DRAFT
ENVIRONMENTAL ASSESSMENT
APPENDICES

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

(PAVEMENT RECONSTRUCTION OF PORTIONS OF RUNWAY 7L/25R AND TAXIWAY B, EASTERLY EXTENSION OF TAXIWAY C, DEMOLITION OF AIR FREIGHT BUILDING NO. 8, AND REPLACEMENT GROUND SUPPORT EQUIPMENT FACILITY)

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:

URS Corporation
Los Angeles, CA

September 2012

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

Responsible FAA Official **Date**

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APPENDIX

A

DESCRIPTION OF DECLARED DISTANCES

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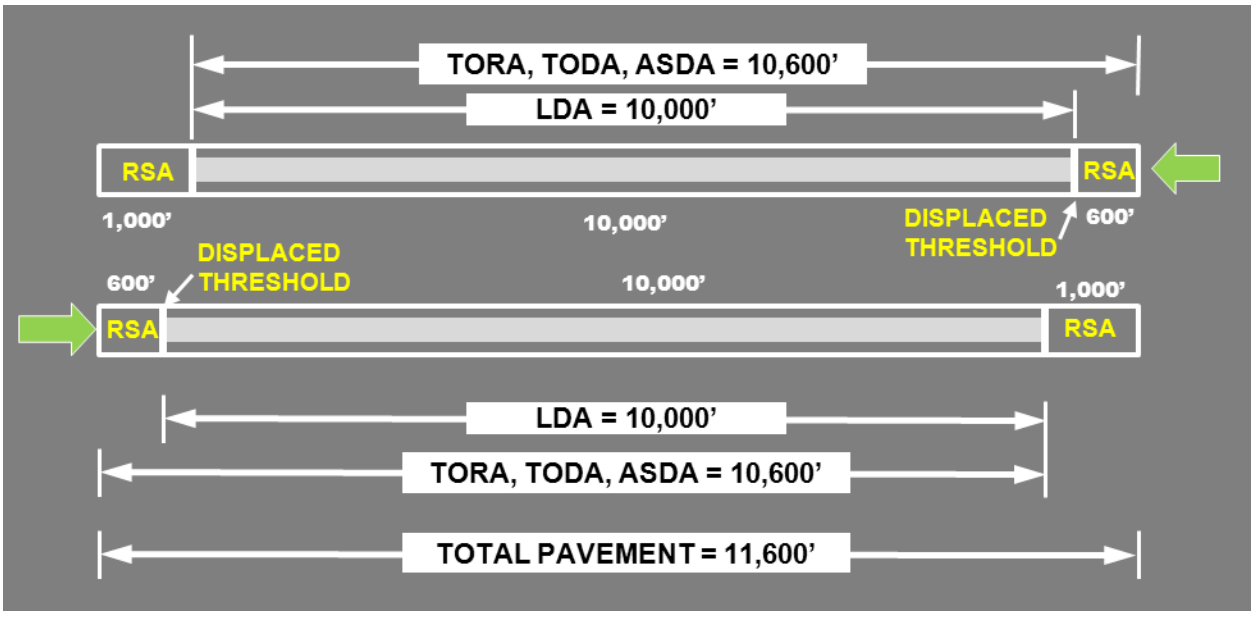
Declared Distances

Declared distances at airports are a mechanism by which specific lengths of runway pavement are identified for use in aircraft operations. Declared distances are incorporated into the Operations Specifications of commercial aircraft operators that are part of the air carrier certificates and operations certificates issued by FAA under 14 CFR Part 119, as well as into the internal operations manuals of those operators. Pilots of commercial aircraft are required to comply with such specifications and manuals.

The specified distance available for a particular operation such as landing may be different in each direction on the same runway pavement. The FAA defines four declared distances:

- **Takeoff Run Available** (TORA) – the runway length declared available and suitable for satisfying takeoff run requirements. The TORA is measured from the start of takeoff to a point 200 feet from the beginning of the departure Runway Protection Zone.
- **Takeoff Distance Available** (TODA) – this distance comprises the TORA plus the length of any remaining runway or clearway beyond the far end of the TORA.
- **Accelerate-Stop Distance Available** (ASDA) – the runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft that must abort its takeoff. A stopway is an area beyond the takeoff runway able to support the airplane during an aborted takeoff, without causing structural damage to the airplane.
- **Landing Distance Available** (LDA) – the runway length that is declared available and suitable for satisfying aircraft landing distance requirements.

The figure below illustrates how declared distances allow a runway pavement length of 11,600 feet to provide a usable runway length of 10,000 feet for landing and 10,600 feet for takeoffs in both directions while still providing the FAA-required runway safety area dimensions of 600 feet prior to the landing threshold and 1,000 feet beyond the runway end.



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APPENDIX

B

NOISE TECHNICAL REPORT

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APPENDIX B
NOISE TECHNICAL REPORT

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INTRODUCTION

The City of Los Angeles, through its aviation department, Los Angeles World Airports (LAWA), is proposing the Runway 7L/25R Runway Safety Area Project and Associated Improvements (Proposed Action) at the Los Angeles International Airport (LAX or the Airport). This noise analysis technical study is prepared to be included as an appendix to the Environmental Assessment (EA). The purpose of the study is to evaluate the aircraft noise and construction noise impacts of the No-Action Alternative, the Proposed Action Alternative, and the Shift Runway Alternative on areas surrounding LAX in order for the EA to determine the level of significance of such impacts.

This technical report contains four sections. The first section presents a brief description of the Proposed Action and its alternatives. The second provides background information on aircraft noise and the metrics used to evaluate noise in the airport setting. The third section provides a summary of the effects of environmental noise. Analyses of operational and construction noise exposure from the proposed action alternatives are presented in the fourth section.

PROJECT DESCRIPTION

The Proposed Action site is located on the South Airfield of LAX in the City of Los Angeles. LAX is located south of Westchester Parkway, west of Interstate 405, north of Imperial Highway, and east of Pershing Drive. The project site is bordered to the north, south, and east by Airport facilities. To the west of the project site is vacant, open land that serves as a buffer area between LAX and Dockweiler State Beach.

LAWA proposes to construct improvements to the Runway Safety Area (RSA) for Runway 7L/25R, reconstruct pavement on the eastern sections of Runway 7L/25R and Taxiway B, extend Taxiway C to the east, demolish Air Freight Building No. 8, and construct a replacement Ground Support Equipment (GSE) Maintenance Facility (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 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.

The elements of the proposed Runway 7L/25R RSA improvements are to: extend the Runway 7L/25R pavement, 832 feet to the west while maintaining the Runway 7L threshold at its current location for landings, resulting in an 832-foot displaced threshold; construct an RSA, approximately 500 feet wide by 168 feet long, beyond the new Runway 7L runway end; construct a blast pad west of the Runway 7L extension; extend 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 C; reconstruct a portion of Taxiway B at the intersection with new Taxiway B17; relocate the existing Localizer Antenna and blast fence to the west; install in-pavement approach lighting system (ALS) in the footprint of the extended Runway 7L; and modify the existing Runway and Taxiway lighting and markings in the newly constructed pavements.

The Proposed Action would replace areas of pavement that are in poor condition. Pavement reconstruction activities may include, but not be 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 sections.

Taxiway C would be extended to improve aircraft and passenger safety by improving access to Runway 25R during pavement reconstruction of Taxiway B. Elements of the extension of Taxiway C would: realign and extend Taxiway C approximately 960 feet eastward to Taxiway B1. The centerline of the new section of Taxiway C would have a separation distance of approximately 281 feet from the centerline of Taxiway B; realign a portion the vehicle service road north of the Taxiway C extension; demolish Air Freight Building No. 8 to accommodate the realigned service road and to comply with FAA Airport Design Standards for Taxiway centerline to fixed or movable objects ; and, pave the site of the demolished Air Freight Building No. 8 site and the area around this site with apron pavement suitable for aircraft parking.

The replacement GSE Maintenance Facility would be located on a 2.86-acres site along Imperial Highway, to the south of Taxiway A. Elements of the replacement GSE Maintenance Facility are: removal and relocation of temporary structures (trailers) present at the replacement GSE Maintenance Facility site to other parts of the Airport property; removal of existing concrete; grading and excavation (10 feet) for foundation; installation of utilities; and construction of a 60,000-square-foot, 2-story GSE facility.

In addition, an alternative to the Proposed Action, the Shift Runway Alternative, is proposed. The Shift Runway Alternative would have the same pavement reconstruction, Taxiway C extension, demolition of Air Freight Building No.8, and the replacement GSE Maintenance Facility as the Proposed Action. However, the RSA improvements would vary, including a larger unpaved and graded area on the west end of Runway 7L and the loss of use of part of Runway 25R. The details of the Proposed Action, Shift Runway, and No-Action Alternatives are presented in the Draft EA.

FUNDAMENTALS OF AIRCRAFT NOISE

Noise here is defined as “Sound or a sound that is loud, unpleasant, unexpected, or undesired” (American Heritage Dictionary 2011). Simply put, noise is unwanted sound. A variety of noise metrics are used to assess aircraft noise impacts in different ways. Noise metrics are used to describe individual noise events (such as a single operation of an aircraft taking off overhead) or groups of events (such as the cumulative effect of numerous aircraft operations, the collection of which creates a general noise environment or overall exposure level). Both types of descriptors are helpful in explaining how people tend to respond to a given noise condition. Descriptions of these metrics are provided below.

Decibel, dB – Sound is a complex physical phenomenon consisting of complex minute vibrations traveling through a medium, such as air. These vibrations are sensed by the human ear as sound pressure. Because of the vast range of sound pressure or intensity detectable by the human ear, sound pressure level (SPL) is represented on a logarithmic scale known as decibels (dB). A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet (laboratory-type) listening conditions. A SPL of 120 dB begins to be felt inside the ear as discomfort and pain at approximately 140 dB. Most environmental sounds have SPLs ranging from 30 to 100 dB.

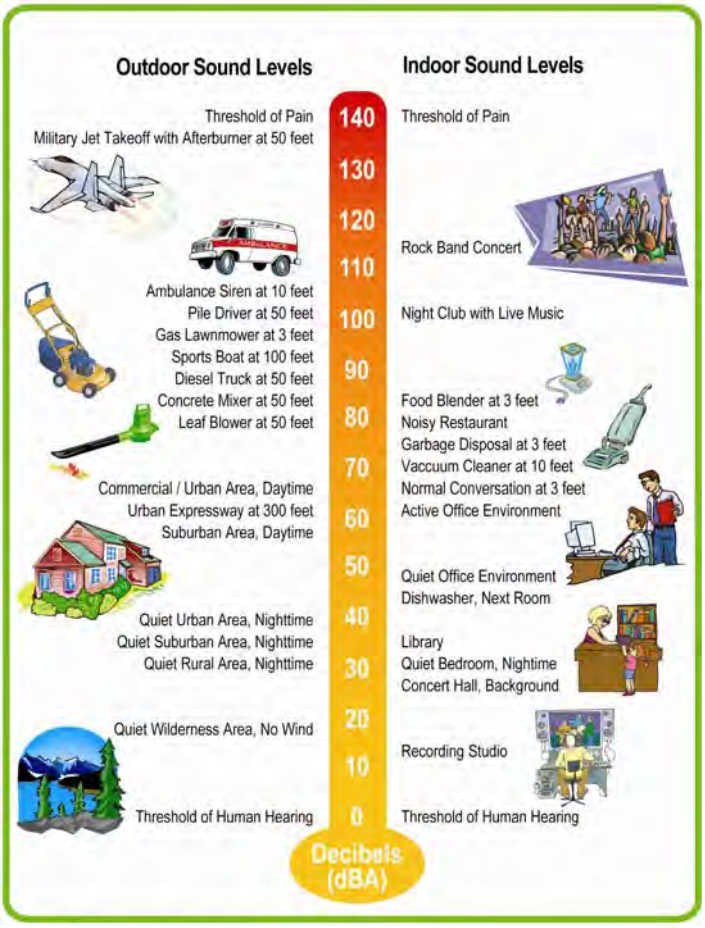
Because decibels are logarithmic, they cannot be added or subtracted directly like other (linear) numbers. For example, if two sound sources each produce 100 dB, when they are operated together they will produce 103 dB, not 200 dB. Four 100 dB sources operating together again double the sound energy, resulting in a total SPL of 106 dB, and so on. In addition, if one source is much louder than another, the two sources operating together will produce the same SPL as if the louder source were operating alone. For example, a 100 dB source plus an 80 dB source produce 100 dB when operating together. Two useful

rules to remember when comparing SPLs are: (1) most people perceive a 6 to 10 dB increase in SPL between two noise events to be about a doubling of loudness, and (2) changes in SPL of less than about 3 dB between two events are not easily detected outside of a laboratory.[1]

A-Weighted Decibel, dBA – Frequency, or pitch, is a basic physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. Because the human ear is more sensitive to middle and high frequencies (i.e., 1,000 to 4,000 Hz), as compared to low frequencies, a frequency weighting called "A" weighting is applied. The internationally standardized "A" filter approximates the sensitivity of the human ear and helps in assessing the perceived loudness of various sounds. In this document all sound levels are A-weighted sound levels and the adjective "A-weighted" has been omitted.

Figure B-1 charts common indoor and outdoor sound levels. A quiet rural area during the nighttime may be 30 dBA or lower while the operator of a typical gas lawn mower may experience a level of 90 dBA. Similarly, the level in a library may be 30 dBA or lower while the listener at a rock band concert may experience levels near 110 dBA.

Figure B-1. Common Outdoor and Indoor Sound Levels



Source: URS Corporation, 2008

[1] ICF Jones & Stokes. *Technical Noise Supplement*. Prepared for California Department of Transportation, Sacramento, CA. 2009.

Maximum A-Weighted Noise Level, L_{max} – Sound levels vary with time. For example, the sound increases as an aircraft approaches, then falls and blends into the ambient or background as the aircraft recedes into the distance. Because of this variation, it is often convenient to describe a particular noise "event" by its highest or maximum sound level (L_{max}). Note that L_{max} describes only one dimension of an event; it provides no information on the cumulative noise exposure generated by a sound source. In fact, two events with identical L_{max} may produce very different total exposures as one may be of very short duration, while the other may be much longer.

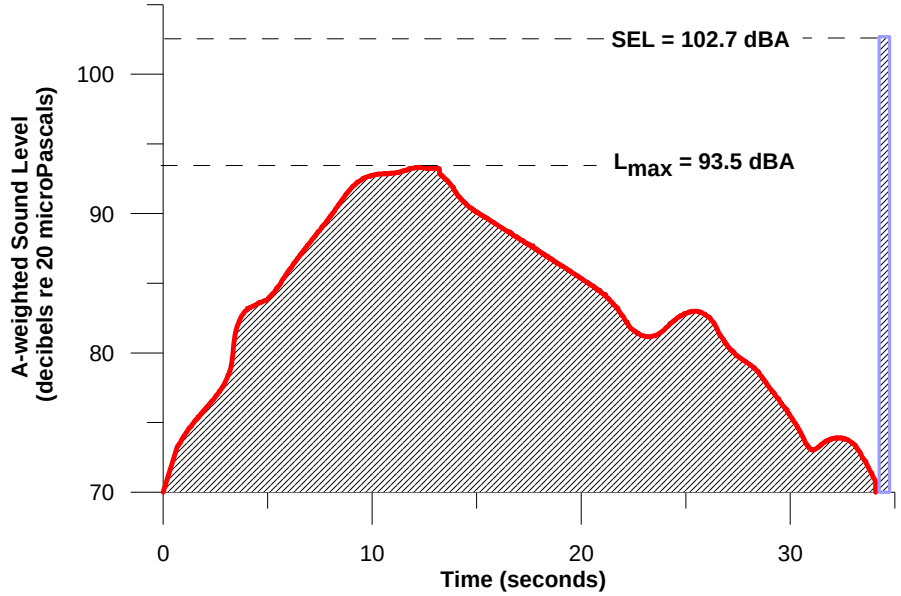
Sound Exposure Level, SEL – The most common measure of noise exposure for a single aircraft flyover is the SEL. SEL is a summation of the A-weighted sound energy at a particular location over the true duration of a noise event normalized to a fictional duration of one second. The true duration is defined as the amount of time the noise event exceeds background levels. For events lasting more than one second, SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the net impact of the entire acoustic event.

The normalization to the fictional duration of one second enables the comparison of noise events with differing true duration and/or maximum level. Because the SEL is normalized to one second, it will almost always be larger in magnitude than the L_{max} for the event. In fact, for most aircraft events, the SEL is about 7 to 12 dB higher than the L_{max}. Additionally, since it is a cumulative measure, a higher SEL can result from either a louder or longer event, or some combination.

As SEL combines an event's overall sound level along with its duration, SEL provides a comprehensive way to describe noise events for use in modeling and comparing noise environments. Computer noise models, such as the one employed for this document, base their computations on these SELs.

Figure B-2 shows an event's "time history," the variation of sound level with time. For typical sound events experienced by a fixed listener, like a person experiencing an aircraft flying by, the sound level rises as the source (or aircraft) approaches the listener, peaks and then diminishes as the aircraft flies away from the listener. The area under the time history curve represents the overall sound energy of the noise event. The L_{max} for the event shown in the figure was 93.5 dBA. Compressing the event's total sound energy into one second to compute its SEL yields 102.7 dBA.

Figure B-2. Comparison of Maximum Sound Level (L_{max}) and Sound Exposure Level (SEL)



Source: URS Corporation, 2007.

Equivalent Sound Level, L_{eq} -- Equivalent sound level (abbreviated L_{eq}) is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest (e.g., an hour, an 8-hour school day, nighttime, or a full 24-hour day). However, because the length of the period can be different depending on the time frame of interest, the applicable period should always be identified or clearly understood when discussing the metric. Such durations are often identified through a subscript, for example $L_{eq(8)}$ or $L_{eq(24)}$.

Conceptually, L_{eq} may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual time-varying sound level with its normal "peaks" and "dips." In the context of noise from typical aircraft flight events and as noted earlier for SEL, L_{eq} does not represent the sound level heard at any particular time, but rather represents the total sound exposure for the period of interest. Also, it should be noted that the "average" sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic, or "energy-averaged," sound level. Thus, loud events tend to dominate the noise environment described by the L_{eq} metric.

Day-Night Average Sound Level, DNL, and Community Noise Equivalent Level, CNEL - Time-averaged sound levels are measurements of sound levels averaged over a specified length of time. These levels provide a measure of the average sound energy during the measurement period. For the evaluation of community noise effects, and particularly aircraft noise effects, the Day-Night Average Sound Level (DNL) or the Community Noise Equivalent Level (CNEL) is used. Both metrics are similar to the Equivalent Sound Level (Leq) except that they compensate for the widely assumed increase in people's sensitivity to noise during nighttime hours. Each aircraft operation occurring between 10:00 p.m. and 7:00 a.m. is treated as if it were 10 operations. Similarly, CNEL (but not DNL) includes a penalty weighting for operations taking place between 7:00 and 10:00 p.m. in the evening. Each aircraft operation during these hours is counted as if it were three operations. Logarithmically, these multipliers are the equivalent of adding 10 dB to the noise level of each nighttime operation and 4.77 dB to the noise level of each evening operation. These noise level penalties are intended to correspond to the drop in background noise level which studies have found takes place from daytime to evening and nighttime in a typical

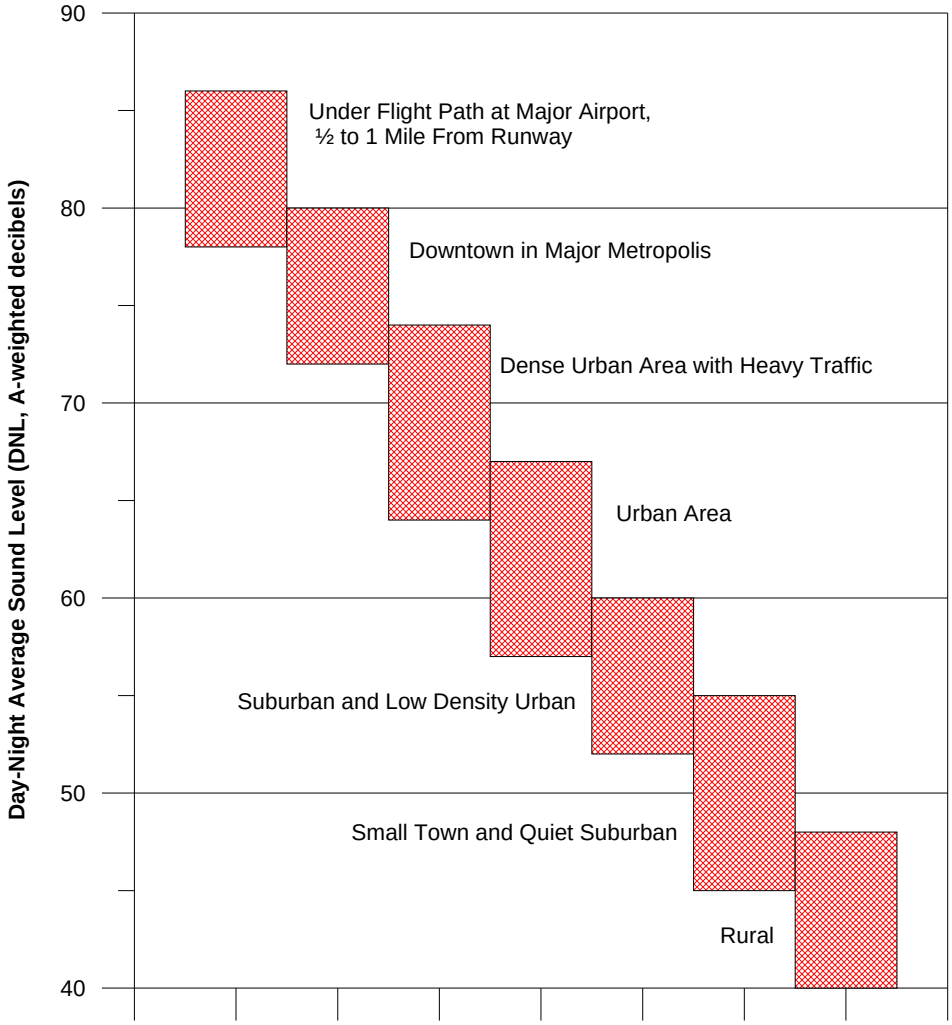
community. The evening and nighttime decrease in ambient sound levels—from both outdoor and indoor sources—is commonly considered to be the principal explanation for people's heightened sensitivity to noises during these periods. (Caltrans, 2002)

CNEL is the primary noise descriptor of this study. CNEL is a 24-hour time-weighted-average noise metric expressed in A-weighted decibels (dBA) which accounts for the noise levels (in terms of SEL) of all individual aircraft events, the number of times those events occur, and the time of day at which they occur. Values of CNEL can be measured with standard monitoring equipment or predicted with computer models. This document utilizes estimates of CNEL with an FAA-approved computer-based noise model.

Typical DNL values for a variety of noise environments are shown in **Figure B-3**. DNL values can be approximately 85 dBA outdoors under a flight path within a mile of a major airport and 40 dBA or less outdoors in a rural residential area. CNEL values would be similar.

Due to the CNEL and DNL descriptor's close correlation with the degree of community annoyance from aircraft noise, CNEL and DNL have been formally adopted by most Federal agencies for measuring and evaluating aircraft noise for land use planning and noise impact assessment. CNEL has been adopted by the State of California. Federal committees such as the Federal Interagency Committee on Urban Noise (FICUN) and the Federal Interagency Committee on Noise (FICON) which include the Environmental Protection Agency (EPA), Federal Aviation Administration (FAA), Department of Defense (DOD), Department of Housing and Urban Development (HUD), and Veterans Administration (VA), found DNL to be the best metric for land use planning. They also found no new cumulative sound descriptors or metrics of sufficient scientific standing to substitute for DNL. Other cumulative metrics could be used only to supplement, not replace DNL. Furthermore, FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*, for environmental impact studies, requires DNL be used in describing cumulative noise exposure and in identifying aircraft noise/land use compatibility issues, although the FAA recognizes CNEL as an alternative metric for California (EPA, 1974; FICUN, 1980; FICON, 1992; 14 CFR Part 150, 2007; FAA, 2006).

Figure B-3. Typical Range of Outdoor Community Day-Night Average Sound Levels



Source: DOD, 1978

EFFECTS OF AIRCRAFT NOISE

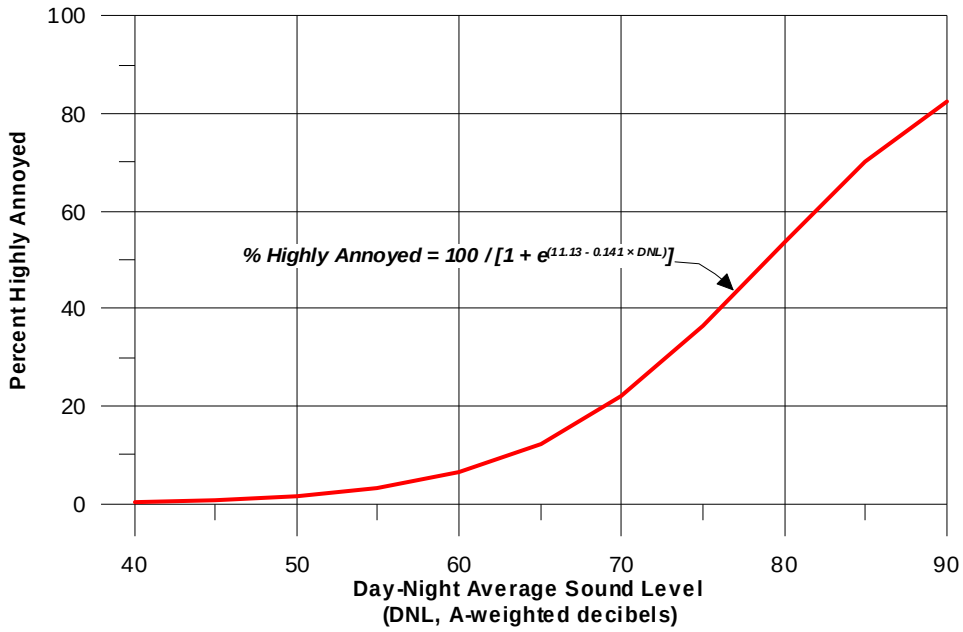
This section addresses three ways humans can be affected by aircraft noise: annoyance, speech interference and sleep disturbance.

Annoyance – The primary potential effect of aircraft noise on exposed communities is one of annoyance. Noise annoyance is defined by the Environmental Protection Agency as any negative subjective reaction on the part of an individual or group (EPA, 1974). Scientific studies and a large number of social/attitudinal surveys have been conducted to appraise people's annoyance to all types of environmental noise, especially aircraft events. These studies and surveys have found the DNL to be the best measure of this annoyance (EPA, 1974; FICUN, 1980; FICON, 1992; ANSI, 2007; ANSI, 2003; Schultz, 1978; Fidell, et. al., 1991).

The relationship between annoyance and DNL determined by the scientific community and endorsed by many Federal agencies, including the FAA, is shown in **Figure B-4**. For a DNL of 65 dBA,

approximately 13% of the exposed population would be highly-annoyed. The figure also shows at very low values of DNL, such as 45 dB or less, 1% or less of the exposed population would be highly annoyed. At very high values of DNL, such as 90 dBA, more than 80% of the exposed population would be highly annoyed.

Figure B-4. Relationship Between Annoyance and Day-Night Average Sound Level



Source: FICON, 1992

Speech Interference – A primary effect of aircraft noise is its tendency to drown out or "mask" speech, making it difficult to carry on a normal conversation. As an aircraft approaches and its sound level increases, speech becomes harder to hear. As the ambient level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

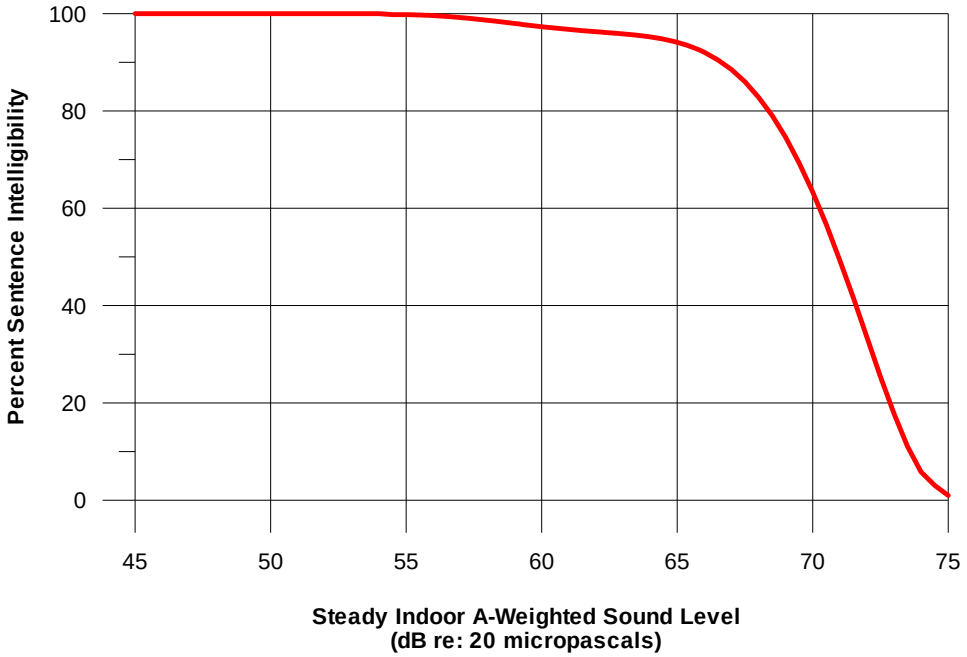
The intelligibility of speech in the presence of noise is dependent on the interrelationship of complex variables. These include acoustical factors, non-acoustic factors and random factors. Acoustic factors include speech signal (at the listener's ear), the level of the interfering noise, the frequency spectrum of the speech, the frequency spectrum of the noise, the temporal pattern of the speech and noise, differences in the spatial relationship of the speech and noise sources, and reverberation effects. Non-acoustic factors include variables such as the listener's motivation and familiarity with the speech topic, visual cues, and the talker's speaking habits. Random factors include individual differences (such as age) between talkers and listeners, the talker's effectiveness or clarity of speech and the listener's effectiveness.

For typical communication distances of 3 or 4 feet (1 to 1.5 meters), acceptable outdoor conversations can be carried on in a normal voice as long as the ambient noise outdoors is less than about 65 dBA (FICON, 1992). If the noise exceeds this level, intelligibility would be lost unless vocal effort was increased or communication distance was decreased.

Indoor speech interference can be expressed as a percentage of sentence intelligibility between two average adults with normal hearing speaking fluently in relaxed conversation approximately one meter apart in a typical living room or bedroom (EPA, 1974). As shown in **Figure B-5**, the percentage of sentence intelligibility is a non-linear function of the (steady) indoor ambient or background sound level

(24-hour energy-average equivalent sound level ($L_{eq(24)}$). Steady ambient indoor sound levels of up to 45 dBA $L_{eq(24)}$ are expected to allow 100% intelligibility of sentences. The curve shows 99 percent sentence intelligibility for $L_{eq(24)}$ at or below 54 dBA and less than 10 percent intelligibility for $L_{eq(24)}$ greater than 73 dBA. In the same document from which **Figure B-5** was taken, the EPA established an indoor criterion of 45 dBA DNL as requisite to protect against speech interference indoors (EPA, 1974).

Figure B-5. Percent Sentence Intelligibility for Indoor Speech

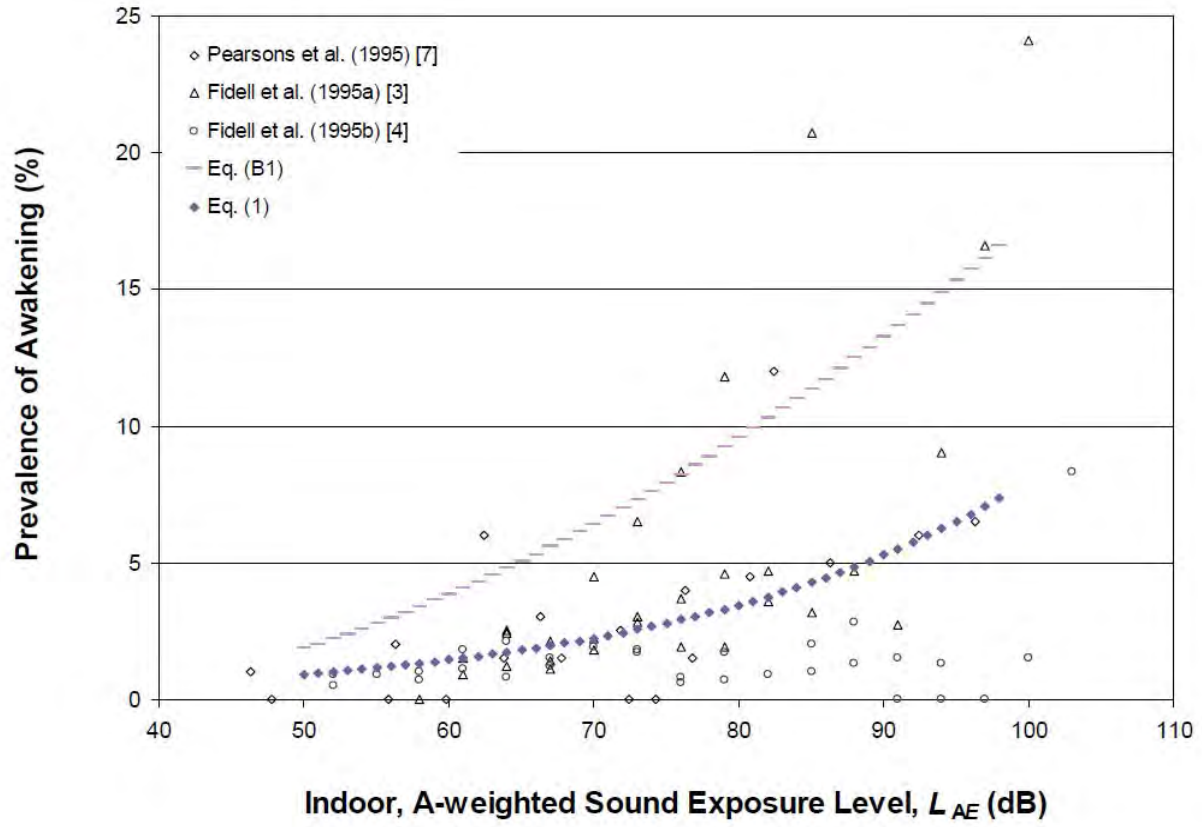


Source: EPA, (1974).

Sleep Disturbance – Sleep disturbance is a major noise concern in noise assessment and, of course, is most critical during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages and cause awakening. Noise may even cause awakening which a person may or may not be able to recall.

Extensive research has been conducted on the effect of noise on sleep disturbance. Early research was conducted in laboratory settings and indicated relatively high levels of sleep disturbance in response to noise stimuli as compared to recent studies. More recently, the miniaturization of electronics has enabled the use of sophisticated and more precise measurement techniques in the home environment. The most recent guidance regarding sleep disturbance is published in ANSI/ASA S12.9-2008/Part 6 *Quantities and Procedures for Description and Measurement of Environmental Sound – Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*. SEL is commonly used to assess sleep disturbance in airport environs. **Figure B-6** is reproduced from S12.9-2008 and indicates the predicted prevalence of awakening in terms of interior SEL.

Figure B-6. Plot of Sleep Awakening Data



Source: ANSI (2008).

ANSI/ASA S12.9-2008/Part 6 suggests that the upper curve shown in **Figure B-6** is applicable to individuals that are not habituated to aircraft noise and the lower curve is applicable to those individuals who are habituated to aircraft noise.

In addition to noise level, the number of nighttime events is also important when evaluating awakenings. For example, based on the lower curve, if 5 % of the population exposed to an interior SEL of 88 dBA is expected to be awakened, this indicates that 95% of the population is expected to remain asleep. From this information, the probability of remaining asleep through multiple events can be calculated. For example, the probability of remaining asleep through two events is 95% x 95 % or 90.2%. The probability of remaining asleep through three events is 95% x 95% x 95% or 86%, and so forth. The probability of awakening in the case of three events at an interior noise level of 88 dBA is 100% - 86% = 14%. Because of this compounding effect, even relatively low SEL values and correspondingly low values in terms of percent awakening from single aircraft events may be significant. With respect to the environs of LAX, this type of analysis must be taken in context. For example, the supporting research is limited and it is not known if the values for the probability of awakening from a single event are necessarily valid in the case of a quiet aircraft following a loud aircraft.

NOISE/LAND USE COMPATIBILITY STANDARDS

FAA has developed standards to minimize the effects of aircraft noise on people. 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*,, Appendix A, Section (§)14.3 and §14.4c, 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:

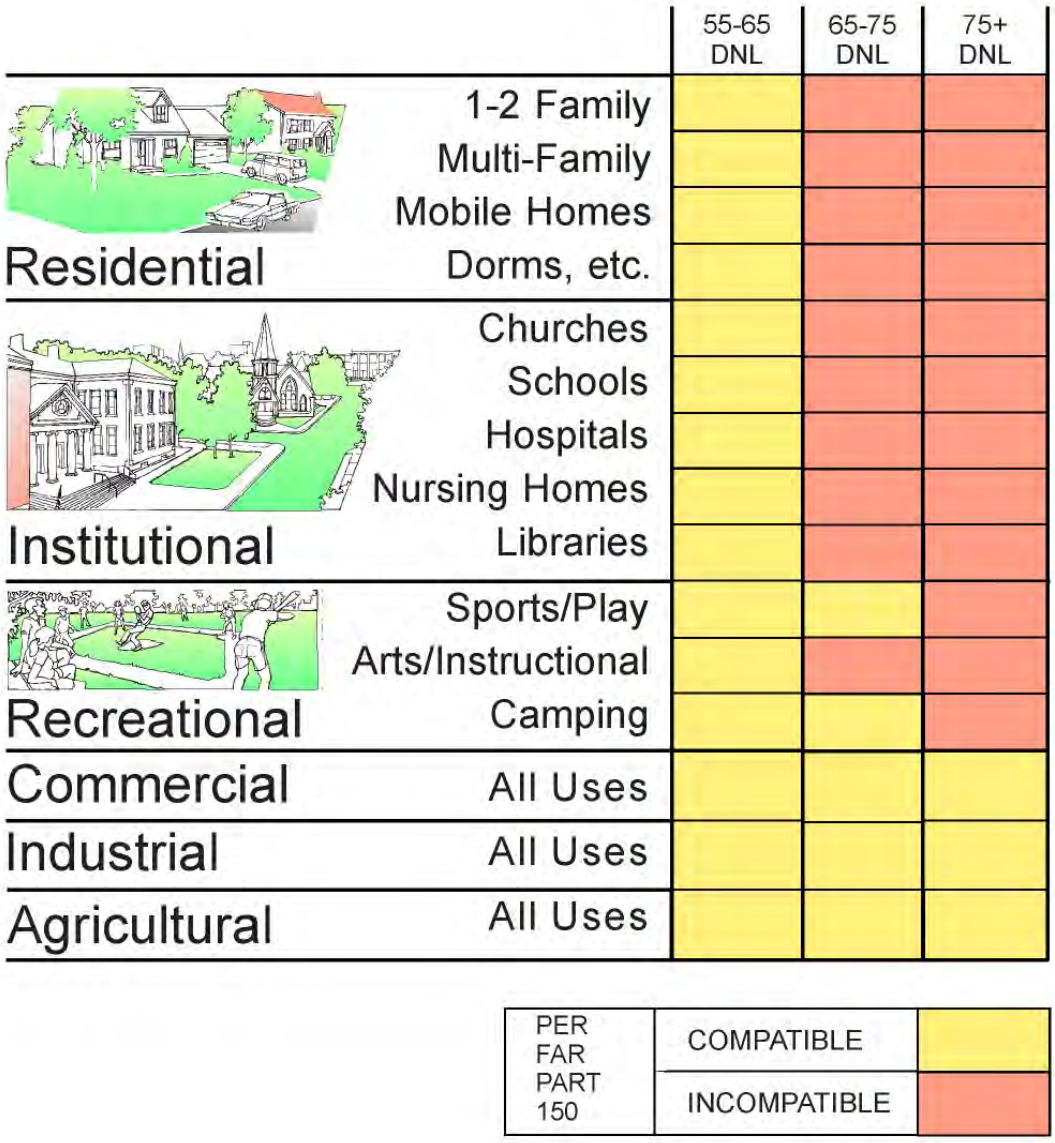
- Cause noise-sensitive areas located at or above CNEL 65 dB to experience a noise increase of at least CNEL 1.5 dB; or

- Cause an increase of DNL/CNEL 1.5 dB that introduces new noise-sensitive areas to exposure levels of CNEL 65 dB or more.

Therefore, the noise analysis determined if either build alternative would cause a 1.5 dB CNEL increase at noise-sensitive areas within the 65 dB CNEL contour for the No-Action Alternative.

FAA has also adopted guidelines for compatible land uses in the vicinity of airports. These regulations are spelled out in 14 CFR Part 150 "Airport Noise Compatibility Planning". As part of the 14 CFR Part 150 Noise Control program, the FAA has published noise and land use compatibility guidelines for land use planning with respect to aircraft noise. These guidelines, summarized in Figure **B-7**, recommend a maximum amount of noise exposure that might be considered acceptable or compatible to people in living and working areas. They provide local authorities with recommendations for determining acceptability and permissibility of land uses. These noise levels are derived from case histories involving aircraft noise problems at civilian and military airports and the resultant community response. Note that residential land use is deemed acceptable for noise exposures up to 65 dB CNEL. Recreational areas are also considered acceptable for noise levels above 65 dB CNEL (with certain exceptions). However the FAA guidelines indicate that ultimately "the responsibility for determining the acceptability and permissible land uses remains with the local authorities."

Figure B-7. Summary of 14 CFR Part 150 Noise Land Use Compatibility Guidelines



Source: Federal Interagency Committee on Aircraft Noise (FICAN) (2002)

ANALYSIS OF NOISE EXPOSURE

This section analyzes the potential change in noise exposure due to the construction and operation of the proposed action alternatives. The noise analysis methodology, modeling inputs and results are presented in the following subsections.

Methodology

Operations

The potential operational noise effects of the action under either of the build alternatives would be due to potential changes in aircraft noise exposure arising from physical shifting of the runway that would change the points of aircraft arrivals and departures.

The Integrated Noise Model (INM) has been FAA's standard tool since 1978 for determining the predicted aircraft noise impact in the vicinity of airports. The INM currently has over 1,000 licensed users and is used in over 30 countries. Within the U.S., statutory requirements for INM use are defined in FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures, Change 1*; Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*; and Title 14 CFR Part 150, *Airport Noise Compatibility Planning*.

INM Version 7.0c, released January 3, 2012, is the most recent version of the INM and was used for this analysis. The INM uses the number of daily daytime, evening and nighttime flight operations; flight paths; and flight profiles of the aircraft along with its extensive internal database of aircraft noise and performance information, to calculate the noise levels in airport environs. From a grid of points, the INM contouring program calculates contours of equal noise levels that can be superimposed onto land use maps for analysis. For this document, CNEL contours of 65, 70, and 75 dBA were developed. CNEL contours present a graphical representation of how the noise from the airport's average annual daily aircraft operations is distributed over the surrounding area. The INM can calculate sound levels at any specified point so that noise exposure at representative locations around an airport can be obtained.

The INM aircraft profile and noise calculation algorithms are based on several guidance documents published by the Society of Automotive Engineers (SAE) Aviation Noise Committee (A-21). A-21 is an internationally represented committee that includes research institutions, engineering firms, government and regulatory agencies, and aircraft and engine manufacturers. The core computational modules of the INM are based on five internationally recognized standards documents as follows:

- SAE-AIR-1845 "Procedure for the Calculation of Airplane Noise in the Vicinity of Airports"
- SAE-AIR-5662 "Method for Predicting Lateral Attenuation of Airplane Noise"
- SAE-ARP-866A "Standard Values of Atmospheric Absorption as a Function of Temperature and Humidity"
- ECAC Doc 29 "Report on Standard Method of Computing Noise Contours Around Civil Airports"
- ICAO Circular 205 "Recommended Method for Computing Noise Contours Around Airports"

The INM is an average-value-model and is designed to estimate long-term average effects using average annual input conditions. Because of this, differences between predicted and measured values can occur because certain local acoustical variables are not averaged, or because they may not be explicitly modeled

in INM. Differences may also occur due to errors or improper procedures employed during the collection of the measured data. Examples of detailed local acoustical variables include:

- Temperature profiles
- Wind gradients
- Humidity effects
- Ground absorption
- Individual aircraft directivity patterns
- Sound diffraction caused by water, buildings, barriers, etc.

The results of the INM analysis provide a relative measure of noise levels around airfield facilities. When detailed aircraft operational data is accurately analyzed and input into the model, the INM is the best tool available for comparing before and after noise effects resulting from forecast changes or alternative noise control actions. It allows noise levels to be predicted for such proposed actions without the actual implementation and noise monitoring of those actions.

Construction

Potential construction noise impacts under each proposed action alternative are evaluated in two ways. The first method is an analysis of potential traffic noise increases due to increased truck traffic along designated haul routes, and the second method entails evaluation of noise exposure due to construction activities and equipment utilized in constructing the various components of both of the action alternatives.

Potential construction traffic noise impacts are evaluated by estimating potential changes in traffic noise exposure due to addition of construction trucks and employee traffic for each action alternative to existing traffic volumes on area roadways, for roadway segments in the vicinity of noise-sensitive areas adjoining the Airport.

Since some of the construction activities would occur proximate to noise-sensitive areas, construction noise is evaluated in this Draft EA. 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.

Existing (2011) Noise Modeling Inputs

Los Angeles World Airports (LAWA) maintains a sophisticated aircraft operations and noise monitoring system. The system utilizes airport surveillance radar (ASR) to track aircraft arriving and departing LAX. Aircraft noise levels are monitored via a system of thirty-five microphones located at key areas around the airport. These microphones provide continuous surveillance and enable LAWA staff to analyze noise levels in critical noise-sensitive areas. Data from this system were used to provide the INM inputs.

Aircraft Operations

Individual daily aircraft operations at LAX for the entire calendar year 2011 were obtained from LAWA. These data are the most comprehensive data available regarding aircraft operational activity at LAX and are used as the basis of the noise analysis. The total annual flight operations data are shown in **Table B-1**.

Table B-1
LAX 2011 Operations

Category	Operations
Air Carrier (AC)	466,718
Air Taxi (AT)	106,007
General Aviation (GA)	18,468
Military (MIL)	2,400
Total Operations	**593,593**

Source: Los Angeles World Airports, 2012.

As shown in **Table B-1**, the majority of operations at LAX are conducted by air carrier aircraft. Air carrier aircraft are predominantly jet aircraft operated by national and international airlines. These operations account for approximately eighty percent of total operations at the airport. Air Taxi operations are operations conducted by small regional airlines and air charter services using predominantly turboprop aircraft. These operations account for approximately seventeen percent of total operations. General Aviation operations are operations conducted by privately owned aircraft. At LAX, General Aviation operations are predominantly business jet operations and comprise approximately three percent of total operations. Military operations at LAX consist predominantly of military transport operations. These operations account for less than one percent of total operations.

Aircraft Fleet Mix

Aircraft noise levels can vary greatly based on the aircraft type. This is due to differences in the noise emissions of the various airframe/engine combinations and aircraft performance characteristics. For this reason, it is very important to determine the precise mix of aircraft operating from the airport. ASR data were used to determine the existing INM fleet mix at LAX. These data are shown in **Table B-2**.

Table B-2
LAX 2011 Fleet Mix

INM Representative Aircraft	Aircraft Category[1]	Total Operations	% of Category	% of Total
737700	AC	67,655	14%	11%
757PW	AC	59,887	13%	10%
737800	AC	55,741	12%	9%
A320-211	AC	53,703	12%	9%
EMB120	AT	34,483	33%	6%
EMB145	AT	30,621	29%	5%
A319-131	AC	33,413	7%	6%
CL601	AT	28,974	27%	5%
CRJ9-ER	AC	31,923	7%	5%
737300	AC	27,032	6%	5%
747400	AC	19,276	4%	3%
767300	AC	17,096	4%	3%
777300	AC	13,466	3%	2%
777200	AC	12,303	3%	2%

Table B-2
LAX 2011 Fleet Mix

INM Representative Aircraft	Aircraft Category[1]	Total Operations	% of Category	% of Total
A321-232	AC	9,568	2%	2%
767CF6	AC	9,239	2%	2%
DHC8	AT	6,910	7%	1%
MD83	AC	7,328	2%	1%
757300	AC	6,925	1%	1%
737400	AC	6,335	1%	1%
A330-301	AC	5,144	1%	1%
MD82	AC	5,068	1%	1%
737500	AC	5,064	1%	1%
1900D	AT	4,379	4%	1%
MD11PW	AC	3,967	1%	1%
A340-642	AC	3,804	1%	1%
CL600	AC	3,013	1%	1%
GIV	GA	3,467	19%	1%
DC1030	Mil	2,154	90%	>1%
LEAR35	GA	3,358	18%	1%
A340-211	AC	2,724	1%	>1%
A300-622R	AC	2,084	>1%	>1%
CNA55B	GA	2,462	13%	>1%
GV	GA	2,419	13%	>1%
A380-841	AC	1,525	>1%	>1%
CNA750	GA	1,842	10%	>1%
A300B4-203	AC	1,324	>1%	>1%
F10062	GA	1,214	7%	>1%
CNA500	GA	836	5%	>1%
DC870	AC	614	>1%	>1%
747200	AC	563	>1%	>1%
CNA441	GA	665	4%	>1%
MU3001	GA	663	4%	>1%
SD330	AT	485	>1%	>1%
GIIB	Mil	245	10%	>1%
A330-343	AC	248	>1%	>1%
IA1125	GA	282	2%	>1%
CNA208	GA	266	1%	>1%
BEC58P	GA	242	1%	>1%
74710Q	AC	196	>1%	>1%
DHC6	AT	149	>1%	>1%
GII	GA	184	1%	>1%

Table B-2
LAX 2011 Fleet Mix

INM Representative Aircraft	Aircraft Category[1]	Total Operations	% of Category	% of Total
GASEPV	GA	178	1%	>1%
727200	AC	128	0%	>1%
CIT3	GA	151	1%	>1%
A310-304	AC	94	>1%	>1%
767400	AC	87	>1%	>1%
LEAR25	GA	97	1%	>1%
MD9028	AC	62	>1%	>1%
727EM1	AC	39	>1%	>1%
PA31	GA	37	>1%	>1%
CNA172	GA	28	>1%	>1%
PA28	GA	26	>1%	>1%
737N17	AC	17	>1%	>1%
CNA182	GA	19	>1%	>1%
DC93LW	AC	15	>1%	>1%
CNA206	GA	18	>1%	>1%
MD81	AC	12	>1%	>1%
DC910	AC	12	>1%	>1%
GASEPF	GA	14	>1%	>1%
707QN	AC	8	>1%	>1%
727EM2	AC	8	>1%	>1%
DC95HW	AC	4	>1%	>1%
DC3	AT	4	>1%	>1%
DHC830	AT	2	>1%	>1%
DC1040	AC	2	>1%	>1%
PA30	GA	1	>1%	>1%

Source: Los Angeles World Airports, 2012; URS Corp., 2012.
Notes: Calendar Year 2011.
[1] Representative Aircraft: EMB= Embraer; CRJ= Canadian Regional Jet; MD= McDonnell Douglas; A=Airbus;
[2] Aircraft Category: AC-Aircraft Carrier; AT-Air Taxi; GA-General Aviation; MIL-Military

Runway Utilization

Runway utilization refers to the percentage of operations that utilize a given runway. Aircraft generally take off and land into the wind. As a result, runway utilization is largely determined by prevailing wind conditions. At LAX, prevailing winds are westerly. For operational efficiency, aircraft departures generally occur from the inboard runways, Runway 24L and Runway 25R, and arrivals are to the outboard runways, Runway 24R and Runway 25L. ASR data via the ANOMS were used to determine the existing runway utilization at LAX. These data were compiled for each INM aircraft type. A generalized summary of these data is presented in **Table B-3**. **Table B-3** indicates the runway utilization by time period for arrival and departure operations. Runway utilization will not change as a result of the Proposed Action and is expected to remain the same in future years.

Table B-3
LAX Runway Utilization (2011)

Runway	Arrivals				Departures			
	Day	Evening	Night	Total	Day	Evening	Night	Total
06L	0.6%	0.3%	2.6%	0.8%	0.0%	0.0%	0.0%	0.0%
06R	0.0%	0.0%	12.3%	1.6%	0.4%	0.3%	0.2%	0.4%
07L	0.0%	0.0%	10.2%	1.3%	0.7%	0.4%	0.9%	0.7%
07R	0.6%	0.3%	1.8%	0.7%	0.0%	0.0%	0.1%	0.0%
24L	1.0%	1.4%	0.5%	1.0%	46.4%	49.9%	22.5%	42.3%
24R	47.5%	47.3%	25.4%	44.6%	1.6%	0.9%	1.1%	1.4%
25L	49.0%	48.5%	46.1%	48.5%	3.0%	5.4%	3.6%	3.4%
25R	1.3%	2.2%	1.1%	1.4%	47.8%	43.2%	71.5%	51.8%

Source: Los Angeles International Airport, 2012; Ricondo and Associates INM Input File, URS Corp. analysis (2012).
Note: Calendar Year 2011

The location of flight tracks (flight path over the ground) is another key component for determining noise exposure. Generalized flight tracks (the geographical spread of aircraft operations in terms of overflight density) for LAX for arrivals and departures are shown in **Figures B-8** and **B-9**, respectively.

Los Angeles International Airport

Legend

Generalized Study Area / Airport Property Boundary

Generalized Arrival Tracks

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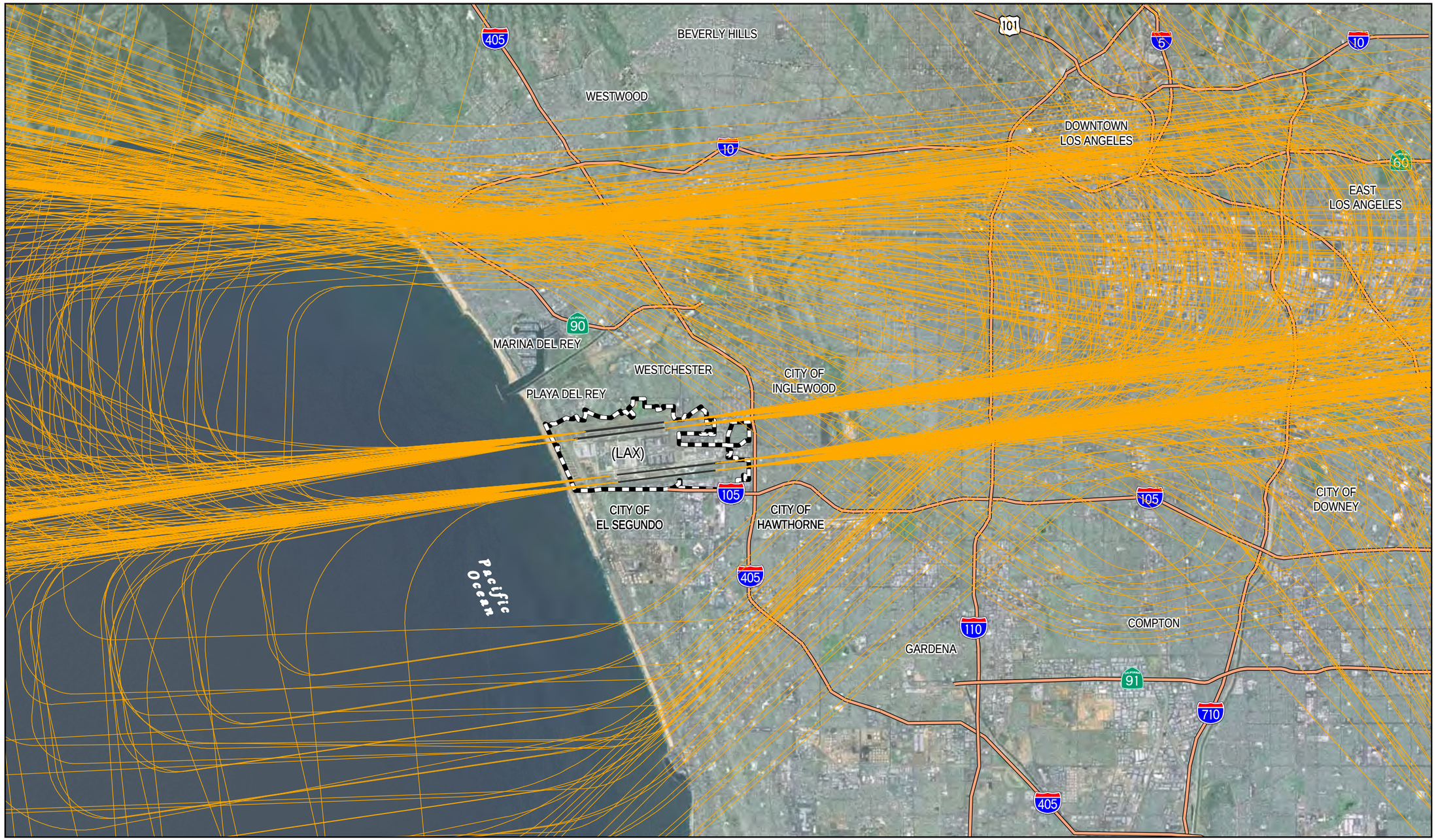
1" = 2 mile

north



Sources: LAWA, 2012; ESRI Maps and Data, April 2012; Prepared by: URS Corporation.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Generalized Flight Tracks at LAX - Arrivals

FIGURE
B-8

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Generalized Study Area / Airport Property Boundary

Generalized Departure Tracks

Los Angeles International Airport

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1" = 2 mile

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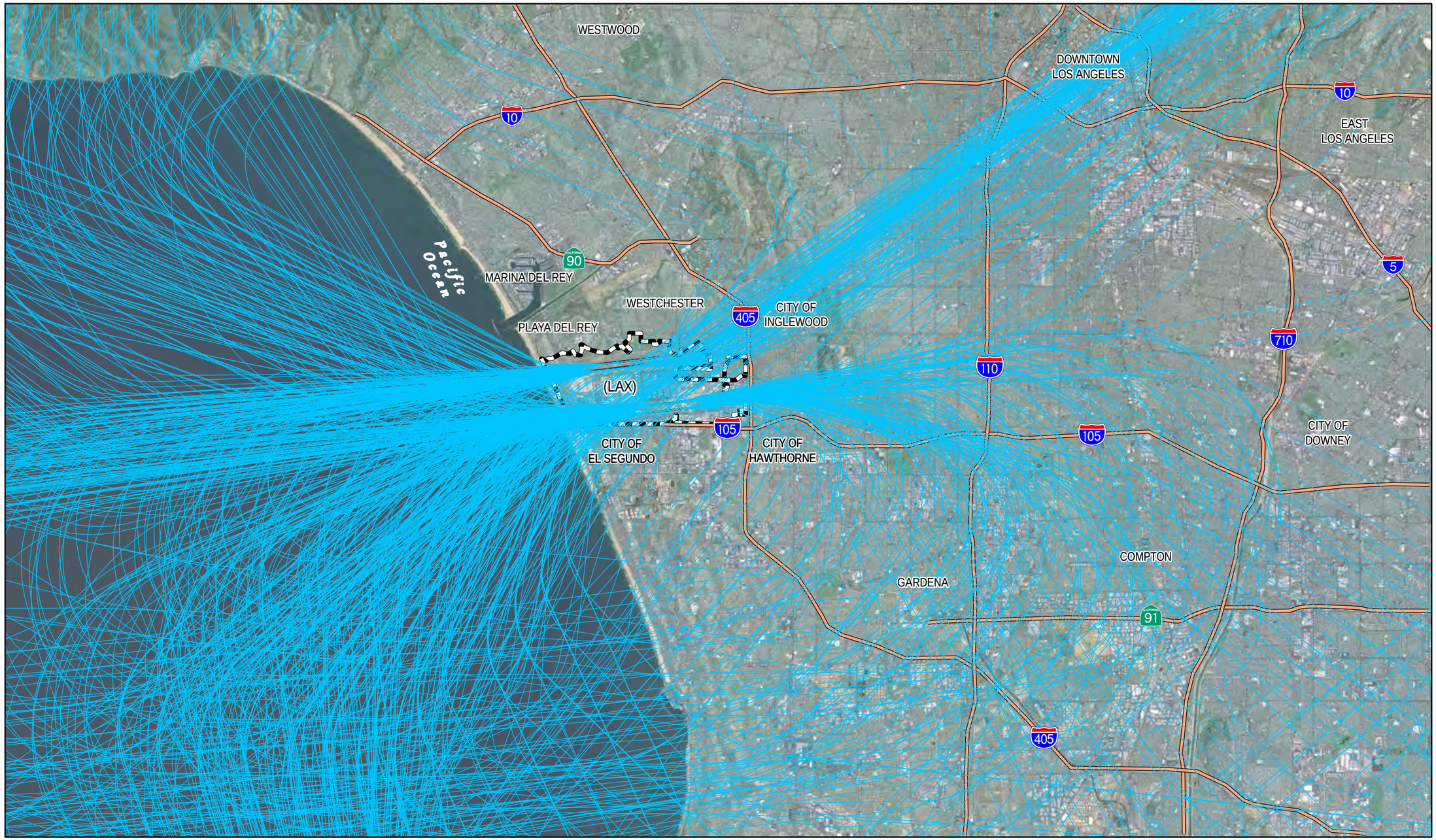

Sources: LAWA, 2012; ESRI Maps and Data, April 2012; Prepared by: URS Corporation.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Generalized Flight Tracks at LAX - Departures

FIGURE
B-9

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Time of Day

The Time of Day aircraft operations occur is important for determining cumulative noise exposure. In the CNEL metric, aircraft noise levels are weighted based on the time of day they occur. In determining CNEL, each aircraft operation occurring during the nighttime, between the hours of 10:00 p.m. and 7:00 a.m., is treated as if it were 10 operations in terms of noise exposure. Similarly, operations taking place during the evening period, between the hours of 7:00 and 10:00 p.m., are treated as if they were three operations. Logarithmically, these multipliers are the equivalent of adding 10 dB to the noise level of each nighttime operation and 4.77 dB to the noise level of each evening operation. These noise level penalties are intended to correspond to the drop in background noise level which studies have found takes place naturally from daytime to evening and nighttime in a typical community. The evening and nighttime decrease in ambient sound levels—from both outdoor and indoor sources—is commonly considered to be the principal explanation for people's heightened sensitivity to noises during these periods (**Table B-4**). CNEL is designed to account for this increased sensitivity.

