse impacts related to socioeconomics, environmental justice, surface transportation or children's health and safety are anticipated under the Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or the Shift Runway Alternative.

4.4.2 Methodology

4.4.2.1 Socioeconomics

Socioeconomic data, including demographics (race and ethnicity), housing characteristics, and employment data, was gathered from the 2010 U.S. Census for the four Census tracts located partially or wholly within the GSA (refer to **Figure 3.5-1**). In addition, sensitive land uses were identified within the GSA and within a quarter-mile of the GSA (refer to **Figure 3.3-3**) using spatial data. Social impacts were determined through the evaluation of how the implementation of the No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or Shift Runway Alternative could impact sensitive populations and resources important to surrounding populations.

4.4.2.2 Environmental Justice

U.S. Department of Transportation (DOT) Order 5610.2, *DOT Order to Address Environmental Justice in Minority Populations and Low-Income Populations* (April 15, 1997), was used to undertake the environmental justice analysis as required under Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994). Environmental justice impacts were evaluated by determining whether the No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or Shift Runway Alternative would have disproportionately high and adverse human health or environmental impacts on minority and low-income populations. Also evaluated were impacts to resources important to communities of environmental justice concern. A Census Tract has the potential to contain a community of environmental justice concern when the minority or low-income population of the analysis area is "meaningfully greater" than that of the surrounding areas. Poverty was determined using U.S. Department of Housing and Urban Development, Health and Human Services Poverty Guidelines as used by the U.S. Census. Finally, Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency* (August 11, 2000), requires federal agencies to provide the opportunity for Limited English Proficiency (LEP) communities to be involved in the planning process by having access to translated materials and/or translation services during meetings. For this evaluation, the LEP population was calculated for the GSA and the public outreach effort was evaluated.

4.4.2.3 Children's Environmental Health and Safety Risk

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 21, 1997), requires federal agencies to prioritize the identification and assessment of environmental health and safety risks resulting from policies, programs, activities, and standards that may disproportionately affect children. Impacts of the alternatives studied in detail were assessed with regard to compliance with Executive Order 13045. The location of schools and daycare centers in the GSA were identified, and any specific health concerns for children are qualitatively described.

4.4.2.4 Significant Impact Thresholds

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, Appendix A §16.3, the following impact significance thresholds apply to the evaluation of the No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or Shift Runway Alternative:

Socioeconomic Impacts

A significant impact would occur if the action would cause:

- Extensive relocation, but sufficient replacement housing is unavailable;
- Extensive relocation of community businesses that would cause severe economic hardship for affected communities; and/or
- A substantial loss in community tax base.

Environmental Justice

A significant impact would occur if the action would cause disproportionately high and adverse human health or environmental impacts to minorities and low-income populations.

Children's Environmental Health and Safety

A significant impact would occur if the action would cause disproportionate health and safety risks to children.

Surface Transportation

A significant impact would occur if the action would cause disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities.

4.4.3 Operational Impacts (Years 2015 and 2020)

4.4.3.1 No-Action Alternative

Under the No Action Alternative, ongoing operations at the Airport would be limited to other already approved and/or funded programs in other areas of the airport property. However, no elements proposed under any of the action alternatives would be developed. Therefore, no disproportionately high and adverse impacts to socioeconomics, environmental justice, children's environmental health and safety, or surface transportation would occur.

4.4.3.2 Proposed Action - RSA Alternative Refinement #3

Socioeconomic and Secondary (Induced) Impacts

The improvements associated with the Proposed Action - RSA Alternative Refinement #3 would be located entirely on existing Airport property. Consequently, no real estate acquisitions would be required, and no displacement of residences, businesses, or community facilities/utilities would occur. Furthermore, no disruption to established communities would occur. The Proposed Action - RSA Alternative Refinement #3 would not change ongoing Airport activities, and would not result in any impact to the tax base. Therefore, no significant socioeconomic impacts are anticipated.

Environmental Justice

Two of the four Census tracts (2772 and 2774) within the GSA can be characterized as having a "meaningfully greater" minority population (refer to **Table 3.5-2**) when compared to surrounding areas. However, poverty levels in these and all GSA Census tracts are lower than those in the County of Los Angeles and City of Los Angeles. These predominantly minority Census tracts are located northeast of the DSA and would not include any portion of the DSA, including the construction staging areas.

An analysis of air quality (see Section 4.5), noise (see Section 4.2), and surface transportation (see below) indicates that no significant impacts are anticipated for the Proposed Action - RSA Alternative Refinement #3. Furthermore, no significant impacts related to lighting and visual character (see Section 4.7), hazardous materials (see Section 4.9), or water resources (see Section 4.6) are anticipated. Therefore, no disproportionately high and adverse human health or environmental impacts to minority and low-income populations are anticipated.

Children's Environmental Health and Safety Risk

There are eight schools identified within or immediately adjacent to the GSA (Refer to **Figure 3.3-3** and **Table 3.3-2**). Noise and air quality impacts on these schools or on residential and recreational areas within the GSA would not exceed applicable significant impact thresholds (see Sections 4.2 and 4.5). Therefore, no disproportionate impacts on children's environmental health and safety are anticipated.

Surface Transportation

The Proposed Action - RSA Alternative Refinement #3 would not increase or otherwise alter the number of passengers or aircraft operations at LAX compared to the No-Action Alternative. Therefore, roadways and intersections within and adjacent to the GSA would not be adversely affected if the Proposed Action - RSA Alternative Refinement #3 is implemented. Consequently, there would be no direct change of level of service in the surrounding communities. Therefore, no significant impacts related to surface traffic are anticipated. See Section 4.4.4 for a discussion of construction traffic.

4.4.3.3 RSA Alternative Refinement #2

Socioeconomic and Secondary (Induced) Impacts

The improvements associated with RSA Alternative Refinement #2 would be located entirely on existing Airport property. Consequently, no real estate acquisitions would be required, and no displacement of residences, businesses, or community facilities/utilities would occur. Furthermore, no disruption to established communities would occur. RSA Alternative Refinement #2 would not change ongoing Airport activities, and would not result in any impact to the tax base. Therefore, no significant socioeconomic impacts are anticipated.

Environmental Justice

The same Census tracts were evaluated under RSA Alternative Refinement #2 as the Proposed Action - RSA Alternative Refinement #3. Environmental justice impacts under RSA Alternative Refinement #2 would be similar to those under the Proposed Action - RSA Alternative Refinement #3. Therefore, no

disproportionately high and adverse human health or environmental impacts to minority and low-income populations are anticipated.

Children's Environmental Health and Safety Risk

The same schools were evaluated under RSA Alternative Refinement #2 as the Proposed Action - RSA Alternative Refinement #3. Children's environmental health and safety impacts under RSA Alternative Refinement #2 would be similar to those under the Proposed Action - RSA Alternative Refinement #3. Therefore, no disproportionate impacts on children's environmental health and safety are anticipated.

Surface Transportation

RSA Alternative Refinement #2 would not increase or otherwise alter the number of passengers or aircraft operations at LAX compared to the No-Action Alternative. Therefore, roadways and intersections within and adjacent to the GSA would not be adversely affected if RSA Alternative Refinement #2 is implemented. Consequently, there would be no direct change of level of service in the surrounding communities. Therefore, no significant impacts related to surface traffic are anticipated. See Section 4.4.4 for a discussion of construction traffic.

4.4.3.4 Shift Runway Alternative

Socioeconomic and Secondary (Induced) Impacts

Socioeconomic impacts under the Shift Runway Alternative would be similar to those under RSA Alternative Refinement #2. Therefore, no significant socioeconomic impacts are anticipated.

Environmental Justice

The same Census tracts were evaluated under the Shift Runway Alternative as the Proposed Action - RSA Alternative Refinement #3. Environmental justice impacts under the Shift Runway Alternative would be similar to those under the Proposed Action - RSA Alternative Refinement #3. Therefore, no disproportionately high and adverse human health or environmental impacts to minority and low-income populations are anticipated

Children's Environmental Health and Safety Risk

The same schools were evaluated under the Shift Runway Alternative as the Proposed Action - RSA Alternative Refinement #3. Children's environmental health and safety impacts under the Shift Runway Alternative would be similar to those under the Proposed Action - RSA Alternative Refinement #3. Therefore, no disproportionate impacts on children's environmental health and safety are anticipated.

Surface Transportation

The Shift Runway Alternative would not increase or otherwise alter the number of passengers or aircraft operations at LAX compared to the No-Action Alternative. Therefore, roadways and intersections within and adjacent to the GSA would not be adversely affected if the Shift Runway Alternative is implemented. Consequently, there would be no direct change of level of service at the intersections/to the roadways in the surrounding communities. Therefore, no significant impacts related to operational traffic are anticipated. See Section 4.4.4 for a discussion of construction traffic.

4.4.4 Construction Impacts

4.4.4.1 No-Action Alternative

Under the No-Action Alternative, no elements proposed under any of the action alternatives would be constructed. Therefore, no construction impacts to socioeconomics, environmental justice, children's environmental health and safety, or surface transportation would occur.

4.4.4.2 Proposed Action, RSA Alternative Refinement #2, and Shift Runway Alternative

Socioeconomic and Secondary (Induced) Impacts

Employment within the GSA would not significantly change as a result of construction of any of the action alternatives. Construction activities would occur on Airport property and would not require relocation of housing or businesses. Construction vehicles and construction worker vehicles would use major roads and would not require construction of new roads that could relocate housing or businesses. Construction activities would be temporary and would not impact the community tax base. Therefore, no significant socioeconomic impacts during construction are anticipated.

Environmental Justice

The Census tracts containing significant minority populations within the GSA are located northeast of the DSA and would not include any portion of the DSA, including the staging areas. An analysis of air quality (see Section 4.5), noise (see Section 4.2), and traffic (see below) indicates that no significant construction impacts are anticipated under any of the action alternatives. Furthermore, no significant construction impacts related to lighting and visual character (see Section 4.7), hazardous materials (see Section 4.9), or water resources (see Section 4.6) are anticipated. Therefore, no disproportionately high and adverse human health or environmental impacts during construction to minority and low-income populations would occur.

Children's Environmental Health and Safety Risk

Noise and air quality construction impacts on the schools in the vicinity of the GSA or on residential and recreational areas within the GSA would not exceed applicable significant impact thresholds (see Sections 4.2 and 4.5). Therefore, no disproportionate construction impacts on children's environmental health and safety would occur.

Surface Transportation

Construction activities would generate increased traffic associated with construction employees and deliveries in the vicinity of the proposed staging area, in particular along Imperial Highway, Pershing Drive, 111th Street, and Aviation Boulevard. However, although there may be short-term localized impacts associated with these construction activities, none of the action alternatives would have long-term impacts on GSA roadways levels of service, disrupt surrounding communities, or result in long-term impacts on local businesses, due to construction impact mitigation commitments from the LAX Master Plan. As these LAX Master Plan mitigation commitments are incorporated into the design of all action alternatives, no significant construction traffic impacts would occur.

4.4.5 Mitigation Measures

No significant impacts would occur; thus, no additional mitigation measures are required.

4.5 Air Quality

Two sets of federal guidelines or requirements determine the need for, define the type(s) of, and establish the extent of, an air quality assessment required for airport-related actions. These include FAA Orders 1050.1E, *Environmental Impacts: Policies and Procedures*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and the federal *Clean Air Act* (CAA), as amended by the *Clean Air Act Amendments* (CAA Amendments) *of 1990*. Guidelines for preparing an air quality analysis under NEPA are also contained in the FAA's *Air Quality Procedures for Civilian Airports and Air Force Bases*, referred to as the FAA's *Air Quality Handbook and its Addendum*.[4]

The requirements described in all of these documents were followed in preparing the air quality assessment for the action alternatives at LAX. FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, states that an air quality assessment prepared under NEPA should include an analysis and conclusions of a Proposed Action - RSA Alternative Refinement #3's impacts on air quality and further directs that, when a NEPA analysis is needed, the Proposed Action - RSA Alternative Refinement #3 should be assessed by evaluating the effects on the National Ambient Air Quality Standards (NAAQS). FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, further provides that, for NEPA purposes, environmental analyses must determine if the air quality impacts of any reasonable alternative would exceed the NAAQS for the time periods analyzed. LAX belongs to the South Coast Air Basin (Basin) and current air quality in the Basin and NAAQS attainment status is discussed in Section 3.6 of the EA.

The CAA Amendments require federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP). Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Federally funded and approved actions at airports are subject to the United States Environmental Protection Agency (USEPA) General Conformity regulations. A conformity determination of the proposed action is required if the total direct and indirect pollutant emissions resulting from a project are above *de minimis* (risk too small to be concerned or lacking significance) emissions threshold levels specified in the conformity regulations.

4.5.1 Overview of Impacts

In accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, construction and operational emissions inventories were prepared to address project-related emissions associated with the No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative. Air emissions associated with construction activities and operations consist of carbon monoxide (CO), oxides of nitrogen (NOx), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SOx), volatile organic compounds (VOC), and lead (Pb)[5]. The construction and operational emissions would be below the established General Conformity *de minimis* thresholds for all applicable pollutants, all alternatives, and both future years and, therefore, conform to the CAA. No significant impacts related to air quality are anticipated for any action alternative.

Greenhouse Gas (GHG) emissions associated with any of the action alternatives would comprise less than 1 percent of the U.S.-based GHG emissions.

[4] Federal Aviation Administration, *Air Quality Procedures for Civilian Airports and Air Force Bases*, 1997.

[5] Lead (Pb) emissions are not typically considered in emission inventories for commercial service airports because they are primarily from piston engine aircraft. However, Pb emissions are quantified for this analysis so that they may be compared to the air monitoring requirement threshold of 1.0 tons per year

4.5.2 Methodology

4.5.2.1 Operational Impacts (Years 2015 and 2020)

As noted in Chapter 1 Purpose and Need, neither the fleet composition nor operational levels of aircraft serving LAX would change as a result of any of the action alternatives. The action-related operational emissions are only related to the extension of the western end of Runway 7L/25R and the resultant decrease/increase in taxi travel distance from the runway ends to the terminal areas as a function of runway usage.

Thus, criteria pollutant emissions from aircraft were computed for the 2015 and 2020 No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative using the FAA's Emissions and Dispersion Modeling System (EDMS), the FAA-required and USEPA-preferred model to calculate emissions from aircraft.[6]

The aircraft fleet mix and operational levels for the No-Action Alternative and the action alternatives were assigned within the EDMS in a manner consistent with the noise assessment (see Appendix B, Noise Technical Report) developed for this EA. Where possible, aircraft engines representing the actual in-use fleet at LAX were applied in EDMS using LAWA's Aircraft Noise and Operations Monitoring System (ANOMS) data, and cross-referenced with proprietary fleet data for air carrier and business jet operations, on the basis of reported aircraft tail number. In segments of the fleet where such matches were not possible, EDMS default engine selections were retained. The taxi times for existing conditions[7] were adjusted to future year conditions on the basis of additional estimated taxi distance, holding taxi speed, runway utilization, and delay assumptions. However, the proposed RSA improvements would only result in slight changes in taxi times.

Aircraft emissions occur during approach, taxi-in (from runway to apron including landing roll), engine startup at the apron, taxi-out (from apron to runway), takeoff, and climb-out.

4.5.2.2 Construction

Air emissions occurring as the result of construction activity vary, based on the project's duration and level of activity. Construction emissions occur mostly as exhaust products from the operation of construction equipment and vehicles, but can also occur as fugitive dust emissions from land disturbance during material staging, demolition, and movement. Evaporative emissions also result from asphalt paving operations. The type of construction equipment commonly used can be categorized as both off-road and on-road equipment. Off-road equipment is typically used for earthwork, paving, demolition, and other onsite activities, while on-road equipment is typically used to transport and deliver supplies, materials, and employees.

Activity levels for on-road construction vehicles were developed based on requirements and schedules developed for all build alternatives. On-road emission factors were computed using region-specific data developed by the California Air Resources Board (CARB) EMFAC2011 emissions model. A schedule of planned construction activities, including vehicle miles traveled estimates for on-road construction vehicles, was developed by construction subtask. Criteria pollutant emissions associated with these activities were computed by factoring these data against County of Los Angeles-specific emissions factors within EMFAC2011, in grams per mile and grams per idle hour, derived using the EMFAC2007 model.

[6] Federal Aviation Administration, *Emissions and Dispersion Modeling System User's Manual with Supplements, EDMS Version 5.1.3*, November 2010.
[7] FAA's Aviation System Performance Metrics (ASPM) database for calendar year 2010, equating to 9 minutes on taxi-out and 14.4 minutes on taxi-in (including delay).

Construction equipment and fuel type, estimated horsepower, and estimated annual hours of operation required for the construction subtasks were also developed. The annual hours of operation were based on the material use and production rates; generally as a result of a 10-hour-per-day, 6-day-per-week workweek. Non-road exhaust emission factors were obtained from the CARB OFFROAD2007 emissions model. These emission factors (in pounds per hour) were multiplied by the estimated operating hours for each equipment type to derive non-road equipment emissions.

Based on the South Coast Air Quality Management District (SCAQMD) emissions model default data (CalEEMod, Version 9.2.4), the average commute distance for construction employees was set to 13.3 miles (26.6 miles round trip).

Fugitive dust emissions occur as the result of travel on unpaved roads, site preparation, grading activities, wind erosion, and other land disturbances. USEPA provides a worst-case uncontrolled PM_{10} emissions rate of 38.2 pounds per acre-day. This emissions rate was used to calculate uncontrolled PM_{10} emissions using construction task acreage assumptions, as well as construction task durations. Notably, CARB specifies in the Urban Emissions (URBEMIS) model that a maximum of 25 percent of this acreage would be disturbed on any given construction day, and that 20 percent of the PM_{10} emissions would occur as $PM_{2.5}$. Lastly, CARB recommends, within the URBEMIS, a 61 percent emissions control efficiency (i.e., 61 percent of the unmitigated emissions would be eliminated) for fugitive dust estimates, which reflects SCAQMD basic mitigation measures that are recommended for all proposed projects in the South Coast Air Basin.

Based on the CARB default data contained within CalEEMod, an emission factor of 2.62 pounds of VOC (from asphalt curing) per acre of asphalt material was used to determine VOC emissions from asphalt paving. The construction schedules provided the required tons of bituminous surface material. Equivalent acreage was calculated using a weight of asphalt of 2,111 tons per acre, assuming an 8-inch pavement depth, based on data available from the National Asphalt Pavement Association and FAA Advisory Circular (A/C) 150/5320-6E, *Airport Pavement Design and Evaluation*.

4.5.2.3 Significant Impact Thresholds

The USEPA first promulgated the General Conformity Rule in 1993 to implement the conformity provision of Title I, § 176(c)(1) of the *CAA Amendments of 1990*. Section 176(c)(1) requires that the federal government not engage in, support, or provide financial assistance for licensing, permitting, or approving any activity not conforming to an approved CAA implementation plan. The approved implementation plan could be a Federal, State, or Tribal Implementation Plan (FIP, SIP, or TIP). Revisions to the General Conformity Rule are codified in 40 Code of Federal Regulations (CFR) Parts 51 and 93, Subpart W, *Revisions to the General Conformity Regulations, Final Rule* (April 2010). The General Conformity Rule applies to all federal actions except highway and transit programs. The latter must comply with the conformity requirements for Transportation Plans in 40 CFR Part 93, Subpart A.

The General Conformity Rule is designed to ensure that air emissions associated with federal actions do not contribute to air quality degradation or prevent achievement of state and federal air quality goals. In short, General Conformity refers to the process of evaluating federal plans, programs, and projects to determine and demonstrate that they meet the requirements of the CAA and applicable SIP. Compliance with the General Conformity Rule is based on a comparison of the changes in project-related air emissions (Proposed Action minus the No-Action Alternative) with the *de minimis* thresholds, in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*.

The South Coast Air Basin (Basin) is currently designated non-attainment of NAAQS for the following pollutants: ozone (O_3), Pb, PM_{10}, and $PM_{2.5}$. Additionally, the Basin is designated as a maintenance area for CO and NO_2. Applicable *de minimis* thresholds for criteria pollutants and their precursors are presented on **Table 4.5-1**.

Table 4.5-1
General Conformity *De Minimis* Thresholds

NAAQS	Attainment Status (Severity)	Pollutant(s)	*De minimis* Threshold (tons)
Carbon Monoxide (CO)	Maintenance	CO	100
Fine Particulate Matter ($PM_{2.5}$)[a]	Non-attainment	NO_x	100
		$PM_{2.5}$	100
		SO_x	100
		VOC	100
Lead (Pb)[b]	Non-attainment	Pb	25
Nitrogen Dioxide (NO_2)[c]	Maintenance	NO_x	100
Ozone (O_3)[d]	Non-attainment (Extreme)	NO_x	10
		VOC	10
Respirable Particulate Matter (PM_{10})	Non-attainment (Serious)	PM_{10}	70

Notes:

[a] Refers to both 2006 24-hour and 1997 Annual Standards

[b] Refers to 2008 Standard

[c] Refers to Annual Standard. USEPA has yet to designate non-attainment areas for the 1-hour NO_2 standard promulgated in 2010.

[d] Refers to 1997 8-hour Standard. USEPA has yet to finalize non-attainment area designations for the 8-hour ozone standard promulgated in 2008. However, based on state recommendations, the area is anticipated to be designated non-attainment of the 2008 standard.

Sources: General Conformity Rule (40 CFR Part 93, Subpart B), USEPA, *Greenbook Non-Attainment Areas for Criteria Pollutants,* 2012.

4.5.3 Operational Emissions Inventory

The criteria pollutant emissions inventories are used to disclose and compare the action alternatives to the future No-Action Alternative and determine the air quality impacts for purposes of NEPA. Emissions inventories are also used to compare the action-related emissions to the General Conformity thresholds.

In general terms, an emissions inventory is a quantification of the amount of pollutants emitted from a source over a period of time. The amount is calculated by applying emission factors (i.e., grams of pollutant/operation) to source activity levels (i.e., number of aircraft operations). The results are provided in tons by pollutant (i.e., CO, NO_x, and SO_x), emission source (i.e., aircraft, motor vehicles, and stationary sources) and analysis year.

Table 4.5-2 depicts the total aircraft operations utilized in the emissions inventories for calendar years 2015 and 2020. As mentioned, these operational levels do not differ between the No-Action Alternative, Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and the Shift Runway Alternative for a given year, and are based upon total operations reported in the FAA Terminal Area Forecast (TAF). Also summarized on **Table 4.5-2** are taxi times utilized in the operational emissions analysis by year and alternative. As shown, implementation of the Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or the Shift Runway Alternative would slightly increase taxi time (by 0.01, 0.01, and 0.08 minutes, respectively) over the No-Action Alternative by 2020.

Table 4.5-2
Total Aircraft Operations and Taxi Times, by Calendar Year

Year	Operations	Taxi-In Time (minutes)				Taxi-Out Time (minutes)			
		No-Action	Proposed Action	RSA Refined Alt #2	Shift Runway	No-Action	Proposed Action	RSA Refined Alt #2	Shift Runway
2015	637,903	9.0	9.0	9.0	9.0	14.40	14.41	14.41	14.48
2020	705,281								

Source: FAA, Terminal Area Forecast, 2012.

The following sections provide the results of the air quality impact assessment for the No-Action Alternative and the three action alternatives for the years 2015 and 2020.

4.5.3.1 No-Action Alternative

Criteria pollutant emissions associated with the No-Action Alternative in years 2015 and 2020 are presented on **Table 4.5-3**. The No-Action Alternative emissions are greater in 2020 than 2015 due to the increase in aircraft operations. Emissions for lead (Pb) were estimated to be less than 0.01 tons per year in both 2015 and 2020.

Table 4.5-3
No-Action Alternative Operational Emissions Inventories

Pollutant	2015 Aircraft Emissions (tons)	2020 Aircraft Emissions (tons)
CO	2,965	3,278
VOC	450	498
NO_x	3,447	3,811
SO_x	338	374
PM_{10}	37.5	41.4
$PM_{2.5}$	37.5	41.4

Source: URS, 2012 (using EDMS v5.1.3).

4.5.3.2 Proposed Action - RSA Alternative Refinement #3

Criteria pollutant emissions associated with the Proposed Action - RSA Alternative Refinement #3 in years 2015 and 2020 are presented on **Table 4.5-4**. Total emissions of lead were estimated to be less than 0.01 tons per year in both 2015 and 2020.

Table 4.5-4
Proposed Action - RSA Alternative Refinement #3 Operational Emissions Inventories

Pollutant	2015 Aircraft Emissions (tons)	2020 Aircraft Emissions (tons)
CO	2,966	3,280
VOC	450	498
NO_x	3,447	3,811
SO_x	338	374
PM_{10}	37.5	41.4
$PM_{2.5}$	37.5	41.4

Source: URS, 2012 (using EDMS v5.1.3).

4.5.3.3 RSA Alternative Refinement #2

Criteria pollutant emissions associated with RSA Alternative Refinement #2 in years 2015 and 2020 are presented on **Table 4.5-5**. Total emissions for lead were estimated to be less than 0.01 tons per year for both 2015 and 2020.

Table 4.5-5
RSA Refinement Alternative #2 Operational Emissions Inventories

Pollutant	2015 Aircraft Emissions (tons)	2020 Aircraft Emissions (tons)
CO	2,966	3,280
VOC	450	498
NO_x	3,447	3,811
SO_x	338	374
PM_{10}	37.5	41.4
$PM_{2.5}$	37.5	41.4

Source: URS, 2012 (using EDMS v5.1.3).

4.5.3.4 Shift Runway Alternative

Criteria pollutant emissions associated with the Shift Runway Alternative in years 2015 and 2020 are presented in **Table 4.5-6**. Total emissions for lead were estimated to be less than 0.01 tons per year for both 2015 and 2020.

Table 4.5-6
Shift Runway Alternative Operational Emissions Inventories

Pollutant	2015 Aircraft Emissions (tons)	2020 Aircraft Emissions (tons)
CO	2,975	3,289
VOC	451	499
NO_x	3,449	3,813
SO_x	339	375
PM_{10}	37.5	41.5
$PM_{2.5}$	37.5	41.5

Source: URS, 2012 (using EDMS v5.1.3).