Table B-4
Summary of Operations by Time of Day

Aircraft Category	Annual Operations		
	Day (7 a.m. – 7 p.m.)	**Evening (7 p.m. – 10 p.m.)**	**Night (10 p.m. – 7 a.m.)**
Air Carrier (AC)	67%	15%	18%
Air Taxi (AT)	76%	16%	9%
General Aviation (GA)	72%	15%	13%
Military (MIL)	57%	15%	28%

Source: Los Angeles International Airport, 2012; Ricondo and Associates INM Input File, URS Corp. analysis (2012).
Note: Calendar Year 2011

Existing (2011) CNEL Contours

Areas of equal noise levels are commonly depicted as CNEL contours and present a graphical representation of the cumulative distribution of noise over the surrounding area. Based on the operational conditions presented above, noise contours were developed using the INM. Noise exposure resulting from 2011 aircraft operations at LAX is depicted on **Figure B-10** as CNEL 65, 70, and 75 dBA contours, superimposed over the local land use map. Noise sensitive land uses within the existing CNEL 65 dBA or greater noise contours are listed in **Table B-5**.

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Los Angeles International Airport

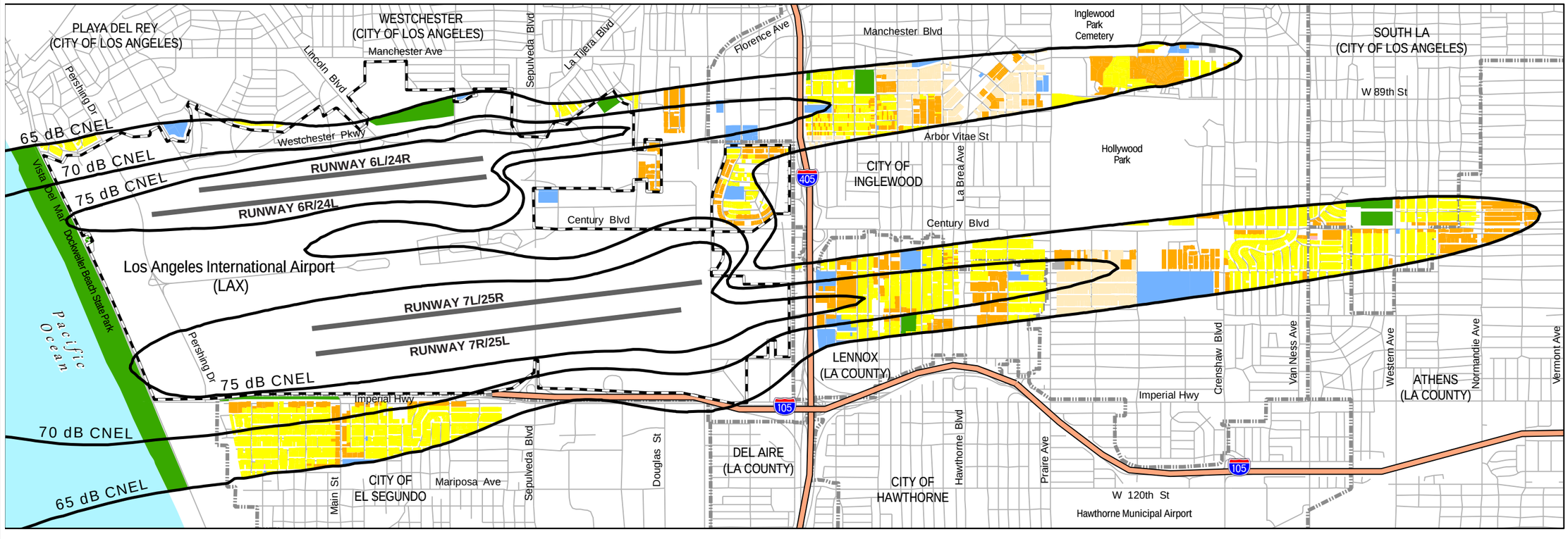
0 4000 ft.
1" = 4000 feet
north

Legend

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

Existing Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Existing (2011)
Aircraft Noise Exposure CNEL Contours

FIGURE
B-10

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Table B-5
2011 (Existing Conditions) Noise Exposure Summary by Sensitive Land Use Category

Land Use		65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family Residential	Dwelling Units	2,788	844	5	3,637
	Population	6,970	2,110	13	9,093
Multi-Family Residential	Dwelling Units	12,967	2,543	187	15,697
	Population	32,417	6,359	468	39,244
Mobile Home	Dwelling Units	786	95	--	881
	Population	1,965	238	--	2,203
School	Parcels	57	15	--	72
Church	Parcels	2	3	--	5
Hospital	Parcels	4	--	--	4
Recreation	Parcels	13	8	3	24
Total	**Parcels**	**76**	**26**	**3**	**105**
	Dwelling Units	**16,541**	**3,482**	**192**	**20,215**
	Population	**41,352**	**8,706**	**481**	**50,539**

Source: Land Use Data from Southern California Association of Governments , 2008; URS Corp. Analysis, 2012.

Future Years Noise Modeling Inputs

Noise modeling inputs for future years is based on the detailed data obtained during the analysis of 2011 aircraft operations. The proposed action alternatives would not change the operational conditions at the Airport. Data regarding fleet mix, runway utilization, flight tracks, and time of day were carried forward for the analysis of future years. These operational data were applied to the future operational levels. All other operational assumptions remain the same as those defined for the 2011 existing conditions, except the location of the takeoff and landing points on Runway 7L-25R as defined in the project description.

The FAA Terminal Area Forecast (TAF) for LAX was used to determine the number of aircraft operations for future years 2015 and 2020. These data are shown in **Table B-6**. For purposes of comparison, operational data for 2011 is included in this table.

Table B-6
LAX Existing and Forecast Aircraft Operations

Aircraft Category	Annual 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; URS Corp. Analysis, 2012.
TAF data is from FAA TAF sourced from http://aspm.faa.gov/main/taf.asp accessed 3/9/12.

The aircraft fleet mix for 2011 was maintained for the 2015 and 2020 analysis. Given the high capital cost of aircraft, airframes are well maintained and typically serve in the fleet for many years. This practice maintains the initial investment by extending the useful aircraft life and serves to stabilize the fleet mix. In terms of analyzing noise exposure, this approach is somewhat conservative in that future aircraft will likely be quieter than existing aircraft. As older aircraft are retired, they will likely be replaced by quieter aircraft.

2015 Airport Noise Contours

No-Action Alternative

Future (2015) No-Action Alternative estimated noise exposure areas, by sensitive land use category, within the 65, 70 and 75 dB CNEL levels are presented in **Table B-7**, and the CNEL contours shown in **Figure B-11**.

Table B-7
2015 Noise Exposure Summary by Sensitive Land Use Category – No-Action Alternative

Land Use		65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family Residential	Dwelling Units	3,036	961	18	4,015
	Population	7,591	2,404	46	10,041
Multi-Family Residential	Dwelling Units	14,336	2,778	231	17,345
	Population	35,839	6,946	578	43,363
Mobile Home	Dwelling Units	795	142	--	937
	Population	1,987	356	--	2,343
School	Parcels	60	17	--	77
Church	Parcels	3	3	--	6
Hospital	Parcels	5	--	--	5
Recreation	Parcels	14	9	3	26
Total	**Parcels**	**82**	**29**	**3**	**114**
	Dwelling Units	**18,167**	**3,881**	**249**	**22,297**
	Population	**45,417**	**9,706**	**624**	**55,747**

Source: Land Use Data from Southern California Association of Governments, 2008; URS Corp. Analysis, 2012.

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Los Angeles International Airport

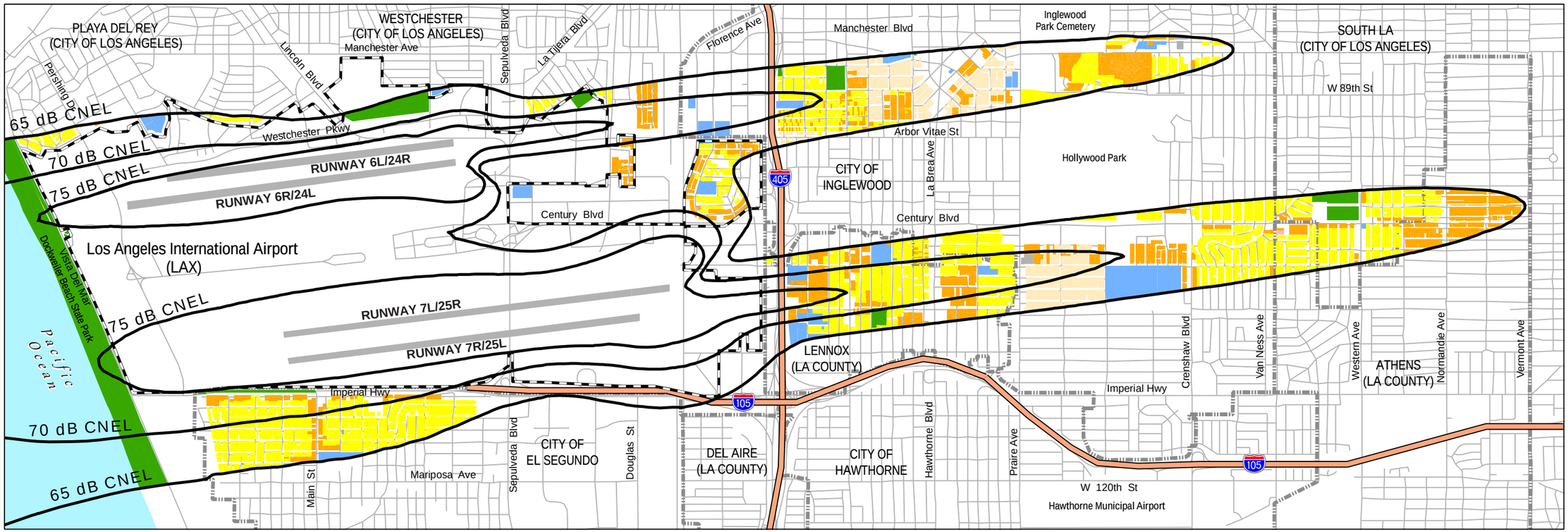
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

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

FIGURE
B-11

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Proposed Action Alternative

Future (2015) Proposed Action Alternative estimated noise exposure areas, by sensitive land use category, within the 65, 70 and 75 dB CNEL levels are presented in **Table B-8**, and the CNEL contours shown in **Figure B-12**.

Table B-8
2015 Noise Exposure Summary by Sensitive Land Use Category – Proposed Action Alternative

Land Use		65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family Residential	Dwelling Units	3,033	961	18	4,012
	Population	7,583	2,403	45	10,031
Multi-Family Residential	Dwelling Units	14,325	2,775	230	17,330
	Population	35,812	6,938	576	43,326
Mobile Home	Dwelling Units	795	141	--	936
	Population	1,986	354	--	2,340
School	Parcels	60	17	--	77
Church	Parcels	3	3	--	6
Hospital	Parcels	5	--	--	5
Recreation	Parcels	14	9	3	26
Total	**Parcels**	**82**	**29**	**3**	**114**
	Dwelling Units	**18,153**	**3,877**	**248**	**22,278**
	Population	**45,381**	**9,695**	**621**	**55,697**

Source: Land Use Data from Southern California Association of Governments, 2008; URS Corp. Analysis, 2012.

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Los Angeles International Airport

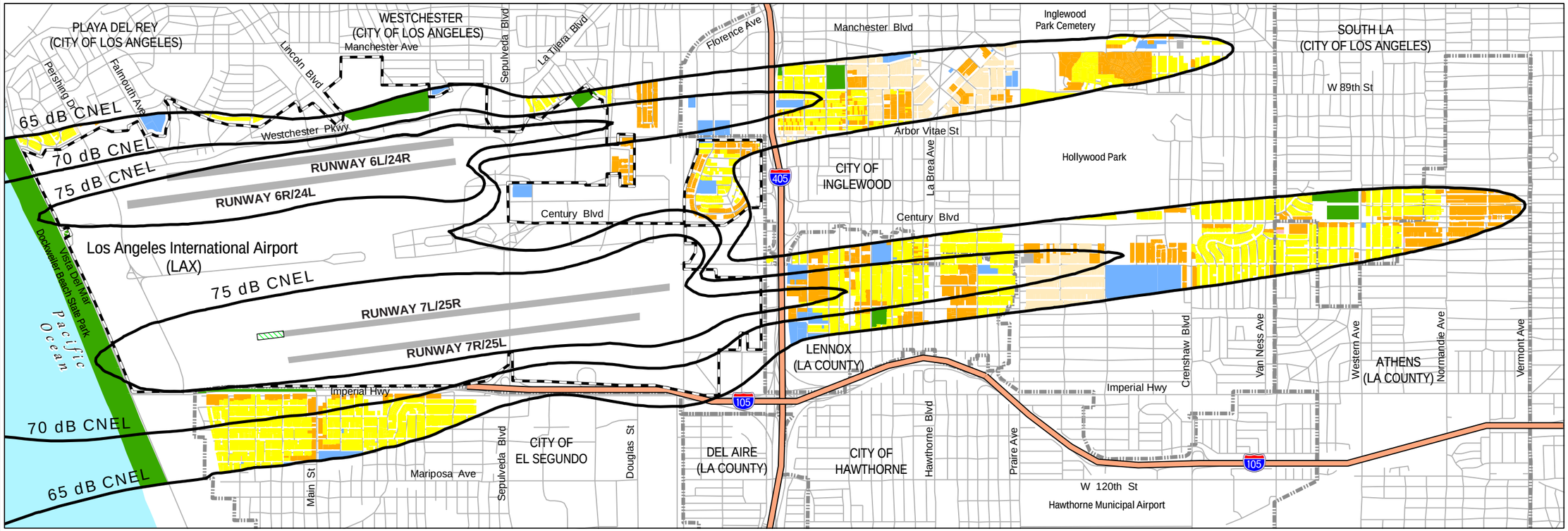
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2015)
Aircraft Noise Exposure CNEL Contours -
Proposed Action Alternative

FIGURE
B-12

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Shift Runway Alternative

Future (2015) Shift Runway Alternative estimated noise exposure areas by sensitive land use category within the 65, 70 and 75 dB CNEL levels are presented in **Table B-9**, and the CNEL contours shown in **Figure B-13**.

Table B-9
2015 Noise Exposure Summary by Sensitive Land Use Category – Shift Runway Alternative

Land Use		65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family	Dwelling Units	2,900	945	18	3,863
	Population	7,250	2,361	45	9,656
Multi-Family	Dwelling Units	14,132	2,631	230	16,993
	Population	35,331	6,577	574	42,482
Mobile Home	Dwelling Units	788	140	--	928
	Population	1,969	349	--	2,318
School	Parcels	61	16	--	77
Church	Parcels	3	3	--	6
Hospital	Parcels	5	--	--	5
Recreation	Parcels	14	9	3	26
Total	**Parcels**	**83**	**28**	**3**	**114**
	Dwelling Units	**17,820**	**3,716**	**248**	**21,784**
	Population	**44,550**	**9,287**	**619**	**54,456**

Source: Land Use Data from Southern California Association of Governments, 2008; URS Corp. Analysis, 2012.

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Los Angeles International Airport

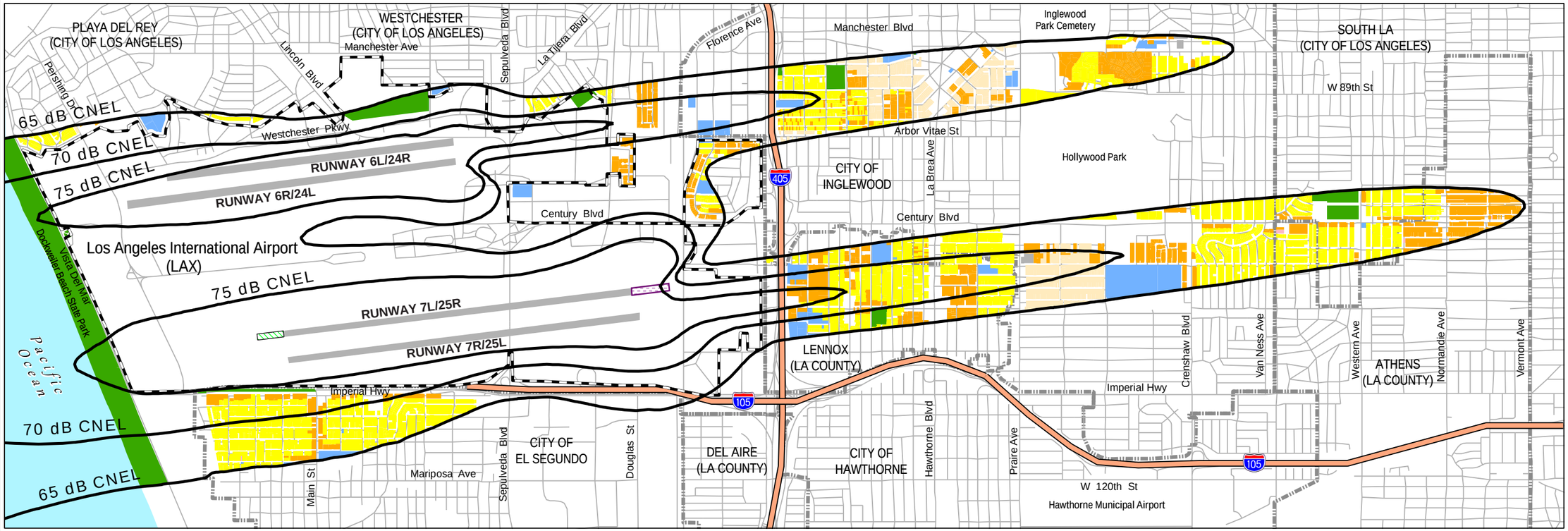
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

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

FIGURE
B-13

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Year 2020 Airport Noise Contours

No-Action Alternative

Future (2020) No-Action Alternative estimated noise exposure areas, by sensitive land use category, within the 65, 70 and 75 dB CNEL levels are presented in **Table B-10**, and the CNEL contours shown in **Figure B-14**.

Table B-10
2020 Noise Exposure Summary by Sensitive Land Use Category – No-Action Alternative

Land Use		65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family Residential	Dwelling Units	3,476	1,128	41	4,645
	Population	8,689	2,819	102	11,610
Multi-Family Residential	Dwelling Units	15,548	3,512	300	19,360
	Population	38,870	8,780	749	48,399
Mobile Home	Dwelling Units	817	195	--	1,012
	Population	2,042	487	--	2,529
School	Parcels	63	21	--	84
Church	Parcels	4	3	--	7
Hospital	Parcels	5	--	--	5
Recreation	Parcels	16	11	4	31
Total	**Parcels**	**88**	**35**	**4**	**127**
	Dwelling Units	**19,841**	**4,835**	**341**	**25,017**
	Population	**49,601**	**12,086**	**851**	**62,538**

Source: Land Use Data from Southern California Association of Governments, 2008;URS Corp. Analysis, 2012.

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Los Angeles International Airport

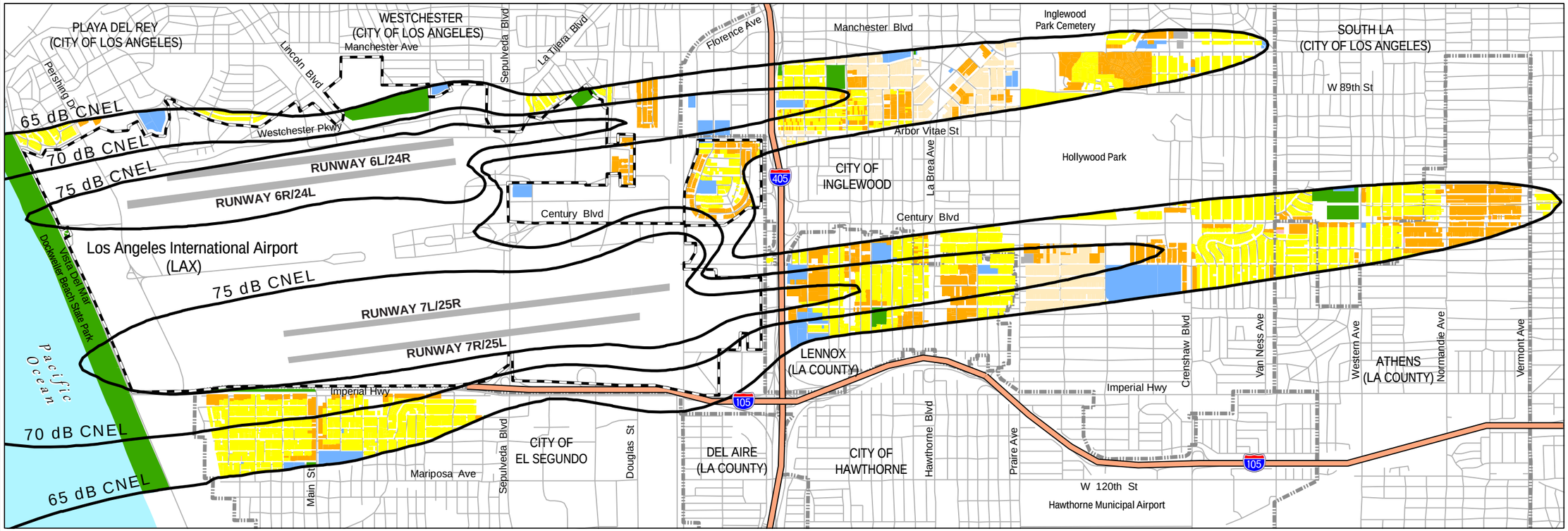
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

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

FIGURE
B-14

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Proposed Action Alternative

Future (2020) Proposed Action Alternative estimated noise exposure areas, by sensitive land use category, within the 65, 70 and 75 dB CNEL levels are presented in **Table B-11**, and the CNEL contours shown in **Figure B-15**.

Table B-11
2020 Noise Exposure Summary by Sensitive Land Use Category –Proposed Action Alternative

Land Use	Detailed Land Use	65-70 dBA CNEL	70-75 dBA CNEL	75 dB CNEL and Above	Total
Single-Family Residential	Dwelling Units	3,472	1,128	40	4,640
	Population	8,680	2,820	100	11,600
Multi-Family Residential	Dwelling Units	15,564	3,502	299	19,365
	Population	38,909	8,755	746	48,410
Mobile Home	Dwelling Units	817	195	--	1,012
	Population	2,041	486	--	2,527
School	Parcels	63	21	--	84
Church	Parcels	4	3	--	7
Hospital	Parcels	5	--	--	5
Recreation	Parcels	16	11	4	31
Total	**Parcels**	**88**	**35**	**4**	**127**
	Dwelling Units	**19,853**	**4,825**	**339**	**25,017**
	Population	**49,630**	**12,061**	**846**	**62,537**

Source: Land Use Data from Southern California Association of Governments, 2008. URS Corp. Analysis, 2012.

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Los Angeles International Airport

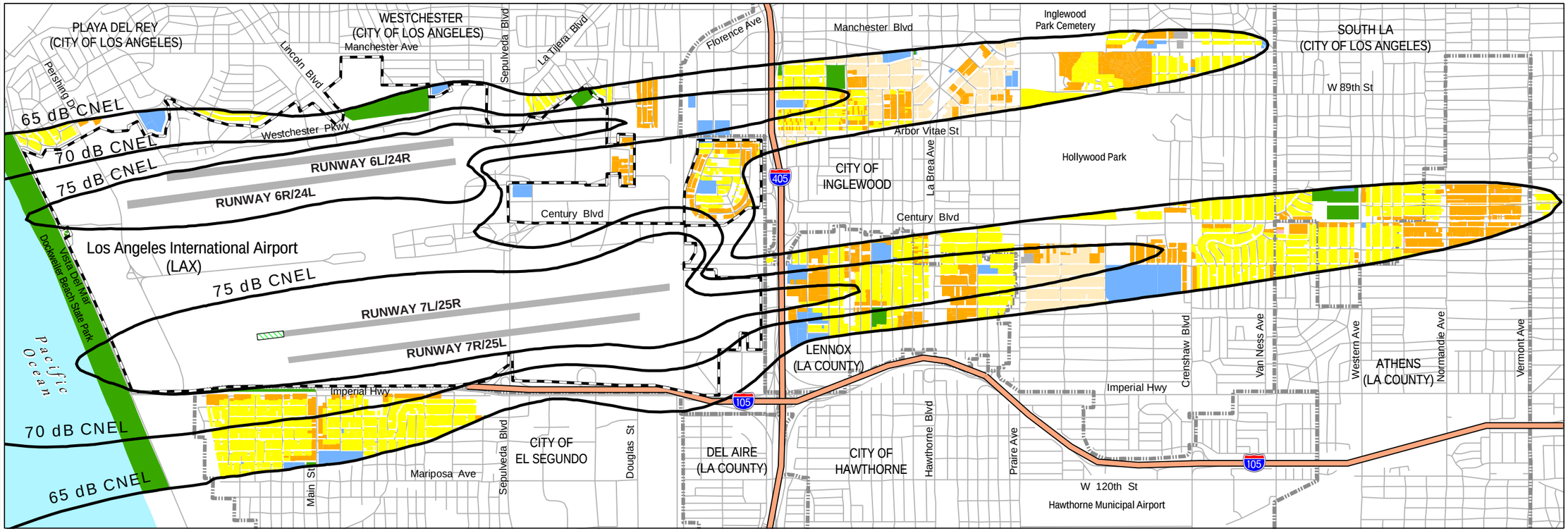
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2020)
Aircraft Noise Exposure CNEL Contours -
Proposed Action Alternative

FIGURE
B-15

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Shift Runway Alternative

Future (2020) Shift Runway Alternative estimated noise exposure areas, by sensitive land use category, within the 65, 70 and 75 dB CNEL levels are presented in **Table B-12**, and the CNEL contours shown in **Figure B-16**.

Table B-12
2020 Noise Exposure Summary by Sensitive Land Use Category – Shift Runway Alternative

Land Use	Detailed Land Use	65-70 dBA CNEL	70-75 dBA CNEL	75 dBA CNEL and Above	Total
Single-Family Residential	Dwelling Units	3,342	1,107	40	4,489
	Population	8,356	2,766	99	11,221
Multi-Family Residential	Dwelling Units	15,296	3,325	298	18,919
	Population	38,241	8,312	744	47,297
Mobile Home	Dwelling Units	809	194	--	1,003
	Population	2,023	484	--	2,507
School	Parcels	62	19	--	81
Church	Parcels	4	3	--	7
Hospital	Parcels	5	--	--	5
Recreation	Parcels	15	10	5	30
Total	**Parcels**	**86**	**32**	**5**	**123**
	Dwelling Units	**19,447**	**4,626**	**338**	**24,411**
	Population	**48,620**	**11,562**	**843**	**61,025**

Source: Land Use Data from Southern California Association of Governments, 2008; URS Corp. Analysis, 2012.

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Los Angeles International Airport

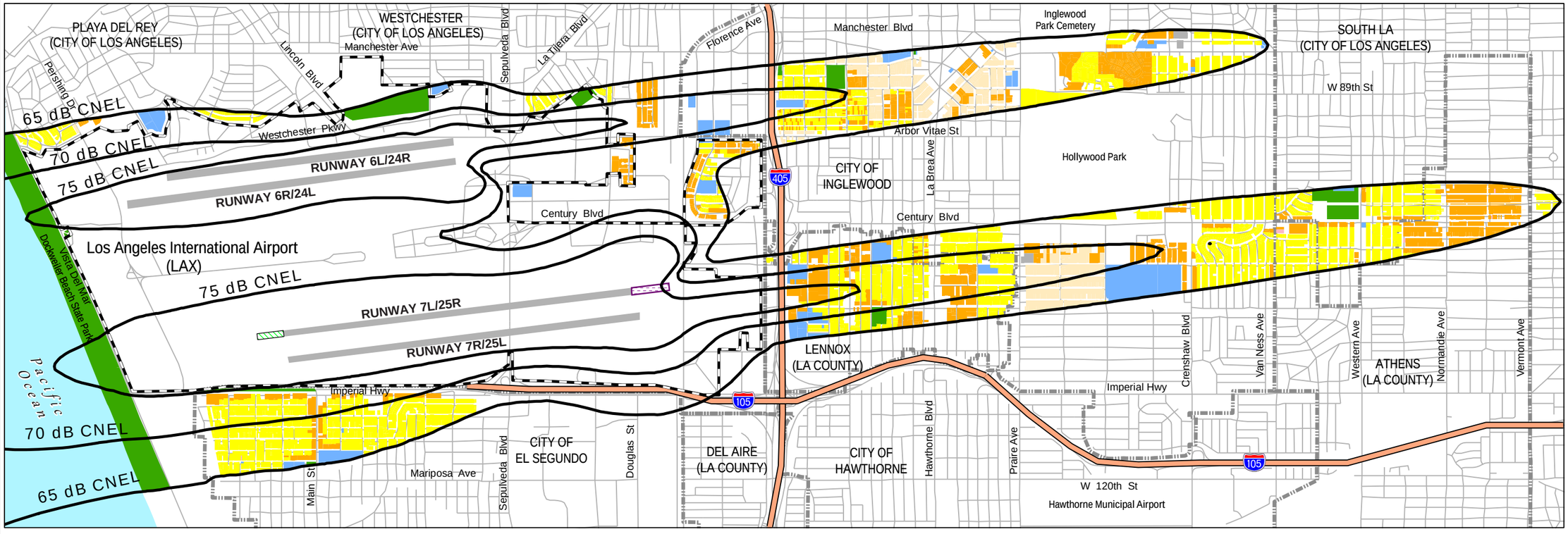
0 4000 ft.
1" = 4000 feet
north

Legend

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

Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- 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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

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

FIGURE
B-16

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Comparison of Alternatives

Figures **B-17** and **B-18** are graphical comparisons of the CNEL contours for the Proposed Action Alternative to the No-Action Alternative for forecast years 2015 and 2020, respectively. From these figures, it is apparent that only a small increase would be experienced 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 years, Proposed Action Alternative aircraft noise exposure at all areas, including areas in El Segundo and beneath the arrival paths east of LAX would remain the same as the No-Action Alternative. This can be explained by the fact that only a small part, nearly one percent, of flight operations at LAX utilize Runway 07L for landing or takeoff (see Table **B-3**).

Figures **B-19** and **B-20** provide a quantitative comparison of noise exposure in terms of CNEL for the Proposed Action Alternative to the No-Action Alternative for forecast years 2015 and 2020, respectively. These figures depict the No-Action Alternative 65 dB CNEL contour along with the change in CNEL from the No-Action Alternative at discrete locations in the vicinity of LAX. As verified by these figures, no locations within the 65 dB CNEL experience an increase of 1.5 dB or greater.

Figures **B-21** and **B-22** depict comparisons of the CNEL contours for the Shift Runway Alternative to the No-Action Alternative for forecast years 2015 and 2020, respectively. Visual examination of these figures reveals that noise-sensitive areas around the Airport would not experience any increases in aircraft noise exposure from the Shift Runway Alternative. The only slight off-Airport increases would be in commercial/industrial areas along Imperial Highway south of the Airport, and in Dockweiler Beach west of the Airport. The Shift Runway Alternative would result in noise benefits at certain noise-sensitive areas proximate to the end of Runway 25R. Since nearly 52 percent of overall aircraft departures at LAX utilize Runway 25R (see Table **X-3**), a major contributor to the noise contours in areas immediately east of this runway 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. Benefited noise-sensitive areas would include the residential uses northeast of Century Boulevard and Aviation Boulevard and some residential locations south of Imperial Highway 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. The reason for this is that the majority of aircraft arrivals, the dominant source of aircraft noise in these areas, utilize Runway 25L which would remain at its current location.

Figures **B-23** and **B-24** provide a quantitative comparison of noise exposure in terms of CNEL for the Shift Runway Alternative to the No-Action Alternative for forecast years 2015 and 2020, respectively. These figures depict the No-Action Alternative 65 dB CNEL contour along with the change in CNEL from the Shift Runway Alternative at discrete locations in the vicinity of LAX. As verified by these figures, no locations aside from areas in the immediate vicinity of Runway 7L/25R, within the 65 dB CNEL experience an increase of 1.5 dB or greater.

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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

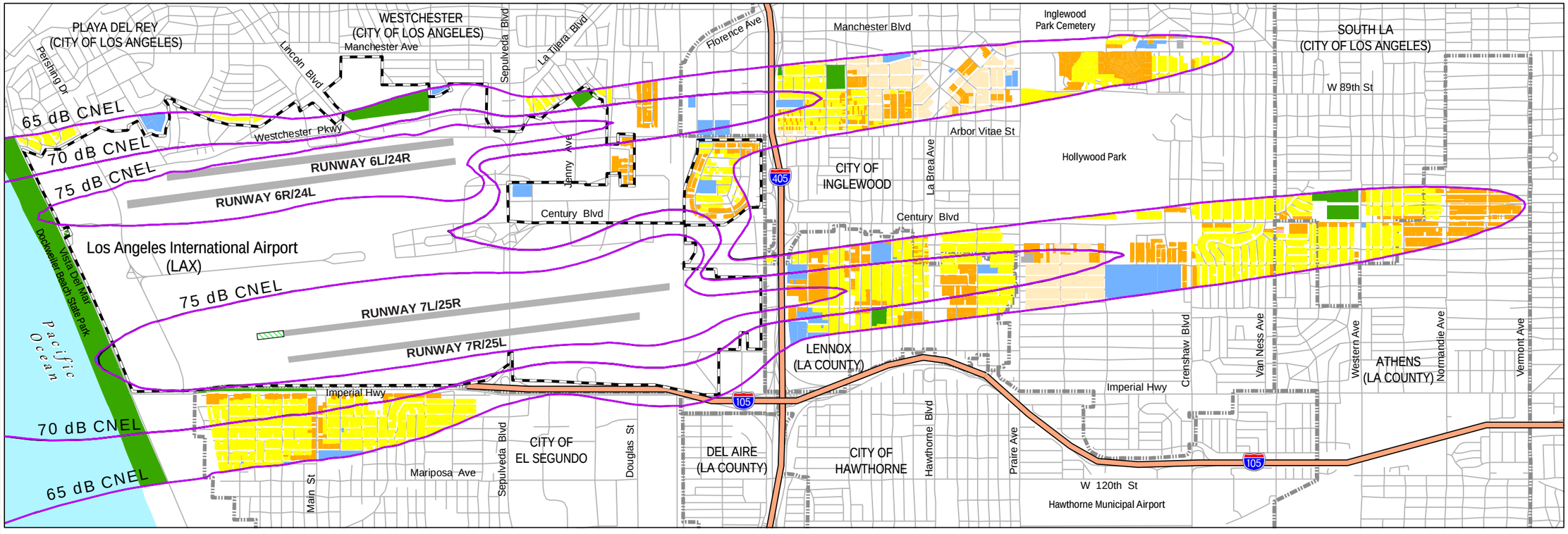
Noise Sensitive Land Use

Single-Family
Multi-Family
Mobile Home
School
Church
Hospital
Recreation

2015 CNEL Noise Exposure Contours
2020 CNEL Noise Exposure Contours

Areas Located Within 65 dB CNEL Contours

No Longer Located
Newly Located



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2015)
Aircraft Noise Exposure CNEL Contours –
Proposed Action vs. No-Action Alternative

FIGURE
B-17

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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

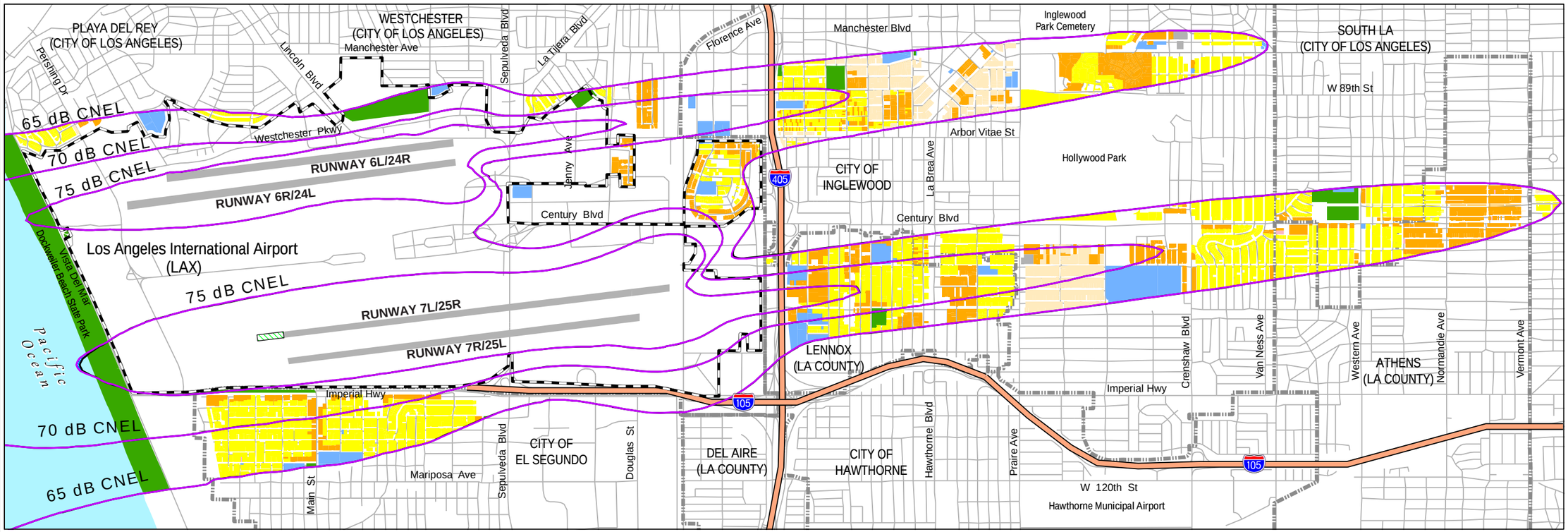
Noise Sensitive Land Use

Single-Family
Multi-Family
Mobile Home
School
Church
Hospital
Recreation

2015 CNEL Noise Exposure Contours
2020 CNEL Noise Exposure Contours

Areas Located Within 65 dB CNEL Contours

No Longer Located
Newly Located



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2020)
Aircraft Noise Exposure CNEL Contours –
Proposed Action vs. No-Action Alternatives

FIGURE
B-18

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Los Angeles International Airport

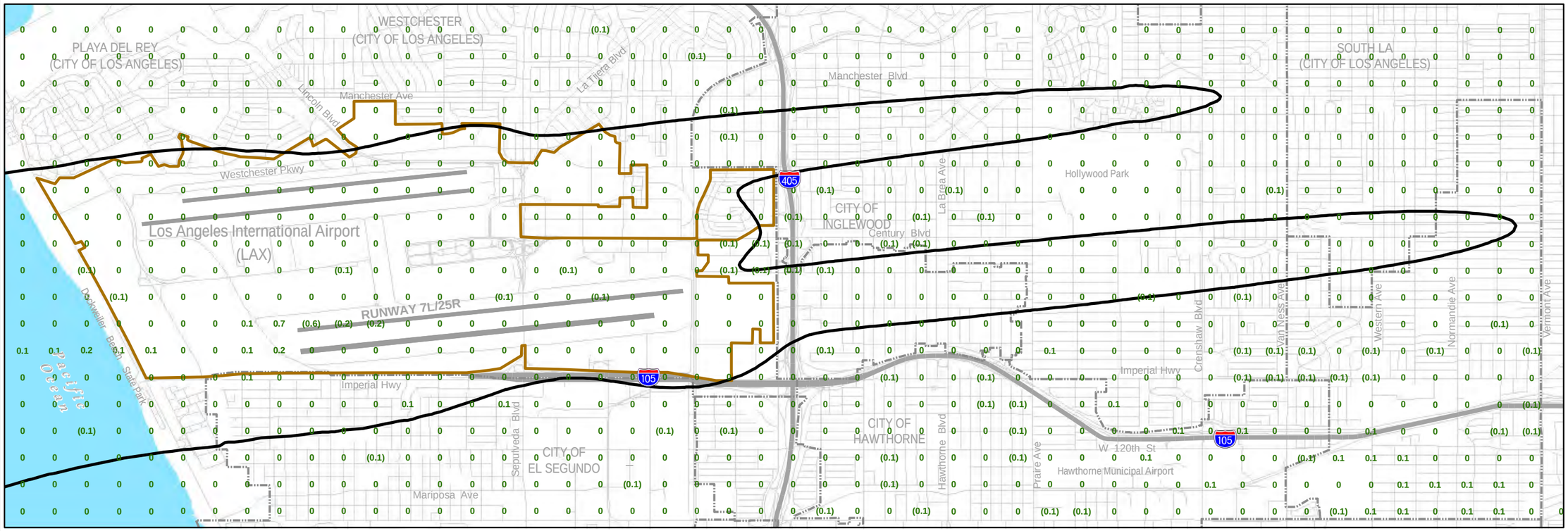
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- No-Action 65 dB CNEL Noise Exposure Contour
- Existing Runway

Change from No-Action Alternative

- (0.1) Less than 0 dB CNEL
- 0.1 0 or Greater dB CNEL



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2015)
Aircraft Noise Exposure CNEL Contours
Quantitative Comparison –
Proposed Action vs. No-Action Alternatives

FIGURE
B-19

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Los Angeles International Airport

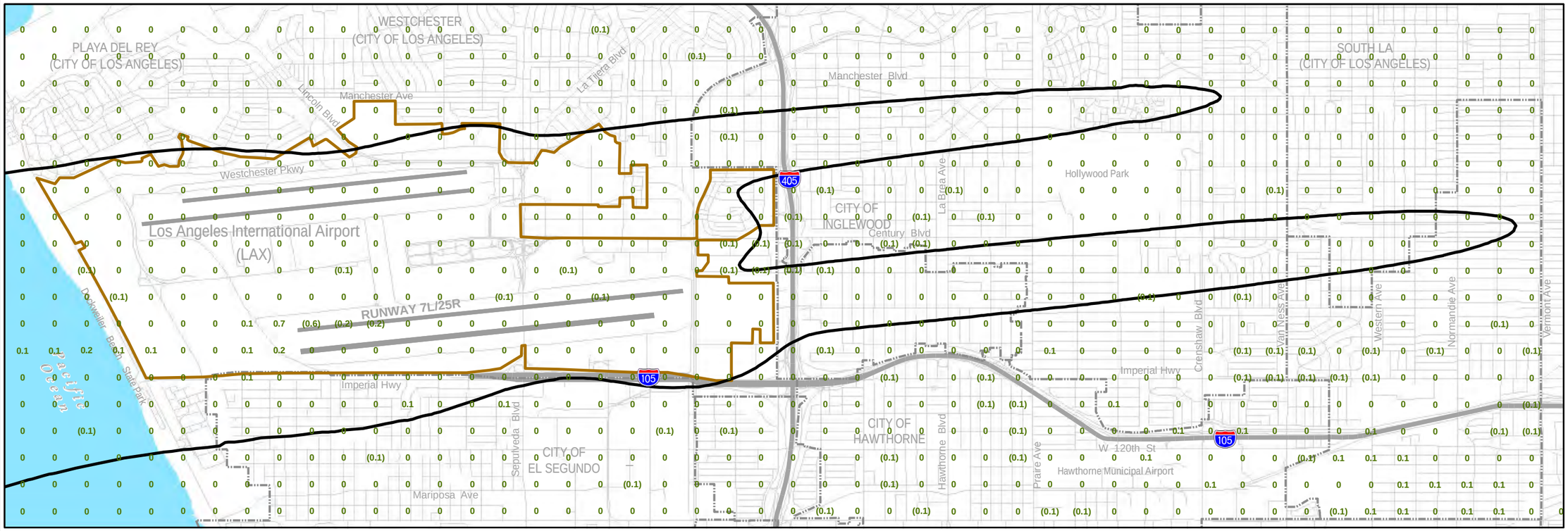
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- No-Action 65 dB CNEL Noise Exposure Contour
- Existing Runway

Change from No-Action Alternative

- (0.1) Less than 0 dB CNEL
- 0.1 0 or Greater dB CNEL



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2020)
Aircraft Noise Exposure CNEL Contours
Quantitative Comparison –
Proposed Action vs. No-Action Alternatives

FIGURE
B-20

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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 Use for Departures

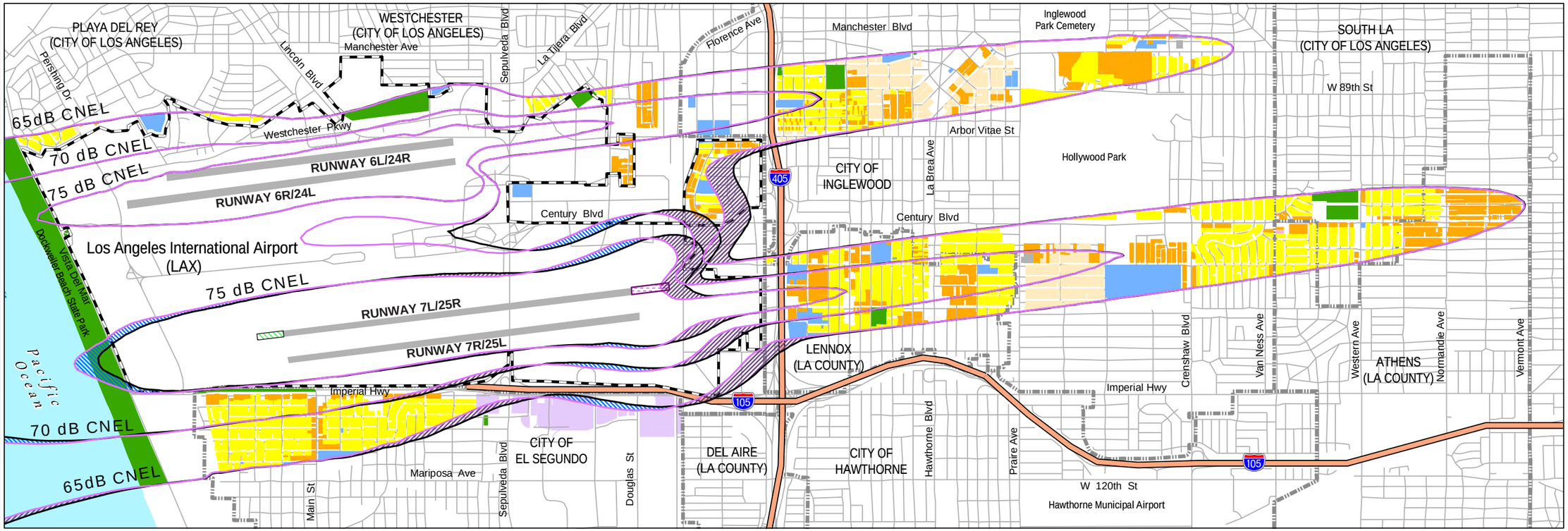
Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- School
- Church
- Hospital
- Recreation

- 2015 CNEL Noise Exposure Contours
- 2020 CNEL Noise Exposure Contours

Areas Located Within 65 dB CNEL Contours

- No Longer Located
- Newly Located



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2015)
Aircraft Noise Exposure CNEL Contours –
Shift Runway vs. No-Action Alternatives

FIGURE
B-21

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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 Use for Departures

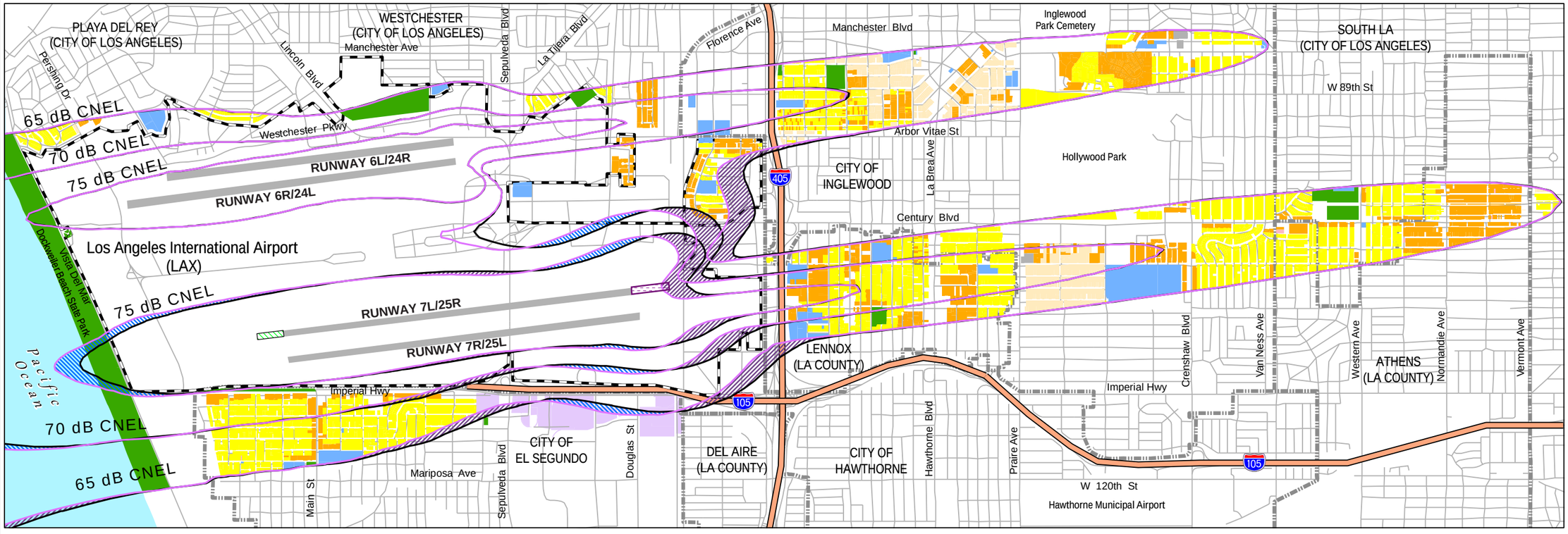
Noise Sensitive Land Use

- Single-Family
- Multi-Family
- Mobile Home
- School
- Church
- Hospital
- Recreation

- 2015 CNEL Noise Exposure Contours
- 2020 CNEL Noise Exposure Contours

Areas Located Within 65 dB CNEL Contours

- No Longer Located
- Newly Located



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2020)
Aircraft Noise Exposure CNEL Contours –
Shift Runway vs. No-Action Alternatives

FIGURE
B-22

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Los Angeles International Airport

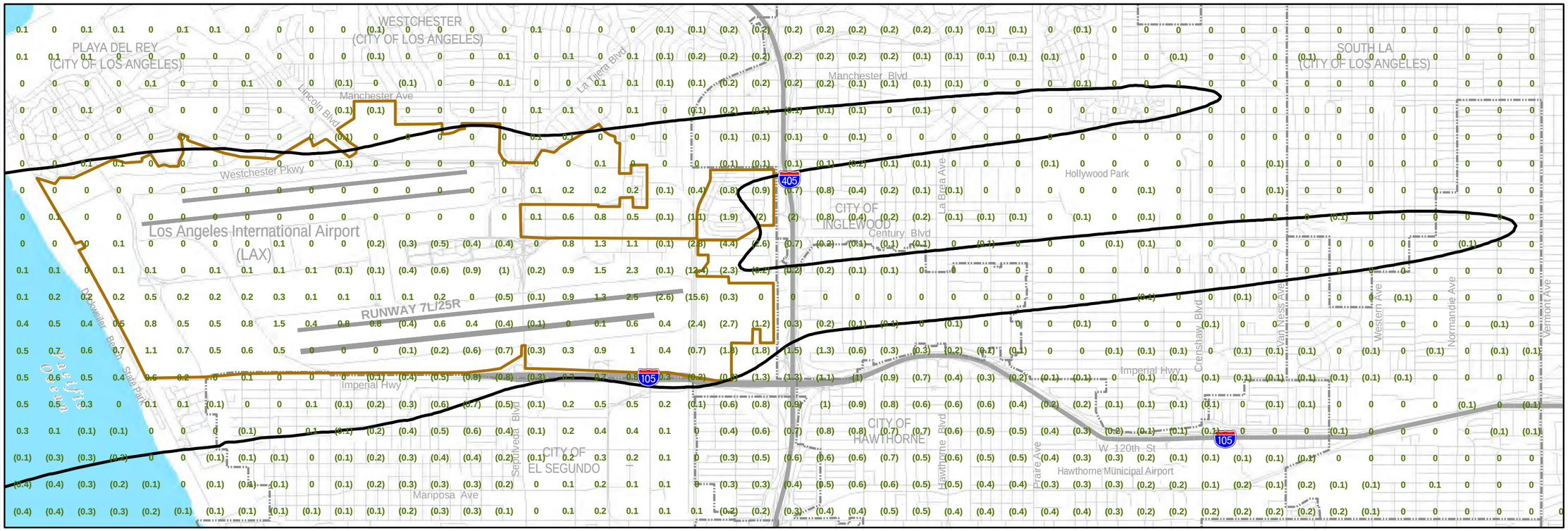
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- No-Action 65 dB CNEL Noise Exposure Contour
- Existing Runway

Change from No-Action Alternative

- (0.1) Less than 0 dB CNEL
- 0.1 0 or Greater dB CNEL



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2015)
Aircraft Noise Exposure CNEL Contours
Quantitative Comparison –
Shift Runway vs. No-Action Alternatives

FIGURE
B-23

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Los Angeles International Airport

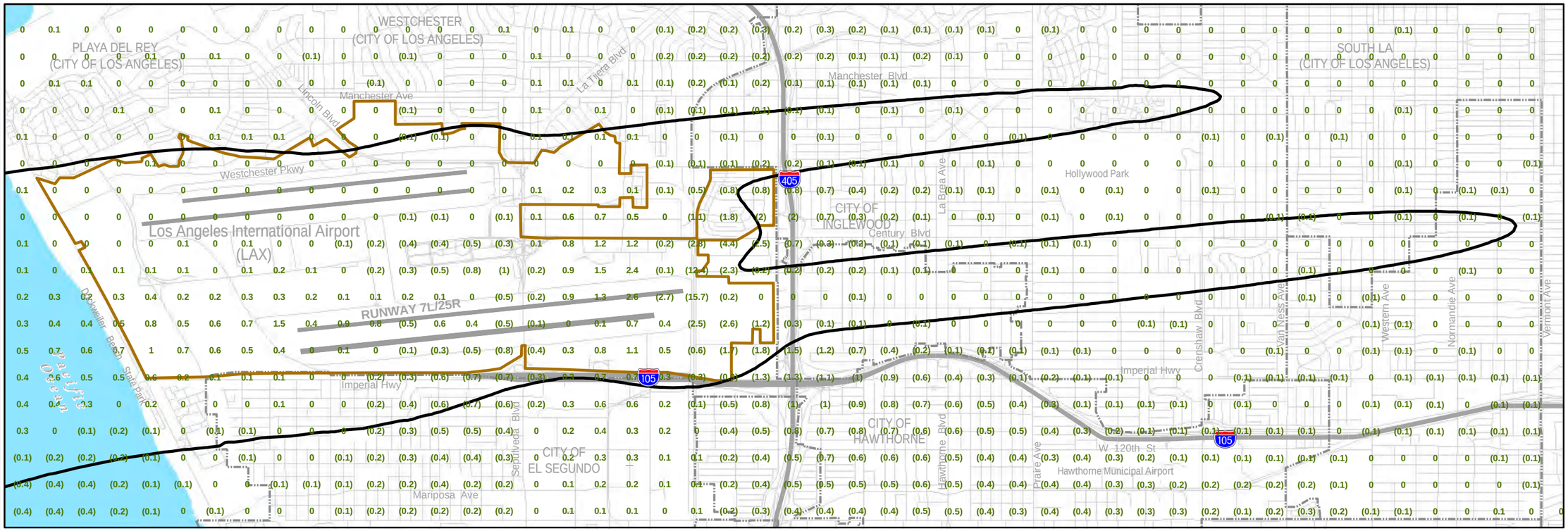
0 4000 ft.
1" = 4000 feet
north

Legend

- Generalized Study Area / Airport Property Boundary
- Municipal Boundary
- No-Action 65 dB CNEL Noise Exposure Contour
- Existing Runway

Change from No-Action Alternative

- (0.1) Less than 0 dB CNEL
- 0.1 0 or Greater dB CNEL



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.

Appendix B-Noise Technical Report
Runway 7L/25R
RSA Project and Associated Improvements

Future (2020)
Aircraft Noise Exposure CNEL Contours
Quantitative Comparison –
Shift Runway vs. No-Action Alternatives

FIGURE
B-24

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Under both future years, when compared to the No-Action Alternative, the Proposed Action and Shift Runway Alternative do not cause sensitive areas located at or above 65 dB CNEL to experience a noise increase. Based on detailed grid point analyses, the noise level increase under the Proposed Action Alternative at Dockweiler State Beach would only be 0.1 dBA CNEL. Under the Shift Runway Alternative, the commercial/industrial areas along Imperial Highway south of the Airport would experience increases of less than 1 dBA CNEL and the slight increase in the Dockweiler Beach west of the Airport would be 0.4 dBA CNEL.

Comparisons of land use noise exposure for the No-Action Alternative, Proposed Action Alternative, and Shift Runway Alternative for forecast years 2015 and 2020 are provided in **Table B-13** and **Table B-14**, respectively. As shown in these tables, minor changes (both increases and reductions) in some land use areas exposed to noise levels of 65 dB CNEL or above are indicated.

Table B-13
2015 Land Use Noise Exposure (Comparison to No-Action Alternative)

Land Use	Detailed Land Use	65 dB CNEL and Above				
		No-Action	Proposed Action	Change	Shift Runway	Change
Single-Family Residential	Dwelling Units	4,015	4,012	(3)	3,863	(152)
	Population	10,041	10,031	(10)	9,656	(385)
Multi-Family Residential	Dwelling Units	17,345	17,330	(15)	16,993	(352)
	Population	43,363	43,326	(37)	42,482	(881)
Mobile Home	Dwelling Units	937	936	(1)	928	(9)
	Population	2,343	2,340	(3)	2,318	(25)
School	Parcels	77	77	0	77	0
Church	Parcels	6	6	0	6	0
Hospital	Parcels	5	5	0	5	0
Recreation	Parcels	26	26	0	26	0
Total	**Parcels**	**114**	**114**	**0**	**114**	**0**
	Dwelling Units	**22,297**	**22,278**	(19)	**21,784**	(513)
	Population	**55,747**	**55,697**	(50)	**54,456**	(1,291)

Source: URS, 2012.

Table B-14
2020 Land Use Noise Exposure (Comparison to No-Action Alternative)

Land Use	Detailed Land Use	65 dB CNEL and Above				
		No-Action	Proposed Action	Change	Shift Runway	Change
Single-Family Residential	Dwelling Units	4,645	4,640	(5)	4,489	(156)
	Population	11,610	11,600	(10)	11,221	(389)
Multi-Family Residential	Dwelling Units	19,360	19,365	5	18,919	(441)
	Population	48,399	48,410	11	47,297	(1,102)
Mobile Home	Dwelling Units	1,012	1,012	0	1,003	(9)
	Population	2,529	2,527	(2)	2,507	(22)
School	Parcels	84	84	0	81	(3)
Church	Parcels	7	7	0	7	0
Hospital	Parcels	5	5	0	5	0
Recreation	Parcels	31	31	0	30	(1)
Total	**Parcels**	**127**	**127**	**0**	**123**	**(4)**
	Dwelling Units	**25,017**	**25,017**	**0**	**24,411**	**(606)**
	Population	**62,538**	**62,537**	**(1)**	**61,025**	**(1,513)**

Source: URS, 2012.

Construction Impacts

Construction activities associated with the proposed action alternatives 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 the LAX Master Plan Mitigation 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.

Under construction activities, grading and scraping operations are the noisiest, 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 closest distances from these areas to the proposed replacement GSE Maintenance Facility is approximately 330 feet and the nearest homes to the 07L RSA and Taxiway H construction area approximately 1,350 feet away. The nearest noise-sensitive areas to construction activities associated with the Runway 25R reconstruction and Taxiway C extension are homes at the northeast quadrant of the intersection of Century Boulevard and Aviation Boulevard. Closest of these homes are approximately 1,750 feet from the nearest construction activity, which is the demolition of Air Freight Building No. 8.

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. Noise exposure would be generally similar to those due to normal airport operations.

Proposed Action Alternative

Construction equipment noise levels under the Proposed Action Alternative 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. Construction equipment noise is evaluated using data in the Roadway Construction Noise Model (RCNM) version 1.1, the FHWA standard model for the prediction of construction noise (U.S. Department of Transportation [USDOT], 2006). RCNM has the capability to model types of construction equipment that would be expected to be the dominant construction-related noise sources associated with a proposed project. Construction noise levels are quantified at predetermined distances from the site using the maximum noise level (Lmax) metric.

Table B-15 summarizes the estimated construction noise exposure levels at the nearest locations potentially affected by such noise.

Table B-15
Estimated Construction Equipment Noise Levels

Construction Phase	Equipment Type	Number of Units	Max. Noise Level @ 50 feet (dBA)	Total Noise Level @ 50 feet (dBA)	Homes South of Imperial Hwy. Nearest Distance: 330 feet	Nearest Homes in El Segundo Nearest Distance: 1,350 feet	Homes NE of Century & Aviation Intersection Nearest Distance: 1,750 feet
Replacement GSE Maintenance Building							
Excavation	Crane	1	81	87	70		
	Pick-up Truck	1	75				
	Excavator	1	85				
Hauling	Truck Tractor	1	84	85	68		
	Pick-up Truck	1	75				
Foundation	Truck Mixer	6	80	90	73		
	Concrete Pump	1	81				
	Generator	1	85				
	Vibrator	1	80				
	Pick-up Truck	1	75				
Building	Cranes	3	81	91	75		
	Front-end Loader	2	79				
	Flatbed Truck	4	74				
	Grader	1	85				
	Compactor	1	83				
	Welder	6	74				
	Forklift	2	70				
	Pick-up Truck	2	75				
RSA and Associated Taxiways Construction							
Aggregate Base	Grader	1	85	90		63	
	Dozer	1	82				
	Compactor	1	83				
	Truck Tractor	1	84				
	Pick-up Truck	1	75				

Table B-15
Estimated Construction Equipment Noise Levels

Construction Phase	Equipment Type	Number of Units	Max. Noise Level @ 50 feet (dBA)	Total Noise Level @ 50 feet (dBA)	Homes South of Imperial Hwy. Nearest Distance: 330 feet	Nearest Homes in El Segundo Nearest Distance: 1,350 feet	Homes NE of Century & Aviation Intersection Nearest Distance: 1,750 feet
Taxiway C Extension and Runway 25R Rehabilitation							
Demolition of Airfreight Building No. 8	Dump Truck	2	77	86			45
	Crawler Loader	2	79				
	Crane	1	81				
	Pick-up Truck	1	75				
Grading of Service Rd. or Taxiway	Dozer	1	82	86			46
	Scraper	1	84				
	Pick-up Truck	1	75				

Source: MARRS, URS, and Ricondo and Associates, 2012.

As shown in **Table B-15**, estimated noise levels at the exterior of nearest homes south of Imperial Highway due to construction of the replacement GSE Maintenance Facility would range between 63 dBA to 75 dBA L_{max} during the noisiest construction activities. Such levels are certainly below noise levels generated by aircraft flight operations and traffic on Imperial Highway, and would not result in the hourly noise levels during daytime to exceed existing ambient noise levels by more than 5 dBA. Noise exposure at these locations due to construction of the RSA and extension of associated taxiways near Runway 7L would be near 64 dBA Lmax during 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 Runway 25R rehabilitation, Taxiway C extension, or the Building No. 8 demolition would be near 53 dBA Lmax 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.

Potential traffic noise level changes during the construction phase were estimated by comparing the traffic noise exposure without the proposed action alternatives to traffic noise levels after addition of construction trucks and employee traffic to existing traffic volumes. This analysis was performed for roadway segments in the vicinity of noise-sensitive areas adjoining the Airport. The traffic noise estimations were conducted using the FHWATNM version 2.5. **Table B-16** is a summary of traffic noise level estimations and anticipated changes at the locations of nearest noise-sensitive uses along each roadway segment. Comparing the traffic noise levels during construction of the Proposed Action Alternative 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 fall far below the 5 dBA Leq change threshold.

Table B-16
Estimated Traffic Noise Level Changes During Construction

Roadway Segment	Direction	2010 PM Peak Hour Traffic Volumes				Proposed Action PCE	Shift Runway PCE	Estimated Hourly Leq (dBA)		
		PCE	Autos	MT	HT			2010	Proposed Action	Shift Runway
Imperial Hwy, East of Pershing Dr.	WB	850	759	16	10	1	1	65.5	66.4	66.4
	EB	728	650	14	9	31	31			
Imperial Hwy, West of Main St.	WB	874	780	16	10	1	1	66.6	67.4	67.4
	EB	1,055	942	20	13	31	31			
Imperial Hwy, East of Main St.	WB	1,056	943	20	13	1	1	66.9	67.6	67.6
	EB	1,070	955	20	13	31	31			
Century Blvd., east of Aviation Blvd.	WB	1,395	1,245	26	17	0	0	67.4	67.6	67.6
	EB	1,885	1,682	35	23	19	19			

Source: URS and Ricondo and Associates, 2012.
Notes:
PCE – Passenger Car Equivalent
Autos – Automobiles
MT – Medium trucks
HT – Heavy trucks
Assumptions:
1. Total truck percentage is assumed to be 3.44% of total traffic on area roadways, composed of 2.09% medium trucks and 1.35% heavy trucks.
2. Each medium or heavy truck is assumed to be equivalent to 3.5 PCEs.

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 Alternative.

MITIGATION MEASURES

Neither the Proposed Action Alternative nor the Shift Runway Alternative would result in significant noise impacts. Therefore, noise mitigation measures are not required.

REFERENCES

American Heritage Dictionary,. "Noise". *The American Heritage Dictionary of the English Language*. Available from Internet, *http://ahdictionary.com/,* accessed June 2012.

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.

ANSI, *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 1,* ANSI S12.9-1988 (R 2003).

ANSI, *Acoustical Performance Criteria, Design Requirements and Guidelines for Schools,* ANSI S12.60-2002, June 26, 2002.

American Speech-Language-Hearing Association (ASHA), *Guidelines for Addressing Acoustics in Educational Settings*. On-line. Available from Internet, *www.asha.org/policy*, accessed May 2012.

Bradley J.S., *Uniform Derivation of Optimum Conditions for Speech in Rooms*, National Research Council, Building Research Note, BRN 239, Ottawa, Canada, November 1985.

California Governor's Office of Planning and Research, *State of California General Plan Guidelines*, October 2003.

Department of Defense (DOD), *Planning in the Noise Environment,* AFM 19-10. TM 5-803-2, and NAVFAC P-970. Washington, D.C. June, 1978.

Environmental Protection Agency (EPA), *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.

Federal Aviation Administration, *Integrated Noise Model (INM) Version 7.0 User's Guide,* FAA-AEE-07-04, April, 2007.

Federal Aviation Administration, *FAA Order 1050.1E: Policies and Procedures for Considering Environmental Impacts, Change 1*, March 20, 2006.

Federal Aviation Administration, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, Order 5050.4B, April 28, 2006.

Federal Interagency Committee on Aviation Noise (FICAN), *Effects of Aviation Noise on Awakenings from Sleep*, June 1997.

Federal Interagency Committee on Noise (FICON), 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.

Federal Interagency Committee on Urban Noise (FICUN), 1980. *Guidelines for Considering Noise in Land Use Planning and Control*, June 1980.

Fidell *et.al.*, 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.

Fidell *et.al.*, Fidell, S., Pearsons, K, Tabachnick, B.G., Howes, R., *Effects on Sleep Disturbance of Changes in Aircraft Noise Near Three Airports*, Journal of the Acoustical Society of America, 107(5) Pt.1, pgs. 2535-2547, May 2000.

ICF Jones & Stokes. *Technical Noise Supplement*. Prepared for California Department of Transportation, Sacramento, CA 2009.

Lazarus H., *New Methods for Describing and Assessing Direct Speech Communication Under Disturbing Conditions*, Environment International, 16 (4-6), pp. 373-392, 1990.

Lind S.J., Pearsons K., and Fidell S., *Sound Insulation Requirements for Mitigation of Aircraft Noise Impact on Highline School District Facilities Volume I. BBN Systems and Technologies*, BBN Report No. 8240, December, 1998.

Schultz, T.J., *Synthesis of Social Surveys on Noise Annoyance*, Journal of the Acoustical Society of America, 64, 377-405, August, 1978.

Sharp, B.S., Plotkin, K. J., Selection *of Noise Criteria for School Classrooms*, Wyle Research Technical Note TN84-2 for the Port Authority of New York and New Jersey, October 1986.

State of California, Department of Transportation, Division of Aeronautics (CalTrans), *California Airport Land Use Planning Handbook*, pp. 6-20 and 6-22, January, 2002.

Title 14 CFR part 150, *Airport Noise Compatibility Planning*, Doc. No. 18691, 49 FR 49269, Dec. 18, 1984; 50 FR 5063, Feb. 6, 1985; Amdt. 150–2, 54 FR 39295, Sept. 25, 1989; 69 FR 18803, Apr. 9, 2004; Amdt. 150–4, 69 FR 57626, Sept. 24, 2004; 72 FR 68475, Dec. 5, 2007.

World Health Organization (WHO), 1999. *Guidelines for Community Noise.* On-line. Available from Internet, *http://www.who.int/peh/noise/guidelines2.html*, accessed May 2012.

APPENDIX

C

CULTURAL RESOURCES EVALUATION REPORT

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CULTURAL RESOURCES EVALUATION REPORT

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

(PAVEMENT RECONSTRUCTION OF PORTIONS OF RUNWAY 7L/25R AND TAXIWAY B, EASTERLY EXTENSION OF TAXIWAY C, DEMOLITION OF AIR FREIGHT BUILDING NO. 8, AND REPLACEMENT GROUND SUPPORT EQUIPMENT FACILITY)

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:

URS Corporation
Los Angeles, CA

September 2012

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APPENDICES

1.0 SUMMARY OF FINDINGS

The City of Los Angeles, through its aviation department Los Angeles World Airports (LAWA), proposes to construct various improvements to the Runway Safety Area (RSA) of Runway 7L/25R to enhance safety at Los Angeles International Airport (LAX). Runway 7L/25R RSA improvements at LAX (Proposed Action) are being undertaken by LAWA in response to the requirements of *The Transportation, Treasury, Housing and Urban Development, the Judiciary, The District of Columbia, and Independent Agencies Appropriations Act, 2006* (Public Law 109-115), November 30, 2005. Public Law 109-115 requires completion of RSA improvements by Airport Sponsors that hold a certificate under Title 14, Code of Federal Regulations (CFR) Part 139, to meet Federal Authority Administration (FAA) airport design standards by December 31, 2015.

In addition, the Proposed Action includes pavement reconstruction of the eastern portions of Runway 25R and Taxiway B; the extension of Taxiway C from Taxiway C1 to Taxiway B1 (which includes demolition of Air Freight Building No.8); and a replacement Ground Support Equipment (GSE) Maintenance Facility (hereafter collectively referred to as the Proposed Action).

This Cultural Resources Evaluation Report has been prepared to document identification, recordation, and evaluation efforts for known or previously unrecorded archaeological and historic architecture resources, such as buildings, structures, objects, districts, landscapes, sites, and linear features. Cultural resources have been evaluated pursuant to Section 106 of the *National Historic Preservation Act* and its implementing regulations 36 CFR Part 800 "Protection of Historic Properties" (Section 106), *National Environmental Policy Act of 1969* (NEPA) Section (§) 102(2)(c), and in accordance with *California Environmental Quality Act* (CEQA) Guidelines §15064.5(a)(2)-(3) of the CEQA Guidelines using the criteria outlined in Public Resources Code (PRC) §5024.1. This Cultural Resources Evaluation Report is intended to serve both the Federal Aviation Administration's (FAA) need for Section 106 Consultation with the California State Historic Preservation Officer (SHPO) and LAWA for their consultation efforts with the California SHPO for state legislation.

The FAA consulted with the California SHPO on the delineation of the Proposed Action's Area of Potential Effects (APE). The California SHPO concurred with FAA's delineation of the APE in letters dated March 5, 2012 and September 20, 2012 (refer to **Appendix C-3**). The APE is congruent to the footprint of proposed direct disturbance. Defining an indirect APE for archaeology and historic architecture was determined to not be necessary because the Proposed Action is not anticipated to increase aircraft operations at LAX, but improve its safety. The Proposed Action will not change the number or type of aircraft using the airport. The APE is entirely within the boundaries of LAX, which is situated on the shore of the Santa Monica Bay, in the southwestern portion of Los Angeles County, California. The City of Los Angeles owns and operates LAX through LAWA, and the Airport's property is under the City of Los Angeles' jurisdiction.

The APE is a discontiguous area due to the limited extent of construction activities at different ends of Runway 7L/25R, Taxiway B, Taxiway C, and the area of the proposed replacement GSE Maintenance Facility. The APE includes the footprint of Air Freight Building No. 8, located in the Century Cargo Complex, which would be demolished as part of the Proposed Action. Additionally, the APE includes the proposed western and eastern construction staging areas. The APE is in an unsectioned portion of Township 3 South and Ranges 14 and 15 West, as depicted on the Venice United States Geologic Survey (USGS) 7.5-minute quadrangle topographic series map. The approximate center point of the APE is at UTM Zone 11 370573mE, 3756087mN. The APE generally has flat topography and includes recently constructed airport-related buildings and modern temporary structures, as well as historic-period[1]

[1] For purposes of this project, 'historic-period' refers to any building, structure, object, district, landscape, site, or linear features, that is older than 45 years and not listed or eligible for listing to a national, state, or local register.

runways, taxiways, approach-lighting trestles, and a building. The APE is primarily covered with hardscape and pavement. The APE includes a vertical APE, or the vertical footprint of the proposed direct disturbance, of a maximum of 6 feet deep for the runway and taxiway improvements, and 10 feet deep and approximately 25 feet high for the proposed replacement GSE Maintenance Facility. There is no vertical APE for the construction staging areas since materials will be placed on the surface temporarily and there will be no ground disturbance. Because of the previous ground disturbances due to the hardscaping and existing pavement, no cultural resources are expected to be present in the vertical APE.

Cultural resources investigations undertaken to support preparation of this report included archival research and field surveys. A reconnaissance archaeological and historic architecture field survey was completed of the APE to account for cultural resources that are known or appeared to be more than 45 years of age (*i.e.,* constructed in 1967 or earlier) and require additional study. Primary and secondary sources concerning the project site and general area from the Native American Heritage Commission (NAHC), the South Central Coastal Information Center (SCCIC), the LAX Master Plan Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) (FAA and LAWA 2005), consultation with LAWA, the Flight Path Learning Center, the Los Angeles Public Library, and various online sources (*e.g.,* USGS Historical Topographic Maps, etc.) were reviewed.

As a result of the archival research and field surveys, two historic-period resources were identified in the Proposed Action APE: Runway 7L/25R and its related features (non-historic and historic-period taxiways including Taxiways B and C, non-historic-period blast fence, and non-historic-period approach lighting systems), and Air Freight Building No.8. and its related feature (building's parking apron). One previously recorded cultural resource, a historic shell scatter along the base of a steep sided hill (19-000691), has been recorded in the Proposed Action APE; however, it has been evaluated as ineligible for listing in the National Register of Historic Places (NRHP), California Register of Historic Resources (CRHR), or a local register due to lack of evidence found at the site and extensive disturbance of the area (FAA and LAWA 2005). No archaeological resources were identified during the survey.

This assessment concludes that no previously recorded or newly identified cultural resources within the APE are eligible for listing in the NRHP. Therefore, the Proposed Action is not anticipated to have adverse effects to historic properties. Additionally, no cultural resources are eligible for listing in the CRHR or are considered historical resources for CEQA purposes (per PRC §15064.5[a][4]). Therefore, the Proposed Action is not anticipated to have significant impacts to historical resources.

2.0 PROJECT DESCRIPTION AND AREA OF POTENTIAL EFFECTS

2.1 Description of Proposed Action

The Proposed Action consists of the following four components: Runway 7L/25 RSA improvements; pavement reconstruction of the eastern portions of Runway 25R and Taxiway B; extension of Taxiway C and demolition of Air Freight Building No. 8; and construction of a replacement GSE Maintenance Facility.

Runway 7L/25R RSA Improvements. The Runway 7L/25R RSA improvements primarily involve Runway 7L (west end of Runway 7L/25R), defined on the west by a north-south service road, to the east by Taxiway U, to the south by Taxiway H, and to the north by Taxiway C. The elements of the proposed Runway 7L/25R RSA improvements (shown in **Figure C-1**) would:

- Extend the Runway 7L, 832 feet to the west. The Runway 7L threshold will remain at its current location for landings, resulting in an 832-foot displaced threshold;
- Construct an RSA, approximately 500 feet wide by 168 feet long, beyond the new Runway 7L runway end;
- Construct blast fences west of the Runway 7L extension;
- Extend 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 C;
- Reconstruct a portion of Taxiway B at the intersection with new Taxiway B17;
- Relocate the existing Localizer Antenna to the west;
- Install in-pavement approach lighting system (ALS) in the footprint of the extended Runway 7L; 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. Although the additional pavement can be used for start of take-off rolls to the east, the Runway 7l/25R landing thresholds will remain at their present locations. In conjunction with the additional runway pavement, LAWA will implement the use of declared distances on Runway 7L/25R to allocate pavement at each end of the runway (along with the graded RSA areas), to provide an equivalent RSA for aircraft arrival and departure operations. This approach allows LAWA to satisfy RSA requirements without substantially affecting the amount of runway currently available for take-off and landing operations.

The existing Runway 25R localizer antenna array, a component of the Instrument Landing System (ILS) that provides runway centerline guidance to landing aircraft, would be relocated approximately 285 feet from the new end of Runway 7L. The existing localizer equipment shelter would not need to be relocated. New blast fences would be installed west of the extended Runway 7L to protect the existing service roads and the localizer antenna from jet blast.

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

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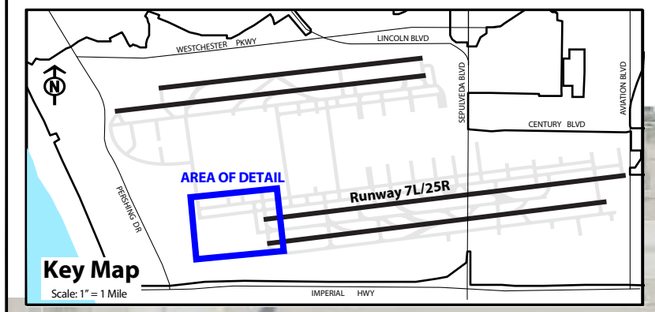

Legend

Existing Runway Safety Area | New Runway Pavement | Taxiway Improvements | RSA Extension

Los Angeles International Airport

0 200 ft.

1" = 200 feet

north

TAXIWAY C

TAXIWAY B17

TAXIWAY B

TAXIWAY U

Area to Install Blast Fences

Relocated Localizer Antenna

Decommissioning of Taxiway B16

Existing Runway Threshold/ Proposed Displaced Threshold Location

7L

TAXIWAY H

TAXIWAY U

7R

RUNWAY SAFETY AREA EXTENSION = 168'

RUNWAY 7L/25R EXTENSION = 832'

RUNWAY SAFETY AREA = 1000'

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.

Cultural Resources Evaluation Report
Runway 7L/25R
RSA Project and Associated Improvements

Runway 7L/25R RSA Improvements

FIGURE C-1

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Currently, the existing Medium Intensity Approach Light Systems (MALSR) serving Runway 7L comprises multiple elevated light fixtures that must remain fixed at their current location and configuration. Accordingly, portions of the existing tower-mounted light fixtures must be replaced with in-pavement lights when the runway pavement is extended westward. The use of in-pavement lighting will allow Runway 7L departures west of the displaced threshold (**Figure C-2**).

Runway 7L/25R and Taxiway B Pavement Reconstruction. Pavement reconstruction activities would be undertaken at the locations listed below, and the Proposed Action elements are shown in **Figure C-3**.[2] These elements include:

- Full-depth reconstruction of existing pavement from the Runway 25R threshold to Taxiway F (1,225 feet long by 150 feet wide by approximately 6 feet deep);
- Full-depth reconstruction of the keel (center) section of Runway 7L/25R from Taxiway F westward to Taxiway J (1,328 feet long by 50 feet wide by approximately 6 feet deep);
- Replace existing pavement surface of the keel section of Runway 7L/25R keel from Taxiway J west to the Taxiway N (5,986 feet long by 50 feet wide);
- Full-depth reconstruction of Taxiway B, from Taxiway C3 to its terminus near the Runway 25R threshold, including connecting taxiways (3,173 feet long by 176 feet wide by approximately 6 feet deep); and,
- Installation of in-pavement lights.

Taxiway C Extension. Taxiway C would be extended eastward from Taxiway C1 to Taxiway B1. Elements of the extension of Taxiway C (shown in **Figure C-3**) would:

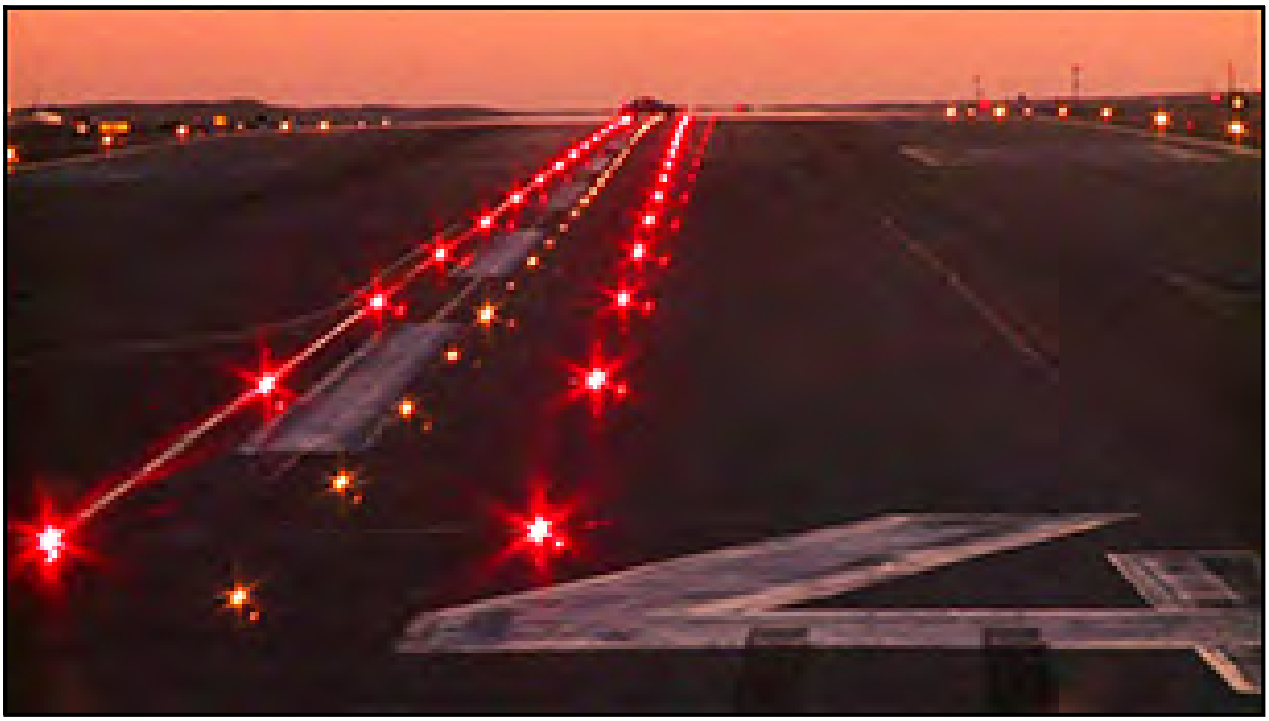
- Realign and extend Taxiway C approximately 960 feet eastward to Taxiway B1. The centerline of the new section of Taxiway C would have a separation distance of approximately 281 feet from the centerline of Taxiway B;
- Realign a portion the vehicle service road north of the Taxiway C extension;
- Demolish Air Freight Building No. 8 to accommodate the realigned service road; and,
- Pave the site of the demolished Air Freight Building No. 8 site and the area around this site with apron pavement suitable for aircraft parking.

Replacement GSE Maintenance Facility. The replacement GSE Maintenance Facility would be located on a 2.86-acre site along Imperial Highway, to the south of Taxiway A (**Figure C-4**).[3] Elements of the replacement GSE Maintenance Facility include:

- Removal and relocation of 7 temporary structures (trailers) present at the proposed replacement GSE Maintenance Facility site to other parts of the Airport property;
- Removal of existing concrete;
- Grading and excavation (10 feet) for foundation; and
- Construction of a 60,000-square-foot, 2-story GSE facility.

[2] HNTB, *Runway 25R & Taxiway B East End Rehabilitation and Taxiway C Extension Preliminary Engineer's Report*, 2011.
[3] Herb Glasgow, LAWA, personal communication, January 2012.

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

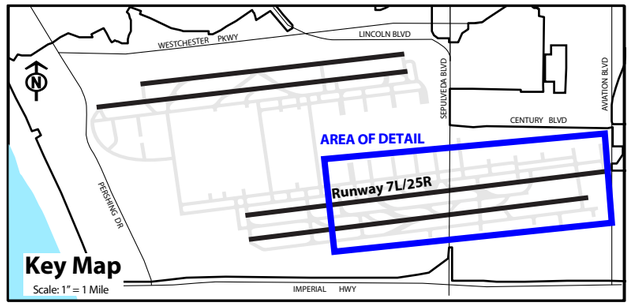


b. Existing North Airfield Runway 24L (Looking West) In-Pavement Approach Light System, Similar to Proposed Runway 7L In-Pavement Approach Light System.

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

FIGURE C-2	**Existing and Proposed Airfield Lighting**	**Cultural Resources Evaluation Report Runway 7L/25R RSA Project and Associated Improvements**

Los Angeles International Airport

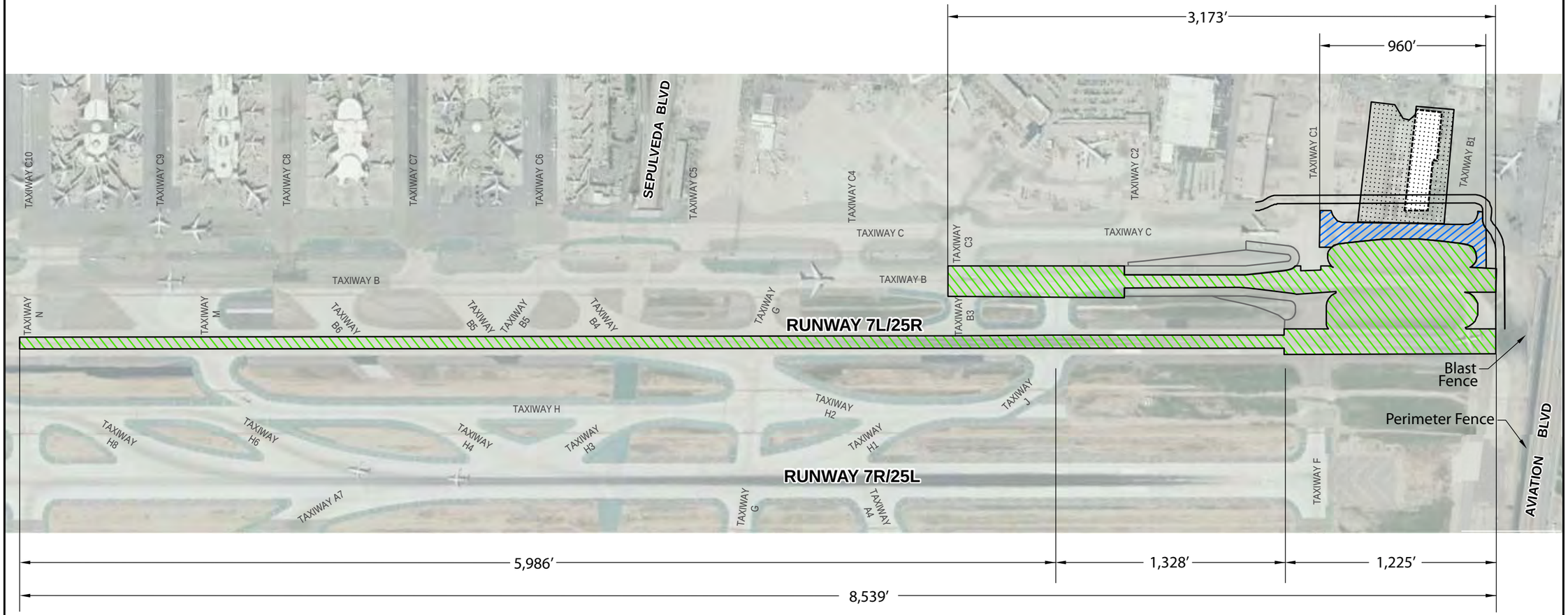


0 1000 ft.
1" = 1000 feet
north

LEGEND

PAVEMENT RECONSTRUCTION PROJECT
- Pavement Reconstruction

TAXIWAY C EXTENSION
- Taxiway C Extension
- Existing Air Freight Building No. 8 (To Be Demolished)
- New Aircraft Parking Apron
- Relocated Access Road



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 January 2012 ; Prepared by: URS Corporation.

Cultural Resources Evaluation Report
Runway 7L/25R
RSA Project and Associated Improvements

Runway 25R and Taxiway B
Pavement Reconstruction and Taxiway C Extension

FIGURE
C-3

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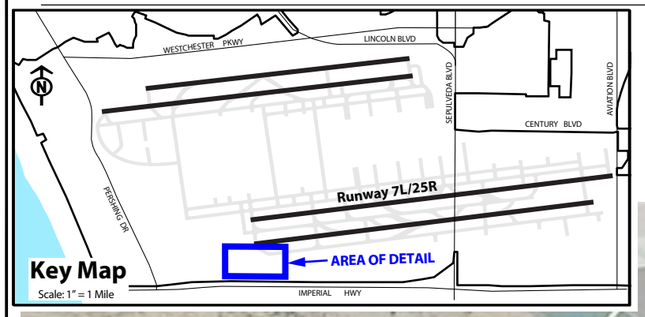
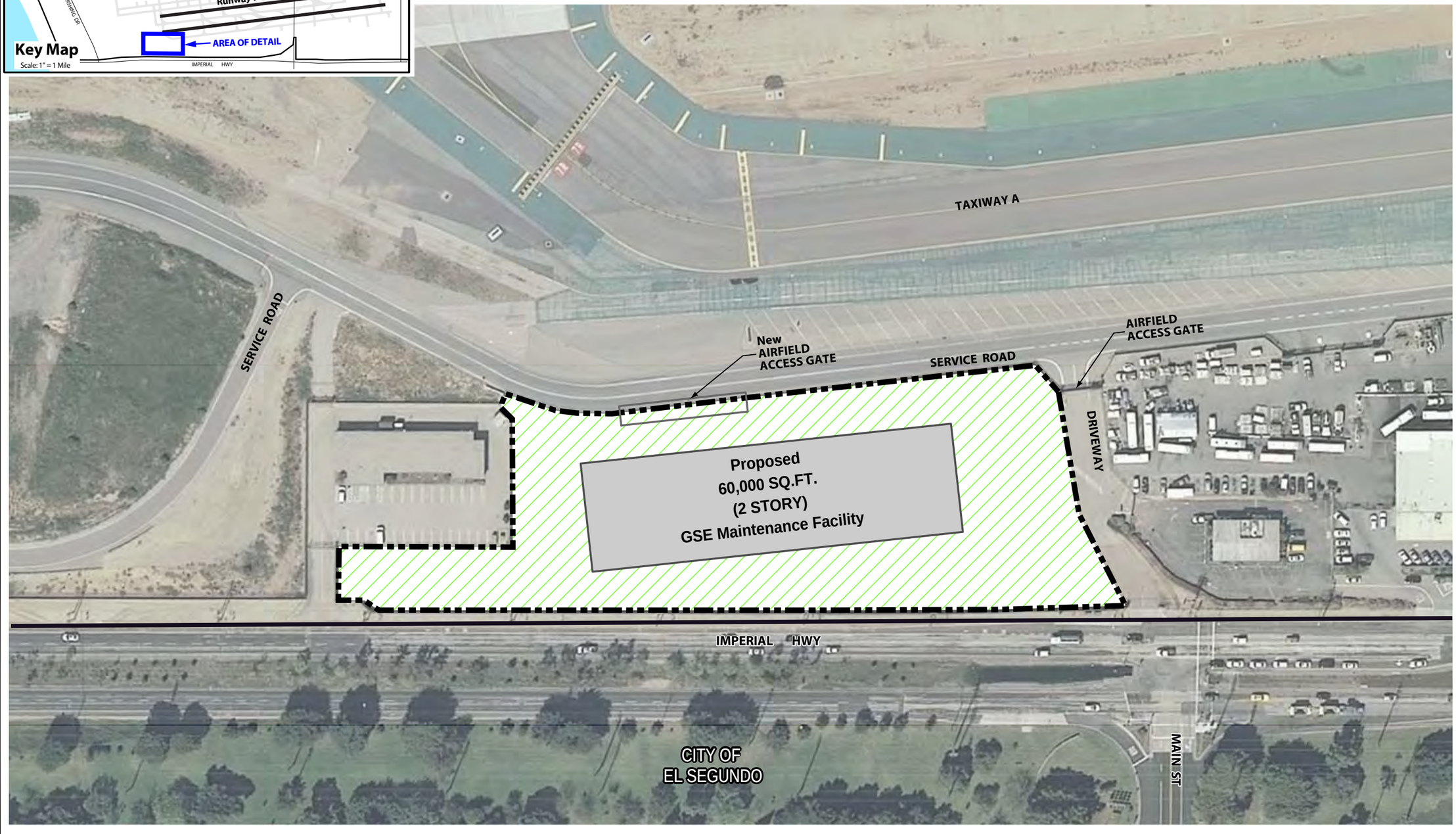
Los Angeles International Airport



LEGEND

- Airport Property Boundary
- Proposed GSE Maintenance Facility
- Proposed Building Footprint

0 — 100 ft.
1" = 100 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.

Cultural Resources Evaluation Report
Runway 7L/25R
RSA Project and Associated Improvements

Proposed Ground Support Equipment Maintenance Facility

FIGURE
C-4

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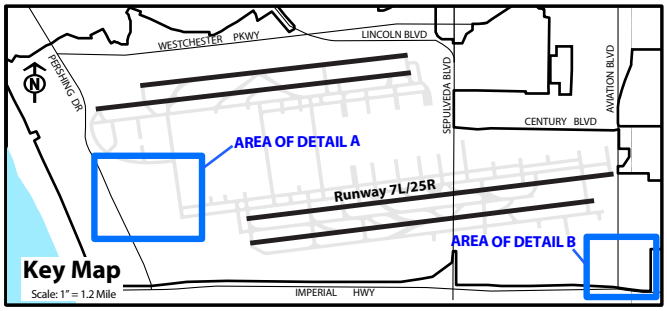
2.2 Area of Potential Effect

The APE for archaeology and historic architecture for the Proposed Action includes boundaries of the entire area that will have physical disturbance, including construction staging areas (**Figure C-5**). The APE includes the various demolition, construction, and navigational aid work described in the enclosed listing, such as runway shifts, repaving, relocating and constructing service roads and taxiways, modifications to existing navigation aids, building demolitions, and construction staging areas. All supplies and equipment would be stored in either of the two construction staging areas. The western staging area is located west of the end of Runway 7L and the eastern staging area is located in the former Continental City site, off Imperial Highway/Aviation Blvd. The staging areas will not create ground disturbance other than the normal effects of driving over and storing materials on the surface. LAWA delineated the APE boundaries through consultation with FAA. As the Proposed Action would not increase the operational capacity of LAX, delineation of an indirect APE is not required. The Proposed Action will not change the number or type of aircraft using the airport. In addition, due to non-historic period and recent construction within LAX's boundaries, the demolition of Air Freight Building No.8 as part of the Proposed Action would not cause changes to the area's historic setting, context, or viewshed.

The APE is in an unsectioned portion of Township 3 South and Ranges 14 and 15 West, as depicted on the Venice USGS 7.5-minute quadrangle topographic series map. The approximate center point of the APE is at UTM Zone 11 370573mE, 3756087mN. The APE generally has flat topography and includes recently constructed airport-related buildings and modern temporary structures, as well as historic-period[2] runways, taxiways, approach-lighting trestles, and a building. The APE is primarily covered with hardscape and pavement.

The State Historic Preservation Office (SHPO) concurred with the delineation of the APE presented in **Figure C-6** for the Section 106 consultation process in letters dated March 5, 2012 and September 20, 2012. These letters are included in **Appendix C-3**.

[2] For purposes of this project, 'historic-period' refers to any building, structure, object, district, landscape, site, or linear features, that is older than 45 years and not listed or eligible for listing to a national, state, or local register.



Legend

- Airport Property Boundary
- Proposed Staging Area

north
1" = 700 feet

A. Proposed Western Staging Area

north
1" = 700 feet

B. Proposed Eastern Staging Area (Former Continental City site)

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

FIGURE C-5	**Proposed Construction Staging Areas**	**Cultural Resources Evaluation Report Runway 7L/25R RSA Project and Associated Improvements**

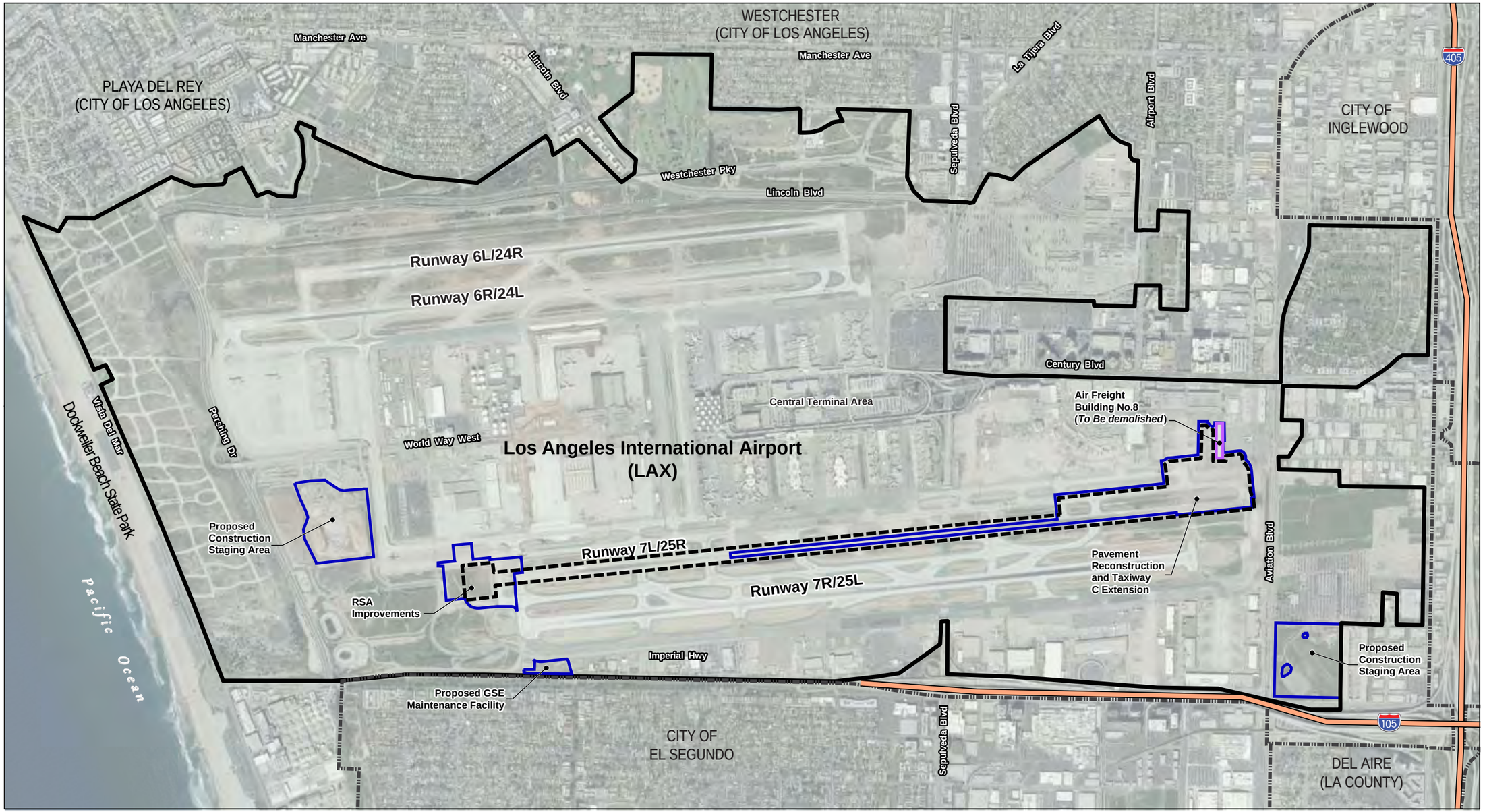
Los Angeles International Airport

0 1600 ft. north

1" = 1600 feet

LEGEND

Generalized Study Area / Airport Property Boundary | Area of Potential Effect | Municipal Boundary | Runway 7L/25R Complex (MR-1) | Air Freight Building No.8 (MR-2)



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

Cultural Resources Evaluation Report
Runway 7L/25R
RSA Project and Associated Improvements

Area of Potential Effect

FIGURE
C-6

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3.0 REGULATORY SETTING

Cultural resources are typically buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Numerous laws, regulations, and statutes on both the federal and state levels seek to protect and target the management of cultural resources.

3.1 Federal Regulations

Historic Sites Act (1935). The *Historic Sites Act*, promulgated at 16 USC 461 et. seq., declares a national policy to preserve historic sites, buildings, antiquities, and objects of national significance, including those located on refuges. The Act provides procedures for designation, acquisition, administration, and protection of such sites.

National Historic Preservation Act, as Amended (1966). The *National Historic Preservation Act* (NHPA) declares federal policy to protect historic sites and values in cooperation with other nations, states, and local governments. The NHPA establishes a program of grants to assist states with historic preservation activities. Subsequent amendments designated the SHPO as the individual responsible for administering state-level programs. The Act also created the President's Advisory Council on Historic Preservation (ACHP). Federal agencies are required to consider the effects of their undertakings on historic resources, and to give the ACHP a reasonable opportunity to comment on those undertakings. A lead federal agency will be responsible for project compliance with NHPA Section 106 and its implementing regulations, set forth by the ACHP at 36 CFR Part 800.

National Environmental Policy Act, as Amended (1969). Under NEPA, 42 USC §§4321-4327, federal agencies are required to consider potential environmental impacts and appropriate mitigation measures for projects with federal involvement. If the Proposed Action has federal involvement (*e.g.*, a Section 404 Permit under the *Clean Water Act*), the lead federal agency will be responsible for project compliance with NHPA Section 106 and its implementing regulations, set forth by the ACHP at 36 CFR Part 800.

Archaeological and Historic Preservation Act (1974). Under 16 USC 469-469c, the *Archaeological and Historic Preservation Act* (AHPA) requires federal agencies to provide notice to the Secretary of the Interior of any dam constructions, and if archaeological resources are found, for their recovery or salvage. The law applies to any agency whenever it receives information that a direct or federally assisted activity could cause irreparable harm to prehistoric, historic, or archaeological data. Up to 1 percent of project funds could be used to pay for salvage work. The NHPA also authorizes additional funding to be made available for this purpose.

American Indian Religious Freedom Act (1978). The *American Indian Religious Freedom Act*, 42 USC 1996, *et. seq.*, regulated under 43 CFR Part 7, has been established to protect religious practices, ethnic heritage sites, and land uses of Native Americans. The Act makes it a policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their inherent right of freedom to believe, express, and exercise their traditional religions. The Act allows them access to sites, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rights. It further directs various federal departments, agencies, and other instrumentalities responsible for administering relevant laws to evaluate their policies and procedures in consultation with Native American traditional religious leaders to determine changes necessary to protect and preserve Native American cultural and religious practices.

Archaeological Resources Protection Act (1979). The *Archaeological Resources Protection Act* (ARPA) supplements the provisions of the Antiquities Act of 1906, and declares it illegal to excavate or remove from federal or Native American lands any archaeological resources without a permit from the land manager (or federal agency with jurisdiction over those lands). Permits may be issued only to educational or scientific institutions, and only if the resulting activities will increase knowledge about archaeological resources. Major penalties for violating the law are included. Regulations found at 43 CFR Part 7 state that the ultimate disposition of materials recovered as a result of permitted activities excavated

from public lands remain the property of the United States. Those excavated from Indian lands remain the property of the Indian or Indian tribe having rights of ownership over such resources.

Native American Graves Protection and Repatriation Act (1990). The *Native American Graves Protection and Repatriation Act* (NAGPRA), 25 USC 3001 *et. seq.*, defines cultural items, sacred objects, and objects of cultural patrimony, and establishes ownership hierarchy for remains found on federal lands. It also provides for specific case review, allows excavation of human remains, and stipulates return of the remains according to ownership. NAGPRA also sets penalties for violations of the Act, calls for cultural resource inventories, and has provisions for the return of specified cultural items to the appropriate Native American tribe(s) and/or Native Hawaiian organization(s). NAGPRA is initiated when the project and the finds are situated on federal lands.

3.2 State Regulations

In California, cultural resources include archaeological and historical objects, sites, and districts; historic buildings and structures; cultural landscapes; and sites and resources of concern to local Native American and other ethnic groups. Compliance procedures are set forth in the California Environmental Quality Act (CEQA), California Public Resources Code (PRC) §15064.5 and §15126.4. The primary applicable state laws and codes are presented below.

California Native American Graves Protection and Repatriation Act (2001). In the California Health and Safety Code, Division 7, Part 2, Chapter 5 (§§8010-8030), broad provisions are made for the protection of Native American cultural resources. The Act sets the state policy to ensure that all California Native American human remains and cultural items are treated with due respect and dignity. The Act also provides the mechanism for disclosure and return of human remains and cultural items held by publicly funded agencies and museums in California. Likewise, the Act outlines the mechanism with which California Native American tribes not recognized by the federal government may file claims to human remains and cultural items held in agencies or museums.

California Public Resources Code, §5020. This California code created the California Historic Landmarks Committee in 1939, and authorizes the Department of Parks and Recreation to designate Registered Historical Landmarks and Registered Points of Historical Interest.

California Public Resources Code, §5097.9. Procedures are detailed under California PRC §5097.9 for actions taken whenever Native American remains are discovered. No public agency, and no private party using or occupying public property, or operating on public property, under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the U.S. Constitution and the California Constitution; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require. The California Native American Heritage Commission (NAHC), pursuant to §5097.94 and §5097.97, shall enforce the provisions of this chapter.

California Health and Safety Code, §7050.5. Under this code, every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in PRC §5097.99. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined the remains to be archaeological. If the coroner determines that the remains are not subject to his or her authority, and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC.

California Health and Safety Code, §7051. Under this code, every person who removes any part of any human remains from any place where it has been interred, or from any place where it is deposited while awaiting interment or cremation, with intent to sell it or to dissect it, without authority of law, or written permission of the person or persons having the right to control the remains under §7100, or with malice or wantonness, has committed a public offense that is punishable by imprisonment in the state prison.

California Code of Regulations, Title 14, §4307. Under this state preservation law, no person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.

3.3 Significance Criteria

Federal and state significance criteria, as well as the conformity between these criteria, are presented below because this report is intended to meet both the FAA's need for NHPA Section 106 consultation requirements with the California SHPO, and for LAWA's consultation efforts for the project.

Potential significance of buildings, structures, or sites is determined by applying NRHP and CRHR criteria. In order to be eligible for a registry, a must be significant within a historic context, and meet certain other criteria. According to the National Park Service "…the significance of an historic property can be judged and explained only when it is evaluated within its historic context. Historic contexts are those patterns, themes, or trends in history by which a specific occurrence, property, or site is understood and its meaning made clear" (NPS, 1991).

The National Park Service has defined three main categories of historic contexts: local, state, and national. A local historic context "represents an aspect of the history of a town, city, county, cultural area, or region, or any portion thereof" (NPS, 1991). A state historic context represents "an aspect of history of the state as a whole" (NPS, 1991). Properties important within a national context represent "an aspect of the history of the United States as a whole" (NPS, 1991).

3.3.1 Federal Significance Criteria

In order to be eligible to the NRHP within its historic context, a property must demonstrate significance under one or more of the following criteria (36 CFR §60.4):

A. Is associated with an event, or series of events that have made a significant contribution to the broad pattern of history;

B. Has an association with the lives of people significant in the past;

C. Embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or

D. Has yielded or may be likely to yield information important in prehistory or history.

Aside from meeting a NRHP criterion, a potential historical resource must also retain its historic integrity. Historic integrity is the ability of a property to convey its significance, and is comprised of seven aspects: location, design, setting, materials, workmanship, feeling, and association. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

3.3.2 State Significance Criteria

In order to be eligible to the CRHR within its historic context, a property must demonstrate significance under one or more of the following criteria (PRC §15064.5):

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory.

Aside from meeting a CRHR criterion, a potential historical resource must also retain its historic integrity. Historic integrity is the ability of a property to convey its significance, and is comprised of seven aspects: location, design, setting, materials, workmanship, feeling, and association. The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance.

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under California PRC §5097.98.

Impacts to "unique archaeological resources" and "unique paleontological resources" are also considered under CEQA, as described under PRC §21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge there is a high probability that it meets one of the following criteria:

a) The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information;
b) The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
c) The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

The lead agency shall first determine whether an archeological resource is an historical resource before evaluating the resource as a unique archaeological resource (CEQA Guidelines 15064.5 [c] [1]). A non-unique archaeological resource is an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

Under CEQA §15064.5, a project would potentially have significant impacts if it would cause substantial adverse change in the significance of one of the following:

a) A historical resource (*i.e.,* a cultural resource eligible for the CRHR);
b) An archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria);
c) A unique paleontological resource or unique geologic feature (*i.e.,* where the project would directly or indirectly destroy a site or resources); or
d) Human remains (*i.e.,* where the project would disturb or destroy burials).

A non-unique archaeological or paleontological resource is given no further consideration, other than the simple recording of its existence, by the lead agency.

3.3.3 Conformity of Federal and State Evaluation Criteria

The criteria for eligibility for the CRHR are very similar to those that qualify a property for the NRHP, which is the significance assessment tool used under the NHPA. The criteria of the NRHP apply when a project has federal involvement. A property that is eligible for the NRHP is also eligible to the CRHR. All potential impacts to significant resources under a federal agency must be assessed and addressed under the procedures of NHPA Section 106 of the NHPA, set forth at 36 CFR Part 800. All resources encountered during the project, with the exception of isolate artifacts and isolate features that appear to lack integrity or data potential, will be evaluated for significance according to NHPA Section 106.

4.0 ENVIRONMENTAL AND CULTURAL SETTING

4.1 Natural Setting

LAX is located at the edge of the Los Angeles Basin, adjacent to Santa Monica Bay, in the southwestern portion of Los Angeles County, California (**Figure C-7**). The general environmental setting of LAX is characterized by highly urbanized development on the north, east, and south sides of the airport. Major freeway and rail lines are located to the east and south, while the Los Angeles/El Segundo Dunes are located to the west (**Figure C-8**). These dunes are considered the largest extant remnant of one of five major sand dune complexes that historically occurred in California, south of San Francisco (Getchell and Atwood 2006). These dunes cover approximately 307 acres; of these 202.8 acres have been designated as the El Segundo Blue Butterfly Habitat Restoration Area. Historically the area once supported a vernal pool/grassland complex; however repeated grading of the area has modified the substrate and as a result vernal pools no longer exist in the area.

The local climate of the Los Angeles Basin is typified by warm, hot to dry summers and mild, somewhat rainy winters. The climate, sometimes classified as Subtropical-Mediterranean, consists of two seasons. The rainy season extends from late October through February, though may extend into March. Occasional monsoon type thunderstorms can occur during the summer time. Smog and air pollution occasionally gather in the coastal basin during periods of little air movement.

4.2 Prehistory

Unless otherwise noted, the prehistory is extracted from the LAX Master Plan Final EIS/EIR (FAA and LAWA, 2005).

The oldest directly dated human remains from coastal southern California are those of the "Los Angeles Man." These remains were uncovered in a fragmentary condition at a depth of approximately four meters (13 feet) below the surface of the river bed near Ballona Creek, which is approximately 1.75 miles north of LAX. The discovery was made in 1936, and in the months that followed, the remains of a mammoth were found at the same general depth some 400 meters (approximately 1,300 feet) from the human skeleton. It is believed that the Ballona Creek region had a human population prior to the extinction of the North American Mammoth.

Los Angeles County's oldest possible remains associated with the Milling Stone period (6,500-3,000 B.P.) are those of "La Brea Woman." This skeletal material was recovered from the La Brea Tar Pits along with a mano (milling stone). The bones were radiocarboned and dated to 9,000 years (+/- 80) before present. Thus, the earliest date for the Milling Stone period in this region is circa 7,000 B.C. None of the sites within the boundaries of the APE were identified as having a definite association with the Milling Stone period.

The Intermediate period is little known in most areas of the U.S., but is generally thought to have begun around 1,500 to 1,000 B.C. and to have lasted through about 500 A.D. During this period, the mortar and pestle came into common usage. The mortar and pestle were used to grind acorns. Sites dating to the Intermediate period are rare in Los Angeles County, as they are rare everywhere. Many regional coastal sites which probably included Intermediate deposits have been destroyed.

During the Lake Prehistoric period, the Shoshonean-speaking people of the Great Basin migrated westward into what are now Los Angeles and Orange counties. This resulted in the displacement of the indigenous populations either northward into Ventura County or south of the San Luis Reye River in San Diego County (areas which were inhabited respectively by the Chumash and Diegenos when the Spanish arrived). Judging by dialectical differences among the various branches of the Shoshonean language, it is estimated that the "Shoshonean Migration" may have taken place at least 1,000 years ago and perhaps as many as 1,500 years ago.

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

FIGURE C-7	Regional Map	Cultural Resources Evaluation Report Runway 7L/25R RSA Project and Associated Improvements

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Legend

Airport Property Boundary

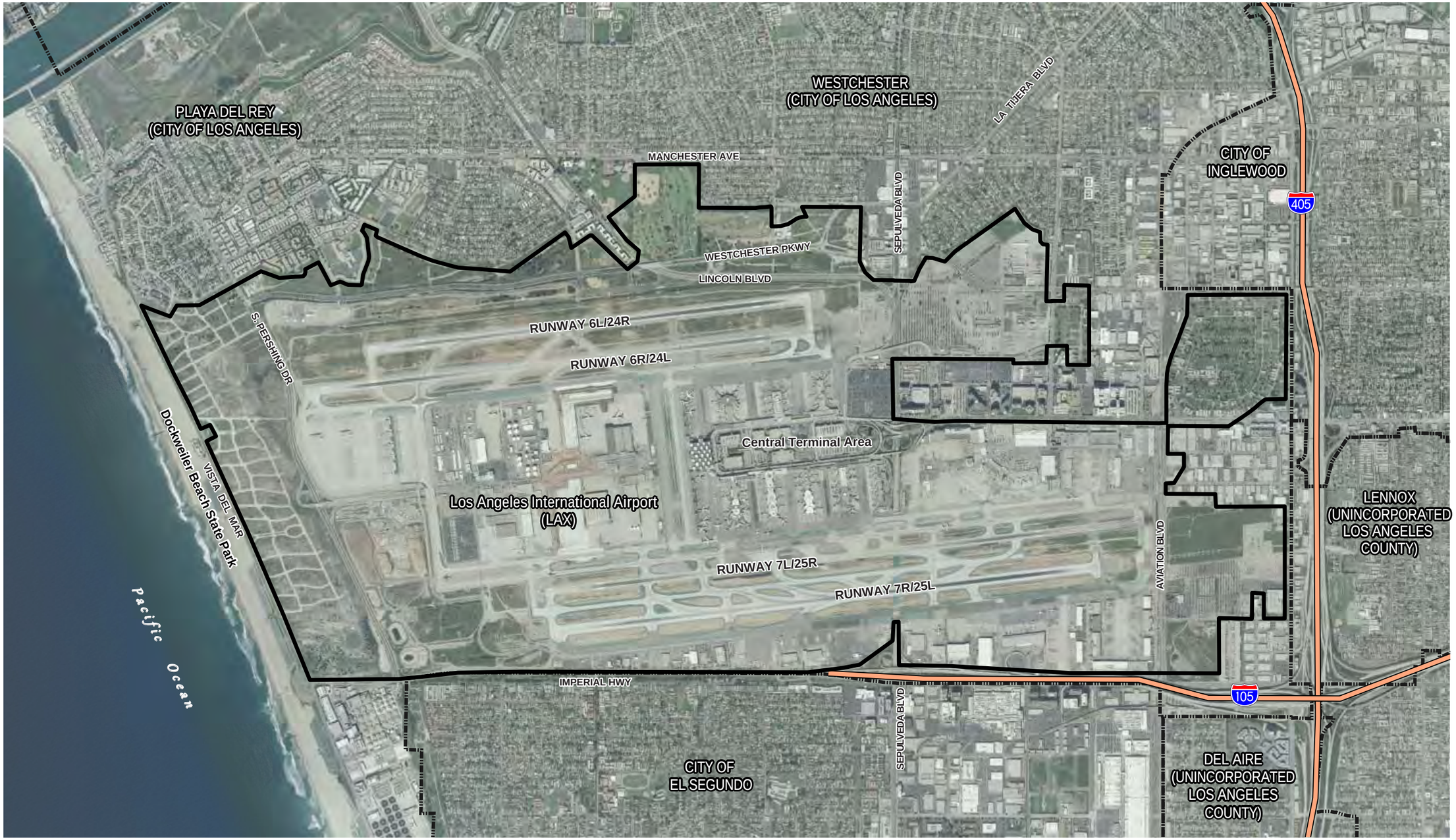
Municipal Boundary

Los Angeles International Airport

0 2000 ft.

1" = 2000 feet

north



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

Cultural Resources Evaluation Report
Runway 7L/25R
RSA Project and Associated Improvements

Airport Location and Existing Layout

FIGURE
C-8

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The APE lies within a region that was occupied during the late prehistoric period by Native American groups now known as the Gabrielino. The Gabrielino may have numbered as many as 5,000 people at their peak in the pre-European contact period (estimated as 1769 in the Los Angeles basin). However, population estimates are very difficult to make because many of the Indians did not come under Spanish control and, consequently, were not included in census records.

Generally, the California Native American groups were quite peaceful and did not often offer warlike resistance to European settlement. Consequently, they did not gain any great notoriety during the settlement period. Also, the original Californians were first under the control of the Spanish and Mexican governments and only later, after most of their culture had been destroyed by disease and displacement, did they come under the control of the United States. There was only a minor Native American presence remaining in California when it became a United States possession and massive development began. Consequently, very little interest in the Native Americans and their prehistory was generated. It was many years later that the size, complexity, and extent of archaeological deposits in the state became apparent and of interest.

4.3 Historic Overview

This historic period overview is divided into three periods—the Spanish, Mexican, and American periods—with an emphasis on the American period, because the cultural resources expected to be encountered and evaluated in the project site would be representative of this period.

The following historic period overviews are excerpted from *Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project* (2006) and *Hangar One National Register of Historic Places Registration Form* (1991).

4.3.1 Spanish Period

The first European account of the area to become Los Angeles County was by Portuguese navigator Juan Rodriguez Cabrillo, who led a Spanish expedition along the California coast in 1542-1543. Cabrillo noted the numerous campfires of the Gabrielino and thus named the area the "Bay of Smokes." Spain's presence in the region was only intermittent for approximately 200 years. Then, because of the possibility of territorial encroachment by the British and Russians from the north, Spanish Governor of Baja California Gaspar de Portola was instructed to lead a land-sea expedition to colonize Alta (upper) California in the 1760s.