4.5.3.5 Comparison with *De Minimis* Thresholds

In 2015, implementation of either the Proposed Action - RSA Alternative Refinement #3 or the RSA Alternative Refinement #2, is estimated to increase operational emissions over the No-Action Alternative by 1.2 tons of CO, 0.1 tons of VOC, 0.2 tons of NO_x, 0.1 tons of SO_x, less than 0.1 tons of PM_{10}, less than 0.1 tons of $PM_{2.5}$ and less than 0.01 tons of Pb, attributable to the estimated slight increase in aircraft taxi time (**Table 4.5-7**). Similarly, emissions increases associated with either the Proposed Action - RSA Alternative Refinement #3 or RSA Alternative Refinement #2 in 2020 constitute 1.3 tons of CO, 0.1 tons of VOC, 0.3 tons of NO_x, 0.1 tons of SO_x, less than 0.1 tons of PM_{10}, less than 0.1 tons of $PM_{2.5}$ and less than 0.01 tons of Pb compared to the No-Action Alternative. These increases in operational emissions are below each of the criteria pollutant General Conformity *de minimis* thresholds, and thus, both the Proposed Action - RSA Alternative Refinement #3 and the RSA Alternative Refinement #2 conform to the SIP for both operational years. Therefore, no significant operational air quality impacts are anticipated under either the Proposed Action - RSA Alternative Refinement #3 or RSA Alternative Refinement #2.

As shown in **Table 4.5-7,** implementation of the Shift Runway Alternative is estimated to increase emissions over the No-Action Alternative in 2015 by 9.5 tons of CO, 1.1 tons of VOC, 1.8 tons of NO_x, 0.6 tons of SO_x, less than 0.1 tons of PM_{10}, less than 0.1 tons of $PM_{2.5}$ and less than 0.01 tons of Pb, attributable to the estimated slight increase in aircraft taxi time. Emission increases associated with the Shift Runway Alternative in 2020 constitute 10.5 tons of CO, 1.2 tons of VOC, 2.0 tons of NO_x, 0.6 tons of SO_x, 0.1 tons of PM_{10}, 0.1 tons of $PM_{2.5}$ and less than 0.01 tons of Pb compared to the No-Action Alternative. These increases in operational emissions are below each of the criteria pollutant General Conformity *de minimis* thresholds, and thus, the Shift Runway Alternative conforms to the SIP for both operational years.

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Table 4.5-7
Comparison of Alternatives with *De Minimis* Thresholds

Pollutant	*De Minimis Threshold (tons)*	No-Action	Proposed Action			RSA Alternative Refinement #2			Shift Runway Alternative		
			Emissions (tons)	Difference	Exceeds?	Emissions (tons)	Difference	Exceeds?	Emissions (tons)	Difference	Exceeds?
2015											
CO	100	2,965	2,966	1.2	No	2,966	1.2	No	2,975	9.5	No
VOC	10	450	450	0.1	No	450	0.1	No	451	1.1	No
NO_x	10	3,447	3,447	0.2	No	3,447	0.2	No	3,449	1.8	No
SO_x	100	338	338	0.1	No	338	0.1	No	339	0.6	No
PM_{10}	70	37.5	37.5	<0.1	No	37.5	<0.1	No	37.5	<0.1	No
$PM_{2.5}$	100	37.5	37.5	<0.1	No	37.5	<0.1	No	37.5	<0.1	No
Pb	25	<0.01	<0.01	<0.01	No	<0.01	<0.01	No	<0.01	<0.01	No
2020											
CO	100	3,278	3,280	1.3	No	3,280	1.3	No	3,289	10.5	No
VOC	10	498	498	0.1	No	498	0.1	No	499	1.2	No
NO_x	10	3,811	3,811	0.3	No	3,811	0.3	No	3,813	2.0	No
SO_x	100	374	374	0.1	No	374	0.1	No	375	0.6	No
PM_{10}	70	41.4	41.4	<0.1	No	41.4	<0.1	No	41.5	0.1	No
$PM_{2.5}$	100	41.4	41.4	<0.1	No	41.4	<0.1	No	41.5	0.1	No
Pb	25	<0.01	<0.01	<0.01	No	<0.01	<0.01	No	<0.01	<0.01	No

Notes: Values reflect rounding

Source: URS, 2012 and 2013 (using EDMS v5.1.3).

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4.5.4 Operational Impacts (Years 2015 and 2020) – Comparison of Alternatives

Table 4.5-8 presents the emissions increases associated with each build alternative compared to the No-Action Alternative for each year. When compared to the Shift Runway Alternative, the Proposed Action - RSA Alternative Refinement #3 or the RSA Alternative Refinement #2 yields a smaller emissions increase over the No-Action Alternative for all pollutants under consideration

Table 4.5-8
Comparison of 2015 and 2020 Operational Emissions of Action Alternatives with the No-Action Alternative

Year	Alternative	Emissions Increase over No-Action (tons per year)[1]						
		CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	Pb
2015	Proposed Action	1.2	0.1	0.2	0.1	<0.1	<0.1	<0.01
	RSA Alternative Refinement #2	1.2	0.1	0.2	0.1	<0.1	<0.1	<0.01
	Shift Runway	9.5	1.1	1.8	0.6	<0.1	<0.1	<0.01
2020	Proposed Action	1.3	0.1	0.3	0.1	<0.1	<0.1	<0.01
	RSA Alternative Refinement #2	1.3	0.1	0.3	0.1	<0.1	<0.1	<0.01
	Shift Runway	10.5	1.2	2.0	0.6	0.1	0.1	<0.01

Source: EDMS v5.1.3.

4.5.5 Construction Impacts

Construction of the proposed improvements is expected to occur in 2014 and 2015. Construction activity emissions inventories for criteria pollutants were developed for all action alternatives. Emissions sources include off-road on-site equipment, on-road on-site equipment, worker commute trips, fugitive dust and fugitive VOCs. Emissions inventories were also developed for the aircraft operational emissions during construction. To allow for the rehabilitation of portions of the Runway 7L/25R pavement, the runway must be temporarily closed for an extended period of time (estimated at 3.5 months). During this time, the operations from this runway must be accommodated through the use of other runways at LAX. This shift in operations may cause airfield and/or airspace delays resulting in increased arrival and departure taxi times. An increase in taxi travel times can result in increased emissions.

To determine the taxi times during the runway closure period, real-time ASDE-X data was used from a period of seven days in 2013 for which Runway 7L/25R was closed due to the installation of runway status lights. Based on conversations with ATC, this historical data would be a reasonable indicator of operations with the runway closure required for the proposed improvements. The taxi-in and taxi-out times for arrivals and departures were averaged over the period for which the runway was closed (January 26, 2013 – February 2, 2013) and when the runway was operating (January 1, 2013 – January 25, 2013; February 3, 2013 – March 31, 2013). The resulting difference in taxi times (**Table 4.5-9**) were added to the No Action taxi times shown in **Table 4.5-2** to establish the construction period taxi times for the runway closure period. The 2015 No Action EDMS file was modified for the runway closure period taxi times. Annual emissions for the runway closure, and normal operations, were then normalized based on a 110-day closure. With the exception of aircraft taxi times, aircraft times in mode (i.e., approach, climbout, and takeoff) do not change during the runway closure period. As the No-Action Alternative would not involve any construction and therefore no runway closure, there would be no change in emissions from the construction period under this alternative.

All action alternatives include the rehabilitation and closure of Runway 7R/25L and will therefore generally have the same emissions from aircraft operations during construction. The increase in emissions will be temporary in nature and only during the closure of the runway.

Table 4.5-9
Proposed Action - RSA Alternative Refinement #3 Taxi Times during Runway Closure

	2015 No Action	2015 Runway Closure
Arrivals	9.00	9.80
Departures	14.40	15.98

Source: Compiled from PDARS data collected by ATAC from LAX's ASDE-X data and SCT; URS Corporation 2012.

4.5.5.1 No-Action Alternative

Under the No-Action Alternative, no construction activities would occur at the project site (the DSA). Therefore, no emissions inventory is required for the No-Action Alternative and no significant construction air quality impacts are anticipated.

4.5.5.2 Proposed Action - RSA Alternative Refinement #3

The emissions inventory for construction activities associated with the Proposed Action - RSA Alternative Refinement #3 is presented in **Table 4.5-10**. The construction-related pollutant emissions were compared against the General Conformity *de minimis* thresholds established for the South Coast Air Basin to gauge conformance to the SIP.

As shown in **Table 4.5-10**, the construction-related emissions of criteria pollutants would be below the established annual *de minimis* thresholds for all construction years.

Table 4.5-10
Proposed Action - RSA Alternative Refinement #3 Construction Emissions Inventory

Construction Year/Sector		Estimated Annual Emissions of Criteria Pollutants (tons/year)				
		CO	**VOC**	**NOX**	**PM_{10}**	**$PM_{2.5}$**
2014	Construction Activity	19.5	1.3	5.5	0.7	0.2
	Aircraft Operations	2,965	450	3,452	37.5	37.5
	Total	**2,985**	**451**	**3,457**	**38.1**	**37.7**
2015	Construction Activity	3.8	0.3	1.1	0.0	0.0
	Aircraft Operations	3,002	454	3,454	37.6	37.6
	Total	**3,005**	**454**	**3,455**	**37.7**	**37.7**
Maximum		3,005	454	3,457	38.1	37.7
De Minimis Threshold		*100*	*10*	*10*	*70*	*100*
DIFFERENCE (UNDER)/OVER *DE MINIMIS* THRESHOLD						
2014		(81)	(9)	(0.04)	(31.9)	(62.3)
2015		(60)	(6)	(2)	(32.3)	(62.3)
Significant?		No	No	No	No	No

Note: Table values may not sum to total values due to rounding.
Source: General Conformity Rule (40 CFR Part 93, Subpart B), January 31, 1994.

4.5.6 Greenhouse Gases Emissions and Climate Change

Based on FAA aircraft data, operations at LAX account for less than two percent of the total U.S. commercial aviation activity.[8] Therefore, assuming that GHGs occur in proportion to level of activity, GHG emissions associated with existing and future aviation activity at LAX would be expected to represent less than two percent of U.S.-based airport GHG emissions.

Although there are no federal standards for aviation-related GHG emissions, it is well established that GHG emissions can affect climate.[9] The Council on Environmental Quality (CEQ) has indicated that climate change should be considered in NEPA analyses. As noted by CEQ, however, "…it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand."[10]

The Proposed Action - RSA Alternative Refinement #3 would increase the construction and operational emissions over the No Action Alternative, as shown in **Table 4.5-13**. The Proposed Action - RSA Alternative Refinement #3 would increase operational GHG emissions by 157 metric tons (MT) of - carbon dioxide equivalent gases (CO_2e) over the No-Action Alternative in 2015, and 173 MT CO_2e over the No-Action Alternative in 2020 (an increase of 0.02 percent).[11] This increase would comprise less than one percent of the U.S.-based GHG emissions.[12] Since GHG emissions were only calculated for the Proposed Action - RSA Alternative Refinement #3, it is assumed GHG emissions from other action alternatives would be similar.

Table 4.5-11

$C0_2e$ Emissions for the Proposed Action - RSA Alternative Refinement #3

Alternative	CO2e Emissions over No Action (metric tons)				
	Construction		Aircraft Ops	Operations	
	2014	2015		2015	2020
Proposed Action	6,356	1,154	4,793	157	173

Source: URS Corp. 2012; Ricondo and Associates, 2013.

The cumulative impact of the action alternatives on global climate when added to other past, present, and reasonably foreseeable future action is not currently scientifically predictable. Aviation has been calculated to contribute approximately three percent of the global CO_2 emissions; this contribution may grow to five percent by 2050.[13] Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO_2 standard.

The U.S. has goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present, there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO_2 emissions. Moreover,

[8] In 2010, the FAA Air Traffic Activity Data System reported 28,365,430 total towered aircraft operations in the United States. LAX accounted for 540,211 aircraft operations, or 1.9 percent of the total aircraft operations at towered airports in the United States.
[9] *Massachusetts v. E.P.A.*, 549 U.S. 497, 508-10, 521-23 (2007).
[10] CEQ, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, 2010.
[11] CO_2e comprises emissions of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) normalized to the global warming potency of CO_2 using global warming potentials of 1, 21, and 310 for CO_2, CH_4 and N_2O respectively.
[12] 2011 US total of 6,702.3 Tg (million MT) CO2e, USEPA website, *http://www.epa.gov/climatechange/emissions/index.html*, accessed June 2013.
[13] Intergovernmental Panel on Climate Change. *Aviation and the Global Atmosphere*. IPCC Special Reports on Climate Change. (2001)

there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies, has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions.[14]

4.5.7 Mitigation Measures

Estimated operational emissions of criteria pollutants due to the implementation of the action alternatives would not exceed applicable General Conformity *de minimis* thresholds and, accordingly, they would conform to the area SIP. As a result, operational mitigation measures are not required.