On September 8, 1771, Fathers Pedro Cambon and Angel Somera established the Mission San Gabriel de Arcangel near the present-day city of Montebello. In 1775, the mission was moved to its current location in San Gabriel due to better agricultural lands. This mission marked the first sustained European occupation of the Los Angeles County area. Mission San Gabriel, despite a slow start partially due to misconduct by Spanish soldiers, eventually became so prosperous it was known as "The Queen of the Missions."

The pueblo that eventually became the City of Los Angles was established in 1781. During this period, Spain also deeded ranchos to prominent citizens and soldiers (though very few in comparison to the Mexican Period (SWCA, 2006).

4.3.2 Mexican Period

The area that became Los Angeles County saw an increase in European settlement during the Mexican Period largely due to the land grants (ranchos) to Mexican citizens by various governors (SWCA, 2006).

The land that was to become LAX was part of Rancho Ajuaje de la Centinela, which was established by Ignacio Machado in 1883. Machado traded his property in 1845 to Bruno Avila, the brother of Antonio

Avila who owned the adjacent Rancho Sausal Redondo. Together the brothers owned 25,000 acres of valuable land upon which the City of Inglewood and the airport would later be built (McAvoy, 1991).

However, the Mexican Period for Los Angeles ended in early January 1847. Mexican forces fought combined U.S. Army and Navy forces in the Battle of the San Gabriel River on January 8 and in the Battle of La Mesa on January 9. On January 10, leaders of the pueblo of Los Angles surrendered all of Alta California to U.S. Army Lieutenant Colonel John C. Fremont in the Treaty of Cahuenga (SWCA, 2006).

4.3.3 American Period

Settlement of the Los Angeles region continued in the early American Period. The County was established on February 18, 1850, one of 27 counties established in the months prior to California becoming a state. Many ranchos in the County were sold or otherwise acquired by Americans, and most were subdivided into agricultural parcels or towns (SWCA, 2006). Rancho Ajuaje de la Centinela and Rancho Sausal Redondo changed ownership many times and were purchased by Sir Robert Burnett of Scotland in 1858 and sold to Daniel Freeman of Canada in 1885. Freeman helped form a land company which began the early development of the City of Inglewood.

In 1894, Andrew Bennett leased 2,000 acres (which now comprises the major part of LAX) from Freeman and planted wheat, barley, and beans. Over the next 30 years, Bennett expanded his ranch to 3,000 acres, ran a successful ranch into the 1920s, and took an active role in the development of Inglewood as a builder and developer. In the early 1920s, William M. Mines leased a small section of Bennet's ranch for an aircraft landing strip between the fields. The dirt airstrip became known as Mines Field.

Though the aviation industry was still in its infancy, the City of Los Angeles recognized its potential and began to look for an airport site. Since the federal government forbade the use of federal funds to build or develop airports, the airport had to result from local government action. In 1926, Mines Field was included on a list of 13 possible sites for a municipal airport published by the Los Angeles Chamber of Commerce. The selection of Mines Field in 1927 as the site for the 1928 National Air Races, contributed to the final decision. On July 25, 1928, the City of Los Angeles selected Mines Field for the municipal airport and leased 640 acres of ranch property for ten years for use as an airport beginning on October 1. The airport was dedicated on June 7, 1930. The same year the lease on the land was renegotiated to 50 years, a demonstration of the City's commitment to the airport.

The aviation industry developed significantly in the United States in the late 1920s. In 1930, $35 million went into airport development nationwide. Because of the climate, the industry thrived in California, particularly in Southern California. By 1928, there were approximately 25 airplane and airplane motor manufacturers and about 40 aviation schools within the greater Los Angeles area. In 1920, California led the nation in the number of airports and federally licensed personnel with 154 airports, 1167 pilots, and 877 chief mechanics. Other municipal airports in southern California, including the Metropolitan Airport (now Van Nuys Airport) in 1928 and the Ontario Airport in 1929, were developed at the same time as Los Angeles (McAvoy, 1991).

4.4 Project-Specific Historic Overview: Los Angeles International Airport

Unless otherwise noted, this project-specific historic overview is extracted from the LAX Master Plan Final EIS/EIR (FAA and LAWA, 2005).

In 1928, in preparation for the National Air Races, under entrepreneur Cliff Henderson, who later became the first airport director of Los Angeles Municipal Airport, construction crews laid out three runways and erected grandstands, temporary buildings, fencing, access roads, utilities, and sanitary facilities (Schoneberger et al, 2009). The first permanent building at the airfield was constructed in 1929 by the Curtiss-Wright Flying School. Known as 'Hangar One,' the building was designed by Los Angeles

architects Gable and Wyant in a distinctive Spanish Colonial Revival style. Additional construction followed, until there were five hangars, a 2,000-foot paved runway, and administrative offices for the then Department of Aviation.

By 1941, Los Angeles Municipal Airport had a new runway system (South Runway Complex/ 7/25 system) under construction, including a main east-west runway that was 4,660 feet long and 300 feet wide (Schoneberger et al, 2009). Plans for a new modern airport, however, were derailed by World War II. Wartime production activity at the aircraft manufacturing plants on and around the airport intensified dramatically. In 1942, the federal government assumed control of the airport and the Army Air Corps stationed planes and men at the field. Despite wartime conditions, a 1944 master plan envisioning two stages of development, an initial stage to immediately accommodate commercial operations and a long-range expansion of the field, was implemented. The Intermediate Facilities, consisting of four passenger terminals, new administrative buildings, and hangars for individual airlines, were opened on the north side of the airfield in 1946, and the runways were extended to 6,000 feet (Schoneberger et al, 2009). Runway system 6/24, to the northwest of the administration building and municipal hangars, was graded and first paved between 1941 and 1951 (historic aerial photographs and airport maps).

A boom in commercial air travel followed, accompanied by marked increases in air freight traffic. A new master plan for the Los Angeles International Airport, so named in 1949, began to be developed. In 1953, the Sepulveda Boulevard underpass was constructed, allowing two runways to pass overhead (Schoneberger et al, 2009). In 1954, in the midst of the Cold War, a Nike missile surface-to-air defense battery was located by the Army on the northwest corner of the airport; it was one of several such facilities located around the Los Angeles basin.

In 1956, a new master plan for a "jet-age" airport was developed by an architectural joint venture of several prominent Los Angeles architects. Their innovative scheme incorporated a U-shaped access road flanked by seven ticketing buildings that in turn were connected via subterranean passageways to remote satellite buildings containing the actual boarding gates. The center of the "U" contained parking, an administrative building surmounted by a state-of-the-art control tower, support facilities, and an eye-catching Theme Building. This jet-age structure, composed of parabolic arches from which a flying saucer shaped restaurant was suspended, became the symbol and centerpiece of the new airport.

In anticipation of future air travel and passenger growth, construction began on a new terminal complex in 1957 and runways were extended (Schoneberger et al, 2009). Continuing growth of both commercial and freight traffic at the airport has resulted in numerous improvements over the latter half of the Twentieth Century. These have included the development of two cargo centers, Cargo City (late 1960s) and the Imperial Cargo Complex (1982); the Bradley International Terminal (1984); and, the new Airport Traffic Control Tower (1996).

Concurrent with the evolution of the airport has been the development of an industrial center around it. Soon after the airfield opened, a few aircraft manufacturers set up shop close to the airfield. The most notable early milestones in the growth of the aircraft industry in the vicinity were the establishment of the Douglas El Segundo plant in 1932 and the construction of the North American Aviation Inglewood factory in 1934. After the end of the World War II in 1945, industries downsized. New avenues of growth were offered in the post-war period by the Korean Conflict, the growth of civilian and commercial air traffic, the replacement of the propeller-driven fleet with jet aircraft, and the Cold War with its accompanying arms and space races. The giants of the industry such as Douglas and North American secured new contracts, and new companies appeared.

The demand for industrial space by non-aircraft concerns also resulted in the expansion of the airport industrial area. One development in particular was notable. Located just east of the south runway, the International Airport Industrial District (1950-1955) was the product of the partnership of Samuel Hayden and S. Charles Lee. The two men purchased and subdivided the 95-acre parcel and Lee, a well-known architect, designed demonstration factories, customizing facades of standardized buildings to suit the

image of individual tenants. Unlike the majority of industrial improvements in the airport area, these building exhibited an awareness of post-war design trends. Another complex, which was distinguished by its architectural qualities, was constructed for cosmetic manufacturer Merle Norman north of the airport (1950-1951).

4.5 Development of the APE

As part of this cultural resource evaluation, investigators reviewed historic topographic maps from 1950, 1964, 1972, and 1981; historic aerial photographs from 1929, 1939, 1941, 1946, 1949, 1955, 1959, 1965, 1980, 1983, 1985, 1988, 1991; and LAX Airport Layout Plans and Taxiway Designation Maps from 1951, 1955, 1969, 1974, 1978, 1982, 1983, 1985, 1990, 1995, 1998, and 2002.

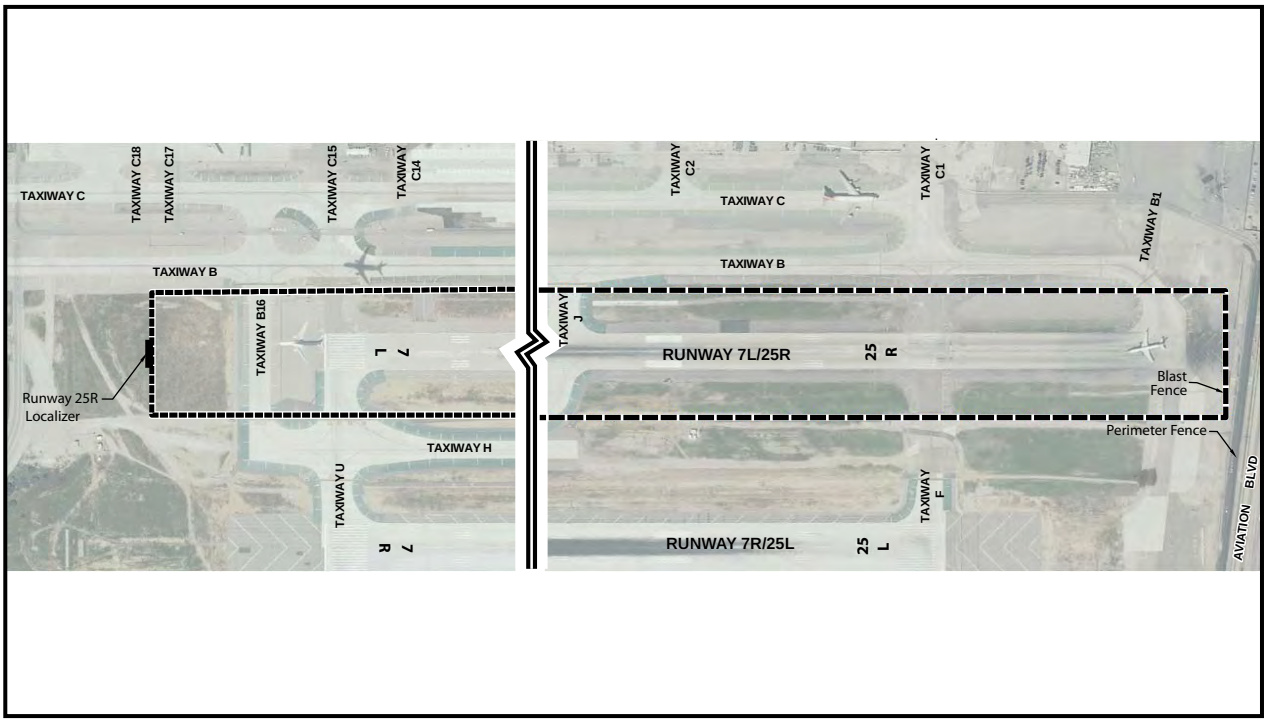
4.5.1 South Runway Complex (7/25 Runway System)

The runways at LAX have gone through a series of alterations since the first dirt runways were constructed in 1928 for the National Air Races. The runways were extended and reconfigured as the airport expanded to meet the growing popularity of air travel and increasing number of passengers following World War II. The first three runways, located south of the administration building and municipal hangars, were graded in 1928 and the first permanent runway was first paved at a length of 2,000 feet in 1929. A main east-west runway was constructed to the south of the administration building in 1941 and extended to 4,660 feet long and 300 feet wide (Schoneberger et al, 2009). This main runway appears to be either Runway 7L/25R or Runway 7R/25L, though it is unclear in aerial photographs. Due to the rarity of photographs during World War II, during which time the airport was concealed under a tarp camouflaged as agricultural fields, the first photographs of the current 7L/25R and 7R/25L runways were not available until 1946 (historic aerial photographs and topographic maps; Schoneberger et al, 2009). In 1946, these runways were extended to 6,000 feet. In 1953, the Sepulveda Boulevard underpass was constructed to allow for lengthening of the runways over the roadway because a longer stretch was now necessary for jets to land. A railroad-style crossing gate was initially used for aircraft to cross Sepulveda Boulevard, but safety concerns necessitated a grade separation. In 1957, the runways were extended again. The arrival of the Airbus A-380 in the first decade of the 21st century mandated major renovations at LAX, including a significant redesign and modification of certain runways and taxiways (Schoneberger et al, 2009). In 2007, as part of the South Airfield Improvement Project, Runway 7R/25L was relocated approximately 55 feet south of its original location to accommodate a new center taxiway (Taxiway H). The existing Runway 7L/25R Complex is shown in **Figure 4-3**.

Approach-lighting was constructed at the east end of Runway 7L/25R by 1951 to help guide pilots onto the runways, but are no longer included on maps after 1978 (LAX Airport Layout Plans and Taxiway Designation Maps). Approach-lighting trestles located at the west end of Runway 7L/25R are visible in an aerial from 1980, but no additional sources pertaining to their initial construction were available.

4.5.2 Air Freight Building No. 8

Air Freight Building No. 8 has historically served two functions: industrial use as a cargo storage facility for Virgin Atlantic and administrative use as an office for Aircraft Service International Group (ASIG). The building, located just north of the eastern end of Runway 7L/25R, was constructed between 1964 and 1969 (per 1964 Venice Quadrangle USGS topographic map and 1969 Taxiway Designation Map) and is a Contemporary-style industrial/commercial warehouse (**Figure C-9**). An addition was added to the building near the center of the west elevation between 1969 and 1974 (Taxiway Designation Maps) (see **Appendix C-1**). A photograph of the property from January 2012 is included below.



a. Runway 7L/25R Source: URS Corporation, 2012.

b. Air Freight Building No. 8 Source: URS Corporation, 2012.

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

FIGURE C-9	**Resources Evaluated**	**Cultural Resources Evaluation Report Runway 7L/25R RSA Project and Associated Improvements**

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5.0 RESEARCH METHODS

Investigators conducted research with/at the South Central Coastal Information Center (SCCIC), the Native American Heritage Commission (NAHC), the LAX Master Plan Final EIS/EIR (FAA and LAWA 2005), consultation with LAWA, the Flight Path Learning Center, the Los Angeles Public Library, and various online sources (*e.g.*, USGS Historical Topographic Maps, etc.) in January and February 2012.

5.1 Records Searches

On January 20, 2012, a record search and literature review from the SCCIC of the California Historic Resource Information System at California State University, Fullerton was received for the Proposed Action (SCCIC File No. 12067.8789). The purpose of the record search was to ascertain whether any cultural resources had been previously identified within or adjacent to 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 also reviewed the NRHP, the California Register of Historic Resources (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 City of Los Angeles Historic-Cultural Monuments (LAHCM) for the records search area, which comprised the entire airport property and a quarter-mile search radius buffer.

In addition, the LAX Master Plan Final EIS/EIR (FAA and LAWA, 2005) and the Caltrans Statewide Bridge Inventory of Local Agency and State Agency Bridges for Los Angeles County were reviewed to identify any additional previously recorded cultural resources within the Airport and quarter-mile search radius not reported by the SCCIC. A quarter-mile search radius is consistent with cultural resource methods in the state, where record searches are undertaken not only to identify previously recorded resources and previous investigations in the APE, but also to attain relevant contextual and background information. In a densely developed area such as LAX, the researchers considered a quarter-mile search radius sufficient to attain the contextual and background information relevant to the identification and evaluation of cultural resources within the APE.

5.1.1 Previously Conducted Investigations Within the Airport and Quarter-Mile Search Radius

The SCCIC records search results identified 54 previously conducted cultural resources investigations within the search area, which comprised the entire Airport property and a quarter-mile search radius. Of the 54 previous investigations, 12 were identified as overlapping with the APE: LA-78 (1975), LA-96, LA-309 (1987), LA-2659 (1992), LA-3673 (1987), LA-4910 (1995), LA-6239 (2000), LA-6240 (2000), LA-7851 (2006), LA-8255 (2006), LA-9925 (2009), and LA-10857 (2005). Supplementary research revealed an additional previously conducted investigation within the airport boundary that was reported as part of the LAX Master Plan Final EIS/EIR (FAA and LAWA 2005). The SCCIC reported 15 additional previous investigations located on the Inglewood, CA and Venice, CA 7.5' USGS Quadrangles that are potentially within a quarter-mile radius of the Airport; however, these reports were not mapped by the SCCIC due to insufficient locational information.

Therefore, over the past 35 years, the APE has been investigated as part of 13 other cultural resources investigations. **Table C-1** summarizes the investigations reported by the SCCIC and identified in supplementary research.

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-69	Rosen, Martin D.	1974	Evaluation of the Archaeological Resources in Playa Del Rey Area	Venice	No
LA-78	Rosen, Martin D.	1975	Evaluation of the Archaeological Resources and Potential Impact of the Proposed Construction of Route 105 Freeway from El Segundo to Norwalk	Inglewood, South Gate	Yes
LA-96	Leonard, Nelson N. III	N/A	Archaeological Study of LAX (19-000691)	Venice	Yes
LA-125	Leonard, Nelson N. III	1975	Hyperion Plant	Venice	No
LA-309	Wlodarski, Robert J.	1987	Archaeological Reconnaissance Report for Areas Relating to the North Outfall Replacement Sewer Project, Los Angeles County, California	Beverly Hills, Hollywood	Yes
LA-513	Desautels, Roger J.	1979	Archaeological Survey Report on TT 35495, a 7.11-acre Parcel of Land on Manchester Boulevard in Playa Del Rey Area of the County of Los Angeles, California	Venice	No
LA-1975	Neuenschwander, Neal J.	1989	Cultural Resource Survey and Clearance Report for the Proposed American Telephone and Telegraph Los Angeles Airport Central Office to the Santa Monica Central Office Fiberoptic Communication Route	Beverly Hills, Venice	No
LA-2659	Wlodarski, Robert J.	1992	A Phase 1 Archaeological Study for the Sepulveda Tunnel Demonstration Project, Los Angeles International Airport, Los Angeles County, California	Venice	Yes
LA-2904	Stickel, Gary E.	1993	Draft Report a Phase I Cultural Resources Literature Search for the West Basin Water Reclamation Project	Inglewood, Redondo Beach	No
LA-3494	Briuer, Frederick L.	1976	Archaeological Impact Statement Development of the Hyperion Treatment Plant Secondary Treatment Facility W.O. 31225, Located at 12000 Vista Del Mar, Playa Del Rey	Venice	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-3583	Bucknam, Bonnie M.	1974	The Los Angeles Basin and Vicinity: a Gazetteer and Compilation of Archaeological Site Information	Anaheim, Baldwin Park, Beverly Hills, El Monte, Hollywood, Inglewood, La Habra, Long Beach, Los Alamitos, Los Angeles, Malibu Beach, Newport Beach, Point Dume, Redondo Beach, San Pedro, Seal Beach, South Gate, Topanga, Torrance, Triunfo Pass, Venice, Whittier	No
LA-3673	Myra L. Frank & Associates	1987	Historic Property Survey Report North Outfall Relief Sewer	Beverly Hills, Hollywood, Inglewood, Venice	Yes
LA-3912	Unknown	1977	Historic Property Survey Airport Boulevard – Manchester Avenue to N/O 98th Street	Inglewood	No
LA-4051	D'Altroy, Terence N.	N/A	Evaluation of the Potential Impact on Archaeological Resources of the Proposed Hyperion Treatment Plant Interim Sludge Processing and Disposal System	Venice	No
LA-4560	Duke, Curt	1999	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 436-02, in the County of Los Angeles, California	Inglewood	No
LA-4647	Duke, Court	1999	Cultural Resources Assessment for Pacific Bell Mobil Services Facility La 942-04, in the County of Los Angeles, California	Venice	No
LA-4748	Duke, Court	1999	Cultural Resources Assessment for Pacific Bell Mobile Services Facility La 436-03, County of Los Angeles, California	Inglewood	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-4835	Ashkar, Shahira	1999	Cultural Resources Inventory Report for Williams Communications, Inc. Proposed Fiber Optic Cable System Installation Project, Los Angeles to Riverside, Los Angeles and Riverside Counties	Baldwin Park, El Monte, Hollywood, La Habra, Los Angeles, Ontario, San Dimas, South Gate, Whittier, Yorba Linda	No
LA-4860	Lapin, Philippe	2000	Cultural Resource Assessment for Pacific Bell Mobile Services Facility La 942-02, in the County of Los Angeles, California	Venice	No
LA-4867	Wallock, Nicole	2001	Cultural Resource Assessment Cingular Wireless Facility No. La 913-13, Los Angeles County, California	Venice	No
LA-4868	Shepard, Richard S.	2000	Cultural Resources Records Search and Paleontological Resources Literature Review Report for the Sempre Energy Gas Leas Sale Project Area, Playa Del Rey and a Portion of the City of Los Angeles, Los Angeles County, California	Venice	No
LA-4891	Sylvia, Barbara	2000	A Proposed High Occupancy Vehicle Lane Between I-105 and SR-90 on I-405 in the City of Los Angeles, Los Angeles County, California	Inglewood, Venice	No
LA-4910	Raschke, Rod	1995	Paleontological and Archaeological Resources Reconnaissance of the Los Angeles International Airport (LAX) Property, Los Angeles County, California	Venice	Yes
LA-5103	Iverson, Gary	1999	Negative Archaeological Survey Report: 491601	Inglewood	No
LA-5496	Smith, Philomene C.	2000	Negative Archaeological Survey report: Constructing a Maintenance Equipment training Facility on 10 Acres of Land Underneath Interstate 105 Between La Cienega Blvd. and the Westbound Off-ramp in Los Angeles	Inglewood	No
LA-5499	Smith, Philomene C.	2000	Negative Archaeological Survey Report: to Cold Plane the Existing Pavement on Route 405 and Overlay With 30 mm of Rubberized Concrete at Selected ON/off-ramps From Vermont Ave. to Manchester Blvd.	Inglewood, Torrance	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-5556	Tillman, Donald C.	1977	Historic Property Survey: Vista Del Mar – Culver Boulevard to Napoleon Street	Venice	No
LA-5558	Duke, Curt	2000	Cultural Resource Assessment for Pacific Bell Wireless Facility La 913-11 County of Los Angeles, California	Venice	No
LA-5561	Duke, Curt	2000	Cultural Resource Assessment for Pacific Bell Facility La 306-03 County of Los Angeles, California	Venice	No
LA-5562	Duke, Curt	2000	Cultural Resource Assessment for Pacific Bell Facility Sm 016-01 County of Los Angeles, California	Venice	No
LA-5564	Verity, Sue	1999	A Neighborhood History and Predictions of Archaeological Potential the Archaeology of Los Angeles XI 1971	Venice	No
LA-5710	Duke, Curt	2002	Cultural Resource Assessment AT&T Wireless Facility No. D432 Los Angeles County, California	Venice	No
LA-5760	Duke, Curt	2002	Cultural Resource Assessment at AT&T Wireless Services Facility No. 04135 Los Angeles County, California	Venice	No
LA-6233	Lortie, Frank and Paula Boghosian	1999	Historic Property Survey Report Interstate 405 / Arbor Vitae Street Interchange Inglewood	Inglewood	No
LA-6239	Wesson, Alex, Bryon Bass and Brian Hatoff	2000	El Segundo Power Redevelopment Project Cultural Resources (Archaeological Resources) Appendix J of the Application for Certification	Venice	Yes
LA-6240	Bunse, Meta and Stephen D. Mikesell	2000	El Segundo Power Redevelopment Project Historic Resources (Built Environment) Appendix K of Application for Certification	Venice	Yes
LA-6246	McKenna, Jeanette A.	2002	Cultural Resources for Proposed Expansion of Westchester High School 7400 W. Manchester Avenue in the City of Los Angeles	Venice	No
LA-6248	Hale, Alice E.	2002	Phase I Archaeological Survey Fire Station Number 5 Westchester, California	Venice	No
LA-7185	Foster, John M.	2004	Archaeological Investigation for Venice Pumping Plant Dual Force Main Project	Venice	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-7715	Bonner, Wayne H.	2005	Cultural Resources Records Search Results and Site Visit for Cingular Wireless Candidate EI-014-03 (Neutrogena Property) 5705 West 98th Street, Los Angeles County, California	Venice	No
LA-7851	Getchell, Barbie Stevenson and John E. Atwood	2006	Archaeological and Historical Evaluations for the Proposed Airport Surveillance Detention Equipment, Model 3x (asde-3x) to Serve Los Angeles International Airport (LAX), Los Angeles County, California	Venice	Yes
LA-7939	Kane, Diane	2000	Historic Property Survey Report for the Route 1 Widening Project Between Culver Boulevard and Jefferson Boulevard in Los Angeles County, California	Venice	No
LA-8255	Arrington, Cindy and Nancy Sikes	2006	Cultural Resources Final Report of Monitoring and Findings for the Qwest Network Construction Project State of California, Volumes I and II	Anaheim, Black Mtn, Burbank, Camarillo, Canoga Park, Dana Point, El Toro, Frazier Mountain, Hollywood, Inglewood, Lebec, Liebre Mtn, Long Beach, Los Alamitos, Los Angeles, San Clemente, San Fernando, San Juan Capistrano, Santa Susana, Saticoy, Simi, South Gate, Tustin, Van Nuys, Venice, Ventura, Warm Springs Mountain, Whitaker Peak, White Ledge Peak, Whittier	Yes
LA-9923	Losee, Carolyn	2009	Cultural Resources Analysis for T-Mobile Site Number LA03358D "Intercom Building" 9800 South Sepulveda Avenue, Los Angeles, California	Venice	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-9925	Richards, Michael D.	2009	A Report of the Monitoring During Excavation, Light Grading, and Planting for the Imperial Highway Stormwater Best Management Practices Project, near the Los Angeles International Airport (LAX) in the City of Los Angeles, California	Venice	Yes
LA-10160	Harper, Caprice D. and Francesca Smith	2008	Preliminary Cultural Resources Survey for the Formation of the Wiseburn Unified School District Project, Cities of El Segundo and Hawthorne, and Unincorporated Los Angeles County, CA	Inglewood, Venice	No
LA-10197	Sriro, Adam	2001	Negative Archaeological Survey Report: Erosion Control Measures at Various Locations Between La Cienega and Vermont on/off ramps on LA405	Inglewood, Torrance	No
LA-10489	Kane, Diane	2000	Historic Property Survey Report for Route 405 HOV Lane Between I-105 and SR-90 in Los Angeles County, California	Inglewood, Venice	No
LA-10732	Bonner, Wayne and Kathleen Crawford	2010	Cultural Resources Records Search, Site Visit Results, and Direct APE Historic Architectural Assessment for Clearwire Candidate CA-LOS2038/CA6587, 9750 Airport Boulevard, Los Angeles, California	Venice	No
LA-10826	Unknown	2008	Section 106 Consultation for Three-Hole Expansion and Two-Hole Course Modification, Westchester Golf Course and Los Angeles International Airport, Los Angeles, CA	Venice	No
LA-10857	Smith, Brian F.	2005	Final – LAX Master Plan Mitigation Monitoring & Reporting Program – Archaeological Treatment Plan	Venice	Yes
LA-10935	Stewart, Noah	2008	Supplemental Historic Property Survey Report – Interstate 405 at Arbor Vitae St.	Inglewood	No
LA-11031	Bonner, Wayne	2011	Direct APE Historic Architectural Assessment for AT&T Mobility, LLC Candidate LAR853-01-CLU2377-01 (Standard Aero Building), 6201 West Imperial Highway, Los Angeles County, California	Venice	No

Table C-1
Previously Conducted Cultural Resources Investigations at the Airport and the Quarter-Mile Search Radius*

NADB No./ SHPO ID	Author	Date	Title	7.5-minute Quadrangle	In APE
LA-11347	Cardenas, Gloriella and Clint Helton	2011	Cultural Resources Monitoring Report for Taxilane S and Bradley West, Los Angeles World Airports, Los Angeles, California	Venice	No
N/A	FAA and LAWA	2005	LAX Master Plan Final EIS/EIR	Venice	Yes

* The SCCIC reported 15 additional previous investigations located on the Inglewood, CA and Venice, CA 7.5' USGS Quadrangles that are potentially within a quarter-mile radius of the Airport: LA-00105, LA-00294, LA-00542, LA-03289, LA-03494, LA-03511, LA-03556, LA-03588, LA-04323, LA-05741, LA-06903, LA-07426, LA-07826, LA-07847, and LA-11138. These reports are not mapped due to insufficient locational information.

Notes:

ID = identification
N/A = not applicable
NADB = National Archaeological Database
SHPO =State Historic Preservation Officer

5.1.2 Previously Recorded Cultural Resources within the Airport and Quarter-Mile Search Radius

The SCCIC records search results reported 131 previously recorded cultural resources (15 archaeological resources and 116 historic architecture resources) within the search area, which comprises the Airport and a quarter-mile search radius. Of the 131 resources reported by the SCCIC, 81 were listed on the Historical Resources Inventory (HRI) and have been evaluated for historical significance; however, locational maps and site forms for these resources were not provided by the SCCIC. Supplementary research revealed an inventory of the properties within the airport boundary that was conducted as part of the LAX Master Plan Final EIS/EIR (LAWA 2005), which reported eight previously recorded cultural resources (four archaeological resources and four historic architecture resources) in the search area in addition to those reported by the SCCIC. Combined, there are 139 previously recorded cultural resources in the search area.

Of the 139 previously recorded cultural resources, one cultural resource was identified as being located within the current APE: 19-000691. 19-000691 is a prehistoric shell scatter that has been evaluated as ineligible for listing in the NRHP, CRHR, or a local register due to lack of evidence found at the site and extensive disturbance of the area (FAA and LAWA, 2005).

Within airport property and quarter-mile search radius, there are no bridges listed in the Caltrans Statewide Bridge Inventory of Local Agency and State Agency Bridges for Los Angeles County that have been assigned a National Register status designation indicating it is listed on the NRHP (status designation 1), eligible for NRHP listing (status designation 2), or may be eligible for NRHP listing (status designation 3).

Information regarding the previously recorded cultural resources reported by the SCCIC and identified in supplementary research has been tabulated below in **Table C-2**.

Table C-2
Previously Recorded Cultural Resources at the Airport and Quarter-Mile Search Radius*

Resource Identifier	Description	Significance	Date Recorded and Evaluator	In APE
19-000066	Playa del Rey Site (no details provided)	Not Evaluated	Unknown date, R.F. Van Valkenburgh 1936, M. Farmer 1950, Rozaire and Belous	No
19-000202	Archaeological site (no details provided/site form missing)	Evaluated as ineligible for NRHP, CRHR, and Local Listing	1953, Eberhart 2005, FAA and LAWA	No
19-000203	Metates	Not Evaluated	1953, Eberhart	No
19-000214	Points	Evaluated as ineligible for NRHP, CRHR, and Local Listing	1953, Eberhart 1995, Bissell 2005, FAA and LAWA	No
19-000691	**Shell scatter**	**Evaluated as ineligible for NRHP, CRHR, and Local Listing**	**1972, Leonard** **1974, Farrell** **1995, Bissell** **2005, FAA and LAWA**	**Yes**
19-001118	Shell midden with isolated lithic debitage	Evaluated as ineligible for NRHP, CRHR, and Local Listing	1981, Stickel and Appier 1995, Bissell 2005, FAA and LAWA	No
19-001716	Two loci with weathered flakes and shell fragment	Not Evaluated	1990, Singer	No
19-002345	Large prehistoric site exposed in sand blowouts consists of hundreds of stone tools, bones, shell fragments, and thermally affected stones	Evaluated as eligible for NRHP, CRHR, and Local Listing	1995, Bissell 2005, FAA and LAWA	No
19-002385	Wide scatter of historic debris	Not Evaluated	1995, Bissell	No
19-002386	World War II-era observation bunker	Not Evaluated	1995, Bissell	No
19-004278	Historic era, c. 1940s or earlier, brick and mortar storm drain remnant	Evaluated as Eligible	2011, Hazlett	No
19-150442	Broadway Department Store/Milliron's Department Store, 8739 South Sepulveda Blvd., Los Angeles, CA, constructed 1948	Evaluated as Not Eligible (based on age at time of evaluation)	1987, Starzak	No
19-150445	Korner Deli Restaurant/Syad Realty Building, 8901-8911 South Sepulveda Blvd, Los Angeles, CA, constructed 1950	Evaluated as Not Eligible	1987, Starzak	No

Table C-2
Previously Recorded Cultural Resources at the Airport and Quarter-Mile Search Radius*

Resource Identifier	Description	Significance	Date Recorded and Evaluator	In APE
19-174101	Hangar One, 5701 W. Imperial Hwy, Los Angeles/Hangar No. 1 Building, constructed 1929	NRHP-Listed, LAHCM No. 44	1996, LAHCM-listed, Unknown 1992, NRHP-listed, Unknown 2005, FAA and LAWA	No
19-186162	LAX Control Tower/Beacon Tower, Los Angeles International Airport, constructed 1951	Evaluated as Not Eligible	2006, Atwood	No
19-188793	Residence – triplex, 915 Kenwood St, Inglewood, CA, constructed 1952	Evaluated as Not Eligible	1999, Lortie	No
19-188794	Residence, 918 South Ash Ave., Inglewood, CA, constructed 1940	Evaluated as Not Eligible	1999, Lortie	No
19-188795	Residence, 920 S. Ash Ave., Inglewood, CA, constructed 1937	Evaluated as Not Eligible	1999, Boghosian	No
19-188796	Residence, 922 S. Ash Ave., Inglewood, CA, constructed 1924	Evaluated as Not Eligible	1999, Lortie	No
19-188797	Residence, 909 S. Ash Ave., Inglewood, CA, constructed 1937	Evaluated as Not Eligible	1999, Boghosian	No
19-188798	Residence, 907 S. Ash Ave., Inglewood, CA, constructed 1937	Evaluated as Not Eligible	1999, Boghosian	No
19-188799	Residence, 700 Arbor Vitae St., Inglewood, CA, constructed 1937	Evaluated as Not Eligible	1999, Boghosian	No
19-188800	Residence, 670 Arbor Vitae St., Inglewood, CA, constructed 1941	Evaluated as Not Eligible	1999, Boghosian	No
19-188801	Residence, 660 W. Arbor Vitae St., Inglewood, CA, constructed 1928	Evaluated as Not Eligible	1999, Boghosian	No
19-188802	Three residences and a commercial unit, 905, 905 ½, and 909 Kenwood St., Inglewood, CA. constructed 1940, 1942, and 1951	Evaluated as Not Eligible	1999, Boghosian	No
19-188803	Three residences, 667 W. Arbor Vitae St., Inglewood, CA, constructed 1943	Evaluated as Not Eligible	1999, Boghosian	No
19-188804	Residence, 689 West Arbor Vitae St., Inglewood, CA, constructed 1943 or 1945	Evaluated as Not Eligible	1999, Lortie	No

Table C-2
Previously Recorded Cultural Resources at the Airport and Quarter-Mile Search Radius*

Resource Identifier	Description	Significance	Date Recorded and Evaluator	In APE
19-188805	Residence, 640 Buckthorn St., Inglewood, CA, constructed 1925 or 1928 or 1941	Evaluated as Not Eligible	1999, Boghosian	No
19-188806	Residence, 632 W. Buckthorn St., Inglewood, CA, constructed 1925	Evaluated as Not Eligible	1999, Boghosian	No
19-188807	Residence, 630 Buckthorn St., Inglewood, CA, constructed 1925	Evaluated as Not Eligible	1999, Lortie	No
19-188808	Residence, 626 W. Buckthorn St., Inglewood, CA, constructed 1925/1930	Evaluated as Not Eligible	1999, Boghosian	No
19-188809	Residence, 639 Buckthorn St., Inglewood, CA, constructed 1942	Evaluated as Not Eligible	1999, Lortie	No
19-188810	Residence, 705 West Buckhorn St., Inglewood, CA, constructed 1925	Evaluated as Not Eligible	1999, Lortie	No
19-188811	Residence, 709 W. Buckthorn St., Inglewood, CA, constructed 1931	Evaluated as Not Eligible	1999, Boghosian	No
19-188812	Residence, 708 Magnolia Ave., Inglewood, CA, constructed 1925	Evaluated as Not Eligible	1999, Boghosian	No
19-188813	Residence, 700 Magnolia Ave., Inglewood, CA, constructed 1948	Evaluated as Not Eligible	1999, Lortie	No
19-188814	Residence, 644 Magnolia Ave., Inglewood, CA, constructed 1928	Evaluated as Not Eligible	1999, Boghosian	No
19-188815	Residence, 705 Magnolia Ave., Inglewood, CA, constructed 1924	Evaluated as Not Eligible	1999, Lortie	No
19-188816	Residence, 706 West Spruce Ave., Inglewood, CA, constructed 1941	Evaluated as Not Eligible	1999, Lortie	No
19-188817	Residence, 702 West Spruce Ave., Inglewood, CA, constructed 1941	Evaluated as Not Eligible	1999, Lortie	No
19-188818	Residence, 644 W. Spruce Ave., Inglewood, CA, constructed 1941/1945	Evaluated as Not Eligible	1999, Boghosian	No
19-188819	Oak Street School, 633 Oak Street, Inglewood, CA, constructed 1928, 1933, 1936, 1952, 1956, 1972, and 1973	Evaluated as Not Eligible	1999, Boghosian	No

Table C-2
Previously Recorded Cultural Resources at the Airport and Quarter-Mile Search Radius*

Resource Identifier	Description	Significance	Date Recorded and Evaluator	In APE
19-188852	Four Points by Sheraton, 9750 Airport Blvd., Los Angeles, CA, constructed c. 1964	Evaluated as Not Eligible	2010, Crawford	No
19-189416	Standard Aero Building, 6201 W. Imperial Highway, Los Angeles, CA, constructed c. 1946	Evaluated as Not Eligible	2010, Crawford	No
Not Provided by SCCIC	Airport Theme Building, 201 Center Way, constructed 1961	NRHP-Eligible CRHR-Eligible LAHCM No. 570 (12-18-1993)	SCCIC 2005, FAA and LAWA	No
Not Provided by SCCIC	Loyola Theatre, 8610 South Sepulveda Blvd, constructed 1948	LAHCM No. 259 (12-17-1982)	SCCIC	No
Not Provided by SCCIC	Four Isolates reported in SCCIC Records Search Results Letter	Unknown	Unknown	Unknown
CA-LAN-1118	Shell midden with lithic debitage; site extends from the western terminus of La Tijera Blvd. west 100 meters and northwest for 250 meters to a point approximately 50 meters south of a line parallel with St. Bernard St.	Evaluated as Not Eligible	1981, Stickel & Appier 2005, FAA and LAWA	No
Isolate 1	Large felsite porphyry flake tool; located immediately west of the northernmost runway at LAX.	Evaluated as Not Eligible	1996, Bissell 2005, FAA and LAWA	No
Isolate 2	Large quartzite tool; located in the dune area in the northwestern portion of LAX.	Evaluated as Not Eligible	1996, Bissell 2005, FAA and LAWA	No,
CA-LAN-*1H	Concrete, asphalt, glass, brick fragments, plaster, linoleum fragments, countertop tiles, and metal fragments; located immediately west of the northernmost runway of LAX.	Evaluated as Not Eligible	1996, Bissell 2005, FAA and LAWA	No
N/A	Intermediate Terminal Complex, constructed 1946	Evaluated as ineligible for NRHP and eligible for CRHR and LAHCM	2005, FAA and LAWA	No

Table C-2
Previously Recorded Cultural Resources at the Airport and Quarter-Mile Search Radius*

Resource Identifier	Description	Significance	Date Recorded and Evaluator	In APE
N/A	International Airport Industrial District, constructed 1950-55	Evaluated as ineligible for NRHP and eligible for CRHR, LAHCM, and Los Angeles Historic Preservation Overlay Zone (HPOZ)	2005, FAA and LAWA	No
N/A	World War II (WWII) Munitions Storage Bunker, constructed 1942	Evaluated as eligible as contributor to potential NRHP Harbor Defenses of Los Angeles Program district and CRHP and Local potential thematic grouping of coastal defense properties on southern California coast. Determined ineligible for NRHP as an individual resource	2005, FAA and LAWA	No
N/A	1961 Airport Traffic Control Tower, constructed 1961	Evaluated as ineligible for NRHP, CRHR, and Local Listing	2005, FAA and LAWA	No

*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.

Notes:

CRHR = California Register of Historic Resources
N/A = not applicable
NRHP = National Register of Historic Places

5.2 Archival Research

Investigators conducted research using the LAX Master Plan Final EIS/EIR (FAA and LAWA 2005), LAWA, the Flight Path Learning Center, the Los Angeles Public Library, and various online sources (e.g., USGS Historical Topographic Maps, etc.), in January and February 2012. As part of the research, investigators examined the historic context and land uses for the APE and vicinity, specifically, the history of Runway 7L/25R, Air Freight Building No. 8, and the temporary structures within the APE. Reproductions of historic-period maps and images are included in **Appendix C-1**.

5.3 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 February 14, 2012, providing contact information for various Native American Tribes and individuals, which were subsequently contacted.

The FAA sent five letters to the following tribes and organizations: Los Angeles City/County Native American Indian Commission, Gabrielino Tongva Nation, Gabrielino Tongva Indians of California Tribal Council, Gabrielino Tongva Tribe, and the Tongva Ancestral Tribal Nation. One email indicating a response would be forthcoming was received by the FAA; however, nothing further was received.

6.0 FIELD AND INVENTORY METHODS

All cultural resources work for the Proposed Action has been conducted by personnel who meet the Secretary of Interior professional qualifications for Archaeology, History, and Architectural History. Cultural resources have been evaluated pursuant to NHPA Section 106 and its implementing regulations 36 CFR Part 800 "Protection of Historic Properties" (Section 106), and in accordance with CEQA Guidelines §15064.5(a)(2)-(3) using the criteria outlined in PRC §5024.1. The qualifications of the individuals contributing to this report are summarized in **Preparers' Qualifications**.

On January 11, 2012, a windshield reconnaissance and limited pedestrian survey of the APE was conducted. 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.

One previously recorded cultural resource, a historic shell scatter along the base of a steep sided hill (19-000691), has been recorded in the APE; however, it has been evaluated as ineligible for listing in the NRHP, CRHR, or a local register due to lack of evidence found at the site and extensive disturbance of the area (FAA and LAWA 2005). No archaeological resources were identified during the survey.

During the investigation, two newly identified historic-period resources were identified, recorded, and evaluated: Runway 7L/25R and its related features (non-historic and historic-period taxiways including Taxiways B and C, non-historic-period blast fence, and non-historic-period approach lighting systems), and Air Freight Building No.8. and related feature (building's parking apron).

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7.0 DESCRIPTION OF CULTURAL RESOURCES

One previously recorded cultural resource, a historic shell scatter along the base of a steep sided hill (19-000691), has been recorded in the APE; however, it has been evaluated as ineligible for listing in the NRHP, CRHR, or a local register due to lack of evidence found at the site and extensive disturbance of the area (FAA and LAWA, 2005). No evidence of the site was observed during this investigation.

As a result of the archaeological investigation and architectural history field survey, two historic-period resources were identified in the APE (see **Table C-3**), and DPR 523 series forms were prepared for the two resources. The DPR 523 series forms include changes/alterations to the resource and setting/layout, additional information, condition assessments, retention of historic integrity aspects, and determinations of eligibility for the properties within the APE. Summary descriptions are provided below.

Table C-3
Newly Recorded Cultural Resources within the APE

Map Reference Number	Original Function/Name	Date of Construction	Significance
1	Runway 7L/25R (related features: non-historic and historic-period taxiways [including Taxiways B and C], non-historic-period blast fence, and non-historic-period approach lighting systems)	Between 1941 and 1946	Not Eligible
2	Air Freight Building No. 8 (related feature: building's parking apron)	Between 1964 and 1969	Not Eligible

Source: URS Corporation, 2012

7.1 Runway 7L/25R (Map Reference 1)

7.1.1 Description

Runway 7L/25R is one of two runways in the South Runway Complex (7/25 system) at LAX, which was first constructed between 1941 and 1946. Though the land had been graded for three runways in preparation for the 1928 National Air Races, the runway paths and dimensions were altered when these two runways were first paved in the 1940s. A main east-west runway was constructed to the south of the administration building in 1941 and extended 4,660 feet long and 300 feet wide (Schoneberger et al, 2009). This main runway appears to be either Runway 7L/25R or Runway 7R/25L, though it is unclear in aerial photographs. Due to the rarity of photographs during World War II, during which time the airport was concealed under a tarp camouflaged as agricultural fields, the first photographs of the current 7L/25R and 7R/25L runways were not available until 1946 (historic aerial photographs and topographic maps; Schoneberger et al, 2009). The runways were extended and reconfigured as the airport expanded to meet the growing popularity of air travel and increasing number of passengers following World War II. In 1946, these runways were extended to 6,000 feet. In 1953, the Sepulveda Boulevard underpass was constructed to allow for lengthening of the runways over the roadway because a longer stretch was now necessary for jets to land. A railroad-style crossing gate was initially used for aircraft to cross Sepulveda Boulevard, but safety concerns necessitated a grade separation. In 1957, the runways were extended again. The arrival of the Airbus A-380 in the first decade of the 21st century mandated major renovations at LAX, including a significant redesign and modification of certain runways and taxiways (Schoneberger et al, 2009).

Runway 7L/25R runs parallel to Runway 7R/25L (which was relocated southward in 2007 to add a Taxiway H between them), and extends east-west across the airfield. Runway 7L/25R is approximately 12,090 feet in length and 150 feet wide (LAX Airport Layout Plan). As a result of consistent use and wear

over time, as well as runway extensions to accommodate larger aircraft and increasing air traffic, Runway 7L/25R has been built up, repaved, and improved outside of the historic period. The runways are paved with non–historic-period concrete that has been painted with striping and other locational information used by incoming pilots and has undergone minor improvements to add features such as light reflectors set within the runway. No original historic materials were observed.

Related features include a number of historic and non-historic-period taxiways, a non-historic-period blast fence, and non-historic-period approach lighting systems. Taxiway B, which runs parallel to Runway 7L/25R, appears to be have been present as early as 1952 based on a review of historic aerial photographs and historic USGS topographic maps; however, it has been extended as a result of extensions to the runway. Taxiway C, which runs parallel and north of Runway 7L/25R and Taxiway B, first appears on 1957 maps only partially complete. It is shown in its general current configuration by a 1972 map. Taxiway C has been extended and related Taxiways C1, C2, and C3 have been added and relocated as airport needs have evolved. All of the taxiways are paved with non-historic period concrete that has been painted with striping and other locational information used by taxiing pilots. No original historic materials were observed.

Approach lighting was constructed at the east end of Runway 7L/25R by 1951 to help guide pilots onto the runways, but are no longer included on maps after 1978 (LAX Airport Layout Plans and Taxiway Designation Maps). Approach lighting systems located at the west end of Runway 7L\25R are visible in an aerial from 1980, but no additional sources pertaining to their initial construction was available (see **Appendix C-1** for historic images and maps). The Runway 7L/25R approach lighting systems are metal structures with lightbars, used to assist pilots in visually identifying the runway and aligning the aircraft with the runway upon approach. Two approach lighting systems are located at the east end of Runway 7L/25R, one with a single-pole support and the other a horizontal series of metal mounts which resembles an exposed trellis. The single-pole structure consists of a metal pole set in a concrete footing, with a metal cross-arm and metal braces. Five lights are mounted along the cross-arm. The second structure consists of a series of metal poles supporting rectangular metal beams with protruding metal bolts, all set in a long concrete pad and connected near the base by a metal beam. Pairs of red approach lights are located at either end of the structure, also set in the concrete pad. A row of five additional approach lights on small metal poles are set in the ground just east of the second approach lighting system.

7.1.2 Significance Evaluation

The historical significance of Runway 7L/25R was determined by applying the procedure and criteria for the NRHP and the CRHR. Upon review of the site survey and historical research, Runway 7L/25R located at LAX, which was first constructed between 1941 and 1946 and considerably altered since (built up, repaved, and improved outside of the historic period, as recent as 1986), is not eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA (PRC §15064.5[a][4]).

Initial research has yielded no information indicating an association of the runway with significant historic events or people (Criteria A and B of the NRHP; Criteria 1 and 2 of the CRHR). Although the runway does appear to be associated with aviation history, it does not illustrate any significant association with aviation history, such as the development of aircraft, establishment of commercial airlines, or location of important aviation flights or events, that characterize the development of the commercial airline and airport industry in the early 20th Century. Although Runway 7R/25L may have been extended to its full length and configuration more than 45 years ago, the runway system has been redesigned and modified within the past 20 years, and does not retain its original materials, construction techniques, or appearance from the historic period. As a result, the runway is not associated with important events or people in aviation or runway engineering history.

Further, the runway does not significantly embody the distinctive characteristics of an engineering structure or architectural style, type, or period (Criterion C of the NRHP; Criterion 3 of the CRHR). The runway has been heavily altered and no longer retains its original or historic appearance, visual narrative, and characteristics from a specific period. The runway pavement has been maintained by LAWA to meet FAA airport design standards and the RSA has been maintained in order to comply with federal requirements. Overall, the runway configuration, the lengths and the widths of the runways, as well as the non–historic-period materials at LAX are common, relatively mundane examples of runway construction that can be found at most commercial airports. Research did not result in identifying any key engineers or master architects for whom the runway may illustrate their important works.

Finally, research has provided no indication that the runway has the potential to yield potentially important information (Criterion D of the NRHP; Criterion 4 of the CRHR).

In addition, in order for a property to be eligible for listing in the NRHP or CRHR, besides meeting one of the above criteria, it must also retain its historic integrity. The NRHP and CRHR traditionally recognize a property's historic integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. In order for a property to be eligible, it must retain some, if not most, of the aspects. Location is defined as the place where the historic-period property was constructed or the place where the historic event took place. The property has not been moved; therefore, it retains its integrity of location. However, no historic events are associated with the property. Design is defined as the composition of elements that constitute the form, plan, space, structure, and style of a property. Although the runway, originally constructed between 1941 and 1946 has generally retained its original design, the runway has been extended significantly since, negatively affecting the integrity of design. Setting is defined as the physical environment of a historic-period property that illustrates the character of the place. The runway has retained its setting north of Imperial Highway and east of Interstate 405; however, the surrounding airport buildings have been significantly altered and the airfield itself has been expanded considerably since, affecting the runway's integrity of setting. Materials are defined as the physical elements combined in a particular pattern or configuration to form the aid during a period in the past. The runway does not retain any integrity of materials. Workmanship is defined as the physical evidence of the crafts of a particular culture or people during any given period of history. The runway does not retain physical evidence of the crafts of a given period of history. Feeling is defined as the quality that a historic-period property has in evoking the aesthetic or historic sense of a past period of time. Due to the loss of historic materials and the expansion of the airfield and runway since they were originally constructed between 1941 and 1946, the runway no longer retains integrity of feeling for a mid-twentieth-century airport. Association is defined as the direct link between a property and the event or person for which the property is significant. No significant events or persons are associated with the runway, so integrity of association was not evaluated. Therefore, Runway 7L/25R does not retain its integrity of design, setting, materials, workmanship, feeling, or association.

In conclusion, Runway 7L/25R is not eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA (Per PRC §15064.5[a][4]).

7.2 Air Freight Building No. 8 (Map Reference 2)

7.2.1 Description

Air Freight Building No. 8 has historically served two functions: industrial use as a cargo storage facility for Virgin Atlantic and administrative use as an office for ASIG. The building, located just north of the eastern end of Runway 7L/25R, was constructed between 1964 and 1969 (per 1964 Venice Quadrangle USGS topographic map and 1969 Taxiway Designation Map) and is a Contemporary-style industrial/commercial warehouse. An addition was added to the building near the center of the west elevation between 1969 and 1974 (Taxiway Designation Maps). It is two-stories in height, has a long rectangular plan, and is composed of two parts. The northern section has a wider rectangular frame and

features a flat roof of metal sheeting with an addition near the center of the west elevation. The southern section has a narrow rectangular frame and features a very slight side-gabled roof of metal sheeting. The building has a concrete base and is clad with corrugated sheet metal on both sections, and the west elevation addition is clad with a combination of concrete and brick facing.

The primary (west) elevation is covered with a long corrugated metal awning, supported by metal braces. Deteriorating signage over the northern section of the awning reads, "Virgin Atlantic Cargo Export". The west elevation features at least 17 large roll-top garage bays, some with additional security grates, and the center bay on the southern end is elevated up a concrete ramp with metal guardrails. Additional entrances are located at the northern and southern ends of the west elevation as well as flanking the center addition. These entrances include four single metal doors elevated up concrete ramps with metal guardrails, three single metal doors elevated above concrete stairs, and a single metal door over a concrete porch slab.

The center addition on the west elevation is clad with concrete and flanked with a stacked bond curtain wall. A row of four three-quarter aluminum-frame picture windows on the upper story and a pair of two three-quarter aluminum-frame picture windows on the ground story are separated by protruding aluminum mullions. Dividing the two stories are prefabricated modular panels adorned with a logo and signage reading "ASIG". Two entryways flank the ground story windows and each contain a single aluminum-frame commercial glass door with transom and long side lite.

The east elevation has no awning, but flood lights are placed at intervals along the roofline. Entryways include at least seven large roll-top garage doors, two of which are elevated up a concrete ramp with metal guardrails. The south elevation features five large aluminum-frame picture windows with sills and an additional window opening with sill (which has been boarded up). The north elevation features a metal pipe, a small vent, and signage reading "Evergreen". Chain link fences topped with barbed wire extends from the north and south elevations, separating the two sides of the building. Overall, the building has a utilitarian and non-descript appearance, and lacks distinctive features and characteristics. The only related feature is the building apron, which is a flat, paved area covered with non-historic period concrete. The building apron appears to be have been paved as early as 1972 based on a review of historic aerial photographs; however, it appears to have been repaved since no original historic materials were observed.

7.2.2 Significance Evaluation

The historical significance of Air Freight Building No.8 was determined by applying the procedure and criteria for the NRHP and the CRHR. Upon review of the site survey and historical research, Air Freight Building No.8 located at LAX, which was constructed between 1964 and 1969, with an addition between 1969 and 1974, is not eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA (Per PRC §15064.5[a][4]).

Initial research has yielded no information indicating an association of the building with significant historic events or people (Criteria A and B of the NRHP; Criteria 1 and 2 of the CRHR). The building does not illustrate any significant association with aviation history, such as the development of aircraft, establishment of commercial airlines, or location of important aviation flights or events, that characterize the development of the commercial airline and airport industry in the early 20th Century. Although the building may have been originally constructed more than 45 years ago, additions and changes have been made outside of the historic period. The building has retained much of its original framework, but its original and historic appearance has changed through the addition of non-historic-period materials and other features (such as security grates). As a result, the building is not associated with important events or people in aviation or engineering history.

Further, the building does not significantly embody the distinctive characteristics of an architectural style, type, or period (Criterion C of the NRHP; Criterion 3 of the CRHR). The building has been heavily altered and no longer retains its original or historic appearance, visual narrative, or characteristics from a specific period. Overall, the building is a common, relatively mundane example of a cargo warehouse

that can be found at most commercial airports. Research did not result in identifying any key engineers or master architects for whom the building may illustrate their important works.

Finally, research has provided no indication that the building has the potential to yield potentially important information (Criterion D of the NRHP; Criterion 4 of the CRHR).

Since the building is less than 50 years of age, the property would also have to meet Criterion Consideration G to be eligible for listing in the NRHP and CRHR. The property does not have exceptional significance, and thus does not meet Criterion G for properties that have achieved significance within the past 50 years of the NRHP. The property is not associated with a fragile class of resources, not important within any appropriate historic context, and (as a heavily altered example) is far from the best representative property of any architectural style.

In addition, in order for a property to be eligible for listing in the NRHP or CRHR, besides meeting one of the above criteria, it must also retain its historic integrity. The NRHP traditionally recognizes a property's historic integrity through seven aspects or qualities: location, design, setting, materials, workmanship, feeling, and association. In order for a property to be eligible, it must retain some, if not most, of the aspects. Location is defined as the place where the historic-period property was constructed or the place where the historic event took place. The property has not been moved; therefore, it retains its integrity of location. However, no historic events are associated with the property. Design is defined as the composition of elements that constitute the form, plan, space, structure, and style of a property. Although the building, originally constructed between 1964 and 1969 has generally retained its original design, an addition from between 1969 and 1974 altered its overall appearance, negatively affecting the integrity of design. Setting is defined as the physical environment of a historic-period property that illustrates the character of the place. The building has retained its location within the airport property; however, the surrounding airport buildings have been significantly altered and the airfield itself has been expanded considerably since, affecting the building's integrity of setting. Materials are defined as the physical elements combined in a particular pattern or configuration to form the aid during a period in the past. The building appears to retain only some of its original materials. Workmanship is defined as the physical evidence of the crafts of a particular culture or people during any given period of history. The building does not retain physical evidence of the crafts of a given period of history. Feeling is defined as the quality that a historic-period property has in evoking the aesthetic or historic sense of a past period of time. Due to the alterations to the building and the expansion of the surrounding airfield since the building was originally constructed between 1964 and 1969, the building no longer retains its integrity of feeling. Association is defined as the direct link between a property and the event or person for which the property is significant. No significant events or persons are associated with the building, so integrity of association was not evaluated. Therefore, Air Freight Building No. 8 does not retain its integrity of design, setting, materials, workmanship, feeling, or association.

In conclusion, Air Freight Building No. 8 is not eligible for listing to the NRHP, CRHR, or considered a historical resource for purposes of CEQA (per PRC §15064.5[a][4]).

In summary, the cultural resources investigation for the Proposed Action identified two historic architecture resources that are eligible for listing in the NRHP, CRHR, or considered historical resources for purposes of CEQA (per PRC §15064.5[a][4]).

8.0 RECOMMENDATIONS

The inventory efforts did not result in the identification of historic properties or historical resources within the APE defined for the Proposed Action. One previously recorded cultural resource, a historic shell scatter along the base of a steep sided hill (19-000691), has been recorded in the APE; however, it has been evaluated as ineligible for listing in the NRHP, CRHR, or as a historical resource for purposes of CEQA, due to lack of evidence found at the site and extensive disturbance of the area (FAA and LAWA, 2005). The cultural resource was not relocated as part of this investigation. In addition, as a result of the archaeological investigation and architectural history field survey, two new historic-period resources were identified in the APE (Runway 7L/25R and related features [non-historic and historic-period taxiways including Taxiways B and C, non-historic-period blast fence, and non-historic-period approach lighting systems] and Air Freight Building No. 8 and related feature [building's parking apron]); however, these resources are not eligible for listing to the NRHP, CRHR, or considered historical resources for purposes of CEQA. Therefore, pursuant to the revised implementing regulations of the NHPA found at 36 CFR §800.11(d)(1) and CEQA Guidelines §10564.5(A)(2)-(3) and the criteria outlined in PRC §5024.1, a determination of no effect to historic properties and no impact to historical resources is anticipated from the proposed undertaking.

Although the inventory efforts were conducted in as thorough a manner as possible, the possibility always exists that previously unidentified archaeological resources could be discovered during project construction. Therefore, pursuant to 36 CFR §800.13(b)(3), if an inadvertent discovery is made during implementation of the proposed undertaking, the FAA and LAWA would require the construction activities in the vicinity of the discovery to stop, and take all reasonable measures to avoid or minimize harm to the property until the FAA and LAWA conclude consultation with the SHPO. It should be reiterated herein, however, that the inadvertent exposure of intact archaeological deposits is not anticipated, given the history of site development and soil deposition within the airport.

If the Project's construction-related activities unearth potentially human bone, ground-disturbing activities in the area of the discovery would immediately be halted by the FAA and LAWA while a temporary construction exclusion zone surrounding the site is established to allow further examination and treatment of the find. The FAA and LAWA would also immediately notify the Los Angeles County Coroner's Office by telephone. By law, within two working days of being notified, the Coroner would determine whether the remains are subject to his or her authority. If the Coroner recognizes the remains to be Native American, he or she would contact the NAHC by telephone within 24 hours of the determination. The project would comply with the process in Public Resource Code 5097.98. The NAHC would then appoint a Most Likely Descendant of the human remains, and a burial treatment plan would be negotiated and implemented. The FAA and LAWA would be responsible for restricting all construction activity from the immediate vicinity of the human remains until treatment is complete.

9.0 REFERENCE LIST

Federal Aviation Administration and Los Angeles World Airports. 2005. "Historic/Architectural and Archaeological/Cultural and Paleontological Resources." *LAX Master Plan Final EIS/EIR.* http://www.ourlax.org/docs/final_eir/ part1/19_040901_HistoricArchitecturalandArchaeological CulturalResources.pdf. Accessed Jan. 10, 2012.

Flight Path Learning Center of Southern California. Historic Aerial Photographs: 1929, 1939, 1941, 1946, 1949, 1955, 1959, 1965, 1980, 1983, 1985, 1988, 1991. Accessed January 2012.

Getchell, Barbie and John E. Atwood. 2006. Model 3X (ASDE-3X), to Serve Los Angeles International Airport (LAX), Los Angeles, Los Angeles County, California.

Los Angeles World Airports. Airport Layout Plans and Taxiway Designation Maps: 1951, 1955, 1969, 1974, 1978, 1982, 1983, 1985, 1990, 1995, 1998, and 2002.

McAvoy, Christy Johnson. 1991. *Hangar One.* National Register of Historic Places Registration Form.

National Park Service. 1991. *National Register Bulletin 15*. Washington, D.C.

Schoneberger, William A., Ethel Pattison, Lee Nichols, and Flight Path Learning Center of Southern California. 2009. *Images of Aviation: Los Angeles International Airport.* Charleston, South Carolina: Arcadia Publishing.

USGS. Historical Topographic Map Collection: 1950, 1964, 1972, and 1981. http://cida.usgs.gov/hqsp/apex/f?p=262:1:3273543933731513. Accessed January 2012.

10.0 PREPARER'S QUALIFICATIONS

Ms. Arleen Garcia-Herbst, URS Corporation Project Manager/Principal Investigator, has more than 13 years of experience in archaeological research, fieldwork, and publication in the American Southwest (California, Arizona, Colorado and Nevada), and Argentina (Patagonia). Ms. Garcia-Herbst is currently working on her Ph.D. in Anthropology at the University of California, Santa Barbara. She has special technical expertise in relation to compliance with Section 106 and 110 of the National Historic Preservation Act (NHPA), as well as compliance with State historic preservation and archaeological resources regulations under the California Environmental Quality Act (CEQA).

Mr. Jeremy Hollins is a Senior Architectural Historian and has performed numerous historic evaluations, context studies, and determinations of eligibility and effect for a range of resources based on local, state, and National Register criteria and through technical reports, DPR 523 series forms, HABS reports, cultural landscape reports, historic structures reports, and resolution documents. He has a detailed knowledge of the laws and ordinances that affect historic properties, such as NHPA Section 106, NEPA, CEQA, Section 4(f), California Public Resources Code, State Historic Building Code, and the Secretary of Interior Standards for the Treatment of Historic Properties. He meets the Secretary of the Interior Standards for Architectural History and History.

Ms. Sarah Provo, URS Corporation Architectural Historian, has an MA in Historic Preservation, a BA in History, and meets the Secretary of the Interior Standards for Architectural History. Since 2009, Ms. Provo has performed numerous historic assessments and determinations of eligibility and effect for a range of property types based on local, state, and National Register of Historic Places (NRHP) criteria in the form of technical reports, Environmental Impact Studies/Environmental Impact Reports, California Department of Parks and Recreation (DPR) 523 series forms, cultural landscape reports, and Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) documentation.

Ms. Melanie Lytle is an Architectural Historian and has performed numerous historic evaluations, context studies, and determinations of eligibility and effect for a range of resources based on local, state, and National Register criteria in the form of technical reports, Environmental Impact Studies, Environmental Impact Reports, DPR 523 series forms, cultural landscape reports, Historic American Building Survey/ Historic American Engineering Record/Historic American Landscapes Survey documentation, and historic structures reports. She has knowledge of the laws and ordinances that affect historic properties, such as NHPA Section 106, CEQA, and the Secretary of the Interior Standards for the Treatment of Historic Properties, and has completed work for various federal, state, and local agencies, including the Federal Emergency Management Agency, Bureau of Land Management, California Energy Commission, Federal Communications Commission, Department of Housing and Urban Development, and California Department of Transportation, as well as numerous local agencies and private clients. She meets the Secretary of the Interior Standards for Architectural History and History.

11.0 LIST OF ACRONYMS AND ABBREVIATIONS

ACHP Advisory Council on Historic Preservation

AHPA Archaeological and Historic Preservation Act

ALS Approach Lighting System

APE Area of Potential Effects

ARPA Archaeological Resources Protection Act

CEQA California Environmental Quality Act

CFR Code of Federal Regulations

CHL California Historical Landmarks

CHRI California Historical Resources Inventory

CPHI California Points of Historical Interest

CRHR California Register of Historic Resources

DPR California Department of Parks and Recreation

EDR Environmental Data Resources, Inc.

EIR Environmental Impact Report

EIS Environmental Impact Statement

EMAS Engineered Materials Arresting System

ESA Environmental Science Associates

FAA Federal Aviation Administration

GSE Ground Support Equipment

HRI Historic Resources Inventory

ID identification

ILS Instrument Landing System

LAHCM Los Angeles Historic Cultural Monuments

LAWA Los Angeles World Airports

LAX Los Angeles International Airport

MALSR Medium Intensity Approach Light Systems

NADB National Archaeological Database

NAGPRA Native American Graves Protection and Repatriation Act

NAHC Native American Heritage Commission

NEPA National Environmental Protection Act

NHPA National Historic Preservation Act of 1966

NPS National Park Service

NRHP National Register of Historic Places

PRC Public Resources Code

RSA Runway Safety Area

SCCIC South Central Coastal Information Center

SHPO State Historic Preservation Officer

URS URS Corporation

USC United States Code

USGS U.S. Geological Survey

UTM Universal Transverse Mercator

APPENDIX

C-1

HISTORIC PHOTOGRAPHS

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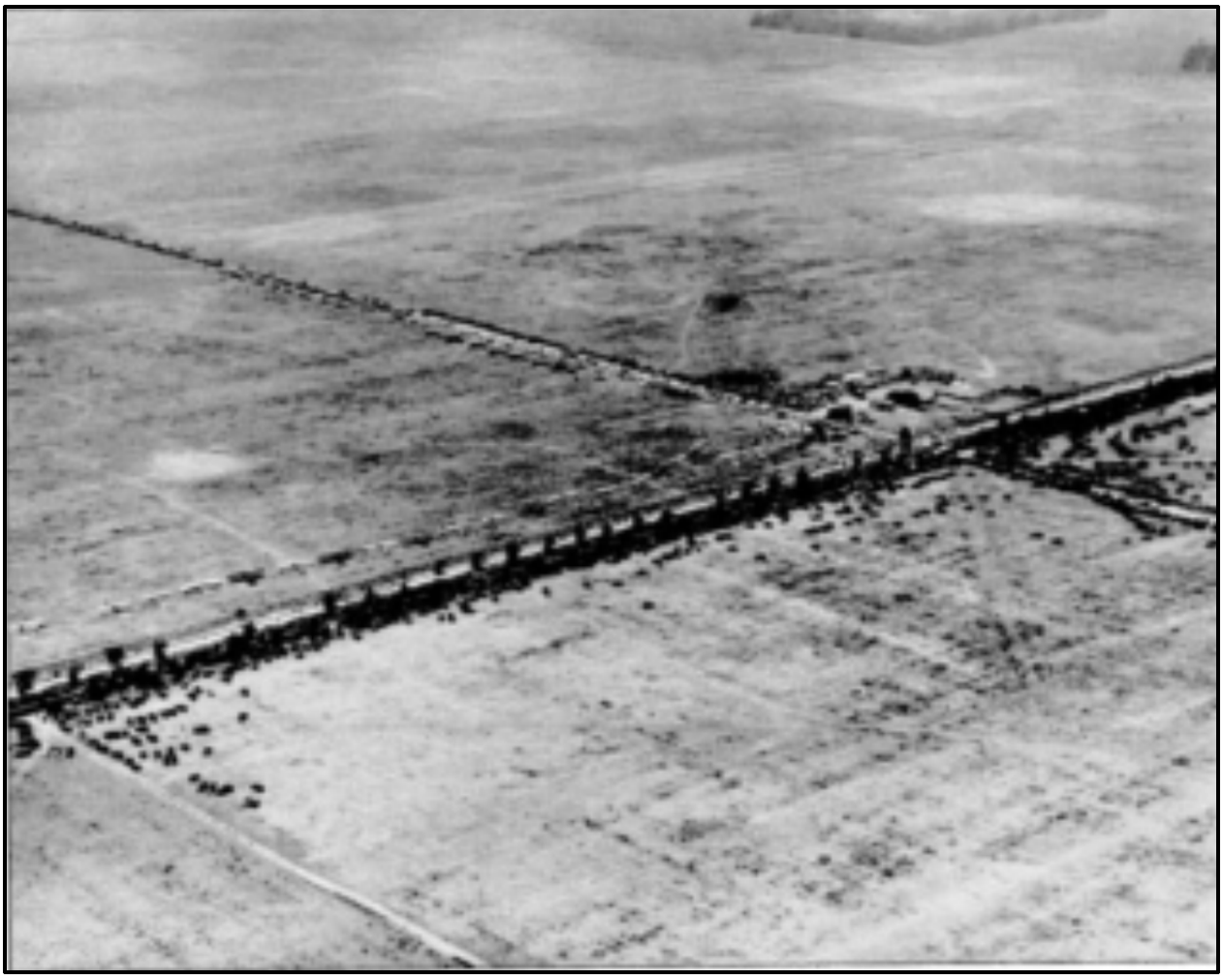
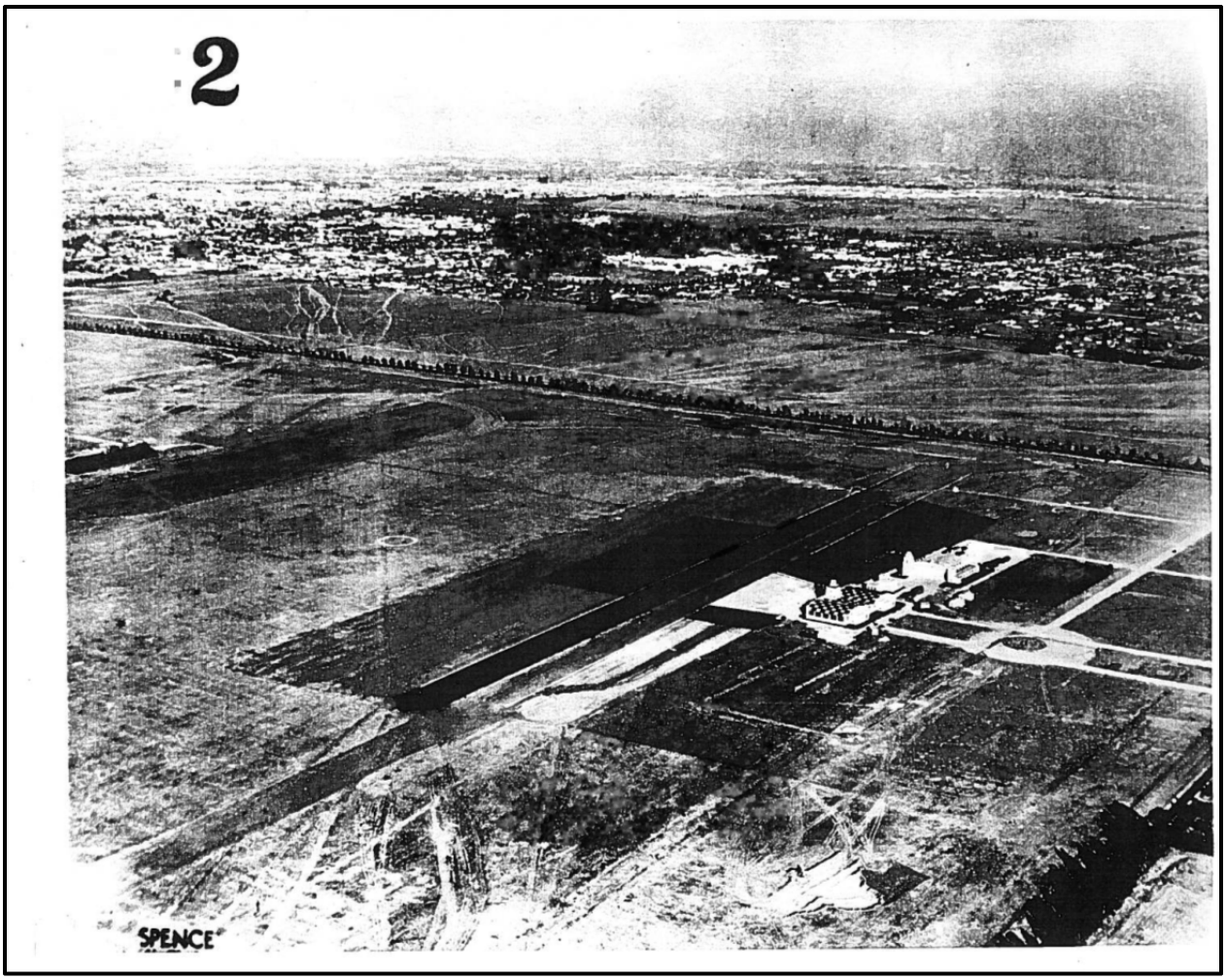


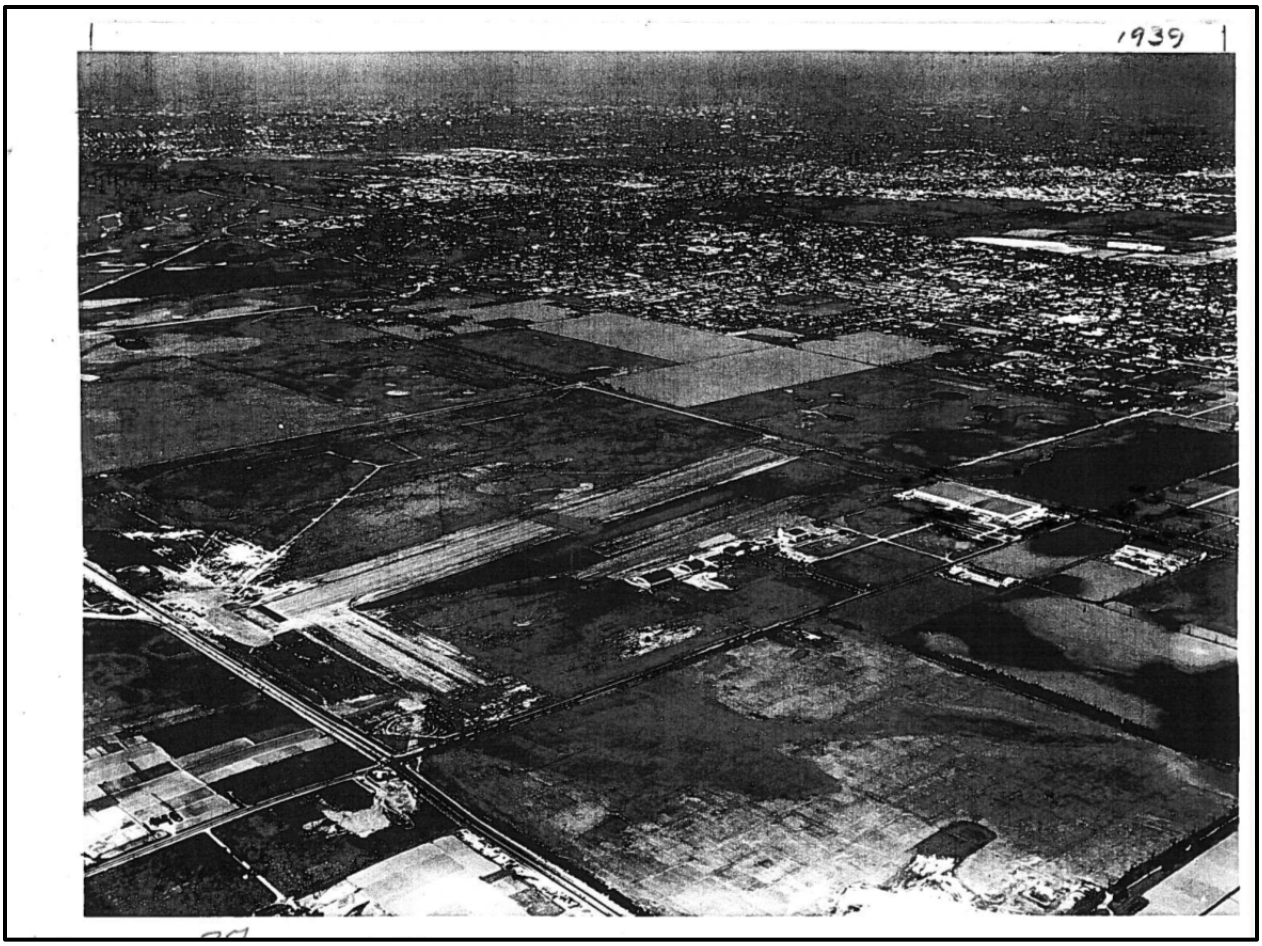
Crops were giving way to early aircraft in this 1926 photograph of Mines Field.
[Images of Aviation: Los Angeles International Airport]

Selection of Mines Field for the 1928 National Air Races drew worldwide attention to the site.
[Images of Aviation: Los Angeles International Airport]



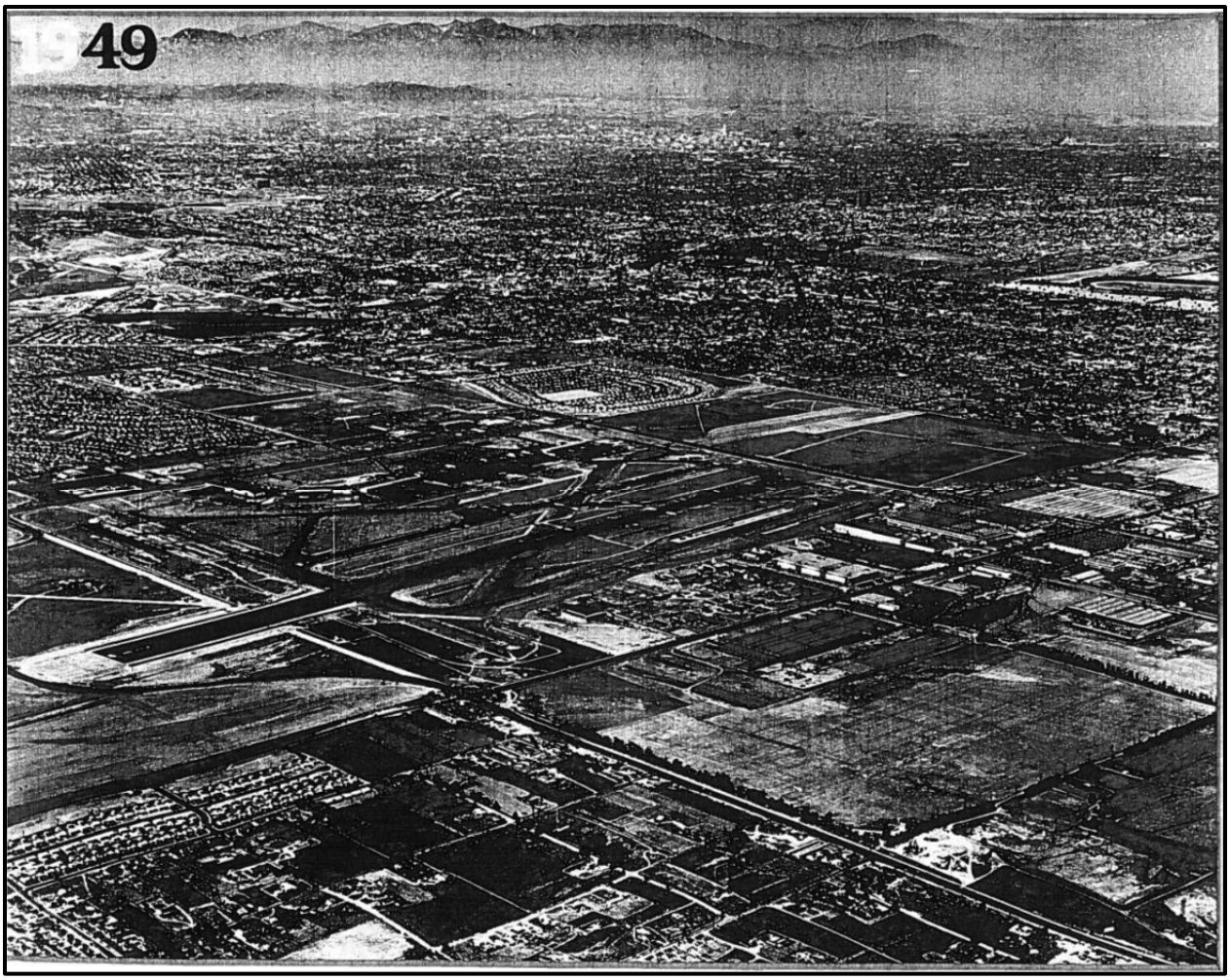
1929 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

The view, looking west, shows Mines Field, officially known as Los Angeles Municipal Airport, in the 1930s.
[Images of Aviation: Los Angeles International Airport]



1939 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

On the eve of World War II, Los Angeles Municipal Airport had a new runway system under construction, including a main east-west runway 4,660 feet long and 300 feet wide.
[Images of Aviation: Los Angeles International Airport]

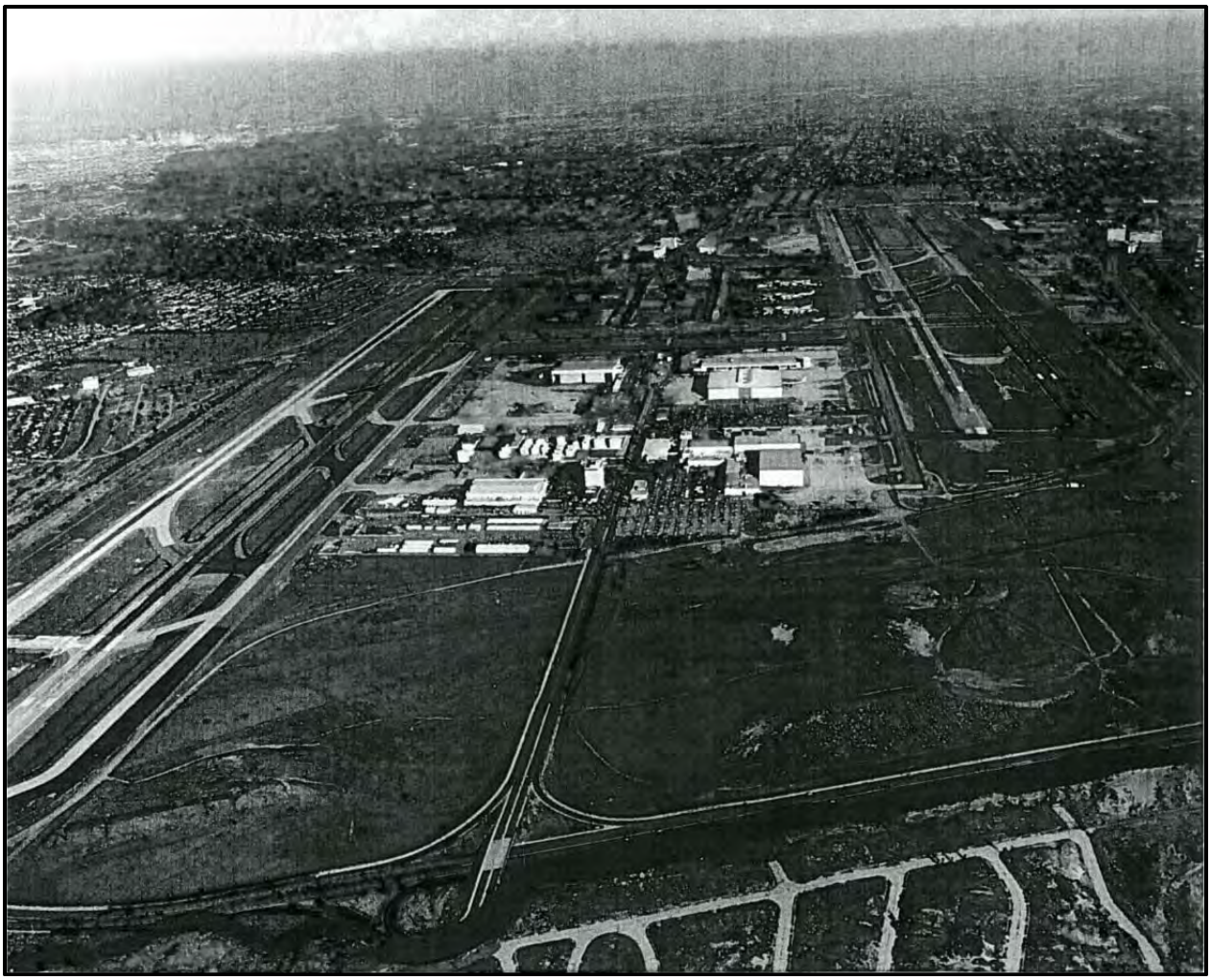


1949 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

Larger aircraft required the lengthening of runways to the extent that they crossed Sepulveda Boulevard. The result was the Sepulveda Boulevard Tunnel, the first of its kind, completed in 1953 and still in service.
[Images of Aviation: Los Angeles International Airport]

1959 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

1965 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]



1980 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

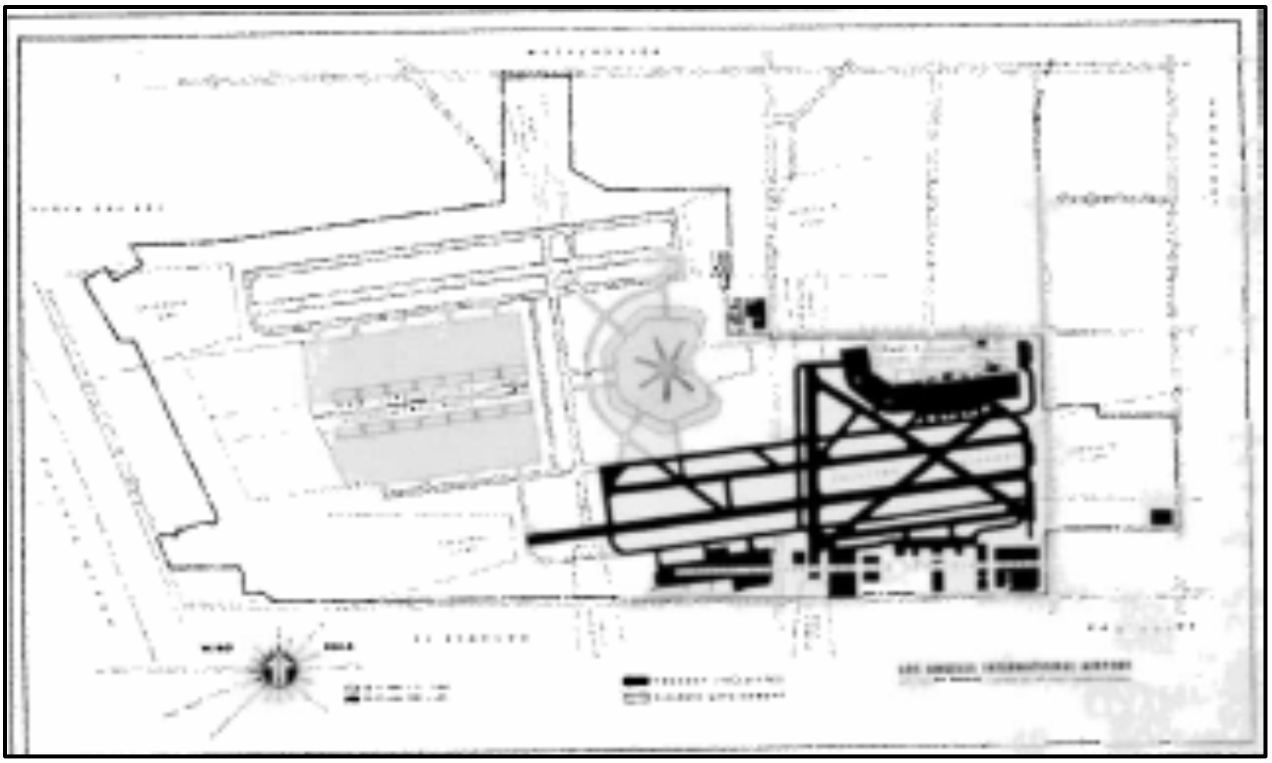
1983 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

1985 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

1988 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

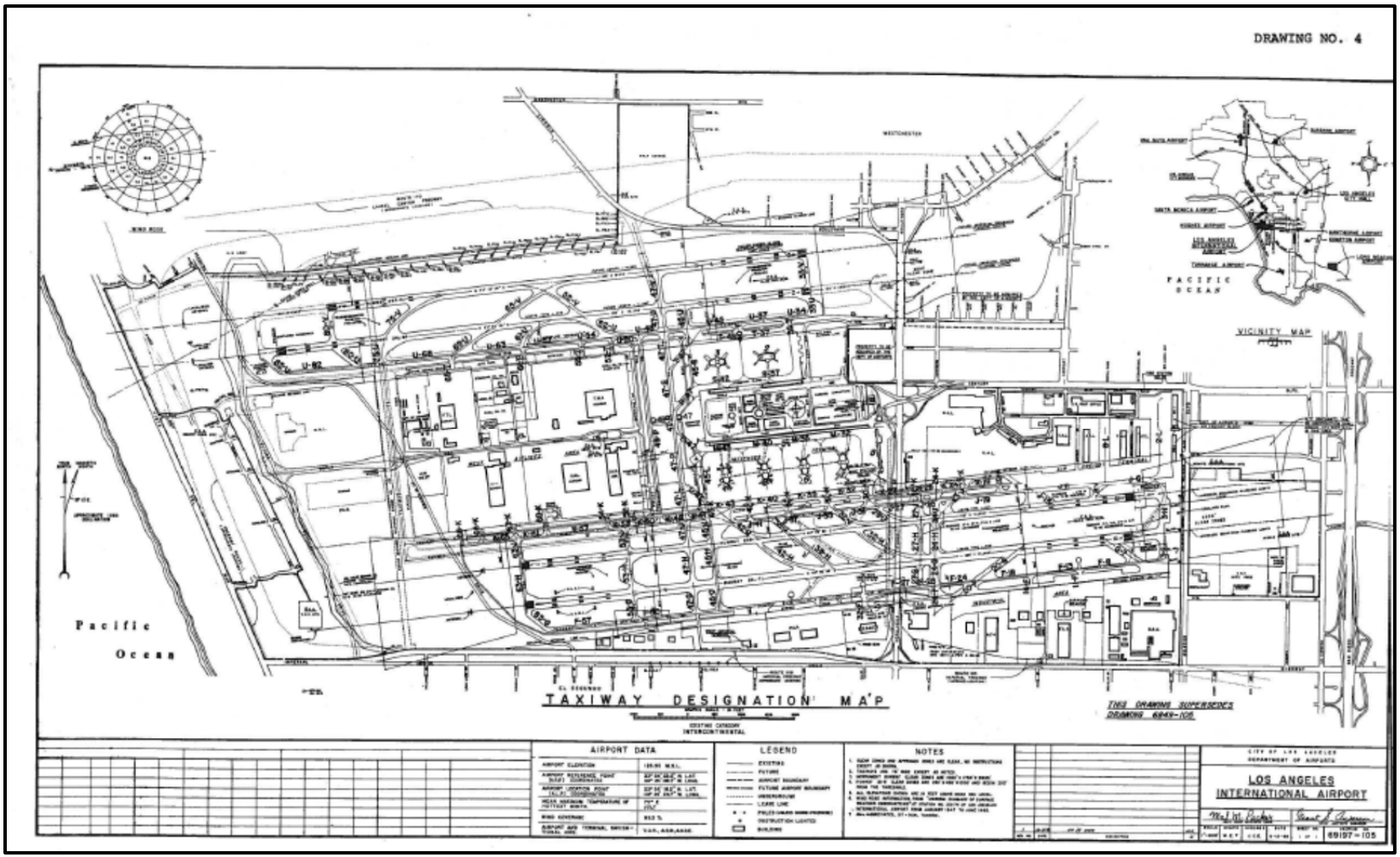
1988 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

1991 Historic Aerial Image: Los Angeles International Airport
Not to Scale [Flight Path Learning Center]

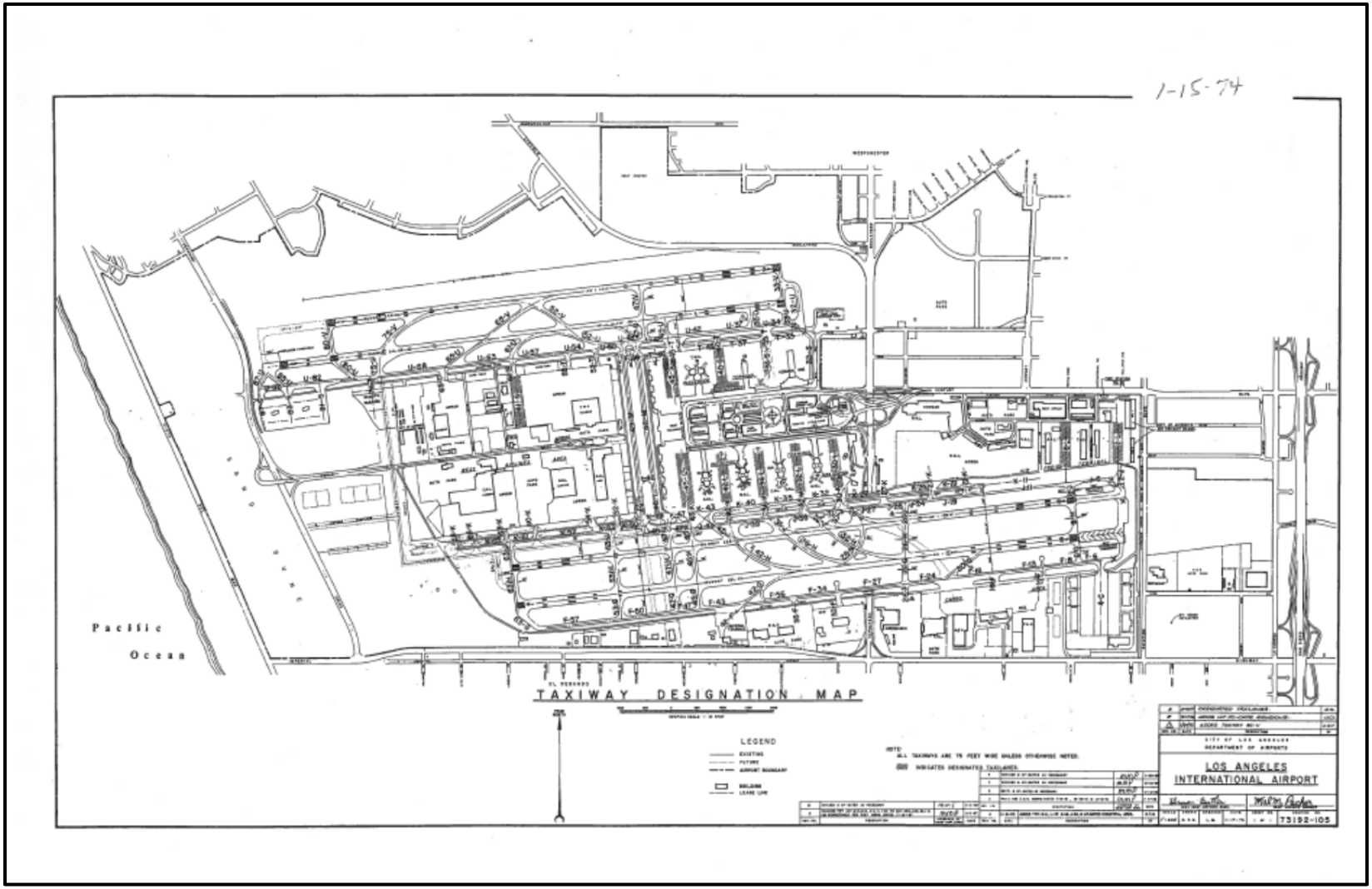


This artistic rendering was unveiled on July 18, 1955, as plans moved ahead for a newly designed Los Angeles International Airport to meet the needs of passenger jet service.
[Images of Aviation: Los Angeles International Airport]

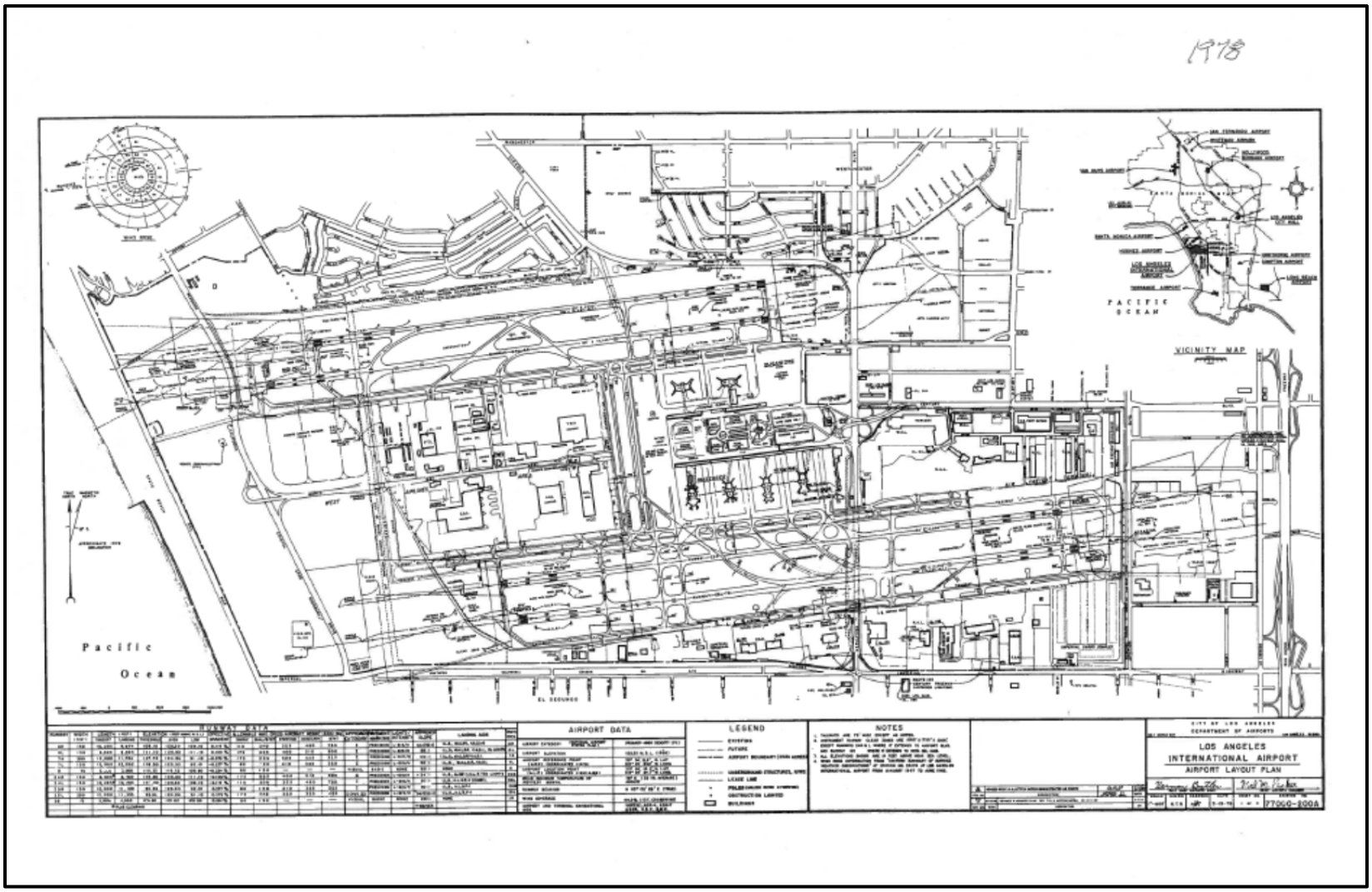
1951 Airport Layout Plan, Not to Scale. [Flight Path Learning Center]



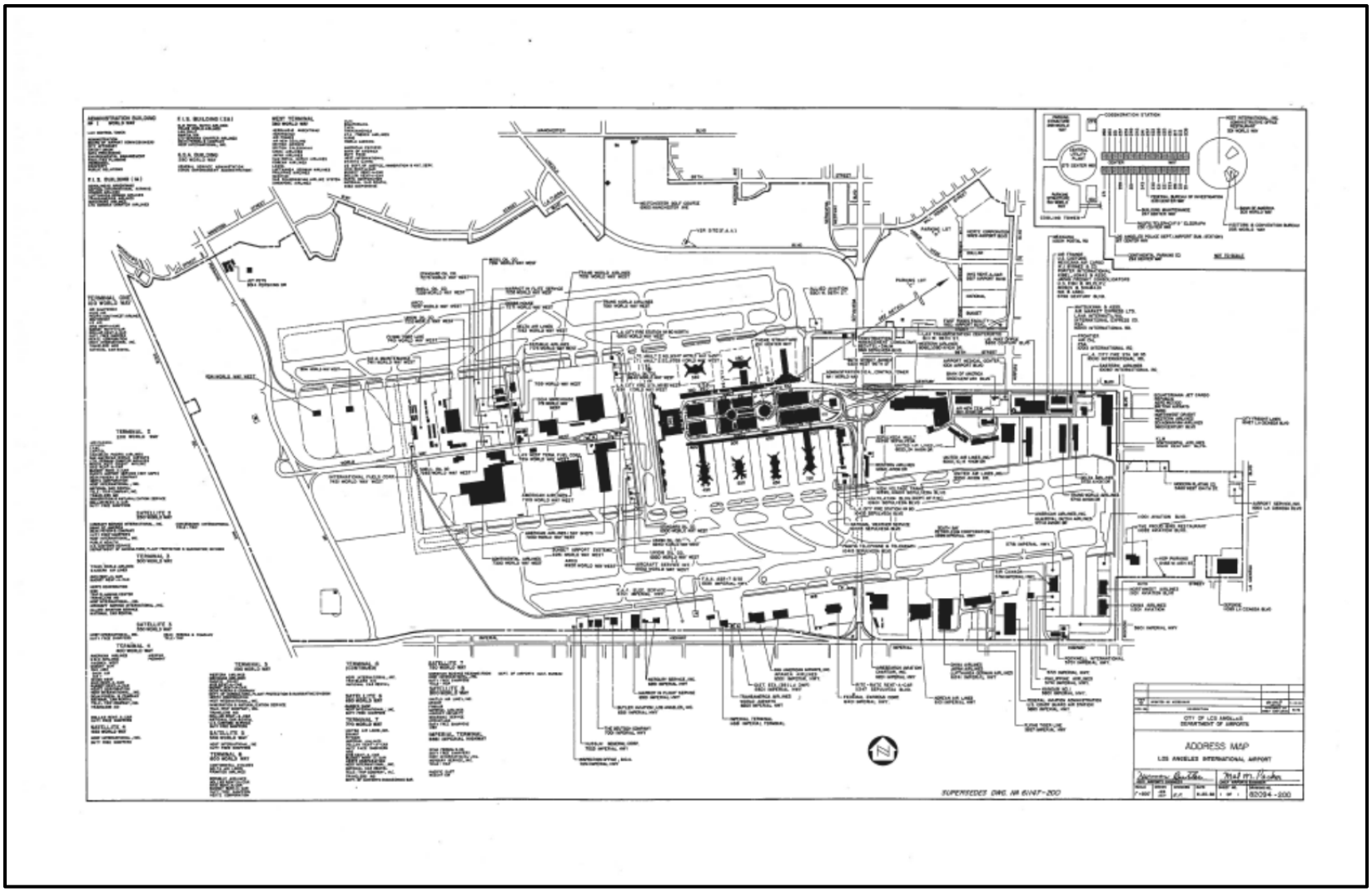
1969 Taxiway Designation Map, Not to Scale. [Flight Path Learning Center]



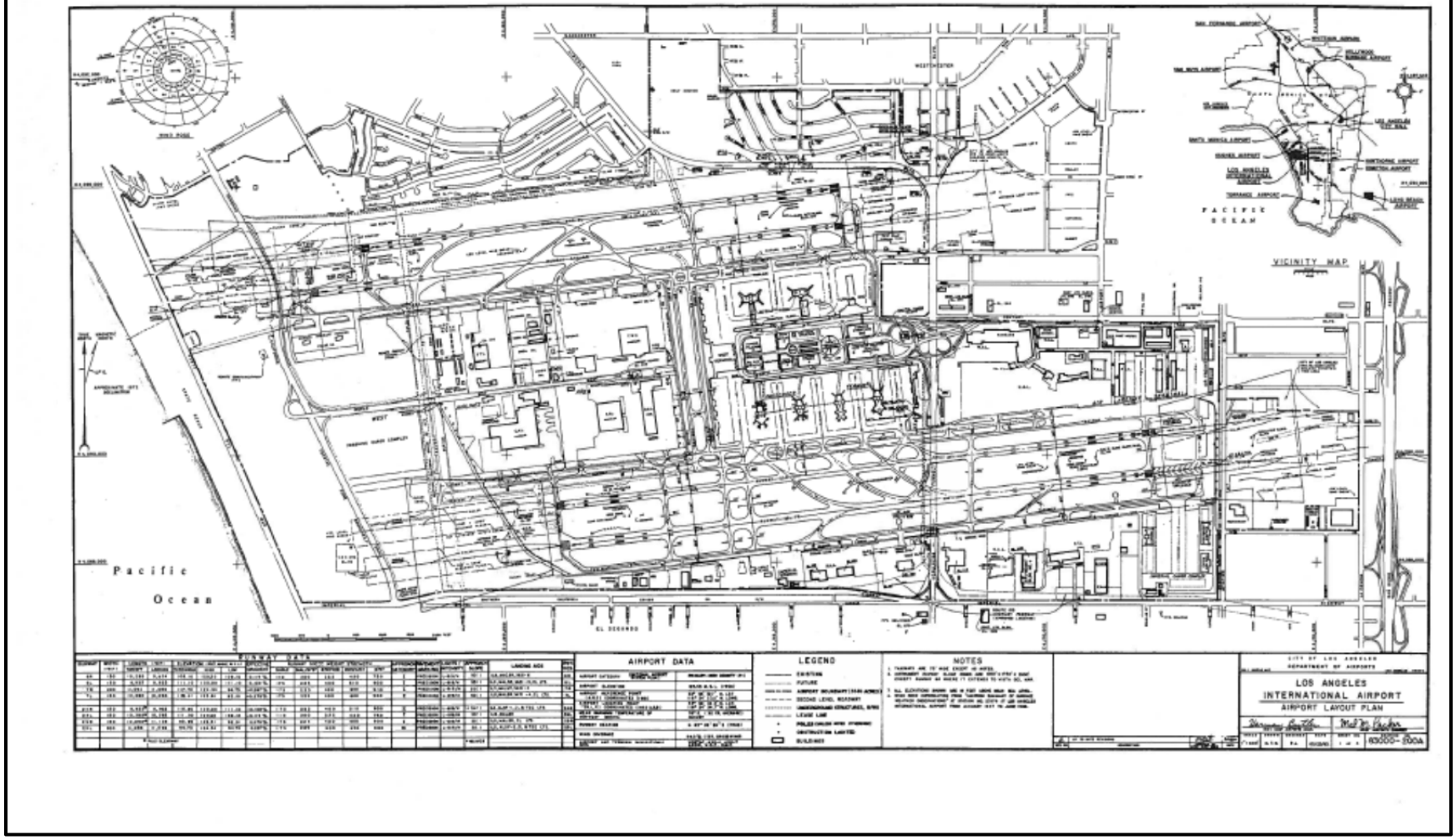
1974 Taxiway Designation Map, Not to Scale. [Flight Path Learning Center]



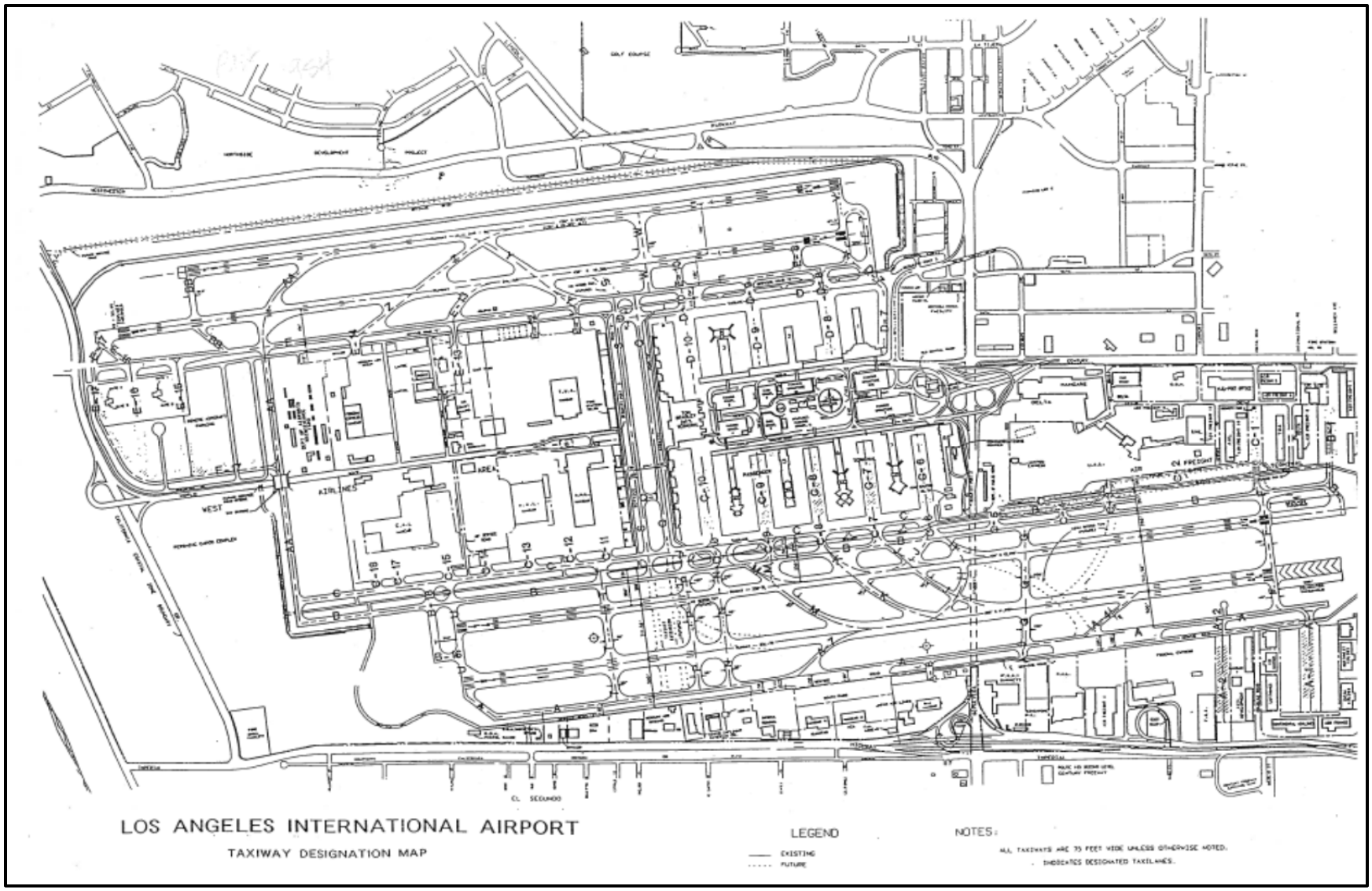
1978 Taxiway Designation Map, Not to Scale. [Flight Path Learning Center]



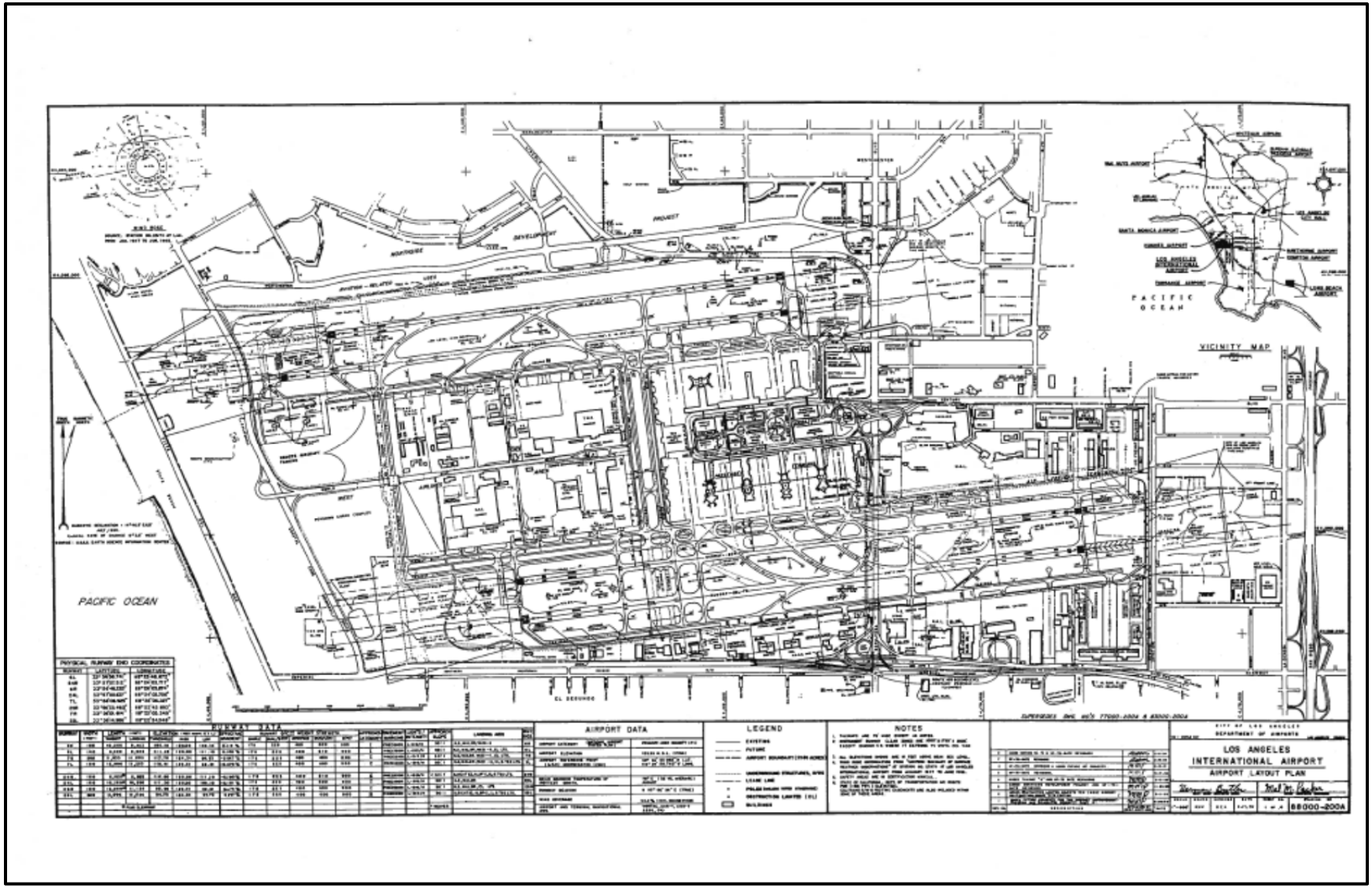
1982 Address Map, Not to Scale. [Flight Path Learning Center]



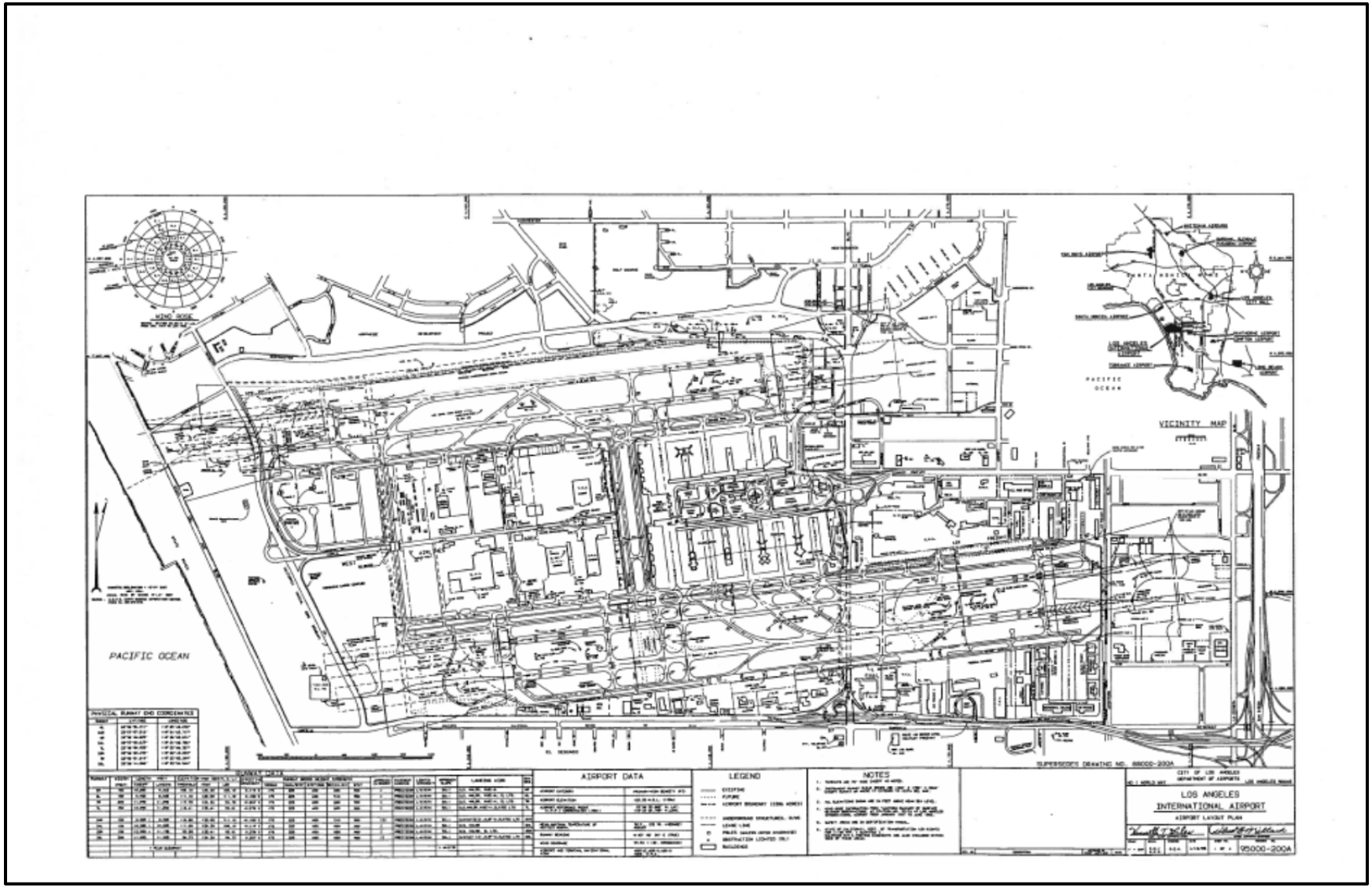
1983 Airport Layout Plan, Not to Scale. [Flight Path Learning Center]