Construction activities associated with the action alternatives would not exceed the General Conformity thresholds for criteria pollutants. As a result, additional construction mitigation measures are not required beyond the numerous construction reduction measures as specified under the LAX Master Plan for air quality which include, but are not limited, fugitive dust suppression, stationary point source controls, diesel emissions reduction plan, vehicle idling and siting limitations, use of alternative fuels, vehicle trip reduction measures, and administrative controls.[15]

4.6 Water Resources

4.6.1 Overview of Impacts

Under the No-Action Alternative none of the proposed improvements would occur within the DSA, and no significant impacts to water resources would occur. The action alternatives would result in minor changes to stormwater discharges because they would increase permanent impervious surfaces and would modify the existing storm drain system.[16] The action alternatives would utilize standard best management practices (BMPs) and LAX Master Plan mitigation commitments to minimize significant impacts to stormwater treatment.[17]

4.6.2 Methodology

Federal, state, and local statutes regulating water resources were reviewed for the analysis of potential water quality impacts. The applicable statutes establish water quality standards, control discharges and pollution sources, protect drinking water systems, prevent or minimize the loss of wetlands, and protect aquifers and other sensitive ecological areas. The project site is located within the jurisdictions of the County of Los Angeles Flood Control District and the Regional Water Quality Control Board (RWQCB) Region 4, Los Angeles.

Reports and documents previously prepared by LAWA were used to assess whether the proposed alternatives would impact water quality and water resources. Existing impervious areas and locations where disturbance is proposed under any action alternative were reviewed to evaluate potential direct and indirect impacts on groundwater and surface water resources. Direct effects include increased turbidity and erosion during construction and increased runoff during operations. Indirect effects can occur when changes in the planned development of an area result in increased water needs or reduced water quality.

[14] Nathan Brown, et. al. *The Strategy for Taking Aviation Climate Impacts*, (2010). 27th International Congress of the Aeronautical Sciences.
[15] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.
[16] URS, *Runway 7L-25R Safety Area (RSA) Project Los Angeles International Airport Engineer's Design Report*, April 2011.
[17] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

Potential impacts on water resources were assessed based on the location, preliminary design plans, and intended function of the proposed alternatives. Potential impacts to potable water consumption and domestic wastewater treatment production were assessed based on potential direct impacts or changes in operational activities.

Details for the application of BMPs at LAX properties are contained in LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and in the City of Los Angeles Green Building Code. On an annual basis, LAWA manages the LAX Master Plan Mitigation Monitoring and Reporting Program (MMRP), including the mitigation commitments, which implements LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code,[18] and which monitors the progress of BMPs during a project's lifespan.

The City of Los Angeles requires any disturbed area greater than one acre to conform to the Standard Urban Stormwater Mitigation Plan (SUSMP) per Ordinance No. 178132 (adopted December 14, 2006). This ordinance requires stormwater from the initial storm flow or first flush to be treated by one or more of the approved BMPs. The BMPs manage, control, remove, reduce, and/or treat urban runoff and stormwater pollution before it reaches receiving waters. Conformance with the SUSMP is monitored by the County and City of Los Angeles.

The City of Los Angeles requirements, along with previous Airport reports and documents, provide the tools and guidance on addressing potential effects on water resources.

Each of the action alternatives would include paving of approximately the same amount of existing pervious surfaces. The amount of grading and fill would differ substantially between the alternatives; however, graded and filled areas would not be impervious. Reconstruction of the pavement on the eastern portions of Runway 25R and Taxiway B would be the same under all alternatives. Consequently, the effects on water resources would be similar under all action alternatives and in the following impact evaluation, all action alternatives are evaluated together.

4.6.2.1 Significant Impact Thresholds

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, an action would be considered to have a significant impact when:

- The potential to exceed water quality standards;
- Water quality problems that cannot be avoided or satisfactorily mitigated; or,
- There would be difficulty in obtaining a permit or authorization.

For projects that have the potential to alter the quality and quantity of stormwater runoff, operational stormwater controls would be required if:

- Post-development pollutant loads exceed pre-project levels;
- The peak runoff flow increases; or,
- The total volume increases.

4.6.3 Operational Impacts (Years 2015 and 2020)

4.6.3.1 No-Action Alternative

Under the No-Action Alternative, none of the proposed improvements would occur within the DSA. Conditions related to water quality and water resources would only change with respect to forecasted growth in aircraft operations and passenger volumes. Therefore, no significant effects related to water quality or water resources would occur under the No-Action Alternative.

[18] City of Los Angeles Department of Public Works, Building and Safety Codes website, *http://dpw.lacounty.gov/bsd/?p=csg*, accessed June 2013.

4.6.3.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Surface Water Quality

The Proposed Action or feasible action alternatives would increase the amount of impervious surfaces at the western end of Runway 7L/25R, but would not substantially modify existing drainage patterns. Drainage would continue to flow to the Imperial sub-basin, as under existing conditions. On the eastern end of Runway 7L/25R, the amount of impervious surfaces during operations would be similar to existing conditions. No new sources of pollutants would be introduced, as all of the proposed facilities and activities under the Proposed Action or feasible action alternatives already exist at the Airport.

Pollutant discharge into the stormwater drainage system is highly regulated at LAX, and all applicable LAX Master Plan mitigation commitments and existing regulations, including BMPs, would be applied to pollutant runoff at this site (including, but not limited to vegetated swales and strips, oil/water separators, clarifiers, media filtration, catch basin inserts and screens, continuous flow deflective systems, bio-retention and infiltration, and detention basins). Therefore, no significant effects related to surface water quality are anticipated.

Stormwater Treatment and Discharge

The Proposed Action or feasible action alternatives would modify portions of the existing storm drain system where pavement would be installed or repaired (the east and west ends of Runway 7L/25R, and at the east end of Taxiway B) and where new grading would occur (western end of Runway 7L). However, all these changes would not substantially modify the overall Airport drainage patterns.

In addition, some areas that are currently pervious surfaces (part of the west end of Runway 7L) would become impervious, increasing runoff. However, these permanent changes to impervious surfaces would not contribute substantial additional flow to the storm drain system; but rather, they would redirect some of the existing flows. For a 25-year frequency storm, approximately 2.6 cubic feet per second (cfs) would be diverted from the Pershing Basin to the Imperial Basin. The existing peak flow into the entire Pershing basin is 28.3 cfs; for the Imperial basin, the peak flow is 54.8 cfs. The amount of flow diversion from one basin to the other is a fraction of the peak flow capacity for either basin, and the diversion would not contribute additional flows to the total system.[19]

Portions of the existing RSA that would be affected by the Proposed Action or action alternatives contain native ground cover species. Existing LAWA regulations restrict the use of chemicals for fertilizers. These restrictions would remain in effect to prevent potential direct impacts from pollutant discharge to stormwater from the Proposed Action or feasible action alternatives.

Regarding erosion control, the DSA is largely flat, although there is some slight sloping. However, erosion is not considered to be a factor within the DSA. No significant impacts related to erosion control are anticipated.

Infiltration devices and underground storage tanks are two proposed BMPs to capture, filter, and treat stormwater runoff. The stormwater would continue its discharge flow to the Imperial Storm Drain to the west and the Dominguez Channel to the east. Due to the performance of the permanent treatment BMPs in the removal of pollutants, the Proposed Action or feasible action alternatives would improve the quality of the discharge flow from this area.

Operational Impacts (Years 2015 and 2020)-Related Water Quality Impacts

The Proposed Action or feasible action alternatives would add a minimal amount of new impermeable airfield pavement; however, as discussed above, drainage patterns would not be substantially altered.

[19] URS, *Runway 7L-25R Safety Area (RSA) Project Los Angeles International Airport Engineer's Design Report-Appendix 3 Drainage Report*, April 2011.

Furthermore, the Proposed Action or feasible action alternatives would not introduce uses that do not already exist on the Airport property or increase uses that would increase the potential for pollutant release. Therefore, minimal impacts related to water quality are anticipated.

Groundwater

The Proposed Action or feasible action alternatives would not require the use of groundwater resources. The improvements associated with the Proposed Action or feasible action alternatives would not directly affect existing groundwater resources, and the amount of impervious surfaces added would not substantially interfere with groundwater recharge. Therefore, no adverse effects related to groundwater resources would occur if the Proposed Action or one of the feasible action alternatives is implemented.

Potable Water

The use of potable water under the Proposed Action or feasible action alternatives would be the same as the No-Action Alternative, because the Proposed Action or feasible action alternatives would not increase operations at the Airport or the number of passengers at LAX. Furthermore, the Proposed Action or feasible action alternatives would not require the relocation or disturbance of public drinking water supply pipelines or local distribution systems.

Wastewater

The generation of wastewater under the Proposed Action or feasible action alternatives would be the same as the No-Action Alternative, because the Proposed Action or feasible action alternatives would not increase Airport activity or the number of passengers at LAX. The Proposed Action or feasible action alternatives would not require the relocation or disturbance of wastewater systems throughout the Airport. Therefore, the project wastewater generation after the Proposed Action or one of the feasible action alternatives is implemented would be the same as the No-Action Alternative, and no significant impacts are anticipated.

4.6.4 Construction Impacts

4.6.4.1 No-Action Alternative

Under the No-Action alternative, no construction activities would occur at the DSA. Therefore, no significant construction impacts on water quality or water resources are anticipated from the No-Action Alternative.

4.6.4.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative

Surface Water Quality

Construction activities would include site preparation, excavation, grading, and installation of drainage structures. Construction activities have the potential to transport sediment, dust, and particles, and construction vehicles and equipment have the potential to leak fuels and oils, which would impact water quality and resources. BMPs would be implemented to minimize the effects of sediment transport and leakage of fluids from vehicles and equipment. BMPs to control sediment transport include the use of gravel bag filters and filter basins. Pollution prevention and waste management plans would be prepared to address the storage, handling, and disposal of fuel, oils, and other wastes from construction.

The project sites adjacent to Runway 7L/25R are subject to significant jet blast and aircraft exhaust during operations. Jet blast and aircraft exhaust could compromise the effectiveness of many temporary BMP measures, including a silt fence, fiber roll, mulching, temporary seeding, and gravel bags. All temporary construction BMPs would require approval from LAWA Operations to address the need for proper anchorage to prevent compromise, damage, and displacement caused by jet blast and aircraft exhaust.

Guidelines for the application of specific BMPs are referenced in LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code.

The implementation of BMPs and pollution prevention plans would protect the surface water quality of receiving waters during construction. Therefore, the Proposed Action, RSA Alternative Refinement #2, and the Shift Runway Alternative would have less than significant construction impacts related to surface water quality.

Stormwater Treatment and Discharge

Construction activities would require coverage under the State Water Resources Control Board's (SWRCB) National Pollution Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, 2009-0009-DWQ as amended by 2010-0014-DWQ (General Permit). To obtain coverage under the permit, LAWA would submit Permit Registration Documents that include a Notice of Intent (NOI) to comply with the General Permit; a risk assessment to address project sediment risk and receiving water risk; post-construction calculations; a site map; and a project-specific SWPPP for construction activities, submitted with the appropriate fees.

Construction of the Proposed Action, RSA Alternative Refinement #2, or the Shift Runway Alternative may also require a permit from the City of Los Angeles. City criteria require any disturbed area greater than one acre to conform to the SUSMP. This ordinance requires stormwater from initial storm flow or first flush to be treated by one or more of the approved BMPs.

Construction-Related Water Quality Impacts

Construction activities associated with the action alternatives have the potential to affect surface water and groundwater quality and would be required to comply with federal, state, and local regulations. Construction activities that disturb one or more acres are required to apply for coverage under the NPDES General Permit. The action alternatives would comply with water quality standards set forth by the State of California in Los Angeles (Region 4) Water Quality Control Plan and adhere to guidelines set forth by LAWA's SWPPP. These guidance documents were prepared in accordance with the General Surface Water Treatment Rule Industrial Permit (SWTR) and the SWRCB General Permit for stormwater discharges associated with industrial activities (Order Number 97-03-DWQ). Construction activities would also need to comply with earthwork, mulching, drainage, and other FAA airport design standards, to minimize erosion and sedimentation. Upon implementation of these permits and regulations, minimal significant impacts related to construction-related water quality would occur.

Groundwater

The depth to groundwater near the project site is approximately 90 to 100 feet deep.[20] Based on mapping by the State of California, the historic high groundwater level at the site is approximately 40 feet below ground surface (bgs).[21] Excavation depths for the elements of the action alternatives would be 6 feet bgs or less for pavement construction. Installation of storm drain structures and filter devices would not exceed a depth of 10 feet. As maximum excavation associated with the action alternatives would be substantially above the historic high groundwater elevation of 40 feet bgs, no construction impacts related to groundwater would occur under any action alternative.

Potable Water

None of the action alternatives would require relocation or disturbance of public drinking water supply pipelines or local distribution systems during construction. Additionally, construction activities are not anticipated to require significant amounts of potable water, and the number of construction workers on the

[20] LeRoy Crandall and Associates, *Report of Geotechnical Investigation, North Outfall Sewer Replacement Sewer, Books A and B, Project No. ADE-87206*, April 1989.
[21] California Geological Survey, *Seismic Hazard Zone Report for the Venice 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 036*, March 1999 (revised 2001).

project site requiring potable water would be minor compared to the existing needs of the Airport passengers and employees. Therefore, no significant construction impacts on potable water supplies are anticipated.

Wastewater

None of the action alternatives would require relocation or disturbance of the sanitary sewer system. Additionally, construction activities and workers are not anticipated to generate substantial volumes of wastewater that would be discharged into the sanitary sewer system compared to the existing generation of the Airport passengers and employees. Therefore, no significant construction impacts related to wastewater are anticipated.