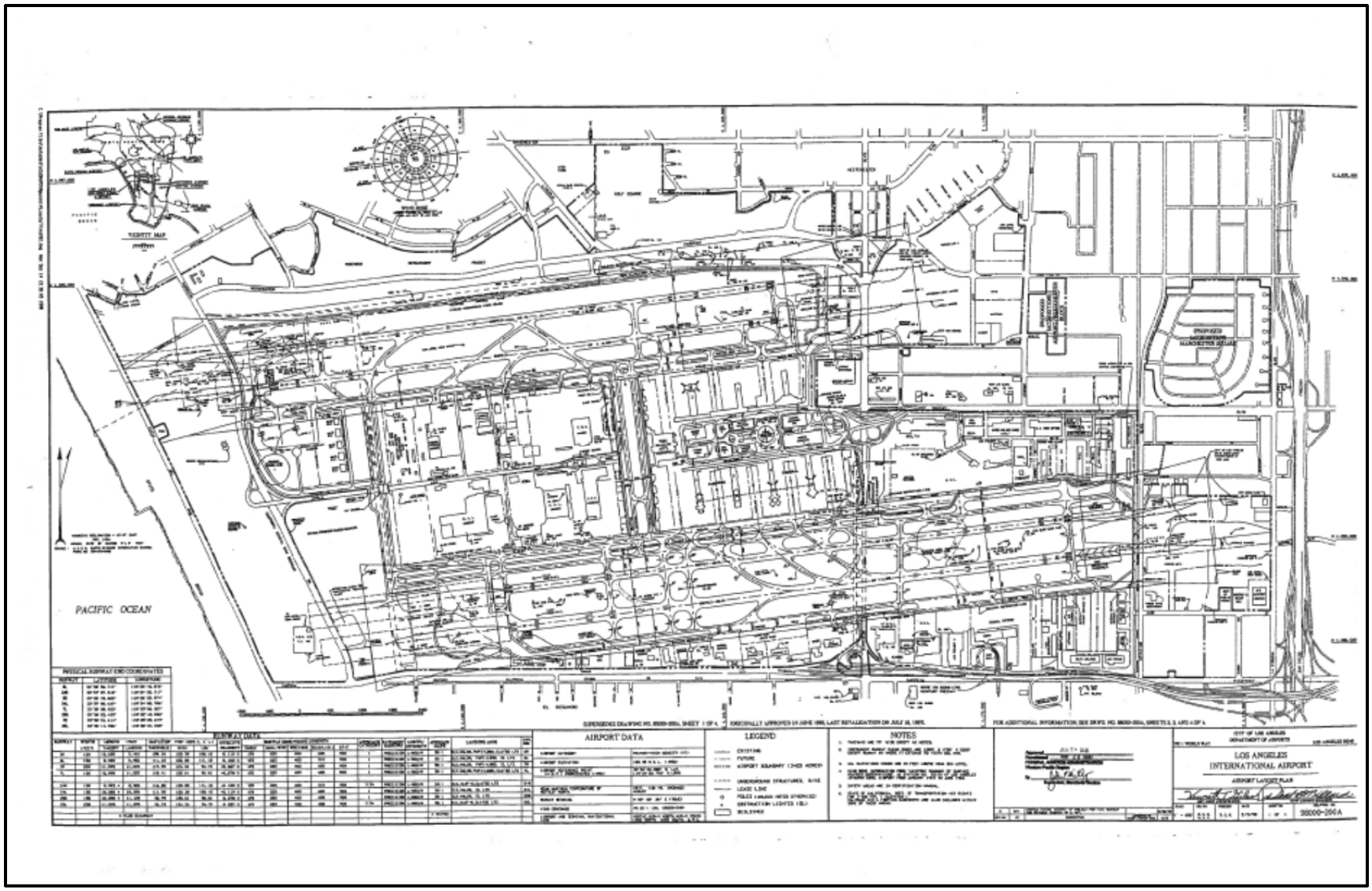
Post-1984 Taxiway Designation Map, Not to Scale. [Flight Path Learning Center]



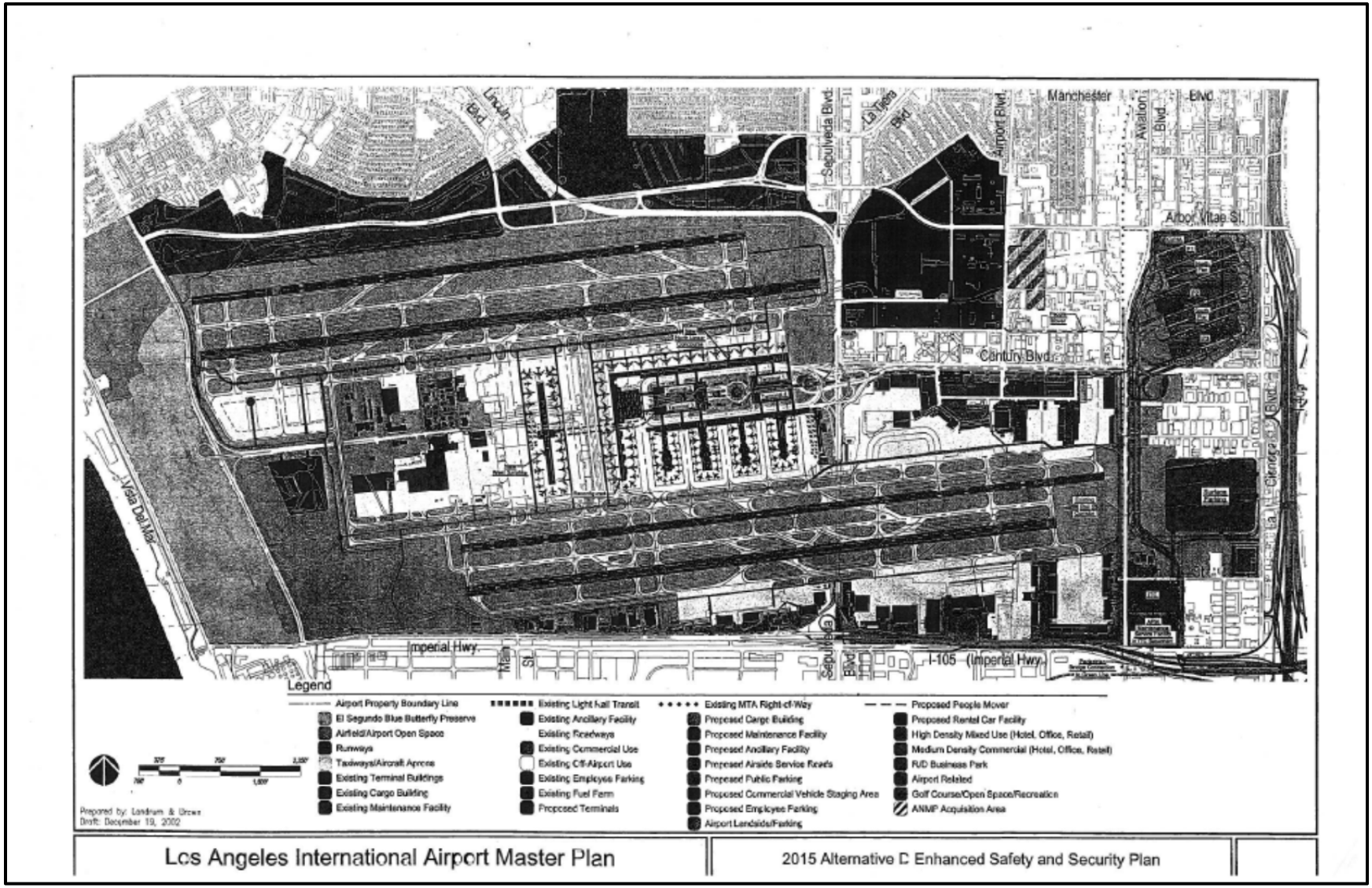
1990 Airport Layout Plan, Not to Scale. [Flight Path Learning Center]



1995 Airport Layout Plan, Not to Scale. [Flight Path Learning Center]



1998 Airport Layout Plan, Not to Scale. [Flight Path Learning Center]



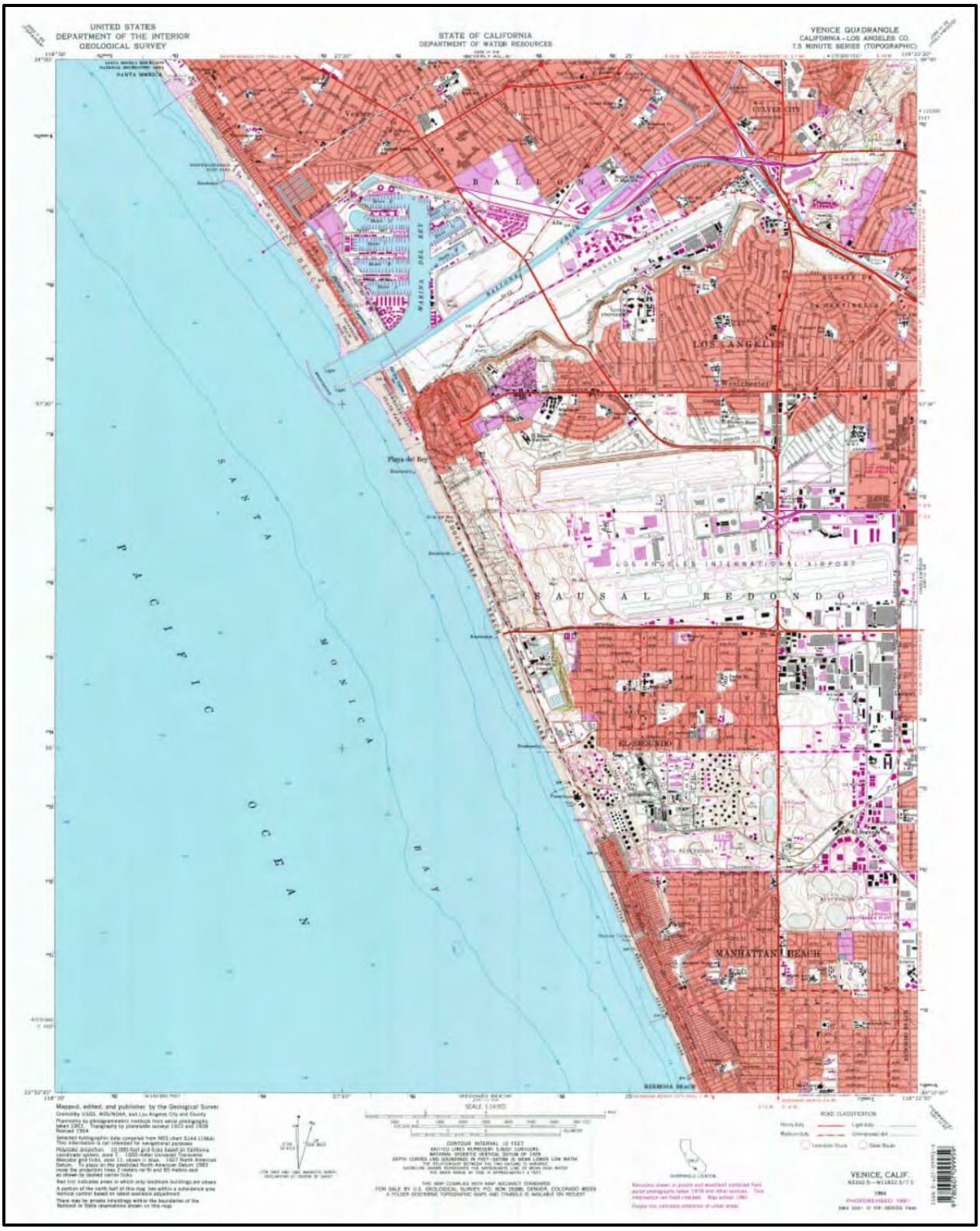
2015 Alternative D Enhanced Safety and Security Plan, Not to Scale. [Flight Path Learning Center]

1896 USGS Historic Topographic Map: Redondo 15 x 15,
Not to Scale

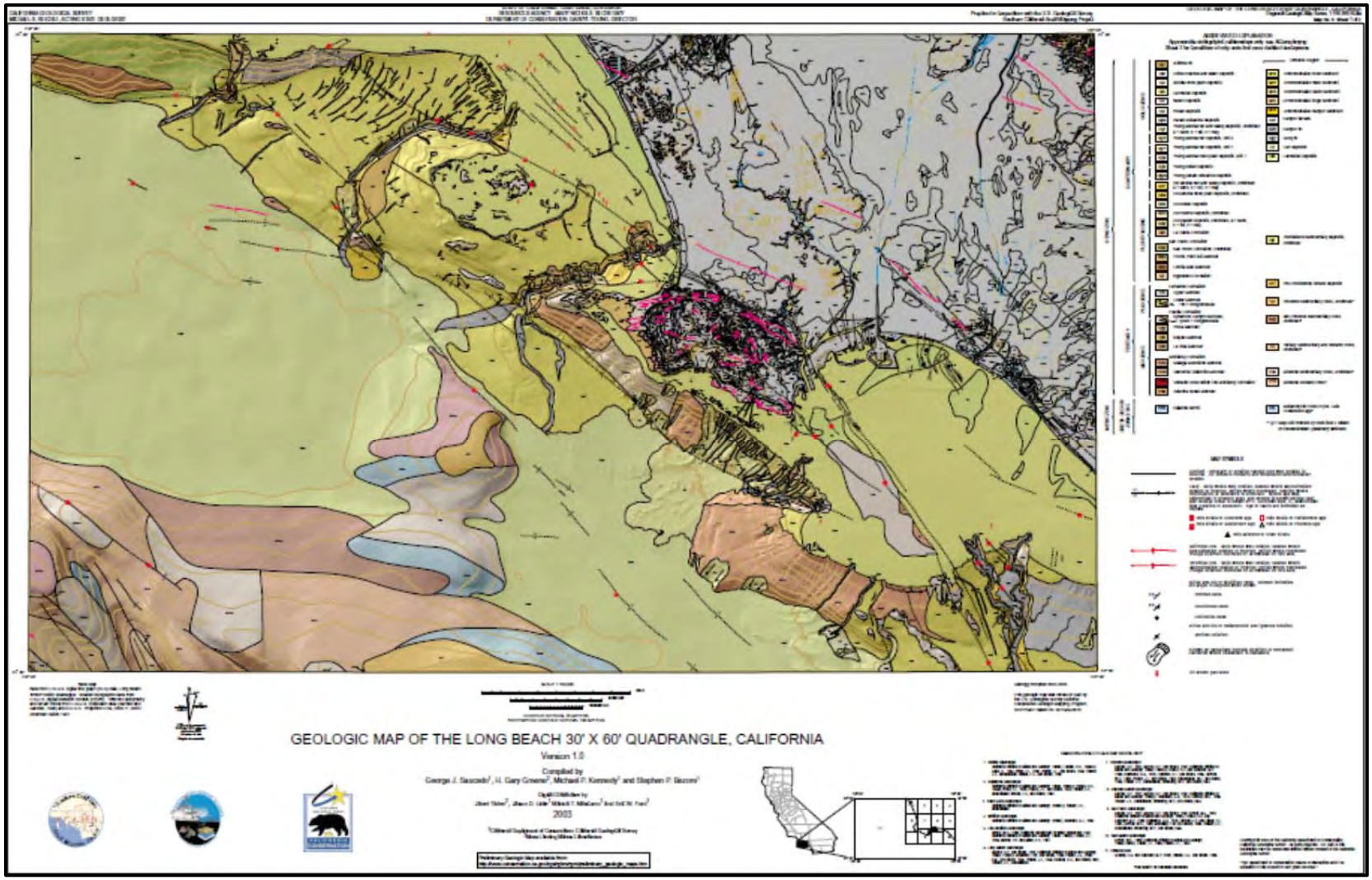
1950 USGS Historic Topographic Map: Venice 7.5 x 7.5,
Not to Scale

1964 USGS Historic Topographic Map: Venice 7.5 x 7.5,
Not to Scale

1964 [Revised 1972] USGS Historic Topographic Map: Venice 7.5 x 7.5,
Not to Scale



1964 [Revised 1981] USGS Historic Topographic Map: Venice 7.5 x 7.5,
Not to Scale



2003 USGS Topographic Map: Long Beach 30x60,
Not to scale

APPENDIX

C-2

RESUMES

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Arleen Elena Garcia-Herbst, C.Phil., RPA

Cultural Resources Team Manager/Project Manager

Years of Experience

With URS: <1 Years
With Other Firms: 13 Years

Education

Ph.D. /In progress, ABD/Anthropology/University of California, Santa Barbara

C.Phil./2006/ Anthropology/ University of California, Santa Barbara

M.A./2000/Anthropology/ University of California, Santa Barbara

B.A./1996/Anthropology

University of Arizona

Registrations:

2007/Register of Professional Archaeologists

Overview

Ms. Garcia-Herbst has more than 13 years of experience in archaeological research, fieldwork, and publication in the American Southwest (California, Arizona, Colorado and Nevada), and Argentina (Patagonia). Ms. Garcia-Herbst is currently working on her Ph.D. in Anthropology at the University of California, Santa Barbara, with a research focus on prehistoric technological innovation and the specifics of why humans adopt new technology. She has several years of supervisory experience and is able to plan projects, write funding proposals, survey and sample, gather, organize and analyze data, as well as summarize and publish results in print and digital formats and well as review documents. She also has analytical expertise in lithic technology, specifically flaked and ground stone analysis, and stone raw material geochemical sourcing. Her experience with computing includes MS Word, MS Excel, MS PowerPoint, MS Access, MS Outlook, MS ActiveSync, Adobe Photoshop, Adobe Fireworks, Adobe Acrobat, Adobe Dreamweaver, TOPO!, ESRI ArcView 3.x and ArcGIS 9.x, ESRI ArcPad, Trimble Field Computers with GPS receiver and MS Windows Mobile software, TerraSync, GPS Pathfinder Tools SDK.

Working as an RPA-registered cultural resource management professional, she provides oversight for the initiation, development, completion and review of reporting of research, cultural resource studies, field data collection/surveys, Phase I, II and III Assessments, and mitigation studies. She has special technical expertise in relation to compliance with Section 106 and 110 of the National Historic Preservation Act (NHPA), as well as compliance with State historic preservation and archaeological resources regulations under the California Environmental Quality Act (CEQA).

Ms. Garcia-Herbst currently serves as the Cultural Resources Team Manager at URS Corporation, La Jolla, CA. In this role, she is responsible for the management of a staff of archaeologists, architectural historians, and paleontologists, and as-needed field technicians to successfully complete a variety of complex, interdisciplinary projects in California and other states. Ms. Garcia-Herbst supervises field monitors and field crews, prepares monitoring reports and cultural resource technical reports, prepares EIR/EA/EIS sections and independent technical reports and coordinates with clients and sub consultants. She also helps group and division managers to develop and market the cultural resources group for URS by preparing quick turn-around scopes and costs for projects for the purposes of marketing.

Project Specific Experience

Archaeological Monitoring for Geotechnical Borings and Proposed Trenches along State Route 76 East Corridor, Caltrans District 11,

San Diego County, CA. As Cultural Resources Task Lead, supervised archaeological monitoring for 65 geotechnical borings and 8 proposed trenches. Monitoring activities included analysis, archaeological report preparation following Caltrans guidelines for monitoring reports and curation of any cultural material recovered during the monitoring of geotechnical borings, as well as coordination with the Caltrans District Archaeologist (2011-present).

Hesperia Commerce Center Industrial Park, San Bernardino County, California. As Cultural Resources Task Lead, performed a Cultural Resources Assessment of a 13-acre parcel consisting of a pre-field records search, reconnaissance survey of the site, letter report preparation, and impact analysis in compliance with CEQA and in support of an EIR (2011).

Confidential Client, Confidential Solar Energy Project, Riverside County, California. Cultural Resources Team Manager for Class III Cultural Resources assessment that covered approximately 20,000 acres and was conducted under the direction of the California Energy Commission (CEC) and The Bureau of Land Management – Palm Springs Field Office. Cultural Resources Manager responsibilities include technical review and QA/QC of archaeology, architectural history, paleontology, geomorphology and ethnography studies, coordination with BLM and CEC staff, assistance with Native American consultation (2011-present).

Marine Corps Air Station Chocolate Mountain Aerial Gunnery Range (MCAS CMAGR) Land Withdrawal Renewal, US Navy, Riverside and Imperial Counties, CA. **As C**ultural Resources Task Manager, supervised the preparation of the cultural resources section of a Legislative Environmental Impact Statement (LEIS) **(2011-present)**.

Marine Corps Base Camp Pendleton (MCBCP) Electrical and Communication Upgrade (MILCON P1093/P1094, US Navy, San Diego County, CA. As Cultural Resources Task Manager, coordinated with the MCBCP Environmental Security division archaeologist and NAVFAC SW project manager, as well as the URS design and engineering team, to ensure the 100% Design plans to be submitted to SHPO are in compliance with the project Final Environmental Impact Statement and the Programmatic Agreement **(2011-present)**.

Cultural Resources Survey for the Sunrise Powerlink Project, San Diego Gas & Electric, San Diego and Imperial Counties, CA. As Project Manager for Sempra Energy Utility Projects, managed an archaeological survey of the approved southern route of the Sunrise Powerlink 230-kV/500-kV transmission line project in compliance with Section 106 of the NHPA and CEQA. Managed Class III intensive field surveys, reporting of findings, as well as prepared recommendations for the utility company for avoiding impacts to cultural resources within the SDG&E easement and access roads, as well as proposed additional facilities, located on Bureau of Land Management, Cleveland National Forest, Department of Defense, County of San Diego, City of San Diego and private property. Worked directly with SDG&E staff and other contractors to ensure avoidance of impacts to archaeological sites located

near proposed structures and associated facilities through fielding activities, as well as the creation of a Historic Property Management Plan and several Historic Property Treatment Plans **(2009-2011)**.

Cultural Resources Surveys, Monitoring and Testing for SDG&E On-Call Contract, San Diego Gas & Electric, Imperial, Orange and San Diego counties, CA. As Project Manager for Sempra Energy Utility Projects, managed medium- to small-scale archaeological surveys for replacement of SDG&E wood utility poles with steel utility poles. Also managed small-scale surveys, monitoring and testing of pole or facility replacement locations related to regular operations and maintenance. This work was done to assist SDG&E in their compliance with Section 106 of the NHPA and CEQA. Managed records search requests, Class III intensive field surveys, cultural monitoring, evaluation testing and reviewed reporting of findings, as well as prepared or approved recommendations for the utility company for avoiding impacts to cultural resources within the SDG&E easement and access roads, as well as those located within Bureau of Land Management, Cleveland National Forest, Department of Defense, Bureau of Indian Affairs, County of San Diego, City of San Diego and private property. Worked directly with SDG&E staff to ensure avoidance of impacts to archaeological sites located near poles or associated facilities (**2009-2011)**.

Evaluation of the Archaeological Resources of the RMWD, Ramona Municipal Water District, San Diego County, CA. As Field Director, conducted testing of 10 prehistoric sites of unknown significance and California Register of Historic Resources eligibility, and co-authored the findings report to assist the RMWD in its compliance with CEQA (**2009)**.

Cultural Resources Survey and Extended Phase I Investigations for the Caltrans Interstate-805 South Corridor Project, Caltrans District 11, San Diego, National City and Chula Vista, CA. As Project Archaeologist, conducted full coverage survey within the proposed areas of potential effects, as well as a 15-m buffer, to assess the presence or absence of potentially significant cultural resources **(2008-2009)**.

Inventory and Evaluation of the Archaeological and Historical Resources of Yokohl Ranch, PBS&J, Tulare County, CA. As Field Director, conducted testing of 28 prehistoric and historic sites of unknown significance and California Register of Historic Resources eligibility, conducted a directed survey of an additional 650 acres, and co-authored the findings report to assist Yokohl Ranch in its compliance with CEQA (**2008)**.

Cultural Resources Survey and Extended Phase I Investigations for the Caltrans Interstate-5 North Coast Corridor Project, Caltrans District 11, San Diego County, CA. As Project Archaeologist, conducted full-coverage survey within the proposed biological mitigation parcels south of Batiquitos Lagoon, to assess the presence or absence of potentially significant cultural resources (**2008)**.

Cultural Resources Survey of 290 Acres in Palomar State Park, California Department of Parks and Recreation, San Diego County, CA. As Project Archaeologist, conducted an intensive pedestrian survey of approximately 290 acres, roughly bounded by Upper Doane Valley on the northeast, Doane Valley Road to the north and west, and State Park Road on the southwest and south, to assist California State Parks in its compliance with Section 106 of the NHPA (**2008)**.

Cultural Resources Survey of the Proposed Westfield North County Fair Expansion Project Area, City of Escondido, HELIX Environmental Planning, Inc., San Diego County, CA. As Project Archaeologist, conducted full coverage survey of an approximately 1-mile segment of the proposed offsite sewer improvement right-of-way, as well as a 15-m buffer, to assess the presence or absence of potentially significant cultural resources, to assist the client in their compliance with CEQA requirements (**2008)**.

Cultural Resources Survey of the Proposed Silverwood Lake Cell Tower Project, Mountaintop District, San Bernardino National Forest, San Bernardino County, CA. As Project Archaeologist, conducted full coverage survey of approximately 1.67-acre proposed area of potential effects (APE), as well as a 30-m buffer, to assess the presence or absence of potentially significant cultural resources, to assist the client in their compliance with Section 106 of the NHPA **(2008)**.

Cultural Resources Survey of the Proposed Tecolote Canyon Long-term Maintenance and Access Project and the Proposed Tecolote Canyon Wetland Mitigation Project, City of San Diego Metropolitan Wastewater Department, San Diego County, CA. As Project Archaeologist, conducted full coverage survey of all six project impact areas, as well as a 6-m buffer surrounding each area to assess the presence or absence of potentially significant cultural resources, to assist the client in their compliance with CEQA requirements **(2008)**.

Cultural Resources Survey of the Riverview Gateway Redevelopment Project, Dudek, National City, CA. As Project Archaeologist, conducted full coverage survey of approximately 21 acres to assess the presence or absence of potentially significant cultural resources, as a subcontractor for Dudek, to assist their client in their compliance with CEQA requirements **(2008)**.

Cultural Resources Survey of Access Roads in Palomar State Park, California Department of Parks and Recreation, San Diego County, CA. As Project Archaeologist, conducted an intensive pedestrian survey of approximately 62.5 acres on either side of the spur road that runs from Doane Valley Road to Baptist Camp, as well as on either side of the Nate Harrison Road and Boucher Road, to assist California State Parks in its compliance with Section 106 of the NHPA **(2008)**.

Cultural Resources Survey of the Veterans Village of San Diego Expansion Parcel, Veterans Village of San Diego, San Diego, CA. As Project Archaeologist, conducted full coverage survey of the parcel to assess the presence or absence of potentially significant cultural resources to assist the Veterans Village of San Diego in their compliance with CEQA requirements **(2008)**.

All-American Canal Road Reconnaissance, Kiewit Pacific Co., Imperial County, CA. As Project Archaeologist, conducted a reconnaissance of approximately 760 m of exposed asphalt road proposed for use for canal construction activities **(2007)**.

Cultural Resources Survey of Access Roads in the Chocolate Mountain Aerial Gunnery Range (CMAGR), NAVFAC Southwest, Imperial County, CA. As Project Archaeologist, conducted an intensive Class III pedestrian survey of approximately 1,000 acres, encompassing 30-m widths on either side of the selected roads in the North and South ranges of the CMAGR, totaling approximately 68 km, to assist CMAGR in its compliance with Section 110 of the NHPA. This survey was part of a continuing program of cultural resources inventory for both Section 106 and Section 110 compliance by the Marine Corps Air Station, Yuma who manage the CMAGR as part of the Bob Stump Training Range Complex (BSTRC) **(2008)**.

Cultural Resources Survey of Bureau of Land Management (BLM) Parcels In the Vicinity of the Marine Corps Air Ground Combat Center (MCAGCC), NAVFAC Southwest, Twentynine Palms, San Bernardino County, CA. As Project Archaeologist, conducted full-coverage survey of approximately 19,000 acres that identified, recorded, and inventoried all cultural resources potentially eligible for listing on the National Register of Historic Places, prehistoric and historic, to assist MCAGCC in its compliance with Section 106 of the NHPA **(2008).**

Cultural Resources Survey of the Planned Bayshore Bikeway, HELIX Environmental Planning, Inc., National City, and Chula Vista, San Diego County, CA. As Project Archaeologist, conducted full coverage survey of an approximately 4.5-mile-long portion of the planned Bayshore Bikeway along the eastern portion of San Diego Bay to assess the presence or absence of potentially significant cultural resources, prehistoric and historic, to assist the San Diego Association of Governments (SANDAG) in its compliance with CEQA and NEPA requirements **(2008**).

Cultural Resources Survey of the Horno/Ammo Burn Areas, NAVFAC Southwest, Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA. As Project Archaeologist, conducted full coverage survey of 3,500 acres within the burn area and wrote the technical report summarizing the field findings which identified, recorded, and inventoried all cultural resources, prehistoric and historic, to assist MCBCP in its compliance with Section 110 of the NHPA **(2008).**

An Evaluation of 30 Archaeological Sites in the Upper Las Pulgas Corridor, NAVFAC Southwest, Marine Corps Base Camp Pendleton (MCBCP), San Diego County, CA. As Field Director, conducted testing of 30 prehistoric sites of unknown significance and National Register of Historic Places eligibility and summarized the field findings to assist MCBCP in its compliance with Section 110 of the NHPA **(2007)**.

SDG&E Post Fire Poles Project, San Diego Gas & Electric, San Diego County, CA. As Cultural Resources Monitor, conducted survey of a 46-acre project area consisting of the existing and new power pole ROW. Monitored subsurface excavation for power pole replacement as a result of damage due to wildfires within Palomar Mountain State Park **(2007)**.

Gila River Flood Control Project, USDI Bureau of Reclamation, Yuma County, Arizona. As Field Director, conducted pedestrian survey of a 1,295-acre proposed project area to assist the U.S. Bureau of Reclamation in its compliance with Section 106 of the NHPA (**2007)**.

Santa Margarita Water District Upper Chiquita Emergency Storage Reservoir Site Survey, Dudek and Associates, Orange County, CA. As Project Archaeologist, conducted pedestrian survey of a 15-acre proposed reservoir site and prepared the technical report **(2007).**

24 Access Roads Survey, Marine Corps Base Camp Pendleton, NAVFAC Southwest, San Diego County, CA. As Project Archaeologist, conducted pedestrian Phase I linear survey of selected areas along 24 training range access roads which are in need of repair due to erosion, totaling 8 miles. Of the 24 roads, only three required survey to examine cultural resources. Additionally, a possible historic culvert was also evaluated **(2007).**

Hudson Ranch II Geothermal Project Option Power Plant Site Survey, Environmental Management Associates, Imperial County, CA. As Project Archaeologist, conducted pedestrian survey of a 65-acre proposed power plant site **(2007).**

Concord BRAC Survey-CSH, NAVFAC Southwest, Contra Costa County, CA. As Principal Investigator, prepared the work plan and final report for a survey of 5,197 acres within the non-administrative section of the Inland Area at NWS Seal Beach, Detachment Concord. The pedestrian survey was conducted using systematic vegetation clears to improve ground surface visibility and overall survey effectiveness **(2007)**.

IID All-American Canal Lining Project Data Recovery, Imperial Irrigation District, Imperial County, CA. As Field Director, coordinated between client, archaeological personnel, and other agencies and conducted the data recovery or capping of 23 prehistoric ceramic pot drop or stone quarry sites on land situated within the right-of-way for construction of a cement-lined canal **(2007)**.

Admiral Hartman Monitoring, San Diego Military Family Housing, San Diego County, CA. As Field Director, coordinated between client, archaeological personnel, and Navy staff and managed the monitoring of the replacement of gas lines that run through archaeological site SDI-5017, a large Native American village, La Rinconada de Jamo, located within and adjacent to the Admiral Hartman Family Housing area, as part of its privatization. Prepared the resulting technical report for submission to the City of San Diego **(2007)**.

Siempre Viva Industrial Park Property Testing, Kearny Real Estate Company, San Diego, CA. As Project Archaeologist, prepared a technical report based on testing conducted by ASM staff at archaeological site CA-SDI-7208/CA-SDI-7857 for submission to the City of San Diego. The site is a sparse lithic scatter that appears to have functioned primarily as a prehistoric camp or lithic workshop **(2007)**.

Caltrans Interstate-5 Extended Phase I and Phase II Testing, Caltrans District 11, San Diego, CA. As Field Director, managed the testing of two archaeological sites located west of I-5 (SDI-13484 and -17928), on land proposed for highway widening and sound barrier construction outside the right-of-way but within the highway project's APE. SDI-13484 contains a meager and disturbed archaeological deposit. SDI-17928 is a substantial Early to Middle Holocene site, primarily focused on shellfish processing but also with vertebrate faunal, ground stone, flaked stone, and shell bead cultural remains **(2006)**.

Monte Cristo Survey, Enviroscientists, Inc., Esmeralda County, Nevada. As GIS Analyst, created GIS-based site and project location maps **(2006)**.

Canyon Trails Phase II, City of Hemet, Riverside County, CA. As Project Archaeologist, conducted archaeological testing and evaluation of 13 archaeological sites located north of Highway 74. The sites comprised an extensive series of bedrock milling features and associated artifacts and are situated near the mouth of Reinhardt Canyon, on a property proposed for residential development **(2006)**.

BLM Eastern San Diego Archaeology GIS, Bureau of Land Management, El Centro, Imperial County, CA. As GIS Analyst, located GIS information for client **(2006)**.

Arboretum Specific Plan Survey, David Evans and Associates, Fontana, San Bernardino County, CA. As Project Archaeologist, conducted pedestrian survey of 485 acres proposed for residential development within historic Grapeland Irrigation District **(2006)**.

North-South Julian Parcels Survey, ERS, Descanso, San Diego County, CA. As Project Archaeologist, conducted pedestrian survey of residential parcels containing trees marked for removal **(2006)**.

Lincoln Clark Navy PPV, San Diego Military Family Housing, San Diego County, CA. As Project Archaeologist, assisted with preparing archaeological background section of a determination of effect on a known, significant archaeological site in Pacific Beach. As GIS Analyst, created associated stratigraphic profile and GIS-based maps **(2006).**

Pankey Property Survey, Pardee Homes, Pala, San Diego County, CA. As Project Archaeologist, conducted pedestrian survey of proposed road construction rights-of-way near a known, significant archaeological site located east of Interstate 15 in northeastern San Diego County **(2006)**.

SR-76 Extended Phase I, Caltrans District 11, Bonsall, San Diego County, CA. As Project Archaeologist, conducted Phase I pedestrian survey and shovel test pit testing of prehistoric site SDI-12155, situated within the proposed road construction right-of-way **(2006).**

National Exploration Survey, Gold Summit Corporation, Nevada. As GIS Analyst, created GIS-based site and location maps **(2006)**.

Julian VMP, California Department of Forestry and Fire Protection, San Diego County, CA. As Project Archaeologist, conducted pedestrian survey of CDF vegetation management projects near the Palomar Observatory on Palomar Mountain and on the Sunrise Fuel Break-South near Julian. Also prepared the state park permit application. As GIS Analyst, created GIS-based site and location maps **(2006)**.

Archaeological Investigations at Early Village Sites in the Middle Santa Cruz Valley, City of Tucson, Pima County, Arizona. As Field Technician, was member of Michael Lindeman and Dr. Jonathan Mabry's field crew, carrying out excavations at the Sunset Mesa site (Hohokam period), and the Las Capas site (Early Agricultural Period) **(1998).**

Historic Preservation Database for Paleoindian and Archaic Sites in Arizona, Arizona State Historic Preservation Office. As Data Entry, was Research Assistant to Dr. Jonathan Mabry. Maintained a database of all the Paleo-Indian and Archaic period sites in Arizona, through data entry and quality control of archaeological site card information from the Arizona State Site File, various museums, educational institutions, and National Park Service offices in Arizona into a Microsoft FoxPro database **(1997)**.

Additional Education or Training:

CULTURAL RESOURCES:

- AEP Advanced CEQA Workshop/2011
- Identification and Management of Traditional Cultural Places, National Preservation Institute/2010
- Section 106: Agreement Documents, National Preservation Institute/2010

- The Section 106 Advanced Seminars, Advisory Council on Historic Preservation/2009
- Section 106: An Introduction, National Preservation Institute/2007
- Typology and Technology of Flaked Stone Artifacts, Dept. of Natural Sciences, Universidad Nacional deLa Plata, La Plata, Argentina/2006
- Field Course on Geomorphology and Quaternary Geology of Tierra del Fuego, Quaternary Geology Laboratory, Centro Austral de Investigaciones Científicas (CADIC-CONICET), Ushuaia, Argentina/2003

OTHER:

- OSHA 8-HourHAZWOPER Renewal, 29 CFR 1910.120(e)/2011
- OSHA 8-HourHAZWOPER Renewal, 29 CFR 1910.120(e)/2010
- Anti-Terrorism Level 1 Awareness Training, U.S. Department of Defense/2010
- Adult CPR, Emergency University/2009
- First Aid, Emergency University/2009
- OSHA 8-Hour HAZWOPER Renewal, 29 CFR 1910.120(e)/2009
- Burlington Northern Santa Fe Railroad Contractor Safety Certification/2008
- OSHA 8-Hour HAZWOPER Renewal, 29 CFR 1910.120(e)/2008
- Non-Live Fire Range Safety Officer Training, MCB Camp Pendleton/2007
- OSHA 40-Hour HAZWOPER, 29 CFR 1910.120(e)/2007
- OSHA 10-Hour Outreach Training Program: Construction Safety/2007
- Adult CPR, Emergency University/2007
- First Aid, Emergency University/2007
- TOPCON total station training seminar, UCSB Dept. of Anthropology/2001
- Technical Issues in Geographic Information Systems, UCSB Dept. of Geography/2000
- Lab in Geographic Information Systems I, UCSB Dept. of Geography/2000
- GIS and Archaeology, UCSB Dept. of Anthropology/2000
- Introduction to Geographic Information Systems, UCSB Dept. of Geography/1999

Publications:

Garcia-Herbst, Arleen

2010 The Society for American Archaeology News Report. *Society for California Archaeology Newsletter* 44(3): 12.

2009f The Society for American Archaeology News Report. *Society for California Archaeology Newsletter* 43(4): 7.

2009e Fire on the Mountain: Archaeology in Palomar Mountain State Park before and after the 2007 Witch/Poomacha Fires. *Proceedings of the Society for California Archaeology* 23. Available Online at: http://www.scahome.org/publications/proceedings/Proceedings.23Garcia.pdf.

2009c The Society for American Archaeology News Report. *Society for California Archaeology Newsletter* 43(3): 11.

2009b The Society for American Archaeology News Report. *Society for California Archaeology Newsletter* 43(2): 12.

2009a Conservation of a Significant Prehistoric Archaeological Site in Urban San Diego. *Proceedings of the Society for California Archaeology* 22. Available Online at: http://www.scahome.org/publications/proceedings/Proceedings.22Garcia.pdf.

2007a Review of Tafonomía Regional y Estudios Arqueofaunísticos de Cetáceos en Tierra del Fuego y Patagonia Meridional, by Florencia Borella. *Latin American Antiquity* 18(1):118-119.

Garcia-Herbst, Arleen E., and Michael Garnsey

2009 Recent Archaeological Investigation at Border Fields State Park: a brief report on 5,000 years of unchanged history. *Proceedings of the Society for California Archaeology* 21: 169-176. Available Online at: http://www.scahome.org/publications/proceedings/Proceedings.21Garcia.pdf

Garcia-Herbst, Arleen E., Charles R. Stern, Hector Neff, José Luis Lanata, and Luis Garcia Albarido

2007 Laser ablation ICP-MS analysis of black obsidian nodules from Pampa del Asador and archaeological samples from southernmost Patagonia. In *Arqueología de Fuego-Patagonia. Levantando piedras, desenterrando huesos... y develando arcanos*, edited by Flavia Morello, Mateo Martinic, Alfredo Prieto y Gabriel Bahamonde, pp. 235-246. Fundación CEQUA, Punta Arenas, Chile.

Lanata, José Luis, Silvana Buscaglia, Marcelo Cardillo, Sebastián Luis Frete, María Marschoff, Arleen Garcia, George Herbst, Victoria Nuviala, and Clara Otaola

2004 Cazadores recolectores en Puerto San Julián, Santa Cruz. Primeros resultados. In *Contra viento y marea. Arqueologia de Patagonia*, compiled by María Teresa Civalero, Pablo Marcelo Fernández and Ana Gabriela Guráib, pp. 745-754. Instituto Nacional de Antropologia Pensamiento Latinoamericano, Buenos Aires, Argentina.

Lanata, José Luis, Luis Martino, Ana Osella, and Arleen Garcia-Herbst

2008 Demographic Conditions Necessary to Colonize New Spaces: The Case for Early Human Dispersal in the Americas. *World Archaeology* 40(4):520-537.

Presentations:

Garcia-Herbst, Arleen

2010 *Soaring over Sunrise: Managing Cultural Resources and Gaining an Understanding of Regional Prehistoric and Historic Human Behavior.* Public lecture presented at the San Diego County Archaeological Society, San Diego (28 August).

2009b Peninsular Range Foragers: San Diego County's Prehistoric Mountain Sites. Public lecture presented at the San Diego Archaeological Center Second Saturday Lecture Series, Escondido (10 October).

2009a Fire on the Mountain: Archaeology in Palomar Mountain State Park before and after the 2007 Witch/Poomacha Fires. Paper presented at the 74th Annual Meeting of the Society for American Archaeology, Atlanta (22-26 April).

2008 Conservation of a Significant Prehistoric Archaeological Site in Urban San Diego. Paper presented at the 42nd annual meeting of the Society for California Archaeology, Burbank (17-20 April).

2004b Late Holocene coastal hunter-gatherers in Southern Argentina. Paper presented at the "Ancient Sites, Modern Maps: Remote Sensing Applications in Archaeology" workshop, Geographic Information Science Center and the Archaeological Research Facility at UC Berkeley (29-30 October, www.gisc.berkeley.edu).

2004a Becoming Involved in Anthropology through the National Association for Student Anthropologists (NASA) and the American Anthropological Association (AAA). Paper presented at the 1st Annual Meeting of the California Undergraduate Anthropology Conference, Santa Barbara (15-16 May).

Garcia-Herbst, Arleen E., and Michael Garnsey

2007 Recent Archaeological Investigation at Border Fields State Park: a brief report on 5,000 years of unchanged history. Paper presented at the 41st annual meeting of the Society for California Archaeology, San Jose (22-25 March).

Garcia-Herbst, Arleen E., and José Luis Lanata

2006 Explaining Ancient Technological Innovation in Coastal Southern Argentina. Paper presented at the 71st Annual Meeting of the Society for American Archaeology, San Juan, Puerto Rico (26-30 April).

Garcia-Herbst, Arleen, Dave Iversen, Brian Williams and Don Laylander

2010 *Energy and persistence conquer all things: assessing the cultural resources along Sunrise Powerlink transmission line corridor.* Paper presented at the 44th annual meeting of the Society for California Archaeology, Riverside (17-20 March).

Garcia-Herbst, Arleen E., Don Laylander, Sherri Andrews, and Alice Brewster
2007 Archaeological Reconstruction of Ancient Lake Cahuilla Settlement Patterns Using GIS. Paper presented at the 27th Annual ESRI International User Conference, San Diego (18-22 June).

Garcia-Herbst, Arleen E., Hector Neff, José Luis Lanata, Luis Garcia Albarido, and Charles R. Stern
2005 Laser ablation ICP-MS analysis of black obsidian nodules from Pampa del Asador and archaeological samples from southernmost Patagonia. Paper presented at the VI Jornadas de Arqueología de la Patagonia, Magallanes, Chile (24-28 October).

Garcia-Herbst, Arleen E., Charles R. Stern, Hector Neff, José Luis Lanata, Luis Garcia Albarido, Ana M. Albornoz, Eduardo A. Crivelli Montero, Mabel Fernández, Adam Hajduk, Alberto E. Pérez, Lisandro G. López, Isabel Pereda, Alicia H. Tapia and John Dudgeon
2007 Laser ablation TOF-ICP-MS analysis of obsidian nodules from obsidian sources and archaeological samples from the southern Pampas and northern Patagonia. Paper presented at 72nd Annual Meeting of the Society for American Archaeology, Austin (25-29 April).

Garcia, Arleen E.
2001 Travels and Archaeology in South Chile and Argentina. Paper presented at the UCSB Anthropology Brown Bag Talk Series, Santa Barbara (4 June).
1998 Ground Stone Artifacts Associated with Paleoindian Sites: The Lindenmeier Site, A Case Study. Poster presented at the 63rd Annual Meeting of the Society for American Archaeology, Seattle.

Anderson, David G., Jose Luis Lanata, J. Christopher Gillam, and Arleen Garcia-Herbst
2008 Modeling Paleoindian Sites and Assemblages: PIDBA (Paleoindian Database of the Americas) and Other Approaches. Session organized at 73rd Annual Meeting of the Society for American Archaeology, Vancouver (26-30 March).

Craig, Nathan, Elizabeth Klarich, George Herbst, Nicolas Tripcevich, and Arleen E. Garcia
2001 Organizing archaeological geophysical survey and surface mapping data in ArcView. Paper presented at the 21st Annual ESRI International User Conference, San Diego (9-13 July).

Lanata, José Luis, and Arleen E. Garcia
2005 Environmental corridors and early human dispersal in South America. Paper presented at the 70th Annual Meeting of the

Society for American Archaeology, Salt Lake City (30 March-3 April).

2002 Metapopulations and the Colonization of Space. Paper presented at Human Global Dispersal, British Academy International Networks Workshop, Southampton, UK (27-28 June).

2001 Population Dynamic and the Peopling of the Americas. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans (18-22 April).

Lanata, José Luis, and Arleen E. Garcia-Herbst

2007 Exploring the Tempo and Mode of America's Human Dispersal. Paper presented at 72nd Annual Meeting of the Society for American Archaeology, Austin (25-29 April).

Lanata, José Luis, Arleen Garcia-Herbst, Luis Garcia Albarido, Cristian Crespo, Natalia Cirigliano, and Ivana Ozán

2008 Cazadores recolectores en Bahía San Julián, Santa Cruz. Paper presented at the VII Jornadas de Arqueología de la Patagonia, Ushuaia, Argentina (21-25 April).

Lanata, José Luis, Luis Martino, Ana Osella and Arleen Garcia-Herbst

2006 Ambiente y Demografía Durante la Dispersión Humana Inicial en Sudamérica. Paper presented at the IV annual meeting of the Congreso de Arqueología en Colombia, Pereira (5-7 December).

Lanata, José Luis, Silvana Buscaglia, Marcelo Cardillo, Sebastián Luis Frete, María Marschoff, Arleen Garcia, George Herbst, Victoria Nuviala, and Clara Otaola

2002 Cazadores recolectores en Puerto San Julián, Santa Cruz. Primeros resultados. Paper presented at the V Jornadas de Arqueología de la Patagonia, Buenos Aires, Argentina (27-31 May).

Professional Memberships or Affiliations:

Society for California Archaeology/Southern Vice President/2011-present
Society for California Archaeology/Liaison to the Society for American Archaeology/2009-present
Society for California Archaeology/UCSB campus student representative/2007-2009
Society for California Archaeology/member/2006-present
Lambda Alpha National Honor Society for Anthropology/member/2004-present
National Association of Student Anthropologists/Web Editor and Web Development Committee Chair/2004
Society for American Archaeology/member/1998-present

Jeremy Hollins, MA

Senior Architectural Historian/ Architectural History Team Lead

Areas of Expertise

- Vernacular Architecture
- 19th – 20th century California Architecture
- Historic Preservation Treatments and Law
- Secretary of Interior Professional Qualification *Architectural History* (36 CFR Part 61)

Years of Experience

With URS: 5 years
With Other Firms: 2 year

Education

- M.A./2005/University of San Diego/Public History
- B.A./2003/Unversity of Rhode Island/ History [Environmental]

Continuing Education

- SRIF "Section 106: Principles and Practice," 2006
- FEMA Institute Independent Study Course IS-00253 "Coordinating Environmental & Historic Preservation Compliance," 2006
- FEMA Institute Independent Study Course IS-00650 "Building Partnerships in Tribal Communities," 2006
- Certificate Program, Urban Planning, UC San Diego Extension; In Completion
- Association of Environmental Professionals "Introductory and Advanced CEQA Workshop Series," 2005
- California Preservation Foundation Annual Conference, 2005

Overview

Jeremy Hollins is a Secretary of Interior Professional Qualified Architectural Historian for URS' San Diego office. Since 2003, Mr. Hollins has performed numerous historic evaluations, context studies, and determinations of eligibility and effect for a range of resources based on local, state, and National Register criteria and through technical reports, DPR 523 series forms, HABS reports, cultural landscape reports, historic structures reports, and resolution documents. He has a detailed knowledge of the laws and ordinances which affect historic properties, such as Section 106 of the NHPA, CEQA, NEPA, Section 4(f), California Public Resources Code, State Historic Building Code, and the Secretary of Interior Standards for the Treatment of Historic Properties. Additionally, two academic journals have published Mr. Hollins' work, and he was an adjunct instructor in 'World Architectural History' at the New School of Architecture before coming to URS in 2006.

Project Experience

Verizon Wireless, Telecommunication Projects – CA and NV.
Architectural History Task Manager on over 95 intensive architectural history field surveys in California and Nevada for telecommunication projects' direct Areas of Potential Effect (APE) and viewshed (indirect APE). Projects completed as part of Section 106 of the NHPA and the FCC Programmatic Agreement with the California Office of Historic Preservation (OHP). Conducted and oversaw archival research, evaluated the projects' APE for eligibility for listing in the NRHP and California Register of Historic Resources (CRHR), identified effects, completed appropriate DPR 523 forms, drafted the reports for submission to OHP, and provided technical editing expertise. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types such as residential and commercial buildings, churches, educational institutions, hospitals, water towers, windmills, farm and ranch landscapes, an oil refinery, and irrigation canals. Responsible for scoping, budget and tasks management, client/agency interaction, and submission of compliance materials (2008-Present)

Brightsource Solar Energy, Rio Mesa Solar – Blythe, CA.
Oversaw architectural history field survey and archival research as architectural history task manager for a large solar project in the Colorado Desert (partially within BLM land) in accordance with Section 106 of the NHPA, NEPA and, CEQA. Oversaw architectural history field survey of project footprint, transmission line and substation locations, and half-mile buffer. Oversaw historic research and community consultation, and the recordation and evaluation of approximately 30 cultural resources,

including historic-age transmission lines, canals and irrigation ditches, historic roads, mines, and borrow pits. (2011)

FAA, San Francisco International Airport Runway Safety Area Program – San Francisco, CA. Task manager for reconnaissance survey of the historic-age runways, taxiways, canal, and approach-lighting trestles within the project APE; evaluated the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessed effects and impacts from the proposed undertaking; completed DPR 523 forms; and authored the Historic Architecture Survey Report. (2011)

Los Angeles Unified School District, Alameda Transportation Relocation Project – Historical Architecture Assessment – Los Angeles, CA. Oversaw a historic architecture assessment in accordance with CEQA and according to City of Los Angeles criteria for listing as a historical or cultural monument. Managed an intensive architectural history survey, archival research, and evaluation. Authored the letter report to assess the significance of the three mid-twentieth century light industrial buildings on the site and any project impacts according to CEQA. (2011)

National Oceanic and Atmospheric Administration (NOAA), Integrated Water Resources Science and Services (IWRSS), University of Alabama Section 106 Compliance – Tuscaloosa, AL. Leader of project planning and photo guidance for a desktop evaluation of eligibility and effect pursuant to Section 106 of the NHPA for buildings associated with the mid-nineteenth century Bryce Hospital (Alabama State Hospital for the Insane) NRHP-eligible historic district. Task manager for resolution of adverse effects and completing SHPO consultation regarding the necessary HABS standards. (2011)

Caltrans and Alameda Corridor Transportation Authority, HAER, Level II, for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement and SR-47 Expansion Project – Long Beach, CA. Managed HAER for Commodore Schuyler F. Heim Bridge, a 1948 steel vertical lift bridge eligible for listing in the NRHP, to fulfill NHRA Section 106 mitigation requirements. The study was completed consistent to the specific guidelines and requirements of the United States Department of Interior and Library of Congress for a Level II HAER and included written historical and descriptive data, 5-by-7" large-format photographs and negatives, and 4-by-5" large-format photographic copies of as-built drawings and negatives. Oversaw project planning (client meetings, site visits, access permits, contract and engagement with photographer), facilitated field work, archival research, report drafting and editing and archival processing. . Project required extensive FHWA, Caltrans, and Port of Los Angeles-Port of Long Beach coordination and consultation. Project was nominated for a URS Pyramid Award for Technical Excellence. (2010-2011)

Caltrans and City of Santa Ana, Bristol Street HPSR and HRER, Phase 3 and Phase 4 – Santa Ana, CA. Task manager for an intensive architectural history field survey of the direct APE and a reconnaissance survey of the indirect APE in accordance with the Programmatic Agreement between the FHA, the Advisory Council on Historic Preservation, the California OHP, and Caltrans. Managed archival research, wrote a historic context, evaluated the APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 66 resources (primarily early to mid-century residences in planned subdivisions) on the appropriate DPR 523 forms, and authored the HPSR and HRER. Adapted unique approach for recordation based on historic subdivisions and property types to facilitate and streamline compliance. (2010-2011)

Caltrans and SANDAG, Lenwood Road HPSR, ASR, and HRER – Barstow, CA.
Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded forty-one resources (Historic Route 66-related commercial buildings and single-family residences) on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Reports and Historic Properties Survey Reports. (2009-2011)

Pio Pico Energy Center, LLC, Pio Pico Energy Center, Otay Mesa – San Diego County, CA. Supervised an intensive architectural history field survey of the project survey area in accordance with CEQA and CEC guidelines. Oversaw archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded two new resources (circa 1909 ranch complex and 1960 ranch-style residence) and re-recorded a third (historic road) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2010-2011)

FEMA, Lake Valley Roof Replacement – Lake Valley Fire Protection District, CA. Managed and planned strategic tasks man tasks for preliminary NHPA Section 106 compliance evaluation of project involving hundreds of mid-twentieth century recreational residences and roof replacements. (2010-2011)

FEMA, Marcucci – Jackson, CA. Completion of Section 106 studies per the FEMA Programmatic Agreement for flood damage control (culvert replacement). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Sutter Creek Broad Storm Drain Diversion – Sutter Creek, CA. Managed Programmatic Agreement between FEMA, the California

OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation for proposed flood damage control (culvert drainage system alterations near a NRHP-eligible creek wall and historic district) tasks Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Fairfax Pavilion – Fairfax, CA. Completion of Section 106 studies per the FEMA Programmatic Agreement for seismic retrofit to NRHP-eligible property). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Lake Elsinore Seismic Retrofit – Lake Elsinore, CA. Managed Programmatic Agreement between FEMA, the California OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation to proposed seismic retrofit tasks for preliminary NHPA Section 106 compliance evaluation of project involving the city hall buildings. (2010)

Caltrans and Riverside County Transportation Department, Clay Street Grade Separation Project – County of Riverside, CA. Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 5 resources on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Report and Historic Properties Survey Reports. (2010)

United States Postal Service, USPS San Diego Midway Processing and Distribution Facility Property – San Diego, CA. Oversaw NRHP eligibility (including Criterion Consideration G) and effects for NHPA Section 106 compliance for the proposed disposition of the USPS San Diego Midway Processing and Distribution Facility property, which contained a large 1972 Brutalism and New Formalism-style building. Supervised a records search, Native American consultation, historic research, evaluation, integrity analysis, assessment of adverse effects, and drafting of report. (2010)

Apex Energy Group, Pio Pico Energy Center – Chula Vista, CA. Oversaw an intensive architectural history field survey of the project's APE in accordance with CEQA and the CEC guidelines. Supervised archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded three resources (1897 reservoir and 1919 dam, late-1950s public park facilities, and early twentieth-century livestock pens) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2009-2010)

FEMA Santa Maria Seismic Retrofit–Santa Maria, CA. Supervised NRHP- and CRHR-eligibility of the Cook and Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with NHPA Section 106 and the Programmatic Agreement between FEMA, California OHP, California Emergency Management Agency, and the Advisory Council on Historic Preservation. Completed DPR 523 forms. (2009)

Tessera Solar, Imperial Valley Solar (formerly Solar II) – El Centro, CA. Supervised archival research and compiled findings regarding Juan Bautista de Anza National Historic Trail and historic gravel mines in the project APE and vicinity pursuant to Section 106 of the NHPA, NEPA, and CEQA. Input archaeological field data to DPR 523 form database. (2009)

California High Speed Rail Authority, High Speed Train – Sylmar to Palmdale, CA. Task manager for field reconnaissance data analysis, records search review, and cultural resource location map revisions pursuant to Section 106 of the NHPA and CEQA. (2009)

Lost Hills Solar, Lost Hills – Kern County, CA. Facilitated **r**esearch and drafted the historic context pursuant to CEQA. (2009)

Clay Street Grade Separation, Riverside County Transportation Department, Riverside County, CA.
Cultural Resources Task Manager (URS Corporation)
Performed Section 106 Compliance Study for Riverside County Transportation Department for the at-grade crossing of Clay Street with the Union Pacific Railroad. Prepared HPSR, ASR, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2010)*

Westside Extension Cultural Resources Technical Report and Historic Survey Report, Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles, CA.
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the Los Angeles Metro Westside Extension project, which involved the planning and design of a heavy-rail subway connecting City of Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles. Responsibilities include Metro, FTA, and SHPO coordination/meetings; authoring project Programmatic Agreement; organizing field survey activities and background research; and authoring the Section 106 of the NHPA, NEPA, and CEQA technical studies. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. In total, the project identified and evaluated a total of 91 NRHP-listed, -eligible, or

contributing resources, and over 200 non-significant historic-period properties. *(2009-2010)*

NHPA Section 106 Compliance for ARRA Projects Undertaken by National Railroad Passenger Corporation (Amtrak). CA, WA, NM.
Architectural Historian (URS Corporation)
West Coast lead for California, Oregon, Washington, and New Mexico National Historic Preservation Act Section 106 consultation and State Historic Preservation Office (SHPO) coordination regarding Amtrak's receipt of $1.3 billion in American Recovery and Reinvestment Act (ARRA) funds under an expediated timeline for receive ARRA funding. Responsibilities included field assessments/built environment surveys with engineering teams; development of design guidelines per project based on the Secretary of the Interior's Standards for Rehabilitation; and completion of Section 106 compliance materials (letter reports). Project required extensive coordination with SHPOs (e.g., CA, WA, and NM). SHPOs) to ensure Section 106 concurrence (No Adverse Effect to Historic Properties) was received in less than 30 days for each project. In total, project involved alterations and additions to nearly 7 NRHP-eligible and -listed properties (e.g., Los Angeles Union Station). Project was nominated for a URS Pyramid Award for Innovation. *(2009-2010)*

California High-Speed Train Project EIR/EIS-Los Angeles to Palmdale Segment, California High-Speed Rail Authority, Los Angeles County, CA.
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the CA High Speed Train Palmdale to Los Angeles Union Station. Responsibilities include sub-consultant management; organizing field survey activities and background research; and authoring the technical reports and EIR/EIS sections. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. *(2009-Present)*

BNSF Tehachapi Cultural Resources Assessment, Kern County, CA.
Architectural Historian (URS Corporation)
Architectural historian for the evaluation of built environment resources and features located within APE for an eleven mile addition of a double-track in the Tehachapi area, near the Tehachapi Loop. Developed historic context and performed determination of eligibility, integrity analysis, and identification of effect. Prepared DPR 523 series forms and co-authored the technical reports per Caltrans Division of Rail CEQA-level standards. Project required complex evaluation of Cesar Chavez former office and gravesite, involving Criterion Considerations C, D, E, F G. *(2008-Present)*

California High-Speed Train Project EIR/EIS-Fresno to Bakersfield Segment, California High-Speed Rail Authority, CA.