4.6.5 Mitigation Measures

No significant impacts related to water resources are anticipated. No mitigation measures are required.

4.7 Light Emissions and Visual Impacts

4.7.1 Overview of Impacts

The No-Action Alternative would not result in light emission or visual impacts. All of the action alternatives would involve minor modifications to existing airfield lighting. Construction impacts are considered short-term and would include implementation of phased construction and LAX Master Plan mitigation commitments to minimize visual impacts to the aesthetic environment.

Operation of the action alternatives would not have significant impacts on the aesthetic environment. Under all action alternatives, the runway improvements would be at-grade within existing Airport property Additionally, the potential effect on the visual landscape would be minimized with the implementation of LAX Master Plan mitigation commitments.

4.7.2 Methodology

Light emission impacts associated with the No-Action Alternative and all of the action alternatives were determined by evaluating construction-related impacts, the extent to which airfield lighting would change, and the potential for the change to create an annoyance among sensitive land uses in the vicinity of the Airport that could interfere with normal activities or contrast with existing environments. Evaluation of visual impacts considered the potential changes in landscape and views in the vicinity of the Airport and whether contrasts with existing environments would occur.

4.7.2.1 Significant Impact Thresholds

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, *Change 1*, thresholds to determine the significance of light emissions and visual effects impacts are:

- Light Emissions: When an action's light emissions create annoyance to interfere with normal activities.
- Visual effects: When consultation with Federal, State, or local agencies, tribes, or the public shows these effects contrast with existing environments and the agencies state the effect is objectionable.

4.7.3 Operational Impacts (Years 2015 and 2020)

4.7.3.1 No-Action Alternative

Under the No-Action Alternative, the proposed RSA improvements on Runway 7L/25R and the other associated improvements would not occur. Consequently, the lighting conditions and visual effects in the DSA under the No-Action Alternative would be similar to existing conditions. The existing lighting has been designed and/or measures have been implemented to reduce the amount of light spillage into

residential communities. Therefore, no significant effects related to light emissions or visual impacts are anticipated.

4.7.3.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, and Shift Runway Alternative

Lighting Emissions

The Proposed Action or feasible action alternatives would include replacement of the existing Approach Lighting System (ALS) in towers at the western end of Runway 7L/25R with in-pavement lighting (Refer to **Figure 1-9**). Having the ALS on the ground would reduce its visibility from the most light-sensitive residences to the south. However, these lights would be bright enough for aircraft to use and, given the non-linear topography of El Segundo, some residences that overlook the Airport would still be able to see the new lights on the western end of Runway 7L/25R. Although the new lights would be visible from some residences, the in-pavement ALS would not increase lighting at the Airport, but would replace existing lighting. Also, the in-pavement lighting would be oriented towards the runway so as to direct pilots. Lighting conditions during operations on the eastern portion of Runway 7L/25R would be similar to existing conditions. As such, the in-pavement ALS would not result in substantial disturbance to residences in the vicinity of the Airport nor interfere with operational activities during the day or at night. Therefore, no significant lighting effects from implementation of the Proposed Action or feasible action alternatives are anticipated.

Visual Effects

Runway and taxiway improvements associated with the Proposed Action or feasible action alternatives would not result in alterations to landforms since they would remain at-grade. Aside from the area that would be graded and unpaved on the western end of Runway 7L/25R and the removal of lighting in towers, most of these improvements would have a similar appearance to existing conditions. The graded and unpaved area at the western end of Runway 7L/25R would look different from existing conditions, but would be consistent with the overall visual character of the Airport. The new in-pavement lighting would differ from existing conditions (towers) but would be consistent with the overall visual character of the Airport. Therefore, no significant visual effects from implementation of the Proposed Action or feasible action alternatives are anticipated.

4.7.4 Construction Impacts

4.7.4.1 No-Action Alternative

Under the No-Action Alternative, the proposed improvements on Runway 7L/25R RSA and associated improvements would not occur. Consequently, there would be no construction effects in the DSA under the No-Action Alternative. Therefore, no significant effects related to construction lighting and visual effects are anticipated.

4.7.4.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Lighting Emissions

Under the Proposed Action or feasible action alternatives, nighttime lighting would be required for nighttime construction activities on the South Airfield. Construction nighttime lighting would be restricted to the areas of the proposed runway improvements. Implementation of LAX Master Plan mitigation commitments would minimize impacts during construction. Therefore, no significant construction lighting emissions impacts are anticipated.

Visual Effects

During construction, large trucks and other large-scale construction equipment would be present on the DSA and on the proposed staging areas. The visual impacts resulting from the construction of the proposed runway improvements are considered short-term and would include LAX Master Plan mitigation commitments (in particular MM-DA-1, Construction Fencing) that would minimize impacts to the aesthetic environment. Therefore, no significant construction visual effects are anticipated.

4.7.5 Mitigation Measures

No significant impacts are anticipated with implementation of LAX Master Plan mitigation commitments. No additional mitigation measures are required.

4.8 Natural Resources and Energy Supply

4.8.1 Overview of Impacts

The No-Action Alternative would not result in natural resources or energy supply impacts. The action alternatives would not significantly impact natural resources that are unusual in nature or are in short supply or increase energy demands beyond available supply. The action alternatives would not increase aircraft operations or alter the use of the Airport when compared to the No-Action Alternative. Additionally, any of the action alternatives would be compliant with LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6* and the City of Los Angeles Green Building Code. These guidelines apply to all Airport projects to promote sustainability in design, planning, and construction and energy conservation. These guidelines would continue to apply under the No-Action and any action alternative. Therefore, no significant effects related to natural resources or energy supplies are anticipated.

4.8.2 Methodology

Energy, fuel, and natural gas demands associated with the No-Action and action alternatives were determined by evaluating the extent to which an action's construction, operation, or maintenance would change demands for electricity, fuel, and water, and assessing whether the change would cause demand to exceed available or future natural resource or energy supplies.

4.8.2.1 Significant Impact Thresholds

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, significant impacts would occur when an action's construction, operation, or maintenance would cause demands that would exceed available or future (project year) natural resources or energy supplies.

4.8.3 Operational Impacts (Years 2015 and 2020)

4.8.3.1 No-Action Alternative

Natural Resources

Under the No-Action Alternative, the proposed Runway 7L/25R RSA and associated improvements would not occur. Existing projected aviation activity at the Airport would not change. Natural resource use at the Airport under the No-Action Alternative would be the same as what is currently forecasted and planned. Previously-approved projects at the Airport would occur; however, these have already been accounted for in forecasted and planned natural resource supplies, and are not anticipated to require unusual natural resources that are in short supply. Consequently, the No-Action Alternative would not cause demands that would exceed available or future natural resource supplies in the GSA. Therefore, no significant effects related to natural resources associated with operation of the No-Action Alternative are anticipated.

Energy Supply

Energy usage at the Airport under the No-Action Alternative would be the same as what is currently forecasted and planned. Previously approved projects at the Airport would occur; however, these have already been accounted for in forecasted and planned energy supplies and are not anticipated to exceed existing or future energy supplies. Consequently, the No-Action Alternative would not cause demands that would exceed available or future energy supplies in the GSA. Therefore, no significant effects related to energy supply associated with operation of the No-Action Alternative are anticipated.

4.8.3.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Natural Resources

Under the Proposed Action or feasible action alternatives, natural resources would be used for the ongoing operation and maintenance of improvements of Runway 7L/25R, including use of water and paving materials. However, these activities would not use unusual resources that are in short supply or unusual in nature. Additionally, the Proposed Action or feasible action alternatives would not change existing forecasted aviation activity at the Airport that could result in demands that would exceed available or future natural resources. Therefore, no significant effects related to natural resources associated with operation of the runway and taxiway improvements are anticipated.

Energy Supply

Under the Proposed Action or feasible action alternatives, energy would be required for the ongoing operation and maintenance of the new in-pavement lighting, as well as other signaling and lighting associated with the new improvements. In-pavement lighting would have similar energy needs as the existing ALS in towers that would be replaced and would not result in energy demands that would exceed available or future energy supplies. The Proposed Action or feasible action alternatives would not change existing forecasted aviation activity at the Airport that could result in demands that would exceed available or future energy supplies. Therefore, no significant effects related to energy supplies associated with operation of the runway and taxiway improvements are anticipated.

4.8.4 Construction Impacts

4.8.4.1 No-Action Alternative

Natural Resources

Under the No-Action Alternative, the proposed Runway 7L/25R RSA and associated improvements would not occur. Therefore, no significant effects related to natural resources associated with construction of the No-Action Alternative are anticipated.

Energy Supply

Under the No-Action Alternative, the proposed Runway 7L/25R RSA and associated improvements would not occur. Therefore, no significant effects related to energy supply associated with construction of the No-Action Alternative are anticipated.

4.8.4.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Natural Resources

Construction of the runway and taxiway improvements associated with the Proposed Action would use common materials and minerals that are not unusual or in short supply, such as asphalt, concrete, and soil. These materials are widely available in the Los Angeles area and would not impact natural resource supplies. Operation of construction equipment and vehicles would use diesel and other fuels that are not unusual or in short supply. As discussed above, construction of the Proposed Action would comply with

LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6*, the City of Los Angeles Green Building Code, and all applicable sustainable construction requirements to reduce natural resource consumption during construction. Therefore, no significant effects related to natural resources associated with the runway and taxiway improvements are anticipated.

Energy Supply

Construction of the runway and taxiway improvements associated with the Proposed Action would use energy for construction lighting, vehicles, and machinery. Construction activities using energy would be temporary, and would comply with LAWA's *Sustainable Airport Planning, Design and Construction Guidelines Version 6*, the City of Los Angeles Green Building Code, and all applicable sustainable construction requirements to reduce energy consumption during construction. Therefore, no significant effects related to energy supply associated with the runway and taxiway improvements are anticipated.

4.8.5 Mitigation Measures

No significant impacts are anticipated. Therefore, no mitigation measures are required.

4.9 Hazardous Materials, Pollution Prevention, and Solid Waste

4.9.1 Overview of Impacts

Under the No-Action Alternative, construction would be limited to other already approved and/or funded programs in other areas of the Airport property. Operational activities would not be altered, and ground disturbance or building alteration/demolition activities associated with construction would not occur under the No-Action Alternative; therefore, no impacts to hazardous materials and solid waste would occur.

Construction of any of the action alternatives would involve shallow excavation and grading depths of up to 6 feet for the reconstruction of runway concrete. Contaminated soil may be encountered during construction activities; however construction plans and specifications would include provisions for the handling, storage, treatment and/or testing and disposal of any contaminated materials. During construction, fuel, oil, and other petroleum-based products would also be used and stored; however, construction plans would include provisions for appropriate handling of these materials. The use of fuel, oil, and other petroleum-based products necessary for the routine operation of LAX would continue, and is not anticipated to increase as a result of implementation of any of the action alternatives because aircraft operations would not increase. Implementation of BMPs would further ensure that no significant impacts would occur.

4.9.2 Methodology

For the purpose of this analysis, locations of facilities that involve hazardous materials and sites of known or potential environmental contamination, located within or adjacent to the GSA, were identified (Refer to **Figure 3.15-1**). This information was then compared to the DSA associated with the No-Action, the Proposed Action, RSA Alternative Refinement #2, and the Shift Runway Alternative. The types of hazardous materials, environmental contamination and/or other regulated substances potentially associated with implementation of any of the action alternatives were also evaluated. This assessment was developed from what is known about existing land uses and facilities at the Airport, as well as the design and other construction requirements under any action alternative. The potential for impacts was further evaluated for the cases where the disturbance areas were located on, or adjacent to, areas where these substances and materials may be encountered.

The findings of these evaluations were compared to appropriate regulatory guidelines, significance thresholds and other appropriate criteria. These include the list of pertinent federal, state and local regulations summarized in **Table 3.15-1**. Relevant safeguards, or precautions, undertaken to help avoid

or minimize the potential environmental impacts associated with hazardous materials and/or environmental contamination during both the construction and operational phases of the action alternative were also evaluated.

The No-Action and action alternatives were evaluated for the potential to result in impacts associated with the generation and/or disposal of municipal solid waste (MSW). Specifically, the evaluation included MSW impacts from:

- Demolition and construction activities;
- Future enplanements at LAX
- Compliance with the guidelines contained in the FAA's A/C 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*.

The potential for temporary generation of solid wastes due to demolition and construction activities was analyzed based on the type of construction activities under any action alternative. According to FAA A/C 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, waste disposal sites having the potential to attract birds are considered incompatible if located within 10,000 feet of any runway used or planned to be used by turbine-powered aircraft, or are located within a 5-mile radius of a runway that attracts or sustains hazardous bird movements into or across the runways and/or approach and departure patterns of aircraft.

4.9.2.1 Significant Impact Thresholds

According to FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, a significant impact would occur when a proposed action would involve properties listed (or potentially listed) on the National Priorities List (NPL). Uncontaminated properties within a NPL site's boundary do not always trigger this significance threshold. However, unresolved status can trigger this significance threshold.

4.9.3 Operational Impacts (Years 2015 and 2020)

4.9.3.1 No-Action Alternative

Under the No-Action Alternative, operations would remain as already planned and would not include the elements proposed under any of the action alternatives. LAX would continue to comply with existing hazardous materials regulations in place. Solid waste generation would not change in the DSA under the No-Action Alternative. No significant impacts related to hazardous materials or solid waste is anticipated.