Architectural Historian (URS Corporation)
Technical reviewer for the Section 106, NEPA, and CEQA studies for the High Speed Train Fresno to Bakersfield segment. *(2010)*

Alosta Avenue Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1929 Plate-Girder bridge and the California Central Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Long Beach Blvd. Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Willow Street Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2007)*

Palomar Road Widening Cultural Resource Survey, County of Riverside, Riverside County, CA.
Architectural Historian (URS Corporation)
Performed historic research and CRHR and NRHP determination of eligibility for a 19th century rural (garden) cemetery (historic designed landscape) in Wildomar. NRHP evaluation required application of Criterion Consideration D: Cemeteries. Information was incorporated into DPR 523 series forms and final technical report. *(2007)*

California High-Speed Train Project EIR/EIS Methodology and Detailed Work Plan, Federal Rail Authority and High-Speed Train Authority, Statewide, CA.
Architectural Historian (URS Corporation)
Prepared Architectural History Methodologies for the completion of the state-wide Section 106, NEPA, and CEQA compliance of the High Speed Train Project EIR/EIS. Developed research, survey, identification, evaluation, and consultation methodologies for completion of the project, as well as identified possible constraints. Also prepared the Detailed Work Plan for the LA-Palmdale Segment Project EIR/EIS. *(2007)*

US-101/McCoy Lane Interchange Project ASR and HPSR, Caltrans Santa Barbara County, CA.
Architectural Historian (URS Corporation)
Prepared the Historic Context for a Section 106, NEPA, and CEQA compliance study for improvements to the US-101/McCoy Lane interchange. Performed primary and secondary sections. The historic context examined the development of oil prospecting in the Santa Maria Valley and the development and operation of the Battles Plant Facility, which was adjacent to the APE. *(2007)*

US 101/SR 46W Interchange Improvement, City of Paso Robles, Paso Robles, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Study for proposed undertaking. Survey discovered 5 previously unrecorded historic properties and evaluated the resources within 2 historic contexts. Performed determination of eligibility, identification of effect, analysis of integrity, and recommended mitigation measures for project. Completed DPR 523 series forms, HRER, and HPSR for Caltrans. *(2006)*

2701 North Harbor Drive Demolition Project EIR, San Diego Unified Port District and San Diego County Regional Airport Authority, City of San Diego, CA.
Cultural Resources Task Manager/ Architectural Historian (URS Corporation)
Served as Task Manager for CEQA-level cultural resources assessment. Performed fieldwork and authored Cultural Resources EIR section and technical report for the demolition of 50 structures at San Diego International Airport. Project considered potential effects to a National Register-eligible historic district (comprised of 17 properties). Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, and development of mitigation measures. *(2008-2009)*

Phase I Archaeological Assessment of Nuevo Business Park II, Private Client, Riverside, CA. *Architectural Historian (URS Corporation)*
Performed CEQA-level cultural resource assessment of 5 rural historic-period landscapes associated with agricultural/subsistence activities in Riverside County. Developed historic context on Riverside County's commercial agriculture industry, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report per County of Riverside Planning Department regulations. *(2008)*

Anaheim Historic Resource Evaluation, City of Anaheim, Orange County, CA.
Architectural Historian (URS Corporation)

Performed CEQA-level cultural resource assessment for three historic-period residences (Tudor Revival, modern ranch, contemporary style) within the City of Anaheim. Performed background research, wrote historic context on northeast Anaheim's transformation from agricultural to industry in the mid-20th century, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. *(2007)*

Space Shuttle Program NEPA, Section 106, and 110 Compliance, NASA, Third Party Peer Review of Technical Reports.
Architectural Historian (URS Corporation)
Performed third party NEPA, Section 106 and Section 110 review of technical reports for NASA for the decommissioning of its Space Shuttle Program properties. Reviewed properties per Criterion Considerations B (Moved Properties) and G (Properties less than 50 years), federal government definition of personal properties, and as geographic historic districts. Space Shuttle Program properties were located at Dryden Flight Research Center (Edwards, CA), White Sands Space Harbor, and White Sands Test Facility (Las Cruces, NM). *(2007)*

Pacific Gateway Cargo Center, Ontario International Airport Construction Monitoring and Treatment Plan, Ontario International Airport, Ontario, CA
Architectural Historian (URS Corporation)
Authored construction monitoring and treatment plan for subsurface features and built environment. Plan was for the redevelopment of 96 acre site, and included monitoring guidelines for construction/grading, and a visual inspection program for surrounding historic resources. Plan encompassed entire building process from pre-construction meetings to post-construction reports. *(2006)*

West Moreland Clean Harbors Landfill Expansion Cultural Resource Assessment, Private Client, West Moreland, CA.
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for Study Area for proposed landfill site. Results of Record Search were tabulated and used for cultural resource assessment of Study Area. *(2006)*

La Posada Hotel Engineering Contingency Plan, Private Client, Winslow, AZ.
Architectural Historian (URS Corporation)
Planned and wrote an Engineering Contingency Plan for the La Posada Hotel (within the La Posada National Register District) for the removal of oil seepage from a raised concrete foundation. Plan provided scope, costs, and recommended Rehabilitation and Restoration treatments (per Secretary of Interior Standards for the Treatment of Historic Properties). Project required informal consultation with AZ SHPO and Materials Contractors. *(2006)*

IERF Building Historic and Architectural Documentation (HABS), University of California, Irvine, Irvine, CA.
Architectural Historian (URS Corporation)
Performed equivalent of HABS Level 2 survey of a 1986 Frank Gehry-designed academic complex at the University of California – Irvine. Responsible for architectural investigation, physical history, historic context, and coordination with HABS photographer. *(2006)*

Uptown San Diego Historic Reconnaissance Survey, City of San Diego, San Diego, CA.
Architectural Historian (IS Architecture)
Historian for the identification and evaluation of 20,000 resources in San Diego. Responsible for jointly preparing survey's first volume, which included "Data Analysis, Phase Implementation, Methodology, Styles Guide/Context, and Proposed Districts/Conservation Overlays." Evaluated and grouped resources based on association to historic context, and drafted district and overlay records, contributing elements, boundaries, and integrity. *(2005-2006)*

100MW Solar/Bio-Waste Power Plant, Spinnaker Energy, Inc., Fresno County, CA
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and co-authored Cultural Resources AFC section and technical report for a proposed hybrid solar and bio-fuel power plant in Fresno County. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008)*

Carrizo Energy Solar Farm AFC Data Requests, Ausra, Inc., San Luis Obispo County, CA.
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the presence of a potential cultural landscape within the northern Carrizo Plains near the vicinity of the Project Area. Research efforts included a review of primary and secondary sources, development of an evaluative context, and recordation and evaluation of 8 potential contributing resources through DPR 523 series forms. Recordation and evaluation followed National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes. *(2008)*

Carrizo Energy Solar Farm AFC Supplemental Filing, Ausra, Inc., San Luis Obispo County, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed CHRIS records search and authored Cultural Resources AFC section for a

150-mile transmission line corridor intended for use as part of the 177 MW solar power project located in San Luis Obispo County, California. *(2008)*

Confidential Solar Energy Project, Confidential Private Client, Imperial County, CA.
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic context for the project area in support of a CEQA-level assessment for submission to the CEC. Context focused on Imperial County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. *(2008)*

Carrizo Energy Solar Farm 177 MW Solar Plant, CEC, Ausra, Inc., San Luis Obispo County, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and authored Cultural Resources AFC section and technical report for a 177 MW solar power project located in San Luis Obispo County, California (640 acre solar farm; 380 acre construction laydown). Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties, analysis of effects, and development of mitigation measures. *(2007-2008)*

Stirling Energy Systems – Solar 2 Project and Data Request 125, CEC, Imperial County, CA
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic and evaluative context for the project area. Context focused on Imperial County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. Also, recorded and performed determination of eligibility, analysis of integrity, and identification of effect for six historic-period properties. Prepared for Stirling Energy Systems. *(2007-2009)*

Solar Hybrid Power Plant Cultural Resources Assessment, Bethel Energy, Imperial County, CA.
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment of two early 20th century earthen and concrete-lined canals in Imperial Valley area. Performed CHRIS Center Record Search, developed historic context on Imperial Valley's irrigated commercial agriculture industry, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. *(2007)*

Calnev Expansion Project, Kinder Morgan, San Bernardino County, CA.
Architectural Historian (URS Corporation)
Served as Architectural Historian for cultural resources assessment for NEPA and CEQA project. Performed fieldwork and authored technical report for a 190-mile portion of a proposed 245-mile pipeline expansion project from Colton, CA to Primm, NV. Deliverables were submitted to the BLM as the lead agency for NEPA and the County of San Bernardino as the lead agency for CEQA. Duties included coordination of field survey, CHRIS records search, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. In total, recorded and evaluated 39 unrecorded historic-period properties and 17 previously recorded historic-period properties. Prepared for Kinder Morgan, Inc. *(2008)*

Carson Cogeneration Plan Expansion, BP, Inc., Los Angeles, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment for a cogeneration plant expansion. Performed fieldwork and co-authored Cultural Resources AFC section and technical reports. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008)*

1507 Mt. Vernon Avenue Historic Property Assessment, Patch Services Engineering, City of Pomona, Los Angeles County, CA.
Project Manager/ Architectural Historian (URS Corporation)
Project Manager/ Architectural historian for the evaluation of a 1927 paper mill located within a cogeneration power facility. Developed historic context, construction chronology, and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Starwood-Midway Power Plant AFC Data Requests, Starwood Energy, Fresno County, CA.
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the location of a historic farm in relation to the Project Area. Research efforts included a review of historic maps, aerial photographs, real estate and county records, and newspaper articles. The Data Requests, and associated figures and maps, were submitted to CEC via a Letter Report. *(2007)*

Revised Niland Cultural Treatment Plan and Research Design, Niland Gas Turbine Plant Project, CEC, Niland, CA
Architectural Historian (URS Corporation)

Authored the Historic Period Research Questions used in the Treatment Plan. Research questions focused on emigration, irrigation, flooding episodes, and power generation in Imperial Valley. *(2007)*

Confidential Pipeline Expansion Project Feasibility Study and Constraints Analysis, Private Client, CA and NV.
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for 223-mile pipeline expansion. Results of Record Search were tabulated and included in Feasibility Study. Also coordinated all cultural resource mapping with GIS personnel. *(2006)*

Cultural Resource Survey and Assessment, Imperial Irrigation District, Niland and El Centro, CA.
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources and effect caused by alterations to power plant facilities. Evaluated resources per California Register criteria and developed recommended mitigation measures for project. Co-authored the Technical Reports, DPR 523 series forms, and Application for Certification. Identified an historic bank, eligible for the California Register of Historic Resources, related to the early development of Niland and a historic powerplant building, associated with the early development of the Imperial Irrigation District and eligible for the California Register. *(2006)*

Cook & Miller Court Complex Seismic Retrofit, FEMA, Santa Barbara County, CA.
Architectural Historian (URS Corporation)
As part of HMGP-funding, evaluated the NRHP and CRHR eligibility of the Cook & Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with Section 106 and the PA Completed architectural history survey, background research, DPR 523 series forms and findings memorandum. *(2010)*

Franklin Reservoir Improvement Section 106 Compliance Project, FEMA, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADWP for the replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Prepared DPR 523 series forms and technical report for SHPO. Developed historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008-2009)*

Santa Monica City Hall MOA Seismic Retrofit, Jail-Area Adaptive Use, and ADA Improvements, FEMA, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Review on behalf of FEMA for the seismic retrofit, jail-area adaptive use, and ADA improvements of the National

Register-eligible City Hall. Reviewed consultant and City prepared studies and drawings, performed integrity analysis and identification of character defining features, analyzed effects, and developed a resolution of effects plan. Coordinated with ACHP, SHPO, OES, FEMA, and City, and authored Notification Letter and Draft MOA to resolve effects. Prepared for FEMA *(2008-2009)*

Harada House Section 106 Review, FEMA, Riverside County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review on behalf of FEMA for emergency repairs to a National Historic Landmark (Harada House) within the City of Riverside. Reviewed project through NEMIS database, and responsible for SHPO consultation, applying Section 106 Programmatic Agreement Allowances, integrity analysis, and identification of effects. Drafted Notification Letter for ACHP, SHPO, OES, FEMA, and City. *(2008)*

Ross School Flood Mitigation Assistance, FEMA, Sonoma County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review for FEMA for a flood elevation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to FEMA. *(2008)*

Sonoma County Flood Mitigation Assistance, FEMA. Sonoma County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to SHPO. Prepared for Sonoma County. *(2008)*

Napa County Flood Mitigation Assistance, FEMA, Napa County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and performed determination of eligibility, analysis of integrity, and identification of effect. Compliance study data transmitted via letter report to SHPO. Prepared for Sonoma County. *(2008)*

Municipal Water District - Upper Feeder Line, FEMA, Riverside County, CA.
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources for FEMA disaster recovery project. Evaluated resources ("Pratt" truss bridge and gaging station) per National Register criteria and requirements of Section 106 of the NHPA. Performed determination of

eligibility, identification of effect, analysis of integrity, and recommended mitigation measures for project. Prepared for Riverside County. *(2006)*

San Diego Vegetative Management, FEMA, San Diego County, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for vegetative management for the San Diego County communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Performed CHRIS Center Records Search and wrote historic contexts for communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Part of technical reports submitted to FEMA for Section 106 Compliance. Prepared for City of San Diego. *(2006)*

Hurricane Katrina Public Assistance, DR-1604-MS, FEMA, Biloxi, MS.
Architectural Historian (URS Corporation)
Historic Preservation Specialist for NEPA review of over 100 public assistance projects. Reviewed projects through NEMIS database. Responsible for SHPO consultation, applying Section 106 Programmatic Allowances, determinations of eligibility, integrity analysis, and identification of effects. Drafted MOAs, developed mitigation measures, ensured projects met Secretary of Interior Standards for the Treatment of Historic Properties, and coordinated and led meetings between applicants, FEMA, and Mississippi SHPO. Projects included over 10 National Register Properties, 1 National Historic Landmark, and 15 Mississippi Landmarks. *(2006)*

Nevada City Fuel Reduction Project, FEMA, Deer Creek Environs, Nevada County, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for wildfire mitigation of 600 acres. Mr. Hollins participated in kick-off meetings; performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. Four previously recorded cultural resources, one previously unidentified historic-period residential camp site, and five historic-period isolates were recorded in the Area of Potential Effect (APE) - all associated with the early history of 19th and 20th century northern California gold mining. *(2006)*

Water

Calaveras Dam Staff Housing Replacement Project, San Francisco Public Utilities Commission, Sunol, Alameda County, CA.
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the CEQA evaluation of a historic-period rural property that would be demolished to accommodate

new staff housing for the SFPUC, as part of Calaveras Dam replacement project. CEQA evaluation included preparation of a technical archaeology and architectural history memorandum, recordation of the property through DPR 523 series forms, and preparation of project area maps. Developed evaluative historic context for the Spring Valley Water Company, Sunol, and Alameda County historic-period rural properties. *(2010)*

City of Los Angeles Lower Franklin Reservoir No. 2 - Debris Basins Replacement, Los Angeles, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for LADWP's replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Mr. Hollins performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. (*2009)*

MCB Camp Pendleton Bachelor Enlisted Quarters Siting Study, San Diego County, CA.
Architectural Historian (URS Corporation)
Reviewed MCB Camp Pendleton GIS layers and cultural resources records and data to identify potential direct impacts to previously recorded cultural resources located within a 500-foot radius of proposed Bachelor Enlisted Quarters at MCB Camp Pendleton. Provided cultural resources analysis as part of a preliminary NEPA constraints and siting study to support the preparation of the Project's design-build RFP for FY2008, FY2009, and FY2010. In total, 25 potential BEQ sites were analyzed for potential direct impacts to cultural resources. Prepared for MCB Camp Pendleton. *(2008)*

Desert Installation Appearance Plan and Airfield Security Study for NAF El Centro, NAS Fallon, NWS Seal Beach, NAS Lemoore, and NAWS China Lake.
Architectural Historian (URS Corporation)
Architectural Historian responsible for developing cultural resources considerations, base-wide historic contexts, design guidelines for historic structures and districts, and base-wide visual themes. Project was completed at five installations throughout California and Nevada. Within the historic district analysis, the character-defining features, visual quality and context, and historic contexts were identified to classify built environment styles and a harmonizing theme. In addition, all built environment properties within the installations were identified and categorized, in order to provide clear visual design guidance and functional and aesthetic guidance. Lastly, based on the preceding data, design guidelines (including material and construction elements) were then established for each installation. Prepared for NAVFAC. *(2008)*

Telecommunications

Historic-Period Property Evaluation Report – Twin Peaks, San Francisco Planning Department, San Francisco, CA.
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the Section 106 of the NHPA and CEQA evaluation of a historic-period religious building (church) located within the City of San Francisco, which would be substantially altered. CEQA evaluation was completed in compliance with San Francisco Planning Department regulations, as well as the guidelines established by the Major Environmental Analysis (MEA) staff and the Planning's Department's Preservation Coordinator. Section 106 of the NHPA and CEQA evaluation included preparation of a letter report, DPR 523 series forms, APE maps, historic maps and images, records search information, and a San Francisco Planning Department Supplemental Information Form for Historic Resource Evaluation form. Historic-period property was evaluated using the Criterion Consideration A: Religious Properties, in addition to NRHP/CRHR criterion. *(2010)*

Scripps Park Historical Structures and Cultural Landscape Report, La Jolla, CA.
Project Manager (Independent Contractor)
Project Manager and lead investigator for historic context and treatment plan of site. Work entailed identifying landscape features, flora/botanical species, existing conditions, review of original drawings and plans, historic sequence of events, construction chronology, and archaeological discoveries. Responsible for assigning tasks, overseeing sub-consultants work, coordination of report, budget, and application of Secretary of Interior standards, CEQA, and Coastal Commission regulations. Project submitted to City of San Diego and Coastal Commission for Restoration and Reconstruction of site and future planning. *(2005)*

Community Involvement

Traffic and Parking Commission, City of Del Mar, Del Mar, CA. Appointed by the Del Mar City Council to serve four-year term as member of five person committee. Meet monthly and make recommendations to City Council based on public input and participation. Responsible for resolving traffic and parking issues; such as speeding, reoccurring regulatory violations, traffic congestion, parking problems, and application of new technologies. Work and meet regularly with the public, City Council, Parking Enforcement, the Fire Department, the San Diego Sheriff's officers, City Manager's office, Public Works and Planning Departments, and the City's Traffic Engineer. *(July 2005-July 2009)*

Publications

"Village Memories: A Photo Essay on La Jolla's Past," *Journal of San Diego History*, Vol. # 54, Fall 2008

"Until Kingdom Come: The Design and Construction of La Jolla's Children's Pool," *Journal of San Diego History*, Vol. # 51, Winter/Spring, 2005

Chronology

2006-Present: URS Corporation, Senior Architectural Historian, San Diego, CA

2005-2006: New School of Architecture, Adjunct Instructor, San Diego, CA

2004-2005: IS Architecture, Architectural Historian, La Jolla, CA

2003-2004: La Jolla Historical Society, Archivist and Preservation Specialist, La Jolla, CA

Sarah Provo

Architectural Historian

Areas of Expertise

- Secretary of Interior Professional Qualification *Architectural History* and *History* (36 CFR Part 61)
- Historic Preservation Treatments and Law
- Recent Past/19th – 20th Century California Architecture
- Large-Scale Surveys and Evaluations for Linear Projects

Years of Experience

With URS: <1 Year
With Other Firms: 1+ Years

Education

M.A./History (Historic Preservation)/2011/University of California-Riverside

B.A./History/ 2006/San Diego State University

Chronology

2011-Present: URS, Architectural Historian/San Diego, CA

2010-2011: City of Riverside Planning Division, Historic Property Surveyor/Riverside, CA

2010: Old Town San Diego State Historic Park, Historic Preservation and Interpretation Intern/San Diego, CA

2009-2011: University of California at Riverside, Graduate Teaching Assistant/Riverside, CA

Overview

Since 2010, Ms. Provo has performed numerous historic assessments and determinations of eligibility and effect for a range of property types based on local, state, and National Register of Historic Places (NRHP) criteria in the form of technical reports, Environmental Impact Studies/Environmental Impact Reports, California Department of Parks and Recreation (DPR) 523 series forms, cultural landscape reports, and Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) documentation. Ms. Provo is a Secretary of Interior Professional Qualified Architectural Historian and Historian for URS' La Jolla (San Diego) office.

Ms. Provo has expert knowledge of the laws and ordinances that affect historic properties, such as Sections 106 and 110 of National Historic Preservation Act (NHPA), the National Environmental Protection Act (NEPA), the California Environmental Quality Act (CEQA), and the Secretary of Interior Standards for the Treatment of Historic Properties. She has completed work for various Federal, state, and local agencies, including the Federal Emergency Management Agency (FEMA), Federal Communications Commission (FCC), Department of Housing and Urban Development (HUD), California Department of Transportation (Caltrans), as well as numerous local agencies and private clients.

Project Experience

Verizon Wireless, Telecommunication Projects – CA and NV. Evaluated telecommunication projects in California and Nevada, both for the projects' direct Areas of Potential Effect (APE) and viewshed (indirect APE) to the requirements of Section 106 of the NHPA and the FCC Programmatic Agreement with the California Office of Historic Preservation (OHP). Evaluated projects' APE for eligibility for listing in the NRHP and California Register of Historical Resources (CRHR), identified effects, drafted the reports for submission to OHP, and provided technical editing expertise. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types such as residential and commercial buildings, military buildings, airport hangars, and educational institutions. (2011-Present)

Santa Ana-Garden Grove Fixed Guideway Project– Santa Ana and Garden Grove, CA. Assisted with the survey and reporting for the architectural review of historic properties older than 1966 for a proposed streetcar project that is situated within the APE of a proposed streetcar route from Santa Ana to Garden Grove, California. Conducted archival research, contributed toward historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded over 100 properties in the field (twentieth-century commercial, institutional, and residential buildings and districts) on the appropriate DPR 523 forms, evaluated project effects

by alternative, proposed mitigation measures, and drafted the technical report. (2011-Present)

Caltrans District 8 and Riverside County Transportation Department, Clay Street Grade Separation – County of Riverside, CA. Assisted with the Section 106 Compliance Study for the Riverside County Transportation Department for the roadway and railroad track grade separation at the Clay Street rail crossing. Prepared map of amendment to previous APE following relocation of water, sewer, and utility facilities on project plans per Caltrans/FHWA guidelines. (2011)

BNSF Mojave Subdivision, Tehachapi Pass, Second Main Track-Bena to Marcel HRER, ASR, and HRCR – Kern County, CA. Assisted the cultural resources task lead with preliminary project planning for the addition of a second main track adjacent to the existing track through the Tehachapi Pass. Prepared photo guidance for architectural history field survey of property and completed preliminary desktop survey of surrounding properties associated with events in local and state history. (2011)

Naval Air Facility El Centro Fire Station – El Centro, CA. Assisted design team by performing background research to evaluate eligibility of historic-age utilitarian industrial buildings at Naval Air Facility El Centro. Assisted with evaluation and architectural history description for technical report for fire station project. (2011)

Confidential Client, Confidential Soil Remediation Project – Los Angeles County, CA. Assisted with cultural resources investigation for confidential soil remediation project in Los Angeles County. Requested records search, reviewed records search results, completed background research to develop historic context statement, and drafted report for CEQA Addendum. (2011)

HUD, Section 106 Consultations – Los Angeles County, CA. Task Manager for several HUD apartment projects in Los Angeles County. Assisted with project planning, client consultation, and financial management work. (2011)

HUD, Highland Park Transit Village – Los Angeles, CA. Assisted with project planning for a mixed-use development consisting of multi-family residential dwelling units and public parking areas on three adjacent blocks in Los Angeles. Tabulated records search results, reviewed records search results maps, requested NAHC Sacred Lands File search, followed up with Native American tribal contacts, and completed Section 106 compliance reports. (2011)

HUD, Santa Cecilia Housing Development – Los Angeles, CA. Assisted with project planning for mixed-use housing consisting of apartments and retail space in Los Angeles. Tabulated records search results, reviewed records search results maps, requested NAHC Sacred Lands File search, followed up with Native American tribal contacts, and completed Section 106 compliance reports. (2011)

HUD, Brooklyn Heights Housing Development – Los Angeles, CA. Assisted with project planning for mixed-use housing consisting of apartments and retail space in Los Angeles. Tabulated records search results, reviewed records search results maps, requested NAHC Sacred Lands File search, followed up with Native American tribal contacts, and completed Section 106 compliance reports. (2011)

FEMA, Fairfax Seismic Retrofit – Fairfax, CA. Assisted with Section 106 Compliance Study for FEMA for an earthquake damage mitigation assistance project involving structural modifications to upgrade the Main Lateral Force Resisting System of the NRHP-eligible Fairfax Pavilion. Provided photo-documentation guidance and prepared survey records and research to evaluate the impact of structural modifications on the historic integrity of the building in accordance with the Secretary of the Interior Standards. (2011-Present)

FEMA, San Anselmo Town Hall Flood Mitigation – San Anselmo, CA. Assisted with preliminary Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the repair of the Town Hall Complex, an early 19th century building which houses the Public Library, Fire Station, and Town Hall Offices. Completed historic research to assist in evaluation methods and application of Secretary of the Interior Standards. (2011-Present)

FEMA, East Bay Hills Hazardous Fire Risk Reduction – Alameda and Contra Costa Counties, CA. Assisted with preliminary Section 106 Compliance Study for FEMA for a fire damage mitigation assistance project involving the removal of vegetation from potentially hazardous areas throughout the East Bay Region. Assisted with historic research, identification and evaluation methods, effects analysis, and application of the Secretary of the Interior Standards for Rehabilitation of historic properties. (2011-Present)

City of Riverside Planning Division Riverside, CA. Historic Property Surveyor. Compiled research to produce DPR 523 series documents evaluating individual and multiple properties for eligibility on the National Register of Historic Places based on the Secretary of the Interior's Standards for Registration. Surveyed existing cultural resources within historic context statement to determine significance and architectural integrity for possible inclusion in a CLG grant project. Collaborated with University of California staff, the City of Riverside Planning Department, and the Riverside Metropolitan Museum to research land use, property histories, and relevant individuals related to local and national themes of racial exclusion in the early 20th century. (2011)

Old Town San Diego State Historic Park San Diego, CA. Historic Preservation and Interpretation Intern. Assessed historic accuracy of current interpretive activities demonstrated in the park and compiled references on period-appropriate processes for these activities. Compiled furniture assessment for furnishing/interpretation plan for the adobe dwelling and National Historic Landmark, Casa de Estudillo. Participated

in living history activities in the park for the education of the public. (2010)

National City Living History Farm Preserve, Inc. National City, CA. Collections Archivist. Photographed, researched, and documented Stein Farm's collection of early 20th century farming equipment. Documented acquisition information and traced purchase details for farming vehicles. Catalogued equipment and vehicle inventory using object and condition reports. (2010)

Riverside Metropolitan Museum. Riverside, CA. Collections Preservation and Exhibit Installation. Compiled object reports and condition reports on pieces selected for exhibition. Researched garment styles from fashion plates and patterns to appropriately prepare mannequins Selected, prepared, and arranged objects on display for "Adornment" exhibit. (2010)

Professional Societies/Affiliates

San Diego History Center
Save Our Heritage Organisation
Phi Alpha Theta, History Honor Society

Awards

Presidential Scholarship, University of San Diego, 2003.

Chancellor's Distinguished Fellowship, University of California, Riverside, 2009.

Contact Information

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Melanie Lytle, M.A.

Architectural Historian

Areas of Expertise

- Historic Preservation Treatments and Law
- Recent Past/19th – 20th Century California Architecture
- Telecommunications Projects
- Large-Scale Surveys and Evaluations for Linear Projects

Years of Experience

With URS: 2 Years
With Other Firms: 3 Years

Education

MA Historic Preservation/ Goucher College/2011

BA History (French Minor)/ California State University, Sacramento/2006

Registration/Certification

- Secretary of Interior Professional Qualification *Architectural History* and *History* (36 CFR Part 61)

Overview

Melanie Lytle is a Secretary of Interior Professional Qualified Architectural Historian and Historian for URS' La Jolla (San Diego) office. Since 2006, Ms. Lytle has performed numerous historic assessments and determinations of eligibility and effect for a range of property types based on local, state, and National Register of Historic Places (NRHP) criteria in the form of technical reports, Environmental Impact Studies/Environmental Impact Reports, California Department of Parks and Recreation (DPR) 523 series forms, cultural landscape reports, and Historic American Building Survey (HABS)/Historic American Engineering Record (HAER) documentation.

She has expert knowledge of the laws and ordinances that affect historic properties, such as Sections 106 and 110 of National Historic Preservation Act (NHPA), the National Environmental Protection Act (NEPA), the California Environmental Quality Act (CEQA), and the Secretary of Interior Standards for the Treatment of Historic Properties. She has completed work for various Federal, state, and local agencies, including the Federal Emergency Management Agency (FEMA), Bureau of Land Management (BLM), California Energy Commission (CEC), Federal Communications Commission (FCC), Federal Aviation Administration (FAA), Department of Housing and Urban Development (HUD), California Department of Transportation (Caltrans), as well as numerous local agencies and private clients.

Project Experience

California High Speed Rail Authority, High Speed Train, Palmdale to Los Angeles Union Station Segment – Los Angeles County, CA.
Architectural Historian (URS Corporation)
Serving as lead author of the Historic Architecture Survey Report and cultural resources sections of the Environmental Impact Report/Environmental Impact Study for the Palmdale to Los Angeles Union Station segment of the California High Speed Train project pursuant to Section 106 of the NHPA and CEQA. Assisting with APE delineation, archival research, and task management. *(Ongoing)*

FAA, Los Angeles International Airport Runway Safety Area Program – Los Angeles, CA.
Architectural Historian (URS Corporation)
Completing an assessment of the historic-age runways, taxiways, and buildings within the project APE for runway safety area improvements required by the FAA at the Los Angeles International Airport. Evaluating the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessing effects and impacts from the proposed undertaking; completing DPR 523 series forms; and assisting with the drafting of the Historic Architecture Survey Report, Environmental Assessment cultural resources section, and Environmental Impact Report cultural resources section. *(Ongoing)*

Yosemite National Park, Mariposa Grove Restoration – Yosemite National Park, CA.
Architectural Historian (URS Corporation)
Drafting the architectural history section of the Environmental Impact Statement for the National Register-listed Mariposa Grove Historic District. Task includes the summary of technical cultural resources reports and analysis of effects. *(Ongoing)*

FEMA, Lake Elsinore City Hall and Cultural Center Seismic Retrofit – Lake Elsinore, CA.
Architectural Historian (URS Corporation)
Performing Section 106 Compliance Study for FEMA for an earthquake damage mitigation assistance project involving the seismic retrofit of three early twentieth century public buildings. Performing determination of eligibility, analysis of integrity, and identification of effect. Drafting DPR 523 series forms and finding memo. *(Ongoing)*

Verizon Wireless Telecommunication Projects, Section 106 Compliance – CA and NV.
Architectural Historian (URS Corporation)
Performed over 75 Section 106 Compliance Studies for the FCC on behalf of Verizon Wireless for new tower support structures and collocated towers throughout California and Nevada. Completed determination of eligibility, analysis of integrity, and identification of effect. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types (residential and commercial buildings, churches, educational institutions, hospitals, water towers, windmills, farm and ranch landscapes, an oil refinery, and irrigation canals). Prepared FCC Form 620 or 621, DPR 523 series forms, viewshed photographs, and letter reports. *(Ongoing)*

Marine Corps Recruit Depot (MCRD), Cultural Resources Internal Audit – San Diego, CA
Architectural Historian (URS Corporation)
Conducted an internal audit of the MCRD cultural resources program. Task included review of Marine Corps and Department of Defense cultural resource policies and NHPA Section 106 requirements against MCRD records. Produced a report detailing the compliance status of each requirement and presented solutions for the resolution of out-of-compliance items. *(2011)*

FEMA, Ennis-Brown House Restoration – Los Angeles, CA.
Architectural Historian (URS Corporation)
Evaluated the recent major restoration of the Frank Lloyd Wright-designed Ennis-Brown House for compliance with Section 106. Performed identification of effect and drafted the finding of no effect to historic properties. *(2011)*

TAVA Development Company, TAVA Development Company Project – Santa Ana, CA
Architectural Historian (URS Corporation)
Reviewed previously completed significance evaluations of a 1910s farmhouse and associated citrus orchard for technical soundness and subsequently prepared a supplemental technical cultural resources memorandum and revised EIR section that reassessed impacts from the proposed undertaking based on the reevaluation that the property is eligible for listing in the Santa Ana Register of Historical Properties (SARHP) as an orchard cultural landscape. The orchard landscape is associated with the citrus orchard business, which was once common in the City but is now rare due to the conversion of most of the City's historic orange orchards to residential and commercial use by the mid- to late twentieth century. *(2011)*

FAA, Oakland International Airport Runway Safety Area Program – Oakland, CA.
Architectural Historian (URS Corporation)
Completed an assessment of the historic-age runways, taxiways, and canal, within the project APE for runway safety area improvements required by the FAA at the Oakland International Airport. Evaluated the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessed effects and impacts from the proposed undertaking; completed DPR 523 series forms; and authored the Historic Architecture Survey Report. *(2011)*

BNSF Mojave Subdivision, Tehachapi Pass, Second Main Track-Bena to Marcel – Kern County, CA.
Architectural Historian (URS Corporation)
Assisted with desktop evaluation of properties in the Project Area Limits (PAL) associated with events in local and state history such as the National Register of Historic Places-listed Nuestra Señora Reina de La Paz, associated with labor rights leader Cesar Chavez. Revised the Historical Resources Evaluation Report (HRER), Archaeological Survey Report (ASR), and Historical Resources Compliance Report (HRCR) in response to reviewer comments. *(2011)*

Caltrans and Los Angeles County Metropolitan Transportation Authority, Interstate 710 Corridor Project between Ocean Boulevard and the State Route 60 Interchange – Los Angeles County, CA.
Architectural Historian (URS Corporation)
As Independent Technical Reviewer, performed a critical review of the Historic Property Survey Report (HPSR) and Historical Resources Evaluation Report (HRER) prepared by Galvin Preservation Associates in compliance with Section 106 of the NHPA and Caltrans's Section 106 PA. The review focused on the content of the work product including, but not limited to the following: overall presentation; appropriate use of charts and graphics, adequacy of supporting calculations and data, and appropriate use of language; adequate Statement(s) of Limitations; compliance with applicable codes and standards; consistency with requirements in the proposal and Project Execution Plan (PXP);

consistency with the project work plan, if one is developed for the project; and validity of the technical approach. A total of 172 historic-period (45 years of age or older) resources were documented and evaluated in the project APE. *(2011)*

BASF Professional Turf and Ornamentals, 10- acre Agricultural Field Office Kekaha Environmental Assessment (EA) – Waimea Ahupua'a, District of Waimea, Island of Kauai, HI.
Architectural Historian (URS Corporation)
Assisted with the drafting of the cultural resources section of the project EA. *(2011)*

Agua Caliente Band of Cahuilla Indians, Research Design and Historic Preservation Management Plan (HPMP) – Palm Springs, CA.
Architectural Historian (URS Corporation)
Assisted with the preparation of an HPMP for tribal lands by peer-reviewing the historic context, drafting the table of built environment property types, and writing management guidelines for those resources. *(2011)*

US Navy, Marine Corps Air Station Chocolate Mountain Aerial Gunnery Range (MCAS CMAGR) Land Withdrawal Renewal – Riverside and Imperial Counties, CA.
Architectural Historian (URS Corporation)
Conducted historic research to identify potential cultural resources in the project APE for the cultural resources section of the Legislative Environmental Impact Statement (LEIS). *(2011)*

BrightSource Energy, Rio Mesa Solar Energy Project – Riverside County, CA.
Architectural Historian (URS Corporation)
Served as the field survey and archival research task lead for an approximately 20,000 acre solar project in the Colorado Desert. Completed determination of eligibility, analysis of integrity, and identification of effect for 30 resources in accordance with the NHPA, NEPA, CEQA, and CEC guidelines. Field survey activities and background research required APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. Architectural history resources recorded included historic-age transmission lines, canals and irrigation ditches, roads, mines, and borrow pits. Author of architectural history portion of cultural resources section of the project Application for Certification (AFC). *(2011)*

Santa Ana and Garden Grove Fixed Guideway – Orange County Transit Authority and Cities of Santa Ana and Garden Grove, CA
Architectural Historian (URS Corporation)
Serve as the field survey task lead, archival research task lead, and technical report and EIS/EIR section author for an approximately four mile proposed streetcar line in the City of Santa Ana. Completing determination of eligibility, analysis of integrity, and identification of effect for approximately 100 resources in accordance with the NHPA,

NEPA, CEQA, and FTA guidelines. Field survey activities and background research required APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, field map and field form creation, and impact analysis. Architectural history resources recorded included a wide range of resources from late nineteenth to late-1970s commercial, residential, institutional, and industrial properties, including an NRHP-eligible steel-truss bridge and two NRHP-listed historic districts as well as numerous locally landmarked and individually NRHP-eligible buildings. *(2011)*

FAA, San Francisco International Airport Runway Safety Area Program – San Francisco, CA.
Architectural Historian (URS Corporation)
Completed an assessment of the historic-age runways, taxiways, canal, and approach-lighting trestles within the project APE for runway safety area improvements required by the FAA at the San Francisco International Airport. Evaluated the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessed effects and impacts from the proposed undertaking; completed DPR 523 series forms; and authored the Historic Architecture Survey Report. *(2011)*

Los Angeles Unified School District, Alameda Transportation Relocation Project, Historical Architecture Assessment – Los Angeles, CA.
Architectural Historian (URS Corporation)
Completed a historic architecture assessment in accordance with CEQA and according to City of Los Angeles criteria for listing as a historical or cultural monument for the proposed relocation of Los Angeles Unified School District facilities (three mid-twentieth century light industrial buildings) in downtown Los Angeles. Performed an intensive architectural history survey, archival research, evaluation, and impact analysis. Authored the letter report. *(2011)*

National Oceanic and Atmospheric Administration (NOAA), Integrated Water Resources Science and Services (IWRSS), University of Alabama Section 106 Compliance – Tuscaloosa, AL.
Architectural Historian (URS Corporation)
Assisted with field methodology planning and photo guidance for a desktop evaluation of eligibility and effect pursuant to Section 106 of the NHPA for buildings associated with the mid-nineteenth century Bryce Hospital (Alabama State Hospital for the Insane) NRHP-eligible historic district. *(2011)*

Caltrans and Alameda Corridor Transportation Authority, HAER, Level II, for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement and SR-47 Expansion Project – Long Beach, CA.
Architectural Historian (URS Corporation)
Task lead for the HAER Level II photo-documentation and written documentation of Heim Bridge within the Port of Los-Angeles-Long Beach to fulfill NHRA Section 106 mitigation requirements. The 1948 steel vertical lift bridge is eligible for listing in the NRHP as one of the

largest vertical lift bridges in the western United States. Project met all Standards and Guidelines of HAER Level II for submission to the Library of Congress and required extensive FHWA, Caltrans, and Port of Los Angeles-Port of Long Beach coordination and consultation. Tasks included project planning (client meetings, site visits, access permits, and contract and engagement with photographer), field work, archival research, report drafting and editing, and archival processing. Project was nominated for a URS Pyramid Award for Technical Excellence. *(2010-2011)*

Caltrans and City of Santa Ana, Bristol Street, Phase 3 and Phase 4 – Santa Ana, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for the City of Santa Ana Public Works Agency for the roadway widening at Bristol Street from Civic Center Drive and Seventeenth Street and from Warner Avenue to Saint Andrew Place. Adapted unique approach for recordation by recording 87 different properties on 43 DPR 523 series based on historic subdivisions and property types to facilitate and streamline compliance. Prepared HPSR, HRER, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Tasks included the development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. *(2010-2011)*

Caltrans and SANDAG, Lenwood Road – Barstow, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for the San Bernardino Associated Governments for the roadway and railroad track grade separation at the Lenwood Road rail crossing. Prepared HPSR, ASR, HRER, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect on forty-one residential and commercial properties associated with Historic Route 66 in San Bernardino County. *(2009-2011)*

Pio Pico Energy Center, LLC, Pio Pico Energy Center, Otay Mesa – San Diego County, CA.
Architectural Historian (URS Corporation)
Performed a historic architecture assessment for a proposed gas plant in San Diego County in accordance with CEQA and CEC guidelines. Conducted archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded two new resources (circa 1909 ranch complex and 1960 ranch-style residence) and re-recorded a third (historic road) on the appropriate DPR 523 series forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. *(2010-2011)*

Caltrans and Riverside County Transportation Department, Clay Street Grade Separation Project – County of Riverside, CA.

Architectural Historian (URS Corporation)
Assisted with the Section 106 Compliance Study for the Riverside County Transportation Department for the roadway and railroad track grade separation at the Clay Street rail crossing. Prepared HPSR and ASR for project per Caltrans/FHWA guidelines, requested records search, tabulated and evaluated the records search results, conducted historic research, and completed DPR 523 forms. *(2009-2011)*

Bethel Energy, L.L.C., Bethel 10 – Imperial County
Architectural Historian (URS Corporation)
Assisted with historic context research and drafting for the environmental review of an alternative energy project in Imperial County. *(2010)*

FEMA, Burbank Library – Burbank, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for an earthquake mitigation assistance project involving a library building. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted the finding of no historic properties. *(2010)*

FEMA, Marcucci – Jackson, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the replacement of a culvert adjacent to NRHP-eligible historic districts. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted DPR 523 series forms and finding memo. *(2010)*

FEMA, Sutter Creek Broad Storm Drain Diversion – Sutter Creek, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the replacement of a culvert and historic-age retaining walls potentially contributors to an NRHP-eligible historic district. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted finding memo. *(2010)*

FEMA, Sonoma County Flood Elevation Program – Sonoma County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for a flood damage mitigation assistance project involving the elevations of early twentieth century residences in Sonoma County. Performed determination of eligibility, analysis of integrity, and identification of effect. Drafted the finding of no historic properties. *(2010)*

FEMA, Napa County Flood Mitigation Assistance, Napa County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for a flood mitigation assistance project involving the elevations of early twentieth century residences in Napa County. Performed determination of

eligibility, analysis of integrity, and identification of effect. Drafted the finding of no historic properties. *(2010)*

FEMA, North Tahoe Roof Replacement – North Tahoe Fire Protection District, CA.
Architectural Historian (URS Corporation)
Prepared a preliminary Section 106 Compliance Study for FEMA for a fire damage mitigation assistance project involving the roof replacements of hundreds of mid-twentieth century recreational residences near Lake Tahoe. Authored a memo for FEMA recommending a project approach, including APE delineation, identification and evaluation methods, Native American consultation and involvement, and specific application of the Secretary of the Interior Standards for Rehabilitation for any identified historic properties. *(2010)*

FEMA, Lake Valley Roof Replacement – Lake Valley Fire Protection District, CA.
Architectural Historian (URS Corporation)
Prepared a preliminary Section 106 Compliance Study for FEMA for a fire damage mitigation assistance project involving the roof replacements of hundreds of mid-twentieth century recreational residences near Lake Tahoe. Authored a memo for FEMA recommending a project approach, including APE delineation, identification and evaluation methods, Native American consultation and involvement, and application of the Secretary of the Interior Standards for Rehabilitation for any identified historic properties. *(2010)*

FEMA, Fairfax Pavilion – Fairfax, CA.
Architectural Historian (URS Corporation)
Assisted with Section 106 Compliance Study for FEMA for an earthquake damage mitigation assistance project a memorial pavilion in Fairfax. Assisted with the determination of eligibility, analysis of integrity, and identification of effect. *(2010)*

FEMA, Lake Elsinore Seismic Retrofit – Lake Elsinore, CA.
Architectural Historian (URS Corporation)
Performed preliminary Section 106 Compliance Study for FEMA for an earthquake damage mitigation assistance project involving the NRHP-eligible Lake Elsinore City Hall buildings. Crafted guidance for the project based on the Secretary of the Interior's Standards for the Treatment of Historic Properties. *(2010)*

FEMA, Cook & Miller Court Complex Seismic Retrofit – Santa Maria, CA.
Architectural Historian (URS Corporation)
Performed preliminary Section 106 Compliance Study for FEMA for earthquake damage mitigation assistance project involving the Cook & Miller Court Complex, a Monterey style complex constructed in 1954. Completed desktop evaluation based on photographs, background research, DPR 523 series forms and findings memorandum. *(2010)*

Caltrans, I-405 Widening – Los Angeles and Orange Counties, CA.

Architectural Historian (URS Corporation)
Assisted the cultural resources task lead with preliminary project planning for the I-405 Widening project in Lose Angeles and Orange Counties. Tabulated records search results, reviewed records search results maps, requested NAHC Sacred Lands File search, and followed-up with Native American tribal contacts. *(2010)*

United States Postal Service, USPS San Diego Midway Processing and Distribution Facility Property – San Diego, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for the proposed disposition of the USPS San Diego Midway Processing and Distribution Facility property, which contained a large 1972 Brutalism and New Formalism-style building. Tasks included the determination of eligibility (including Criterion Consideration G), analysis of integrity, identification of effects, records search, historic research, and drafting of report. *(2010)*

Los Angeles County Metropolitan Transportation Authority (Metro), Westside Subway Extension, Historic Survey Report–Los Angeles, CA.
Architectural Historian (URS Corporation)
Assisted with the architectural history tasks for the Los Angeles Metro Westside Extension project, which involved the planning and design of a heavy-rail subway connecting City of Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles. Conducted archival research, contributed toward historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), identified and evaluated a total of 91 NRHP-listed, -eligible, or contributing resources, and over 200 non-significant historic-period properties (twentieth-century commercial, institutional, and residential buildings and districts) on DPR 523 series forms, evaluated project effects by alternative, proposed mitigation measures, and drafted the technical report. *(2009-2010)*

National Railroad Passenger Corporation (Amtrak), Amtrak Security Enhancement and Police Radio – Sacramento, CA; San Diego, CA; Stockton, CA; Los Angeles, CA, Fullerton, CA; Portland, OR; Seattle, WA; Albuquerque, NM.
Architectural Historian (URS Corporation)
Assisted the West Coast task lead for California, Oregon, Washington, and New Mexico National Historic Preservation Act Section 106 consultation and State Historic Preservation Office (SHPO) coordination regarding Amtrak's receipt of $1.3 billion in American Recovery and Reinvestment Act (ARRA) funds under an expedited timeline for receive ARRA funding. Responsibilities included field assessments/built environment surveys with engineering teams; record searches; development of design guidelines per project based on the Secretary of the Interior's Standards for Rehabilitation; and completion of Section 106 compliance materials (letter reports). Project required extensive coordination with SHPOs (e.g., CA, WA, and NM SHPOs) to ensure Section 106 concurrence (No Adverse Effect to Historic Properties) was received in less than 30 days for each project. In total, project involved

alterations and additions to nearly 7 NRHP-eligible and -listed properties (e.g., Los Angeles Union Station). Project was nominated for a URS Pyramid Award for Innovation. *(2009-2010)*

Apex Energy Group, Pio Pico Energy Center – Chula Vista, CA.
Architectural Historian (URS Corporation)
Performed an intensive architectural history field survey of the project's APE in accordance with CEQA and the CEC guidelines for a proposed gas plant in Chula Vista. Conducted archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded three resources (1897 reservoir and 1919 dam, late-1950s public park facilities, and early twentieth-century livestock pens) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. *(2009-2010)*

Kinder Morgan, Calnev Expansion Project – San Bernardino County, CA.
Architectural Historian (URS Corporation)
Revised the architectural history report including creating an architectural style and property type chronology for the project area pursuant to Section 106 of the NHPA and CEQA. *(2009)*

Tessera Solar, Imperial Valley Solar (formerly Solar II) – El Centro, CA.
Architectural Historian (URS Corporation)
Conducted archival research and compiled findings regarding Juan Bautista de Anza National Historic Trail and historic gravel mines in the project APE and vicinity pursuant to Section 106 of the NHPA, NEPA, and CEQA. Input archaeological field data to DPR 523 form database. (2009)

California High Speed Rail Authority, High Speed Train – Sylmar to Palmdale, CA.
Architectural Historian (URS Corporation)
Assisted with field reconnaissance data analysis, records search review, and cultural resource location map revisions pursuant to Section 106 of the NHPA and CEQA for the high-profile California High Speed Train project. *(2009)*

Lost Hills Solar, Lost Hills – Kern County, CA.
Architectural Historian (URS Corporation)
Researched and drafted the historic context pursuant to CEQA for a solar energy project in Kern County. (2009)

Projects Performed at another Firm

City of San Diego, Barrio Logan Community Plan Update Historical Resources Survey – San Diego, CA.
Historian (Brian F. Smith and Associates, Inc.)
Historian and Task Manager for a 480-property historic reconnaissance survey for the Barrio Logan planning area in the City of San Diego.

Developed historic context, surveyed the project area for all resources older than 1965, collected lot information, evaluated the properties for integrity and historical significance based on City of San Diego and CRHR criteria, assessed the presence of historic districts, identified a Mexican American Cultural Landscape, completed DPR 523 forms, developed a community walking tour, and presented findings in a community meeting. Information was used to update the Barrio Logan Community Plan. *(2009)*

Historic Structure Assessments of the Buildings at 9030 and 9036 La Jolla Shores Lane – San Diego, CA. *Historian (Brian F. Smith and Associates, Inc.)*
Performed historic structure assessments of the residential buildings on two lots in the La Jolla neighborhood of San Diego by conducting field work, archival research, and analysis of integrity. Resulted in a preliminary significance evaluation based on City of San Diego Historical Resources Guidelines and recommendations for further study. (2009)

Rancho Santa Fe Community Association, Osuna Adobe County of San Diego Landmark Nomination – Rancho Santa Fe, CA.
Historian (Brian F. Smith and Associates, Inc.)
Successfully nominated the Osuna Adobe, a Mexican Rancho Period adobe residence, constructed circa 1831, to the County of San Diego Landmark list based on all four County of San Diego cultural resources criteria. Project included field work, photography, literature review, historic title search, archival research, oral interviews, historic context development, determination of eligibility, analysis of integrity, and identification of effect. (2009)

Milley Property Project Cultural Resources Assessment – San Diego, CA.
Historian (Brian F. Smith and Associates, Inc.)
Performed historic structure assessment of the buildings at the Milley Project, which included an early twentieth century Craftsman-style residence, a historic cistern, and landscape features such as stone walls and historic trees. Determined the property to be significant based on architectural value and recommended mitigation measures according to County of San Diego criteria and guidelines. (2008)

Phase II Significance Evaluation of Site CA-RIV-6380H for the Gabrych Pit Project – Riverside County, CA.
Historian (Brian F. Smith and Associates, Inc.)
Served as historian on a team of cultural resource specialists that updated documentation regarding a historic 1920s water trench and associated features that may be associated with the first historic water conveyance system in the Palm Springs area. Conducted archival research and drafted recommendations of significance based on County of Riverside guidelines and mitigation recommendations. (2008)

Historical Resource Research Report for the Klemm Residence Project – San Diego, CA.

Historian (Brian F. Smith and Associates, Inc.)
Completed a historic structure research report of a mid-century Modern Ranch-style residence in the La Jolla neighborhood of San Diego, California. Property was owned by architect William Lumpkin, renown for his southwestern adobe-style designs. Conducted field work, archival research, historic title search, and determination of integrity and significance. Report submitted to the City of San Diego Historical Resources Board. (2007)

Mitigation Supplement for the Kelly Ranch House on the Robertson Ranch Project, Modified HABS – Carlsbad, CA.
Historian (Brian F. Smith and Associates, Inc.)
Modified HABS study of the Kelly Ranch House, a late nineteenth century Folk Victorian residence, associated with the Kelly Ranch in Carlsbad, California. Photographs, sketches of the four elevations, archival research, and architectural descriptions were completed, as requested by the City of Carlsbad. (2007)

Concordia Lutheran Church Project Redesign Impacts – Chula Vista, CA.
Historian (Brian F. Smith and Associates, Inc.)
Completed a historic structure research report of a mid-century Contemporary-style church and associated buildings in Chula Vista, California. Conducted field work, archival research, and determination of integrity and significance. (2007)

Mitigation Monitoring Report for the Breeza Project – Downtown San Diego, CA.
Historian (Brian F. Smith and Associates, Inc.)
Co-author of the Breeza Project mitigation monitoring report. Reviewed monitoring findings, completed DPR 523 series forms, identified two early twentieth century Chinese-style hearths associated with a Chinese laundry previously on the site, and drafted text of the report. (2007)

Cultural Resources Study for the SDSU 2007 Campus Master Plan Revision – San Diego, CA.
Historian (Brian F. Smith and Associates, Inc.)
Performed field survey and architectural study of several San Diego State University campus buildings to be affected by Master Plan revisions. Drafted recommendations for treatment of the historic properties. (2007)

Cultural Resource Report for the Frulla-Fallbrook Ranch Project – County of San Diego.
Historian (Brian F. Smith and Associates, Inc.)
Completed a historic structure research report of a mid-century Spanish Colonial Revival residence and associated landscape in Fallbrook, California. Reviewed field work data, conducted archival research, developed historic context and architectural description, and determined integrity and significance. (2007)

Employment History

2009 to Present	URS Corporation, Architectural Historian
2006 to 2009	Brian F. Smith and Associates, Inc., Historian

Specialized Training

Maryland State Highway Administration, "Section 4(f) Overview," 2011

California Preservation Foundation, "Historic Context Statements Workshop," 2011

California Preservation Foundation, "Historic American Landscape Survey (HALS) Training," 2010

National Trust for Historic Preservation, Annual Conference, 2009

City of San Diego, "Best Practices in Historic Preservation Seminar," City of San Diego, 2008

Speaking Engagements

History Colorado and National Park Service, Cultural Landscapes in the Western United States Workshop, "Preserving the Barrio: Identification and Evaluation of the Mexican American Cultural Landscape in San Diego, California," 2011

Goucher College, Master of Arts in Historic Preservation Symposium, "Fundamental Transformation: The Management of South Africa's Heritage for Nation Building in the Post-Apartheid Era," 2011

Heritage South Africa Symposium, "Research Topics in Post-Apartheid South African Cultural Heritage Policy," 2010

Goucher College, Master of Arts in Historic Preservation Symposium, "Preservation of the Barrio: A Mexican American Cultural Landscape in Barrio Logan, San Diego, California," 2009

Publications

"The Civilization Fund Act of 1819," *Clio* 17 (2007): 187-208. California State University, Sacramento, Department of History. 2007.

Awards

Stephen K.F. and Katharine W. Lee Thesis Prize, 2011**.** "A Fundamental Transformation: The Management of South Africa's Heritage for Nation Building in the Post-Apartheid Era." Goucher College.

Stephen K.F. and Katharine W. Lee Prize, 2009**.** "Preservation of the Barrio: A Mexican American Cultural Landscape in Barrio Logan, San Diego, California," Goucher College, 2008.

History Department Undergraduate Scholarship, 2004**.** California State University, Sacramento.

Professional Societies/Affiliates

National Trust for Historic Preservation

Vernacular Architecture Forum
Preservation Action
California Preservation Foundation
San Diego History Center
Save Our Heritage Organisation
Phi Alpha Theta, History Honor Society
Phi Kappa Phi, Honor Society
Golden Key, Honor Society

Contact Information

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(301) 820-3185
Melanie.Lytle@URS.com

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APPENDIX

C-3

SHPO CONCURRENCE

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OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
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March 05, 2012

Reply In Reference To: FAA120117A

David B. Kessler, AICP
Federal Aviation Administration
P.O. Box 92007
Los Angeles, CA 90009-2007

RE: Runway 7L/25R Safety Area Improvement, Runway 7L/25B and Taxiway B Reconstruction, and Ground Support Maintenance Construction, Los Angeles International Airport (LAX), Los Angeles County, CA

Dear Mr. Kessler:

Thank you for initiating consultation with me on behalf of the Federal Aviation Administration (FAA) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation at 36 CFR Part 800. You are asking that I concur that the Area of Potential Effects (APE) for this undertaking has been adequately determined.

The city of Los Angeles, through its Airport's office of Los Angeles World Airports (LAWA) and the FAA, is preparing federal environmental documentation for proposed safety and other construction work at LAX. The undertaking includes the shifting of Runway 7R/25L 832 feet to the west in order to create a Displaced Threshold on the western end of the Runway 7L/25R. The eastern portion of Runway 7L/25R and the parallel Taxiway B will also be reconstructed. The anticipated depth of ground disturbance is approximately three to four feet below ground level.

As part of the Taxiway B extension project, the existing Air Freight Building No. 8 will be demolished. The area currently beneath Building No. 8 will be used as a parking apron. A new Maintenance Building will also be constructed. The anticipated depth of ground disturbance for this project component is approximately ten feet below ground level.

You define the direct APE as the construction areas and a 1,000 foot buffer zone at the end of Runway 7L/25R. The Indirect APE is the entirety of LAX.

Having reviewed your submittal, I concur that the APE, as described in your letter and depicted on the accompanying map, has been properly determined and documented pursuant to 36 CFR Parts 800.4. I understand that you will resume consultation once you have undertaken further identification efforts, including the outcome of Native American consultation and your opinion as to whether this undertaking has the potential to affect historic properties.

FAA120117A

Thank you for considering historic properties as part of the project planning process. I look forward to consulting with you on future aspects of this project. If you have any questions or comments, please contact Tristan Tozer of my staff at (916) 445-7027 or by email at ttozer@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

OFFICE OF HISTORIC PRESERVATION
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September 20, 2012

Reply In Reference To: FAA120117A

David B. Kessler, AICP
Regional Environmental Protection Specialist
Western-Pacific Region Airports Division
Federal Aviation Administration
P. O. Box 92007
Los Angeles, California 90009-2007

RE: Section 106 Consultation for the Proposed Runway 7L/25R Safety Area Improvement and Runway 7R/25L and Taxiway B Pavement Reconstruction, and Ground Support Maintenance Building Construction Project, Los Angeles International Airport, Los Angeles, Los Angeles County, California

Dear Mr. Kessler:

Thank you for consulting with me. You do so on behalf of the Federal Aviation Administration (FAA) in order to comply with Section 106 of the *National Historic Preservation Act of 1966* (16 U.S.C. 470f), as amended, and its implementing regulation at 36 CFR Part 800. In your letter of July 18, 2012, you stated that the proposed undertaking is located at the Los Angeles International Airport in Los Angeles, California. The proposed undertaking would include the following actions: (a) construction of 832 feet of runway pavement on the west end of Runway 7L/25R to be used as a displaced threshold for departures and landings to the East; (b) full reconstruction of the eastern portion of Runway 7L/25R and parallel Taxiway B pavement that was poured in the mid-1980s; (c) as part of the Taxiway C extension project, the existing Air Freight Building no. 8 (Building) will be demolished and replaced with aircraft parking apron pavement, and (d) construction of a new 2-story, 60,000 square feet Ground Support Equipment building.

You requested that I concur with your determination that the above-referenced undertaking will not affect historic properties.

As documentation for your determination, you provided a report entitled, *Cultural Resources Evaluation Report – Proposed Runway 7L/25R Runway Safety Area (RSA) Project and Associated Improvements, Los Angeles International Airport*, dated July 2012. After conducting a limited (i.e., because of FAA's security reasons) pedestrian survey of the area of potential effects (APE) and a records review at the South Central Coastal Information Center, you have concluded that there were three archaeological or historical resources located within the APE. Of those three resources, one was prehistoric (i.e., 19-000691 – a prehistoric shell scatter along the base of a steep hill) and two were historic (i.e., Runway 7L/25R and its related features, and the Building proposed for demolition). The pedestrian survey failed to identify any cultural material at the recorded site of 19-000691 and noted that the site had

been extensively disturbed by construction at the airport. Runway 7L/25R and its related features were originally built in the 1940s and have been considerably altered by repaving and reconstruction since then, most recently in 1986. The Building was initially constructed between 1964 and 1969 and since then, it has been altered significantly with the addition of non-historic materials and other features such as security gates. Consequently, you concluded that none of the three resources were eligible for listing on the National Register of Historic Places.

After contacting the Native American Heritage Commission (NAHC), you contacted the tribes, identified by NAHC, in letters sent on March 12, 2012. In response to those letters, the Tongva Ancestral Territorial Tribal Nation responded in an email that it would respond fully at a later date and that it considered the project site to be located in an area that is "very sensitive with numerous cultural resources documented and some that are not". No further reply was received from the tribe nor did it request the use of Native American monitors during ground disturbing activities.

Having reviewed the information submitted with your letter, I offer the following comments:

- I concur that the description of the APE is appropriate.
- I concur with your determination that the three resources located in the APE are not eligible for listing on the National Register of Historic Places.
- I concur that the undertaking, as described, will not affect historic properties.

Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have additional future responsibilities for this undertaking under 36 CFR Part 800. Should you encounter cultural artifacts during ground disturbing activities, please halt all work until a qualified archaeologist can be consulted on the nature and significance of such artifacts.

Thank you for considering historic resources during project planning. If you have any questions or comments, please contact Tristan Tozer of my staff at (916) 445-7027 or by email at ttozer@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

APPENDIX

D

BIOLOGICAL ASSESSMENT

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APPENDIX D
BIOLOGICAL ASSESSMENT

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

(PAVEMENT RECONSTRUCTION OF PORTIONS OF RUNWAY 7L/25R AND TAXIWAY B, EASTERLY EXTENSION OF TAXIWAY C, DEMOLITION OF AIR FREIGHT BUILDING NO. 8, AND REPLACEMENT GROUND SUPPORT EQUIPMENT FACILITY)

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:

URS Corporation
Los Angeles, CA

September 2012

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EXECUTIVE SUMMARY

Project Description

The City of Los Angeles, through its aviation department Los Angeles World Airports (LAWA), is proposing safety-related and other improvements at the Los Angeles International Airport (LAX). LAWA proposes to construct improvements to the Runway Safety Area (RSA) for Runway 7L/25R, reconstruct sections of Runway 7L/25R and Taxiway B, extend Taxiway C, demolish Air Freight Building 8, and construct a replacement Ground Support Equipment (GSE) maintenance building. 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 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, to meet Federal Aviation Administration (FAA) airport design standards by December 31, 2015. The Runway 7L extension would increase the physical length of Runway 7L/25R from 12,091 feet to 12,923 feet. In conjunction with the additional runway pavement, LAWA would implement the use of declared distances on Runway 7L/25R to allocate pavement at each end of the runway (along with the graded RSA areas) to provide an equivalent RSA for aircraft arrival and departure operations. The new pavement would be used by pilots to begin their takeoff roll to the east in conjunction with declared distances. Therefore, the runway length available to a pilot would not increase as a result of the construction of the 832-foot long Displaced Threshold. This approach allows LAWA to satisfy RSA requirements without substantially affecting the amount of runway currently available for take-off and landing operations. Operationally, the Proposed Action would not change arrival and departure locations or taxi times.