4.9.3.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Under the Proposed Action or feasible action alternatives, aircraft operations would not change and would be similar to the aircraft operations under the No-Action Alternative. In addition, LAX is not an existing or proposed NPL site. Therefore, no significant operational impacts related to hazardous materials or solid waste is anticipated.

4.9.4 Construction Impacts

4.9.4.1 No-Action Alternative

Under the No-Action Alternative, no construction activities in the DSA would occur. Therefore, no significant construction impacts related to hazardous materials or solid waste are anticipated.

4.9.4.2 Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2 and Shift Runway Alternative

Construction activities associated with the Proposed Action or feasible action alternatives would involve the use of typical construction-related hazardous materials and excavation of existing surface material (i.e., earth, concrete and asphalt). The use of hazardous materials during construction would be in quantities that are typical of the construction industry. The removal of existing surface materials (asphalt and concrete) to prepare the new surfaces (reconstructed concrete) would be relatively shallow excavations. For the components of the RSA improvements that include pavement reconstruction (west end of Runway 7L/25R) and for the pavement reconstruction of the eastern portions of Taxiway B and Runway 25R, and a portion of the aircraft parking apron west of Air Freight Building No. 8, excavation would reach a maximum of 3 feet in depth. Given the historical uses of LAX, there is potential for encountering mild soil contamination. However, the Airport has a defined methodology and protocol in place for handling hazardous materials encountered during construction.[22] Additionally, the Airport also has a methodology and protocol in place for the disposal and recycling of contaminated concrete and soils.[23]

Potential effects on solid waste generation during construction would be offset by the Airport's on-site recycling program in accordance with AB 939, which requires that the City of Los Angeles solid waste disposal be diverted from landfills by 50 percent by 2000.[24] The City of Los Angeles has achieved this diversion rate and has set a solid waste diversion rate of 70 percent by 2020. Any other debris that would potentially include contaminated soils would be disposed at an off-site facility approved for contaminated materials.

Lastly, LAX is not an existing or proposed NPL site. No significant construction impacts related to hazardous materials or solid waste are anticipated.

4.9.5 Mitigation Measures

No significant impacts are anticipated. Therefore, no mitigation measures are required.

4.10 Cumulative Impacts

A cumulative impact is the environmental effect resulting from the incremental effects of a proposed action when added to the effects of past, other present, and reasonably foreseeable future actions, regardless of the entity (i.e., federal or non-federal) or person that would carry out those actions. In some cases, individually minor but collectively significant actions occurring over a defined period of time can cause cumulative impacts. The actions considered in the assessment of potential cumulative impacts for this EA are identified in Section 3.16 (Refer to **Tables 3.16-1** and **3.16-2**, and **Figure 3.16-1**).

4.10.1 Methodology

For this EA, 31 actions meet the criteria described in Section 3.16. The GSA was used to define the spatial boundary. As shown in **Tables 3.16-1** and **3.16-2**, the time frame ranges from 2012 through 2019. The cumulative projects within the vicinity of the GSA are in various stages of planning and/or construction. Projects in the planning phase cannot provide enough data to ensure complete analysis and, as such, a qualitative evaluation of the potential environmental impacts associated with these projects has been conducted. The analysis incorporates information and lessons learned from other studies and projects nationwide. Based on these other studies, the severity of potential impacts resulting from the cumulative projects was given a subjective ranking between 1 and 4. These rankings are as follows:

[22] Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR,* 2005.
[23] *Ibid.*
[24] *Ibid.*

Ranking Description

1. Environmental impacts *would not occur* to this resource category as a result of either the Proposed Action - RSA Alternative Refinement #3/RSA Alternative Refinement #2/Shift Runway Alternative or the cumulative project.
2. Potential *minor* environmental impacts could occur to this resource category as a result of either the Proposed Action - RSA Alternative Refinement #3/RSA Alternative Refinement #2/Shift Runway Alternative or the cumulative project. These projects would not result in a cumulative impact when added together.
3. Potential *minor* environmental impacts could occur as a result of both the Proposed Action - RSA Alternative Refinement #3/RSA Alternative Refinement #2/Shift Runway Alternative and the cumulative project; the cumulative impact could be significant when these projects are added together.
4. Potential *significant* impacts could occur as a result of the Proposed Action - RSA Alternative Refinement #3/RSA Alternative Refinement #2/Shift Runway Alternative and the cumulative projects, and the cumulative impact would be potentially significant.

Table 4.10-1 provides a summary of the impact analysis for the cumulative projects. When interpreting the ranking information in this table, consideration should be given to the fact that projects listed are primarily in the early development phase. As such, planners developing these projects have the opportunity and would incorporate design features to minimize and mitigate many of the potential impacts that have been identified.

4.10.2 Operational and Construction Impacts

As indicated in **Table 4.10-1**, present and reasonably foreseeable development projects within and in the vicinity of the GSA have the potential to independently impact a number of the resource categories evaluated in this EA, such as air quality, lighting and visual character, and noise. The limited impacts of the Proposed Action - RSA Alternative Refinement #3, RSA Alternative Refinement #2, or the Shift Runway Alternative would be mitigated to the fullest extent practicable through the implementation of on-site avoidance and minimization measures discussed in this EA. Therefore, when considered in addition to other development projects identified in Section 3.16, none of the action alternatives is anticipated to have significant cumulative impacts.

LAWA is in the midst of a large modernization program which includes the completion of the Bradley West project and the completion of the Central Utility Plant-Replacement Project, currently under construction. LAWA is also in the process of securing contractors to begin the construction of Taxiway T, and is initiating environmental review for the implementation of RSA improvements to the north airfield runways (Runways 6L/24R and 6R/24L), the construction of the West Aircraft Maintenance Area, the Midfield Satellite Concourse North Project, and the update to the Northside Plan. While the Specific Plan Amendment Study (SPAS) EIR has been approved and certified by the Los Angeles Board of Airport Commissioners and the City Council, it is currently under litigation and LAWA does not have a timetable for implementing projects approved as part of that EIR.

Table 4.10-1
Potential Cumulative Impacts – Construction and Operational Impacts (Years 2015 and 2020)

Time Frame	Figure 3.16-1 ID#	Project Name	Air Quality	Coastal Resources	Compatible Land Use	DOT Section 4(f)	Fish, Wildlife, and Plants	Floodplains	Hazardous Materials, Pollution Prevention, and Solid Waste	Historic, Architectural, Archaeological, and Cultural	Light Emission and Visual	Natural Resources/Energy	Noise	Socioeconomics, Environmental Justice, and Children's Health	Water Resources	Wetlands
PRESENT (2011)	1	Transitional Housing	1	1	1	1	1	1	2	2	1	1	1	1	2	1
	2	Car Wash	2	1	1	1	1	1	2	2	1	1	2	1	2	1
	4	Retail Center	2	1	1	1	1	1	2	2	2	1	2	1	1	1
FUTURE (2012-2019)	3	Radisson Hotel	2	1	1	1	1	1	2	2	2	1	2	1	1	1
	5	Mixed Use	1	1	1	1	1	1	2	2	1	1	1	2	2	1
	6	Office	2	1	1	1	1	1	2	2	2	1	2	1	1	1
	7	Aviation Station Project (TOD)	1	1	1	1	1	1	2	2	1	1	1	2	2	1
	8	El Segundo Corporate Campus	2	1	1	1	1	1	2	2	2	1	2	1	1	1
	9	Northrup-Grumman	2	1	1	1	1	1	2	2	2	1	2	1	1	1
FUTURE (2012-2019)	10	Condominiums	1	1	1	1	1	1	2	2	1	1	1	2	2	1
	11	Condominiums	1	1	1	1	1	1	2	2	1	1	1	2	2	1
	12	Data Center	2	1	1	1	1	1	2	2	2	1	2	1	1	1
	13	Data Center	2	1	1	1	1	1	2	2	2	1	2	1	1	1
	14	Condominiums	1	1	1	1	1	1	2	2	1	1	1	2	2	1
	15	American Eagle Commuter Facility Improvements	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	16	North Terminals Improvements	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	17	AOA Perimeter Fence Replacement – Phase 4	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	18	Coastal Dunes Improvements	2	2	1	2	2	1	1	1	1	1	1	1	1	1
	19	CTA "New Front Door" Improvement / Enhancements	2	1	1	2	1	1	1	2	1	1	1	1	1	1
	20	Passenger Boarding Bridge Replacement/ Improvements	2	1	1	2	1	1	1	2	1	1	1	1	1	1
	21	Central Utility Plant Replacement Project (CUP - RP)	2	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 4.10-1
Potential Cumulative Impacts – Construction and Operational Impacts (Years 2015 and 2020)

Time Frame	Figure 3.16-1 ID#	Project Name	Air Quality	Coastal Resources	Compatible Land Use	DOT Section 4(f)	Fish, Wildlife, and Plants	Floodplains	Hazardous Materials, Pollution Prevention, and Solid Waste	Historic, Architectural, Archaeological, and Cultural	Light Emission and Visual	Natural Resources/Energy	Noise	Socioeconomics, Environmental Justice, and Children's Health	Water Resources	Wetlands
FUTURE (2012-2019)	22	CTA Replacement of Elevators and Escalators	2	1	1	2	1	1	1	2	1	1	1	1	1	1
	23	Second Level Roadway Expansion Joint & Deck Repairs	2	1	1	2	1	1	1	2	1	1	1	1	1	1
	24	West Aircraft Maintenance Area Project	2	1	1	1	2	1	1	1	1	1	1	1	1	1
	25	LAX Bradley West Project	2	1	1	2	1	1	1	2	2	2	1	1	2	1
	26	TWA Demo and Taxiway T	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	27	Midfield Satellite Concourse Phase 1 – North Concourse	2	1	1	1	1	1	1	1	2	2	1	1	2	1
	28	Public Safety Building	2	1	1	1	1	1	1	1	1	2	1	1	1	1
	29	Runway Status Lights System	2	1	1	1	1	1	1	1	2	2	1	1	1	1
	30	South Terminals Improvements	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	31	North Airfield RSA Improvements	2	1	1	1	1	1	2	1	1	1	2	1	1	1

Key to Table:

1 = No impacts would occur to this resource category as a result of any of the action alternatives or the cumulative project.

2 = Potential minor environmental impacts could occur to this resource category as a result of any of the action alternatives or the cumulative project; these projects would not result in a cumulative impact when added together.

3 = Potential minor environmental impacts could occur as a result of any of the action alternatives and the cumulative project; the cumulative impact could be significant when these projects are added together.

4 = Potential significant impacts could occur as a result of any of the action alternatives and the cumulative projects, and the cumulative impact would be potentially significant.

Source: URS 2012.

5.0 COORDINATION AND PUBLIC INVOLVEMENT

5.1 Introduction

Under 40 CFR §1501.4, federal agencies are required to involve environmental agencies, applicants, and the public, to the extent practicable, in preparing EAs. Therefore, when conducting the NEPA process, the FAA and the airport sponsor are encouraged to begin early coordination with the proper federal, state, tribal, and local agencies, including surrounding municipalities, to determine any possible environmental concerns as the Draft EA was prepared. Following release of the Draft EA document, a public hearing was held to receive input on the findings presented in the Draft EA. The primary components of the agency coordination and public involvement program for the EA included:

- Notification of the publication of the Draft EA for agency and public review in local newspapers;
- A Public Workshop and Hearing held on November 1, 2012; and
- Preparation of a Final EA that includes responses to comments received on the Draft EA.

Keeping agencies and the public informed and gathering their input is an essential component of any environmental study. The following sections summarize the agency coordination and public involvement program for this EA.

5.2 Agency Consultation

Agency consultation was conducted by the FAA and LAWA to explain the Proposed Action and solicit comments and questions. The following agencies were consulted by the FAA and LAWA as part of the Draft EA development process:

- State Historic Preservation Officer (SHPO)
- Native American Heritage Commission (NAHC)

5.2.1 Comments Received from Agency Consultation

SHPO concurred on the delineation of the Area of Potential Effect (APE) in letters dated March 5, 2012 and September 20, 2012. Both these letters are provided in Appendix C. In response to comments on the Draft EA, the Proposed Action was refined and, consequently, the APE was revised as well. Figure 3.12-1 shows the revised APE. The FAA consulted with SHPO on the revised APE and the SHPO concurred in a letter dated August 2, 2013, included in Appendix C. FAA received an email from one of the non-federally recognized tribes that said they would submit information; however, FAA did not receive an additional response.

5.3 Availability of the Draft EA for Review

The Draft EA was available for review by the general public, government agencies, and interested parties for a period of 33 days prior to the date of the Public Hearing (November 1, 2012) and for 19 days after the date of the Public Hearing (for a total of 53 days). The Notice of Availability (NOA) of the Draft EA for review was published on September 28, 2012. This NOA was sent to all those included on a mailing list provided by LAWA. The NOA was published to appear on September 28, 2012 in the following newspapers: *Los Angeles Times*, *The Argonaut*, and the *Daily Breeze*. The NOA was also posted to the LAWA website: *http://www.ourlax.org*. Copies of the Draft EA and the NOA were available for review

at the locations listed in **Table 5-1**, which included the LAWA Offices, area libraries, and the FAA Western-Pacific Regional Office in Hawthorne, California.

Table 5-1
Locations Where Draft EA Was Made Available

Location	Address	City	ZIP
FAA Western-Pacific Region, Airports Division	15000 Aviation Boulevard	Hawthorne	90261
LAWA Offices	1 World Way	Los Angeles	90045
El Segundo Public Library	111 W. Mariposa Avenue	El Segundo	90245
Los Angeles Public Library, Westchester-Loyola Branch	7114 W. Manchester Ave.	Los Angeles	90045

Anyone wishing to comment on the Draft EA was offered the opportunity to do so in writing, or in person at the Public Workshop and Hearing described in Section 5.4. Written comments were accepted until **5:00 p.m. Pacific Daylight Time (PDT)**, **Tuesday, November 20, 2012** and they were sent to:

Mr. Herb Glasgow
Chief of Airport Planning I

All comments received on the Draft EA were considered by FAA and LAWA in preparing the Final EA.

5.4 Public Workshop and Hearing

A combined public information workshop and public hearing was held to present the results of the environmental studies, and to receive comments on the Draft EA from the public and government agencies. The format of the workshop and hearing was structured to provide an opportunity for the public to discuss aspects of the environmental studies in an informal setting, and an opportunity to submit written and/or verbal comments during the proceedings. The combined public workshop and hearing was conducted from **6:00 p.m. to 9:00 p.m. PDT** on **Thursday, November 1, 2012** at the following location:

Flight Path Learning Center
6661 West Imperial Highway
Los Angeles, CA 90009

The public workshop was conducted during the first hour (6:00 p.m. to 7:00 p.m.), and the public hearing was held from 7:00 p.m. to 9:00 p.m. Notification of the hearing was accomplished through press releases and the published NOA in the local media, as described in the previous section. Members of the public or agency representatives wishing to comment were able to provide verbal comments during the public hearing or written comments at any time during the public review period.

A court reporter recorded the public hearing and the transcript is available as part of Appendix E2. A Spanish translator was made available at the public workshop and hearing. However, there were no attendees who required translation services. A total of three (3) participants attended the public workshop and hearing. One (1) oral comment was received at the public hearing. This comment and responses to it are presented in Appendix E3.

5.5 Comments on the Draft EA

Four (4) written comment letters were received on the Draft EA during the public review period. These comments and responses to them are presented in Appendix E3.

5.6 Final EA

The Draft EA has been revised as necessary to summarize and incorporate comments received during the public and agency review period. In development of the Final EA, LAWA and the FAA have considered and addressed all pertinent comments received within the comment period from the general public, agencies, and organizations. Summaries of comments received, responses, and any necessary revisions to the Draft EA are incorporated into the Final EA. The public and agencies will be notified of the availability of the Final EA for review. The Final EA will be submitted by LAWA to the FAA for their review and determination of whether to issue a Finding of No Significant Impact/Record of Decision (FONSI/ROD) or to prepare an Environmental Impact Statement (EIS).

Copies of the Final EA will be available for review at the locations listed in **Table 5-2**, and include the LAWA Offices and the FAA Western-Pacific Regional Office in Hawthorne, California.

Table 5-2
Locations Where Final EA is Available

Location	Address	City	ZIP
FAA Western-Pacific Region, Airports Division	15000 Aviation Boulevard	Hawthorne	90261
LAWA Offices	1 World Way	Los Angeles	90045
El Segundo Public Library	111 W. Mariposa Avenue	El Segundo	90245
Los Angeles Public Library, Westchester-Loyola Branch	7114 W. Manchester Ave.	Los Angeles	90045

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7.0 REFERENCES

American National Standards Institute, Inc. (ANSI), *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound - Part 5: Sound Level Descriptors for Determination of Compatible Land Use,* ANSI/ASA S12.9-2007/Part 5, November 14, 2007.

American National Standards Institute, Inc., *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 1,* ANSI S12.9-1988 (R 2003), 2003.

Arrington, Cindy and Nancy Sikes, *Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project,* 2006.

BonTerra Consulting, *Results of Focused Burrowing Owl Surveys for the Tom Bradley International Terminal Reconfiguration Project in the City of Los Angeles, Los Angeles County, California*, 2009.

Brown, Nathan, *et. al., The Strategy for Taking Aviation Climate Impacts*, 2010.

Burt, W.H. and R.P. Grossenheider, *A Field Guide to Mammals: North America; North of Mexico*. New York, NY: Houghton Mifflin Company, 1980.

California Air Resources Board website, *http://www.arb.ca.gov/homepage.htm*, accessed December 2011.

California Coastal Commission, Local Coastal Program (LCP) Status Maps, July 2009, *http://www.coastal.ca.gov/lcp/lcpstatus-map-sc.pdf,* accessed January 2012.

California Coastal Commission, State Coastal Zone Boundaries website, *http://coastalmanagement.noaa.gov/mystate/docs/StateCZBoundaries.pdf,* accessed 1.24.2012.

California Department of Conservation website, *http://www.conservation.ca.gov/dlrp/fmmp/ Pages/Index.aspx,* accessed April 2012.

California Department of Fish and Game, *California Natural Diversity Database*, 2012.

California Department of Transportation, Division of Aeronautics, California Airport Land Use Planning Handbook, pp. 6-20 and 6-22, January, 2002.

California Department of Transportation, Division of Aeronautics website, *http://www.dot.ca.gov/hq/planning/aeronaut/avnoise.html,* accessed June 2012.

California Geological Survey, *Seismic Hazard Zone Report for the Venice 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 036,* March 1999 (revised 2001).

California Native Plant Society, *CNPS Electronic Inventory of Rare and Endangered Plants*, 2012.

California Office of Historic Preservation, State Historic Preservation Officer, *Instructions for Recording Historical Resources*, 1995.

CalRecycle website, *http://www.calrecycle.ca.gov*, accessed January 2012.

City of El Segundo, General Plan website, *http://www.elsegundo.org/depts/planningsafety/ planning/general_plan/gptoc.asp,* accessed January 2013.

City of Inglewood, Planning Division website, *http://www.cityofinglewood.org/depts/ planning_and_building/planning/default.asp,* accessed January 2012.

City of Inglewood website, *http://www.cityofinglewood.org/depts/planning_and_building/planning/default.asp,* accessed June 2013

City of Inglewood website, *http://www.cityofinglewood.org/generalplan/reports_and_docs.html,* accessed June 2013.

City of Los Angeles, *Coastal Bluffs Specific Plan*, 1994.

City of Los Angeles, *Coastal Transportation Plan Specific Plan*, 1993.

City of Los Angeles, *Los Angeles Airport/El Segundo Dunes Specific Plan,* 1992.

City of Los Angeles, *Los Angeles CEQA Thresholds Guide*, 2006.

City of Los Angeles, and Los Angeles World Airports, LAX Specific Plan Amendment Study, Draft EIR, July 2012

City of Los Angeles, *LAX Plan*, September 2004.

City of Los Angeles, *LAX Specific Plan*, September 2004.

City of Los Angeles, *Westchester-Playa Del Rey Community Plan*, April 2004.

City of Los Angeles Department of Building and Safety Codes website, *http://ladbs.org/LADBSWeb/codes.jsf,* accessed March 2012

City of Los Angeles Department of City Planning website, *http://cityplanning.lacity.org/*, accessed January 2012.

City of Los Angeles Department of Public Works, Bureau of Sanitation website, *http://www.lacitysan.org/solid_resources/strategic_programs/diversion_strategy/index.htm*, accessed April 2012.

City of Los Angeles Department of Public Works, Bureau of Engineering, *Bureau of Engineering Manual, Part G, Storm Drain Design*, 2006.

City of Los Angeles Department of Public Works, Building and Safety Codes website, *http://dpw.lacounty.gov/bsd/?p=csg,* accessed June 2013.

City of Los Angeles Stormwater Program website, *http://www.lastormwater.org/Siteorg/general/hypern1.htm*, accessed April 2012.

Council on Environmental Quality (CEQ), *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, 2010.

County of Los Angeles, Department of Public Works, 2010 Annual Report on the Countywide Summary Plan and Countywide Siting Element, October 2011.

Diaz Yourman and Associates, *Runway 7L-25R Engineer's Design Report, Appendix 5 – Geotechnical Report*, April 2011.

Elbroch, M., *Mammal Tracks & Sign, A Guide to North American Species*, Mechanicsburg, PA: Stackpole Books, 2003.

Entomological Consulting Services Ltd., *Report of El Segundo Blue Monitoring Activities in 2010 at the Los Angeles International Airport*, February 2011.

Federal Aviation Administration, *Advisory Circular No. 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports*, 2007.

Federal Aviation Administration, *Advisory Circular No. 150/5220-22A, Engineered Materials Arresting Systems for Aircraft Overruns*, 2005.

Federal Aviation Administration, *Advisory Circular No. 150/5300-13.Airport Design*, September 29, 1989.

Federal Aviation Administration, *Advisory Circular No. 150/5320-5C, Surface Drainage Design*, 2006.

Federal Aviation Administration, *Advisory Circular No. 150/5320-6E, Airport Pavement Design and Evaluation*, 2009.

Federal Aviation Administration, *Air Quality Procedures for Civilian Airports and Air Force Bases*, 1997.

Federal Aviation Administration, *Air Traffic Activity Data System*, 2010.

Federal Aviation Administration, *Aviation System Performance Metrics (ASPM) Database*, 2010.

Federal Aviation Administration, *Computer Testing Supplement for Airline Transport Pilot and Aircraft Dispatcher*, July 2011.

Federal Aviation Administration, *Emissions and Dispersion Modeling System User's Manual with Supplements, EDMS Version 5.1.3*, November 2010.

Federal Aviation Administration, *Terminal Area Forecast Report – Los Angeles International Airport*, December 2010.

Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR*, 2005.

Federal Aviation Administration and Los Angeles World Airports, *LAX Master Plan Final EIS/EIR. Biological Assessment*, 2005.

Federal Aviation Administration, Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports website, *http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger*, accessed March 2012.

Federal Aviation Administration, *Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures*, March 2006.

Federal Aviation Administration, *Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, 2006.

Federal Aviation Administration, *Order 5200.8, Runway Safety Area Program*, 1999.

Federal Aviation Administration, *Record of Decision on the LAX Master Plan EIS*, 2005.

Federal Interagency Committee on Noise (FICON), *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Federal Interagency Committee on Urban Noise (FICUN), *Guidelines for Considering Noise in Land Use Planning and Control*, June 1980.

Fidell, S., Barger, D.S., Schultz, T.J., *Updating a Dosage-Effect Relationship for the Prevalence of Annoyance Due to General Transportation Noise*, Journal of the Acoustical Society of America, 89, pgs. 221-233, January 1991.

GeoTracker website, *http://geotracker.waterboards.ca.gov/default.asp*, accessed January 2012.

Gizmodo Australia website, *http://www.gizmodo.com.au/2011/12/why-did-this-airplane-landing-gear-destroy-this-concrete-runway*, accessed April 2011.

Glasgow, Herb, Airport Environmental Planner, Los Angeles World Airports, electronic mail communication, dated March 20, 2012.

Glasgow, Herb, Airport Environmental Planner, Los Angeles World Airports, personal communication, January 2012.

General Conformity Rule (40 CFR Part 93, Subpart B), January 31, 1994.

Getchell, Barbie and Atwood, John E., *Model 3X (ASDE-3X), to Serve Los Angeles International Airport (LAX)*, Los Angeles, California, 2006.

Gonzalez, R.J., J. Drazen, S. Hathaway, B. Bauer, and M. Simovich, "Physiological Correlates of Water Chemistry Requirements in Fairy Shrimps (Anostraca) from Southern California," *Journal of Crustacean Biology* 16:286-293. Lawrence, KS, The Crustacean Society, 1996.

Google Earth and ESRI, 2012.

Halfpenny, J.C, *Scats and Tracks of the Desert Southwest, A Field Guide to the Signs of 70 Wildlife Species*, Helena, MT: Falcon Publishing, Inc, 2000.

Hathaway, S.A. and M.A. Simovich, "Factors affecting the Distribution and Co-Occurrence of Two Southern Californian Anostracans (Brachiopoda), *Branchinecta sandiegonensis* and *Streptocephalus woottoni*," *Journal of Crustacean Biology* 16:669-677. Lawrence, KS, The Crustacean Society, 1996.

Hickman, J.C. (ed.), *The Jepson Manual: Higher Plants of California*. Berkeley: University of California Press, 1993.

HNTB, *Dominguez Channel Hydrology Analysis*, May 2006.

HNTB, *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011.

Holland, R.F, California Department of Fish and Game. The Resources Agency, ed, *Preliminary Descriptions of the Terrestrial Natural Communities of California* , p. 156. Sacramento, CA, 1986.

ICF Jones & Stokes. *Technical Noise Supplement*. Prepared for California Department of Transportation, Sacramento, CA. 2009

Intergovernmental Panel on Climate Change, *Aviation and the Global Atmosphere*, 2001.

LeRoy Crandall and Associates, *Report of Geotechnical Investigation, North Outfall Sewer Replacement Sewer, Books A and B, Project No. ADE-87206,* April 1989.