Purpose of this Biological Assessment

The purpose of this Biological Assessment (BA) is to review and analyze the impacts the Proposed Action would have on federally-listed threatened or endangered species and designated or proposed critical habitats protected under the *Endangered Species Act* (ESA) *of 1973*. The following federally listed species are known to occur, or have been recorded, in the vicinity of the Biological Resource Study Area (BRSA) delineated for the Proposed Action: Coastal Dunes Milk-Vetch (*Astragalus tener* var. *titi*); Ventura Marsh Milk-Vetch (*Astragalus pyncnostachys* var. *lanosissimus*); San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*); California Orcutt Grass (*Orcuttia californica*); El Segundo Blue Butterfly (*Euphilotes battoides allyni*); Riverside Fairy Shrimp (*Streptocephalus woottoni*); California Gnatcatcher (*Polioptila californica californica*); California Least Tern (*Sterna antillarum browni*); Southwestern Willow Flycatcher (*Empidonax extimus traillii*); Western Snowy Plover (*Charadrius alexandrines nivosus*); and Pacific Pocket Mouse (*Perognathus longimembris pacificus*). Of these species there is only marginal habitat for California Orcutt Grass and El Segundo Blue Butterfly; however, neither species has been recorded within the BRSA.

Conclusion

After reviewing the current status of these species and the effects of the Proposed Action, the FAA has determined that the Proposed Action would have *no effect* on any federally listed plant or wildlife species. No federally-listed plant or wildlife species, or critical habitat for these species, were identified as present on the airport property.

INTRODUCTION

Section 7 of the *Federal Endangered Species Act* (FESA) *of 1973* directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the Secretary (i.e., United States Fish and Wildlife Service [USFWS] and/or National Marine Fisheries Service), ensure that any action authorized, funded, or carried out by such agency does not jeopardize listed species or destroy or adversely modify critical habitat. Section 7 applies to management of federal lands as well as other federal actions that would affect listed species such as federal approval of private activities through the issuance of federal permits, licenses, or other actions.

The City of Los Angeles, through its aviation department, LAWA, has proposed improvements to the Runway 7L/25R RSA at LAX to meet FAA airport design standards, to comply with provisions of 14 CFR Part 139 certification, and to meet a congressionally-mandated schedule for the completion of required RSA improvements. LAWA has also proposed other improvements, including the reconstruction of sections of Runway 7L/25R and Taxiway B pavements, extension of Taxiway C, demolition of the Air Freight Building No. 8, and construction of a replacement GSE maintenance building. Collectively, these projects are referred to in this BA as the "Proposed Action." LAWA is seeking the FAA's unconditional approval of portions of the LAX Airport Layout Plan (ALP) depicting the proposed projects and necessary federal actions for processing applications for federal funding of the projects qualifying under the Airport Improvement Program and/or through the use of Passenger Facility Charges. Because of the requested federal approvals and actions, the FAA is preparing this BA to review and analyze the impacts the Proposed Action would have on federally-listed threatened or endangered species and designated (or proposed) critical habitat protected under the ESA.

This BA identifies the potential environmental biological effects that would result from implementation of the construction and operation of the Proposed Action.

An extensive literature search was performed, including resource management plans and other available documents containing pertinent information on the species discussed in this BA.

Project Site Location

The action site is located within the boundaries of the LAX. 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 (**Figure D-1**).

For the purposes of this assessment, the Biological Resource Study Area (BRSA) was defined as the footprints of the areas of direct disturbance plus a 250-foot buffer from the footprint area (**Figure D-2**) to address the potential indirect effects based on construction activities (i.e. dust, noise, etc.).[1] The BRSA is a discontiguous area, and would allow for the adequate assessment of the direct, indirect, and cumulative effects of the Proposed Action on potential sensitive species known to exist in the general vicinity of

[1] 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

LAX. The action site footprint is a discontiguous 10-acre area, and includes two proposed temporary construction staging areas (combined equaling 6 acres).

The BRSA is located within the San Bernardino meridian, Sections 1, 2, 3 Township 35 North, and Range 15 West and Sections 6 and 8, Township 35, and Range 14 West of the Venice and Inglewood United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle Maps (USGS, 1981) . Surrounding land uses include densely developed residential, commercial, and industrial areas, public infrastructure, and a large open space area (The El Segundo Blue Butterfly Habitat Restoration Area and Dockweiler Beach State Park) located to the west of LAX.

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

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

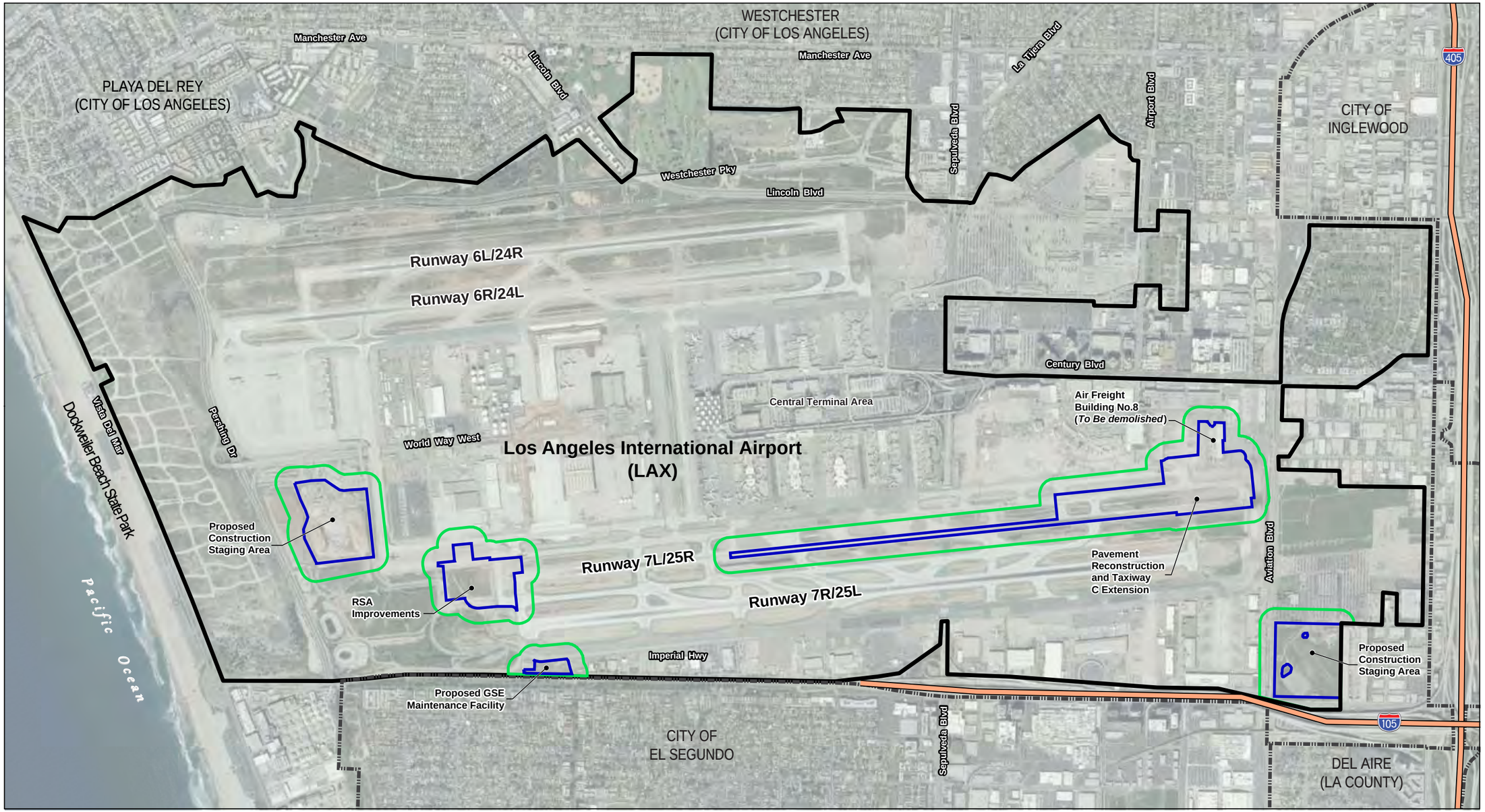
Los Angeles International Airport

0 1600 ft. north

1" = 1600 feet

LEGEND

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



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

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

Existing Airport Layout and Study Areas

FIGURE
D-2

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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 electronic navigational aids – an Instrument Landing System (ILS) consisting of the localizer array providing horizontal guidance to the runway and the Glide Slope providing vertical guidance. The Runways are also equipped with visual aids including the Approach Lighting System (ALS). 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 D-3**).

Existing Pavement at Eastern Portions of Runway 7L/25R and Taxiway B

Most aircraft that utilize the South Airfield for departure begin that process on Runway 25R and its connecting taxiways (**Figure D-4**). As such, this section 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 sections of the runway and taxiway pavements are in poor (0) to fair (70) condition (HNTB 2011). Through implementation of the Proposed Action, LAWA intends to reconstruct sections of the concrete surfaces on the eastern side of Runway 7L/25R and Taxiway B that are in poor condition.

Air Freight Building No. 8 and Site of Proposed Taxiway C Extension

Parallel Taxiway B provides the primary access to the Runway 25R threshold for departing aircraft and is heavily used each day, all day (**Figure D-4**). Parallel Taxiway C, which provides access to the central and eastern portions of the Century Cargo Complex, is bounded to the east by an airport service road and Air Freight Building No. 8. Taxiway C does not connect to Taxiway B1, which is used access the easternmost portion of the Century Cargo Complex. Currently, air cargo aircraft use the easternmost section of Taxiway B to access Taxiway B1 and the easternmost buildings of the Century Cargo Complex.

The existing Air Freight Building No. 8 is currently used to store and maintain GSE. The location of Air Freight Building No. 8 is convenient for the transport of GSE as needed during operations as there is direct access to taxiways and runways in the South Airfield from this building (**Figure D-4**). Air Freight Building No. 8 is bound on the south by a service road north of Taxiway C. The proposed Taxiway C extension between Taxiways C1 and B1 would require realignment of the service road northward, which would place it going through the existing Air Freight Building No.8.

1.1.4 Site of Proposed Replacement GSE Maintenance Facility

The site of the proposed replacement GSE Maintenance Facility currently is occupied by seven non-permanent structures (trailers and sheds) used for offices and other airport-related uses. The site is accessible from Imperial Highway at the Main Street intersection. Controlled access to the service road and South Airfield is provided by a security gate. The site is paved and relatively flat, and a portion of it is currently used for automobile parking, although it has no marked parking spaces (**Figure D-5**).

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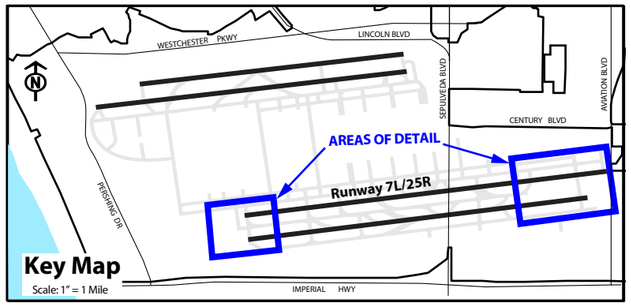
Los Angeles International Airport



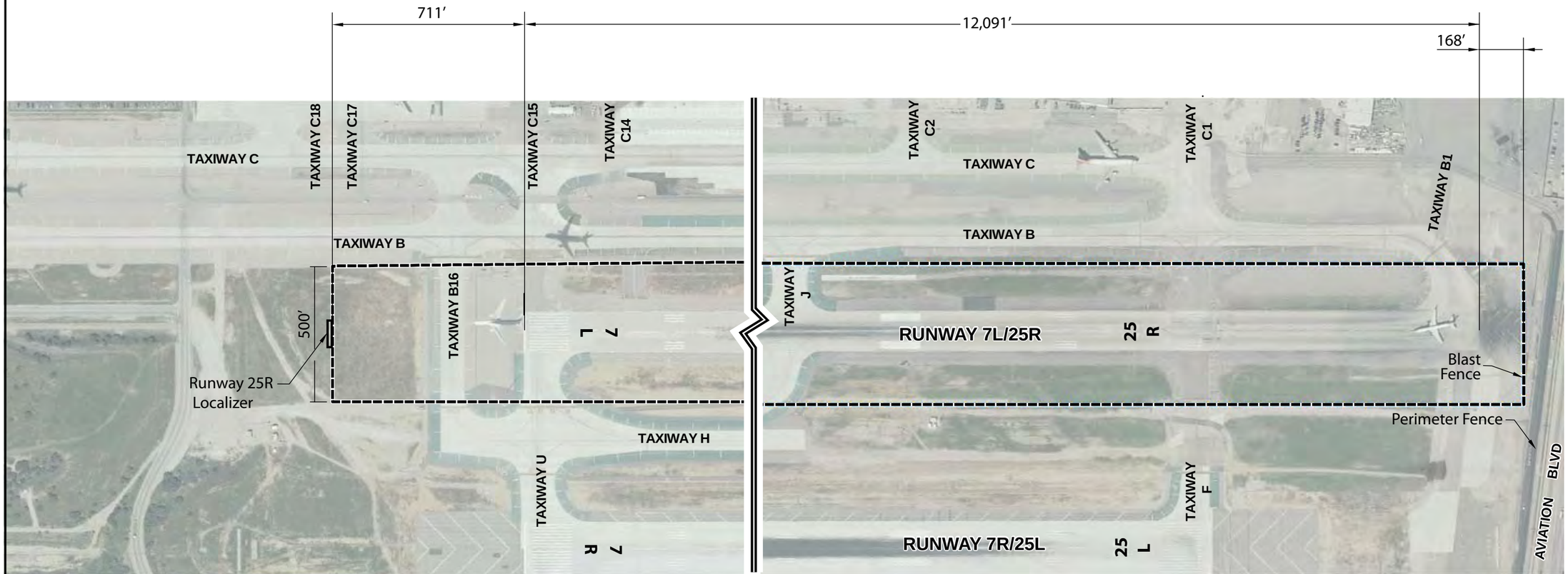
LEGEND

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.

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

Existing Runway 7L/25R RSA

FIGURE
D-3

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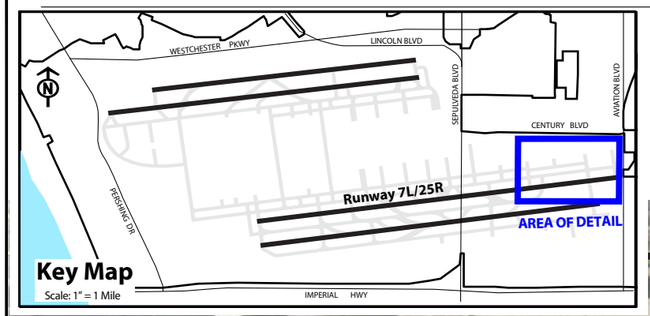

Los Angeles International Airport

LEGEND

Airport Property Boundary

0 300 ft.

1" = 300 feet

north

CENTURY BLVD

AIRPORT RD

INTERNATIONAL RD

AVION DR

CENTURY CARGO COMPLEX

AIR FREIGHT BUILDING NO. 8

AVIATION BLVD

TAXIWAY C1

PERIMETER FENCE

TAXIWAY C3

TAXIWAY C2

SERVICE ROAD

TAXIWAY B1

TAXIWAY C

BLAST FENCE

TAXIWAY B

RUNWAY 25R

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

Existing Runway 25R and Century Cargo Complex

FIGURE D-4

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

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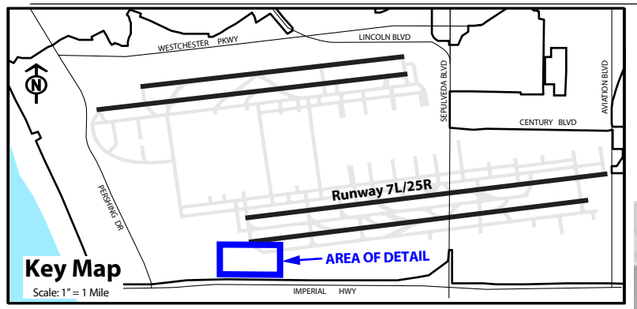
Los Angeles International Airport

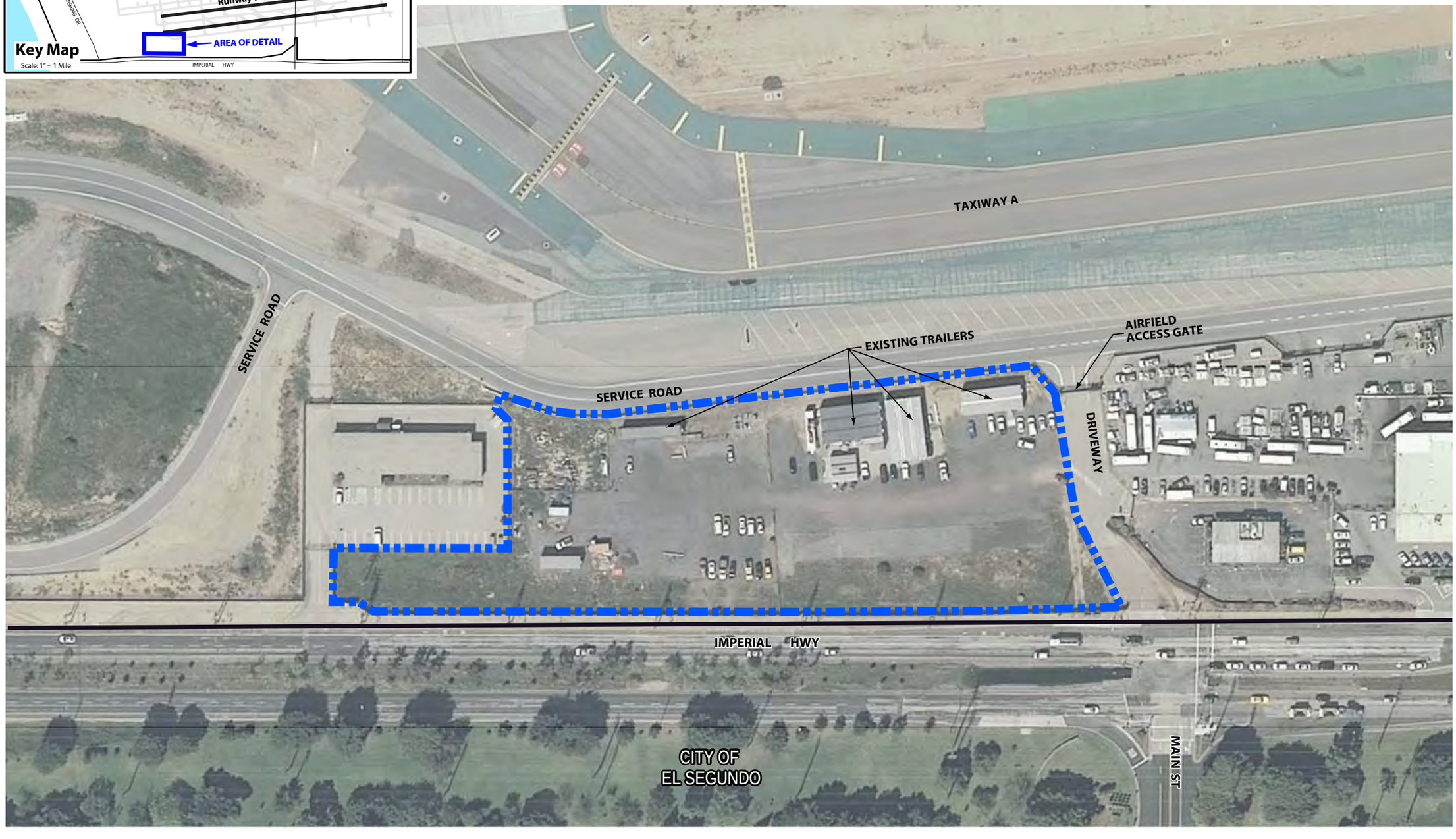


LEGEND

- Airport Property Boundary
- Proposed GSE Maintenance Facility Site

0 — 100 ft. — north

1" = 100 feet



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.

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

Proposed Ground Support Equipment Maintenance Facility Site

FIGURE
D-5

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Proposed Action Description

The Proposed Action would improve the RSA for Runway 7L/25R, reconstruct sections of Runway 7L/25R and Taxiway B, extend Taxiway C, demolish Air Freight Building 8, and construct a replacement GSE maintenance building at LAX.

Runway 7L/25R RSA Improvements

The Runway 7L/25R RSA improvements primarily involve the west end of Runway 7L (**Figure D-6**). 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;
- Construct an RSA, approximately 500 feet wide by 168 feet long, beyond the new Runway 7L runway end;
- Construct a blast pad west of the Runway 7L extension;
- Extend 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 C;
- Reconstruct a portion of Taxiway B at the intersection with new Taxiway B17;
- Relocate the existing Localizer Antenna and blast fences to the west;
- Install in-pavement approach lighting system (ALS) in the footprint of the extended Runway 7L; 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 will be used by pilots to begin their takeoff roll towards the east, and will 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 not increase as a result of the construction of the 832-foot long Displaced Threshold.

The existing Runway 25R localizer antenna array, a component of the Instrument Landing System (ILS) that provides runway centerline guidance to landing aircraft, would be relocated approximately 285 feet from the new end of Runway 7L. The existing localizer equipment shelter would not need to be relocated. New blast fences would be installed west of the extended 7L Runway to protect an existing service road from jet blast.

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

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

Operationally, the RSA improvements would not change arrival and departure locations or taxi times.

Pavement Reconstruction of the Eastern Portions of Runway 25R and Taxiway B

Pavement reconstruction activities under the Proposed Action would be undertaken at the locations listed below and shown in **Figure D-7**:

- Full-depth reconstruction of existing pavement from the Runway 25R threshold to Taxiway F (1,225 feet long by 150 feet wide by approximately 6 feet deep);
- Full-depth reconstruction of the keel (center) section of Runway 7L/25R from Taxiway F westward to Taxiway J (1,328 feet long by 50 feet wide by approximately 6 feet deep);
- Replace existing pavement surface of the keel (center) section of Runway 7L/25R keel from Taxiway J west to the Taxiway N (5,986 feet long by 50 feet wide);
- Full-depth reconstruction of Taxiway B, from Taxiway C3 to its terminus near the Runway 25R threshold, including connecting taxiways (3,173 feet long by 176 feet wide by approximately 6 feet deep); and,
- Installation of in-pavement approach lights

Extension of Taxiway C and Demolition of Air Freight Building No. 8

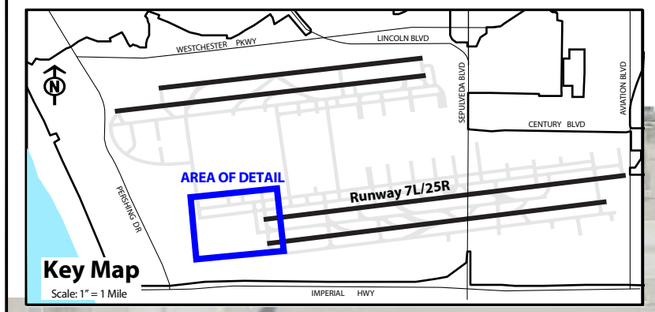
Taxiway C would be extended eastward from Taxiway C1 to Taxiway B1 (**Figure D-7**). Elements of the extension of Taxiway C include:

- Realign and extend Taxiway C approximately 960 feet eastward to Taxiway B1. The centerline of the new section of Taxiway C would have a separation distance of approximately 281 feet from the centerline of Taxiway B;
- Realign a portion the vehicle service road north of the Taxiway C extension;
- Demolish Air Freight Building No. 8 to accommodate the realigned service road; and,
- Pave the site of the demolished Air Freight Building No. 8 and the area around this site with apron pavement suitable for aircraft parking.

Replacement GSE Maintenance Facility

The replacement GSE Maintenance Facility would be located on a 2.86-acres site along Imperial Highway, to the south of Taxiway A (**Figure D-8**). Elements of the new GSE Maintenance Facility include:

- Removal and relocation of seven temporary structures (trailers) present at the proposed replacement GSE Maintenance Facility site to other parts of the Airport property;
- Removal of existing concrete;
- Grading and excavation (maximum 10 feet) for foundation;
- Installation of utilities; and
- Construction of a 60,000-square-foot, 2-story GSE maintenance building.



Legend

Existing Runway Safety Area | New Runway Pavement | Taxiway Improvements | RSA Extension

Los Angeles International Airport

0 200 ft.

1" = 200 feet

north

TAXIWAY C

TAXIWAY B17

TAXIWAY B

TAXIWAY U

Area to Install Blast Fences

Relocated Localizer Antenna

Decommissioning of Taxiway B16

Existing Runway Threshold/ Proposed Displaced Threshold Location

7L

TAXIWAY H

TAXIWAY U

7R

RUNWAY SAFETY AREA EXTENSION = 168'

RUNWAY 7L/25R EXTENSION = 832'

RUNWAY SAFETY AREA = 1000'

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.

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

Runway 7L/25R RSA Improvements

FIGURE
D-6

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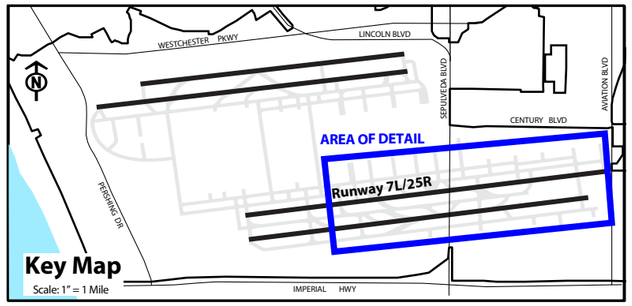
Los Angeles International Airport

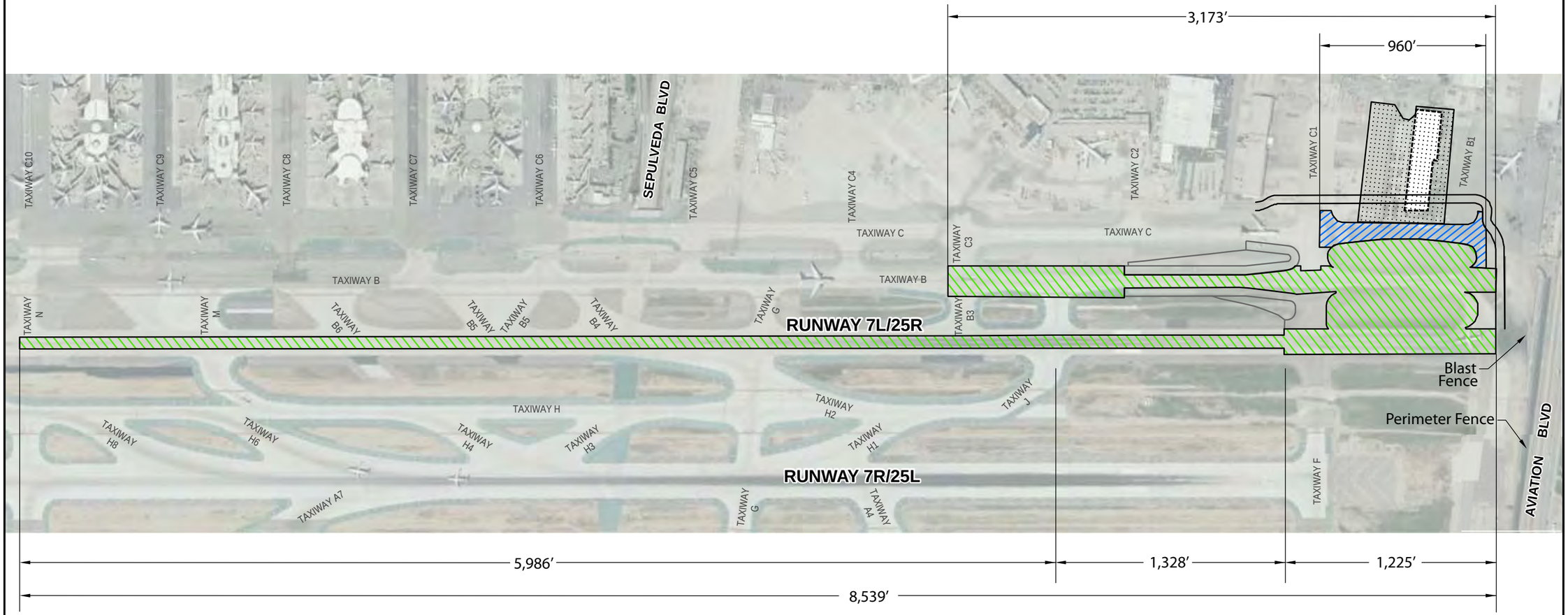


0 1000 ft.
1" = 1000 feet
north

LEGEND

PAVEMENT RECONSTRUCTION PROJECT
- Pavement Reconstruction

TAXIWAY C EXTENSION
- Taxiway C Extension
- Existing Air Freight Building No. 8 (To Be Demolished)
- New Aircraft Parking Apron
- Relocated Access Road



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 January 2012 ; Prepared by: URS Corporation.

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

Runway 25R and Taxiway B Pavement Reconstruction and Taxiway C Extension

FIGURE
D-7

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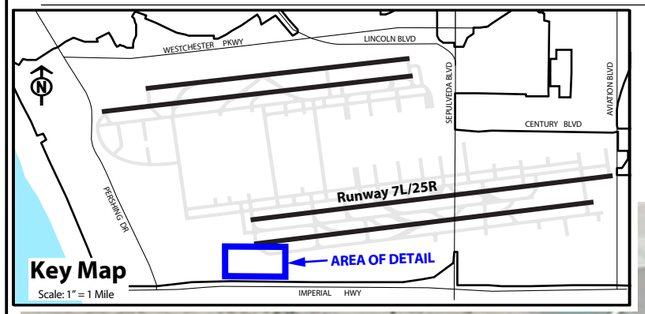
Los Angeles International Airport

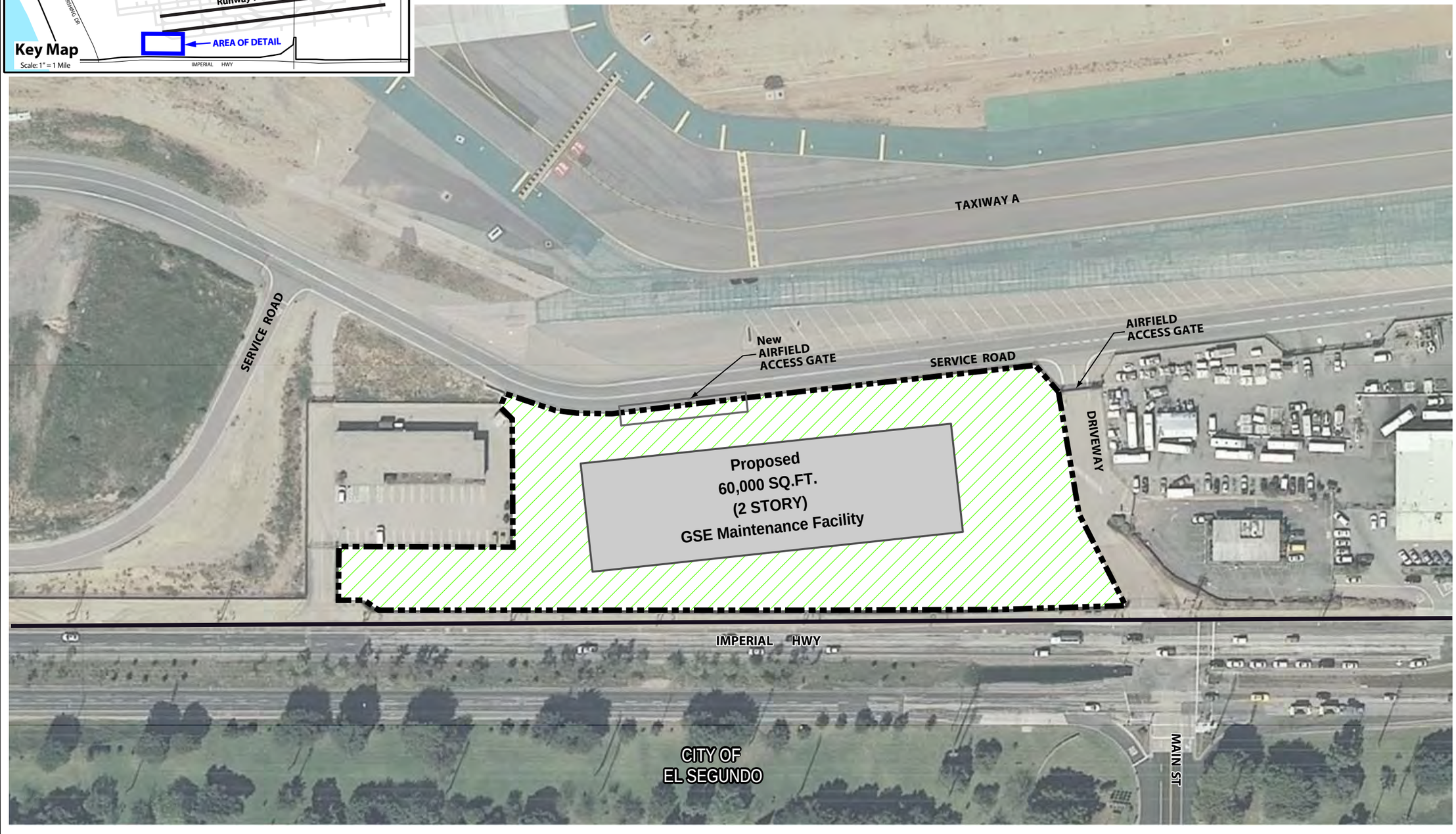
LEGEND

- Airport Property Boundary
- Proposed GSE Maintenance Facility
- Proposed Building Footprint

0 — 100 ft. — north

1" = 100 feet





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.

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

Proposed Ground Support Equipment Maintenance Facility

FIGURE
D-8

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SPECIES CONSIDERED

Listed Species Potentially Affected

This section considers species protected under ESA. Consultation of 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 BRSA was conducted to get a comprehensive understanding of the potential for occurrence of protected species. Some of these resources included the USFWS Critical Habitat Mapper and File data (USFWS 2012a), the Ventura Field Office Species List for Los Angeles County (USFWS 2012b), and the Carlsbad Field Office Species List for Los Angeles County (USFWS 2012c). The California Department of Fish and Game's (CDFG) Natural Diversity Database (CDFG 2012) and California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2012) file data were also queried for records of occurrence of special-status species and habitats within the Venice and Inglewood USGS 7.5-minute Topographic Quadrangle Map (USGS 1981). The pertinent documents, scientific studies, technical publications, and resource specialists consulted included, but were not limited to, the following:

- LAX Master Plan Final EIS/EIR
- LAX Master Plan Final EIS/EIR, Appendix J1. Biological Assessment Technical Report 2001 Sapphos Environmental, Inc.
- 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) 2010 Annual Progress Report

From these sources, a list of 11 federally-listed sensitive species that have the potential for occurring in the BRSA was compiled (Tables 2-1 and 2-2). Based on a review of the distribution and habitat requirements for these species and the site conditions, it was determined that the BRSA does not support habitat for seven of the 11 species. The remaining four species were evaluated further and are described in the following sections.

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 around the LAX area. There is limited habitat potential for this species within the non-native grasslands that occur throughout the BRSA where water tends to pond after significant rain events. No record of observation for this species has been found within the BRSA (CDFG 2012). The Proposed Action would have *no effect* on this species.

El Segundo Blue Butterfly

The El Segundo Blue Butterfly (*Euphilotes battoides allyni*) was federally-listed as endangered on June 8, 1976. The species is found on coastal 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 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 BRSA. There is no habitat for the host plant, Coastal buckwheat, within the BRSA as a majority of the 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. The Proposed Action would have *no effect* on this species.

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 (USFWS 2005). This species is confined to pools that are generally deep (greater than 30 centimeters) (Hathoway and Simovich 1996). Development and maturation are much slower in this species than in other Fairy Shrimp, with an average of 7 to 8 weeks to fully mature (Hathoway and Simovich 1996). 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 (Gonzalez et al. 1996; Hathaway and Simovich 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 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 adult shrimp could not be confirmed during surveys conducted in 1997 and 1998 (Sapphos 2001). 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 (USFWS 2004). There is no suitable habitat for this species within the BRSA. Given the lack of a potential habitat for this species, Riverside Fairy Shrimp would not be present within the BRSA. The Proposed Action would have *no effect* on this species.

Table D-1
Listed Plant Species Potential for Occurrence within the Biological Resources Study Area

Scientific / common name	Habitat and distribution	Flowering season	Designation	Potential for Occurrence/ Local Status
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 for the species is limited to the fore dune, west of the Los Angeles/El Segundo Dunes immediately adjacent to Vista del Mar Boulevard. The Proposed Action would not affect foredune habitat.	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 meters elevation.	Apr-Jun	FC SE	*Absent* BRSA is below normal elevation range for this species

Table D-1
Listed Plant Species Potential for Occurrence within the Biological Resources Study Area

Scientific / common name	Habitat and distribution	Flowering season	Designation	Potential for Occurrence/ Local Status
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 Colonet and in pools in San Quentin. The nearest record for this species is 6 miles east 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	*Low* Only marginal habitat exits for this species within the BRSA. Species has not been historically documented within the BRSA

Notes:
Federal designations: (Federal Endangered Species Act, USFWS): FE: Federal-listed, endangered; FT: Federal-listed, threatened.
State designations: (California Endangered Species Act, CDFG): SE: State-listed, endangered; ST: State-listed, threatened.
Source: California Natural Diversity Database, 2012; Sapphos 2001; FAA and LAWA 2005

Table D-2
Listed Wildlife Species and their Potential for Occurrence within the Biological Resources Study Area

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status
		USFWS	CDFG	
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 2010 range from 110,000 –120,000 butterflies.	FE	None	*Absent* No Coastal buckwheat exits for 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. Viable cysts of the Riverside Fairy Shrimp were observed in imported fill soil on the western portion on the LAX property during focused surveys conducted in 1997; however presence of adult shrimp could not be confirmed during surveys conducted in 1997 and 1998 (Sapphos 2001). 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 (USFWS 2004).	FE	None	*Absent* No suitable habitat for this species exists within the BRSA

Table D-2
Listed Wildlife Species and their Potential for Occurrence within the Biological Resources Study Area

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status
		USFWS	CDFG	
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 and the surrounding area
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 3 miles north of the LAX Master Plan boundaries. Observed as a seasonal visitor to waters offshore of Dockweiler State Beach. This species is not known to breed within the LAX Master Plan boundaries or Los Angeles/El Segundo Dunes.	FE	SE	*Absent* This species was determined absent within the LAX Master Plan Boundaries and the Los Angeles/El Segundo Dunes as a result of directed surveys performed in summer 1998 and 2000.
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 LAX Master Plan boundaries or Los Angeles/El Segundo Dunes. Therefore, this species is not further addressed in this document.	FE	SE	*Absent* This species was determined absent within the LAX Master Plan Boundaries 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	None	*Absent*

Table D-2
Listed Wildlife Species and their Potential for Occurrence within the Biological Resources Study Area

Species Common Name/ *Scientific Name*	Habitat Description	Designation		Potential For Occurrence/ Local Status
		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	None	*Absent* No suitable habitat exists within the BRSA. This species was determined to be absent within the Los Angeles/El Segundo Dunes as a result of directed surveys performed in 1995, 1996, 1997, 1998, 1999, and 2000.

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 Natural Diversity Database, 2012; Sapphos 2001; FAA and LAWA 2005

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ENVIRONMENTAL SETTING

Vegetation communities within the surveyed BRSA include mule fat scrub, non-native grassland, and ornamental. Cover types include disturbed/developed (**Figure D-9**). Each of these communities and cover types is briefly discussed below.

Vegetation Communities and Cover Types

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 BRSA varied, but generally included Namaqualand daisy (*Dimorphotheca sinuate*) and non-native grasses.

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 BRSA, mule fat scrub was found along the margins of the large basin within the proposed eastern staging area. The basin was created as part of the excavation for the "Continental City" project under previous ownership. It was intended as the basement for a large office building, but abandoned after excavation. 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.

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. They 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 BRSA 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*).

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*).

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Los Angeles International Airport

Legend

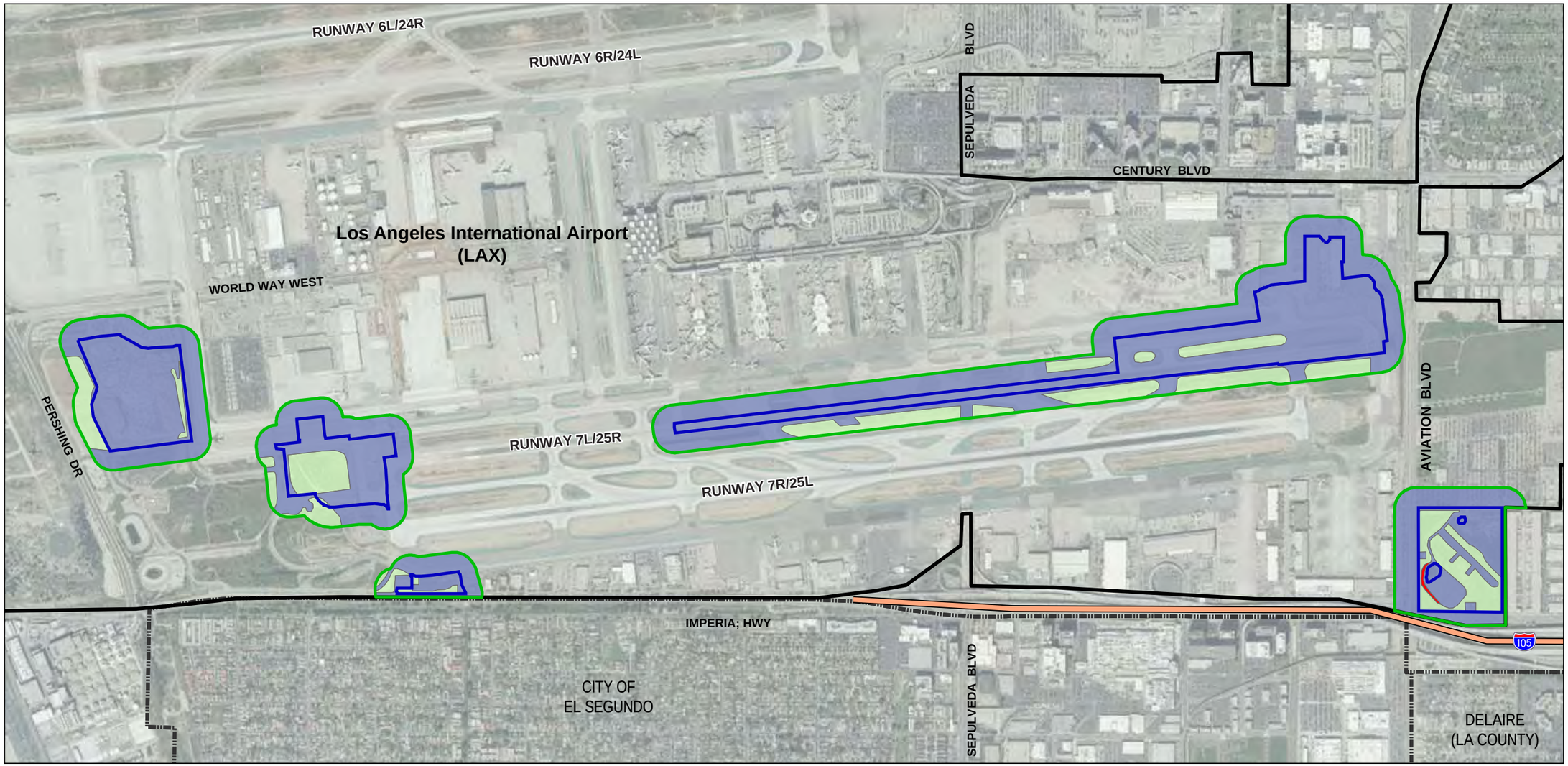
- Biological Resource Study Area
- Generalized Study Area/Airport Property Boundary
- Detailed Study Area
- Municipal Boundary

Vegetation Communities

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

0 1300 ft. north

1" = 1300 feet



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

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

Vegetation Communities Within the Biological Resource Study Areas

FIGURE
D-9

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CUMULATIVE EFFECTS

Cumulative effects analyses are limited to future state and private actions that are reasonably certain to occur within the vicinity of the area of the federal project. For Section 7 consultations, the cumulative impacts should not include future federal actions since they are actions that would be subject to the provisions of Section 7 at some later date. Indicators of "reasonably certain" projects must show more than the possibility that the non-federal project would occur. They must demonstrate with reasonable certainty that it would occur. Accordingly, only those state or private projects that satisfy all major land use requirements and that appear to be economically viable are considered. Cumulative effects involve only future non-federal actions: past and present impacts of non-federal actions are part of the environmental existing conditions. The following subsection identifies and describes potential cumulative effects that could result from the project in combination with other reasonably foreseeable future non-federal actions or natural events in or near the BRSA.

Cumulative Projects

Projects that would potentially contribute to cumulative impacts are those located in the same general geographic area of influence of LAX. Projects or proposed projects of potential regional significance are also considered in the cumulative analysis. One future project within the LAX area that is reasonably certain to occur is the Westchester Stormwater Best Management Practices Project, proposed by the City of Los Angeles Department of Public Works, Bureau of Sanitation (BOS).

Westchester Stormwater Best Management Practices Project. The proposed BOS project would construct large and small diameter storm drains, underground rainwater storage tanks (URST) and underground infiltrations facilities (UIFs) covered with soil to improve drainage in the area and, consequently, beach water quality at Dockweiler Beach and comply with the Santa Monica Bay Beaches Wet Weather Bacteria Total Maximum Daily Load (TMDL). The proposed BOS project is located on the northwest edge of LAX near the intersection of Westchester Parkway and Falmouth Avenue (**Figure D-10**). Given the urban location of the proposed BOS project and the limited habitat potential of the federally listed species in the vicinity of the Proposed Action, it is unlikely that the Proposed Action would contribute cumulatively to impacts on federally-listed species.

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Los Angeles International Airport

Legend

Generalized Study Area/Airport Property Boundary

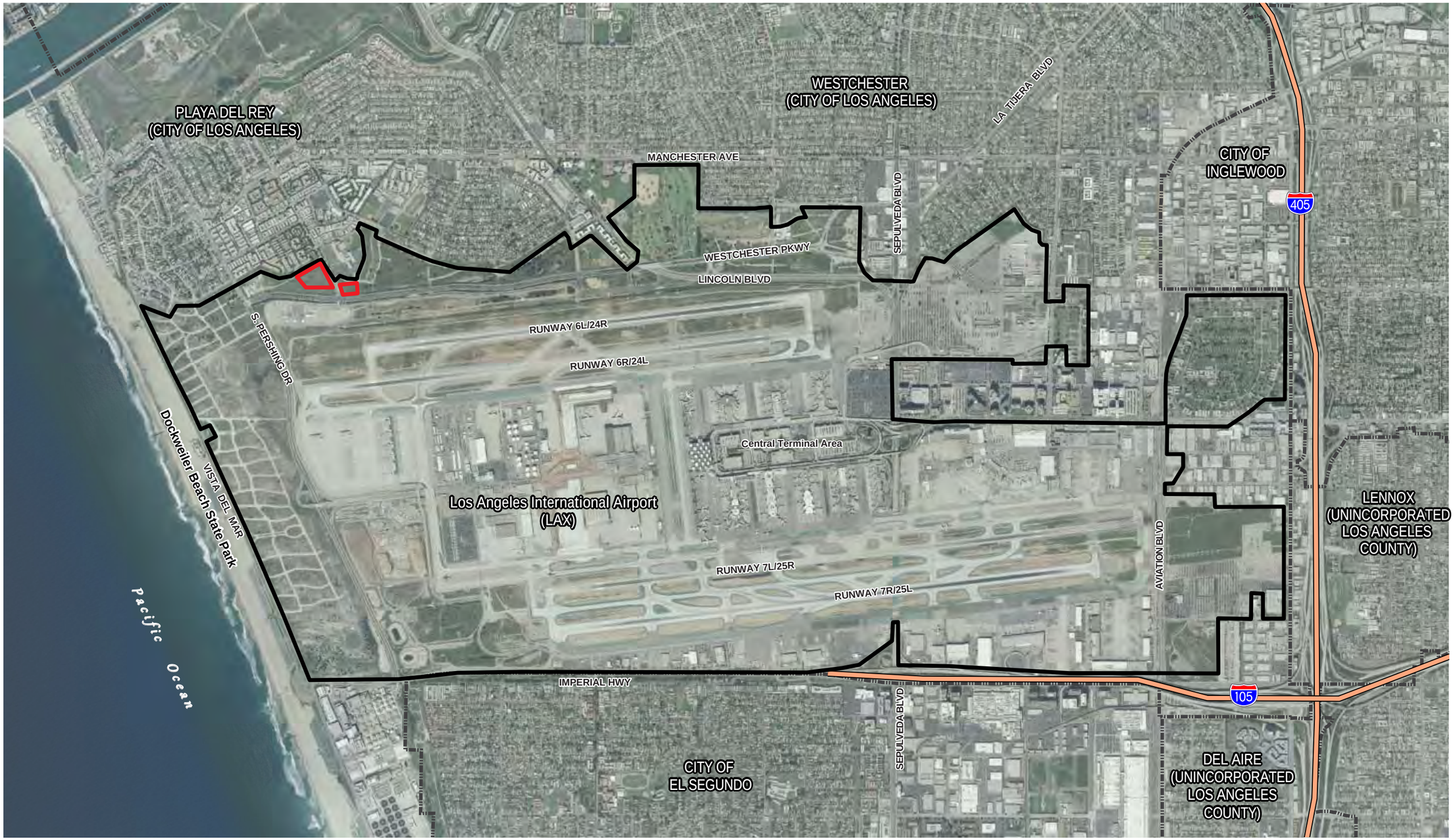
Westchester Stormwater Best Management Practices Project

Municipal Boundary

0 2000 ft.

1" = 2000 feet

north



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

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

Westchester Stormwater Best Management Practices Project

FIGURE
D-10

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CONCLUSION

Based on the information presented above, the FAA has determined that the Proposed Action evaluated in this BA would have *no effect* on federally listed species or designated or proposed critical habitat. There is no suitable habitat for federally-listed species within the BRSA's.

REFERENCES CITED

California Department of Fish and Game. 2012. RareFind California Department of Fish and Game Natural Diversity Database (CNDDB) Inglewood and Venice USGS 7.5-Minute Quadrangles. Sacramento, CA: California Department of Fish and Game, Biogeographic Data Branch.

California Native Plant Society. 2012. CNPS Electronic Inventory of Rare and Endangered Plants: CNPS.

Endangered Species Act.. 1973. 16 U.S.C. §1531 et seq

Federal Aviation Administration and Los Angeles World Airports. 2005. Final Environmental Impact Statement, Los Angeles International Airport Proposed Master Plan Improvements, Los Angeles, Los Angeles County, California. Los Angeles, CA: U.S. Department of Transportation, FAA

Gonzalez, R.J., J. Drazen, S. Hathaway, B. Bauer, and M. Simovich. 1996. 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.

Hathaway, S.A. and M.A. Simovich. 1996. 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.

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

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California (California Department of Fish and Game. The Resources Agency, ed), p. 156. Sacramento, CA.

Los Angeles World Airports. 2011. LAX Master Plan, Mitigation Monitoring and Reporting Plan: 2010 Annual Progress Report. Los Angeles, CA: LAWA.

National Environmental Policy Act. 1969. 42 U.S.C. § 4321et seq.

Sapphos. 2001. Appendix: LAX Master Plan EIS/EIR: J1. Biological Assessment Technical Report. Pasadena CA: Sapphos Environmental, Inc.

United States Geological Service. 1981. 7.5-Minute Quadrangle Maps Inglewood and Venice, California.

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 : USFWS.

United States Fish and Wildlife Service. 2005 (April 12). 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. Washington, D.C.: USFWS.

United States Fish and Wildlife Service. 2012a. Critical Habitat Portal. USFWS

United States Fish and Wildlife Service. 2012b. Ventura Fish and Wildlife Office Endangered and Threatened Species List. In: U.S. Department of the Interior, editor. Ventura, CA: USFWS.

United States Fish and Wildlife Service. 2012c. Carlsbad Fish and Wildlife Office Endangered and Threatened Species List. In: U.S. Department of the Interior, editor. Ventura, CA: USFWS

ACRONYMS AND ABBREVIATIONS

§	Section
ALS	Approach Light System
BA	Biological Assessment
BOS	Bureau of Sanitation
BRSA	Biological Resource Study Area
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
FAA	Federal Aviation Administration
FR	Federal Register
ESA	*Endangered Species Act of 1973*
GSE	Ground Support Equipment
ILS	Instrument Landing System
LAWA	Los Angeles World Airports
LAX	Los Angeles International Airport
MALSR	Medium-intensity Approach Lighting System
MMRP	Mitigation Monitoring and Reporting Program
NEPA	*National Environmental Policy Act of 1969*
RSA	Runway Safety Area
RWY	Runway
TMDL	Total Maximum Daily Load
TWY	Taxiway
UIFs	Underground Infiltrations Facilities
URST	Underground Rainwater Storage Tanks
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

APPENDIX

E

NOTICE OF AVAILABILITY

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U.S. Department of Transportation
Federal Aviation Administration

Los Angeles World Airports
Los Angeles International Airport

Draft Environmental Assessment
Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project

NOTICE OF AVAILABLITY OF DRAFT ENVIRONMENTAL ASSESSMENT, PUBLIC WORKSHOP AND PUBLIC HEARING

Pursuant to Title 49, United States Code, Section (§) 47106(c)(1)(A), notice is hereby given that the City of Los Angeles, California, through its airport department – Los Angeles World Airports (LAWA), proposes to improve the Runway Safety Area (RSA) for Runway 7L/25R at Los Angeles International Airport (LAX), City of Los Angeles, Los Angeles County, California and to complete associated improvements that include pavement reconstruction on the eastern segments of Runway 25R and Taxiway B, the extension of Taxiway C to the east, the demolition of Air Freight Building No. 8, and the construction of a replacement Ground Support Equipment (GSE) Maintenance Facility to relocate the tenants currently operating at the existing Air Freight Building No. 8 (collectively the Proposed Action). The purpose of the Proposed Action Runway 7L/25R RSA improvements is to enhance the level of safety provided by RSAs at LAX to comply with airport design standards included in Federal Aviation Administration (FAA) Advisory Circular 150/5300-13, *Airport Design*, as required by *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. P.L. 109-115 requires completion of RSA improvements by airport sponsors that hold a certificate under Title 14, Code of Federal Regulations (CFR), Part 139, to meet FAA airport design standards by December 31, 2015. The purpose for reconstructing Runway 7L/25R and Taxiway B pavements is to address poor pavement conditions and to provide a suitable pavement for aircraft landing and departing on Runway 7L/25R and aircraft taxiing on Taxiway B. The purpose of the proposed extension of Taxiway C is to maintain access to Runway 25R during pavement reconstruction activities of Taxiway B. The purpose of the replacement GSE Maintenance Facility is to provide a location within the South Airfield area to relocate the existing GSE maintenance operations currently housed in Air Freight Building No. 8.

The Proposed Action RSA improvements involve a westerly extension of Runway 7L and implementation of declared distances, as well as site preparation, grading, and installation of drainage structures, paving, marking, and in-pavement approach lighting system along an 832-foot long by 150-foot wide westerly extension of Runway 7L/25R to serve as a displaced threshold; construction of extensions to parallel and connector taxiways for the displaced threshold; replacement of the Approach Lighting System from towers to in-pavement lights. The Proposed Action also involves the pavement reconstruction of the eastern portion of the Runway 7L/25R and of the eastern portion of parallel Taxiway B; easterly extension of Taxiway C to Taxiway B1 to permit continued access to the end of Runway 25R while Taxiway B pavement is reconstructed; demolition of Air Freight Building No. 8 to accommodate the extension of Taxiway C and realignment of a service road, and construction of a new, replacement GSE Maintenance Facility along Imperial Highway within the LAX property boundary. The Proposed Action will enhance the safety of the airfield consistent with the requirements of P.L. 109-115 at LAX. Reconstruction of the runway and taxiway pavements is necessary to ensure safety of aircraft operations on the airport due to the deteriorated condition of the existing pavement. A Draft Environmental Assessment (EA) of the economic, social, and environmental impacts of the Proposed Action and its alternatives (including the No-Action Alternative) has been prepared.

The Draft EA evaluates the potential environmental effects of the Proposed Action and its alternatives described above and has been prepared pursuant to the requirements of Section 102(2)(c) of the *National Environmental Policy Act of 1969* (NEPA), and Section 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. The Draft EA has also been prepared in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*; and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Pursuant to the federal Endangered Species Act, Clean Water Act, Clean Air Act, National Historic Preservation Act, the Draft EA includes an analysis of prudent or feasible alternatives analysis, potential impacts, and mitigation measures, as appropriate.

Beginning on **September 28, 2012**, the Draft EA will be available for public review through LAWA's website at ***http://www.ourlax.org*** and in the following locations during normal business hours, through **November 13, 2012**:

- Federal Aviation Administration, Western-Pacific Region, Office of the Airports Division, 15000 Aviation Boulevard, Hawthorne, CA 90261;
- Los Angeles World Airports, Airports & Facilities Planning Division, 1 World Way, Room 218, Los Angeles, CA 90045;
- El Segundo Public Library, 111 W. Mariposa Avenue, El Segundo, CA 90245; and
- City of Los Angeles Public Library Westchester-Loyola Branch, 7114 W. Manchester Avenue, Los Angeles, CA 90045.

A Public Workshop on the Draft EA will be held on **Thursday, November 1, 2012**, from 6:00 p.m. to 7:00 p.m. Pacific Daylight Time, followed by a Public Hearing from 7:00 p.m. to 9:00 p.m. Pacific Daylight Time at the **Flight Path Learning Center, 6661 West Imperial Highway, Los Angeles, California, 90045**. Oral and written comments will be accepted at the Public Hearing.

Comments must be received by **5:00 p.m. Pacific Daylight Time** on **Tuesday, November 13, 2012**. Please ensure adequate time for mailing. Comments can only be accepted with the full name and address of the individual commenting. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask the FAA in your comment to withhold from public review your personal identifying information, the FAA cannot guarantee that it will be able to do so. Comments received on the Draft EA and the responses to those comments will be disclosed in the Final EA.

Written comments on the adequacy of the information disclosed in the Draft EA may be submitted by mail or facsimile to:

Mr. Herb Glasgow
Chief of Airport Planning I
Airports & Facilities Planning Division
Los Angeles World Airports
1 World Way, Room 218
Los Angeles, California 90045
Fax: (424) 646-9210

Those interested in attending the Public Workshop and/or Hearing who have special communication or accommodation needs, including translation services, are encouraged to contact Mr. Herb Glasgow at least three (3) days prior to the Workshop and Public Hearing. Every reasonable effort to accommodate special needs will be made.

APPENDIX

F

LAND USE ASSURANCE LETTER

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Los Angeles
World Airports

September 25, 2012

Mr. David Kessler, AICP
Regional Environmental Protection Specialist
Federal Aviation Administration
Airports Division, Western-Pacific Region
P.O. Box 92007
Los Angeles, CA 90009

SUBJECT: PROPOSED RUNWAY SAFETY AREA IMPROVEMENT PROGRAM, LOS ANGELES INTERNATIONAL AIRPORT, CA, LAND USE ASSURANCE LETTER

Dear Mr. Kessler:

The Los Angeles World Airports (LAWA), a department of the City of Los Angeles, California, makes the following statement of land use assurance as required by Section 511(a)(5) of the Airport and Airway Improvement Act of 1982, as amended:

Los Angeles International Airport (LAX) is physically located within the City of Los Angeles, California, which has authority to regulate and control land use and zoning within the City of Los Angeles municipal limits. Cities bordering LAX to the east are Inglewood, Lennox, Hawthorne and Del Aire (an unincorporated area of the County of Los Angeles), and south of LAX is the City of El Segundo.

LAWA provides assurance that appropriate action has been and will be taken, to the extent reasonable, to restrict the use of land under LAWA ownership and control to activities and purposes compatible with normal airport operations both existing and in the future. Moreover, within the municipal limits of the City of Los Angeles, heights of structures and natural objects in the vicinity of LAX are regulated by ordinances described within the Los Angeles Municipal Code. Section 12.50 of the Planning and Zoning Code includes Airport Hazard Maps and regulations relating to height limits. The ordinance relating to this Section of the Code was written and adopted in 1971 and amended in 2000, in conformance with Federal Aviation Regulation, Part 77.

LAWA works with the adjacent municipalities having land use jurisdiction over land adjacent to or in the immediate vicinity of LAX and encourages the adoption of zoning laws, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of LAX to activities and purposes compatible with airport operations. LAWA is involved with these neighboring communities and municipalities in promoting compatible land uses as evidenced by Part 150 noise mitigation efforts. LAWA comments on proposed land use development in neighboring communities as it affects LAX, and LAWA is committed to ensuring land use compatibility with its surrounding neighborhoods.

If you have any questions regarding this matter, please contact Herb Glasgow of my staff at 424-646-5180 or by email at hglasgow@lawa.org.

Sincerely,

Cynthia Guidry, P.E.
Chief of Airport Planning II

CG:HG:yl

cc: Steve Martin
Lisa Trifiletti