Los Angeles County, *California Geological Survey, Seismic Hazard Zone Report for the Venice 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 036*, March 1999 (revised 2001).

Los Angeles County website, *http://lacounty.gov*, accessed January 2012.

Los Angeles County Department of Public Works, *LACDPW Hydrology Manual, Chapter 4.3,* January 2006.

Los Angeles County, Department of Regional Planning website, *http://planning.lacounty.gov/plans/adopted*, accessed June 2013.

Los Angeles County Department of Regional Planning website, http://planning.lacounty.gov/generalplan*/existing*, accessed June 2013.

Los Angeles World Airports, *2011 Annual Flight Operation Data*, 2012.

Los Angeles World Airports, *California State Airport Noise Standards Quarterly Report, Los Angeles International Airport (LAX),* January 13, 2012.

Los Angeles World Airports Facilities Division, 2012 and 2013.

Los Angeles World Airports, *Los Angeles International Airport Layout Plan*, December 2009.

Los Angeles World Airports, *LAX Master Plan, Mitigation Monitoring and Reporting Program: 2010 Annual Progress Report*, 2011.

Los Angeles World Airports, *Runway Safety Area Evaluation and Analysis for Runway 7L/25R at LAX*, 2006.

Los Angeles World Airports, *South Airfield improvement Project EIR, Setting, Environmental Impacts, and Mitigation Measures. Part 1, Volumes 1, Section 4.1, Hydrology and Water Quality*, August 2005.

Los Angeles World Airports, *Stipulated Settlement Agreement for Litigation on the LAX Master Plan*, 2006.

Los Angeles World Airports, *Sustainable Airport Planning, Design and Construction Guidelines Version 6*, 2011.

Los Angeles World Airports, Environmental Services Division, *Storm Water Pollution Prevention Plan (SWPPP) Monitoring Program Plan (SWMPP) associated with Industrial Activities for LAX*, September 2003.

Lourdes, Q. Maurice and Lee, David S., Final report of the International Civil Aviation Organization (ICAO) Committee on Aviation and Environmental Protection (CAEP) Workshop October 29th – November 2nd 2007, Montreal, *Chapter 5: Aviation Impacts on Climate*, 2007.

McAvoy, Christy Johnson, National Register of Historic Places Registration Form, *Hangar One,* 1991.

Melrose, Alan, ICAO Environmental Report, *European ATM and Climate Adaptation: A Scoping Study*, 2010.

Office of Administrative Law, *California Code of Regulations, Title 21, Division 2.5, Chapter 6*, 2007.

Parsons Brinkerhoff and Quade Douglas, *Drainage Master Plan, Final On-Site Hydrology Report for LAX*, October 2002.

Psomas, *Los Angeles International Airport, Conceptual Drainage Plan*, April 2005.

Ricondo and Associates, *Construction Surface Transportation Existing Conditions Report*, January 2012.

Ricondo and Associates, PCR Services Corporation, 2013.

Ricondo and Associates, *Runway 7L-25R Safety Area (RSA) Practicability Study for Los Angeles International Airport,* December 2009.

Sapphos Environmental, Inc., *LAX Master Plan EIS/EIR: Appendix J1. Biological Assessment Technical Report*, 2001.

Sawyer and Keeler-Wolf, *A Manual of California Vegetation*. Sacramento, CA: California Native Plant Society, 1995.

Schoneberger, William A., Ethel Pattison, Lee Nichols, and Flight Path Learning Center of Southern California, *Images of Aviation: Los Angeles International Airport,* Charleston, South Carolina: Arcadia Publishing, 2009.

Schultz, T.J., *Synthesis of Social Surveys on Noise Annoyance*, Journal of the Acoustical Society of America, 64, 377-405, August, 1978.

Sibley, D.A., National Audubon Society, *The Sibley Guide To Birds*, New York, NY: Alfred A. Knopf, Inc., 2000.

Southern California Association of Governments, *2008 Integrated Growth Forecast website, http://www.scag.ca.gov/forecast/index.htm*, accessed January 2012.

Southern California Association of Governments, *Land Use Data*, 2008.

Southern California Association of Governments, *Employment Density Study*, 2001.

State Water Resources Control Board, *2010 Integrated Report Clean Water Act Sections 303(d) and 305(b)*, 2010.

Stebbins, R.C., *A Field Guide To Western Reptiles and Amphibians*, New York, NY: Houghton Mifflin, 2003.

SCA Environmental, *Airfreight 8 Building Final Report: Asbestos Abatement Activities*, March 1999.

Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity*, January 1980.

URS Corporation, *Runway 7L-25R Safety Area (RSA) Project Los Angeles International Airport Engineer's Design Report,* April 2011.

URS Corporation, LAX Runway 7L/25R Safety Area (RSA) Project, Aircraft Noise Analysis, March 2012

United States Bureau of Labor Statistics, *2012 and California Employment Development Department,* 2012.

United States Census Bureau website, *http://www.census.gov/,* accessed January 2012.

United States Department of the Interior, National Park Service, *National Wild and Scenic Rivers System*, December 1990.

United States Department of the Interior, National Park Service, *National Register Bulletin 15: How to Apply the Criteria for Evaluation*, Washington, D.C.: Government Printing Office, 1999.

United States Department of Interior, National Park Service website, *http://www.nps.gov/lwcf/,* accessed January 2012.

United States Department of the Interior, National Park Service, Wild & Scenic Rivers State-By-State List website, *http://www.nps.gov/rivers/wildriverslist.html*, accessed April 2012.

United States Environmental Protection Agency website, *http://www.epa.gov/climatechange/emissions/index.html*, accessed June 2013.

United States Environmental Protection Agency, *Greenbook Non-attainment Areas for Criteria Pollutants*, 2012.

United States Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect the Public Health and Welfare with an Adequate Margin of Safety*, Report 550/9-74-004, March 1974.

United States Environmental Protection Agency, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act 2-3*, December 2009.

United States Environmental Protection Agency, Climate Change website, *http://www.epa.gov/climatechange/* , accessed March 2012.

United States Federal Emergency Management Agency, *Q3 Digital Data*, 2008.

United States Fish and Wildlife Service, *LAX Master Plan Final EIR/EIS Appendix F-E: Biological Opinion from the United States Fish and Wildlife Service*, 2005.

United States Fish and Wildlife Service, Biological Opinion for Los Angeles International Airport Master Plan, 2004.

United States Fish and Wildlife Service, "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Riverside Fairy Shrimp (*Streptocephalus woottoni*); Final Rule," *Federal Register* 70(69): 19153–19204, 2005.

United States Fish and Wildlife Service, Critical Habitat Portal website, *http://criticalhabitat.fws.gov/crithab/*, accessed March 2012.

United States Fish and Wildlife Service, U.S. Department of the Interior, editor, *Carlsbad Fish and Wildlife Office Endangered and Threatened Species List*, 2011.

United States Fish and Wildlife Service, U.S. Department of the Interior, editor, *Ventura Fish and Wildlife Office Endangered and Threatened Species List*, 2012.

United States Fish and Wildlife Service and National Marine Fisheries Service, *Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, March 1998.

United States General Accounting Office, *Aviation and the Environment – Aviation's Effects on the Global Atmosphere Are Potentially Significant and Expected to Grow.* GAO/RCED-00-57, 2000.

United States Geological Service, 7.*5 Minute Venice and Inglewood Quadrangle Maps*, 1981.

World Resources Institute, Climate Analysis Indicators Tool (CAIT) website, *http://cait.wri.org/*, accessed March 2012.

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8.0 LIST OF ABBREVIATIONS AND ACRONYMS

The following is a list of abbreviations, definitions, and acronyms that are used in this Draft EA.

Numbers and Symbols

μ/m^3	Micrograms per cubic meter
§	Section/Paragraph

A

AAM	Annual Arithmetic Mean
AB	Assembly Bill
A/C	Advisory Circular
AC	Aircraft Carrier
AT	Air Taxi
ACCRI	Aviation Climate Change Research Initiative
ADG	Airplane Design Group
Airport	Los Angeles International Airport
ALS	Approach Lighting System
ANOMS	Aircraft Noise and Operations Monitoring System
AOA	airport operations area
APE	Area of Potential Effect
ARC	Airport Reference Code
ARTS	Automated Radar Terminal System
ASDA	Accelerate-Stop Distance Available
AST	aboveground storage tank
ATCT	Airport Traffic Control Tower
ATSAC	Automated Traffic Surveillance and Control

B

BA	Biological Assessment
Basin	South Coast Air Basin
bgs	below ground surface
BMP	Best Management Practice
BNSF	Burlington North Santa Fe Railroad
BRSA	Biological Resources Study Areas

C

CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CA FID UST	California Facility Inventory Database Underground Storage Tank List
CalEEMod	California Emissions Estimator Model
Cal Recycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCA	California Coastal Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERC-NFRAP	Comprehensive Environmental Response, Compensation and Liability Act No Further Action Required
cfs	cubic feet per second
CFR	Code of Federal Regulations

CHMIRS	California Hazardous Material Incident Reporting System
CHRIS	California Historic Resource Information System
CMA	Critical Movement Analysis
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
COS	Central Outfall Sewer
CPA	Community Plan Area
CRHR	California Register of Historical Resources
CRJ	Canadian Regional Jet
CT	Census tract
CTA	Central Terminal Area
CWA	Clean Water Act
CUPA	Certified Unified Program Agency
CUP-RP	Central Utility Plant – Replacement Project
CZMA	Coastal Zone Management Act

D

dB	Decibels
dBA	A-weighted decibel
DNL	day-night average sound level
DOE	Determination of Eligibility
DSA	Detailed Study Area
DTSC	Department of Toxic Substances Control

E

EA	Environmental Assessment
EDMS	Emissions and Dispersion Modeling System
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMAS	Engineered Materials Arresting System
EPA	Environmental Protection Agency
ESA	Endangered Species Act

F

FAA	Federal Aviation Administration
FC	Federal Candidate
FE	Federal Endangered
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIP	Federal Implementation Plan
FONSI	Finding of No Significant Impact
FR	Federal Register
FSC	Federal Species of Concern
FT	Federal Threatened

G

GAO	General Accounting Office
GA	General Aviation
GHG	greenhouse gas

GIS	Geographic Information Systems
gpd	Gallons per day
GSA	Generalized Study Area
GSE	ground support equipment

H

HRI	Historic Resources Inventory
HTP	Hyperion Treatment Plant

I

ILS	Instrument Landing System
INM	Integrated Noise Model

J

JWPCP	Joint Water Pollution Control Plant

K

khz	Kilo Hertz

L

LACSD	Los Angeles County Sanitation Department
LAMC	Los Angeles Municipal Code
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	Los Angeles Fire Department
LAHCM	City of Los Angeles Historic Cultural Monument
LARWGCB	Los Angeles Regional Water Quality Control Board
LARWQCB	Los Angeles Regional Water Quality Control Board

LAUSD	Los Angeles Unified School District
LAX	Los Angeles International Airport
LAX-A Zone	Airport Airside Sub-Area
LAWA	Los Angeles Worldwide Airports
LCP	Local Coastal Plan
LDA	Landing Distance Available
LEA	Local Enforcement Agency
LEP	Limited English Proficiency
Leq(h)	Equivalent Sound Level (hourly)
L_{max}	maximum noise level
LOS	Level of Service
LRT	Light Rail Transit
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund

M

MALSR	Medium Intensity Approach Light Systems
MAX	Municipal Area Express
MD	McDonnell Douglas
Metro	Los Angeles County Metropolitan Transportation Authority
MIL	Military
MG	million gallons
MGTOW	Maximum gross takeoff weight
MMRP	Mitigation Monitoring Reporting Program
MSW	Municipal Solid Waste
MWD	Metropolitan Water District

MT	Metric Tons

N

N/A	Not Applicable/No Designation
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen oxide
NOI	Notice of Intent
NORS	North Outfall Relief Sewer
NOx	Oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places

O

O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OFA	Object Free Area

P

Pb	Lead
PCC	Portland Cement Concrete
PCI	Pavement Condition Index
PE	Proposed Endangered

PL	Public Law
PM_{10}	particulate matter equal to less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to less than 2.5 microns in diameter
ppm	parts per million
PRC	Public Resource Code
PT	Proposed Threatened

R

RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
RSA	Runway Safety Area
RS-N	Receiving Station N
RSP	Residential Soundproofing Program
RWY	Runway

S

SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SE	State Endangered
SO_2	Sulfur Dioxide
SO_X	Oxides of Sulfur
SPAS	LAX Specific Plan Amendment Study

SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SSC	State Species of Concern
ST	State Threatened
SUSMP	Standard Urban Stormwater Mitigation Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWTR	General Surface Water Treatment Rule Industrial Permit

T

TAF	Terminal Area Forecast
TIP	Tribal Implementation Plan
TNM	Traffic Noise Model
TODA	Take Off Distance Available
TORA	Take Off Run Available
Tpd	tons per day
TSA	Transportation Security Administration
TWY	Taxiway

U

URBEMIS	Urban Emissions Model
USACE	United States Army Corps of Engineers
USC	United States Code
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

USGS	United States Geological Survey
UST	underground storage tank

V

v/c	volume/capacity
VOC	volatile organic compound

W

WBMWD	West Basin Municipal Water District
WBWRP	West Basin Water Reclamation Plant
WDR	Waste Discharge Requirements